

## Department of Energy

Washington, DC 20585

# Best Practice Guidelines for Residential PACE Financing Programs

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## Overview

This document provides updated best practice guidelines to help implement the Policy Framework for PACE Financing Programs, initially announced on October 18, 2009.¹ Property Assessed Clean Energy (PACE) financing programs allow state and local governments, where permitted by state law, to extend the use of land-secured financing districts to fund energy efficiency, renewable energy and water conservation improvements on private property.² Instead of accruing to an individual borrower, PACE programs attach the obligation to repay the cost of improvements to the property as an assessment. DOE has developed these revisions to the original "Guidelines for Pilot PACE Financing Programs," initially issued on May 7, 2010, to reflect the evolving structure of the PACE market and incorporate lessons learned from various PACE programs that have been successfully implemented since the original guidelines were issued. The revised guidelines have been updated to focus solely on residential PACE programs and support a more rigorous approach to determining property owner eligibility. These guidelines are applicable to both property owners who voluntarily opt into PACE programs, and to lenders who hold mortgages on properties with PACE assessments.

The revised guidelines focus on best practices for program design, compatibility of PACE with energy efficiency programs and services and evaluation of program outcomes, including cost effectiveness, energy savings, and non-energy benefits such as improved health and comfort. Both existing and prospective PACE financing programs are strongly encouraged to follow these guidelines. The revised guidelines focus on best practices for program design,

<sup>&</sup>lt;sup>1</sup>The Policy Framework for PACE Financing Programs is available here: <a href="http://www.whitehouse.gov/assets/documents/PACE\_Principles.pdf">http://www.whitehouse.gov/assets/documents/PACE\_Principles.pdf</a>.

<sup>&</sup>lt;sup>2</sup> For more information on PACE programs, please visit: <a href="http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/PACE.html">http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/PACE.html</a>. PACE programs are paid through a form of property tax assessment on the property, which may be established by placing a lien on the property. Lien priority is a matter of state law, and these guidelines do not (and cannot) pre-empt state law.

compatibility of PACE with energy efficiency programs and services and evaluation of program outcomes, including cost effectiveness, energy savings, and non-energy benefits such as improved health, comfort and resilience. Both existing and prospective PACE financing programs are strongly encouraged to follow these guidelines.

An information resources section is located at the end of the document with links to additional references for best practices on residential energy efficiency programs, more broadly.

## **Background**

Since the issuance of the "Guidelines for Pilot PACE Financing Programs" in 2010, 31 states have passed PACE-enabling legislation, and the number of states with active PACE programs (including commercial and residential PACE) has grown from two to sixteen.<sup>3</sup> In that time, multiple jurisdictions in those states have set up both commercial and residential PACE programs that demonstrate a wide range of programmatic choices made to reflect the unique characteristics of their individual jurisdictions. These revised guidelines have taken into account the lessons learned from the experiences of those state and local governments to update the Department of Energy's recommendations.

The updated guidelines also incorporate advancements in DOE residential energy efficiency analytical tools and resources, such as the DOE Home Energy Score and Standard Work Specifications, and step-by-step program guidance available through the Better Buildings Residential Program Solution Center. These tools and resources can be used by PACE program administrators and participants to plan, develop and implement programs that effectively deliver home energy upgrades to participating households in their jurisdictions.

## **Program Design Guidelines**

States, local governments and third-party PACE program administrators should consider the following program design features to increase energy performance and better economic outcomes for participating homeowners and contractors, mortgage holders, and investors.

## 1. Define Eligible Improvements and Prioritize Cost-Effective Energy Measures

PACE financing should define which improvements are eligible and prioritize cost-effective measures to protect both participants and mortgage holders.

<sup>&</sup>lt;sup>3</sup> Source: http://www.pacenation.us/pace-data/

## Eligible Improvements

The primary rationale for PACE programs is to pursue a legally-defined "public purpose", which generally includes environmental, health, and energy independence benefits. PACE programs should establish criteria for eligible improvements that are consistent with the public purpose of the programs, as defined by each state or locality.

