



# Home Performance Program Contractor Handbook

June 20, 2017



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## I. Program Term

- A. The SMUD Home Performance Program (HPP) will be in effect through mid-December of each year.

## II. What Is Home Performance?

- A. Whole house approach and building science.

1. Contractors and homeowners who participate in the HPP use a “house-as-a-system” approach to improve the comfort, health, safety, durability, and energy efficiency of the home. The HPP contractor uses building science principles and specialized equipment to evaluate how energy-related components of the house (e.g., HVAC, insulation, air infiltration, and windows) affect conditions in the living space. The contractor then determines how improvements to separate components can be integrated in order to optimize the total project result.
2. Home performance contractors are trained to implement energy efficiency standards developed by Building Performance Institute (BPI), an independent non-profit organization that develops and promotes national standards for residential energy efficiency and combustion appliance safety. Obtaining BPI certification as a Building Analyst (and additional specialties) equips home performance contractors with the knowledge and skills needed to maximize a home’s energy performance and ensure comfort and safety. Learn more at [www.bpi.org](http://www.bpi.org).
3. Using the house-as-a-system approach, a home performance contractor inspects the house for signs of inefficiency (e.g., drafts, excessive dust, moisture issues such as mold or mildew, and premature deterioration of building materials). The HPP contractor also interviews the customer to identify additional inefficiency indicators (e.g., uneven room temperatures or poor indoor air quality) and obtains additional data, as needed, from utility bills and diagnostic testing. The HPP contractor uses this information to identify all the energy efficiency problems, and then designs a prioritized integrated project plan that improves energy efficiency and living conditions throughout the home.
4. *SMUD requires all of its HPP Participating Contractors to provide excellent customer service for their clients; this includes providing a clear explanation of the HPP and retrofit project process, managing clients’ expectations, and maintaining regular and effective communication with the client.*
  - a. Participating Contractors must provide every client with the [“Frequently Asked Questions From Homeowners”](#) fact sheet, which explains what customers should know about the SMUD HPP program and what to expect as a program participant.

B. Additional Resources: SMUD Single-Measure Programs.

1. In addition to HPP, SMUD provides a suite of single-measure rebate programs for appliances (including refrigerator and freezer recycling, clothes washers, dishwashers, and solar water heaters) and equipment efficiency upgrades (including air conditioning, cool roof, heat pump, whole house fan).
  - a. *Note: Homeowners can participate in only one program per appliance or system (e.g., a homeowner cannot apply for a rebate from the SMUD air conditioning single-measure program and also apply for an HPP rebate that includes an air conditioning component).*
  - b. More information about single measure programs can be found at <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/index.htm>

C. SMUD goals.

1. The goal of the HPP is to maximize kWh savings through the implementation of multiple measures.

D. Why are the rebates important?

1. The home performance industry is relatively new, yet offers homeowners an effective means to increase their home's energy efficiency, comfort, safety, and durability. SMUD HPP promotes homeowner understanding of and participation in the "house-as-a-system" approach and its rebates make it more affordable for homeowners to invest in an energy retrofit project.

### III. **SMUD Personnel/Program Administration**

A. SMUD Program Management.

1. Jim Mills is SMUD's HPP Program Manager. Jim is responsible for the program's smooth operation and success. Jim can be reached at: [james.mills@smud.org](mailto:james.mills@smud.org); (916) 732-6798.

B. Who is Efficiency First California/CBPCA, and what do they do?

1. Efficiency First California or EFCA (formerly California Building Performance Contractors Association [CBPCA]) leads the HPP administration team. EFCA ensures that Participating Contractors understand how the program works; teaches them how to successfully use the program; provides in-field quality assurance, project verification, and contractor mentoring; and oversees program administration.

Program information is available on the HPP website at <http://cbpca-hpp.org/>. Questions may be emailed to [contractorsupport@thebpca.org](mailto:contractorsupport@thebpca.org). Individuals and organizations interested in the HPP can call EFCA/CBPCA at (510) 788-0463 for more information.

