

**Rapid Deployment
Energy Efficiency (RDEE) Toolkit:
Planning & Implementation Guides**

FINAL

December 9, 2009

Forward

The Rapid Deployment Energy Efficiency (RDEE) Toolkit is designed to help state and local authorities and energy efficiency program administrators plan and implement successful programs as they advance energy efficiency through the American Recovery and Reinvestment Act of 2009.

The Toolkit was developed under the guidance of and with input from the Leadership Group of the National Action Plan for Energy Efficiency, with support from the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). It was prepared by Peter Lemoine, Tyler Huebner, David Pickles, Bill Prindle, and Nora Buehler of ICF International.

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1. Introduction and Purpose

The American Recovery and Reinvestment Act (ARRA) authorized about \$17 billion in energy efficiency funding that qualifying public entities—primarily states, cities, and counties—could pursue. The primary objectives of this funding are to create jobs, save energy, and build clean energy (energy efficiency and renewable energy) infrastructure for the longer term. To accomplish these objectives, the Administration and Congress have placed heavy emphasis on transparency and accountability in the use of ARRA funds.¹ At the same time, funds must be obligated and expended rapidly in order to have an impact on economic recovery in the near future. The U.S. Department of Energy (DOE) has already begun distributing these funds to states and municipalities. It is possible to see funding targets and awards made to date at <http://www1.eere.energy.gov/recovery/>, a Web site set up to support the task of dispersing ARRA funds in the energy efficiency and related clean energy areas.

The **Rapid Deployment Energy Efficiency (RDEE) Toolkit** is being provided to help recipients of ARRA funding meet these objectives and challenges. The Toolkit provides information on ten program types across the residential, commercial, and industrial sectors, drawn from the experience of hundreds of federal, state, local, private, and utility organizations.² These programs were selected because they work: they have been successful in putting to good use hundreds of millions of dollars in training, support, marketing, administration, and customer incentives. Moreover, these ten program types have improved through years of experience and scrutiny in design and implementation. Over this time, these programs have become part of the nation’s field-tested energy efficiency delivery infrastructure.

ARRA grantees can leverage this infrastructure in quickly launching these proven program designs. This Toolkit provides the information grantees need to plan and begin implementing the following ten RDEE program types. It goes well beyond the minimum information required in ARRA grant applications, and is thus still useful even for grantees whose awards have been announced.³

Residential Programs

- R1. ENERGY STAR[®] Labeled Products
- R2. Tier 1 Residential Energy Audit and Direct Installation
- R3. Home Performance with ENERGY STAR[®]
- R4. Residential Efficient Heating and Cooling

¹ See <http://www.recovery.gov/?q=content/accountability-and-transparency>.

² This includes the experience of the participants in the National Action Plan for Energy Efficiency, a public private initiative to pursue all cost-effective energy efficiency by 2025, www.epa.gov/eeactionplan.

³ The Planning Guide was first published in May 2009, in advance of the ARRA deadlines for state and local governments to submit grant applications to DOE. Although these deadlines have now passed, applications did not require full program details, so grantees can still use the information in this Toolkit for detailed guidance on how to finalize designs and implement programs.

Non-Residential Programs

NR1. Non-Residential Prescriptive Rebates

NR2. Non-Residential Retrocommissioning

NR3. Commercial Food Service

NR4. Non-Residential (Commercial & Industrial) Custom Incentives

NR5. Non-Residential Benchmarking and Performance

NR6. Non-Residential On-Site Energy Manager

The Toolkit is organized such that an administrator can access relevant program information without having to sift through details of programs that are not directly relevant to them. The Table of Contents should be used to guide the reader to the appropriate section(s). The Toolkit includes four major components:

- *Planning Guide.* The purpose of the Planning Guide is to help states and local governments plan for RDEE programs, either individually or as part of a portfolio of initiatives.
- *Implementation Guide.* The purpose of the Implementation Guide is to help administrators move from planning into the early stages of program implementation.
- *RDEE Program Snapshots and Templates.* These chapters provide a more detailed look at each of the RDEE programs. Chapter 4 focuses on the residential sector RDEE programs and Chapter 5 focuses on the non-residential RDEE programs.
- *Appendices.* Appendix A includes an overview of ARRA energy efficiency funding opportunities and rules for participation. Appendix B provides background on the methodology and assumptions of the employment estimates developed for the Planning Guide.

Planning Guide

The second chapter of the Toolkit is the Planning Guide. The purpose of the Planning Guide is to provide the information program administrators need to plan for residential and non-residential energy efficiency programs, either as stand-alone efforts or as part of a portfolio of programs. The Planning Guide addresses:

- Target market
- Evaluation, monitoring, and verification requirements

- Infrastructure requirements
- Training requirements
- Staffing requirements
- Implementation timeline
- Energy savings and portfolio benchmarking
- Participation rates
- Total budget
- Job creation estimates
- Cost-effectiveness
- Resources and assistance

Note that this document does not address the planning process and potential for renewable energy programs.

The Planning Guide is organized as follows:

- *Considerations in program selection and budgeting.* This section outlines the key factors to consider in program selection and budgeting, including job impact, collaboration/leverage of funds, significance of savings, cost of savings, and sustainability and market transformation.
- *Overview of the RDEE program types.* This section briefly describes each of the ten program types in the Toolkit including the target market and major program elements.
- *Framework for decision making.* This section outlines how to use the program-specific information presented in the Planning Guide to select and budget for one or more of the ten RDEE programs. This section also discusses portfolio benchmarking to help program administrators “reality check” their proposed set of programs against historic program performance around the country, in terms of cost-effectiveness and allocation between residential and non-residential sectors.

Implementation Guide

The third chapter of this document is the Implementation Guide. The purpose of this chapter is to help program administrators move from planning to program launch and management. The Implementation Guide includes information on four key aspects of program implementation that program administrators need to address to get RDEE programs off the ground. These topics include:

- *The role and use of implementation contractors.* This section reviews the ways in which efficiency programs typically use contractor support, and provides guidance on hiring and managing contractors. Included is a summary of the major tasks involved in issuing an RFP and selecting a contractor.

- *Training needs and resources.* This section discusses the skill level, certifications, and training needed for program administrators and contractors, with links to each type of training.
- *Marketing strategies.* This section provides an overview of proven marketing strategies and tactics, including how to define target markets for each RDEE program.
- *Tracking and estimating results (M&V).* This section helps program administrators determine what tracking and measurement infrastructure they need in order to report program savings to DOE and others overseeing program funding.

RDEE Program Snapshots and Templates

The final two chapters provide a more detailed look at each of the RDEE programs. Chapter 4 focuses on the residential sector RDEE programs while Chapter 5 focuses on non-residential RDEE programs. The information included in each chapter is outlined below.

Residential RDEE Programs

- Snapshots for each residential program,⁴ with data and guidance on the following considerations in program design and implementation:
 - (a) Target market
 - (b) Infrastructure requirements
 - (c) Staffing requirements and job creation
 - (d) Training needs and resources
 - (e) Implementation timeline
 - (f) Program performance (savings, cost, and cost-effectiveness)
 - (g) Evaluation, measurement & verification (EM&V) support
 - (h) Resources and assistance (including links to other materials on the Web)
- Marketing plan templates for two programs:
 - (a) Home Performance with ENERGY STAR[®]
 - (b) Efficient Heating and Cooling
- Contractor RFP template for Home Performance with ENERGY STAR[®]

Non-Residential RDEE Programs

- Snapshots for each non-residential program

⁴ These snapshots have been revised and expanded since initial publication in the RDEE Toolkit Planning Guide.

- Marketing plan templates for four programs:
 - (a) Prescriptive Programs
 - (b) Retrocommissioning (RCx) Programs
 - (c) Commercial Food Service
 - (d) Benchmarking and Performance
- Contractor RFP template for Prescriptive Programs

2. Planning Guide

2-A: Criteria for Program Selection

ARRA grant recipients face a formidable challenge in allocating their resources and stimulus funding most effectively across a wide range of programming choices. The State Energy Program (SEP) Funding Opportunity Announcement (FOA)⁵ identifies many of the criteria and considerations that DOE has outlined as important in the SEP grant process. Some criteria are explicit and quantifiable, and others are more general in nature, emphasizing the need for the programs to be consistent with the requirements of the ARRA and with DOE's guiding principles for the SEP program. While many of the criteria are addressed in multiple sections of the FOA, and are expressed in slightly different terms, many of the primary considerations are captured in the following five metrics.⁶

1. **Job Impact.** The ARRA and SEP FOA are clear in their guidance that the funding should have a significant impact on creating new or sustaining existing jobs. The FOA emphasizes the urgency of this need by preferring programs that can be initiated and completed expeditiously. Tracking and reporting of the nature and duration of jobs created by the funds is also required.
2. **Collaboration/Leverage of Funds.** The SEP FOA required states to commit to using funding to expand existing programs, including ratepayer-funded (utility or public-benefit fund) programs, or to create new programs, and not to supplant or replace existing funding. Collaboration among Federal and state agencies, and across public and private agencies, is explicitly encouraged, as is use of best practices from other states. Given the need to expend funds quickly while minimizing the risks associated with starting new programs, the use of existing programs and infrastructure is also encouraged.
3. **Magnitude of Energy of Savings.** The SEP FOA reinforced that states' overall energy strategies should pursue a minimum goal of reducing per capita energy consumption at least 25 percent relative to the 1990 base year by 2012. Combined with the goal of a significant increase in jobs and a reduction in environmental impacts, the FOA anticipates that the programs and resulting energy impacts will be large.
4. **Cost of Savings.** The SEP FOA strongly encouraged state portfolios of SEP programs to achieve at least 10 million annual source Btus in savings for every \$1,000 spent. While individual programs may, for good reason, provide fewer savings, the relative cost of the programs will be an important consideration. Note that this standard of cost effectiveness equates to approximately \$1 per first-year saved kWh for electric utilities, whose program portfolios often achieve energy savings for less than half this cost.

⁵ U.S. DOE Funding Opportunity Announcement: State Energy Program Formula Grants, #DE-FOA-0000052. Available at: http://apps1.eere.energy.gov/wip/pdfs/sep_arra_foa.pdf.

⁶ Note that these criteria include a mix of pass/fail criteria, as well more ordinal criteria (e.g., where the project can satisfy the criteria to varying degrees). This document does not modify, limit, or change in any way the requirements of the FOA.

5. **Sustainability and Market Transformation.** The SEP FOA anticipates preservation of the jobs and activities initiated by the ARRA even after the funds have been expended. States have been requested to focus program efforts on market transformation activities, which cause lasting changes in the function of markets or behavior of participants. Programs that can continue to provide value by leveraging other sources of funds (such as ratepayer or private sector funds) or by changing long-term practices (such as teaching quality installation and maintenance practices) are appropriate.

Note that these are not the only criteria. Other important criteria (such as the Governor's Assurance) also apply. These criteria may, however, prove very useful to recipients in the analysis, prioritization, and funding of programs.

Although these criteria are designed to reflect the key considerations of DOE during the award process, states may also wish to overlay their own additional requirements. While these criteria will be situation specific, they might include:

- Alignment with the mission and statutory authority of the state agency and previously filed SEP plans
- Availability of tracking systems for program funds, quality assurance and control (QA/QC) of work conducted with the funds, and accounting and anti-fraud controls
- Electric system requirements (e.g., timing of future capacity or energy driven additions)
- Availability of programs for all taxpayers and a broad-based opportunity to participate in at least one program
- Special accommodations for low-income customers
- Sensitivity to competitive market operations and a desire not to create programs that compete with or provide inappropriate competitive advantage to individual market participants
- Ability of the program to integrate with plans by regional utilities to introduce an Advanced Metering Infrastructure or Smart Grid
- The impact on the ability to reach goals that may have been established for existing energy efficiency program providers, especially utilities

2-B: Overview of the Rapid Deployment Energy Efficiency Programs

The Rapid Deployment Energy Efficiency (RDEE) Toolkit provides information on 10 energy efficiency program types. These programs each have a proven track record and are consistent with the criteria and considerations outlined by DOE. Each of these programs typically:

- Addresses broad target audiences
- Creates jobs

- Saves significant amounts of energy
- Is cost-effective
- Has established measurement and evaluation methods
- Leverages existing infrastructure
- Is sustainable, at least in part, and results in long-term market transformation
- Is comparatively low-risk
- Has manageable complexity
- Has available extensive design support and case study information

The program types span energy efficiency options across the residential, commercial, and industrial sectors. They are:

1. **ENERGY STAR[®] Labeled Products (R1)**. This residential and small commercial sector program promotes efficient lighting (CFLs and fixtures) and appliances through a variety of incentive structures including direct rebates to the customer as well as upstream incentives. This program generally targets the broad residential and small commercial market place. Particular products may be selected for inclusion, such as lighting products or home appliances. Savings will depend upon the products included. Typical savings range from approximately 0.5 to 3.0 million British thermal units (MBtu) per participant.
2. **Residential Energy Audit and Direct Installation (R2)**. This program targets the same market and works with the same set of contractors as HPwES (see below); the key difference is a more basic audit and a less-extensive and lower-cost set of measures, such as CFLs, hot water heater wraps, pipe insulation, and low flow showerheads. Typical savings are approximately 3 to 6 MBtu per participant.
3. **Home Performance with ENERGY STAR[®] (R3)**. This residential sector program offers whole home retrofits using qualified contractors, established home assessment protocols, and incentives from the program sponsor. This program can be a good strategy particularly for older pre-code constructed homes. The program is estimated to reduce home energy bills by 20 percent on average.
4. **Residential Efficient HVAC (R4)**. This program targets HVAC contractors and homeowners to increase sales and proper installation of ENERGY STAR qualified HVAC equipment, such as air conditioners and furnaces.⁷ Savings are

⁷ The measure mix (the technologies that are cost-effective for the program to rebate) of HVAC programs varies largely based on weather and primary fuel (electric or gas). For example, in some areas of the country measures such as ground source heat pumps and hydronic heating systems are cost-effective and have been incorporated into residential HVAC programs.

very sensitive to local climate conditions, but the minimum savings range per participant is approximately 5 to 20 MBtu.

5. **Non-Residential Prescriptive Rebates (NR1).** This program provides incentives to the commercial, institutional, and industrial market for upgrade or retrofit of equipment with new, more energy-efficient equipment, such as lighting, HVAC equipment, and products like motors and refrigerators. Particular equipment and products may be selected for inclusion in this program, such as lighting; savings depend upon the equipment and products included. Generally, a large percentage of program savings come from lighting retrofits.
6. **Non-Residential Retrocommissioning (NR2).** Retrocommissioning offers building owners a systematic process for evaluating a structure's major energy-consuming systems and identifying opportunities to optimize equipment operation. Retrocommissioning tunes-up existing buildings, improving their energy efficiency and operational procedures. It is typically carried out through local networks of commissioning providers. Typical savings range from approximately 4,000 to 20,000 MBtu per participant.
7. **Commercial Food Service Equipment Incentives (NR3).** This program rebates energy-efficient commercial food service equipment such as refrigerators, freezers, steamers, fryers, hot food holding cabinets, ice machines, dishwashers, ovens, and other technologies, primarily aiming to influence the buyer to purchase more efficient equipment when their existing equipment has failed. Typical savings range from approximately 20 to 60 MBtu per participant.
8. **Non-Residential Custom Incentives (NR4).** A commercial and industrial (C&I) Custom Program supports C&I customers in identifying and implementing site-specific and complex energy efficiency opportunities, which often require calculations to determine energy savings. A typical project may involve industrial process efficiency, chillers/boilers, data center efficiency, or electric motor retrofits, or projects that otherwise fall outside of the prescriptive program. Savings per project can be very large, but vary widely by state/industry.
9. **Non-Residential Benchmarking and Performance Improvement (NR5).** This program works with commercial facility operations staff and owners to benchmark, monitor, and improve building energy performance using tools such as ENERGY STAR Portfolio Manager and building sub-metering equipment, as well as to recommend energy efficiency upgrades based on analyses of building performance data. This program is estimated to reduce building energy use by 10 to over 30%.
10. **Non-Residential On-Site Energy Manager (NR6).** This program assists larger customers by providing an On-Site Energy Manager (OEM) to work with them for a six-month period or longer. During their tenure with a business, the OEM will evaluate facilities' energy use and work with maintenance staff to reduce

2-C: Framework for Program Selection and Budgeting

This section can be used to select and plan for any one of the ten programs presented here or to develop a portfolio of such programs. To determine which programs may be appropriate for use of SEP and EECBG funding in a particular area, the Toolkit provides the following basic program information and planning assumptions on:⁸

- Target audience
- Likely near-term annual penetration rates
- Average energy savings per participant
- Annual program costs per participant
- Anticipated number of jobs created

This program planning information permits program administrators to scale the numbers up or down based on population, location, or other specific information.⁹ Program sponsors are encouraged to consult the resources identified and/or contact EPA for assistance in identifying appropriate planning assumptions for their own states/cities/counties and developing program designs.

The use of this information is illustrated below for various hypothetical residential and non-residential populations. Based upon assumptions for participation rates, average costs per participant, average savings per participant, and estimated jobs created, the following program planning information can be developed (as illustrated in Table 1):

- Total annual program costs
- Total annual energy saved
- Jobs created
- Source Btu saved per \$1,000 invested

⁸ These are initial planning assumptions based on the experience of a number of organizations implementing these programs. However, recipients are encouraged to evaluate these assumptions as their plans are developed to address local circumstances that could be different from the circumstances of past program implementers due to different climate conditions, economic activity levels, incentive strategies, market infrastructure, etc.

⁹ The information provided is by necessity somewhat generic, and may not reflect individual program design approaches or be achievable under all circumstances.

Table 1: Illustrative Program Metrics 2009-2011

	Program	Eligible Population	Participation rate	Participants	Average Cost per Participant	Program Cost	Jobs per \$1M	Jobs Created	Per Unit Source MBtu Saved	MBtu Saved	Source Mbtu saved per \$1,000
R1.	ENERGY STAR Products	1,000,000	23.4%	235,530	\$ 26	\$ 34,700,000	9	296	3	3,029,000	87
R2.	Easy Audit and Direct Install	250,000	3.5%	8,700	\$ 990	\$ 8,636,000	21	184	5	43,500	5
R3.	HPwES	250,000	1.0%	2,500	\$ 5,850	\$ 14,625,000	20	297	60	150,000	10
R4.	Efficient Heating and Cooling	1,000,000	4.0%	40,000	\$ 290	\$ 11,700,000	14	168	25	1,000,000	85
NR1.	Prescriptive	100,000	1.8%	1,820	\$ 3,610	\$ 6,571,000	9	57	400	726,000	110
NR2.	Retrocommissioning	20,000	0.5%	100	\$ 48,100	\$ 4,810,000	12	58	5,800	579,500	120
NR3.	Commerical Food Service	40,000	7.7%	3,075	\$ 1,400	\$ 4,307,750	7	29	60	172,000	40
NR4.	Custom	100,000	0.3%	261	\$ 20,000	\$ 5,220,000	16	81	1,500	639,450	123
NR5.	Commerical Benchmarking and Performance	20,000	0.5%	90	\$ 40,000	\$ 3,600,000	12	43	2,900	260,550	72
NR6.	On-Site Energy Manager	20,000	0.5%	105	\$ 47,600	\$ 5,001,250	8	39	4,500	472,500	94

2-D: Allocation of Funds Among Programs

Program administrators need to decide which programs to pursue and how large a budget to allocate to each program. This is important because ARRA funds are unlikely to be sufficient to support a complete program portfolio serving all customer types and end use markets; grantee’s challenge is to pick the best ways to apply limited funds. This section outlines a framework for making these decisions, using both quantitative and qualitative considerations.

A primary consideration in selecting a portfolio of programs should be to maximize its value, subject to applicable constraints. In this case, value is determined in large part by the multiple metrics in ARRA funding rules, including number of jobs created and total energy saved. Chief constraints would include the available budget, cost per Mbtu saved, and the perceived risk of the projects.

There are many valid ways to select programs, some founded in mathematical scoring models, and others based on qualitative assessments. Given that the criteria established above are both quantitative and qualitative, a hybrid approach may be most appropriate for allocating ARRA funds.

Because the ARRA’s primary goals are to create jobs and save energy, this guide provides the information necessary to estimate and benchmark these benefits. While there is some uncertainty in these estimates, ranges of probable impacts are provided. The process used to develop ranges for the jobs created from the programs is outlined in Appendix B. The energy savings estimates are derived from past program experience with these ten program types.

Similarly, estimates of the cost-effectiveness of the programs, expressed in terms of MBtu per \$1,000 spent should be developed. Again, these can reasonably be expressed as ranges using the information presented in this document and other sources.

In addition to these quantitative items, each program should be evaluated on qualitative criteria that are significant to each applicant. Examples of these criteria might include:

1. *The applicability of the program to a broad range of constituents.* The definition of equity across taxpayers may vary based on circumstances, but will generally require that, over time, all taxpayers have the opportunity to participate in the programs, or will at least share materially in their benefits.
2. *The comparative simplicity and risk level of the program.* Relative risk of individual programs, and of the portfolio as a whole, is difficult to judge since there is often a lack of reliable information on future performance. Therefore, risk assessment should examine: the quality and reliability of information used in determining the quantitative metrics; track record of the program and/or its implementer in hitting goals and maintaining budgets; and dependence of the program on factors outside the grantee’s direct control.
3. *The sustainability of the program after ARRA funding has been expended.* Sustainability depends in part upon the degree to which the program permanently builds the market for energy efficiency: for example, by changing contractor practices or distributor stocking practices, or increases the consumer demand for efficient products and services.
4. *The degree to which the program leverages other funding sources or programs.* Opportunities for leverage are best found by charting existing programs that can supplement grantee program funding, and by reaching out to other entities willing and able to introduce such programs. Utilities, both public and private, as well as public agencies, tax incentives, and regional transmission organizations may all serve as potential sources of leveraged funds.

The evaluation process might include a ranking of each program from “low” to “high” relative to these criteria, as illustrated in Table 2. This table can be adapted for use by program administrators to identify the best opportunities in their region.

Table 2: Illustrative Metrics of Potential RDEE Programs

Program	Approx Mbtu per \$1000	Approx Jobs per \$M	Applicability	Simplicity & Lack of Risk	Sustainability	Leverage
RESIDENTIAL						
R1. ENERGY STAR Products	3	9	High	High	Moderate	High
R2. Easy Audit and Direct Install	5	21	High	Moderate	High	Moderate
R3. HPwES	60	20	High	Moderate	High	Moderate
R4. Efficient Heating and Cooling	25	14	High	High	Moderate	High
NON-RESIDENTIAL						
NR1. Prescriptive	400	9	Moderate	High	Moderate	High
NR2. Retrocommissioning	5,800	12	Moderate	Moderate	Moderate	Moderate
NR3. Commercial Food Service	60	7	Moderate	Moderate	Moderate	Moderate
NR4. Custom	1,500	16	Moderate	Moderate	Moderate	Moderate
NR5. Commercial Benchmarking and Performance	2,900	12	Moderate	Moderate	High	Moderate
NR6. On-Site Energy Manager	4,500	8	Low	Moderate	High	Moderate

Recipients should consider the program and policy environment in their own jurisdictions when assigning such rankings. For example, a state with utilities that are actively promoting similar programs might provide “high” opportunities for leverage. In contrast,

states with few or no such programs might have a “moderate” or “low” opportunity for leverage. Details about the attributes of each program are provided in Chapters 4 and 5; these details will support the evaluation of each program.

2-E: Program/Portfolio Benchmarking

Benchmarking a set of proposed programs against the performance of existing programs nationwide is important for energy efficiency program implementation because it provides a “reality check” for program administrators. Benchmarking can help answer questions like: “How do our programs compare to others in terms of cost-effectiveness?” or “How do they compare in terms of savings impacts?”

In this section, four metrics for benchmarking a set of programs are presented:

1. *Program cost per annual kWh*¹⁰. The U.S. Energy Information Administration (EIA) and the American Council for an Energy-Efficient Economy (ACEEE) provide data on the cost-effectiveness of programs run by a variety of program administrators nationwide.
2. *Annual energy savings as a percentage of total statewide kWh sales*. Recent industry data illustrate the range of impacts energy efficiency programs have had on electricity sales in states, as well as Energy Policy Act (EPAct) of 2005 savings goals.
3. *Savings by end-use*. Experience strongly suggests that lighting improvements account for a large fraction of verified program savings, especially in the first few years of program implementation.
4. *Residential versus non-residential spending and savings*. The allocation of program spending across customer classes varies widely by state and/or utility territory. Nevertheless, the range of typical allocations provides a guidepost for states and local governments.

Note that benchmarking and program measurement and verification (M&V) are related but separate topics. Benchmarking provides context on overall portfolio performance while M&V involves the details of program tracking and QA/QC on individual measures and projects. M&V is discussed in the Tracking and Estimating Results section, below.

Table 3 below illustrates the range of typical values for each of these metrics, derived from several published sources.¹¹ Program administrators can use the “guidepost” values in Table 3 to help gauge whether their proposed program portfolios are consistent, in

¹⁰ Cost per annual-year kWh is defined as total program costs during a program year, divided by the program’s energy savings gained during the program year.

¹¹ Martin Kushler, Dan York and Patti While. Meeting Aggressive New State Goals for Utility-Sector Energy Efficiency: Examining Key Factors Associated with High Savings. March 2009. ACEEE Report Number U091.

U.S. EIA Form 861 Data, 2006.

Randy Gunn. Benchmarking 2005 DSM Results. Summit Blue Consulting, February 8, 2007.

terms of cost-effectiveness and savings, with expected cost-effectiveness and savings based on the measured performance of best practice programs around the country.

Some important notes on benchmarking:

1. Although the median values for dollars per annual kWh are \$0.14 to \$0.44, these values are much lower than the DOE's threshold for cost-effectiveness, which is approximately \$1.00 per annual kWh. What this means is that the RDEE programs, which are modeled on the programs that have median values of \$0.14 to \$0.44 per kWh, should be very cost-effective when benchmarked against the DOE's cost-effectiveness threshold.
2. Although median annual energy savings as a percentage of total statewide kWh sales have historically been around 0.4% to 0.7%, the EAct 2005 goal is much higher, around 2%. As discussed further below, this means that most new programs will have to be much more aggressive in capturing energy efficiency opportunities than most historical programs.

Table 3: Total Program Benchmarking Metrics

Benchmarking Metric	"Guidepost" Value(s)	Source
\$ per annual kWh	\$0.14 - \$0.44/kWh [†] (Avg ~ \$0.25/kWh)	U.S. EIA; ACEEE
Median annual energy savings as a % of statewide electricity sales	0.4% - 0.7%	Summit Blue; ACEEE
EPACT 2005 goal (25% per capita reduction of 1990 levels by 2012)	2% +	DOE SEP FOA
Savings by end-use	60% - 75% lighting (decreasing over time)	ICF; ACEEE
Residential Spending (% of total)	40-49% (Avg ~45%)	ICF; ACEEE
Residential Savings (% of total)	35% - 40%	ICF; ACEEE

[†]The DOE's cost-effectiveness metric is in Mbtu/\$1000. These values translate to 25-70 Mbtu/\$1000 in program spending

Conceptually-similar programs can vary widely state to state, reflecting the variability in markets and economies across the country. Therefore, as with other metrics in this Toolkit, benchmarking metrics are suggested as guideposts rather than as hard targets for balancing the set of programs.

Each of these benchmarking metrics is described in the subsequent sections.

2-E-1: Program Cost per Annual kWh

The DOE's cost-effectiveness guide in the SEP Formula Grant FOA is 10 million source Btus (10 MBtus) per \$1,000 in energy efficiency program spending,¹² or approximately \$1 per annual kWh. Estimated cost-effectiveness of the RDEE programs is well below \$1 per annual kWh as noted above.

¹² U.S. DOE Funding Opportunity Announcement: State Energy Program Formula Grants, #DE-FOA-000052

An analysis of EIA data¹³ shows that of the 70 program administrators (including utilities, states, local governments, and other entities) spending \$1 million or more on energy efficiency programs in 2006, 63 (90%) spent less than \$1 per annual kWh savings. The median cost-effectiveness was approximately \$0.25 per annual kWh, or 40 Mbtu per \$1,000.¹⁴ A similar analysis using 2006 data in ACEEE's 2008 State Energy Efficiency Scorecard shows similar results at the state level. The median cost in that analysis is approximately \$0.19 per annual kWh, or 50 Mbtu per \$1,000.¹⁵

Experience with the programs in the Toolkit shows that most of the ten program types are expected to achieve cost-effectiveness levels above the median on a stand-alone program basis, and in combination would be expected to achieve cost-effectiveness levels near the \$0.19 - \$0.25 per annual kWh range.

2-E-2: Annual Energy Savings as a Percentage of Total Statewide kWh Sales

To qualify for ARRA funding, a state energy program was required to describe “how it intends to achieve 25 percent (or more) [savings] [per capita from 1990 levels by 2012] along with any initial/preliminary progress toward achieving the improvement goal.”¹⁶ To reach this goal, even states that have been running successful programs for many years may need to significantly step-up their efforts.

Many states have energy efficiency goals on the order of 1% or more of total annual energy sales, which is aggressive relative to actual, verified savings of programs across the country. Only a handful of states (among them California, Vermont, and Connecticut) have exceeded the 1% mark to date. Recent studies suggest that median annual electricity savings for larger programs lies between 0.4% and 0.7% of annual statewide kWh sales; these states are spending approximately 0.5% to 1.5% of their annual kWh sales to achieve this level of savings.

Achieving the overall savings goals that the ARRA aspires to presents a significant but technically feasible challenge for most states, especially those with low market penetration of energy-efficient products and services. However, given the level of ARRA funding now being distributed, in addition to public policy agendas that continue to drive energy savings goals, the next several years will in all likelihood see program impacts that substantially exceed historical achievements.

2-E-3: Savings by End-Use

The cumulative body of evaluation, measurement, and verification (EM&V) results of energy efficiency programs suggest that programs have saved more energy by installing

¹³ Note: EIA Form 861 data is self-reported by utilities and other program administrators; therefore, there may be some inconsistencies in terms of how the administrators calculated program cost metrics.

¹⁴ U.S. Department of Energy (DOE), Energy Information Administration (EIA), Form 861 Data, 2006.

¹⁵ American Council for an Energy-Efficient Economy. “2008 State Energy Efficiency Scorecard,” ACEEE Report #E086, October 2008, and “Meeting Aggressive New State Goals for Utility-Sector Energy Efficiency: Examining Key Factors Associated With High Savings,” ACEEE Report #U091, March 2009.

¹⁶ Section 9.1B of the FOA.

lighting measures than through all other end-uses combined. For example, lighting accounts for approximately 60% to 75% of total savings in five states considered leaders in energy efficiency – California, Rhode Island, Vermont, New Jersey, and Wisconsin.¹⁷

This suggests that states implementing programs in regions with low market penetration of energy-efficient technologies should expect a large majority of their savings to come through lighting measures over the next few years. While lighting represents “low-hanging fruit” (quick and easy savings), Federal lighting standards including those for many popular lighting products like CFLs, will start to phase-in in 2012, which will diminish the impact of today’s efficient lighting technologies.¹⁸ This suggests that meeting ARRA’s aspirational longer-term energy savings goals will require tapping savings across many other end-uses along with lighting.