In addition to financing energy efficiency, including renewable energy improvements, PACE programs can also establish eligibility criteria for financing health and safety measures necessary to install and ensure performance of energy efficiency measures, or protect occupants (e.g., water conservation, roof repairs, removal of asbestos insulation, electrical system upgrades, seismic retrofits, radon mitigation and similar measures). The costs and benefits of health and safety measures should be reviewed with homeowners prior to engaging in a PACE project.

## Cost-Effective Measures

The financed package of energy improvements should be designed to pay for itself over the term of the assessment. This program attribute minimizes impacts on the participant's debt-to-income ratio, increasing the participant's ability to repay PACE assessments and other debt, such as mortgage payments. PACE programs should consider the following program design features to ensure that homeowners make cost effective investment decisions:

- PACE Programs should prioritize cost effective improvements when making
  improvement recommendations to homeowners, and generally limit investment to
  those identified measures. Programs should establish a list of eligible energy efficiency
  and renewable energy measures that incorporate national standards, such as ENERGY
  STAR, or state-specific, approved product lists; and
- The economics of renewable energy investments can be enhanced when packaged with energy efficiency measures by further reducing the energy consumption of the home, and allowing renewable energy systems to be appropriately sized.

## Energy Assessments

DOE encourages energy assessments as a way to identify and recommend energy efficiency improvements. The cost of the assessment should be allowed as an eligible cost that can be incorporated into the PACE financing (note that many utilities offer incentives for home energy assessments at a reduced cost to the homeowner). Multiple tools are available to analyze energy efficiency measures, including the DOE Home Energy Score,<sup>4</sup> the RESNET Home Energy Rating System (HERS)<sup>5</sup> and other tools offered by utilities or third party energy efficiency

<sup>&</sup>lt;sup>4</sup>For more information, see www.homeenergyscore.gov.

<sup>&</sup>lt;sup>5</sup>For more information, see www.resnet.us.

program administrators (e.g., Technical Reference Manuals and utility demand-side management planning tools).

For additional information see the energy efficiency measures and evaluation and program design sections of the information resources included with these guidelines.

## 2. Establish Property Owner Eligibility Criteria

State and local laws treat PACE assessments differently, however PACE program administrators should design eligibility criteria and standardized procedures to determine the financial eligibility of the property. These should include the following considerations:

- Verifying Property Ownership
  - Check that applicant has clear title to property and that the property is located in the financing district;
  - Check the property title for restrictions such as details about power of attorney, easements, or subordination agreements;
- Confirming Property-Based Debt and Property Valuation
  - Estimated property value should be in excess of property owner's public and private debt on the property, including mortgages, home equity lines of credit (HELOCs), and the addition of the PACE assessment, to ensure that property owners have sufficient equity to support the PACE assessment;
  - Property owner is current on mortgage and property taxes and has not been late more than once in the past 3 years, or since the purchase of the house if less than three years;<sup>6</sup>
  - To avoid placing an additional tax assessment on properties that are in distress, have recently been in distress, or are at risk for distress, the following should be verified:
    - There are no outstanding taxes or involuntary liens on the property in excess of \$1,000 (i.e. liens placed on property for failure of the owner to comply with a payment obligation);
    - Property is not in foreclosure and there have been no recent mortgage or other property-related debt default.
  - Programs should attain estimated property value by reviewing assessed value.
     This is typically used in assessment districts. If assessed value appears low or high, programs should review comparable market data to determine the most appropriate valuation. If programs believe the estimated value remains inaccurate or there is a lack of sufficient comparable market data to conduct an

<sup>&</sup>lt;sup>6</sup> Applicants that have purchased the property within 3 years have recently undergone rigorous credit analyses that compensate for the short property tax payment history.

analysis, they should perform further analysis to obtain an accurate estimate of the property value, such as a desktop appraisal.<sup>7</sup>

## 3. Key PACE Attributes: Establish Consumer and Lender Protections

The following attributes for PACE assessments are important consumer and mortgage-holder protections for PACE programs to consider:

## **Property Owner Education and Disclosures**

PACE may be an unfamiliar financing mechanism to program participants. As with any debt obligation, it is essential that programs educate potential participants on how PACE financing works, and explain the opportunities as well as the potential risks property owners should consider when utilizing PACE to finance energy improvements to their property.