2. EFCA subcontractor Bevilacqua-Knight, Inc. (BKl) processes Participating Contractor project applications, provides desktop Quality Assurance review, mentors contractors on project application protocols and Vision database processes, and manages program data. Participating Contractors should use the Vision database to communicate with BKl and EFCA staff about their HPP projects. For additional questions, call BKl at (510) 444-8707.

## **IV. Participating Contractor Requirements**

### **A. SMUD expectations.**

1. SMUD expects all Participating Contractors will read all messages, including (but not limited to) emails, newsletters, and database communications, to program participants to keep abreast of program-related news and changes. SMUD holds semiannual Contractor Meetings to present program updates, such as new rebate measures, and confer with Participating Contractors on opportunities to increase the value of the program for homeowners and contractors.
2. SMUD expects all Participating Contractors will share the contents of SMUD communications and Program Administrator notices with all staff involved in implementing HPP projects to ensure that program standards and requirements are met.
3. All Participating Contractors are responsible for understanding program-related information and acting upon that information in a timely fashion.
4. SMUD requires all Participating Contractors to provide excellent customer service for their clients; this includes providing a clear explanation of the HPP and retrofit project process, managing client expectations, and maintaining regular and effective communication with the client.
5. SMUD requires all Participating Contractors to use all materials/equipment as intended by the product manufacturer and indicated in the product specification sheet. SMUD reserves the right to disqualify any rebate portion for any individual HPP retrofit project based on improper use, or installation, of materials and/or equipment. Participating Contractors are encouraged to contact SMUD and its Program Administrator to discuss the possible use of new materials, equipment, or installation methods within an HPP retrofit project, especially for retrofit measures not clearly identified in the Contractor Handbook.
6. Contractors entering the HPP program must complete a three (3) month probationary period during which they must submit at least one project to the program. Failure to submit a project during the three-month period will trigger an evaluation by the SMUD Program Management team to determine why the project submission requirement was not met and whether the company shall continue in the program.

B. Licensing.

1. To participate in the SMUD HPP, Participating Contractors must hold a:
  - a. BPI Building Analyst (BPI-BA) certification, **AND**
  - b. California General B License,
2. Contractors shall provide evidence that they hold an active California State Contractor's License in good standing.

C. General company requirements.

1. Participating Contractors must maintain all applicable insurance and bonds required by federal, state, and local laws.

D. BPI certification.

1. HPP requires that Participating Contractors have a certified BPI Building Analyst on staff to provide the following services for each HPP project in accordance with BPI Technical Standards for the Building Analyst Professional – Combustion Safety and Carbon Monoxide Protection protocols:
  - a. Combustion Appliance Safety (CAS) testing including: (1) carbon monoxide (CO) measurement at each appliance, (2) draft measurement and spillage evaluation for atmospherically vented appliances, and (3) worst-case negative pressure measurement for each combustion appliance zone (CAZ).
  - b. Combustion safety test results must be acted upon according to the Combustion Safety Action Level table specified in the BPI Technical Standards for the Building Analyst Professional, page 13.
2. For the most up to date information about BPI certification for individuals, visit [www.bpi.org](http://www.bpi.org).

E. Program orientation.

1. Any contractor who wants to learn about the program and become a Participating Contractor must attend a pre-recorded HPP Orientation Webinar.
2. The Orientation Webinar recording and PDF slides can be found here: <http://cbpca-hpp.org/apply/>

F. Enrollment/documents to be signed.

1. Contractor Participation Agreement

- a. All Participating Contractors must sign the SMUD Participating Contractor Agreement. It can be found at <http://cbpca-hpp.org/apply/>
- b. A signed original Participating Contractor Agreement must be provided to SMUD in hard copy format.

G. List of eligible HPP contractors.

1. SMUD maintains a list of all eligible HPP Participating Contractors. It can be located at <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/HPP/HPP-Contractors.htm>.