2-E-4: Residential Versus Non-residential Spending and Savings

Non-residential energy savings from the commercial, institutional, and industrial sectors are usually less expensive per unit than residential energy savings, largely because residential programs typically bear higher administrative and marketing costs to serve a large number of smaller projects. Programs serving larger customers typically require lower administrative and marketing costs per units of savings.

Among leading states, non-residential savings are approximately 20% to 40% cheaper to achieve than residential savings. On average, residential program spending is approximately 45%¹⁹ of total energy efficiency spending and accounts for approximately 40% of energy savings. Conversely, non-residential program spending among these states averaged about 55% of total spending and 60% of savings.²⁰ These ratios will vary considerably state-to-state depending on a variety of factors, including whether large energy users (e.g., industrial customers) have the ability to opt-out of paying for and/or being targeted for program participation.

¹⁷ American Council for an Energy-Efficient Economy, “Meeting Aggressive New State Goals for Utility-Sector Energy Efficiency: Examining Key Factors Associated With High Savings,” Report # U01, March 2009.

¹⁸ The Energy Independence and Security Act of 2007 (the “Energy Bill”), signed into law by President Bush on December 18, 2007, requires all light bulbs use 30% less energy than today’s incandescent bulbs by 2012 to 2014. The phase-out will start with 100-watt bulbs in January 2012 and end with 40-watt bulbs in January 2014. By 2020, a Tier 2 would become effective, which requires all bulbs to be at least 70% more efficient (effectively equal to today’s CFLs).

¹⁹ American Council for an Energy-Efficient Economy, “Saving Energy Cost-Effectively” Draft 2009. Forthcoming.

²⁰ American Council for an Energy-Efficient Economy, “Meeting Aggressive New State Goals for Utility-Sector Energy Efficiency: Examining Key Factors Associated With High Savings,” Report # U01, March 2009.

3. Implementation Guide

3-A: Using Energy Efficiency Contractors

Few ARRA grantees are likely to have sufficient in-house staff expertise and other resources in place today to be able to deliver large new energy efficiency programs. This suggests that outside contractors may be needed to support program management, delivery, or evaluation. Energy efficiency program administrators currently use contractors in several ways: individuals are brought in to supplement in-house staff to manage programs; firms are hired to deliver energy efficiency to customers; or contractors are hired for program evaluation, measurement, and verification services.

This chapter offers an overview of the role that contractors can play in implementing RDEE programs, including when and how to hire contractors. Whether and to what extent a state, local government, or other program administrator will need to hire implementation contractors depends on a number of factors, including the nature of the program, skill level and availability of in-house staff, opportunities to hire additional staff, ability to use existing contract mechanisms, and funding levels. Section 3-B of this chapter, Training Needs and Resources, lists the skill level and certifications typically needed for each program. Program administrators can use the information in that section to determine whether current in-house personnel have the necessary skills needed to run new programs.

Many program administrators hire third parties to carry out turn-key implementation services through competitive bidding processes. Others opt to manage programs themselves, hiring sub-contractors to carry out specific program services. For example, the program administrator may manage the overall program, but hire a local architectural engineering firm to review work papers for prospective new construction projects.

This chapter begins with a review of the typical categories of contractor solicitation, followed by a generic request for proposal (RFP) timeline, as well as a section that includes suggested proposal evaluation criteria. This is followed by an overview of performance contracting, which is highlighted in the DOE's State Energy Program FOA.²¹

Note that Chapters 4 and 5 include RFP templates for Home Performance with ENERGY STAR® and Non-Residential Prescriptive programs.

3-A-1: Types of Program Implementation Contractor Support

In procuring energy efficiency services, program administrators in a number of states have chosen or been directed by their regulators to issue either “broad-based” or “targeted” solicitations for program development/design, management, and delivery/implementation. Under both options, contractors bear some responsibility for the final design and implementation of the program(s), but the program administrator is ultimately responsible for the outcomes. This is not the case in Performance Contracts, which are discussed in section 3-A-4 of this chapter. In a “broad-based” solicitation, the program administrator issues a request for proposals with relatively few limits placed on eligible markets, program areas, or preferred delivery mechanisms.

²¹ U.S. DOE Funding Opportunity Announcement: State Energy Program Formula Grants, #DE-FOA-0000052. Available at: http://apps1.eere.energy.gov/wip/pdfs/sep_arra_foa.pdf.

In contrast, a “*targeted*” solicitation often focuses on specific program areas and/or under-served markets (e.g., multifamily buildings, small commercial, residential renovation and remodeling).

Energy efficiency services can also be procured through various types of “*partnership*” arrangements. In this option, the program administrator develops a relationship with a third-party “partner” to deliver an element of an energy efficiency program (or an entire program) for which a design has been well-specified by the program administrator. These partnering arrangements allow the program administrator to form a strategic alliance with an organization that is uniquely suited to manage and deliver energy efficiency programs. Services for which partnering arrangements are most common include training, education/information, and certification of contractors.

One type of partnering arrangement that is discussed in detail below is energy performance contracting; these are agreements between building owners or operators and energy service companies based on “guaranteed” (contracted) energy savings through comprehensive energy efficiency measures.

3-A-2: Generic RFP Timeline

Energy efficiency implementation contractors are generally hired through a competitive RFP process.

Table 4 summarizes the major tasks involved in issuing an RFP and selecting implementation contractors. The time required for this process varies considerably by organization, but four to seven months is typical. RFP respondents are generally given at least three weeks to write and submit their proposals, though it is not unusual for program administrators to require proposals be submitted in two weeks or less following issuance of the RFP. An illustrative timeframe is presented for each task listed. This timeline assumes that each step proceeds smoothly and there are no major delays.

Table 4: Issuing an RFP and Choosing an Implementation Contractor

RFP Task	Illustrative Time Frame (Weeks)
1. RFP Management	2-3
a. Select RFP/proposal evaluation committee	
b. Assign Manager to RFP process	
2. RFP development	
a. Develop list of appropriate implementation contractors	2-3
b. Develop proposal evaluation criteria	
c. Write RFP	
3. Issue RFP	1-2
4. Contractors' issue intent to bid statement	2-3
5. Pre-bid question period	2-3
a. Hold pre-bidder's conference call to answer questions; or	
b. Allow bidder's questions to be posted online on secure RFP Web site	
6. Receive proposals	1
7. Evaluate proposals	2-4
8. Select preferred contractor(s)	3-4
a. Check references of preferred contractor(s)	
b. Reconcile any issues arising from reference check with preferred contractors	
i. If issues are not resolved, repeat steps 8a-8b, if possible	
c. Confirm selection of contractor(s)	
d. Notify winning contractor(s)	
e. Notify losing contractor(s)	
9. Negotiate winning contractor(s) contract(s)	3-5
Total	~18-28

3-A-3: Proposal Evaluation Criteria

Program administrators can use the criteria listed below as a starting point for assessing each bidder's ability to satisfy the requirements of the RFP in a cost-effective and efficient manner. Each program administrator will likely have additional criteria specific to their circumstances.

- Demonstrated experience with providing the proposed or similar program(s) or portfolio at the scale and on the timeframe requested.
- The bidder's commitment (financial or otherwise).
- Experience of personnel to be assigned to the project.
- Capacity to modify and/or expand the program when required, and to provide a continuing high level of performance for the duration of the contract.
- Ability to provide independent, third party verification of program results, as well as tracking and reporting with transparency as required by ARRA funding guidance.
- Understanding of the requirements and implications of the proposed work effort.
- Commitment to and evidence of a diversified work force at all levels of the organization, and a diversified supplier strategy.
- Quality and cost of proposed evaluation plan.
- Estimated project cost.

3-A-4: Performance Contracting

Performance contracts may offer an attractive option for deploying ARRA energy efficiency funds, and to leverage private capital, for government and commercial building efficiency improvements. Many states and local governments have saved taxpayer dollars, as well as energy, by conducting comprehensive efficiency projects on public facilities through performance contracting. This section provides an overview of performance contracting, including typical financial vehicles employed in performance contracts, examples of performance contracting projects in the United States, and links to more detailed information.

Overview

Energy Performance Contracts (EPCs) or Energy Savings Performance Contracts (ESPCs) are agreements between building owners or operators and Energy Service Companies (ESCOs) based on "guaranteed" (contracted) energy savings through comprehensive energy efficiency measures. The ESCO, rather than the building owner, makes the upfront capital expenditures and bears the risk of paying for the capital and costs if the energy efficiency savings do not cover the cost of the project(s).

Performance contracts may be especially well suited for financing large and complex projects. Typically, there must be a large savings potential before an ESCO and financier will make a commitment to an energy efficiency project; thus, performance contracts are generally arranged for facilities with annual energy costs above \$150,000 that entail relatively capital-intensive efficiency investments.²²

How Does a Performance Contract Work?

Performance contracting has been a standard design/build tool in the energy efficiency industry since the 1970s²³ and most states have the ESCO infrastructure to support these agreements. There is no single, precise definition of what a performance contract is and how it is financed²⁴. However, most agreements are turnkey service solutions including:²⁵

1. Investment grade audits
2. Engineering
3. Construction
4. Financing
5. Commissioning or retrocommissioning
6. Operation and maintenance for the term of the contract
7. Long-term measurement and verification

ESCOs often offer complete packages of measures including energy efficiency, renewable energy, and onsite distributed generation technologies that fit the needs of the client.

Performance contracts are self-financing, meaning that the capital, labor, and service costs are paid through the dollars saved. Financing usually comes from third party sources, or a collection of sources, which expands the impact of the investment dollars. Figure 1 below explains the basic mechanism. Repayment methods can differ significantly, however, and should be considered carefully as the contract is being developed. Three basic financing models can be considered for guidance:

- *Guaranteed cost savings* means the contracting organization receives a guaranteed amount of the saved dollars and the ESCO gets the rest;

²² ENERGY STAR, “Chapter 4: Financing”, *Building Upgrade Manual, 2008 Edition*. Available at www.energystar.gov/BldgManual. (accessed 7. July 2009)

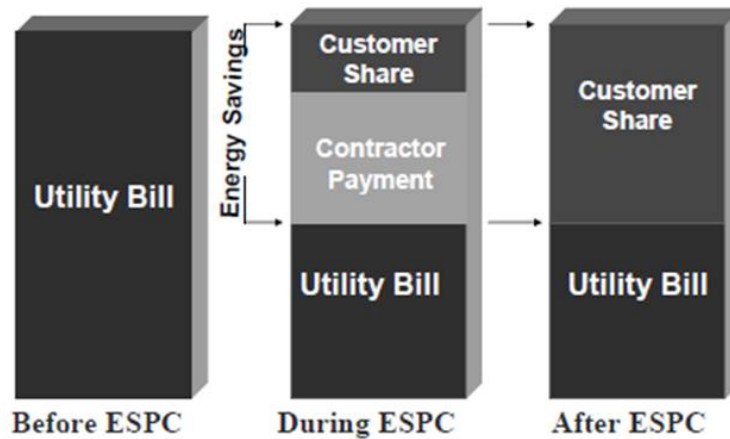
²³ Energy Service Coalition “What is Energy Performance Contracting? Available at <http://www.energyservicescoalition.org/resources/whatis.htm> (accessed 7. July 2009)

²⁴ As with any contract, it is critical that those entering into a performance contract fully understand the terms of the agreement.

²⁵ ENERGY STAR (WebEx) “Maximize Stimulus Funding with Performance Contracting and ENERGY STAR” available at <https://energystar.webex.com/tc0500l/trainingcenter/record/recordAction.do?siteurl=energystar&recordingID=31465132&actionType=Info&tcRecordingLink=Yes> (accessed 7. July 2009)

- *Shared savings* is designed so that the contracting organization and the ESCO split the dollar savings according to a percentage, such as 60/40; and
- *Paid-from savings* means the ESCO receives a guaranteed amount of savings dollars and the contracting organization gets the rest.²⁶

Figure 1: Performance Contract Repayment Mechanism and Effect on Customer Bill



Source: Adapted from ENERGY STAR, “Performance Contracting: ENERGY STAR Monthly Partner Web Conference” February 21, 2007. Available at http://www.energystar.gov/ia/business/networking/presentations/Feb07_Performance_Contracting.pdf

Examples of Successful Performance Contracts in Public Buildings

Metro Louisville

Metro Louisville is the local government for the city of Louisville, Kentucky and Jefferson County. It has been an ENERGY STAR partner since 2007 and has worked to benchmark its 150+ buildings using Portfolio Manager. ENERGY STAR tools are simple to understand and use, and are widely recognized by constituents. Through its benchmarking exercises, it became clear that the facilities were in need of energy system upgrades. Under the leadership of Mayor Jerry Abramson, Metro Louisville developed a request for proposal (RFP) for an Energy Performance Contract to improve the efficiency of 27 municipal properties. Since the staff and constituents were familiar with ENERGY STAR tools, Metro Louisville included specific language in the RFP that would ensure the chosen contractor would continue to use Portfolio Manager and other tools such as the Cash Flow Opportunity calculator. They found that respondents to the RFP were already leveraging ENERGY STAR tools in their projects. In March 2009, Metro

²⁶ ENERGY STAR, “Chapter 4: Financing”, *Building Upgrade Manual*, 2008 Edition. Available at www.energystar.gov/BldgManual. (accessed 7. July 2009)

Louisville chose Johnson Controls to be its ESCO. The city planned to break ground on several projects in August 2009.²⁷

University of Missouri, Kansas City

The University of Missouri in Kansas City (UMKC) contracted with the ESCO Burns & McDonald to complete the 15-year Guaranteed Energy Savings Program. The contract focuses on 27 buildings covering over two million square feet. Identified measures included: Design and construction of a new central chilled water plant; variable flow, occupancy based fume hood exhaust controls; high efficiency lighting retrofits; chiller replacement for the medical school; variable frequency drives and high efficiency motors installed on fans and pumps; convert constant volume air handlers to Variable Air Volume; low-flow plumbing retrofits; steam leak surveys; expand and enhance energy management system controls and reporting capabilities; and assist in hiring an Energy Resource Manager for UMKC to enhance and discover additional sources of energy savings. The total cost of the contract was \$19.4 million, to be paid back through energy savings. Annual energy savings are estimated to be \$1.6 million, which means that the contract will provide positive cash flow for the University over the 15-year contract.²⁸

Additional Performance Contracting Resources

Please follow these links for additional information on performance contracting:

- National Association of Energy Service Companies: www.naesco.org
- Energy Service Coalition “What is Energy Performance Contracting? Available at <http://www.energyservicescoalition.org/resources/whatis.htm>
- ENERGY STAR (WebEx) “Maximize Stimulus Funding with Performance Contracting and ENERGY STAR” available at <https://energystar.webex.com/tc0500l/trainingcenter/record/recordAction.do?siteurl=energystar&recordingID=31465132&actionType=Info&tcRecordingLink=Yes>
- ENERGY STAR, “Chapter 4: Financing”, *Building Upgrade Manual, 2008 Edition*. Available at www.energystar.gov/BldgManual.

3-B: Training Needs and Resources

The Planning Guide provided estimates of the number of new jobs that each RDEE Program could create. This section provides information on the skill levels, relevant certifications, and training needed for these new jobs. State and local governments implementing RDEE programs can use this information as a starting point for building relationships with key trade allies and

²⁷ ENERGY STAR (WebEx) “Maximize Stimulus Funding with Performance Contracting and ENERGY STAR” available at <https://energystar.webex.com/tc0500l/trainingcenter/record/recordAction.do?siteurl=energystar&recordingID=31465132&actionType=Info&tcRecordingLink=Yes> (accessed 7. July 2009)

²⁸ National Association of Energy Service Companies (case study) “University of Missouri, Kansas City” available at <http://www.naesco.org/resources/casestudies/documents/UMKC.pdf> (accessed 7. July 2009)

other program stakeholders. These relationships are often integral to supporting successful programs that create quality jobs for individuals and achieve energy savings.

The necessary certifications, training infrastructure, worker readiness, and other factors will vary from state to state. Depending on what the state has already accomplished with past energy efficiency programs, new ARRA programs should take advantage of the existing local infrastructure of trade allies, including contractors, vendors, installers, auditors, and other skilled professionals. It is also advantageous to coordinate with utilities, which may have established efficiency programs in place. Other potential partners and/or stakeholders include community-based organizations, state labor departments, workforce investment boards, and state weatherization program offices.

This section discusses the three primary categories of training that may be needed for each RDEE program:

1. *Program Administrator Training.* Training of staff that will oversee and administer energy efficiency programs.
2. *Contractor Skills Training.* Training of contractors to perform the work called for in the energy efficiency programs.
3. *Program-Specific Training.* Training of contractors in how to participate in the program and receive rebates for work completed (where relevant).

Each of these categories is discussed below, along with examples and links to Web resources.

3-B-1: Program Administrator Training

Program administrators may benefit from training in the processes and best practice operations of existing energy efficiency programs delivered by a variety of organizations nationwide. The following is a list of organizations that offer national conferences and training sessions that may be useful for individuals and organizations implementing energy efficiency programs.

- National Association of State Energy Officials (NASEO) has training resources at <http://www.naseo.org/>.
- Affordable Comfort, Inc. (ACI) at <http://www.affordablecomfort.org/> hosts national and regional conferences and additional workshops.
- American Council for an Energy-efficient Economy (ACEEE) hosts industry conferences throughout the year. Events are listed at <http://www.aceee.org/pubsmeetings/index.htm>.
- Association of Energy Services Professionals' (AESP) training site is at <http://aesp.org/calendar.cfm>. These trainings are more geared for program managers or consultants as opposed to in-building or in-home contractors.
- National Association for State Community Services Programs (NASCSPP) events and list of partner events at <http://www.nascsp.org/events.htm>.

- ENERGY STAR hosts annual Partner Meetings for Lighting, Appliances, and Consumer Electronics. Information is available at http://www.energystar.gov/index.cfm?c=partners.pt_meetings.

3-B-2: Contractor Training Resources and Certifications

The implementation contractors will need trained and possibly certified employees to perform the energy efficiency work. Columns D, E, and F in the Tables 5 and 6 below include lists of resources for content training and certifications for each of the RDEE programs.

Contractors will also need training on program policies and procedures, such as how to complete incentive applications, track progress, and verify data. The information in Columns B and C in the Tables 5 and 6 is intended to indicate the duration of time that the program administrator (e.g., State Energy Office, County, or City) would need to train an organization or individual on how to participate in the program. For most programs, this assumes that the contracting organization or individual already has the skills to do the work. If this is the case, the program-specific training would only cover items such as participation contracts, rebate forms, verification of performance, and other program details and policies. Typically programs include the cost of contractor training as a program expense, and include the cost of acquiring the diagnostic and analytical tools (temperature gauges, light meters, leak detectors, etc.) that the contractor and its field employees use to deliver the efficiency services.

For newer markets, more basic energy efficiency education and training may be needed to bring new contractors up to speed. This education and training could cover general background on energy efficiency, an introduction to the specific program(s), and the details of participation.

An example of program-specific policies and forms comes from the San Francisco Energy Watch (SFEW) program, and is available at <http://www.sfenergywatch.org/library.html>. A sample presentation that SFEW uses in a 120 minute training session for contractors interested in participating in the incentive program is included here as a clickable PDF file (double click on the image below to open the presentation):

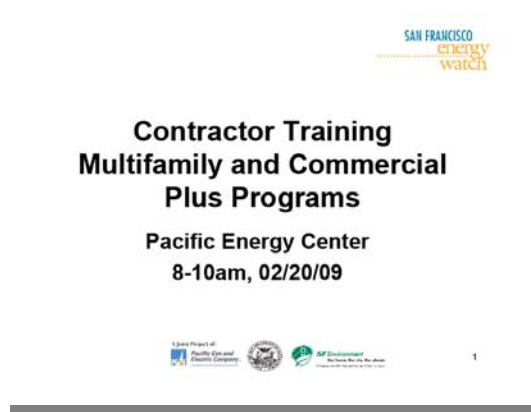


Table 5: Contractor Training, Resources, and Certifications (Residential Programs)

A Program	B Program Specific Training Needed	C Notes	D Content Training Resources	E Certification Resources	F Technical Skill Level Required
R1. ENERGY STAR Products	0.5 - 1 day	Expected that 1-2 days of general EE and ENERGY STAR training may also be needed. ²⁹	ENERGY STAR Training Center: <ul style="list-style-type: none"> • Appliances (Link) • Lighting (Link) 		Low - Medium
R2. Tier 1 Audit and Direct Install	0.5 - 1 day program training; 1 - 3 days skills training	Expect that the program will deliver training on how to perform "easy audits"	<ul style="list-style-type: none"> • ENERGY STAR Air Seal and Insulate Contractor Resource (Link) and consumer education (Link) • Home Energy Audits (Link) • <i>Example Training Program</i> – Minnesota Office of Energy Security (Link) • <i>Example Training Program</i> – Pacific Gas & Electric "Residential Energy Use- Where Do the Dollars Go?" (Link) 	<ul style="list-style-type: none"> • Building Performance Institute • List of trainers and contact information (Link) <p>RESNET</p> <ol style="list-style-type: none"> 1. National registry of Accredited Energy Rater Training Providers (Link) 2. Upcoming trainings (Link) 	Low
R3. Home Performance with ENERGY STAR	0.5 - 1 day	Training for HERS and BPI are each 5 days; Expected that contractors will have certification or required skills upon entering program-specific training.	HPwES Sponsor Guide (Link) and consumer education (Link)		High
R4. Efficient HVAC	0.5 - 1 day program training; 1 - 3 days AC Tune-up skills training	AC Tune-up skills training should focus on use of commonly accepted diagnostic tools	<ul style="list-style-type: none"> • ENERGY STAR Heating and Cooling Products training (Link) • <i>Example Training Program</i> – Alabama Power HVAC Training Center (Link) 	Air Conditioners Contractors of America – education and training (Link)	High

²⁹ Note that for this initiative, it is important that not only contractors but also retailers, particularly retail sales staff, receive ENERGY STAR training.

Table 6: Contractor Training, Resources, and Certifications (Non-residential Programs)

A Program	B Program Specific Training Needed	C Notes	D Content Training Resources	E Certification Resources	F Technical Skill Level Required
NR1. Prescriptive	0.5 - 1 day	Some states may already or may want to consider making contractor's license a requirement.	<ul style="list-style-type: none"> • <i>Example Training</i> – Pacific Gas & Electric “Commercial Lighting Fundamentals” (Link) • On-the-job Training 		Medium
NR2. Retrocommissioning	1-3 days	Some states may already or may want to consider making contractor's license a requirement.	Portland Energy Conservation, Inc. Nationally Recognized Commissioning Experts (Link)	Building Commissioning Association sponsors webinars and certifications (Link)	High
NR3. Commercial Food Service	0.5 - 1 day	Expected that 1-2 days of general EE and ENERGY STAR training may also be needed.	ENERGY STAR Sales Training Presentation (Link)		Low - Medium
NR4. Commercial & Industrial Custom	1-3 days	Some states may already or may want to consider making contractor's license a requirement.	Association of Energy Engineers Online Seminars (Link)	<ul style="list-style-type: none"> • Certified Energy Auditor Exam (Link) • Professional Engineer's License (Link) 	High

Table 6: Contractor Training, Resources, and Certifications (Non-residential Programs), Continued

A Program	B Program Specific Training Needed	C Notes	D Content Training Resources	E Certification Resources	F Technical Skill Level Required
NR5. Benchmarking & Performance	1-3 days	Training focuses on use of the Portfolio Manager tool.	ENERGY STAR Portfolio Manager: 1. Live Training webinars (Link) 2. Pre-recorded Sessions (Link) 3. Benchmarking Starter Kit (Link) Building Owners and Managers Association (BOMA) and the BOMA Energy Efficiency Program (BEEP) offer trainings through local chapters and online trainings. (Link)	<ul style="list-style-type: none"> • Building Operator Certification Trainings and Certifications (Link) • Certified Energy Manager Trainings and Certification (Link) • Professional Engineer's License (Link) • LEED Accredited Professional (Link) 	Medium
NR6. On-Site Energy Manager	1-5 days	Initial workers will be program certified, but this could lead to becoming a Certified Energy Manager (CEM).	<ul style="list-style-type: none"> • <i>Example Program</i> – Puget Sound Energy's Conservation Resource Manager (Link) • ENERGY STAR Guidelines for Energy Management (Link) 	<ul style="list-style-type: none"> • Building Operator Certification Trainings and Certifications (Link) • Certified Energy Manager Trainings and Certification (Link) 	Medium - High

3-C: Marketing Strategies

Several conditions need to be met for an energy efficiency program to be successful. Three of the most essential conditions are:

- Determine if there is sufficient market potential for the products and services offered by the program. Market analysis should have been considered in the planning phase before the commitment was made to focus efficiency efforts on a particular customer segment and/or efficiency measure(s).
- The program must be cost-effective from both the program administrator's and participant's perspectives. This too should have been evaluated (prospectively) in the process of deciding which efficiency programs to offer.
- Target audiences must know about the program, understand the advantages of participating in the program, and make an affirmative decision to participate. Marketing fulfills this third condition of a successful program.

The information in this section is intended to help states and local governments identify basic marketing strategies and tactics. The key components of planning for successful, cost-effective energy efficiency program marketing are reviewed, including researching and defining target markets, illustrative marketing strategies and tactics, and typical program marketing costs. Chapters 4 and 5 provide program-specific illustrative marketing plans for select residential and non-residential RDEE programs.

3-C-1: Researching and Defining Target Markets

Successful program marketing requires a clear understanding of target audiences, including both end-users (e.g., homeowners and businesses) and market actors, or “trade allies” such as builders, developers, installers, contractors, equipment suppliers, architects, engineers, retailers, etc. Ideally, this understanding comes through market research on the saturation of energy-efficient technologies and services, as well as research on local demographics, housing stock, and economic activity. Since states and local governments may lack detailed data of this nature, some high level guidance has been provided here for planning purposes.

The program snapshots in Chapters 4 and 5 include target markets for each program. For example, the target market for Home Performance with ENERGY STAR[®] (HPwES) is typically homeowners with homes at least 15 years old. An HPwES marketing campaign will usually focus its tactics on this group. But there are other key market actors important in moving a successful HPwES program, most notably home performance contractors that have evolved from home repair, renovation, and building contractors. Naturally, the program must also take steps to recruit and train members of this business community. Primary target markets for each program, as well as key trade ally target markets are summarized in Table 7.

Table 7: Program Target Audiences

RDEE Program	Primary Target Markets	Key Market Actors/Trade Allies
RESIDENTIAL		
R1. ENERGY STAR Products	Homeowners and renters	Retailers
R2. Easy Audit and Direct Install	Homeowners	Performance contractors
R3. HPwES	Typically homeowners who own homes that are 15 years or older	Performance contractors
R4. Efficient Heating and Cooling	Homeowners with CACs and furnaces	HVAC contractors
NON-RESIDENTIAL		
NR1. Prescriptive	Commercial, institutional, and industrial customers	Retailers; installation contractors
NR2. Retrocommissioning	Business owners and building managers with commercial facilities that are large and/or particularly energy intensive	Commissioning providers
NR3. Commercial Food Service	Restaurant owners and managers	Food service suppliers and distributors
NR4. Custom	Medium and large commercial, industrial, and institutional customers	Retailers; installation contractors
NR5. Commercial Benchmarking and Performance	Business owners and building managers with commercial facilities that are large and/or particularly energy intensive	Energy service professionals
NR6. On-Site Energy Manager	Business owners and building managers with commercial facilities that are large and/or particularly energy intensive	Energy service professionals

In the section below, illustrative marketing strategies and tactics that have been used to successfully reach each of these target markets are provided.

3-C-2: Adopting Key Marketing Strategies

There is a range of marketing strategies and associated tactics that successful energy efficiency programs have used to reach prospective participants. The strategies and tactics below are drawn from program literature and experience; they are not meant to provide an exhaustive list nor are they necessarily required for the success of a particular program. The strategies and tactics best suited for each program depend in part on the unique circumstances of the state or local government administering the program.

- *Creating an on-line presence.* Illustrative tactics include:
 - Program Web pages (see call-out box at right)
 - Ads on local Web sites
 - Keyword-targeted text ads (e.g., Google AdWords)
 - Email newsletter
- *Reaching out through the mass media.* Illustrative tactics include:
 - Radio advertising/news or talk radio spots
 - Newspaper/local magazine ads
 - TV advertising
 - Feature story opportunities (on TV news)
 - Press releases and proactive media relations
 - Press conferences with key political figures (e.g., mayors, governors)
 - School events
- *Marketing directly to primary target audiences.* Illustrative tactics include:
 - Direct mail
 - Door hangers
 - Bill stuffers
 - PSAs or Ads in trade publications
 - In-store/retail point-of-purchase (POP) displays
 - Collateral (stickers, pens, magnets, window clings, etc.)
 - Community event attendance

The Importance of Program Web Pages

One strategy that is found in most, if not all, successful energy efficiency programs is the creation of an online presence. More specifically, an online presence means an “energy efficiency landing page” from which Web site visitors can easily navigate to appropriate program Web pages. Examples of such a landing page include the following:

- *Wisconsin Focus on Energy.*
www.focusonenergy.com
- *New York State Energy and Research Development Authority.*
www.getenergysmart.org
- *Pacific Gas & Electric, Residential Programs.*
www.pge.com/myhome/saveenergymoney/energysavingprograms
- *Oncor Electric.*
www.oncor.com/electricity/teem

A well-designed program Web page can have a significant influence on program participation, making it easy for target audiences to find and act on program information. For many successful program administrators, the main purpose of most of their marketing collateral is to drive potential participants to the program Web site. One of the advantages of Web sites is that they can be updated on a regular basis at relatively low cost, while printed materials can be costly and time-consuming to keep current. The program sponsor’s Web site can be used as an entry-point for customers to access contractors’ efficiency services; in this case the Web site needs to validate and explain the role of contractors in energy efficiency service delivery.

- *Marketing directly to trade allies/contractors.* Illustrative tactics include:
 - Contractor trainings
 - Phone (contractors/trade ally contacts)
 - Vendor breakfasts/workshops
 - Ads in trade publications
 - Attending trade shows
 - Vendor incentives (e.g., recognition, awards, listing on Web site, etc.)

3-C-3: Illustrative Program Costs

Program marketing costs vary considerably depending on current market saturation of energy efficiency products and services, geographic distribution of eligible populations, and other factors. Residential program marketing budgets are typically 10-15% of total program budgets (for example, a \$5 million ENERGY STAR qualified appliance replacement program might spend half a million dollars or more on marketing and customer education), whereas non-residential market budgets are usually lower, in the range of 3-10% of total costs. Residential programs generally require larger marketing budgets because participants are often more difficult to reach, and use more mass media advertising and public relations efforts to reach target customers. For both residential and non-residential programs, marketing costs tend to decrease over time as customers' awareness and acceptance of energy efficiency increases; conversely, the proportion of program costs dedicated to incentives tends to increase over time.