Programs should clearly explain and provide disclosures to consumers of the following:

- How PACE financing works, including the structure of the tax assessment and homeowner obligations;
- Informed consumer choice disclosure: containing basic information on other predominant financing options available to property owners for financing energy efficiency and renewable energy investments and how PACE compares;
- All program fees and how they will be paid;
- The interest rate;
- The amount of the PACE assessment and how it will be billed and repaid;
- Information on transferring the assessment at time of sale, potential market challenges and options;
- Process and implications of including solar lease financing and revenue streams from renewable energy systems (e.g., renewable energy credit payments) with PACE financing; and
- Options for and implications of including tax credits in the PACE assessment

## **Right to Cancel the Purchase**

Give the property owner time to review the PACE financing and alternative financing options in

<sup>&</sup>lt;sup>7</sup> A desktop appraisal involves a licensed appraiser estimating the value of a property without a visual inspection. These appraisals cost approximately \$100.

more detail as well as a fixed period of time following the contract's execution to cancel the purchase.

## The Assessment Should Be Appropriately Sized

Improvements should be "right-sized" for properties and for the administrative costs of PACE financing. PACE assessments should also consider establishing a maximum amount for a PACE assessment on a property, either as a percentage of the property value, a maximum dollar amount, or combination thereof. States have set maximum assessments ranging from 10% to 20% of the estimated property value. At the federal level, the Fannie Mae HomeStyle® program establishes a maximum amount of 15% of as completed appraised value for incorporating existing PACE assessments into a first mortgage purchase or refinance. PACE programs may also choose to set the maximum assessment relative to median home values. This also may protect homeowners' properties from becoming "underwater" due to "over improvement" of properties relative to market price.

Because of the administrative requirements of administering PACE programs, assessments should generally not be issued for projects below a minimum cost threshold, as determined by the PACE program.

## **Home Improvement Information**

PACE programs should provide current homeowners, prospective purchasers, and future buyers with information on home improvements conducted through PACE financing. Approaches may include:

- Providing information on energy efficiency and renewable energy improvements to prospective homebuyers and home purchasers, including typical costs and estimated savings from energy retrofit projects;
- Completing an energy assessment that provides a numerical rating for the home pre and post-improvements, such as the DOE Home Energy Score, the RESNET HERS Index or other energy assessment offered by utility programs; and/or
- Providing a certificate of completion that documents the improvements completed, such as the Home Performance with ENERGY STAR completion certificate or a program certificate that complies with BPI Standard 21019

https://www.fanniemae.com/content/guide/selling/b5/3.3/01.html

http://www.bpi.org/Web%20Download/BPI%20Standards/BPI-2101-S-

<sup>&</sup>lt;sup>8</sup> The Fannie Mae HomeStyle program allows payoff of an existing PACE loans originated on or after July 6, 2010 of up to 15% of the appraised value of the property:

<sup>&</sup>lt;sup>9</sup> For more information on BPI Standard 2101, see:

## Information about the Relationship between PACE Assessments and Mortgage Financing

Programs should clearly explain and provide disclosures on the following:

- If the failure to pay the PACE assessment could trigger foreclosure and property loss even if the property owner is current on other mortgage lien(s), or the right to foreclose on the property is contractually subordinated;
- How PACE assessments and the lien position may impact options to sell or refinance their property; and
- If some mortgage lenders may be unwilling or unable to modify or refinance a property subject to a PACE assessment due to the type and position of the assessment.

## **PACE Assessment Non-Acceleration Upon Property Owner Default**

In the event of the sale, including a foreclosure sale, of the property with outstanding PACE financing, the obligation will continue with the property causing the new homeowner to be responsible for the payments on the outstanding PACE amount. It is critical to the development of a low cost and widely accessible product that the PACE assessment survive the foreclosure process (i.e., the full PACE obligation amount does not become due and payable in the event of foreclosure on the property).