H. Activity requirements to remain in good standing.

1. SMUD requires that all Participating Contractors be active in the program. To remain on the HPP Contractor list, a Participating Contractor must abide by the following rules:
  - a. A Participating Contractor must complete a minimum of one HPP retrofit project every three months. Failure to submit HPP project within a quarter will cause removal from the SMUD list for the following quarter. If you submit a project after each quarter, we will re-instate you onto the list for the remainder of that quarter, and the next quarter, etc.
  - b. Participating Contractors must submit pre-upgrade Job Reporting Template (JRT) within 30 days of work starting in order for SMUD to measure its program “pipeline” and to have an ongoing record of customers participating in the program.
    - i. Program administrators will leave reminders in Vision at 60 and 90 days after a project is originally submitted to assist contractors in tracking active projects.
    - ii. After 120 days, program administrators will follow-up by phone to support the rebate process.
  - c. If a Participating Contractor can complete the upgrade within 30 days after work begins, he/she can submit both pre-upgrade walkthrough and post-upgrade test-out information in a one JRT via a single Vision upload.
    - i. SMUD reserves the right to remove any HPP Participating Contractor from the publicly available list because of inactivity or failure to complete retrofit projects within the time allotted.
    - ii. SMUD may reinstate any Participating Contractor who has been removed from the publicly available list under the condition that the Participating Contractor completes a retrofit project within the following three months.

I. Use of subcontractors.

1. A Participating Contractor must be in charge of the entire HPP project. Participating Contractors, however, may subcontract work, including work that is required to be performed by a BPI certified individual.
2. The Participating Contractor is responsible for ensuring that all SMUD HPP requirements are met, that all measures installed and work performed follow BPI best practices and meet BPI standards, and that all data and any other information submitted to the HPP meets SMUD requirements.

J. Customer complaints.

1. If SMUD receives a customer complaint about a Participating Contractor, SMUD will contact that contractor in a timely manner to facilitate an appropriate and prompt contractor response.
2. If SMUD receives more than three customer complaints from three different customers regarding any one Participating Contractor, that contractor will be placed on probation for 45 days.
3. Any contractor who has been placed on probation because of customer complaints will be returned to the active list after 45 days if no further complaints are received during that period.
4. If SMUD receives any further complaints either during the 45-day probationary period or afterward, no more new retrofit projects will be accepted by SMUD for that contractor for the remainder of the program year.

K. Mentoring.

Mentoring helps Participating Contractors ensure that they are effectively implementing the house-as-a-system approach, following BPI and program standards, and providing quality home performance services to HPP customers.

1. Each new Participating Contractor **must** schedule three (3) free onsite project mentoring sessions with EFCA. The first onsite mentoring session may be conducted at the start of the contractor's first HPP project to assist with project scope planning, or at the end during "test-out" to show how the project could be improved. New Participating Contractors are required to complete two additional onsite test-out mentoring sessions within their first four HPP projects.
  - a. **Required onsite test-out mentoring** covers safety inspection procedures, project scope plan design, measure installation quality review, photo documentation techniques, diagnostic blower door and Duct Blaster testing, and Combustion Appliance Safety (CAS) testing. The mentoring session focuses on performing a complete and correct home test-out per BPI standards and program requirements while addressing any missed opportunities for deeper energy savings.
2. SMUD highly recommends that all project staff participate in mentoring. This includes the project's BPI/BA-certified staff (or the certified subcontractor), the field crew leads for the



project, the contractor's primary sales person, and any other key decision makers involved in selecting customers and jobs.

3. **HPP Mentoring Service:** Additional onsite test-out mentoring is available on a first-come/first-served basis. In addition, Participating Contractors may request in-office administrative mentoring that covers Job Reporting Template (JRT) preparation, project planning to optimize rebates, rebate application preparation, project timeline, and much more.
4. **Mentoring Request Application:** To schedule an onsite test-out or in-office administrative mentoring session, Participating Contractors must complete an online Mentoring Request Application through the Vision system. EFCA will reply to the request and schedule a mentoring session through Vision. Complete information about mentoring and verification requirements, and instructions about how to schedule mentoring and verification sessions can be found at <http://cbpca-hpp.org/qc/>.

