



The Parker Ranch installation in Hawaii

Designing Effective Residential Retrofit Programs

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Energy Futures Group & VEIC

DOE Technical Assistance Program

Team 4 – Program & Project Development &
Implementation

- Technical Assistance Project (TAP) Overview
- Retrofit Program Design Elements
- Q&A
- Next Steps

DOE's Technical Assistance Program (TAP) supports the Energy Efficiency and Conservation Block Grant Program (EECBG), the State Energy Program (SEP) and the Better Buildings grantees by providing state, local, and tribal officials the tools and resources needed to implement successful and sustainable clean energy programs.



TAP offers:

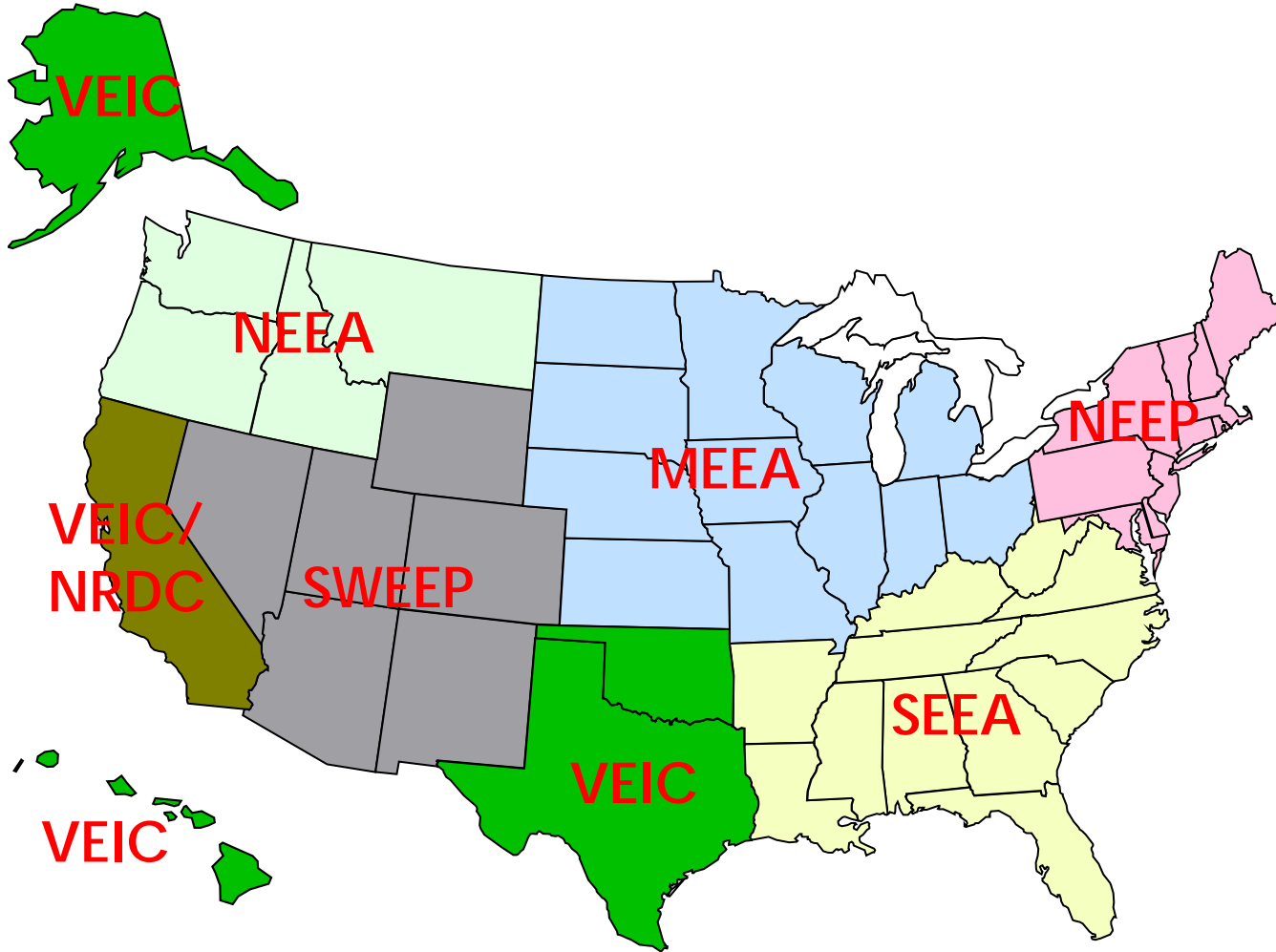
- One-on-one assistance
- Extensive online resource library, including:
 - Webinars
 - Events calendar
 - TAP Blog
 - Best practices and project resources
- Facilitation of peer exchange