In states where non-acceleration of the assessment is standard for other special assessments, it should also be standard for PACE assessments. After a foreclosure, the successor owners are responsible for future assessment payments. Non-acceleration is an important mortgage-holder protection because liability for the assessment in foreclosure is limited to any amount in arrears at the time; the total outstanding assessed amount is not due in full. In cases of foreclosure, priority collection of delinquent payments for the PACE assessment may be waived or relinquished.

## **Notification of Mortgage Holders of Record**

Existing mortgage holders should be notified when residential property owners have placed a PACE assessment on the property to fund improvements.<sup>10</sup>

 $<sup>\</sup>underline{2013\%20Standard\%20Requirements\%20for\%20a\%20Certificate\%20of\%20Completion\%20for\%20Residential\%20Energy\%20Upgrades\%202013-09-03.pdf$ 

<sup>&</sup>lt;sup>10</sup> Eligibility and consent requirements for PACE assessments will vary by mortgage holder and type of PACE assessment mechanism. Property owners should contact their lender to ensure the PACE assessment is in compliance with their existing obligations and agreements. Property owners should also notify their mortgage holder of the annual PACE assessment amount to be withheld in escrow.

#### 4. Public Disclosure of PACE Assessments

Standardizing record keeping and public disclosure within the state or locality is critical for market transparency and improved integration of PACE into the mortgage markets. A reliable public information source is important for potential buyers, lenders, appraisers, title agents, and real estate professionals to confirm whether a property is encumbered by a PACE assessment. Each program should develop a framework to ensure that information on improvements is documented and made available to realtors, appraisers and lenders through permit records, multiple listing service (MLS) 'green fields' and other resources, such as *The Appraisal Institute's Green Addendum*. <sup>11</sup> Additional information on data to collect is provided in Section 10 and in the Information Resources section of the Guidelines.

## 5. Rebates and Tax Credits

The total amount of PACE financing should be net of any expected direct cash rebates for the energy efficiency, renewable energy, or water conservation improvements chosen.

Homeowners may also be eligible for non-direct cash incentives or tax credits, which can be more difficult to manage. For example, calculating an expected income tax credit can be complicated, as not all participants will have access to the tax credit and there will be time lags between project completion and tax credit monetization. Programs should therefore consider alternative structures for financing this gap, including assignment of rebates and tax credits to repay PACE assessments, short-term assessment additions, and partnering with third party lenders that offer short-term bridge financing. At a minimum, programs should provide full disclosure of potential financing gaps (i.e., rebate or tax credit payments) and encourage participants to seek qualified tax advice on the implications and options available for monetizing available income tax credits.

PACE programs should work in coordination with existing utility programs to offer available incentives and other support (e.g., energy advising or assessments) to households. PACE programs should actively engage utility and other energy efficiency programs available to households to maximize the benefits of PACE financing. PACE programs should also seek ways to engage low-moderate income households by coordinating with available programs and services that may offer additional support to eligible homeowners (e.g., homebuyer assistance or offering reduced interest rates on PACE assessments to income-qualified households).<sup>12</sup>

Home/Financing/Financing/The-PACE-Process

<sup>&</sup>lt;sup>11</sup> For more information, see the DOE white paper "Capturing Residential Energy Efficiency in Real Estate Transactions" at: <a href="http://eetd.lbl.gov/sites/all/files/c-1176">http://eetd.lbl.gov/sites/all/files/c-1176</a> better buildings real estate white paper6.pdf

<sup>12</sup> Efficiency Vermont's residential PACE program provides an example of how PACE programs designed to provide services to low and moderate income households: <a href="https://www.efficiencyvermont.com/For-My-">https://www.efficiencyvermont.com/For-My-</a>

## 6. Property Appraisals and Real Estate Transactions

PACE assessments are designed to achieve improvements in the comfort, health, and energy performance of homes through energy-efficiency, renewable energy and water conservation improvements. Energy efficiency improvements may also contribute to higher property values at resale.<sup>13</sup> Therefore, it is important to document upgrades and provide relevant information to those involved at point of sale (e.g., realtor/broker, appraiser) so that parties to the transaction are informed and knowledgeable about improvements financed through PACE.