## V. HPP Dwelling Eligibility

### A. The following types of homes qualify for a full rebate in the SMUD Home Performance Program:

#### 1. Single-family detached homes

- a. Includes all-electric homes, homes with electric and natural gas service, and homes with electric and propane service.
- b. Includes manufactured homes that are constructed on site and bolted to the foundation.
- c. Excludes mobile homes.
- d. Includes homes with detached "guest homes" or "mother-in-law" units on the parcel. The square footage of the separate unit must be added to the square footage of the main building in the Job Reporting Template and the detached unit included in the test-out process if gas combustion appliances are present.

#### 2. Two-to-four (2-4) units per building, single owner (at least 1,000 square feet per unit)

- a. Includes all-electric homes, homes with electric and natural gas service, and homes with electric and propane service.
- b. All units must participate in the SMUD Home Performance Program.
- c. All units must be owned by a single individual or company.
- d. In a multi-story, multi-family building, lower story units (which do not have attics) will not be eligible for attic rebates.

#### 3. Units in buildings with two (2) or more units in which each unit is individually owned

- a. Includes all-electric homes, homes with electric and natural gas service, and homes with electric and propane service.

- b. Includes condominiums, townhouses, and “halfplexes.”
  - c. Not all units in the building must participate in the SMUD Home Performance Program.
  - d. Each participating unit (if owned by different individuals) can receive a full rebate if the unit is 1,000 sq. ft. or larger.
- B. The following types of homes qualify for a half rebate in the SMUD Home Performance Program:
- 1. **Two-to-four (2-4) units, single owner (less than 1,000 square feet per unit)**
    - a. Includes all-electric homes, homes with electric and natural gas service, and homes with electric and propane service.
    - b. If the building has natural gas or propane service, all units in the building must participate in the SMUD Home Performance Program.
    - c. Stacked units are acceptable.
    - d. Rebates will be processed only once documentation for all units in the building has been submitted.
- C. SMUD territory requirement.
- 1. Only homes that are located in SMUD Service territory and that receive electric power from SMUD are eligible for rebates under the HPP.
  - 2. A map of the SMUD territory can be located at <https://www.smud.org/en/about-smud/company-information/board-of-directors/ward-map.htm>.
- D. Customer accounts.
- 1. Only houses with active and up-to-date SMUD accounts are eligible to participate in the HPP.
- E. Financing options.
- 1. Financing is an important resource for HPP customers. Information about SMUD financing options can be located at <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/financing.htm>

## VI. Project Requirements

Note: SMUD requires that all HPP Contractors train their workers to properly install Home Performance Program measures.

### A. Deadlines for project submissions.

1. Participating Contractors are required to submit a pre-upgrade JRT within 30 calendar days of the signed contract in order for SMUD to measure its program “pipeline” and to have an ongoing record of customers participating in the program. Failure to do so will cause the HPP project to be ineligible for the SMUD program.
  - a. Program administrators will leave reminders in Vision at 60 and 90 days after a project is originally submitted to assist contractors in tracking active projects.
  - b. After 120 days, program administrations will follow-up by phone to support the rebate process.
2. If a Participating Contractor can complete the upgrade within 30 calendar days after contract signing, he/she can submit both pre-upgrade walkthrough and post-upgrade test-out information in a one JRT via a single Vision upload.

B. All applicable permits must be pulled, all applicable building codes must be followed, and BPI standards must be adhered to for each HPP project. The Permit number is now required on the JRT by the end of the job. Permit closure not required, rebate will be paid with the permit number.

Measure	Permit requirement
Attic insulation	NOT required
Wall insulation	NOT required
Crawlspace insulation	NOT required
Air sealing of the house	NOT required
Duct sealing	NOT required
Refrigerant charge of AC	NOT required
HVAC replacement	<b>Required</b>
Duct replacement	<b>Required</b>
Window replacement	<b>Required</b>
Water heater replacement	<b>Required</b>
Pool pump replacement	<b>Required</b>
Lighting replacement	<b>Required</b>
Whole house fan replacement	<b>Required</b>

EV readiness

Required

C. Combustion appliance safety (CAS) testing.

1. CAS testing must be conducted by an appropriate BPI-certified Building Analyst during project test-out.
2. All CAS testing must be performed in accordance with BPI testing protocols.
3. Depending upon the specifics of the project, post-retrofit combustion safety issues must be fixed immediately, fixed as soon as possible, and/or reported to PG&E. If a combustion safety issue arises that the homeowner does not want addressed, SMUD strongly recommends to Participating Contractors that they clearly document that issue, request that the homeowner sign a document stating that the homeowner does not want any further CAS-related work performed, and advise the natural gas or propane provider of the CAS issue.