Table 8 shows a break-out of typical marketing-related costs of residential and non-residential marketing budgets for programs in their first three years of implementation. During this early program period, market research and creative development costs can be substantial, though ongoing market research is important even to mature programs. Direct mail and mass media usually play larger roles in residential programs; whereas contractor/trade ally related marketing costs (recruiting and training) are usually more substantial for non-residential programs.

Table 8: Illustrative Marketing Budgets

Marketing Cost Category	Residential Programs (% of Total Marketing Budget)	Non-residential Programs (% of Total Marketing Budget)
Market Research and Creative Development	15%	15%
Web Related	10%	10%
Mass Media (i.e. Radio, TV & Print)	25%	10%
Direct mail, bill stuffers, etc.	10%	10%
Marketing Collateral (i.e. Brochures, point-of-purchase displays)	20%	25%
Recruiting and Training Trade Allies	20%	30%

3-D: Tracking and Estimating Results (M&V)

This section focuses on the steps needed to estimate savings from the individual projects that make up a program. These “gross” savings estimates, along with supporting data, will likely provide information that ARRA funding recipients can use in reporting to DOE.

Note that DOE included basic reporting requirements in the FOA, but has not yet finalized program evaluation methodology for recipients of ARRA funds as of the release of this Toolkit. Links to the DOE guidelines will be added as they become available.

To estimate project and program savings in a systematic way, program administrators typically undertake the three steps discussed in this section:

- *Tracking project and program data.* Program administrators need a way to keep track of the key project and program activities. A comprehensive database allows them to track data on participants, equipment installations, energy savings, financial/incentive management, and cost effectiveness, and provides a record for third party review if needed.
- *Estimating savings.* A well-documented estimate of project and program savings is critical to project financiers and, if appropriate, regulators. There are two main categories of project savings estimation techniques: deemed and calculated savings.
 - *Deemed savings.* These are specified savings rates, typically applied to efficiency measures that have been used widely and for which savings have been well documented. Deemed savings rates are generally accepted by state regulatory agencies.
 - *Calculated or “custom” savings.* As the name implies, these are calculated savings rates, often developed by an engineer based on technical information about the efficiency measures. Calculated savings are needed when efficiency measures are tailored for specific facilities or applications.
- *Quality control.* Procedures for checking major project and program components, such as applications and project installations, allow program administrators to catch problems, improve program effectiveness, and increase confidence in the results.

3-D-1: Tracking Project and Program Data

A tracking database is essential for collecting, analyzing, and reporting key data on program performance, participant information, equipment installations, energy savings, financial/incentive management, and cost effectiveness. The database ideally accounts for all program activities associated with reported energy and demand savings. The items listed below are illustrative of the typical types of information collected on energy efficiency projects in program tracking databases. Program-specific tracking recommendations are included in each RDEE program snapshot in Chapters 4 and 5.

Typical energy efficiency project tracking items include:

- Unique participant ID
- Participant contact information

- Customer acquisition source (e.g., advertising, phone recruiting, public booth, retail vendor, etc.)
- Measures installed and their anticipated savings
- Field measurements taken by contractors before and after the work
- Basic characteristics of the home or facility where the work was performed
- Participant business NAICS code
- HVAC contractor name and contact information
- Other partners or allies involved (e.g., retail appliance vendor)
- For each project:
 - Unique project ID
 - Measures installed
 - Project incentive amount
 - Anticipated project savings
 - Project audit/verification status and date
- Pre- and post-project ENERGY STAR energy performance rating using ENERGY STAR Portfolio Manager (for non-residential facilities)

3-D-2: Estimating Savings

There are a variety of methods used for estimating the savings associated with energy efficiency projects. This section discusses the two largest categories of savings estimation methodologies introduced above: Deemed savings and calculated, or “custom,” savings estimation.

Deemed Savings

“Deemed savings” is an estimate of the energy and demand savings of certain technologies that has been established by a public utilities commission or similar regulatory body, or agreed to by other entities.

Deemed savings, although agreed upon, are not static. Many states have an annual review process for deemed savings that takes into account fuel costs, electricity generation capital costs, updates to building codes and appliance standards, new market-ready energy-efficient technologies, and more precise savings estimation techniques. Energy efficiency technologies or measures may be removed from or added to the deemed savings database during this process. Typically, new deemed savings values do not apply retroactively; that is, if during the annual deemed savings review process a deemed savings value for a particular technology changes, that new savings value will only apply to program savings estimates going forward.

Custom Savings Calculations

Deemed savings are not appropriate for all energy efficiency projects. For many commercial and industrial programs, energy efficiency projects may be unique to

particular facilities, involving measures whose performance varies widely from application to application. In these cases, program administrators will need facility-specific data to develop custom savings estimates. For example, a retro-commissioning project will need to consider the facility’s operating schedule and other unique characteristics in order to estimate project energy and demand savings. Estimating savings might require engineering calculations and energy billing analysis.

RDEE Program Deemed and Calculated Savings

The RDEE programs require both deemed and calculated savings methods. Table 9 below shows which project savings estimation techniques are typically used for the types of programs in the RDEE Toolkit. This information is also contained in each RDEE program snapshot in Chapters 4 and 5.

Table 9: Typical RDEE Program Savings Calculation Methodologies

Sector	Program(s)	Typical Savings Estimate
<i>Residential</i>		
Residential Lighting and Appliances	R1. ENERGY STAR labeled products. Rebates, tax incentives, early retirement	Deemed Savings
Residential Retrofit	R2. Tier 1: Energy Audit with Easy Direct Install Measures (CFLs, weather stripping, water heater and pipe insulation)	Deemed Savings
	R3. Tier 2: Home Performance with ENERGY STAR	Deemed & Calculated/Custom
Residential/ Small Commercial	R4. Efficient HVAC, including SEER rebates, quality installation, and tune-up	Deemed & Calculated/Custom
<i>Commercial/Government/Schools</i>		
All	NR1. Prescriptive (e.g., lighting)	Deemed Savings
	NR2. Retro-commissioning	Calculated/Custom
	NR3. ENERGY STAR Qualified Commercial Food Service Equipment	Deemed Savings
	NR4. Custom (including audits)	Calculated/Custom
	NR5. Benchmarking and Performance	Calculated/Custom
	NR6. On-Site Energy Manager (place and pay for expert energy manager in key facilities for 6 months)	Calculated/Custom

Only a limited number of states have a publicly available database of agreed-upon deemed savings estimates. Where such a database does not exist in a particular locality, program administrators can look to the deemed savings estimates used in these states as a

starting point for their own estimates. Links to deemed savings data for California, the Northwest, Texas, and Connecticut are listed below for reference, as is a link to the International Performance Measurement and Verification Protocol, which describes general methodologies for calculating measure savings:

- *CA Database for Energy Efficiency Resources (DEER)*. www.deeresources.com. Extensive, routinely updated database of measure characteristics, savings and costs.
- *Northwest Power and Conservation Council*. Regional Technical Forum, www.nwcouncil.org/comments/default.asp. Measure data for the Northwest region.
- *Public Utilities Commission of Texas (PUCT)*. www.puc.state.tx.us/electric/projects/22241/DeemedSavings_final.pdf. Deemed savings values approved by the PUCT.
- *Connecticut Energy Efficiency Fund*. Program Savings Documentation for CT Power & Light and United Illuminating, www.ctsavesenergy.org/files/Final%202008%20Program%20Savings%20Document0.pdf.
- *International Performance Measurement and Verification Protocol*. www.evo-world.org/index.php?option=com_philaform&form_id=37&Itemid=1. Standard practice methods for estimating measure savings. Methods contained therein or equivalent can be used for estimating measure savings.

3-D-3: Quality Control

Quality Assurance/Quality Control (QA/QC) activities are designed to audit, both internally and independently, the actual level of savings delivered, and to maximize savings achieved for the given program budget. Discussed below are two common QA/QC procedures:

- Review of applications from prospective participants.
- Inspection of project installations, both before and after completion.

Project Application Review

Most programs require an application process for program participants to receive incentives; therefore, thorough review of participant applications provides an important and early opportunity to detect the potential for program errors, contractor misconduct or fraud, and other issues that can affect program success. Program process evaluations show consistently that timely and accurate payment of incentives is one of the most important satisfaction criteria for program participants; thus, it is also important to expedite payments as quickly as is prudent. Table 10 presents an illustrative program incentive application review process for a non-residential prescriptive program. Larger projects (i.e., where incentives are at least \$5,000 and that typically require higher participant first-costs) typically go through a pre-approval process in which applications undergo preliminary review (in addition to pre-inspection). If the project does not pass pre-approval, the applicant can be notified that the program either requires additional information for pre-approval, or that the project will not receive a program incentive.

Table 10: Illustrative Incentive Application Review Process

Stage	Application Status	Time frame (Days)	Description
1	Received	One to two	Application received and logged
2	Pending	One to three	Application reviewed for completeness. If incomplete payment process stops until all information is received
3	Tech Review	Five to fourteen	Application sent to technical reviewer. If selected for inspection or incentive is >\$25,000 technical review will include inspection. Application reviewed for preliminary approval
4	Approved	One to two	Application received from reviewer for payment authorization in tracking system
5	Incentive check authorized	One to four	Payment authorization sent to Accounts Payable for incentive check to be issued
6	Paid	One to three	Incentive check mailed to Participant
	Total Time	1.5-4 weeks	

Pre/Post Installation Inspections

Inspections both before and after installation of efficiency measures are key to program quality assurance. To keep costs reasonable, program administrators may want to conduct pre-project inspections for all non-residential energy efficiency projects above a certain dollar value (e.g., \$5,000), and post-project inspections for all projects above a higher dollar threshold (e.g., \$25,000). All other residential and small non-residential projects could then be inspected using statistically valid sampling methods, to produce accurate results that can be safely extrapolated across the entire group of like customers in the energy efficiency program.

In general, inspections cover the following aspects of a project:

- A pre-installation inspection verifies the existing baseline equipment and compares line by line the unit numbers in the customer’s application.
- A post-installation inspection verifies all equipment counts, compares the description and model numbers on the application with what was actually installed, and ensures that all equipment is fully operational.

3-D-4: Resources

This Implementation Guide has only touched on the major steps involved in documenting the results of RDEE. Two more comprehensive resources program administrators can draw upon in developing program policies and procedures for this important aspect of efficiency program design and implementation are listed below. As stated above, the DOE is still in the process of developing program evaluation guidelines for ARRA energy efficiency funding.

- National Action Plan for Energy Efficiency (2007). Model Energy Efficiency Project Impact Evaluation Guide. Prepared by Steven R. Schiller, Schiller Consulting, Inc., www.epa.gov/eeactionplan.
- U.S. EPA State Clean Energy and Climate Program (2009). Clean Energy Lead by Example Guide: Strategies, Resources, and Action Steps for State Programs. Prepared by Joanna Pratt and Joe Donahue, Stratus Consulting, Inc., <http://www.epa.gov/cleanenergy/energy-programs/state-and-local/index.html>.

4. Residential RDEE Program Snapshots and Templates

4-A: Residential RDEE Programs

This section contains program-specific planning and implementation ramp-up materials for Residential RDEE programs, including:

- A. Snapshots for the following RDEE programs³⁰:
 - R1. ENERGY STAR[®] Labeled Products
 - R2. Tier 1 Residential Audit and Direct Install
 - R3. Home Performance with ENERGY STAR[®] (HPwES)
 - R4. Efficient HVAC
- B. Marketing Strategies and Tactics for Residential Programs, including marketing plan templates for the Efficient HVAC and HPwES programs. These are intended to help program administrators and managers create marketing plans for any of the residential energy efficiency programs presented in the Toolkit.
- C. An illustrative Request for Proposal (RFP) for third party implementation of a residential program (Home Performance with ENERGY STAR[®] or HPwES). This may be used by state energy offices or other program administrators to help develop their own RFPs for soliciting proposals for implementation of the HPwES or other energy efficiency programs.

³⁰ The snapshots have been updated and expanded since they were originally released in May 2009 as part of the first version of the Planning Guide.

R1: ENERGY STAR® Labeled Products

PROGRAM	R1. ENERGY STAR® Labeled Products
Program Summary	<p>The objective of this program is to increase awareness and sales of efficient lighting and appliances to residential and small commercial customers. The program offers customers the opportunity to purchase, largely through retail locations, a variety of discounted products that are ENERGY STAR qualified or better.</p> <p>The most effective programs involve either retailer/supplier mark-downs, where an agreement is reached with retailers to stock reduced-priced products and rebates are paid to the retailer/supplier after the product is purchased by end-use customers, and/or manufacturer buy-downs, where bulk product is purchased directly from manufacturers and delivered to retailers/suppliers at reduced prices. Financial incentives should be targeted to efficient products where there is a price premium over the standard efficiency counterpart, where incremental energy efficiency benefits can justify incentive payments, and where market saturation for the efficient product is low relative to the standard efficiency options. Good candidates for incentives include lighting fixtures, water heaters, commercial solid state lighting, and commercial food service equipment. ENERGY STAR qualified enterprise servers is also a good option and this specification went into effect in May 2009.</p> <p>Incentives for products such as refrigerators, clothes washers, and CFLs need to be evaluated carefully based on local market conditions and may require advanced targeting strategies. For example, the Energy Independence and Security Act of 2007 established minimum efficiency requirements for general service lamps effective in 2012, which will essentially phase out general-service incandescent lighting for most applications. In addition, in some localities and customer segments, market saturation for specific high-efficiency products may already be quite high. Strategies such as targeting certain market channels (e.g., grocery) and specialty CFL applications should be considered to ensure energy savings can be attributed to the program.</p> <p>Leveraging national ENERGY STAR campaigns such as “Change the World, Start with ENERGY STAR” boosts program participation and cost-effectiveness.</p> <p>This program should also leverage the Federal ENERGY STAR Appliance Rebate Program.</p> <p>Note: US DOE issued a Funding Opportunity Announcement (FOA) for the State ENERGY STAR Appliance Rebate Program on July 14, 2009. The purpose of this FOA is to award formula grants to U.S. states, territories, and the District of Columbia to provide American Recovery and Reinvestment Act funding for the establishment and administration of State Appliance Rebate Programs. The initial application (SF-424) was due to DOE by August 15, 2009. The comprehensive application is due by October 15, 2009. All comprehensive applications must be submitted through www.fedconnect.net. The FOA (DE-FOA-0000119) is available at: http://www07.grants.gov/search/search.do?oppld=48463&mode=VIEW.</p>
Target Market	<p>This program targets all residential and small commercial customers, though program sponsors may elect to target participants with certain demographic characteristics, or whose energy consumption exceeds established metrics to tailor the program to their specific service areas.</p>

PROGRAM	R1. ENERGY STAR® Labeled Products
Infrastructure Requirements	<p>The implementation of this program will require additional infrastructure including:</p> <ul style="list-style-type: none"> • A process for recruiting retailers/suppliers and manufacturers and providing training as necessary • A process for allocating midstream and upstream rebates to retailers/suppliers and manufacturers • A customer rebate process for distributing any consumer-direct incentives • A system for tracking and accounting for the program, and for reporting to the program sponsor • Processes for marketing and education, including mass-market television, radio, internet, point-of-purchase and in-store displays, bill inserts, an informational Web site, product demonstrations, and on-site events (e.g. bulb exchanges) among other activities • A process for conducting evaluation, measurement, and verification (EM&V) • A process for handling proper disposal of CFLs (to avoid mercury ending up in landfills) • A process for providing customer support including a call center and online help.
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>ENERGY STAR Products programs are often a large part of a program sponsor's portfolio. Accordingly, they require a significant staff. At a minimum, one program manager is required, plus 4-5 FTEs to assist with retailer/supplier and manufacturer recruitment, training, sales, customer support, program tracking, and other administrative tasks.</p> <p>Job Creation</p> <p>This program develops jobs in the manufacturing and retail/supplier sectors. Additional jobs will be created in related fields as a result of program spending through direct and indirect jobs as well as economic effects resulting from homeowners' and businesses having additional money that would otherwise go toward utility bills. In total, expect from 5 to 11 jobs to result per million dollars spent on this program.</p>

PROGRAM

R1. ENERGY STAR® Labeled Products

Training Needs and Resources

There are two types of contractor training required. The first involves technical skill sets contractors must have to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.

Retailer & Contractor Technical Training Resources³¹

Content Training Resources	Technical Certification Resources	Skill Level Required
ENERGY STAR Training Center: <ul style="list-style-type: none">• Appliances (Link)• Lighting (Link)	N/A	Low-Medium

Program-Specific Training Resources

How long will training take?	Notes
0.5 - 1 day	Expected that 1-2 days of general EE and ENERGY STAR training may also be needed.

³¹ Note that for this initiative, it is important that not only contractors but also retailers, particularly retail sales staff, receive ENERGY STAR training.

PROGRAM

R1. ENERGY STAR® Labeled Products

Implementation Timeline

This program can be ramped up quickly and scaled appropriately to adjust to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design and Creative												
Coordinate with retailers on necessary marketing materials	■	■	■									
Develop in-store marketing materials		■	■									
Develop Program Web site			■									
Task 2: Program Delivery Activities												
Recruit manufacturers and retailers			■	■								
Retail site visits to ensure discounted ENERGY STAR products on retailer floor					■	■						
Implement recycling plan (CFLs and/or appliances)						■	■	■	■	■	■	■
Task 3: Marketing Program Execution and Delivery												
Initiate marketing to suppliers and retailers			■	■	■	■	■	■	■	■	■	■
Initiate marketing through retail outlets			■	■	■	■	■	■	■	■	■	■
Online Promotion (website development and/or search key words)			■	■	■	■	■	■	■	■	■	■
Media Promotions (TV, Radio, print media)			■	■	■	■	■	■	■	■	■	■
Change the World, Start with ENERGY STAR campaign participation			■	■	■	■	■	■	■	■	■	■
Earth Day Promotions (April 22nd)												<i>whenever April 22nd falls in program</i>
Task 4: Incentive Application Validation and Processing												
Develop incentive/financing plan (upstream/midstream to manufacturers/retailers and/or consumer rebates)			■	■	■	■						
Task 5: Tracking Database Design and Set Up												
Develop retail partner data submission process			■	■	■	■						
Begin collecting sales data						■	■	■	■	■	■	■
Keep monthly reports						■	■	■	■	■	■	■
Task 6: Customer Support Activities												
Develop customer support plan (web communications and/or call center)			■	■	■							
Implement customer support plan						■	■	■	■	■	■	■
Task 7: Evaluation, Measurement & Verification (EM & V)												
Develop EM&V protocols			■	■	■							
Implement EM&V protocols										■	■	■

PROGRAM

R1. ENERGY STAR® Labeled Products

Illustrative
Program
Performance

Energy Savings

All the lighting products and most of the appliances rebated through this program have negligible sensitivity to weather in terms of performance. However, saturation of ENERGY STAR products is highly variable across the country. Therefore, incremental savings will also be highly variable. In order to develop deemed savings values for ENERGY STAR products in your area, we recommend conducting a comprehensive market saturation and baseline use study. This need not delay program implementation however. For planning purposes, the numbers provided in this guide may be used as a starting place, or you can contact EPA/ENERGY STAR for assistance in determining appropriate planning values for incremental measure costs and savings.

Participation and Budget

Aggressive upstream CFL programs show that about 350,000 to 450,000 bulbs can be distributed per million dollars of program expenditure. The illustrative impacts below contain rebates for CFLs and lighting fixtures, the latter of which have a higher cost per unit. The program impacts below are drawn from recently developed quick-start programs on the East Coast and Northeast. CFLs are typically purchased in multi-packs, so the number of individual CFL units sold exceeds the number of households (participants) in many cases.

Program budgets are very sensitive to market size, the types of products rebated, and the program delivery strategy (downstream/customer coupons, midstream/retailer, or upstream/manufacturer). Incentives vary considerably as well. CFL rebates are generally about \$1-\$2 CFL bulb (for a 60W equivalent), \$20 per fixture, and between \$30 and \$100 per appliance. Budgets for an ENERGY STAR products program are easily scaled to meet demand. An illustrative program budget is shown below:

	Year			Cumulative
	1	2	3	
Lighting Products (CFLs, Fixtures)	1,000,000	1,000,000	1,000,000	3,000,000
New ES Appliances	10,000	20,000	30,000	60,000
New Appliance Participation Rate	7%	14%	20%	20.0%
Lighting Participation rate	3%	7%	14%	23.6%
Jobs Created	37	97	162	296
MBtu Saved	359,000	893,000	1,777,000	3,029,000
Program Cost \$	\$ 3,700,000	\$ 10,800,000	\$ 20,200,000	\$34,700,000
				Average
Avg Cost per Lighting Participant	\$13	\$17	\$16	\$16
Avg Cost per Appliance Participant	\$83	\$67	\$61	\$67
Jobs per \$1M	10	9	8	9
Per Unit Source MBtu Saved	0.4	0.9	1.7	1.0
Source Mbtu saved per \$1,000	97	83	88	87

(Note that the lighting products are primarily retrofit products, so the participation rate is cumulative; the appliance participation rate is based on the number of new appliances purchased each year, therefore is not cumulative.)

PROGRAM	R1. ENERGY STAR® Labeled Products
EM&V Support	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Number, type and quantity of products that receive incentives and their anticipated savings • Tracking products and reporting accomplishments is completed through agreements reached with retailers, manufacturers and suppliers. <p>Savings</p> <p>Savings are often based on deemed savings values, as the savings impacts of products in this program are well-researched and are not weather sensitive.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators. It typically focuses on establishing the kW, kWh, and Btus saved by the program through a more rigorous evaluation of the equipment purchased, its installation rate, actual usage characteristics, and whether or not the owner would have undertaken the work even in the absence of the program, to ensure that the results can in fact be attributed to the program. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • ENERGY STAR Lighting: http://www.energystar.gov/lighting • CFLs and mercury: www.energystar.gov/index.cfm?c=cfls.pr_cfls_mercury • ENERGY STAR Appliances: www.energystar.gov/products • ACEEE's Compendium of Champions, Lighting and Appliances category. (Publication U081): http://aceee.org/pubs/u081/res-light-app.pdf

PROGRAM	R1. ENERGY STAR® Labeled Products
Program Characteristics Summary	<p>An ENERGY STAR products program is an extremely good use for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> <li data-bbox="334 331 1442 569">1. Impact on Jobs. An ENERGY STAR products program provides moderate employment benefits when weighed against other energy efficiency program options. It does not employ contractors to perform retrofit or installation work or entail significant technical skills training. Increased jobs come through direct employment of program administrators and implementation contractors, and the increased marketing, training, and sales activity that they generate. Indirect and induced benefits are seen at manufacturers and retailers, and through economic multipliers as individuals and businesses have reduced utility bills. <li data-bbox="334 575 1442 940">2. Collaboration and Leverage of Funds. An ENERGY STAR products program provides an excellent opportunity to leverage EPA/DOE resources for ENERGY STAR rated products rebated through the program, and to collaborate nationally with utility companies, state and local agencies, retailers, manufacturers, and consulting communities. In almost every location in the country where energy efficiency programs exist, an ENERGY STAR products program, or similar program exists, and these programs should be leveraged for expansion and incorporation of additional funding. ENERGY STAR has developed significant resources to aid in program design, implementation, and marketing; has developed relationships with the major retailers and manufacturers that are leveraged by energy efficiency programs nationwide; convenes one major lighting conference and one major appliances conference each year and has started an annual electronics meeting with partners as well; and boasts strong recognition of the ENERGY STAR brand. <li data-bbox="334 947 1442 1087">3. Significance of Program Savings. ENERGY STAR products programs yield significant savings over a relatively short timeframe. This program is very easy to ramp-up quickly to significant scale. For states that are newer to energy efficiency, this program is a must-do to achieve quick energy savings and stimulate the market for other energy efficiency offerings. <li data-bbox="334 1094 1442 1289">4. Cost of Savings. ENERGY STAR products programs are typically among the most cost-effective in an energy efficiency portfolio. The program requires low overhead while paying incentives for a large volume of projects. There are many examples of best practices and experienced implementation firms that have implemented large quick-start products programs in the past few years, and that competition has driven the implementation costs down. Participation is very simple for customers, and requires relatively little up-front cost on their behalf. <li data-bbox="334 1295 1442 1604">5. Sustainability and Market Transformation. Through broad marketing, outreach, and education components, the ENERGY STAR products program creates a more educated and aware public on the benefits and importance of energy efficiency. Simple actions by participants such as, the purchase of a relatively inexpensive product such as a CFL can open those participants to more opportunities through other programs. The manufacturers and retailers, who are participating in these programs, transform their purchasing and stocking patterns to benefit from the incentives that will drive customers to their stores. In areas with energy efficiency programs, experience shows that retailers will stock ENERGY STAR models for up to 50% of each rebated product (refrigerators, clothes washers, room air conditioners for example).

R2: Tier 1 Energy Audit and Direct Install

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
Program Summary	<p>Together, the Tier 1 Energy Audit and Direct Install and the Tier 2 Audit program (Home Performance with ENERGY STAR®, or HPwES) comprise the Residential Retrofit initiative. These programs work with the same pool of contractors and population of homeowners. The primary differences between HPwES and Energy Audit and Direct Install are the level of the audit (the Tier 1 program offers a basic, visual home energy checkup whereas the HPwES audit is comprehensive and involves diagnostic tools) and the measures available for incentives (Tier 1 only offers inexpensive, direct install measures whereas HPwES offers a wide range of measures for all end-uses, and at many price points). One important goal for Tier 1 Energy Audit and Easy Direct Install is for participants to realize the benefits of energy efficiency at little to no cost to them, which can then lead them to participate in more comprehensive programs such as HPwES or Residential HVAC, and realize even greater levels of savings and benefits.</p> <p>This program introduces homeowners to a whole-house approach for reducing energy consumption and helps establish and train a network of skilled and credible home energy analysts and contractors. These contractors provide quick (visual) home energy checkups for qualified homeowners and directly install low-cost measures, such as CFLs, hot water heater wraps, pipe insulation, and low-flow showerheads. Some homeowners may follow up with more comprehensive energy efficiency improvements, such as air and duct sealing, appliance retrofits, or request a more comprehensive energy audit, thus moving to a holistic approach to energy efficiency; these customers should be referred to the HPwES program.</p> <p>The cost of completing a checkup, including the checkup delivery, measure cost and measure installation labor is typically \$200-300. Checkups may be offered to homeowners at a subsidized rate (e.g., \$35-50), with the option that the fee will be waived if the customer pursues installation of the identified energy efficiency measures. Programs typically pay contractors \$100-150 per checkup.</p> <p>Key elements of the program include contractor recruitment, training, and independent verification of a sample of homes to verify quality of the work and data collected.</p>
Target Market	<p>This program typically targets homes 15 years or older – this constitutes approximately 80 percent of the housing stock nationwide.³² Program sponsors may elect to target participants with certain demographic or geographic characteristics, or whose energy consumption exceeds established metrics.</p>

³² U.S. Census Bureau, “American Housing Survey: 2007,” www.census.gov/hhes/www/housing/ahs/ahs07/tab1a-1.xls

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A process for recruiting and screening qualified performance contractors to participate in the program • A process for training, certifying, and monitoring the performance of contractors • A standardized process for conducting the checkup and calculating and reporting energy savings to the homeowner and to the program • A process for marketing the program to homeowners • A process for disbursing incentives • A process for ensuring that work performed and contractor business practices meet the quality standards of the program • A system for tracking and accounting for the program, and for reporting to the program sponsor • A process for conducting evaluation, measurement, and verification (EM&V) • A process for providing customer support, including a call center and information online about the program
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, a Tier 1 Audit program requires 2-4 full-time employees. At a minimum, the program requires one manager, and one field staff technician for conducting contractor training, providing contractor mentoring and verifying projects. Initial phases of the program may require an additional 2-3 staff for a period of 6 months to perform start-up activities. As the program grows over time the need for additional technical staff for quality assurance purposes and administrative staff for processing jobs and incentives will increase.</p> <p>Participating Contractors</p> <p>Initial roll-out of the program (0-6 months) typically involves recruiting 3-5 contractors, ideally who have or can quickly attain the appropriate certifications from the program (unlike the HPwES program, a certified individual does not need to perform the quick energy audits – but the contractor does need to have at least one certified individual on staff). While implementation models vary, it might be expected that by the end of the first program year, approximately 15 certified contractors will be needed (about a third of contractors will likely be very active, a third moderately active, and a third relatively inactive) for each million dollars of program budget, although this is very sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>This program helps develop the market for performance contractors and associated trade allies. Additional jobs will be created in related fields as a result of program spending. In total, expect from 18 to 25 jobs to result per million dollars spent on this program.</p>

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
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Contractor Training Needs and Resources

There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.

Contractor Technical Training Resources

Content Training Resources	Technical Certification Resources	Skill Level Required
<ul style="list-style-type: none"> • ENERGY STAR Air Seal and Insulate Contractor Resource (Link) and consumer education (Link) • Home Energy Audits (Link) • <i>Example Training Program</i> – Minnesota Office of Energy Security (Link) • <i>Example Training Program</i> – Pacific Gas & Electric “Residential Energy Use-Where Do the Dollars Go?” (Link) 	<ul style="list-style-type: none"> • Building Performance Institute • List of trainers and contact information (Link) <p>RESNET</p> <ol style="list-style-type: none"> 1. National registry of Accredited Energy Rater Training Providers (Link) 2. Upcoming trainings (Link) 	Low-Medium

Program-Specific Training Resources

How long will training take?	Notes
0.5 - 1 day	Expect that the program will deliver training on how to perform "easy audits".

PROGRAM **R2. Tier 1 Energy Audit and Easy Direct Install**

Implementation Timeline

This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design and Creative												
Develop marketing plan												
Develop program Web site												
Task 2: Marketing Materials Execution and Delivery												
Launch marketing campaign												
Task 3: Participant Recruiting, Training, and Support												
Identify/develop training												
Identify/recruit contractors												
Train/equip/certify contractors												
Task 4: Incentive Application Validation and Processing												
Develop consumer and/or contractor incentive/financing plan. Consumers typically pay a subsidized rate for a walk through audit. Contractors often also receive a subsidy per job.												
Task 5: Tracking Database Design and Set Up												
Develop results tracking system												
Implement results tracking												
Task 6: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan												
Implement quality assurance protocols												
Task 7: Customer Support Activities												
Develop customer support plan (web communications and/or call center)												
Implement customer support plan												
Task 8: Program Implementation												
First job completed												
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

Source: Adapted from Home Performance with ENERGY STAR® Sponsor Guide, Version 1.0, September 2008.

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
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Illustrative Program Performance

Energy Savings

Energy savings per home varies widely by climate zone, measures installed, and incentive levels. Annual source energy savings reported by program sponsors are in the range of 4 MBtu to 8 MBtu per average home³³, as illustrated in the table below.