Because PACE programs involve an additional tax assessment on the property that may be transferable to a future buyer at time of sale, PACE programs may consider taking the following steps to ensure energy improvements are real estate transactions:

- Establish a real estate advisor that can assist appraisers, realtors and home sellers and purchasers with questions regarding PACE assessments and improvements financed through a PACE assessment. Ensure that information on improvements is documented and made available to realtors, appraisers and lenders through permit records, multiple listing service (MLS) 'green fields' and other resources, such as *The Appraisal Institute's Green Addendum*. <sup>14</sup>
- Offer the US DOE Home Energy Score or other energy assessment before and after PACE
  efficiency upgrades are completed. If your program isn't equipped to offer the Score,
  then encourage homeowners who undertake a PACE assessment to get one through a
  qualified assessor in the area. Some utilities score homes for free or at a reduced cost.
  Home inspectors and energy auditors also offer this relatively low cost, quick, and
  standardized service.
- Engage MLSs, realtors, appraisers and lenders to provide information on the benefits of
  energy efficiency, renewable energy and water efficiency improvements, and guidance
  on completing real estate transactions that involve PACE assessments. For example,
  PACE programs can host workshops, trainings and provide direct technical assistance to
  realtors, lenders and appraisers on the PACE financing process, and provide assistance
  with purchase or refinance transactions involving PACE assessments.

## 7. Program Execution and Compliance with Applicable Laws

The structure of PACE programs makes the state and/or localities accountable for ensuring PACE programs comply with applicable federal and state laws as well as their public purpose. A well-designed program will help its property owners select the optimal combination of cost-

<sup>&</sup>lt;sup>13</sup> An Early Look at Energy Efficiency and Contributory Value. 2015. Colorado Energy Office. https://www.colorado.gov/pacific/energyoffice/atom/32661

<sup>&</sup>lt;sup>14</sup> For more information, see the DOE white paper "Capturing Residential Energy Efficiency in Real Estate Transactions" at: http://eetd.lbl.gov/sites/all/files/c-1176 better buildings real estate white paper6.pdf

effective, energy performance measures and confirm that the property owners can support the cost of the additional special assessment. The Quality Assurance and Anti-Fraud Measures section outlines steps PACE programs can take to provide oversight and ensure that cost-effective and quality work is being performed by qualified contractors on time and within budget. State and local governments should institute periodic reviews of PACE administrators and borrower performance under PACE programs.

## 8. Quality Assurance and Anti-Fraud Measures

Quality assurance and anti-fraud measures are essential protections for property owners, mortgage holders, investors, and local governments. These measures should include:

- PACE programs should establish minimum contractor requirements, including training and a registry of approved contractors:
  - Contractors should have minimum certifications appropriate to the installed measures;
  - Only licensed auditors and contractors that adhere to PACE program terms and conditions should be permitted to conduct energy assessments and upgrades financed through PACE programs; and
  - The DOE Standard Work Specifications for Home Energy Upgrades (SWS) define minimum requirements to ensure that work performed during home energy upgrades is effective, durable, and safe. The SWS can be used as an industry guide for workers, training instructors, homeowners, and program administrators involved in conducting energy efficiency improvements under PACE programs.<sup>15</sup>
- Program administrators should monitor contractor performance.
- A process for dispute resolution among homeowners, contractors, and the program administrator should be developed and published to facilitate resolving issues with quality workmanship, product problems, and customer service.
- Permits should be obtained where required by state or local law, with verification that permits have been issued prior to performing work.
- Onsite inspections of projects should be completed on a portion of participating properties upon project completion to ensure that contractors participating in the PACE program are adequately performing work.<sup>16</sup>
  - If work is not satisfactorily completed, contractor payment should be withheld until remedied. If not satisfactorily remedied, programs should disqualify