D. Minimum energy savings.

1. The purpose of the SMUD HPP is different from single-measure energy efficiency programs in that HPP Participating Contractors work with homeowners to maximize kWh savings through the implementation of multiple measures.
2. At the end of each HPP upgrade, (a) the home must be safe, (b) attic insulation must be greater than or equal to R-38 (R-30 if the home starts with R-30 or greater), (c) measured duct leakage to outside must be less than or equal to 8%, and (d) the whole building leakage must be less than or equal to 130% of the ASHRAE mechanical ventilation threshold.

E. Infiltration target.

1. Post-retrofit air infiltration in the upgraded home must be at or below 130% of the ASHRAE 62.2 mechanical ventilation minimum standard. Additionally, mechanical ventilation should be recommended if infiltration is below the ASHRAE 62.2 mechanical ventilation minimum standard. (The minimum standard and 130% of the minimum standard are calculated in the JRT based on the conditioned floor area of the home, the number of bedrooms, the average ceiling height, and the number of floors). If a project cannot reach the 130% target, the Participating Contractor must be prepared to explain during the desktop and/or in-home quality assurance review what prevented the project from reaching that goal.

F. Attic insulation and air sealing.

1. If the pre-retrofit attic insulation level is below R-30, an attic upgrade must be included in the work scope. The post-retrofit insulation level must be R-38 or higher in order to qualify for an attic insulation rebate. Vertical knee walls must be insulated to R-19 or higher.
2. Houses with knob and tube are not eligible to participate in HPP

3. Solar tubes must be insulated to R-19 with an aluminum-facing batt product. The aluminum-facing must be sealed along the length of the tubing seam (UL tape) and to the surface of the attic ceiling/floor (UL tape/caulk) to create a complete air barrier.
4. SMUD recommends that air sealing be completed as part of each home performance job (see table below), which may require the removal of improperly installed, wet, or contaminated insulation, and the completion of proper air sealing in the attic, especially on the attic floor.
5. SMUD highly recommends that the HPP Participating Contractor NOT reuse existing insulation as part of a retrofit project, but instead remove existing attic insulation and decontaminate and air seal the attic.
6. Participating contractors should be aware that a post-retrofit verifier may examine the project's work and will likely move the attic insulation to determine whether existing insulation was reused and whether the installation meets SMUD HPP insulation requirements.
7. SMUD permits the reuse of insulation that is relatively new (likely within four to five years of insulation), largely effective, and uncontaminated. Existing insulation may be combined with new insulation to meet the HPP's R-38 target.

The rebate level corresponding to an attic insulation upgrade is determined by the pre-retrofit building leakage, pre-retrofit attic insulation level, whether existing insulation is re-used, and the square footage of the upgraded attic space.

Pre-retrofit condition	Post-retrofit condition	Rebate value
≤ R-29	Sealed attic floor, ≥ R-38 (knee walls ≥ R-19) (existing insulation must be completely replaced)	\$100 for every 100 sqft of attic insulation, \$2,000 max
≤ R-29	Sealed attic floor, ≥ R-38 (knee walls ≥ R-19) (re-use of existing insulation allowed if uncontaminated and free of debris)	\$50 for every 100 sqft of attic insulation, \$1,500 max
≤ R-29	≥ R-38 (knee walls ≥ R-19) (re-use of existing insulation allowed if uncontaminated and free of debris)	\$15 for every 100 sqft of attic insulation, \$1,000 max