Weather Zone	Warm Climates			Cool Climates		
	Electricity kWh	Gas Therms	Source MBtu	Electricity kWh	Gas Therms	Source MBtu
Gas Heated Home	260	30	5.6	260	20	4.6
Electrically Heated Home	9,000,000	0	8.0	6,300,000	0	6.3

Participation and Budget

An aggressive program could reach about 3.5% of eligible homes after three years. An illustrative three year participation schedule is shown below. The schedule represents a Tier 1 Audit program run in a metro area on the East Coast with about 250,000 eligible homes. Under a non-aggressive scenario, participation after three years may be closer to 1-1.5%.

Illustrative program implementation costs are expected to decline from approximately \$1200 per completed home in the initial year to \$880 per completed home after three years. Costs are dependent on a variety of factors, including the fraction of participants that elect to install the direct install measures and contractor costs for performing checkups. An illustrative participation schedule and budget are shown in the table below.

	Year			
	1	2	3	Cumulative
Population of Eligible Homes	250,000	250,000	250,000	250,000
Participants	1,900	3,100	3,700	8,700
Participation rate	0.7%	1.2%	1.5%	3.5%
Jobs Created	57	68	59	184
MBtu Saved	9,500	15,500	18,500	43,500
Program Cost	\$ 2,280,000	\$ 3,100,000	\$ 3,256,000	\$ 8,636,000
				Average
Average Cost per Participant	\$1,200	\$1,000	\$880	\$ 990
Jobs per \$1M	25	22	18	21
Per Unit Source MBtu Saved	5	5	5	5
Source Mbtu saved per \$1,000	4.2	5.0	5.7	5.0

³³ Source Btus assuming an average electric generation heat rate of 10,000 Btu/kWh.

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Measures installed and their anticipated savings • Field measurements of energy usage taken by contractors before and after the work • Basic characteristics of the home where the work was performed <p>Savings</p> <p>As the performance of the measures in this program is typically well-understood, it is expected that most measure savings estimates will be deemed values.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators, and typically focuses on establishing the kW, kWh, and Btus saved by the program. This typically consists of an evaluation of the existing baseline conditions of a sample of homes, the nature of the energy efficiency improvements installed, usage characteristics of the home, and whether or not the homeowner would have undertaken some of the efficient actions even in the absence of the program to ensure energy savings can be attributed to the program.</p> <p>Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • EPA ENERGY STAR Resources for Contractors page: www.energystar.gov/index.cfm?c=home_contractors.hm_improvement_contractors_resources • Building Performance Institute: www.bpi.org • Residential Energy Services Network: www.natresnet.org

PROGRAM	R2. Tier 1 Energy Audit and Easy Direct Install
Program Characteristics Summary	<p>Tier 1 Audit is a good use of stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> <li data-bbox="334 342 1422 674">1. Impact on Jobs. Given the relative fragmentation of the home contracting industry and the comparatively small size of each job, Tier 1 Audit is a training and labor-intensive program; on a per-dollar-spent basis, the Residential Retrofit initiative (Tier 1 Audit and HPwES, combined) generates more new job opportunities than any other program. The level of skill required to perform a home checkup is less than that required to perform a comprehensive home audit for HPwES. However, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of home services and energy efficiency. In addition, residential customer bill savings tend to re-circulate in the economy to a greater degree than do savings by commercial or industrial customers, and therefore have a greater multiplier effect on jobs and economic activity. <li data-bbox="334 684 1409 852">2. Collaboration and Leverage of Funds. Tier 1 Audit provides an excellent opportunity to collaborate with EPA/DOE, utility companies, state and local agencies, local trade allies and their associations, as well as the building science and consulting communities. With increasing regional energy efficiency goals in many portions of the country, utilities may provide an excellent opportunity for collaboration, funding, and/or direct implementation of Tier 1 Audit programs. <li data-bbox="334 863 1425 1125">3. Significance of Program Savings. Savings from Tier 1 Audits are not as significant as other residential initiatives but the potential participant base is very large, consisting of all owner-occupied dwellings older than just a few years, and the home energy checkup spurs homeowner interest in larger energy efficiency investments. Further, the program also provides an equitable and highly visible opportunity for the largest single group of taxpayers to participate in a program and benefit from ARRA stimulus dollars. The program can also accommodate the needs of low-income individuals with increased incentive levels and other support functions. Further, the potential impact of the program is (after the initial introduction) largely scalable relative to the program budget dedicated. <li data-bbox="334 1136 1406 1304">4. Cost of Savings. Tier 1 Audit is a relatively expensive program due to its requirements for training and verification of the work, as well as the need for public education. However, these expenses are also the key drivers of the program's strong performance relative to job creation, quality, and accountability. Additionally, audits lay the foundation for potential energy efficiency improvements that can result in future energy savings when the improvements are made. <li data-bbox="334 1314 1430 1608">5. Sustainability and Market Transformation. Through its broad outreach and education components, Tier 1 Audit creates a more educated and aware public on the benefits and importance of energy efficiency. Participants tend to develop and maintain sensitivity to energy issues and an understanding of energy systems and financial payback principles long after their initial contact with the program. This can lead customers to future energy investments and behavioral changes beyond the Tier 1 Audit program. Similarly, a Tier 1 Audit program seeds a competitive market of contractors who develop a variety of business models and approaches. Through competitive innovation, these contractors often integrate the Tier 1 Audit services with other services such as HVAC service and repair, insulation, and window replacement.

R3: Home Performance with ENERGY STAR® (HPwES)

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
<p>Program Summary</p>	<p>Together, the Tier 1 Energy Audit and Direct Install and the Tier 2 Audit program (Home Performance with ENERGY STAR, or HPwES) comprise the Residential Retrofit initiative. These programs work with the same pool of contractors and population of homeowners. The primary differences between HPwES and Energy Audit and Direct Install are the level of the audit (the Tier 1 program offers a basic, visual home energy checkup whereas the HPwES audit is comprehensive and involves diagnostic tools) and the measures available for incentives (Tier 1 only offers inexpensive, direct install measures whereas HPwES offers a wide range of measures for all end-uses, and at many price points).</p> <p>This market-based program motivates homeowners to use highly skilled home energy analysts and contractors that offer a whole-house approach for reducing energy use. These contractors provide comprehensive energy audits for qualified homeowners and provide incentives from the program sponsor (often either rebates and/or low-interest loans) for qualifying energy efficiency projects. Typical projects might include: insulation, duct sealing and repair, high-efficiency HVAC systems, windows, lighting, and appliances. The energy analysts are usually free to establish their own pricing for the audits and subsequent work and to determine their own basic business model (e.g., just providing audits, or also providing installation of the efficiency improvements). However, they are required to adhere to strict training, engineering, reporting, quality assurance, and other requirements set forth by the EPA, DOE, and the program sponsor.</p> <p>Incentives to homeowners typically have a value of approximately 10%-20% of the value of the improvements, or between \$300 and \$1,500 (including cash incentives and low-interest financing) depending on the measures installed, though some programs have paid much higher rebates for projects, on the order of \$5,000 or more. A variation of the program called “Assisted Home Performance” provides greater levels of incentives for low and moderate income participants. Incentives and other support to contractors typically include items such as job completion bonuses and cost-sharing for training with existing nationally recognized building performance associations. Other key elements of the program include contractor recruitment, training, and mentoring, and independent verification of all homes to verify quality of the work and data collected. Extensive support in the design and implementation of this program is available from the EPA and DOE in the form of a sponsor guide, template program outline, financing guidebook, marketing materials, case studies, and other information.</p> <p>Note: Some program sponsors elect to roll-out HPwES first as a pilot in selected areas; then, based on their experience from the pilot, expand the program to the entire eligible population.</p>
<p>Target Market</p>	<p>HPwES typically targets homes 15 years or older – this constitutes approximately 80 percent of the housing stock nationwide.³⁴ Program sponsors may elect to target participants with certain demographic characteristics, or whose energy consumption exceeds established metrics.</p>

³⁴ U.S. Census Bureau, “American Housing Survey: 2007,” www.census.gov/hhes/www/housing/ahs/ahs07/tab1a-1.xls

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A process for recruiting and screening qualified contractors to participate in the program • A process for training, certifying, and monitoring the performance of contractors • A standardized process for conducting the audit and calculating and reporting energy savings to the homeowner and to the program • A process for marketing the program to homeowners • A process for disbursing incentives • A process for ensuring that work performed and contractor business practices meet the quality standards of the program • A system for tracking and accounting for program results • A process for conducting evaluation, measurement, and verification (EM&V) • A process for providing customer support, including a call center and information online about the program
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, HPwES requires at least 2-4 full-time employees. At a minimum, the program requires one manager, one part-time staff member for conducting contractor trainings (typically available from existing consultants), and one staff member for providing contractor mentoring and verifying projects. Initial phases of the program may require an additional 2-3 staff for a period of 6 months to perform start-up activities. As the program grows over time the need for additional technical staff for quality assurance purposes and administrative staff for processing jobs and incentives will increase.</p> <p>Participating Contractors</p> <p>Initial roll-out of the program (0-6 months) typically involves recruitment of 3-5 contractors, ideally who have or can quickly attain the appropriate certifications from the program. While implementation models vary, it might be expected that by the end of the first program year, approximately 15 certified contractors will be needed (experience suggests that approximately one third of contractors will be very active, a third moderately active, and a third relatively inactive) for each million dollars of program budget. However, this assumption is sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>In addition to the direct jobs associated with implementing the program, additional jobs are created for contractors and others through the incremental equipment, supplies, and installation induced by the program, as well as through economic effects resulting from homeowner spending of those dollars that would otherwise go toward utility bills. In total, it is estimated that approximately 18 to 25 jobs will result per million dollars spent by the program.</p>

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
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Contractor Training Needs and Resources

There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.

Contractor Technical Training Resources

Content Training Resources	Technical Certification Resources	Skill Level Required
HPwES Sponsor Guide (Link) and consumer education (Link)	<ul style="list-style-type: none"> • Building Performance Institute • List of trainers and contact information (Link) <p>RESNET</p> <ol style="list-style-type: none"> 1. National registry of Accredited Energy Rater Training Providers (Link) 2. Upcoming trainings (Link) 	High

Program-Specific Training Resources

How long will training take?	Notes
0.5 - 1 day	Training for HERS and BPI are each 5 days; Expected that contractors will have certification or required skills upon entering program-specific training.

PROGRAM



R3. Home Performance with ENERGY STAR® (HPwES)

Implementation Timeline

This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design and Creative												
Task 2: Marketing Materials Execution and Delivery												
Task 3: Participant Recruiting, Training, and Support												
Develop contractor recruitment and training plan												
Train/equip/certify contractors												
Task 4: Incentive Application Validation and Processing												
Develop consumer incentive/financing plan. Incentives typically cover 10-20% of value of improvements. Cash incentives, low-interest loans, or on-bill financing are optional incentive formats.												
Task 5: Tracking Database Design and Set Up												
Develop tracking system. Should include # of participants, the measures installed, and anticipated savings. Field measurement reports before and after the work and the basic housing characteristics should be included.												
Consider additional Evaluation, Monitoring & Verification data needs such as actual consumption data from utility or measurement of program's influence on decision to make energy efficiency investments												
Implement tracking system												
Task 6: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan												
Implement quality assurance protocols												
Task 7: Customer Support Activities												
Develop customer support plan (web communications and/or call center)												
Implement customer support plan												
Task 8: Program Implementation												
First job completed												
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

Source: *Adapted from* Home Performance with ENERGY STAR® Sponsor Guide, Version 1.0, September 2008; Rapid Deployment Energy Efficiency (RDEE) Program Planning Guide, April 3, 2009.

KEY
 recommended start date
 optional early start date

PROGRAM **R3. Home Performance with ENERGY STAR® (HPwES)**

Illustrative Program Performance

Savings

Energy savings per home varies widely by climate zone, measures installed, incentive levels, and average job size. Annual source energy savings reported by program sponsors are in the range of 34 MBtu to 66 MBtu per average home³⁵, as illustrated in the table below.

Census Region	Savings		
	Electricity kWh	Gas Therms	Source MBtu
Northeast	1,400	400	54
Midwest	1,700	400	57
South	4,600	200	66
West	1,400	200	34

Participation and Budget

An aggressive HPwES program could reach approximately 1% of eligible homes after three years, depending upon the degree of marketing and the ratio between audits conducted and projects completed. Under a less aggressive scenario, participation after three years may be closer to 0.025%.

Illustrative program implementation costs are expected to decline from approximately \$7,500 per completed home in the initial year to \$5,000 per completed home after three years. Reported costs vary depending upon the implementation approach taken and degree of participation. An *illustrative* participation schedule and budget are shown in the table below. This budget reflects an early emphasis on market conditioning, including contractor recruitment and training, as well as marketing.

[Potential program sponsors are encouraged to consult the resources identified below and/or contact the EPA/DOE for assistance in identifying appropriate planning assumptions for their own states/cities/counties and anticipated program designs]

	Year			Cumulative
	1	2	3	
Population of Eligible Homes	250,000	250,000	250,000	250,000
Participants	250	750	1,500	2,500
Participation rate	0.10%	0.30%	0.60%	1.0%
Jobs Created	47	116	135	297
MBtu Saved	15,000	45,000	90,000	150,000
Program Cost \$	\$ 1,875,000	\$ 5,250,000	\$ 7,500,000	\$ 14,625,000
				Average
Average Cost per Participant	\$7,500	\$7,000	\$5,000	\$ 5,850
Jobs per \$1M	25	22	18	20
Per Unit Source MBtu Saved	60	60	60	60
Source Mbtu saved per \$1,000	8.0	8.6	12.0	10.3

³⁵ Source Btus assuming an average electric generation heat rate of 10,000 Btu/kWh.

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Measures installed and their anticipated savings • Field measurements taken by contractors before and after the work • Basic characteristics of the home where the work was performed <p>Savings</p> <p>As the performance of the measures in this program is typically well-understood, it is expected that most measure savings estimates will be deemed values, although some whole home projects may require custom (calculated) savings estimates.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators, and typically focuses on establishing the kW, kWh, and Btus saved by the program through an evaluation of the existing baseline conditions of a sample of homes, the nature of the energy efficiency improvements installed, actual usage characteristics and utility consumption of the home, and whether or not the owner would have undertaken the work even in the absence of the program to ensure that the energy savings can in fact be attributed to the program. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • HPwES program sponsor support Web site: www.energystar.gov/hpwessponsors <ul style="list-style-type: none"> – EPA's HPwES program implementation plan outline: www.energystar.gov/ia/home_improvement/Program_Implementation_Plan.pdf – Current HPwES programs: www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_hpwes_partners • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits • Building Performance Institute: www.bpi.org • Residential Energy Services Network: www.natresnet.org <p>Contact: homeperformance@energystar.gov or Chandler von Schrader at EPA (202-343-9096; vonschrader.chandler@epa.gov) Patricia Plympton at Navigant Consulting (for DOE) (202-481-7397; patricia.plympton@navigantconsulting.com)</p>

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
Program Characteristics Summary	<p>HPwES is a good match for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> <li data-bbox="345 331 1427 699"> 1. Impact on Jobs. Given the relative fragmentation of the home contracting industry and the comparatively small size of each job, HPwES is a training and labor intensive program. It therefore results in a comparatively large number of jobs created. Per dollar spent, HPwES results in perhaps more new job opportunities than any other program. These are skilled jobs that include significant exposure to engineering and building performance science, as well as skills required by the HVAC industry and related trades. Qualified training staff and curricula for this program exist in many parts of the country and should be leveraged when possible. Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of home services and energy efficiency. In addition, bill savings by residences tend to re-circulate in the economy to a greater degree than do savings by commercial or industrial customers, and therefore have a greater multiplier effect on jobs and economic activity. <li data-bbox="345 709 1427 1108"> 2. Collaboration and Leverage of Funds. HPwES provides an excellent opportunity to collaborate with EPA/DOE, utility companies, state and local agencies, local trade allies and their associations, as well as the building science and consulting communities. EPA and DOE have completed considerable research and design regarding HPwES and provide a large library of implementation support and other materials. The program also benefits from the considerable brand recognition and value associated with the ENERGY STAR program. EPA and DOE support regular conferences demonstrating best practices and peer experience. EPA and DOE provide selective marketing funding and other support for qualifying programs, and utilities (both municipal and investor owned). With increasing regional energy efficiency goals in many portions of the country, utilities may provide an excellent opportunity for collaboration, funding, and/or direct implementation of HPwES programs. Finally, homeowners implementing projects with the help of HPwES can also leverage Federal tax credits for energy efficiency investments (see, www.energystar.gov/index.cfm?c=products.pr_tax_credits). <li data-bbox="345 1119 1427 1455"> 3. Significance of Program Savings. On a “per job” basis, HPwES provides a lesser impact on energy and environmental emissions than many commercial or industrial programs. However, the potential participant base is very large, consisting of all owner-occupied dwellings older than just a few years, and the measures installed by the program typically have long lives and persist even if home ownership changes. Not only does this large base provide an opportunity for large impacts, it also provides an equitable and highly visible opportunity for the largest single group of tax-payers to participate in a program and benefit from ARRA stimulus dollars. In addition, the program can accommodate the needs of lower-income individuals with increased incentive levels and other support functions. Further, the potential impact of the program is (after the initial introduction) largely scalable and a function of the budget dedicated to the program. <li data-bbox="345 1465 1427 1629"> 4. Cost of Savings. HPwES is a relatively expensive program due to its extensive requirements for training and verification of the work, as well as the need for public education. However, these expenses are also the key drivers of the program’s strong performance in job creation, quality, and accountability. Despite being comparatively expensive on a \$/Btu saved basis, a typical program is still anticipated to be less expensive than the 10 Mbtu per \$1,000 guidance provided in the FOA.

PROGRAM	R3. Home Performance with ENERGY STAR® (HPwES)
	<p>5. Sustainability and Market Transformation. Through its broad outreach and education components, HPwES creates a more educated and aware public on the benefits and importance of energy efficiency. The need to be sensitive to energy issues and the basic understanding of energy systems and financial payback principles will be retained by participants long after their initial contact with the program. This will result in spillover benefits to other energy investments or behavioral changes they may be considered in the future, even if they are not elements of the HPwES program. Similarly, an HPwES program seeds a competitive market of contractors who develop a variety of business models and approaches. Through competitive innovation, these contractors often integrate the HPwES services with other services such as HVAC service and repair, insulation, and window replacement. The training regarding proper analysis and installation of efficient measures, as well as customer education and sales techniques, remains with the contractors even in the absence of the program. Indeed, as the market matures and as the general public comes to understand and demand efficient and properly-installed products, the level of incentive offered by the program can be reduced or eliminated while the benefits are expected to persist.</p>

R4: Residential Efficient Heating and Cooling

PROGRAM	R4. Residential Efficient Heating and Cooling
Program Summary	<p>The objectives of this program are to increase sales of efficient (ENERGY STAR qualified, or better) heating and cooling equipment in replace-on-burnout, retrofit, and new construction opportunities, and to improve the operating efficiency of equipment through tune-ups of existing units and quality installation of new units.</p> <p>HVAC contractors are the main vehicle for deployment of this program. Contractors must complete trainings for AC tune-ups (refrigerant charge, coil cleaning, filter change, and a blower speed test), AC quality installation (proper sizing, refrigerant charge, and air flow test), furnace quality installation (proper sizing, air flow adjustment, furnace on-rate check), and other program requirements.</p> <p>Since the measures in this program are weather sensitive, savings vary by climate region and so do incentives. Contractors receive incentives for performing AC tune-ups (typically \$50-75) and quality installations (\$70-100). Homeowners receive incentives for installing efficient equipment (typically 50-75% of incremental cost).</p> <p>The measure mix (the technologies that are cost-effective for the program to rebate) of HVAC programs varies largely based on weather and primary fuel (electric or gas). For example, in some areas of the country measures such as ground source heat pumps and hydronic heating systems are cost-effective and have been incorporated into residential HVAC programs.</p>
Target Market	<p>This program targets HVAC contractors and homeowners with central air conditioners and furnaces.</p>
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A process for recruiting contractors • A process for training contractors to perform tune-ups and quality installations • A process for ensuring that work performed and contractor business practices meet the quality standards of the program (including a quality installation verification process) • A process for marketing the program • A process for providing customer support including a call center and online help • A process for calculating and disbursing incentives • A process for inspecting projects • A system for tracking and accounting for the program, and for reporting to the program sponsor • A process for conducting evaluation, measurement, and verification (EM&V)

PROGRAM	R4. Residential Efficient Heating and Cooling
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Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, a residential HVAC initiative requires 2-4 full-time employees. At a minimum, the program requires one manager (a seasoned HVAC expert), and two staff engineers for assisting with tune-up and quality install training, quality installation verifications, project documentation review, and other administrative tasks. As the program grows over time the need for additional engineers for will increase.</p> <p>Participating Contractors</p> <p>Although many contractors may sign a participation agreement, typically about a third is very active in the program. By the end of the second year, you can expect to have about 15 contractors signed up per million in program spending (expect about five to be very active in the program). Note this is very sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>This program helps develop the market for HVAC contractors and associated trade allies. Additional jobs will be created in related fields as a result of program spending. In total, expect from 11 to 20 jobs to result per million dollars spent on this program.</p>
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Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p>
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Contractor Technical Training Resources

Content Training Resources	Technical Certification Resources	Skill Level Required
ENERGY STAR Heating and Cooling Products training (Link) Example Training Program – Alabama Power HVAC Training Center (Link)	Air Conditioning Contractors of America – education and training (Link)	High

Program-Specific Training Resources

How long will training take?	Notes
0.5 - 1 day program training; 1 - 3 days AC Tune-up skills training	AC Tune-up skills training should focus on use of commonly accepted diagnostic tools.

PROGRAM **R4. Residential Efficient Heating and Cooling**

Implementation Timeline

A key challenge for this program is motivating HVAC contractors to conduct tune-ups, especially during the cooling season when they are usually focused on replacing equipment. For this reason, if resources and timing are constrained, consider starting quality install training before starting tune-up training. Furnaces have fewer installation issues than ACs so less training for contractors is required prior to the heating season than prior to the cooling season.

This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design and Creative												
Develop consumer collateral materials												
Develop program Web site												
Task 2: Marketing Materials Execution and Delivery												
Print consumer collateral materials												
Launch program Web site												
Task 3: Participant Recruiting, Training, and Support												
Develop contractor recruitment & training materials												
Hold group recruitment meetings for contractors												
Contractors begin signing program agreements												
Hold implementation meetings with participating contractors												
Ongoing account management meetings with participating contractors throughout the year												
Activity logs documenting all communication and activities with contractors												
Sales training courses for contractors (optional)												
Task 4: Trade Ally Recruiting, Training, and Account Management												
Individual meetings with area HVAC distributors, local chapters of HVAC business organizations												
Activity logs documenting all communication and activities with allies												
Task 5: Incentive Application Validation and Processing												
All incentive applications verified for correct measures and in-territory												
Task 6: Quality Assurance & Quality Control (QA/QC)												
Conduct Level 1 Verification on all sites; review calculations and commissioning report												
Conduct Level 2 In-Field Verification following Phases 1, 2 and 3 as Verification Protocols for contractors												
Verify completion of ENERGY STAR Q1 program training for all contractors.												
Task 7: Tracking Database Design and Set Up												
Customize Program Database												
Task 8: Program Management, Administration, and Support												
Monthly meetings with Program Manager, staff												
Monthly progress reports												
Final year-end report												
Task 9: Call Center Support												
Provide HVAC Program resources to Call Center												
Task 10: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

Illustrative
Program
Performance**Energy Savings**

Energy savings are very sensitive to weather, primary heating fuel type, and technology. The table below includes illustrative savings for the minimum level of heating and cooling upgrade typically required for centrally cooled/heated homes (upgrade to SEER 14 AC and/or 90 AFUE furnace) in "warm" and "cool" climates. Savings in hotter climates on efficient ACs can be considerably higher. In addition, AC Tune-Up savings typically range from 200 kWh in cooler climates, to almost 700 kWh in hotter regions.

Warm Climates			Cool Climates		
Electricity kWh	Gas Therms	Source MBtu	Electricity kWh	Gas Therms	Source MBtu
400	35	8	250	200	23

Illustrative savings for quality installation (QI) procedures are shown below.

QI Procedure Element	Energy Savings	
	Cooling	Heating
Refrigerant Charge	2-6%	
Airflow	2-5%	
Sizing	3-7%	11-18%
Duct sealing	11-18%	11-18%

Participation and Budget

An aggressive program could reach about 3% of eligible homes after 3 years, though this is very sensitive to the climate zone and local infrastructure of HVAC contractors. An illustrative three year participation schedule is shown below. The sample represents a residential HVAC program run in a large metro area on the East Coast (with about a million residential customers).

Illustrative program implementation costs are shown below. This is very sensitive to the degree of participation, the nature of the HVAC contractor network, and the measures that are cost-effective for the program to offer for rebates.

PROGRAM

R4. Residential Efficient Heating and Cooling

	Year			
	1	2	3	Cumulative
Population of Eligible Residential Customers	1,000,000	1,000,000	1,000,000	1,000,000
Participants*	10,000	12,000	18,000	40,000
Participation rate	1.0%	1.2%	1.8%	4.0%
Jobs Created	66	47	55	168
MBtu Saved	250,000	300,000	450,000	1,000,000
Program Cost	\$ 3,300,000	\$ 3,360,000	\$ 5,040,000	\$ 11,700,000
				Average
Average Cost per Participant**	\$ 330	\$ 280	\$ 280	\$ 290
Jobs per \$1M	20	14	11	14
Per Unit Source MBtu Saved (elec-AC)	5	5	5	5
Per Unit Source MBtu Saved (gas-Furnace)	20	20	20	20
Source Mbtu saved per \$1,000	75.8	89.3	89.3	85.5

*Assumes 50% AC installs, 50% furnace installs

**Assumes average cost of AC upgrade (\$400) and furnace upgrade (\$200)

PROGRAM	R4. Residential Efficient Heating and Cooling
Resources and Assistance	<ul style="list-style-type: none"> • ENERGY STAR HVAC Contractor Resources: www.energystar.gov/index.cfm?c=contractors.cont_prod_installcheck • ENERGY STAR HVAC Quality Installation Program contact Ted Leopkey at EPA (202-343-9659; leopkey.ted@epa.gov) • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits
EM&V Support	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant contact information • HVAC contractor name and contact information • For each project: A unique project ID, measures installed, the project incentive amount, anticipated project savings, as well as project audit/verification status and date <p>Savings</p> <p>Deemed savings estimates are typically used for this type of program, although there may be certain home projects that require custom (calculated) savings estimates.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of homeowners, the nature of the energy efficiency improvements installed usage characteristics of the home, and whether or not the homeowner would have undertaken the projects in the absence of the program. For this program, evaluators will also interview a sample of HVAC contractors to see how the program influenced their practices. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>

PROGRAM	R4. Residential Efficient Heating and Cooling
<p>Program Characteristics Summary</p>	<p>HVAC is a good match for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. Given the relative fragmentation of the HVAC contracting industry and the comparatively small size of each job, HVAC is a training and labor intensive program (it involves specialized training in both HVAC tune-ups and quality installation for <i>all</i> participating contractors). It therefore results in a comparatively large number of jobs created. These jobs gain exposure to skills required by the HVAC industry and related trades. Qualified training staff and curricula for this program exist in many parts of the country and should be leveraged whenever possible. Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the HVAC and energy efficiency industries. In addition, bill savings by residences tend to re-circulate in the economy to a greater degree than do savings by commercial or industrial customers, and therefore have a greater multiplier effect on jobs and economic activity. 2. Collaboration and Leverage of Funds. HVAC provides an excellent opportunity to collaborate with EPA/DOE, utility companies, state and local agencies, and local HVAC trade allies and their associations, as well as the building science and consulting communities. The program also benefits from the considerable brand recognition and value associated with the ENERGY STAR program. With increasing regional energy efficiency goals in many portions of the country, utilities may provide an excellent opportunity for collaboration, funding, and/or direct implementation of HVAC programs. 3. Significance of Program Savings. On a “per job” basis, HVAC provides a lesser impact on energy and environmental emissions than some programs. However, the potential participant base is very large, consisting of all owner-occupied dwellings with a central AC or furnace, and the measures installed by the program typically have long lives and persist even if home ownership changes. Not only does this large base provide an opportunity for large impacts, it also provides an equitable and highly visible opportunity for the largest single group of tax-payers to participate in a program and benefit from ARRA stimulus dollars. Although it is not a focus here, this program can have a considerable impact on peak demand – ENERGY STAR Central ACs save around 0.3-1.0 kW, depending on the efficiency of the unit. 4. Cost of Savings. HVAC requires a significant investment due to its extensive requirements for training and verification of the work, as well as the need for public education. However, these expenses are also the key drivers of the program’s strong performance relative to job creation, quality, and accountability. Despite being comparatively expensive on a \$/Btu saved basis, a typical program is still anticipated to be less expensive than the 10 Mbtu per \$1,000 guidance provided in the FOA. 5. Sustainability and Market Transformation. Through its outreach and training components, this program helps transform the HVAC contractor market. Most HVAC contractors are focused on replacing burned-out equipment during the heating and cooling seasons, and research shows that more often than not, these units are both oversized and improperly installed. This program changes contractor behavior by teaching HVAC personnel to properly size units and to perform quality installations. The program also helps build demand for these contractors by teaching them how to properly tune-up functioning equipment, and by marketing tune-ups to homeowners. As the market matures and homeowners come to understand and demand efficient and properly installed HVAC equipment, the level of incentive offered by the program can be reduced or eliminated while the benefits are expected to persist.

4-B: Marketing Strategies & Tactics for Residential Programs

In addition to a strong online presence, residential program marketing generally benefits from a heavier emphasis on mass media (i.e., radio or television ads or public service announcements) and traditional collateral (i.e., point-of-purchase displays) than does non-residential program marketing. This is especially the case with ENERGY STAR Products initiatives because customers often learn about efficient products through traditional media channels, and then make final decisions on lighting and appliance purchases while shopping retail locations.

Marketing Plan Templates

These marketing plan templates provide examples of how to effectively promote different types of residential RDEE Programs. Included below are templates for:

- Home Performance with ENERGY STAR[®] (HPwES)
- Residential Efficient Heating and Cooling

Many of the strategies and tactics included in these templates apply across program types. Program managers can work from these templates as a framework for developing their own marketing plans, or, if the program administrator is in the process of selecting an implementation contractor through an RFP process, for helping screen the quality of the prospective contractors' own marketing plans.

4-B-1: Marketing Plan Template: Home Performance with ENERGY STAR®

Preliminary Considerations

To develop an effective marketing plan for Home Performance with ENERGY STAR® (HPwES), program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort?
- What are the key motivators for the target audience?
- What message(s) will the marketing effort deliver to the target audience?
- What marketing tactics will be most-effective in reaching the target audience with the defined message?
- How will the results of the marketing effort be measured?