<sup>&</sup>lt;sup>15</sup> Standard work specifications for home energy upgrades. <a href="https://sws.nrel.gov/">https://sws.nrel.gov/</a>

<sup>&</sup>lt;sup>16</sup> Additional guidance on quality assurance and on-site inspection methods and sampling protocols is available in the Home Performance with ENERGY STAR Sponsor Guide and Reference Manual (v1.5). https://www.energystar.gov/index.cfm?c=home\_improvement.hpwes\_sponsor\_guide

contractors from further PACE-related work.

• Property owners should sign-off before payment is issued for the work.

#### 9. Debt Service Reserve Fund

An assessment reserve fund should be created to protect investors from late payment or non-payment of PACE assessments. This fund could also be used to protect mortgage lenders financing the first and/or second mortgages or third party mortgage insurers and loan guarantors by minimizing the risk resulting from the need to make payments for PACE assessments due from sales proceeds in the event of default or foreclosure.

#### 10. Data Collection and Evaluation

PACE programs should collect and analyze data to evaluate the efficacy of PACE programs and understand PACE assessments' financial performance and energy and cost savings realized from PACE projects. Helpful data to collect includes:

- installed measures;
- PACE assessment amount;
- PACE assessment default and delinquency;
- mortgage default and foreclosure;
- expected energy and cost savings;
- borrower data (e.g., FICO score, debt-to-income ratio); and
- actual energy consumption and costs for a minimum of twelve months before and after installation of measures.

For example, customers of utilities participating in the Green Button Initiative can readily share data with third-party providers.<sup>17</sup> Obtaining this information will facilitate evaluation of the effectiveness of PACE programs by program administrators or third party evaluators. Resources for collecting and evaluating program data are provided in the information resources section.

## Conclusion

Current and prospective residential PACE financing programs are strongly encouraged to follow these guidelines and best practices. DOE will continue to support implementation of PACE financing programs by capturing and disseminating best practices, promoting effective program design, and sharing lessons learned with stakeholders.

<sup>&</sup>lt;sup>17</sup> For more information on Green Button, see: http://www.greenbuttondata.org/

#### Informational Resources

The following information resources are available to assist PACE program administrators and their stakeholders in planning, implementing and evaluating their residential energy efficiency financing programs.

## **Energy Efficiency Measures**

The following resources provide information on residential energy efficiency measures, cost effectiveness, and energy savings potential.

- The National Residential Efficiency Measures Database, maintained by the National Renewable Energy Laboratory (NREL) is a publicly available, centralized resource of residential building retrofit measures and costs for the U.S. building industry. <a href="http://www.nrel.gov/ap/retrofits/">http://www.nrel.gov/ap/retrofits/</a>
- The Demand-Side Management (DSM) Program Database and Reports, maintained by Lawrence Berkeley National Laboratory (LBNL) characterizes and inventories efficiency programs and calculates and reports on the cost of saving energy through utility and other energy efficiency programs. https://emp.lbl.gov/what-it-costs-save-energy
- The Database for Energy Efficient Resources (DEER) contains information on selected energy-efficient technologies and measures. The DEER provides estimates of the energy-savings potential for these technologies in residential and nonresidential applications. <a href="http://www.deeresources.com/">http://www.deeresources.com/</a>
- **Technical Reference Manuals (TRMs)** provide standards and protocols for verifying, measuring and evaluating energy savings. TRMs are developed and utilized by states for planning and implementing energy efficiency regulations and programs.

## **Program Design**

The following resources are available to assist PACE program administrators in developing, implementing and evaluating their residential energy efficiency programs.