On topics including:

- State and local capacity building
- Energy efficiency and renewable energy technologies
- Program design and implementation
- Financing
- Performance contracting

<p>State and Local Capacity Building</p>	<ul style="list-style-type: none"> • Trainings • Workshops • Peer-to-peer matching
<p>Technical</p>	<ul style="list-style-type: none"> • Renewable energy siting and development • Review of technical specs for RFPs • Strategic planning, energy management, and conservation strategies • Green building technologies • Building codes
<p>Program Design and Implementation</p>	<ul style="list-style-type: none"> • Policy and program development • Coordinating rate-payer funded dollars with ARRA projects and programs • Sustainable community and building design • State and regional EE and RE assessments and planning • EE and RE portfolio program design elements
<p>Financial</p>	<p>Program design support and guidance on financing mechanisms such as:</p> <ul style="list-style-type: none"> • Revolving loan funds (RLFs) • Property-assessed clean energy (PACE) • Loan loss reserves and enhanced credit mechanisms
<p>Performance Contracting</p>	<ul style="list-style-type: none"> • Designing and implementing a performance contract • Leveraging private investment • Reducing institutional barriers • Tracking and comparing programs

Who We Are: Team 4



ACEEE, NRDC: National Support

- What are the elements of a successful retrofit program?
- Can you just build it and expect that consumers will come?
- Can you market retrofit programs conventionally and expect they will succeed?
- Is financing the silver bullet?



- *A champion* to push and lead
- Supporting foundational *policies*
- *A structure* that supports program goals
- *Stakeholder* participation
- Substantial and stable *funding* to develop markets
- *Partner* with utilities and others with resources, knowledge and existing delivery mechanisms
- *A comprehensive* approach to targeted *markets*
- Engagement of and support for private sector *weatherization contractors*
- *A comprehensive* approach to individual buildings
- *Nimbleness and creativity*

Retrofit Program Design Elements

- Program design
- Simplify the process
- Technical training & support
- Technical certification (of workers) and accreditation (of businesses)
- Sales training & support
- Aggressive marketing
- Comprehensiveness
- Facilitators
- Innovative financing products
- Rebates
- Building labeling/rating
- Implementation entity
- Quality assurance processes
- Careful integration with other efficiency and/or renewable energy programs
- Research and development investments
- Track performance

- **Barrier:** The pressure to rush a program out the door before it is fully baked
- **Sample Solutions:**
 - Resist the pressure; be ready before opening the doors
 - Take the time and make the effort to get it right
 - Use best practices first and don't waste time reinventing the wheel
 - Plan, execute, evaluate, adjust, repeat
 - Incentivize individual measures but reward comprehensiveness based on overall % reduction
 - One-stop-shop and hand-holding for customers
 - Set up measurement and verification systems up front

- **Barrier: Complicated, confusing & numerous steps to participation.**
- **Sample Solutions:**
 - One stop shop
 - Transparent process
 - Simplified application and enrollment
 - Single point of contact
 - Program and services integration
 - Clear understanding of roles between players

- **Barrier:** Inadequately trained and supported contractors to address EE
- **Sample Solutions:**
 - Recruit, train and support “Home Performance” contractors to serve as the foundation for program:
 - Maximize energy savings
 - Understand building science
 - Address health and safety
 - House as a system
 - Develop and/or link in with local EE training programs and support networks (workforce development & green jobs)
 - Assess HP contractors supply to meet expected demand
 - Once trained, they still need on-going TA support

- **Barrier:** There is no way for consumers to easily identify quality contractors.
- **Sample Solutions:**
 - Programs need to identify and market qualified contractors through certification and accreditation
 - Trained contractors need to be able to differentiate themselves
 - Certification reduces consumer transaction and hassle costs
 - Building Performance Institute (BPI)
 - NYSERDA example of website list of “qualified” contractors

- **Barrier:** Many contractors with good technical credentials lack effective sales skills & invisible EE measures are not easy to sell.
- **Sample Solutions:**
 - Train contractors (or their sales staff) to understand all the benefits and how to sell:
 - Mitigated future fuel price risks
 - Comfort
 - Building durability
 - Health & safety
 - Teach how to avoid just cream skimming; sell deeper
 - Provide sales skills and tools

- **Barrier:** Consumers don't understand and generally aren't concerned about energy issues.
- **Sample Solutions:**
 - Consumer education to raise consciousness
 - Drive business to accredited contractors
 - Use comfort and other non-energy benefits such as safety, health and improved home value to help sell comprehensiveness
 - Well conceived, well funded, long term campaign
 - Partner with utilities to get the word out
 - Advanced customer engagement (e.g. Opower)
 - Affinity marketing (e.g. neighborhood, faith-based, etc.)
 - Competitions (e.g. Charlottesville non-profits)
 - \$\$: show consumers how much money they can save and rebates
 - LBNL's "Driving Demand" paper and webinars