Defining the Target Audience

Homeowners likely to be most receptive to HPwES include those who:

- Live in communities with high utility rates or areas that recently experienced rate increases;
- Own homes built before energy codes became widely adopted (pre-1980) or have comfort problems such as drafts, cold floors, poor air flow, high indoor humidity;
- May consider single-measure energy efficiency projects (adding insulation, replacing windows, replacing inefficient heating and cooling equipment);
- Are considering other large-scale home improvements (such as replacement of malfunctioning equipment, kitchen or bath upgrades, basement finishing, and major additions) and therefore have the budget set aside;
- Earn a high enough income to be able to afford a whole-house retrofit project (or low enough to qualify for special financing programs);
- Are interested in energy efficiency and want to live a “greener” lifestyle;
- Have family members with allergies, asthma, or other health issues that may be related to indoor air quality.

Defining the Key Motivations and Messages

Knowing that the target audience may be experiencing issues such as high utility bills, comfort problems, health problems, malfunctioning equipment, desire to improve amount of space or home aesthetics, or a desire to live greener, HPwES marketing messages should address these issues and identify HPwES as the “best” solution to these problems. Key HPwES messages for homeowners include:

- Utility bill savings of 20% or more;
- Improved comfort (fewer drafts, more comfortable rooms, better humidity control, and improved indoor air quality);
- Work performed by specially-trained contractors, with third-party quality assurance to make sure work gets done right; and

- Reduced greenhouse gas emissions to protect the environment.

Selecting Marketing Tactics

A variety of marketing tactics can be used to reach HPwES target audiences. Marketing plans should include a combination of several of these to create a comprehensive multi-media strategy:

- On-line (comprehensive program Web site, Search Engine Optimization (SEO), paid search campaigns, Web banners and buttons);
- Print (newspaper, national, local and special interest magazines, yellow pages, direct mail);
- Radio (NPR sponsorships, talk and music stations, Sunday morning special interest shows);
- TV (commercial spots, news or weather sponsorships);
- Home shows and other community events;
- Public relations and other “earned media.”

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Demonstrated increase in consumer awareness of HPwES;
- Increase in traffic on program Web site and at program events;
- Increase in HPwES job leads for participating contractors and completed HPwES jobs reported.

Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate homeowners about HPwES. These materials are available at: www.energystar.gov/hpwessponsors.

- Home Performance with ENERGY STAR® Marketing Graphic
- Sample Program Web Site
- Marketing Toolkit
- Promotional Video
- Home Performance House Graphics
- Promotional Banners
- Consumer Brochure
- Home Energy Yardstick

4-B-2: Marketing Plan Template: Residential Efficient Heating and Cooling

Preliminary Considerations

To develop an effective marketing plan for Residential Efficient Heating and Cooling, program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort?
- What are the key motivators for the target audience?
- What message(s) will the marketing effort deliver to the target audience?
- What marketing tactics will be most effective in reaching the target audience with the defined messages?
- How will the results of the marketing effort be measured?

Defining the Target Audience

Experience has proven that successful programs must reach and engage both sides of the market, supply and demand contractors as well as homeowners directly, to ensure consistent messaging across the program, and provide a full comprehensive campaign. By reaching out to both sectors in tandem, the marketing program will create a push-pull effect with an overlapping effect of filling in all relevant information from both the supply and demand sides of the industry.

Contractors likely to be most receptive to selling and providing Efficient Heating and Cooling products include those who are:

- Interested in growing their business and recruiting high quality staff;
- Willing to sell or deliver more time-intensive services, such as verified quality installations or duct sealing and repair;
- Unaware of their options or of the features and benefits of higher efficiency equipment;
- Providing services in areas with higher than average energy consumption or stricter than average energy efficiency requirements.

Homeowners likely to be most receptive to Efficient Heating and Cooling products include those who:

- Are purchasing new HVAC equipment as part of replacing existing equipment or improving their current home or consumers who would benefit from a tune-up on their current system;
- Consume more than average amounts of energy;
- Are required to use products that meet minimum efficiency requirements;
- Live in communities with high utility rates or areas that recently experienced rate increases;
- Are considering home improvement (aesthetic and structural) and/or energy efficiency projects (adding insulation, replacing windows, replacing inefficient heating and cooling equipment);
- Interested in energy efficiency and want to live a “greener” lifestyle.

Defining the Key Motivations and Message

Contractors and consumers have unique vested interests, and there are specific and common barriers associated with each group. These should be considered and addressed when crafting key messages.

The greatest challenge for most HVAC contractors is finding, retaining, and motivating high quality technical staff. The lack of adequate staff often impedes contractors' ability and willingness to sell or deliver more time-intensive services. Given their sensitivity to the time requirements of these services, many contractors believe that they can best maximize profit by selling and delivering a higher volume of work rather than by performing the highest quality work or by exceeding minimum code requirements. Even contractors who genuinely want to focus on quality may operate from the fundamental belief that the majority of consumers are primarily interested in low or competitive first cost, leading them to simply conclude that "going the extra mile" provides them with no tangible competitive benefit.

Keeping these issues in mind, key messages for contractors include:

- Training and program resources will help grow the business and reputation for delivering quality work in the service area.
- Homeowners are increasingly concerned about reducing their energy costs and negative impact on the environment.
- Incentives and rebates will make the services more affordable to the clients.

Homeowners' desire for energy-efficiency equipment will create the market pull that demonstrates to the HVAC industry that selling efficiency makes business sense. Many consumers lack information about HVAC in general, leading them to view HVAC products and services as a "commodity" that can be provided by any licensed HVAC contractor. They assume that equipment is installed and serviced according to best practices, and therefore tend to shop for the lowest initial price rather than consider the long-term total cost of ownership and operation. This misperception can be reinforced in the marketplace by less skilled, less astute contractors who sell on the basis of lowest price and fast service rather than high quality. The result is that many consumers do not demand energy-efficient HVAC equipment, quality installations, or properly performed system tune-ups.

Keeping these issues in mind, key messages for homeowners include:

- In any season, high efficiency heating and cooling equipment can help lower usage and manage utility costs.
- Heating and cooling costs make up nearly half the home's total energy bill. If the central air conditioning unit is more than 12 years old, replacing it with a qualified, high-efficiency model could cut cooling costs by 30 percent.
- ENERGY STAR[®] qualified central air conditioners have a higher seasonal energy efficiency ratio (SEER) than standard models - which makes them about 14% more efficient than standard models. The higher the SEER, the greater the efficiency.
- When buying new equipment, make sure to get a quality installation. Make sure to get a contractor who can do the right job.

- Proper maintenance can go a long way in preventing future heating and cooling system problems.
- Rebates are available to offset upfront costs and customers will save energy each month with more efficient products.

Selecting Marketing Tactics

A variety of marketing tactics can be used to reach residential Efficient Heating and Cooling target audiences. Marketing plans should include a combination of several of these to create a comprehensive multi-media strategy to engage both contractors and homeowners.

The following tactics have the objective of recruiting contractors:

- Contractor Recruitment Packet (guidance and support documents and materials);
- Program Resource Kit (guides, reporting forms, training materials, marketing support materials, messaging, technical specifications, etc);
- Marketing Tools (door hangers, rebate forms, van magnets, email template, newsletter articles, online banner ad);
- Program Web Site;
- Local Contractor Trainings and Information Sessions;
- Direct (targeted mail; print, online or radio advertising).

The following tactics have the objective of increasing consumer demand for energy-efficient residential heating and cooling products and services:

- Direct Marketing (inserts in community newspapers, co-op inserts);
- Door Hangers (direct hangs targeted by demographics or zip codes);
- Web Site and Online Advertising (Search Engine Optimization, Google Key Words, banner ads on relevant Web sites);
- E-Marketing (program email updates, newsletter and special offers);
- Retail Promotion or Point of Purchase (signage at retail);
- Print (newspaper, national, local and special interest magazines, yellow pages, direct mail);
- Radio (NPR sponsorships, talk and music stations, Sunday morning special interest shows, home improvement programs);
- TV (commercial spots, news or weather sponsorships);
- Home shows and other community events;
- Public relations and other “earned media.”

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Increased sales of new efficient heating and cooling products and associated savings;
- Increased servicing of existing heating and cooling products and associated savings;
- Number of contractors engaged in the program and the number of their customers they serve;
- Demonstrated increase in consumer awareness of the ENERGY STAR brand;
- Traffic to program Web site;
- Contractor and customer satisfaction (e.g. tracked via surveys, comment cards).

Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate homeowners about commercial energy users. These materials are available at:

http://www.energystar.gov/index.cfm?c=partners.pt_index.

- *ENERGY STAR Logos* – can be used in a variety of promotional materials for distribution, and also provides brand recognition to the program
- *Publications* – a library of all ENERGY STAR published materials with information about products, safety and saving tips, and other ways to improve efficiency
- *Training Center* – serves as a resource for partners looking to improve their sales effectiveness. Find tools and information to help convey to staff, customers, or business partners how ENERGY STAR can help them protect the environment while saving energy and money.
- *National Awareness and Marketing Campaigns* – provides background on other initiatives and branding taking place with ENERGY STAR
- *Heating and Cooling* fact sheets, forms and specification sheets
- *Guide to Energy Efficient Heating & Cooling*
- *Seal and Insulate with ENERGY STAR* Brochure
- *Do-It-Yourself Guide to Sealing and Insulating with ENERGY STAR*

4-C: Illustrative Request for Proposal

4-C-1: Home Performance with ENERGY STAR®

Note: The final RFP should be reviewed by the organization/s contracts official or attorney.

Purpose of RFP

The purpose of this RFP is to select a third-party vendor that will offer the program administrator a range of high quality and effective services relating specifically to the development and implementation of a Home Performance with ENERGY STAR (HPwES) program funded by the American Recovery and Reinvestment Act of 2009. Desired services include the following:

- Baseline Market Characterization and Performance Indicators;
- Development of the HPwES program plan, policies and procedures;
- Participant recruitment and training;
- Contractor technical support and mentoring; and
- Quality Assurance

The initial contract for the selected Bidder will extend for a term of [two] years. After the initial [two-year] term, the contract may be renewed annually, at [Program Administrator's] option, through [date].

About the Program Administrator

[Organization description and Web site]

Contact Information

The following individual will represent the Program Administrator as the primary contact for matters relating to the non-technical aspects of this RFP and during the contract negotiation/award process and subsequent invoicing.

[Name]

[Contact Info]

The following individual will represent the Program Administrator as the primary contact for matters relating to technical aspects of the RFP and throughout the performance of the work upon the awarding of the contract.

[Name]

[Contact Info]

Scope of Work

Task [1]: Baseline Market Characterization and Performance Indicators

The contractor will prepare a baseline market characterization and list of key performance indicators that should be tracked by the program administrator. The primary goal is to provide data and intelligence to inform program-related decision-making and future program evaluation.

- *Baseline Market and Energy Use Characterization* analysis will provide population and housing stock demographics including: predominant age and style of homes, energy usage, homeowner income and buying habits, and projected cost-effective energy improvements, existing local contractor environment, number of contractors skilled in residential energy assessment, local licensing requirements, and contractor training opportunities. This information will be relevant to launching an HPwES program in [region].

- *Performance Indicators* consist of a set of metrics for tracking market changes (supply and demand) in [service territory] that can be attributed to program actions. These metrics may include: number of customer inquiries (demand), number of participating contractors (supply), number of participating customers by contractor (demand), number of verification inspections by contractor, average energy saved per home, measures installed, and gross energy saved. The program administrator will monitor these metrics quarterly and make appropriate adjustments in program delivery to balance consumer demand and the supply of participating contractors with the purpose of achieving the programs energy savings goals.

Task [2]: Develop Program Plan, Policies and Procedures

The contractor will develop a program implementation plan that documents policies and procedures that govern the administration of the HPwES program. This plan should include both programmatic (internal) and participant policies and procedures.

The HPwES program will enlist residential trade contractors to conduct whole-house energy assessments and install measures which reduce energy use and improve home performance. Trade contractors will need training to learn how to conduct a whole-house energy assessment and participate in the program.

Example of policies and procedures that should be established (or adopted):

- A contractor participation agreement that describes the requirements of participation including qualifications, incentives, and expected levels of performance.
- Protocols for how participating contractors will conduct a Home Performance Assessment, estimate energy savings, summarize findings and recommendations for the customer; install measures to best practice standards, conduct a test-out inspection, and report information to the program.
- Instructions on how customer inquiries (or leads) will be managed tracked and directed to participating contractors.
- What incentives, financing or other benefits are available to customers and participating contractors, how to qualify for them and how they will be processed.
- How a quality assurance program will monitor the work performed under the program.

The home performance assessment should include a complete visual and diagnostic inspection of all the home's thermal and mechanical systems for efficiency including attics, exterior walls, windows, basement, heating and hot water systems. The evaluation may also include a utility bill analysis of the homes' heating, cooling, and other loads.

The National HPwES Program provides guidance (www.energystar.gov/hpwessponsors) for preparing this plan

Task [3]: Participant Recruitment and Training

The contractor will develop a strategy for recruiting, training, and mentoring contractors to participate in the HPwES program.

The contractor will coordinate with trade allies to promote the program to prospective participants.

The contractor will provide technical training to participating contractors in the fundamentals of building science, diagnostic testing , conducting a Home Performance Assessment, estimating energy savings, summarizing findings and recommendations for customers, installing measures to best practice standards, conducting a test-out inspection, reporting information and other requirements of participating in the program. Participating contractors will pay a fee for the training and a portion of the fee may be refunded when they meet the qualifications for participation and successfully complete improvements, that meet program criteria, for [5] customers.

Task [4]: Technical Support and Mentoring

The contractor will work closely with participating contractors to provide technical assistance and mentoring on their first [5] jobs. This task will include accompanying participating contractors to customer's homes to conduct a Home Performance Assessment, summarize findings and recommendations, estimate energy savings, installing recommended measures and conducting a test-out inspection. Individuals performing work under this task should be experienced and qualified to do this work and have appropriate liability insurance.

The contractor will be available [2] hours, [5] days a week to answer technical building science related questions raised by participating contractors and assisting them in identifying the appropriate diagnostic testing equipment necessary to fulfill program testing requirements.

Task [5]: Marketing

The contractor will develop and manage a web site that explains the program to customers and contractors. The contractor will also establish a hotline for customers to call with questions about the program. The hotline will be staffed [5] days a week during normal business hours. Customers can visit the web site or leave a message during non-business hours. Email inquiries generated from the web site will be managed by hotline staff.

The contractor will conduct public relations and marketing campaigns that encourage customers, in the [service territory], to participate in the program. Customers will be directed to visit the web site or call the hotline for more information and to request an appointment with a participating contractor.

Customers that request an appointment with a contractor will be directed to a participating contractor that agrees to follow-up with the customer and schedule an appointment by the close of the next business day. Lead tracking will need to be coordinated with quality assurance activities handled by [a separate contractor.]

An online marketing toolkit, that includes marketing templates, is available to HPwES Partners from the National HPwES program. A web site template is also available.

Task [6]: Quality Assurance

The value of Home Performance with ENERGY STAR is maintained when participating contractors consistently deliver services that meet or exceed program standards.

Develop and implement a quality assurance program that provides direct feedback to participating contractors on their compliance with program policies and procedures. Activities are likely to include:

- Collecting specific information from participating contractors on all Home Performance Assessments and work they have completed for customers.
- Reviewing information from every completed project to determine if fundamental program requirements are being met.
- Conducting inspections of at least 5% of the work completed by each participating contractor to determine if program requirements are being met.
- Obtaining and reviewing feedback from customers.
- Communicating with participating contractors on their performance.

The contractor will be responsible for tracking the activities of all participating contractors, reviewing contractor reporting, scheduling on-site inspections, conducting inspections, documenting findings of the inspection, and providing prompt feedback to the participating contractor on any measures that need to be brought into compliance. The contractor will also be responsible for removing contractors from the program that fail to meet program requirements.

The contractor will provide summary information in a monthly and annual report to [Organization Name] on quality assurance activities including the following metrics: incentives, number participating contractors, number homes assessed, number participating customers (measures installed), estimated energy savings, number of homes inspected. The contractor will work cooperatively with the Process and Impact Evaluation contractor selected by [Organization Name] to provide requested metrics and information collected in the

quality assurance process.

The National HPwES Program offers guidance (www.energystar.gov/hpwessponsors) for developing a quality assurance program.

Information to Be Provided with Proposal

Section 1: Introduction and General Information – The proposal should briefly identify key information about the organization. The proposal must include the following information:

- The organization name, address, telephone number, fax number, and email address for each contact person.
- Year the organization was established
- Name and address of parent company (if applicable)

The proposal should describe why the organization is uniquely qualified to perform and complete the services requested by this RFP. This section should be limited to no more than one (1) page and provide a brief introduction of the organization and the team (if applicable).

Section 2: Executive Summary – Summary of the proposed program (not to exceed 1 page)

Section 3: Technical Approach –The Technical Approach details how the organization will fulfill each of the tasks outlined in the SOW. Do not simply reiterate or rephrase the SOW tasks. The technical approach must express how the organization proposes to comply with the work scope and provide a full explanation of the techniques and procedures the organization proposes to follow. The organizations technical approach for completing the SOW must be prepared as an ordered set of tasks, including subtask as necessary. The SOW will describe the approach/methodology and its rationale. Each action needed to complete each task will be identified along with who will perform it, how it will be performed, when it will be performed, and the anticipated deliverables. Additional tasks, not included in the RFP, maybe proposed if they are consistent with the primary objectives. Use the table format provided below to provide all information on the proposed approach to the SOW.

Approach to SOW Task # (title)
Approach to Sub Task 1 (title):
Approach to Sub Task 2 (title):
Etc.

Section 4: Management Structure – The proposal will identify all project participants, including the program director, who will be responsible for ensuring that the tasks within the SOW are carried out properly and in a timely manner. The proposal will provide a clear description of the roles and responsibilities of each key person in completing the work. An organization chart will be included in the proposal. The proposal will describe how coordination with building trade allies and other contractors helping to implement parts of the program will be accomplished.

Section 5: Qualifications – The proposal will demonstrate the qualifications and past experience of the organization and all personnel who will carry out each task in the SOW.

Section 6: Schedule and Staff Plan – The proposal will include a time line for completing each task and major subtask included in the SOW. This time line should be in bar chart form showing anticipated starting and completion times for each task, in terms of weeks or months after execution of the contract.

The proposal will include a staffing plan that identifies the key personnel, including any subcontractors or other resources, responsible for completing each task and major subtask. Provide a table showing the number of hours each key person or subcontractor will spend on each task and the total hours per task.

Section 7: Budget – The proposal will include a proposed budget to complete the SOW. The budget will include the following cost elements and a total cost.

- Direct Labor
- Labor Overhead
- Direct Materials
- Materials Overhead
- Equipment
- Travel
- Other Direct Costs
- Subcontractors/Consultants

Evaluation Criteria

- The Bidder's experience with providing the proposed program portfolio at the scale and on the timeframe requested in other engagements.
- The capacity of the Bidder, as judged by program administrator, to successfully devise and deliver the proposed programs on the aggressive schedule required. The judgment will be based on such factors as the Bidder's commitment, experience of personnel to be assigned to the project, facilities, and evidence of past experience in implementing such programs.
- The Bidder's ability to modify and/or expand the program when required, and to provide a continuing high level of performance for the duration of the contract.
- The Bidder's ability to provide independent, third party verification of program results, as well as tracking and reporting with transparency as required by ARRA funding guidance.
- The Bidder's ability to demonstrate to the program administrator that the requirements and implications of the proposed work effort are clearly defined and understood.
- The Bidder's commitment to and evidence of a diversified work force at all levels of the organization, and a diversified supplier strategy.
- Quality and cost of Bidder's proposed Project Evaluation plan.
- Project Cost.

Selection and Award Process

Distribution of RFP:	[date]
Proposals due to Program Administrator:	[date/time]
Decision on Program Vendor	[date]
Negotiate and Execute Contract	[date]
Launch programs	[date]

*****Please submit [six (6)] copies of the proposal. Proposals must be clearly labeled and submitted to: [Program Administrator Contact Name and Address]*****

Bidders whose proposals have not been selected will be notified via telephone, email and/or written letter at the number or address provided in their proposal. An official statement to the same effect will be sent through the U.S. Postal Service following the award of the contract to the successful Vendor, if any.

Appendices

- STANDARD TERMS AND CONDITIONS
- SIGNATURE PAGE
- BIDDER ACKNOWLEDGEMENT (of receipt of the RFP)
- BIDDER CONDUCT (expectations regarding bidder's professional conduct]

5: Non-Residential RDEE Program Snapshots and Templates

5-A: Non-residential RDEE Programs

This section contains program-specific planning and implementation ramp-up materials for non-residential RDEE programs, including:

A. Snapshots for the following RDEE programs³⁶:

- NR1. Prescriptive
- NR2. Retrocommissioning
- NR3. Commercial Food Service
- NR4. C&I Custom
- NR5. Benchmarking and Performance
- NR6. On-Site Energy Manager

B. Marketing Strategies and Tactics for Non-Residential Programs, including marketing plan templates for the Prescriptive, Retrocommissioning, Commercial Food Service, and Benchmarking and Performance programs. Program administrators and managers can use the templates in development of marketing plans for any non-residential efficiency program.

C. An illustrative Request for Proposal (RFP) for third party implementation of a non-residential program (Prescriptive). This may be used by state energy offices or other program administrators to help develop their own RFPs for soliciting proposals for implementation of a Prescriptive program or other energy efficiency programs.

³⁶ The snapshots have been updated and expanded since they were originally released in May 2009 as part of the first version of the Planning Guide.

NR1: Non-Residential Prescriptive Program

PROGRAM	NR1. Non-Residential Prescriptive Program
Program Summary	<p>Prescriptive programs encourage non-residential customers to upgrade or retrofit working equipment with new, energy-efficient equipment. This program has been run cost-effectively in nearly every region of the country, and provides an opportunity to deploy energy-efficient technologies quickly into a state's businesses, industries, and schools.</p> <p>Focusing on easy opportunities to produce verifiable energy savings, such as lighting upgrades from T12 to T8 linear fluorescent lamps, efficient HVAC equipment, and products like motors and refrigerators, this program will provide a simple, expedited solution for non-residential customers to save energy. The majority of incentives are geared towards customers who are in the market for new equipment when their old equipment burns out. In some instances, such as for T12 lighting, the program should also encourage the replacement of working but inefficient technologies with newer and more energy-efficient technologies (retrofit opportunities) due to significant savings opportunities.</p>
Target Market	<p>The program is targeted at commercial, institutional, and industrial customers. Program sponsors may elect to target participants with certain demographic characteristics, or whose energy consumption exceeds established metrics.</p>
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • Processes for trade ally recruiting, training, and account management • Processes for participant marketing, recruiting, training, and account management • A process for calculating and disbursing incentives • A process for inspecting projects • A process for ensuring that work performed and contractor business practices meet the quality standards of the program • A system for tracking and accounting for the program, and for reporting to the program sponsor • A process for conducting evaluation, measurement, and verification (EM&V) • Customer support including a call center and online help
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, a prescriptive initiative requires 3-5 full-time employees. At a minimum, the program requires one manager, and two staff engineers for reviewing project documentation and inspecting projects. As the program grows over time, the need for additional staff will increase.</p> <p>Participating Contractors</p> <p>Participating contractors are typically required to sign a participation agreement with the program. Although many contractors may sign a participation agreement, generally only about a third is very active in the program. By the end of the second year, you can expect to have about 150 contractors signed up per million in program spending, although this is very sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>This program helps develop the market for installation contractors and associated trade allies. Additional jobs will be created in related fields as a result of program spending. In total, expect from 8 to 11 jobs to result per million dollars spent on this program.</p>

PROGRAM	NR1. Non-Residential Prescriptive Program											
Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p>											
	<p>Contractor Technical Training Resources</p>											
	<table border="1"> <thead> <tr> <th>Content Training Resources</th> <th>Technical Certification Resources</th> <th>Skill Level Required</th> </tr> </thead> <tbody> <tr> <td data-bbox="376 577 721 682"> Example Training – Pacific Gas & Electric “Commercial Lighting Fundamentals” (Link) </td> <td data-bbox="734 577 1084 682" style="text-align: center;">N/A</td> <td data-bbox="1091 577 1442 682" style="text-align: center;">Medium</td> </tr> <tr> <td colspan="3" data-bbox="376 690 1442 724">On-the-job Training</td> </tr> </tbody> </table>	Content Training Resources	Technical Certification Resources	Skill Level Required	Example Training – Pacific Gas & Electric “Commercial Lighting Fundamentals” (Link)	N/A	Medium	On-the-job Training				
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<p>Program-Specific Training Resources</p>												
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PROGRAM **NR1. Non-Residential Prescriptive Program**

Implementation Timeline

This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Design Marketing Materials												
Identify commercial sectors to target	■											
Develop collateral materials for business owners and managers		■	■									
Develop program Web site		■	■									
Task 2: Marketing Materials Execution and Delivery												
Print collateral material				■	■							
Outreach to business owners and managers				■	■							
Conduct PR / Media Effort				■	■							
Task 3: Participant Recruiting, Training, and Support												
Recruit distributors, contractors, and designers		■	■	■								
Train distributors, contractors, and designers			■	■	■							
Task 4: Incentive Application Validation and Processing												
All incentive applications verified for correct measures and in-territory (it will make a difference whether the process is electronic or not)					■	■	■	■	■	■	■	■
Task 5: Program Hotline Support												
Provide C&I Program resources to Hotline			■									
Develop complaint resolution process/plan			■									
Provide call service for customer questions and scheduling appointments				■	■	■	■	■	■	■	■	■
Task 6: Tracking Database Design and Set Up												
Determine what database needs are		■										
Customize program database			■	■								
Report to Program Sponsor (as requested)					■	■	■	■	■	■	■	■
Task 7: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan			■	■								
Implement quality assurance protocols				■	■	■	■	■	■	■	■	■
Task 8: Program Management, Administration, and Support												
Monthly meetings with Program Manager, staff	■	■	■	■	■	■	■	■	■	■	■	■
Monthly progress reports	■	■	■	■	■	■	■	■	■	■	■	■
Final year-end report											■	■
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols	■	■	■									
Implement EM&V protocols										■	■	■

PROGRAM

NR1. Non-Residential Prescriptive Program

Illustrative Program Performance

Energy Savings

Energy savings will vary considerably by state/industry. One Prescriptive program in the Midwest (see table below) verified energy savings of about 400 MBtu per participant. A similar program, also in the Midwest, verified 600 MBtu per participant. In general, a large percentage of program savings comes from lighting retrofit projects.

Participation and Budget

An illustrative three year participation schedule for a Prescriptive program run in a large metropolitan area in the Midwest with a million electric customers is shown below. Note that in the first program year, participation is relatively low – this is because the program started later in the year than expected.

Reported costs vary depending upon the implementation approach taken and degree of participation. Illustrative program implementation costs are shown below.

	Year			
	1	2	3	Cumulative
Population of Eligible C&I Customers	100,000	100,000	100,000	100,000
Participants	110	880	830	1,820
Participation rate	0.1%	0.9%	0.8%	1.8%
Jobs Created	3	34	20	57
MBtu Saved	39,000	352,000	335,000	726,000
Program Cost \$	297,000	\$ 3,784,000	\$ 2,490,000	\$ 6,571,000
				Average
Average Cost per Participant	\$2,700	\$4,300	\$3,000	3,610
Jobs per \$1M	11	9	8	9
Per Unit Source MBtu Saved (elec)	350	400	400	400
Per Unit Source MBtu Saved (gas)	0.3	0.3	3.4	3.4
Source Mbtu saved per \$1,000	131.3	93.0	134.5	110.5

Incentive Levels

Illustrative incentive levels for some C&I prescriptive measures are listed below.

- T12 upgrade to HP-T8 lamps and electronic ballast - \$10/fixture
- New High efficiency troffer fixture with HP-T8/T5 - \$20/fixture
- New High efficiency low glare troffer fixture with HP-T8/T5 - \$25/fixture
- New indirect low glare troffer fixture with HP-T8/T5 - \$35/fixture
- New 4' strip fixture with reflector with HP-T8/T5 - \$20/fixture
- New 8' strip fixture with reflector with HP-T8/T5 - \$20/fixture
- Hard-wired compact fluorescent fixture, new or retrofit kit - \$10/fixture
- New compact fluorescent fixture with dimmable ballast - \$40/fixture
- Occupancy sensor
 - o Wall mount - \$25/sensor
 - o Remote mount - \$75/sensor
 - o High/low control - \$40/ballast
 - o Daylight dimming - \$40/ballast
- LED Exit signs - \$25/sign
- LED Traffic signals – \$50-\$75
- Premium efficiency 1 – 200 HP motors - \$45 – \$700 depending on motor size
- Rooftop/Unitary AC: \$60/ton
- Split System A/C (< 5.4 tons) – 14 SEER \$100, 15 SEER \$150, 16 SEER \$200
- Furnace – 92 AFUE \$200, 94 AFUE \$300
- Variable frequency drives in HVAC applications - \$900 - \$9,500 depending on horsepower of controlled motor
- Vending machine occupancy controls
- Refrigerated beverage machine - \$75/control
- Snack machine - \$30/control

PROGRAM	NR1. Non-Residential Prescriptive Program
EM&V Support	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant business NAICS code • Participant contact information • Contractor name and contact information • For each project: A unique project ID, measures installed, the project incentive amount, anticipated project savings, as well as project audit/verification status and date <p>Savings</p> <p>As the performance of the measures in this type of program are typically well-understood, the use of deemed savings estimates is generally appropriate.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of facilities, the nature of the energy efficiency improvements installed, usage characteristics of the facility, and whether or not the business owner would have undertaken the projects. Due to the well-researched assumptions surrounding the products in this program, deemed savings values will be used for most measures. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources & Assistance	<ul style="list-style-type: none"> • EPA's ENERGY STAR Products page: www.energystar.gov/products • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits

PROGRAM	NR1. Non-Residential Prescriptive Program
Program Characteristics Summary	<p>A prescriptive program is a good use for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. The main employment benefit of the prescriptive program is stimulating the market for installation contractors. Unlike some programs, a prescriptive program does not involve skilled training, or direct employment with the program. However, prescriptive programs are contractor-driven initiatives, and experience shows that contractors active in similar programs see significant increases in business. 2. Collaboration and Leverage of Funds. A prescriptive program provides an excellent opportunity to leverage EPA/DOE resources for ENERGY STAR qualified products rebated through the program, and to collaborate with utility companies, state and local agencies, and local trade allies and their associations. 3. Significance of Program Savings. A prescriptive program should be one of the first programs off the block, and will also yield significant savings over a relatively short timeframe. The best-run prescriptive programs do this by keeping participation simple and picking low-hanging fruit, such as T-12 to T-8 retrofits. 4. Cost of Savings. This program tends to be very cost effective because it requires low overhead while paying incentives for a large volume of projects. Prescriptive incentives are attractive to a wider range of commercial customers than other C&I programs because participation is relatively simple, and does not require a significant upfront investment on the part of business owners. 5. Sustainability and Market Transformation. In terms of market penetration, a prescriptive program will reach more non-residential customers across more customer segments than any other C&I program. Research shows that C&I customers who experience the benefits of energy efficiency through a relatively simple program, such as prescriptive incentives, are more likely to participate in other programs that require more significant investments.