- The Better Buildings Residential Program Solution Center provides step-by-step guidance to help program administrators and their partners plan, operate, and evaluate residential energy efficiency programs. <a href="http://www.energy.gov/rpsc/">http://www.energy.gov/rpsc/</a>
- The **SEE Action Energy Efficiency Financing Program Implementation Primer** Provides key considerations for policymakers, energy efficiency program administrators, and

program partners on implementing successful energy efficiency financing programs for existing buildings.

https://www4.eere.energy.gov/seeaction/publication/energy-efficiency-financing-program-implementation-primer

## **Real Estate Transactions and Appraisals**

The following resources provide additional information on valuation of energy related improvements in real estate transactions and appraisals:

- The DOE report, "Capturing Energy Efficiency in Residential Real Estate Transactions:
   Steps That Energy Efficiency Programs Can Take", describes specific strategies for capturing the value of energy efficiency in real estate transactions, with case studies and resources for energy efficiency programs, realtors and appraisers.
   <a href="https://rpsc.energy.gov/sites/default/files/publication/c-1176">https://rpsc.energy.gov/sites/default/files/publication/c-1176</a> Better Buildings Real Estate White Paper.pdf
- The DOE Better Buildings Residential Program Solution Center provides a portfolio of resources on valuation and appraisal of energy efficiency improvements and integration of energy efficiency in real estate transactions, including step-by-step guidance and examples from residential energy efficiency programs. http://rpsc.energy.gov
- The **Appraisal Institute** provides training, guidance, and publications for realtors and appraisers on methods and procedures for valuation of energy efficiency, renewable energy and other green features and improvements, including the following resources:
  - Residential Green and Energy Efficient Addendum;
  - Residential Green Valuation Tools; and
  - An Introduction to Green Homes

http://www.appraisalinstitute.org/appraisal-institute-aids-us-department-of-energy-on-home-energy-efficiency/

## **Program Evaluation and Data**

The following resources provide information on energy efficiency program evaluation and data collection:

- The Uniform Methods Project provide a voluntary set of standard protocols for determining savings resulting from particular energy efficiency measures implemented through state and utility efficiency programs, including residential energy efficiency. http://energy.gov/eere/about-us/ump-protocols
- The SEE Action Energy Efficiency Program Impact Evaluation Guide provides an

overview and guidance on energy efficiency program evaluation, including definitions, concepts, and steps for calculating savings, avoided emissions, and other impacts. <a href="https://www4.eere.energy.gov/seeaction/system/files/documents/emv">https://www4.eere.energy.gov/seeaction/system/files/documents/emv</a> ee program impact guide 0.pdf

- The Better Buildings Residential Program Solution Center, Evaluation and Data
   Collection Handbook provides step-by-step guidance on evaluating residential energy
   efficiency programs, including planning and conducting evaluations, collecting data, and
   communicating impacts.

   https://bbnp.pnnl.gov/handbooks/evaluation-data-collection-%E2%80%93-overview
- The DOE Program Benchmarking Guide provides an inventory of recommended Residential Program Progress Metrics, describes approaches for using them effectively, and gives examples of peer benchmarks from residential energy efficiency programs. <a href="http://energy.gov/eere/better-buildings-residential-network/resources#guide">http://energy.gov/eere/better-buildings-residential-network/resources#guide</a>

## U.S. Department of Housing and Urban Development (HUD) Resources

## **Fair Housing and Equal Opportunity**

The following resources provide more information on program structure, operation and evaluation to ensure equal access under the Fair Housing laws:

 HUD Fair Housing recommends collection of data to ensure that the population is not being disproportionately served. Additional information can be found at: <a href="http://hudatwork.hud.gov/HUD/fheo/po/e/guidance/fheo-guidance">http://hudatwork.hud.gov/HUD/fheo/po/e/guidance/fheo-guidance</a>

## **Mortgage Market Information**

The following sources provide information on the FHA single family PACE policy:

- FHA Single Family
   http://portal.hud.gov/hudportal/HUD?src=/program\_offices/housing/sfh
- FHA Mortgagee Letters
   http://portal.hud.gov/hudportal/HUD?src=/program offices/administration/hudclips/letter
   s/mortgagee
- FHA Resource Center http://portal.hud.gov/hudportal/HUD?src=/program offices/housing/sfh/fharesourcectr