- a. Use the "Typical Insulation R-values" chart and "Effective R-values for Batt Insulation" chart located in the [BPI Technical Standards for Building Analyst Professional](#) (page 7) to determine the R-value(s) of existing attic insulation.
- b. If the roof has more than one assembly (i.e., more than one R-value in the same roof), use the average R-value (weighted by the respective areas of each assembly) and the table above to determine the overall R-value.
- c. There are **three air sealing rebate** tiers, which greatly expands the number of homes eligible for air sealing rebates:
  - i. 15% CFM50 reduction,

- ii. 30% CFM50 reduction, and
- iii. 30% CFM50 reduction plus mechanical ventilation per ASHRAE standards.
- d. The 15% and 30% reductions are relative to the greater of test-in or default CFM50 (4.9 SLA). This is designed for compatibility with the PG&E Home Upgrade program, which measures infiltration reduction relative to default CFM50.
- e. All homes are required to test-out at or below 130% of the ASHRAE mechanical ventilation standard threshold, even if the project is not claiming an air sealing rebate.
- f. All values related to the air sealing standards and rebates are automatically calculated in the *JobInfo* tab of the JRT.

G. Duct leakage

- 1. Leakage-to-outside of test-out ductwork can measure no more than 8% of *measured* airflow. Installation of more than forty feet of new ductwork, however, triggers Title 24 Part 6 system requirements to meet 5% of *nominal* airflow.
- 2. SMUD does not require a Duct Blaster test on ducts with suspected asbestos covering. If this is the case and duct replacement is not in work scope, note in the JRT that ducts were not tested because of the presence of asbestos. In jobs in which Duct Blaster tests cannot be used because of the presence of asbestos, the default leakage number using Title 24 Part 6 must be recorded. If asbestos-covered ducts are to be removed, they must be removed in accordance with all state and local health and safety requirements.

H. Performance standards for scope measures.

- 1. **Any new appliance or measure installed as part of the HPP must conform to meet, or exceed, the requirements of the corresponding SMUD single-measure program, should one exist.**
- 2. Crawlspace insulation and vapor barrier standards.
  - a. Crawlspace insulation needs to be minimum R-19, with a minimum 6 MIL plastic vapor barrier installation.
- 3. **Duct insulation standards.**
  - a. New ducts or new duct insulation needs to be minimum R-8.
- 4. **Deep buried duct standards.**
  - a. Ducts in attic must be fully buried (i.e., top of duct at or below insulation level), and preferably deeply buried (top of duct is at least 3.5" below insulation level) or as much as is practical.
- 5. **Minimum air conditioning standards.**

Tier	SEER		EER		HSPF		Title 24
	Split	Package	Split	Package	Split	Package	
1	15	15	12.5	12	8.5	8.2	Required for all tiers as needed by Title 24 · Refrigerant Charge · Duct Sealing · Fan Watt · Airflow
2	16	16	13	12	9	8.2	
3	18		13		10		
Mini-splits Ductless	15				8.5		

- a. The total tonnage of all HVAC systems combined must be the same or lower at the completion of the job than at the start of the job. There is a bonus rebate in place for reducing tonnage.
- b. Recognizing that many HVAC system change-outs are unplanned, Participating Contractors are urged to use the Emergency HVAC Retrofit Protocol (<http://cbpca-hpp.org/library/>) when performing emergency changes.

**6. HVAC airflow bonus.**

- a. There are **two HVAC airflow bonus rebate** tiers, which are based from the sum of all system’s measured airflow and tonnage:
  - i. 400 cfm/ton
  - ii. 450 cfm/ton or better
- b. To qualify, Participating Contractors must indicate on the JRT what steps were taken to achieve either tiers of the airflow measure upgrade.
- c. The airflow bonus is one per home.
- d. If there are two systems, they must both meet the airflow standard.

**7. Whole house fan standards.**

- a. To earn a rebate, the whole house fan must be rated for ≥1000 CFM.
- b. The Contractor may install two or more whole house fans on the same project and receive a rebate for the first two fans.

**8. Gas furnace standards.**

- a. See PG&E program requirements.