NR2: Non-Residential Retrocommissioning (RCx)

PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)
<p>Program Summary</p>	<p>Retrocommissioning (RCx) offers building owners a systematic process for evaluating a structure's major energy-consuming systems and identifying opportunities to optimize equipment operation. RCx tunes up existing buildings, improving their energy efficiency and operational procedures. RCx is typically carried out through local networks of commissioning providers. Each customer goes through a five-phase process:</p> <ol style="list-style-type: none"> 1. <i>Application:</i> Building owners or managers apply for RCx program assistance. 2. <i>Planning:</i> An analysis of the entire building, including a study of past utility bills and interviews with facility personnel. 3. <i>Investigation:</i> Use of benchmarking tools, such as ENERGY STAR Portfolio Manager (can be used to develop the baseline Building Energy Performance rating) to assess overall performance against peer buildings and identify under-performing buildings to target. 4. <i>Implementation:</i> Diagnostic monitoring and functional tests of building systems are then conducted, leading to system adjustments and maintenance actions. 5. <i>Verification:</i> Building systems are then retested and re-monitored to fine-tune improvements. ENERGY STAR Portfolio Manager can be used to provide a level of transparency and accountability to help demonstrate strategic use of ARRA 2009 funding by generating a Statement of Energy Performance (SEP) for each building, and summarizing important performance indicators, including energy use intensity and greenhouse gas emissions associated with building energy use. <p>A final report, retrocommissioning plan, and operations and maintenance schedule are given to the building owners and operators. Each commissioning provider should develop a pre-and post-commissioning Energy Performance Rating using ENERGY STAR Portfolio Manger and submit the results in its final report for each building.</p> <p>In many cases, building operators receive additional training in keeping systems operating at optimum levels, and monitoring methods are established to track performance on an ongoing basis. Incentives typically include cost sharing for planning and investigation up to a per-project cap of \$10,000-15,000. Implementation incentives are offered on a dollar per kWh basis covering some of the incremental cost of implementing recommended energy efficiency measures.</p>
<p>Target Market</p>	<p>RCx is typically performed only on large commercial and industrial facilities. Facility qualification criteria may include:</p> <ul style="list-style-type: none"> • A size minimum (though priority may be granted to facilities with high energy use intensities). • A funding commitment (i.e., \$15,000) from the building owner for completing the project plan and implementing measures. The facility must have an existing building or system energy management system (EMS) with direct digital control (DDC). • The facility must be free of major problems requiring costly repairs or replacements and have no major system renovations or retrofits planned. • The facility must have accessible and up-to-date building documentation and records. • The facility owner and O&M staff must express a commitment to be actively involved in the RCx process with a commitment of at least 40 hours by the O&M staff. • The facility owner and O&M staff must deliver a persistence plan prior to project completion demonstrating strategies for maintaining energy savings identified as part of the RCx process.

PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A standardized process for screening applications • A process for recruiting and training commissioning providers • Processes for conducting the planning, investigation, implementation and verification stages of RCx • A process for marketing the program to business owners and building managers • A process for calculating and disbursing incentives • A process for ensuring that work performed and commissioning provider business practices meet the quality standards of the program • A system for tracking and accounting for the program, and for reporting to program sponsor • A process for conducting evaluation, measurement, and verification (EM&V) • Customer support, including a call center and on the program Web site
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, RCx requires 3-5 full-time employees. At a minimum, the program requires one manager (an individual with significant commissioning experience), and two staff engineers with commissioning experience who can handle both supervising and conducting the planning, investigation, implementation, verification stages of RCx, program trainings with commissioning providers, as well as additional education of building owners and operators. As the program grows over time, the need for additional engineers for will increase.</p> <p>Participating Contractors</p> <p>During the first 6 months as RCx rolls out, you will need to recruit 3-5 commissioning providers per million program dollars spent. As the program grows over time, the need for additional providers will increase, although this is very sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>This program helps develop the market for commissioning providers and associated trade allies. Additional jobs will be created in related fields as a result of program spending. In total, expect from 5 to 15 jobs to result per million dollars spent on this program.</p>

PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)								
Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p>								
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PROGRAM

NR2. Non-Residential Retrocommissioning (RCx)

Implementation Timeline

Approximately five months are needed to introduce an RCx program, although this may be sensitive to the availability of local commissioning providers. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design and Creative												
Develop collateral materials for business owners and managers, and for commissioning providers												
Establish recruitment strategies and procedures												
Task 2: Marketing Materials Execution and Delivery												
Print consumer collateral materials												
Identify processes and procedures for qualifying commissioning providers. Market directly to commissioning providers.												
Identify commissioning providers, key business owners, managers and industry associations												
Identify and market the pre-screening process for selecting customer participants.												
Launch marketing campaign												
Task 3: Recruiting, and Pilot Phase												
Recruit commissioning providers												
Select a pilot market to test recruitment, application and procedures. Initiate first Rx project												
Expand recruitment of commissioning providers and promotions												
Task 4: Account Management												
Identify additional training requirements for building operators												
Implement ongoing monitoring process for sustained performance												
Task 5: Tracking Database Design and Set Up												
Customize Program Database												
Implement tracking												
Task 6: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan												
Implement quality assurance protocols												
Verify eligibility on all submitted claims												
Conduct on-site verification of all installations												
Task 7: Program Management and Administration												
Monthly meetings with Program Manager, staff												
Monthly progress reports												
Final year-end report												
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)																																					
Illustrative Program Performance	Savings																																					
	Savings for RCx projects vary widely depending on the baseline efficiency of the facility, as well as facility size and type, the types of measures installed, and incentive levels. Generally, savings of 4,000 to 20,000 Mbtu per RCx project are realistic.																																					
	Participation and Budget																																					
	An aggressive RCx program could reach about 0.5% of eligible facilities after three years. An illustrative three year participation schedule is shown below. Under a non-aggressive scenario, participation after three years may be closer to 0.1-0.2%.																																					
	RCx projects tend to be expensive, as they involve extensive on-site analysis and training. One program reported average per participant costs of about \$200,000, though the savings were commensurately higher, around 20,000-25,000 Mbtu per project. An illustrative RCx program participation schedule with implementation costs is shown below.																																					
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PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant business NAICS code • Participant contact information • Commissioning provider name and contact information • Current commissioning phase and date • Facility baseline energy consumption • Pre-and post-commissioning • Pre and post-ENERGY STAR Portfolio Manager Energy Performance Rating • For any projects completed: A unique project ID, contractor name and contact information, measures installed, the project incentive amount, and anticipated project savings <p>Savings</p> <p>RCx projects typically require custom (calculated) savings estimates.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of commissioned facilities, the nature of the energy efficiency improvements installed, usage characteristics of the facility, and whether or not the business owner would have undertaken the projects in the absence of the program. Typical savings verification techniques include spot-metering, detailed engineering calculations, and billing analysis. The evaluator should also estimate the persistence of savings from RCx activities. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • ENERGY STAR Portfolio Manager: www.energystar.gov/benchmark • ENERGY STAR Guidelines for Energy Management: www.energystar.gov/guidelines • ENERGY STAR Building Upgrade Manual: www.energystar.gov/bldgmanual • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits • Building Commissioning Association: www.bcxa.org

PROGRAM	NR2. Non-Residential Retrocommissioning (RCx)
<p>Program Characteristics Summary</p>	<p>RCx is a good match for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. An RCx program requires expertise in building commissioning—these jobs require a higher skill level and pay than is required for some programs. Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of building science, facility management, and energy efficiency. 2. Collaboration and Leverage of Funds. RCx offers an excellent opportunity to collaborate with the EPA through the use of its Portfolio Manager, and with utility companies, state and local agencies, and local commissioning providers. 3. Significance of Program Savings. RCx programs tend to yield very high energy savings per customer, which translates into real cost savings for participating businesses. Lowering operational costs increases profit; this can be reinvested in additional energy saving opportunities and/or human resources. 4. Cost of Savings. RCx is an expensive program due to the comprehensive and time-consuming nature of the commissioning process, as well as the level of expertise required to complete it. However, these expenses are also the key drivers of the program’s strong performance relative to job creation, quality, and accountability. The program is very cost-effective because it takes a whole-facility approach to reducing energy use, and sustains savings by training building owners and operators to maintain optimal building performance after the program has pulled out. 5. Sustainability and Market Transformation. RCx helps create sustained energy savings because it goes well beyond reducing prices on efficient equipment. The program teaches building owners and operators how run to their facilities more efficiently, and that by doing so they are also reducing operating costs, as well as improving building health and safety.

NR3: Commercial Food Service

PROGRAM	NR3. Commercial Food Service Program
Program Summary	<p>A Commercial Food Service (CFS) program rebates energy-efficient commercial food service equipment such as refrigerators, freezers, steamers, fryers, hot food holding cabinets, ice machines, dishwashers, ovens, and other technologies. The primary aim is to influence the buyer to purchase more efficient equipment when their existing equipment has failed.</p> <p>The existing ENERGY STAR specifications should be utilized to denote efficient equipment eligible for rebates, and will help with marketing the product to the supply chain and the end users. States with advanced codes for some equipment types may also wish to offer incentives at CEE (Consortium for Energy Efficiency) levels. The food service network of market actors is complicated, consisting of manufacturers, manufacturers' reps, dealers, dealer reps, equipment stores, and often cash-strapped end-users including restaurants, schools, hotels and motels, and hospitals. The network varies locally and regionally.</p> <p>Best practices include cultivating the food service network, providing identifiable point of purchase marketing with eligible rebate amounts at the distributors' warehouses, actively training and offering incentives to equipment distributors and dealers to market the program, and leveraging ENERGY STAR marketing and resources.</p>
Target Market	<p>The program is targeted at commercial food service equipment distributors and dealers who are the key access points for delivery of efficient products to restaurants, schools, hotels and motels, and hospitals. Independent restaurant chains are also a good target for direct outreach, as influencing the way they specify equipment in their franchising requirements can result in a large number of installations over the long-term.</p>
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • Processes for trade ally recruiting, training, and account management • Processes for participant marketing, recruiting, training, and account management • A process for calculating and disbursing incentives • A process for inspecting projects • A system for tracking and accounting for the program, and for reporting to the program sponsor • A process for conducting evaluation, measurement, and verification (EM&V) • Customer support including a call center and online help

PROGRAM	NR3. Commercial Food Service Program											
Staffing Requirements & Job Creation	<p>Program Administration</p> <p>A CFS program requires one program manager and at least two support staff for training, materials development, incentive application verification, and project inspection and verification, for programs with budgets of \$250,000 to \$1 million annually. Typically, one additional administration employee is needed per \$1 million expended by the program.</p> <p>Incentives for CFS programs can also be included as part of an existing C&I Standard Offer Program. This approach has reduced overhead expenses and offers quicker deployment. However, it likely results in fewer equipment installations due to lack of sector-specific education and marketing and it does not offer the same potential for creating lasting change in the demand for energy-efficient products and services in the marketplace, so is best used as a bridge strategy to an eventual full-scale CFS program.</p> <p>Trade Allies</p> <p>Trade allies, such as equipment distributors, dealers, manufacturers, and manufacturer reps will largely be re-trained and re-oriented to focus effort on manufacturing, distributing, and selling energy-efficient equipment, instead of standard equipment.</p> <p>Job Creation</p> <p>Additional jobs will be created through program administration as well as indirect and induced effects such as the additional design and manufacture of new, more energy-efficient equipment and the reduced operating costs of restaurants. The latter effect can be particularly significant as utility costs are a major operating expense for the CFS industry, which operates on slim profit margins.³⁷ In total, expect from 6 to 10 jobs to result per million dollars spent on this program.</p>											
Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p> <p><i>Contractor Technical Training Resources</i></p> <table border="1" data-bbox="332 1213 1406 1381"> <thead> <tr> <th>Content Training Resources</th> <th>Technical Certification Resources</th> <th>Skill Level Required</th> </tr> </thead> <tbody> <tr> <td>ENERGY STAR Sales Training Presentation (Link)</td> <td>N/A</td> <td>Low-Medium</td> </tr> </tbody> </table> <p><i>Program-Specific Training Resources</i></p> <table border="1" data-bbox="475 1472 1263 1644"> <thead> <tr> <th>How long will training take?</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>0.5 - 1 day</td> <td>Expected that 1-2 days of general EE and ENERGY STAR training may also be needed.</td> </tr> </tbody> </table>		Content Training Resources	Technical Certification Resources	Skill Level Required	ENERGY STAR Sales Training Presentation (Link)	N/A	Low-Medium	How long will training take?	Notes	0.5 - 1 day	Expected that 1-2 days of general EE and ENERGY STAR training may also be needed.
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³⁷ National Restaurant Association, 2008. 2007/2008 Restaurant Industry Operations Report, as cited in the National Restaurant Association, 2008 Restaurant Industry Forecast.

PROGRAM	NR3. Commercial Food Service Program																									
Implementation Timeline	This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).																									
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	Task 1: Marketing Program Design																									
	Identify key restaurants, food service franchises and institutions to target																									
	Develop collateral materials for end use customers and food service distributors																									
	Establish recruitment procedures and application processes																									
	Task 2: Marketing Materials Execution and Delivery																									
	Print consumer collateral materials																									
	Identify key trade ally contacts, including distributors, manufacturers and local trade associations. Launch marketing campaign.																									
	Task 3: Participant Recruiting and Training																									
	Provide outreach to food service product distributors																									
	Provide outreach to targeted restaurants, food service franchises or institutions with food service.																									
	Hold group implementation meetings with participating food service suppliers and distributors (review program policies, etc.)																									
	Begin rebate administration.																									
	Task 4: Incentive Application Validation and Processing																									
	Verify all incentive applications for correct measures and eligibility.																									
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PROGRAM **NR3. Commercial Food Service Program**

Illustrative Program Performance

Energy Savings

Energy savings will vary based on the equipment and its use from one participant to the next, and the types of equipment needed varies in the local markets. An illustrative program, run by a large utility in the West, saved about 40 million source Btu per \$1,000 over three years.

Participation and Budget

An illustrative three year participation schedule is shown below for a CFS Program run in a region with 90,000 independent and chain restaurant locations. This example shows an aggressive and well-funded program that was able to reach over 3% of new equipment sales by the third year. Under a less aggressive program, perhaps 1% of new equipment sales could be reached in that time frame.

Illustrative program implementation costs are expected to range from \$1,000 to \$1,500 per piece of equipment. Experience shows that 50-60% of the budget is expected to be spent on incentives and rebates, while 40-50% is spent on program administration, training, marketing, and other costs. An illustrative participation schedule and budget are shown in the table below.

	Year			
	1	2	3	Cumulative
Eligible Equipment	40,000	40,000	40,000	40,000
Participants	675	1,000	1,400	3,075
Participation rate	1.7%	2.5%	3.5%	7.7%
Jobs Created	7	10	12	29
Program Cost \$	\$ 843,750	\$ 1,420,000	\$ 2,044,000	\$ 4,307,750
	Average			
Average Cost per Participant \$	\$ 1,250	\$ 1,420	\$ 1,460	1,400
Jobs per \$1M	8	7	6	7
Per Unit Source MBtu Saved (elec)	23	49	39	39
Per Unit Source MBtu Saved (gas)	10	22	17	17
MBtu Saved	22,000	71,000	79,000	172,000
Source Mbtu saved per \$1,000	26	50	39	40

PROGRAM	NR3. Commercial Food Service Program
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Contractor name and contact information • Measures installed and their anticipated savings • Verification of measure installation for a sample of projects <p>Savings</p> <p>Deemed savings estimates are typically used for CFS programs.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators, and typically focuses on establishing the kW, kWh, and Btu saved by the program through a more rigorous evaluation of the equipment installed, verification of installation and satisfaction with the energy-efficient equipment, and actual usage characteristics and utility consumption of the business. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • ENERGY STAR Commercial Food Service: http://www.energystar.gov/cfs • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits • Consortium for Energy Efficiency Commercial Kitchens Initiative: http://www.cee1.org/com/com-kit/com-kit-main.php3

PROGRAM	NR3. Commercial Food Service Program
Program Characteristics Summary	<p>Commercial Food Service is a good match for stimulus funding, but due to its more complex implementation nature and relatively smaller employment impact, it is a better program in areas with established efficiency infrastructure, experience, and larger budgets. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> <li data-bbox="321 411 1414 674">1. Impact on Jobs. A commercial food service program, because it is primarily based on the purchase of energy-efficient equipment instead of standard efficiency equipment upon the failure of a unit, does not create as many jobs as other rapid deployment programs that require contractors to inspect homes or businesses and install retrofit equipment. Direct employment occurs with the program administrators and implementation contractors. Indirect and induced benefits occur at the participant level, as their energy bills are reduced giving them more operating capital to sustain and grow their business, and for manufacturers and distributors who can make higher profits off of more expensive energy-efficient equipment. <li data-bbox="321 684 1414 947">2. Collaboration and Leverage of Funds. Commercial food service provides an excellent opportunity to leverage EPA/DOE resources for ENERGY STAR qualified products rebated through the program, and to collaborate with utility companies, state and local agencies, and local trade allies and their associations, both local and national. ENERGY STAR provides marketing materials, case studies, a restaurant guidebook, product calculators, and a quarterly newsletter to support program administrators and share best practices. National associations, including NAFEM (the National Association of Food Equipment Manufacturers) and SEFA (Supply & Equipment Foodservice Alliance) host annual conferences that are well-attended by energy efficiency program administrators. <li data-bbox="321 957 1414 1157">3. Significance of Program Savings. On a per-dollar and per-equipment basis, commercial food service provides a lesser impact on energy savings than other programs. However, typical participants such as restaurants, hospitals, and hotels/motels can achieve significant and long-lasting savings for equipment purchases. If funding allows for an aggressive program to be implemented, many participants can achieve significant energy savings by getting incentives on multiple pieces of equipment that they otherwise could not afford. <li data-bbox="321 1167 1414 1398">4. Cost of Savings. Commercial food service is moderately cost-effective compared with other rapid deployment options. Compared with similar programs offering simple cash-back rebates on new equipment, such as a Commercial and Industrial Sector Standard Offer Program this program is a less cost-effective avenue to energy savings. Increased cost-effectiveness comes through reducing overhead while paying incentives for a larger volume of projects. Participation is relatively simple due to the straightforward rebate. Despite being comparatively expensive, experience with this program shows it does exceed the FOA's guidance for 10 MBtu per \$1,000. <li data-bbox="321 1409 1414 1671">5. Sustainability and Market Transformation. Commercial food service is an excellent program for sustainable energy savings and market transformation. Initial rebates that encourage participants to purchase more efficient equipment open the door to understanding the long-term energy savings available to them. The long life of food service equipment ensures that reduced energy costs will persist. Over time, as the food service program grows, a participant could obtain huge energy savings by adopting multiple pieces or complete kitchens full of more efficient equipment. Sustained programs could also persuade restaurant chains to specify energy-efficient products in their franchise agreements resulting in more widespread market transformation.

NR4: Commercial & Industrial (C&I) Custom

PROGRAM	NR4. C&I Custom
Program Summary	<p>A C&I Custom Program supports C&I customers in identifying and implementing site-specific and unique cost-effective energy efficiency opportunities, which often require engineering calculations to determine energy savings. A typical project may involve industrial process efficiency, chillers/boilers, data center efficiency, electric motor retrofits, or projects that otherwise fall outside of the Prescriptive program. The strategy is to minimize market barriers to energy efficiency implementation for C&I customers, which include higher first costs, lack of customer understanding about measure payback, and lack of awareness of energy-efficient technologies.</p> <p>The program provides energy audits, co-funding for feasibility studies, best practices training (sometimes in collaboration with DOE), and calculated (custom) incentives for energy efficiency projects. A feasibility study investigates a proposed energy efficiency project or process improvement. Custom programs co-fund studies up to a maximum percentage or funding cap. Incentive levels vary widely depending on the size and nature of local industries. The program should develop an estimated pre-and post-project Energy Performance Rating using ENERGY STAR's Portfolio Manager (for certain types of commercial buildings). Energy savings per project can be very large, on the order of 100,000 to 200,000 kWh. It is up to participating businesses to implement projects. In some regions, water pumping and treatment represent a large portion of total energy end use. Targeting these end uses for custom projects could result in substantial savings.</p> <p>ENERGY STAR Portfolio Manager can also be used by both program sponsors and participants for tracking progress over time in commercial buildings (monitoring energy efficiency improvements compared to baseline; tracking reductions in greenhouse gas emissions; and monitoring energy cost savings) and verifying and documenting results (to provide a level of transparency and accountability to help demonstrate strategic use of ARRA 2009 funding by generating a Statement of Energy Performance for each building, and summarizing important performance).</p> <p>Key elements of the program include technical support of customer facility owners and managers, comprehensive facility energy audits, and project QA/QC.</p>
Target Market	<p>Custom projects tend to be implemented by businesses with large industrial facilities, but the program should be available to all medium and large commercial, industrial, and institutional customers.</p>
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A standardized process for conducting facility audits • A standardized process for calculating and reporting energy savings to the business owner and to the program • A standardized process for selecting feasibility studies for co-funding • A process for marketing the program to business owners • A process for calculating and disbursing incentives • A process for inspecting projects • A process for ensuring that work performed and contractor business practices meet the quality standards of the program • A system for tracking and accounting for the program, and for reporting to the program sponsor • A process for conducting evaluation, measurement, and verification (EM&V) • Customer support, including a call center and on the program Web site

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Staffing Requirements & Job Creation	<p>Program Administration</p> <p>Depending on the size of the program, a Custom Program requires 3-5 full-time employees. At a minimum, the program requires one manager, and two staff engineers for conducting facility audits, reviewing project documentation, and inspecting projects. As the program grows over time, the need for additional engineers will increase.</p> <p>Participating Contractors</p> <p>Although the program conducts audits, co-funds feasibility studies, reviews project documentation, and inspects projects, it is up to the participant to implement projects. As such, the program does not directly recruit installation contractors. By the end of the second year, you can expect to have about 50 contractors implementing energy efficiency projects for Custom participants per million in program spending, although this is very sensitive to the scale of individual contracting organizations and the size of the market.</p> <p>Job Creation</p> <p>This program helps develop the market for industrial engineers, on-site energy managers, and associated trade allies. Additional jobs will be created in related fields as a result of program spending. In total, expect from 15 to 18 jobs to result per million dollars spent on this program.</p>

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Implementation Timeline	This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).																																																																																																																																																																																																																																																																																																																																																																																																																																												
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PROGRAM	NR4. C&I Custom							
Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p>							
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PROGRAM

NR4. C&I Custom

Illustrative Program Performance

Energy Savings

Energy savings will vary considerably by state/industry. One custom program in the Midwest verified energy savings of about 2,450 Mbtu per participant.

Incentives for custom projects are typically calculated on a per-kW and/or per kWh and/or per Therm basis. See below for examples of incentive calculations for projects carried out by two customers.

Savings estimates for custom projects are sometimes deemed (i.e., for lighting measures), but many are also based on engineering calculations (i.e., process steam, some HVAC measures, etc.).

A	B	C	D	E	F	G	H
Customer	Project	Incentive	Unit	Savings (kW)	Savings (kWh)	Calculated Incentive (C*E)	Total Incentive
1	Lighting upgrades	\$ 480	per kW	3.5	15,300	\$ 1,700	\$ 1,810
	Refrigeration upgrades	\$ 410	per kW	0.3	2,320	\$ 110	
2	HVAC upgrades	\$ 325	per kW	66.2	457,000	\$ 21,500	\$ 81,500
	Lighting upgrades	\$ 480	per kW	125.0	937,000	\$ 60,000	

Participation and Budget

An illustrative three year participation schedule for a C&I Custom Program run in a large Midwestern metropolitan area with a million electric customers is shown in the table below.

Implementation costs can vary widely by state/industry. Illustrative program implementation costs are shown below. A different custom program in the Northeast spends about \$750,000 per year, and acquires about 40 Mbtu/\$1,000.

	Year			
	1	2	3	Cumulative
Population of Eligible C&I Customers	100,000	100,000	100,000	100,000
Participants	48	111	102	261
Participation rate	0.05%	0.11%	0.10%	0.26%
Jobs Created	17	33	31	81
Program Cost	\$ 960,000	\$ 2,220,000	\$ 2,040,000	\$ 5,220,000
				Average
Average Cost per Participant	\$20,000	\$20,000	\$20,000	\$ 20,000
Jobs per \$1M	18	15	15	16
Per Unit Source MBtu Saved (elec)	1,500	1,500	1,500	1,500
Per Unit Source MBtu Saved (gas)	950	950	950	950
MBtu Saved	117,600	271,950	249,900	639,450
Source Mbtu saved per \$1,000	122.5	122.5	122.5	122.5

PROGRAM	NR4. C&I Custom
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant business NAICS code • Participant contact information • Contractor name and contact information • For each project: A unique project ID, measures installed, the project incentive amount, anticipated project savings, pre- and post-project ENERGY STAR Portfolio Manager Energy Performance Rating (for commercial buildings), as well as project audit/verification status and date. <p>Savings</p> <p>Custom (calculated) savings estimates are typically required for Custom energy efficiency projects. In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of facilities, the nature of the energy efficiency improvements installed, usage characteristics of the facility, and whether or not the business owner would have undertaken the projects in the absence of the program. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • DOE Industrial Technologies Program: www1.eere.energy.gov/industry/ • ENERGY STAR Portfolio Manager: www.energystar.gov/benchmark • ENERGY STAR Guidelines for Energy Management: www.energystar.gov/guidelines • ENERGY STAR Building Upgrade Manual: www.energystar.gov/bldgmanual • ENERGY STAR Products page: www.energystar.gov/products • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits

PROGRAM	NR4. C&I Custom
Program Characteristics Summary	<p>C&I Custom is a good match for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. A custom program requires expertise in industrial and energy engineering, so while the actual number of jobs created may not be that large relative to some programs, the jobs do require a high skill level and higher pay (e.g., for conducting industrial energy audits). Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of industrial engineering and energy management. 2. Collaboration and Leverage of Funds. Custom programs provide an excellent opportunity to collaborate with utility companies, state and local agencies, local trade allies and their associations, as well as the industrial engineering and consulting communities. They also offer a great opportunity to collaborate with the US DOE on industrial best practice trainings, and the EPA through the use of ENERGY STAR Portfolio Manager. 3. Significance of Program Savings. Custom programs tend to yield very high energy savings per customer, which translates into real cost savings for participating businesses, making them more competitive on the global market. The custom program helps businesses increase production, make higher quality products, and lower operational costs. 4. Cost of Savings. The lead time for custom projects can be long, causing the program, especially in its first years, to expend considerable resources before realizing significant savings. But because of the scale of most projects, custom programs also tend to be very cost-effective, reaching upwards of 100 Mbtu per \$1000. Industrial customers also tend to constitute a large share of system peak load; therefore, the avoided capacity benefits of custom programs are also large. 5. Sustainability and Market Transformation. Custom programs work with the largest energy users in the country to not only install projects that yield substantial energy savings, but fundamentally change the way the industry views energy by conducting energy audits, co-funding feasibility studies, and training businesses in best practices.

NR5: Non-Residential Benchmarking and Performance

PROGRAM	NR5. Non-Residential Benchmarking and Performance
Program Summary	<p>This program works with commercial facility operations staff and owners to benchmark and monitor building energy performance using tools such as ENERGY STAR Portfolio Manager and building sub-metering equipment, as well as to recommend energy efficiency upgrades based on analyses of building performance data.</p> <p>Commercial Benchmarking and Performance (CBP) involves eight technical and educational services to achieve savings:</p> <ol style="list-style-type: none"> 1. Collection of key facility operational characteristics and contacts 2. Ongoing collection of interval energy consumption, sub-metering, data logging, and activity or output metrics as appropriate to the facility. The extent of metering equipment installed depends on the program's budget; however, all CBP programs can use tools such as ENERGY STAR Portfolio Manager to identify under-performing buildings to target for energy efficiency improvements, and establish baselines to set goals and measure progress for energy efficiency improvement projects over time. 3. Development of building performance metrics 4. Ongoing calculation and updating of metrics 5. Communication of metrics to participants 6. Identification of building system drift (from optimal performance) and alerts (to participants) where appropriate 7. Analysis of facility performance and root cause assessment and communication 8. Recommendations for energy efficiency upgrades based on analysis and root cause assessment <p>Tools such as ENERGY STAR Portfolio Manager can be used to provide a level of transparency and accountability to help demonstrate strategic use of ARRA 2009 funding by generating a Statement of Energy Performance (SEP) for each building, and summarizing important performance indicators, including energy use intensity and greenhouse gas emissions associated with building energy use.</p> <p>When the program pulls out, facility staff should be able to continue competently conducting building benchmarking, monitoring, analysis, and performance upgrades on their own.</p>
Target Market	<p>This program is open to all commercial customers that meet certain criteria. Such criteria may include:</p> <ul style="list-style-type: none"> • A size minimum (though priority should be given to businesses with facilities that have high energy use intensities). • The facility must be free of major problems requiring costly repairs or replacements and have no planned major system renovations or retrofits. • The facility must have accessible and up-to-date building documentation and records.