- **Barrier:** The tendency of homeowners to desire and contractors to promote individual measures rather than comprehensive retrofits
- **Sample Solutions:**
 - Consumer education
 - Train contractors to take whole-building approach
 - Reward contractors for comprehensiveness
 - Design rebates to reward comprehensiveness

- **Barrier:** Homeowners alone are not equipped to take contractors' recommendations and turn them into completed, quality, on-time, on-budget projects that result in the potential/predicted energy savings.
- **Sample Solutions:**
 - Program should include facilitators that help homeowners line up contractors and ensure that quality work is done.
 - Could be the auditor or someone else (including the HP contractor)
 - Provide coverage for every step in the process and don't rely on the homeowner to make it happen.

- **Barrier:** There is a lack of readily available, low-cost, long-term financing available with minimal hassles and delays.
- **Sample Solutions:**
 - Unsecured loan products with:
 - Low interest rates
 - Long loan terms
 - Easy qualification
 - PACE
 - Energy Mortgages
 - On-bill financing
 - Minimized transaction hurdles and delays!

- **Barrier:** Homeowner uncertainty and conservatism about the benefits of energy efficiency
- **Sample Solutions:**
 - Motivate homeowners
 - Offer rebates, especially during launch
 - HomeStar?
 - Rebates:
 - Defray costs, overcome financial barriers
 - Serve as a marketing strategy to consumers
 - Act as sales “hook” for contractors
 - Lend credibility if coming from trusted source
 - Rebate individual measures but reward comprehensiveness at a higher incentive level
 - Rebates could go to customers or upstream for discounts
 - Adjust over time and in response to changing markets

- **Barrier:** Banks and home-buyers do not value efficiency because they cannot easily assess the efficiency of buildings.
- **Sample Solutions:**
 - Rate/label homes to provide consumer information on:
 - Energy costs
 - Greenhouse gas emissions
 - Efficiency Rating
 - Demonstrate building improvement post-retrofit
 - Create market recognition for efficiency
 - Provide comparisons and benchmarks
 - Serve as the basis for Time of Sale initiatives
 - Tie into national efforts for uniformity and consistency

- **Barrier:** Uncertainty about which delivery model to adopt
- **Sample Solutions:**
 - In-house (if taxpayers are willing to pay for more municipal employees)
 - Utility
 - For-profit firm vs. non-profit organization
 - Large company with deep resources vs. less expensive smaller outfit
 - Local vs. national (or team of both)

- **Barrier:** Sub-standard work can and does happen all too often
- **Sample Solutions:**
 - Install a rigorous set of QA processes:
 - Spot checking
 - Discipline for bad behavior
 - Sliding scales of inspections depending on contractor performance
 - Clear categories for warnings/probation/termination with teeth

- **Barrier:** Lack of comprehensive data results in under-reporting of success, inability to justify programs and insufficient feedback mechanisms to help improve programs.
- **Sample Solutions:**
 - Measurement & Verification (M&V) is:
 - Critical for measuring successes, impacts and for program improvement
 - Energy & non-energy impacts
 - Data collection protocols are under development by DOE
 - Some tools to help collect data are currently available
 - Team 4 EM&V webinars: October 20 & December 9

- **Barrier:** Lack of clarity about how to measure program performance
- **Sample Solutions:**
 - Standard measures:
 - # jobs
 - \$/job
 - Identify indicators of superior performance:
 - Comprehensiveness: lost-opportunities minimized
 - Customer satisfaction
 - Nobody on probation
 - Positive trends and measures of growth
 - Regular (monthly) desktop monitoring of data
 - Program management tools