PROGRAM	NR5. Non-Residential Benchmarking and Performance
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A process for estimating facility baselines • A process for selecting and installing the appropriate metering equipment (if using) • A process for developing building performance benchmarks • A standardized process for alerting participants and program staff when a building system drifts (from optimal performance) • A standardized process for transmitting and tracking interval meter data (if available through sub-metering) • A standardized process for reporting building performance on a monthly, quarterly and annual basis to the program sponsor • A process for marketing the program to business owners and building managers • A process for calculating and disbursing incentives • A process for transitioning program services to participants • A process for conducting evaluation, measurement, and verification (EM&V)
Staffing Requirements	<p>Program Administration</p> <p>Depending on the size of the program, CBP requires 2-4 full-time employees. At a minimum, the program requires one manager (an individual with significant building performance and/or building sub-metering experience), and a staff engineer. Building operator education is essential to this program's success, so program staff will spend a significant amount of time with participants reviewing data, and recommending efficiency improvements based on data analysis. As the program grows over time, the need for additional engineers will increase.</p> <p>Participating Contractors</p> <p>If the CBP program sponsor opts to use building sub-metering equipment, the program will need to select at least one metering equipment provider/company to assist with meter installation, interval data storage, reporting, and analysis.</p> <p>Job Creation</p> <p>This program helps develop the market for building performance specialists, metering equipment, building operators and managers, and installation contractors. Additional jobs will be created in related fields as a result of program spending. In total, expect from 5 to 15 jobs to result per million dollars spent on this program.</p>

PROGRAM	NR5. Non-Residential Benchmarking and Performance
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Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p> <p><i>Contractor Technical Training Resources</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Content Training Resources</th> <th style="width: 33%;">Technical Certification Resources</th> <th style="width: 33%;">Skill Level Required</th> </tr> </thead> <tbody> <tr> <td> ENERGY STAR Portfolio Manager: 1. Live Training webinars (Link) 2. Pre-recorded Sessions (Link) 3. Benchmarking Starter Kit (Link) Building Owners and Managers Association (BOMA) and the BOMA Energy Efficiency Program (BEEP) offer trainings through local chapters and online trainings. (Link) </td> <td> Building Operator Certification Trainings and Certifications (Link) Certified Energy Manager Trainings and Certification (Link) Professional Engineer's License (Link) LEED Accredited Professional (Link) </td> <td style="text-align: center; vertical-align: middle;">Medium</td> </tr> </tbody> </table> <p><i>Program-Specific Training Resources</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">How long will training take?</th> <th style="width: 50%;">Notes</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1-3 days</td> <td>Training focuses on use of the Portfolio Manager tool.</td> </tr> </tbody> </table>	Content Training Resources	Technical Certification Resources	Skill Level Required	ENERGY STAR Portfolio Manager: 1. Live Training webinars (Link) 2. Pre-recorded Sessions (Link) 3. Benchmarking Starter Kit (Link) Building Owners and Managers Association (BOMA) and the BOMA Energy Efficiency Program (BEEP) offer trainings through local chapters and online trainings. (Link)	Building Operator Certification Trainings and Certifications (Link) Certified Energy Manager Trainings and Certification (Link) Professional Engineer's License (Link) LEED Accredited Professional (Link)	Medium	How long will training take?	Notes	1-3 days	Training focuses on use of the Portfolio Manager tool.
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PROGRAM

NR5. Non-Residential Benchmarking and Performance

Implementation Timeline

This ramp-up schedule is sensitive to the availability of building metering/sub-metering providers (and to whether the program opts to use sub-meters). An illustrative CBP program ramp-up schedule is shown below. This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Marketing Program Design												
Task 2: Marketing Materials Execution and Delivery												
Print consumer collateral materials												
Select a pilot market to test recruitment, participation in Portfolio Manager training sessions, application and incentive levels (if incentives are included).												
Launch marketing campaign												
Task 3: Participant Recruiting, Training, and Pilot Phase												
Provide outreach to trade ally's who provide benchmarking services. Provide outreach to targeted business owners and operators.												
Promote online ENERGY STAR Benchmarking training sessions for staff, trade ally's and customers. Strategic Energy Management/Action Plan Development; provide education and guidance to program participants and service providers on the value of an integrated approach to improving building performance.												
Task 4: Trade Ally Training and Account Management												
Hold training meetings with trade ally's who perform technical and marketing services to businesses.												
Task 5: Incentive Application Validation and Processing												
Perform incentive verification or PE Certification, if applicable.												
Task 6: Tracking Database Design and Set Up												
Customize Program Database												
Implement participation tracking												
Task 7: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan												
Implement quality assurance protocols												
Task 8: Program Management and Administration												
Monthly meetings with Program Manager, staff												
Monthly progress reports												
Final year-end report												
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

PROGRAM	NR5. Non-Residential Benchmarking and Performance
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Illustrative Program Performance

Savings

Energy savings of existing CBP programs vary widely (depending largely on facility type, size, and baseline efficiency, and whether or not gas savings are verified), but generally CBP savings tend to be in the range of 1,000-3,000 Mbtu per participant.

Participation and Budget

A moderately aggressive CBP program could reach about 0.5% of eligible facilities after three years. An illustrative three year participation schedule is shown below. Under a non-aggressive scenario, participation after three years may be closer to 0.25%.

CBP program costs vary widely depending on whether the program sponsor has sufficient budget to sub-meter facilities, and the extent of sub-metering implemented. The illustrative CBP program implementation costs shown below contain the minimum per participant cost required if the program uses sub-metering equipment; more extensive sub-metering, along with associated analysis and support services from a sub-metering contractor, can cost upwards of \$90,000-100,000 per participant. If the program opts to not use sub-metering equipment, per participant costs are closer to \$20,000-25,000.

	Year			
	1	2	3	Cumulative
Population of Eligible C&I Customers	20,000	20,000	20,000	20,000
Participants	20	30	40	90
Participation rate	0.10%	0.15%	0.20%	0.45%
MBtu Saved	45,000	87,000	132,000	260,550
Program Cost	\$ 800,000	\$ 1,200,000	\$ 1,600,000	\$ 3,600,000
				Average
Average Cost per Participant	\$40,000	\$40,000	\$40,000	\$ 40,000
Jobs per \$1M	15	11	11	12
Jobs Created	12	13	18	43
Per Unit Source MBtu Saved (elec)	2,000	2,500	2,750	2,475
Per Unit Source MBtu Saved (gas)	250	400	550	420
Source Mbtu saved per \$1,000	56	73	83	72

PROGRAM	NR5. Non-Residential Benchmarking and Performance
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant business NAICS code • Participant contact information; facility baseline energy consumption • Pre- and post-project ENERGY STAR Energy Performance Rating • For each project completed: A unique project ID, contractor name and contact information, measures installed, the project incentive amount and anticipated project savings <p>Savings</p> <p>Custom (calculated) savings estimates are typically used for this type of program.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of commissioned facilities, the nature of the energy efficiency improvements installed, usage characteristics of the facility, and whether or not the business owner would have undertaken the projects in the absence of the program. Evaluators can use the interval data and facility data collected by the program to estimate building baselines and energy savings. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources and Assistance	<ul style="list-style-type: none"> • ENERGY STAR Portfolio Manager: www.energystar.gov/benchmark • ENERGY STAR Guidelines for Energy Management: www.energystar.gov/guidelines • ENERGY STAR Building Upgrade Manual: www.energystar.gov/bldgmanual • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits • Building Operator Certification: http://www.theboc.info • BOMA Building Energy Efficiency Program: www.BOMA.org/BEEP • Green Globes Certification: www.greenglobes.com

PROGRAM	NR5. Non-Residential Benchmarking and Performance
Program Characteristics Summary	<p>CBP is a good match for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. The CBP program requires expertise in building performance and building sub-metering—these jobs require a higher level of skill and pay than is required for some programs. Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of building science, facility management, building metering and energy efficiency. 2. Collaboration and Leverage of Funds. CBP is also an excellent opportunity to collaborate with the EPA/DOE through the use of its Building Portfolio Manager, and with utility companies, state and local agencies, and local commercial building contractors. 3. Significance of Program Savings. CBP programs tend to yield high energy savings per customer, which translates into real cost savings for participating businesses. Lowering operational costs increases profit; this can be reinvested in additional energy saving opportunities, including human resources. 4. Cost of Savings. CBP results in very cost effective savings, but may require significant upfront investment in both equipment and personnel required to carry-out building sub-metering, system benchmarking and facility owner and operator education. However, these expenses are also the key drivers of the program's strong performance relative to job creation, quality, and accountability. The program is very cost-effective because it takes a whole-facility approach to reducing energy use, and sustains savings by training building owners and operators to maintain optimal building performance after the program has pulled out. 5. Sustainability and Market Transformation. CBP helps create sustained energy savings because it goes well beyond reducing prices on efficient equipment. The program works closely with building owners and operators to optimize building performance by teaching them how to analyze and respond to building energy performance data. Buildings that undergo the CBP process not only have efficient equipment, but efficient equipment that runs optimally over the long haul.

NR6: Non-Residential On-Site Energy Manager

PROGRAM	NR6. Non-Residential On-Site Energy Manager
Program Summary	<p>This program assists businesses by hiring and training an On-Site Energy Manager (OEM) to work with them for a six month period. During their tenure with a business, the OEM will evaluate facilities' energy use and work with maintenance staff to reduce energy usage and costs. Long-term energy and cost savings of 10 to 15 percent are achievable, largely through behavioral changes. ENERGY STAR recommends a seven-step process for instituting efficient energy management:</p> <ul style="list-style-type: none"> • STEP 1: Make Commitment • STEP 2: Assess Performance • STEP 3: Set Goals • STEP 4: Create Action Plan • STEP 5: Implement Action Plan • STEP 6: Evaluate Progress • STEP 7: Recognize Achievements <p>Incentives for businesses can include a sign-up bonus grant (a % of the OEM's salary), performance based incentives (for achieving savings targets), free energy resource accounting software, and ongoing OEM training and technical support.</p>
Target Market	<p>A typical participant is a business with a large facility portfolio (1+ million square feet of conditioned space), though priority should be granted to businesses with facilities that have high energy use intensities.</p>
Infrastructure Requirements	<p>The primary infrastructure required to deliver this program includes:</p> <ul style="list-style-type: none"> • A process for screening applicants • A process for hiring and training OEMs • A standardized energy management process or manual for OEMs to implement • A standardized process for reporting building performance • A process for marketing the program to business owners and building managers • A process for calculating and disbursing incentives • A process for conducting evaluation, measurement, and verification (EM&V)
Staffing Requirements	<p>Program Administration</p> <p>This program requires, at a minimum, one manager and a staff building energy engineer. As the program grows over time, the need for additional engineers will increase.</p> <p>Participating Contractors</p> <p>This program requires one full time OEM per participant for a 6 month interval. If you have 40 participants in your first program year, for example, you will need at least 20 OEMS (assuming the OEM will work with 2 participants per year).</p> <p>Job Creation</p> <p>This program helps build the market for energy managers, building operators and managers, and installation contractors. Additional jobs will be created in related fields as a result of program spending. In total, expect from 5 to 11 jobs to result per million dollars spent on this program.</p>

PROGRAM	NR6. Non-Residential On-Site Energy Manager							
Contractor Training Needs and Resources	<p>There are two types of contractor training required. The first involves technical skill sets and training required by contractors to perform program services. The second is program specific training; that is, training carried out by the program administrator and/or third party implementation contractor on program policies and procedures. Sometimes, program-specific training also involves technical training.</p> <p><i>Contractor Technical Training Resources</i></p>							
	<table border="1"> <thead> <tr> <th data-bbox="342 401 727 527">Content Training Resources</th> <th data-bbox="727 401 1084 527">Technical Certification Resources</th> <th data-bbox="1084 401 1466 527">Skill Level Required</th> </tr> </thead> <tbody> <tr> <td data-bbox="342 527 727 716"> Example Program – Puget Sound Energy's Conservation Resource Manager (Link) ENERGY STAR Guidelines for Energy Management (Link) </td> <td data-bbox="727 527 1084 716"> Building Operator Certification Trainings and Certifications (Link) Certified Energy Manager Trainings and Certification (Link) </td> <td data-bbox="1084 527 1466 716" style="text-align: center;">Medium-High</td> </tr> </tbody> </table>	Content Training Resources	Technical Certification Resources	Skill Level Required	Example Program – Puget Sound Energy's Conservation Resource Manager (Link) ENERGY STAR Guidelines for Energy Management (Link)	Building Operator Certification Trainings and Certifications (Link) Certified Energy Manager Trainings and Certification (Link)	Medium-High	
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PROGRAM **NR6. Non-Residential On-Site Energy Manager**

Implementation Timeline This program can be ramped up quickly and scaled appropriately to available funding levels. The table below illustrates typical activities and associated timeframes. It does not include time that may be needed to hire implementation contractors (typically four to seven months).

Activity	Months in Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Design Marketing Materials												
Develop collateral materials for business owners and managers												
Develop program Web site												
Task 2: Marketing Materials Execution and Delivery												
Print collateral material												
Outreach to business owners and managers												
Conduct PR / Media Effort												
Task 3: Participant Recruiting, Training, and Support												
Recruit On-Site Energy Managers (OEMs)												
Train OEMs												
Task 4: Incentive Application Calculation and Processing												
Calculate incentives and disperse for each project												
Task 5: Program Hotline Support												
Provide C&I Program resources to Hotline												
Develop complaint resolution process/plan												
Provide call service for customer questions and scheduling appointments												
Task 6: Tracking Database Design and Set Up												
Determine what database needs are												
Customize Program Database												
Report to Program Sponsor (as requested)												
Task 7: Quality Assurance & Quality Control (QA/QC)												
Develop quality assurance plan												
Inspect projects / EM&V												
Implement quality assurance protocols												
Task 8: Program Management, Administration, and Support												
Monthly meetings with Program Manager, staff												
Monthly progress reports												
Final year-end report												
Task 9: Evaluation, Measurement & Verification (EM&V)												
Develop EM&V protocols												
Implement EM&V protocols												

PROGRAM	NR6. Non-Residential On-Site Energy Manager																																																																				
Illustrative Program Performance	Savings																																																																				
	Energy savings of existing OEM programs vary widely depending largely on facility type, size, and baseline efficiency, and other factors, but are generally in the range of 10-15% (of annual energy).																																																																				
	Participation and Budget																																																																				
	An aggressive OEM program could reach about 0.5% of eligible facilities after three years. An illustrative three year participation schedule is shown below. Under a non-aggressive scenario, participation after three years may be closer to 0.1%.																																																																				
	Illustrative OEM program implementation costs are shown below. Per participant costs are high because of the OEM income assistance provided by the program.																																																																				
	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="4">Year</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>Cumulative</th> </tr> </thead> <tbody> <tr> <td>Population of Eligible C&I Customers</td> <td>20,000</td> <td>20,000</td> <td>20,000</td> <td>20,000</td> </tr> <tr> <td>Participants</td> <td>20</td> <td>40</td> <td>45</td> <td>105</td> </tr> <tr> <td>Participation rate</td> <td>0.10%</td> <td>0.20%</td> <td>0.23%</td> <td>0.53%</td> </tr> <tr> <td>MBtu Saved</td> <td>90,000</td> <td>180,000</td> <td>202,500</td> <td>472,500</td> </tr> <tr> <td>Program Cost</td> <td>\$ 1,000,000</td> <td>\$ 1,920,000</td> <td>\$ 2,081,250</td> <td>\$ 5,001,250</td> </tr> <tr> <td colspan="4"></td> <td>Average</td> </tr> <tr> <td>Average Cost per Participant</td> <td>\$50,000</td> <td>\$48,000</td> <td>\$46,250</td> <td>\$ 47,600</td> </tr> <tr> <td>Jobs per \$1M</td> <td>11</td> <td>9</td> <td>5</td> <td>8</td> </tr> <tr> <td>Jobs Created</td> <td>11</td> <td>17</td> <td>10</td> <td>39</td> </tr> <tr> <td>Per Unit Source MBtu Saved</td> <td>4,500</td> <td>4,500</td> <td>4,500</td> <td>4,500</td> </tr> <tr> <td>Source Mbtu saved per \$1,000</td> <td>90</td> <td>94</td> <td>97</td> <td>94.5</td> </tr> </tbody> </table>						Year				1	2	3	Cumulative	Population of Eligible C&I Customers	20,000	20,000	20,000	20,000	Participants	20	40	45	105	Participation rate	0.10%	0.20%	0.23%	0.53%	MBtu Saved	90,000	180,000	202,500	472,500	Program Cost	\$ 1,000,000	\$ 1,920,000	\$ 2,081,250	\$ 5,001,250					Average	Average Cost per Participant	\$50,000	\$48,000	\$46,250	\$ 47,600	Jobs per \$1M	11	9	5	8	Jobs Created	11	17	10	39	Per Unit Source MBtu Saved	4,500	4,500	4,500	4,500	Source Mbtu saved per \$1,000	90	94	97	94.5
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PROGRAM	NR6. Non-Residential On-Site Energy Manager
EM&V	<p>Program Tracking Recommendations</p> <p>The following list includes items typically contained in a program tracking database for this kind of program.</p> <ul style="list-style-type: none"> • Unique participant ID • Participant business NAICS code • Participant contact information • On-Site Energy Manager name • Facility baseline energy consumption • For any projects completed: Unique project ID, contractor name and contact information, measures installed, the project incentive amount and anticipated project savings <p>Savings</p> <p>Custom (calculated) savings estimates are typically used for this type of program.</p> <p>In some cases, additional measurement and verification may be required by the program sponsor or regulators and typically focuses on establishing the kW, kWh, and Btu saved by the program through an evaluation of the existing baseline conditions of a sample of participant facilities, the nature of the energy efficiency improvements installed, usage characteristics of the facility, and whether or not the business owner would have undertaken behavioral changes in the absence of the program. Evaluators can use the interval data and facility data collected by the program to estimate building baselines and energy savings. Methods used vary widely based upon the need for precision in the estimates and the perspective of the program sponsor or regulators. In general, EM&V costs range between 1% and 8% of the overall program budget, and are most typically around 3-4%.</p>
Resources & Assistance	<ul style="list-style-type: none"> • ENERGY STAR Guidelines for Energy Management: www.energystar.gov/guidelines • Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits

PROGRAM	NR6. Non-Residential On-Site Energy Manager
<p>Program Characteristics Summary</p>	<p>OEM is a strong candidate for stimulus funding. Its characteristics relative to the key criteria identified previously include:</p> <ol style="list-style-type: none"> 1. Impact on Jobs. The OEM program requires expertise in building energy management; these jobs require a higher level of skill and pay than is required for some programs. Further, these jobs often entail skills that prepare the employee for a broad range of potential future opportunities in the fields of building science, facility management, and energy efficiency. 2. Collaboration and Leverage of Funds. OEM provides an excellent opportunity to collaborate with utility companies, state and local agencies, and local commercial energy managers. OEM is also a strong opportunity to leverage EPA's expert resources in energy management. 3. Significance of Program Savings. OEM programs tend to yield very high energy savings per customer, which translates into real cost savings for participating businesses. Lowering operational costs increases profit; this can be reinvested in additional energy saving opportunities, including human resources. 4. Cost of Savings. OEM is an expensive program because it places a full time employee on each job site. However, this expense is the key driver of the program's strong performance relative to job creation, quality, and accountability. The program is very cost-effective because it takes a whole-facility approach to reducing energy use, and sustains savings by training building owners and operators to maintain optimal building performance after the program has pulled out. 5. Sustainability and Market Transformation. OEM helps create sustained energy savings because it goes well beyond reducing prices on efficient equipment. The program works closely with building owners and operators to optimize building performance, creating lasting savings, and transforming the market from the inside-out.

5-B: Marketing Strategies & Tactics for Non-Residential Programs

Non-residential programs are largely contractor and supplier driven, so mass media is generally not as important as it is with residential initiatives, although advertisements in trade publications and attendance at trade events can be effective.

Both residential and non-residential programs should leverage the activities and influence of local and state sector-based associations. For example, a C&I Prescriptive or Custom program might work with organizations such as school business officials, chambers of commerce, local hospitality associations to reach restaurants and hotels, and the hospital engineers' chapter (to reach the health care sector) in order to effectively disseminate information about program offerings and benefits. Working within these existing channels not only helps maximize effective use of marketing dollars, but fosters market transformation by influencing the market actors that are already well established in the community and state.

Marketing Plan Templates

These marketing plan templates provide examples of how to effectively promote the various types of RDEE Programs. Included below are templates for:

- Prescriptive Programs
- Retrocommissioning (RCx) Programs
- Commercial Food Service
- Benchmarking and Performance

Many of the strategies and tactics included in these templates apply across program types. For example, much of the Non-Residential Prescriptive marketing plan template is applicable to a wide variety of commercial and industrial program promotion efforts where both business owners and contractors need to be influenced. Program managers can work from these templates as a framework for developing their own marketing plans, or, if the program administrator is in the process of selecting an implementation contractor through an RFP process, for helping screen the quality of the prospective contractors' own marketing plans.

5-B-1: Marketing Plan Template: Non-Residential Prescriptive Program

Preliminary Considerations

To develop an effective marketing plan for a Non-Residential Prescriptive Program, program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort?
- What are the key motivators?
- What are the competing priorities that are facing the target audience?
- What message(s) will the marketing effort deliver to the target audience?
- What marketing tactics will be most-effective in reaching the target audience with the defined messages?
- How will the results of the marketing effort be measured?

Defining the Target Audience

Experience has proven that successful programs must reach and engage commercial, industrial, and institutional customers. In fact, this group often offers the largest opportunity for energy savings, including significant prospects for projects that result in quick payback and energy savings.

The primary target audience for this plan includes decision makers within each target sector of the commercial and industrial (C&I) community (e.g., retail, hospitality, industrial, office, warehouse/storage, education). These include:

- Large Commercial Decision Makers (CEOs, CFOs, COOs, etc.)
- Purchasing Managers Facility Managers
- C-Suite Executives

In addition, there are organizations and individuals that can help to identify, reach, inform, educate, and/or engage these decision makers. These could include:

- Industry-specific trade associations
- Non-governmental organizations
- Contractors
- Distributors
- Architects, Designers, and Builders
- State and local governments
- Unions
- Small Business Associations
- Chambers of Commerce

Defining the Key Motivations and Messages

Prescriptive programs encourage non-residential customers to upgrade or retrofit working equipment with new, energy-efficient equipment. This program has been run cost-effectively in nearly every region of the country, and provides an opportunity to quickly deploy energy-efficient technologies into a state's businesses, industries, and schools.

Focusing on easy opportunities to produce verifiable energy savings—such as lighting upgrades from T12 to T8 linear fluorescent lamps, efficient HVAC equipment, and products like motors and refrigerators—this program will provide a simple, expedited solution for non-residential customers to save energy. The majority of incentives are geared towards customers who are in the market for new equipment when their old equipment burns out, though various incentives (e.g., quick payback periods, rebates, etc.) can help to encourage early replacement of inefficient equipment (retrofit opportunities).

Keeping these issues in mind, key messages include:

- Prescriptive programs offer a variety of opportunities for energy efficiency improvements, retrofits, modernization, new construction, and purchases.
- These programs do not require significant upfront cost and provide qualified contractors without having to search.
- Training and program resources can help grow business and enhance a reputation for delivering quality equipment in a service area.
- End-users are increasingly concerned about reducing their energy costs and negative impact on the environment.
- Incentives and rebates will make products more affordable.

Selecting Marketing Tactics

A variety of marketing tactics will be necessary to reach C&I target audiences. Marketing plans should include a combination of several tactics to create a comprehensive, multi-faceted strategic approach to engage contractors, service providers, manufacturers, distributors, retailers, and end-users, such as:

- Direct Marketing (inserts in business publications, co-op inserts);
- Web Site and Online Advertising (Search Engine Optimization, Google Key Words, banner ads on relevant Web sites);
- E-Marketing (program email updates, newsletter and special offers);
- Print (trade publications);
- Trade shows and other community business events;
- Public relations and other earned media.
- Retail Promotion or Point of Purchase (signage at distributor and retail sites to reach both contractors and customers)

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Increased sales of new efficient equipment and associated savings;
- Increased servicing of existing commercial equipment and associated savings;
- Number of distributors/retailers engaged in the program and the number of their customers they serve;
- Demonstrated increase in consumer awareness of the ENERGY STAR brand;
- Traffic to program Web site;
- Retailer and end-user satisfaction (e.g., tracked via surveys, comment cards).

Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate the public about commercial energy users. These materials are available at:

http://www.energystar.gov/index.cfm?c=partners.pt_index.

- *ENERGY STAR Logos* – can be used in a variety of promotional materials for distribution, also provides brand recognition to the program.
- *Publications* – a library of all ENERGY STAR published materials with information about products, safety and saving tips, and other ways to improve efficiency.
- *Training Center* - serves as a resource for partners looking to improve their sales effectiveness. Find tools and information to help convey to the staff, customers, or business partners how ENERGY STAR can help them protect the environment while saving energy and money.
- *National Awareness and Marketing Campaigns* – provides background on other initiatives and branding taking place with ENERGY STAR.
- *Equipment fact sheets, forms and specification sheets* – detailed technical data about individual equipment.

5-B-2: Marketing Plan Template: Non-Residential Retrocommissioning (RCx) Program

Preliminary Considerations

To develop an effective marketing plan for Non-Residential Retrocommissioning (RCx) program, program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort? Are there multiple levels of audiences?
- What are the key motivators for the target audience(s)?
- What message(s) will the marketing effort deliver to the target audience(s)?
- What marketing tactics will be most effective in reaching the target audience(s) with the defined messages?
- How will the results of the marketing effort be measured?
- What are the competing priorities that are facing the target audience(s)?
- What opportunities exist to market retrocommissioning services with other programs, such as prescriptive programs and custom programs, to provide a full package of services to the C&I audience?

Defining the Target Audience

The best candidates for RCx are typically large facilities or those with high energy use per square foot. For RCx to be successful, the facility owner/operator should be ready to commit to active involvement in the RCx process as well as to carry out the recommended measures. Therefore, marketing should focus on decision-makers within the C&I community. One way to reach these decision-makers is through key influencers from trade associations and NGOs who have direct access to the power players for clients.

Defining the Key Motivations and Messages

RCx marketing should address issues that facility owners and managers are likely to face, such as high energy costs and tenant complaints. Key messages for the RCx target audience include:

- Typical energy savings can range from 5% to 15% without significant capital investment and can provide paybacks in less than two years
- RCx improves occupant comfort and reduces complaints
- RCx can eliminate building “hot” or “cold” spots
- RCx can reduce maintenance and repair costs and extend equipment service life

Selecting Marketing Tactics

A variety of marketing tactics can be used to reach C&I target audiences. Energy service providers can play an important role in reaching their customers (i.e., end users) for this program. Marketing plans should include a combination of several tactics to create a comprehensive multi-level strategy to engage both service providers and end-users.

Energy service providers (contractors, distributors, etc.) are essential to the marketing of a retrocommissioning program. Providing materials to and enabling these service providers

through training and knowledge of the programs can have a huge impact on the success. It is essential to offer service providers a variety of materials, with both an informative and persuasive slant, to cover all potential inquiries.

The following tactics have the objective of increasing end-user demand for energy-efficient C&I products and services:

- Direct Marketing (inserts in business publications, co-op inserts)
- Web Site and Online Advertising (Search Engine Optimization, Google Key Words, banner ads on relevant Web sites)
- E-Marketing (program email updates, newsletter and special offers)
- Print (trade publications)
- Trade shows and other community business events
- Public relations and other earned media

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Increased upgrades of current equipment to more efficient equipment and associated resulting savings
- Number of distributors/retailers engaged in the program and the number of their customers they serve
- Traffic to program Web site
- Retailer and end-user satisfaction – e.g., tracked via surveys, comment cards


Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate the public about commercial energy users. These materials are available at:

http://www.energystar.gov/index.cfm?c=partners.pt_index.

- *ENERGY STAR Logos* – can be used in a variety of promotional materials for distribution, and also provides brand recognition to the program.
- *Publications* – a library of all ENERGY STAR published materials with information about products, safety and saving tips, and other ways to improve efficiency.
- *Training Center* – serves as a resource for partners looking to improve their sales effectiveness. Find tools and information to help convey to staff, customers, or business partners how ENERGY STAR can help them protect the environment while saving energy and money.

- 
- National Awareness and Marketing Campaigns – provides background on other initiatives and branding taking place with ENERGY STAR.
 - Equipment fact sheets, forms and specification sheets – detailed technical data about individual equipment.

5-B-3: Marketing Plan Template: Commercial Food Service

Preliminary Considerations

To develop an effective marketing plan for Commercial Food Service (CFS), program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort?
- What are the key motivators for the target audience?
- What message(s) will the marketing effort deliver to the target audience?
- What marketing tactics will be most-effective in reaching the target audience with the defined messages?
- How will the results of the marketing effort be measured?
- Who are the largest (based on energy use) potential customers in the area?
- Who are the largest area CFS dealers, and which distributors and manufacturers serve them?

Defining the Target Audience

Successful programs must reach and engage food service equipment distributors and dealers who serve as the access points for delivery of products to restaurants, schools, hotels, and hospitals. In addition to their ability to reach end-user target audiences, they are also in a position to encourage manufacturers to provide energy-efficient equipment.

Distributors and dealers likely to be most receptive to energy-efficient Commercial Food Service products and incentives include those whose customers (end-users):

- Are purchasing new equipment as part of replacing existing equipment or improving their current restaurant/hotel/hospital or have local end-users who would benefit from a tune-up on their current system;
- Are opening new facilities that require commercial food service equipment;
- Consume higher than average amounts of energy;
- Are required to use products that meet minimum efficiency requirements;
- Live in areas with high utility rates or areas that recently experienced rate increases; or
- Are interested in energy efficiency and want to work in a “greener” environment.

Reaching out to the end-users is also a key to success. Restaurant chains, hotel chains, and school districts are among those often considered as primary targets for direct outreach. Influencing their purchasing decisions (and requirements) and standards for equipment replacement can result in a large number of energy-efficient installations over the long term. In addition, increased customer demand will ensure that manufacturers, dealers, and distributors offer more new energy-efficient equipment.

Defining the Key Motivations and Messages

A good Commercial Food Service (CFS) program offers rebates for energy-efficient commercial food service equipment such as refrigerators, freezers, steamers, fryers, hot food holding

cabinets, ice machines, dishwashers, ovens, and other technologies, primarily aiming to influence the buyer to purchase more efficient equipment when their existing equipment has failed.

The existing ENERGY STAR specifications should be utilized to denote efficient equipment that would be eligible for rebates, and will help with marketing the product to the supply chain and the end-users. States with advanced codes for some equipment types may also wish to offer incentives at Consortium for Energy Efficiency (CEE) levels. The food service network is complicated, consisting of manufacturers, manufacturers reps, dealers, dealer reps, equipment stores, and often cash-strapped end-users including restaurants, schools, hotels and motels, and hospitals. The network varies locally and regionally.

Given today's sensitivity to increasing expenditures, many end-users believe that they can best maximize profit by increasing prices or eliminating staff rather than through maximizing their energy usage and stretching their electric dollar. Even end-users who genuinely want to focus on the environment or efficiency may operate from the fundamental belief that the majority of consumers are not interested in the processes that produced their meals, leading them to simply conclude that "going the extra mile" provides them with no tangible competitive benefit.

Keeping these issues in mind, key messages for distributors include:

- Buildings with restaurants and other food service operations are very energy intensive, consuming roughly 2.5 times the energy per square foot as other commercial buildings, or close to 250,000 British thermal units (Btu) of energy per square foot.
- As much as 80 percent of the food service sector's \$10 billion annual energy bill is expended on energy that does no useful work and a substantial portion of this waste is related to equipment inefficiencies.
- Training and program resources will help grow the business and reputation for delivering quality equipment in the service area.
- End-users are increasingly concerned about reducing their energy costs and negative impact on the environment.
- Incentives and rebates will make products more affordable to the clients.

End-users' desire for energy-efficient equipment will create the market pull that demonstrates to the CFS industry that selling efficiency makes business sense. Many end-users lack information about the efficiency of their equipment in general, leading them to view new equipment upgrades and purchases as an "extravagance" that can be unnecessary to their current kitchen setup. They assume that most equipment is installed and serviced relatively equally, and therefore tend to shop for the lowest initial price rather than consider the long-term total cost of ownership and operation. This misperception can be reinforced in the marketplace by less skilled, less astute distributors who sell on the basis of lowest price and convenience rather than high quality. And so many consumers do not demand energy-efficient CFS equipment, quality installations or properly performed system tune-ups.

Keeping these issues in mind, key messages for dealers include:

- In any season, high efficiency CFS equipment can help their customers' lower usage and manage utility costs.

- Energy consumption in a typical food service facility is approximately 30 percent for cooking and 20 percent for refrigeration – approximately 50 percent of the energy consumed in a typical food service facility. The total savings potential from a more efficient commercial kitchen can vary from 10-30 percent, depending upon the technologies installed³⁸.
- When selling new equipment, make sure to provide a quality installation. Make sure the representatives can do the right job.
- Proper maintenance can go a long way in preventing future CFS system problems.
- Rebates are available to offset upfront costs and customers will save energy each month with more efficient products.

Selecting Marketing Tactics

A variety of marketing tactics can be used to reach CFS target audiences. Marketing plans should include a combination of several of these to create a comprehensive multi-media strategy to engage both distributors and end-users.

The following tactics have the objective of recruiting distributors:

- Distributor Recruitment Packet (guidance and support documents and materials);
- Program Resource Kit (guides, reporting forms, training materials, marketing support materials, messaging, technical specifications, etc);
- Marketing Tools (door hangers, rebate forms, van magnets, email template, newsletter articles, online banner ad);
- Program Web Site;
- Local Distributor/Retailer Trainings and Information Sessions;
- Direct Marketing (targeted mail; print, online or radio advertising).

The following tactics have the objective of increasing end-user demand for energy-efficient CFS products and services:

- Direct Marketing (inserts in community newspapers, co-op inserts);
- Web Site and Online Advertising (Search Engine Optimization, Google Key Words, banner ads on relevant Web sites);
- E-Marketing (program email updates, newsletter and special offers);
- Retail Promotion or Point of Purchase (signage at retail);
- Print (trade publication advertising);
- Trade shows and other community events;
- Public relations and other earned media.

³⁸ Consortium for Energy Efficiency, *Commercial Food Services Fact Sheet*, 2007

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Increased sales of new efficient commercial food service products and associated savings;
- Increased servicing of existing commercial food service products and associated savings;
- Number of distributors/retailers engaged in the program and the number of their customers they serve;
- Demonstrated increase in consumer awareness of the ENERGY STAR brand;
- Traffic to program Web site;
- Retailer and end-user satisfaction (e.g., tracked via surveys, comment cards).

Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate homeowners about commercial energy users. These materials are available at:

http://www.energystar.gov/index.cfm?c=partners.pt_index.

- *ENERGY STAR Logos* – can be used in a variety of promotional materials for distribution, also provides brand recognition to the program.
- *Publications* – a library of all ENERGY STAR published materials with information about products, safety and saving tips, and other ways to improve efficiency.
- *Training Center* – serves as a resource for partners looking to improve their sales effectiveness. Find tools and information to help convey to staff, customers, or business partners how ENERGY STAR can help them protect the environment while saving energy and money.
- *National Awareness and Marketing Campaigns* – provides background on other initiatives and branding taking place with ENERGY STAR.
- *Equipment fact sheets, forms and specification sheets* – detailed technical data about individual equipment.

5-B-4: Marketing Plan Template: Non-Residential Benchmarking and Performance

Preliminary Considerations

To develop an effective marketing plan for Commercial Benchmarking and Performance (CBP), program sponsors should first consider the following questions:

- Who is the target audience for the marketing effort?
- What are the key motivators for the target audience?
- What message(s) will the marketing effort deliver to the target audience?
- What marketing tactics will be most-effective in reaching the target audience with the defined messages?
- How will the results of the marketing effort be measured?

Defining the Target Audience

This program is open to commercial customers that meet certain criteria. Such criteria may include:

- A size minimum (though priority should be given to businesses with facilities that have high energy use intensities).
- The facility must be free of major problems requiring costly repairs or replacements and have no planned major system renovations or retrofits.
- The facility must have accessible and up-to-date building documentation and records.

Defining the Key Motivations and Messages

This program works with commercial facility operations staff and owners to benchmark and monitor building energy performance using tools such as ENERGY STAR Portfolio Manager and building sub-metering equipment, as well as to recommend energy efficiency upgrades based on analyses of building performance data.

CBP involves eight program technical and educational services to achieve savings:

- Collection of key facility and operational characteristics and contacts.
- Ongoing collection of interval energy consumption, sub-metering, data logging, and activity or output metrics as appropriate to the facility. The extent of metering equipment installed depends on the program's budget; however, all CBP programs can use tools such as ENERGY STAR Portfolio Manager to identify under-performing buildings to target for energy efficiency improvements, and establish baselines to set goals and measure progress for energy efficiency improvement projects over time.
- Development of building performance metrics.
- Ongoing calculation and updating of metrics.
- Communication of metrics to participants.
- Identification of building system drift (from optimal performance) and alerts (to participants) where appropriate.

- Analysis of facility performance and root cause assessment and communication.
- Recommendations for energy efficiency upgrades based on analysis and root cause assessment.

Tools such as ENERGY STAR Portfolio Manager can be used to provide a level of transparency and accountability to help demonstrate strategic use of ARRA 2009 funding by generating a Statement of Energy Performance (SEP) for each building, and summarizing important performance indicators, including energy use intensity and greenhouse gas emissions associated with building energy use.

Key marketing messages for building owners and operations managers as well as contractors may include:

- Although energy savings of CBP programs vary widely (depending largely on facility type, size, and baseline efficiency, and whether or not gas savings are verified), generally CBP savings tend to be in the range of 1,000-3,000 Mbtu per participant;
- Many large companies have service contracts to monitor energy usage and performance, and many have performance contracts where the contractor shares the savings related to energy efficiency improvements, so there is more incentive to save; and
- Incentives and rebates make efficient equipment and quality installation services affordable for business owners and managers.

Selecting Marketing Tactics

A variety of marketing tactics can be used to reach CBP target audiences. Marketing plans should include a combination of several of these to create a comprehensive multi-media strategy to engage the total audience.

The following tactics can be used to increase corporate operations manager demand for CBP services:

- Direct Marketing (inserts in trade publications, co-op inserts);
- Web Site and Online Advertising (Search Engine Optimization, Google keywords, banner ads on relevant Web sites);
- E-Marketing (program email updates, newsletter and special offers);
- Trade shows and other community events; and
- Public relations and other earned media.

The following tactics can be used to encourage interested contractors to help promote the CBP program:

- Contractor Recruitment Packet (guidance and support documents and materials);
- Program Web Site; and
- Contractor Trainings and Information Sessions on ENERGY STAR Portfolio Manager.

Measuring Effectiveness

Measuring the effectiveness of the marketing plan in reaching the target audience with a message that motivates that audience is a key element to the overall program design that should not be ignored. Various metrics can be used, including:

- Demonstrated increase in use of ENERGY STAR Portfolio Manager;
- Marked increase in number of companies/facilities applying for EPA recognition;
- Demonstrated increase in consumer and contractor awareness of ENERGY STAR;
- Visitor traffic to program Web site; and
- Customer satisfaction among users of Portfolio Manager (e.g., tracked via surveys, comment cards).

Based on the results of the evaluation, changes should be made to the marketing plan and future marketing efforts to improve effectiveness.

Available Resources

EPA and DOE provide a variety of materials to help program sponsors educate the commercial audience about Commercial Benchmarking and Performance. These materials are available at: http://www.energystar.gov/index.cfm?c=partners.pt_index.

- ENERGY STAR Portfolio Manager: www.energystar.gov/benchmark
- ENERGY STAR Guidelines for Energy Management: www.energystar.gov/guidelines
- ENERGY STAR Building Upgrade Manual: www.energystar.gov/bldgmanual
- Federal Tax Credits for Energy Efficiency: www.energystar.gov/taxcredits
- Building Operator Certification: www.theboc.info
- BOMA Building Energy Efficiency Program: www.BOMA.org/BEEP

5-C: Illustrative Request for Proposal

5-C-1: Non-Residential Prescriptive Program

Note: The final RFP should be reviewed by the organization's contracts official or attorney.

Purpose of RFP

The purpose of this RFP is to select a third-party vendor that will offer the program administrator a range of high quality and effective services relating specifically to the development and implementation of a non-residential Prescriptive energy efficiency program funded by the American Recovery and Reinvestment Act of 2009. Desired services include the following:

- Program design finalization;
- Marketing strategy design and materials execution and delivery;
- Participant recruiting, training and support;
- Trade ally recruiting, training and account management;
- Participant technical services;
- Incentive application validation and processing;
- QA/QC;
- Tracking database design and set up; and
- Program management, administration, and support.

The initial contract for the selected Bidder will extend for a term of [two] years. After the initial [two-year] term, the contract may be renewed annually, at [Program Administrator's] option, through [date].

About the Program Administrator

[Organization description and Web site]

Contact Information

The following individual will represent the Program Administrator as the primary contact for matters relating to the non-technical aspects of this RFP and during the contract negotiation/award process and subsequent invoicing.

[Name]

[Contact Info]

The following individual will represent the Program Administrator as the primary contact for matters relating to technical aspects of the RFP and throughout the performance of the work upon the awarding of the contract.

[Name]

[Contact Info]

Scope of Work

Task [1]: Program Design Finalization

Develop a final Non-residential Prescriptive Program Implementation Plan that will describe the strategy for delivering the program, including:

- Finalizing contractor recruiting and training plan;
- Developing final list of prescriptive measures and incentive levels;
- Program processes;
- Administrative protocols;
- QA/QC protocols;
- Administrative tools and procedures; and
- Program applications and materials.

Task [2]: Marketing Strategy and Execution

Conduct market research and design marketing plan as appropriate, including:

- Marketing objectives;
- Target audiences;
- Key messages;
- Specific program strategies and tactics;
- Creative design "look and feel";
- A program Web site;
- A marketing evaluation plan; and
- Development and delivery of marketing collateral/materials.

Task [3]: Participant Recruitment, Training and Support

Conduct activities as appropriate to retain participants, including:

- Outreach to eligible populations through trade associates and community based organizations;
- Participation in trade shows; and
- Online outreach.

Task [4]: Trade Ally Recruiting, Training and Account Management

The key to delivering the Non-residential Prescriptive Program will be the participation and engagement of Trade Allies, who will deliver the products and services to customers. Develop relations with Trade Allies through a variety of methods, including, but not limited to:

- Outreach to local chapters of key industry associations;
- Engaging local distributors and manufacturer representatives; and
- Online outreach.

Task [5]: Technical Services

Provide Trade Allies with the tools that will help them support customers throughout the participation process, including, but not limited to:

- Leveraging ENERGY STAR Portfolio Manager to benchmark customer facilities and identify savings opportunities;
- Supporting on-site equipment evaluation and related technical assistance provided by qualified Trade Allies; and
- Providing annual, as well as ongoing training.

Task [6]: Incentive Application Validation and Processing

Assist the Program Administrator in developing program administrative tools and procedures for program tracking and reporting, rebate processing and invoicing, and support of Evaluation, Measurement, and Verification (EM&V).

Task [7]: QA/QC

QA/QC activities are central to the success of the Program, as they will be used to estimate program savings impacts, monitor program performance, ensure that incentives paid are proportional to savings achieved (i.e., prevention of overpayment), and provide feedback for on-going program improvements. These activities will serve as a means to audit, both internally and independently, the actual level of savings being delivered, and to maximize savings achieved for the given program budget. Furthermore, these collected data will feed into any formal EM&V process that the Program Administrator decides to undertake at a later date. Please clearly describe the processes for program QA/QC.

Task [8]: Tracking Database Design and Set Up

A robust information and data management system is essential to the performance of the Program Administrator's programs. Please describe the features and functions of a tracking database for the Non-residential Prescriptive Program.

Task [9]: Program management, administration and support

Please describe the specific components of the program management approach.

Evaluation Criteria

- The Bidder's experience with providing the proposed program portfolio at the scale and on the timeframe requested in other engagements.
- The capacity of the Bidder, as judged by program administrator, to successfully devise and deliver the proposed programs on the aggressive schedule required. The judgment will be based on such factors as the Bidder's commitment, experience of personnel to be assigned to the project, facilities, and evidence of past experience in implementing such programs.
- The Bidder's ability to modify and/or expand the program when required, and to provide a continuing high level of performance for the duration of the contract.
- The Bidder's ability to provide independent, third party verification of program results, as well as tracking and reporting with transparency as required by ARRA funding guidance.
- The Bidder's ability to demonstrate to the program administrator that the requirements and implications of the proposed work effort are clearly defined and understood.
- The Bidder's commitment to and evidence of a diversified work force at all levels of the organization, and a diversified supplier strategy.
- Quality and cost of Bidder's proposed Project Evaluation plan.
- Project Cost.

Selection and Award Process

Distribution of RFP:	[date]
Proposals due to Program Administrator:	[date/time]
Decision on Program Vendor	[date]
Negotiate and Execute Contract	[date]
Launch programs	[date]

****Please submit [six (6)] copies of the proposal. Proposals must be clearly labeled and submitted to: [Program Administrator Contact Name and Address]****

Bidders whose proposals have not been selected will be notified via telephone, email and/or written letter at the number or address provided in their proposal. An official statement to the same effect will be sent through the U.S. Postal Service following the award of the contract to the successful Vendor, if any.

Appendices

- STANDARD TERMS AND CONDITIONS
- SIGNATURE PAGE
- BIDDER ACKNOWLEDGEMENT (of receipt of the RFP)
- BIDDER CONDUCT (expectations regarding bidder's professional conduct)

Appendix A: Overview of Stimulus Package

Most of the ARRA funds flow through existing programs, including: the State Energy Program (SEP); the Weatherization Assistance Program (WAP); as well as the new Energy Efficiency and Conservation Block Grant Program. However, the DOE’s Office of Electricity Delivery and Energy Reliability is programming \$4.5 billion in “smart grid” funding, including \$100 million in training funds, and the U.S. Department of Labor’s Employment and Training Administration is also spending \$500 million for training and workforce development. These programs are summarized in Table A1.

This appendix describes each program in greater detail, with an emphasis on those funding streams most relevant to the energy efficiency opportunities discussed in the Toolkit (Energy Efficient Community Block Grants, SEP, and ENERGY STAR[®] Appliance Rebate Program). Additional information can be found by visiting www.energy.gov/recovery.

Table A1: Summary of ARRA Funding

Provision (Agency)	Dollar Amount
Energy Efficiency and Conservation Block Grants (DOE-EERE-OWIP) www.eecbg.energy.gov	\$3.2 Billion
State Energy Program (DOE-EERE-OWIP)	\$3.1 Billion
ENERGY STAR [®] Appliance Rebate Program (DOE-EERE-OWIP)	\$300 Million
Weatherization Assistance Program (DOE-EERE-OWIP)	\$5 Billion
Smart Grid (DOE-OE)	\$4.5 Billion
Grants for Energy Efficiency-Renewable Energy Workforce Development (Labor) http://www.dol.gov/recovery/	\$500 Million

Energy Efficiency and Conservation Block Grants (EECBG)

The formal Funding Opportunity Announcement (FOA) was issued by DOE on March 26, 2009 for Energy Efficiency and Conservation Block Grants (EECBG); \$2.8 billion in formula grants were made available to U.S. states, territories, local governments and Indian tribes. Applications for EECBG were due May 12, 2009. To obtain a copy of the FOA, which contains complete information for grantees on the program, go to

www.eecbg.energy.gov/downloads/EECBG_FOA_Instruction_For_Downloading.pdf. The FOA contains guidance on eligible uses of funds, metrics, and reporting requirements. Further EECBG information, tools, and resources can be found at <http://www.eecbg.energy.gov/>.

Note: While the application deadline is past, many EECBG grantees are still developing their strategies and can use RDEE resources and key program details to guide development and implementation of those strategies.

The subsections below summarize the purpose and eligible activities for EECBG grants from the DOE FOA.

Purpose

The purpose of the EECBG Program is to assist local governments to:

- Reduce fossil fuel emissions in a manner that is environmentally sustainable and maximizes benefits for local and regional communities;
- Reduce the total energy use of the eligible entities; and
- Improve energy efficiency in the building sector, the transportation sector, and other appropriate sectors.

Entities may develop initiatives and projects that address one or more of these purposes, and each activity is not required to meet all of the stated purposes. DOE encourages entities to develop many different new and innovative approaches. However, each entity is required to use the funds cost-effectively and in a manner that yields longer-term energy and emission reduction benefits.

Program Principles

DOE defined the following core principles for the program and project planning process:

- Prioritize energy efficiency and conservation as the cheapest, cleanest, and fastest ways to meet energy needs.
- Maximize benefits over the longest possible terms, by linking energy efficiency efforts to long-term priorities (especially community economic development, community stabilization and poverty reduction).
- Invest funds in programs and projects that create and/or retain substantial and measurable numbers jobs, energy savings, and economic benefits.
- Leverage federal funds with other resources, including other ARRA programs targeting community development such as the Community Development Block Grant program, HOME, and job training programs.
- Develop programs and strategies that will continue beyond the funding period.
- Ensure oversight, transparency, and accountability for all program activities.
- Develop comprehensive plans that benchmark current performance and set aggressive goals.

Eligible Activities

The activities listed below are not an exhaustive list; each entity is encouraged to develop a strategy to yield the maximum energy efficiency improvements, energy use reductions, fossil-fuel emission reductions, and economic benefits with available funds.

1. Development of an Energy Efficiency and Conservation Strategy: Develop and/or implement a strategy for energy efficiency and conservation and carry out activities to achieve the purposes of the program. Entities receiving direct formula grants are required to submit a proposed strategy for DOE approval.

2. Technical Consultant Services: Retain technical consultant services to assist in the development of an energy efficiency and conservation strategy, including: formulation of goals; development of activities to achieve those goals; development of methods to measure progress toward goals; developing annual reports on strategies, goals, and achievements to the population served by the eligible entity.

3. Residential and Commercial Building Energy Audits: Support the conduct of residential and commercial building energy audits.

4. Financial Incentive Programs: Establish financial incentive programs and financing mechanisms for energy efficiency improvements, such as energy saving performance contracting, on-bill financing, and revolving loan funds.

5. Energy Efficiency Retrofits: Grants to nonprofit organizations and governmental agencies for the purpose of retrofitting existing facilities to improve energy efficiency.

6. Energy Efficiency and Conservation Programs for Buildings and Facilities: Develop and implement energy efficiency and conservation programs for privately-owned buildings and facilities within the jurisdiction.

7. Development and Implementation of Transportation Programs: Develop and implement programs to conserve energy used in transportation, including but not limited to: employee flex time programs; promoting use of satellite work centers; development of zoning guidelines or requirements that promote energy efficient development; infrastructure such as bike lanes and pathways and pedestrian walkways; synchronization of traffic signals; state/local/regional integrated planning activities that reduce greenhouse gas emissions and vehicle miles traveled; incentive programs to reduce commutes by single occupancy vehicles; transportation system efficiency improvements such as intelligent transportation system (ITS) strategies; idle-reduction technologies and/or facilities to reduce energy use and emissions from freight movement; and installation of solar panels on interstate rights-of-way to conserve energy in highway operations and maintenance activities.

8. Building Codes and Inspections: Develop and implement building codes and inspection services to promote building energy efficiency.

9. Energy Distribution: Distributed energy resource technologies that significantly increase energy efficiency, including: district heating and cooling systems; combined heat and power/cogeneration systems; energy storage systems; thermally-activated cooling systems; micro turbines; and ground source heat pumps.

10. Material Conservation Programs: Activities to increase participation and efficiency rates for material conservation programs, including source reduction, recycling, and recycled content procurement programs that lead to increases in energy efficiency.

11. Reduction and Capture of Methane and Greenhouse Gases: Purchase and implement technologies to reduce, capture, and use methane and other greenhouse gases generated by landfills or similar waste-related sources, such as wastewater treatment plants, operations producing food waste, dairy farms, and other animal operations.

12. Traffic Signals and Street Lighting: Replace traffic signals and street lighting with energy efficient lighting technologies, including light emitting diodes; and any other technology of equal or greater energy efficiency.

13. Renewable Energy Technologies on Government Buildings: Develop, implement, and install on or in any eligible government building onsite renewable energy technology that generates electricity from renewable resources, including solar energy; wind energy; fuel cells; and biomass.

14. Any Other Appropriate Activity: Submit any other appropriate activity for approval in the Energy Efficiency and Conservation Strategy.

State Energy Program (SEP)

State energy offices are receiving supplemental grants under the terms of ARRA. These entities have received SEP funds for many years under existing law and program rules. DOE issued a FOA for SEP grants, downloadable from http://apps1.eere.energy.gov/wip/pdfs/sep_arra_foa.pdf.

Note: Applications were due May 12, 2009 and most states have now received at least conditional grant awards under the program, though SEP grant recipients still must fulfill several conditions in order to ensure continued ARRA funding. These conditions include:

1. Governors must submit assurances that:
 - A. The applicable State regulatory authority will seek to implement, in appropriate proceedings for each electric and gas utility, under its rate-making authority a general policy that ensures that utility financial incentives are aligned with helping their customers use energy more efficiently and that provide timely cost recovery and a timely earnings opportunity for utilities associated with cost-effective measurable and verifiable efficiency savings, in a way that sustains or enhances utility customers' incentives to use energy more efficiently.

- B. The State, or the applicable units of local government that have authority to adopt building codes, will implement the following:
 - i. A residential building energy code (or codes) that meet or exceed the most recent International Energy Conservation Code, or achieve equivalent or greater energy savings.
 - ii. A commercial building energy code (or codes) throughout the State that meets or exceeds the ANSI/ASHRAE/IESNA Standard 90.1–2007, or achieves equivalent or greater energy savings.
 - iii. A plan to achieve 90 percent compliance with the above energy codes within eight years. This plan will include active training and enforcement programs and annual measurement of the rate of compliance.

- 2. States are guided to prioritize grants toward funding energy efficiency and renewable energy programs, including:
 - A. Expansion of existing energy efficiency programs run by state agencies or utilities;
 - B. Expansion of existing state or utility renewable programs;
 - C. Cooperation and joint activities between States to advance more efficient and effective use of ARRA funding.

- 3. States have substantial flexibility in program funds, notwithstanding the guidance to build on existing programs. In addition, the FOA encourages priority focus on the following kinds of activities:
 - A. Establishment and enforcement of energy efficient building codes and standards, and implementation of voluntary programs that impact new design.
 - B. Loans, grants, and incentives for energy efficiency and renewable energy measures.
 - C. Building retrofits.
 - D. Traffic signal synchronization and replacement with LEDs.
 - E. Industrial retrofits.

- 5. DOE encourages states to go beyond typical utility metrics of cost-effectiveness in selecting measures and programs to fund, and DOE promises further guidance in this area. The FOA also, however, suggests that SEP-funded activities produce (as a portfolio) at least 10 million Btu (source energy) in annual energy savings per \$1,000 spent.

Most states have energy plans under their current SEP program umbrellas. ARRA funded initiatives should be consistent with these plans' goals. To the extent the state energy office programs funds through existing programs, consultation may be needed with the relevant agencies or regulatory authorities, to ensure consistency with these institutions' policies and practices.

ENERGY STAR® Appliance Rebates

ARRA provides \$300 million for a program authorized in the Energy Policy Act of 2005 (EPAct 2005). The authorizing language calls for states to receive funds on a formula basis, and use them to provide rebates or other incentives for ENERGY STAR qualified residential products. DOE's Funding Opportunity Announcement was issued in July 2009, with preliminary applications due August 15 and final applications due October 15. The FOA includes recommendations for eligible products and other details. The FOA encourages states to program these funds through existing programs. For more information visit: http://apps1.eere.energy.gov/news/daily.cfm/hp_news_id=178.

Weatherization Assistance Program (WAP)

Note: Applications for WAP funding were due May 12, 2009.

The DOE FOA pertaining to the Weatherization Assistance Program (WAP) is downloadable from http://ase.org/uploaded_files/5461/doe_wap_guidelines.doc.

Key elements of this guidance include:

1. WAP grantees are defined by longstanding law and program rules as designated state agencies. WAP sub-grantees are also defined in the program, and serve as the primary delivery agents for program services. These definitions and associated rules have not changed, except that matching fund requirements have been waived for ARRA funds. The FOA does acknowledge that a state may add new sub-grantees, as long as they are Community Action Agencies, public agencies, or nonprofit groups that meet program rules.
2. The WAP allocation formula was modified slightly to ensure a more even distribution of funds, such that warmer states will receive somewhat higher amounts than under the previous formula.
3. Three significant WAP rule changes were included in ARRA: (1) eligibility threshold income was raised from 150% to 200% of the poverty level; (2) training and technical assistance funds can account for 20% of total funds, up from 10%; and (3) average per-home spending limits were raised from \$2,500 to \$6,500.

More information on the Weatherization Assistance Program is available at http://apps1.eere.energy.gov/weatherization/recovery_act.cfm.

Smart Grid

DOE is distributing the \$4.5 billion in ARRA funds in this category primarily through competitive grants. Grants up to \$200 million are available. **Applications were due August 6, 2009.** These funds will go towards advanced utility metering, demand-response technologies, advanced transmission, distribution, and control technologies, planning and analysis efforts, and other purposes. More information can be found at http://www.oe.energy.gov/information_center/american_recovery_reinvestment_act.htm.

Green Jobs

Department of Labor's Employment and Training Administration is programming approximately \$400 million for "green jobs" training and workforce development. There are three main opportunities available. For more information: http://www.doleta.gov/grants/find_grants.cfm.

Appendix B: Estimating the Employment Effects of Energy Efficiency Programs

Methodology

Investment in energy efficiency programs results in direct, indirect, and induced employment increases in energy efficiency and related fields during the program life and thereafter. Examples of direct jobs include program staff and contractors required for measure installation. Indirect jobs include manufacturing and service positions that supply technologies rebated and installed by programs, and induced jobs result when the utility bill savings that accrue to participants are either saved or spent.

Forecasts of employment effects vary widely based on program designs and employment model framework and input assumptions. As a result, it is prudent to consider a range of potential job impacts for planning purposes. The methodology used herein centers on four studies. The first study developed conservative estimates for total (direct, plus indirect, and induced) job impacts (ACEEE, 2008)³⁹ of approximately 5 jobs per million dollars in energy efficiency spending. The second study developed moderate estimates for direct and indirect job impacts (Bezdek, 2007)⁴⁰ of approximately 8 jobs per million. A third study developed larger impacts of around 20 jobs per million, which includes induced job effects in addition to direct and indirect effects (PERI, 2008)⁴¹. A fourth study, published by the International Monetary Fund (IMF) in 2002⁴², is a meta-study of 16 empirical macroeconomic models that each estimated induced economic effects of various Federal monetary policies. The output of these types of models are economic multipliers that capture induced dollars “created” in the economy for every dollar of Federal expenditure. These multipliers were used to calculate a range of induced job estimates resulting from energy efficiency funding, based on the direct and indirect job estimates published by Bezdek and PERI.⁴³

Using this methodology, the range of job creation estimates shown in Column G below was developed. The actual, published ACEEE, Bezdek and PERI estimates are on rows 1, 2 and 5, respectively. The remaining estimates use the non-induced Bezdek and PERI job numbers (Column D), times a multiplier (Column E) to estimate induced jobs (Column F); the total jobs estimate is then the sum of Column D and Column F.

³⁹ Ehrhardt-Martinez, Karen, and Laitner, John A., “The Size of the U.S. Energy Efficiency Market: Generating a More Complete Picture,” American Council for an Energy-Efficiency Economy, Report #E083, May 2008.

⁴⁰ Bezdek, Roger, “Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century,” Management Information Services, Inc., for American Solar Energy Society, 2007.

⁴¹ Pollin, Robert et al., “Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy,” Department of Economic and Political Economy Research Institute, University of Massachusetts-Amherst (Prepared under commission with the Center for American Progress), September 2008.

⁴² Hemming, Richard et al., “The Effectiveness of Fiscal Policy in Stimulating Economic Activity-A Review of the Literature,” International Monetary Fund, WP/02/08, December 2002.

⁴³ The authors of the PERI report consulted the IMF meta-study and opted to use a multiplier of 0.3, which they considered relatively conservative.

Table B1: Employment effect estimates

	A	B	C	D	E	F	G
	Estimate	Direct Jobs/\$M	Indirect + Induced Jobs/\$M	B + C	IMF Induced Effects Multiplier	Induced Jobs/\$M	Total Jobs/\$M
1	ACEEE	3.8	1.6	5.4	NA	NA	5.4
			Indirect Jobs/\$M				
2	Bezdak (published)	3.8	4.9	8.6	NA	NA	8.6
3	Bezdak + Induced	3.8	4.9	8.6	0.3	2.6	11.2
4	PERI, low	9.4	5.9	15.2	0.1	1.5	16.7
5	PERI, mid (published)	9.4	5.9	15.2	0.3	5.0	20.2
6	PERI, high	9.4	5.9	15.2	0.6	9.1	24.3

A value of 0.1 was used as the “low” multiplier because this was the lowest published value in the IMF meta-study. A value of 0.6 was used as the “high” multiplier (the 25th percentile amongst all the values published in the meta-study; that is, 75% of the multiplier estimates were higher than 0.6) to be conservative and not overestimate the employment effects of SEP dollars. By way of reference, the median and average multiplier values were both 0.9 and the highest value was 2.0.

Application to Programs

The programs in this guide vary considerably in size (budget), scalability, target market, and delivery mechanism. As a result, the number of jobs created by each program will also vary considerably. Some programs require people with advanced engineering or building science backgrounds (Custom, Persistence Commissioning), while others require people with trade skills to whom the program will provide additional training (HPwES). Below, we illustrate how different job estimates were developed for two programs in the portfolio.

- **HPwES.** Given the relative fragmentation of the home contracting industry and the comparatively small size of each job, Home Performance with ENERGY STAR[®] is a training and labor intensive program. It therefore results in a comparatively large number of jobs created, on average between the “PERI, low” and “PERI, high,” we estimate approximately 25 jobs/\$M in the first year, trailing to 18 jobs/\$M by the end of the third year.
- **Retrocommissioning.** An RCx program requires expertise in building commissioning; these jobs require a higher skill level and pay than is required for some programs. They therefore result in a comparatively low number of jobs created; on average between “ACEEE” and the “PERI, low” estimate, or about 15 jobs/\$M in the first year, trailing to about 5 jobs/\$M by the end of third year.

Because of the considerable uncertainty around any job creation estimate, we used the values in the table above as guideposts, not rules, for estimating the employment effects of each program as illustrated in the table below.

Table B2: Recommend ranges of employment effects

Average job type required by program	Example	Jobs/\$M Estimate	
		Low	High
Skilled trade	HVAC contractor or Home Performance contractor	8.6	24.3
Advanced technical or managerial	Commissioning provider or On-site Energy Manager	5.4	16.7

Finally, the table below shows the range of job impacts developed for each program in the program snapshots.

Table B3: Employment effect assumptions, RDEE Program Snapshots

	Program	Jobs/\$M, Low	Jobs/\$M, High
R1	ENERGY STAR Products	8	10
R2	Easy Audit and Direct Install	18	25
R3	HPWES	18	25
R4	Efficient AC	11	20
NR1	Prescriptive	8	11
NR2	Retrocommissioning	11	15
NR3	Commerical Food Service	6	8
NR4	Custom	15	18
NR5	Benchmarking and Performance	11	15
NR6	On-Site Energy Manager	5	11