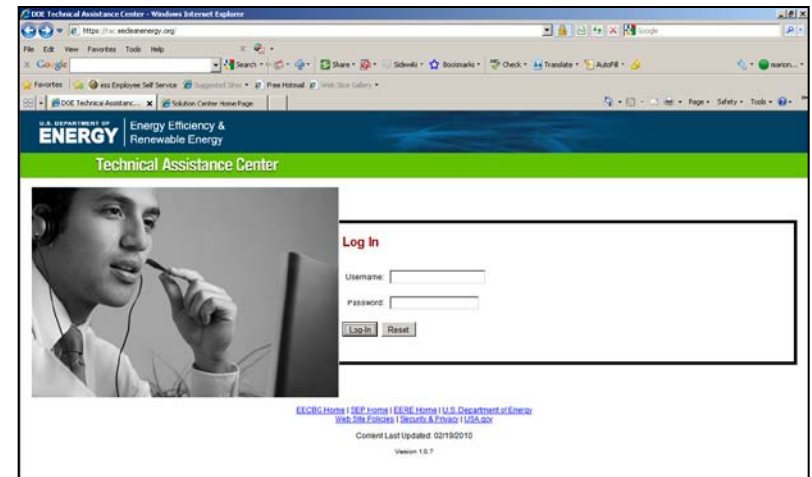
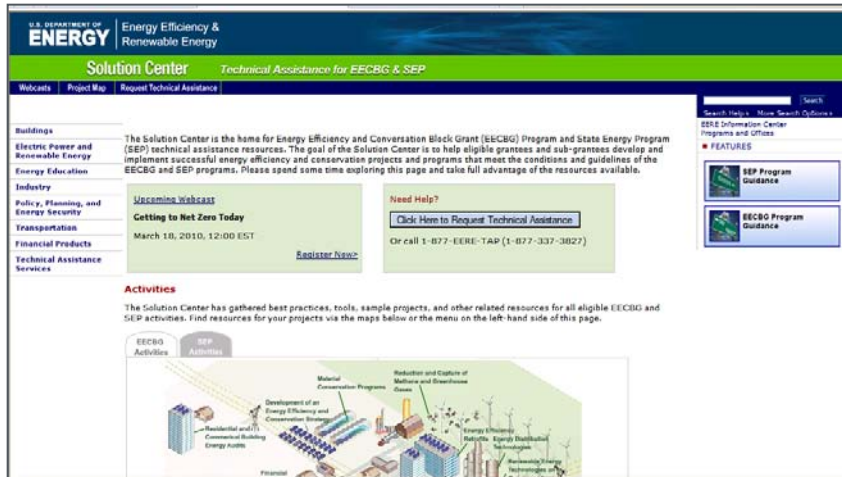
- Integration with other EE and RE programs
 - Efficient heating & cooling equipment programs
 - Refrigerator/freezer replacement programs
 - PV and/or solar hot water programs
 - Incentivize whole-house approaches
 - Utility & other program coordination
- Low-income component
- R&D

- EPA Home Performance with ENERGY STAR:
 - http://www.energystar.gov/index.cfm?fuseaction=hpwes_profiles.showSplash
- ACEEE Summer Study on Energy Efficiency in Buildings Proceedings
 - 2010: “Retrofit Program Delivery Models for Home Performance with ENERGY STAR: The Climate to Retrofit Is Now”, Patricia Plympton
- Driving Demand Paper
 - LBNL

We encourage you to:

1) Explore our online resources via the [Solution Center](#)

2) Submit a request via the [Technical Assistance Center](#)



3) Ask questions via our call center at 1-877-337-3827 or email us at solutioncenter@ee.doe.gov

Please join us again:

Title: Residential Building Audits and Retrofits

Host: Casey Murphy, ICF International

Date: September 1, 2010

Time: 1:00 – 2:00 EDT

Title: Low-to-No Cost Strategy for Energy Efficiency in Public Buildings

Host: Carolyn Sarno, Northeast Energy Efficiency Partnerships

Date: September 14, 2010

Time: 2:00 – 3:00 EDT

Title: Stretch/Reach Codes

Host: Isaac Elnecave, Midwest Energy Efficiency Alliance

Date: September 15, 2010

Time: 2:00 – 3:00 EDT

Title: Loan Loss Reserves: Lessons from the Field

Host: Merrian Fuller, Lawrence Berkley National Laboratory

Date: September 20, 2010

Time: 2:00 – 3:15 EDT

Title: Taking Advantage of Qualified Energy Conservation Bonds (QECSBs)

Host: Mark Zimring, Lawrence Berkley National Laboratory

Date: September 22, 2010

Time: 3:00 – 4:30 EDT

Title: Energy Saving Performance Contracting (ESPC) Basics

Host: Meg Giuliano, ICF International

Date: September 23, 2010

Time: 1:30 – 2:30 EDT

Title: “Green” Codes and Programs

Host: J.C. Martel, Southwest Energy Efficiency Alliance

Date: September 24, 2010

Time: 2:00 – 3:00 EDT

Title: Designing Effective Renewables Programs

Host: Cheryl Jenkins, Vermont Energy Investment Corporation

Date: September 28, 2010

Time: 2:00 – 3:00 EDT

Title: Driving Demand for Home Energy Improvements: Lessons from the Field

Host: Sarah Busche, National Renewable Energy Laboratory

Date: September 29, 2010

Time: 3:00 – 4:15 EDT

For the most up-to-date information and registration links, please visit the Solution Center webcast page at www.wip.energy.gov/solutioncenter/webcasts

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