**9. Water heater standards.**

- a. **Replacing existing electric DHW with a heat pump DHW.** Warranty must be equal to/greater than 6 years on sealed system, safety UL 174 & UL 1995. Heat Pump DHW Energy Factor (EF) equal to/greater than 2.0; first hour rating equal to/greater than 50 gallons/hour; insulate first 5 feet of hot and cold water pipes from the storage tank
- b. **Replacing existing electric DHW with an electric DHW with EF 0.92 or greater.** Maximum capacity 60 gallons; insulate first 5 feet of hot and cold water pipes from the storage tank

**10. Window standards.**

- a. Windows must meet ENERGY STAR's qualification criteria, currently U-factor equal to/less than 0.30, and Solar Heat Gain Coefficient (SHGC) equal to/less than 0.25 to comply.

**11. Pool pump standards.**

- a. Variable-speed pool pumps and controllers (when applicable) must default to low-speed setting and be on Approved Equipment List.
  - i. Variable-Speed Pool Pump Eligibility List: <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/documents/Variable-Speed-Pool-Pump-Eligibility-List.pdf>
  - ii. Variable-Speed Controller Eligibility List: <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/documents/Variable-Speed-Controller-Eligibility-List.pdf>
- b. The contractor may include the pool pump measure in the HPP rebate application under one of the following circumstances:
  - i. The customer hires a certified pool pump professional to install a qualifying pool pump.
  - ii. The contractor subcontracts the pool pump installation to a certified pool pump professional.
  - iii. The contractor staff includes a certified pool pump professional who installs the pump.
- c. Requirements.
  - i. Upgraded pool pump must be Variable Speed and default to low-speed.
  - ii. Upgraded pump and controller (if applicable) must be on program Approved Equipment List (see VI.H.9.a.i-ii above)
  - iii. All equipment and installation methods must be Title 20 compliant.

**12. Smart thermostat.**



SMUD HPP now offers these nine types of smart thermostats (the list might grow in the future):

- Bryant Housewise
- Carrier Cor
- EcoBee3
- EcoBee3G
- EcoBee4
- EcoBee3 Lite
- EcoFactor Simple S100
- Nest3G
- Nest Learning T3 Series

The following information will be required to be entered into the JRT:

- Thermostat brand name
- Thermostat serial number
- Thermostat model number
- AC make and model

The rebate is available as a standalone HPP measure with or without HVAC replacement. The rebate amount is \$75. Smart Thermostats can be considered for a bonus kicker regardless of the HVAC selection.

### **13. Electric vehicle (EV) ready homes.**

EV Ready means that the home is ready to have an EV charging station installed without major electrical work. Specifically, the home must be pre-wired for a Level 2 electrical vehicle charging station. *“Level 2 charging”* refers to the voltage that the electric vehicle charger uses (240 volts). Level 2 chargers come in a variety of amperages typically ranging from 16 amps to 40 amps.

#### **ii. Code Compliance:**

- Must meet current California electrical code & National Electrical Code (NEC) – Article 625
- Local jurisdictions may have additional requirements

#### **iii. Installation Requirements:**

- Breaker and grounded AC outlet installation
- Locate on permanent surface within 10' of on-site parking space
- Require a SMUD-branded label to inform the customer that the spot is EV-capable
- Dedicated 240-volt single phase 40-amp circuit with ground wire. From the electrical panel to a junction box within 10' of on-site parking space.
- Proper wire size

- Mechanically secured
- Physically protected
- Installed by a licensed contractor
- Required permit (permit copy not required to be submitted to HPP)
- Must be installed inside the garage or a parking space

**14. Lighting fixture standards.**

- a. Rebates are available for installing five (5) pin-based sockets and bulbs that meet Title 24 Part 6 high-efficiency lighting standards. These standards are itemized in the Job Reporting Template (JRT).

**15. Multiple measure bonus.**

- a. Each project that includes five (5) or more HPP measures will receive a \$300 bonus. This applies to all measures and all homes whether heated by natural gas or electricity. HVAC replacement combined with HVAC tonnage reduction and/or duct sealing is considered one measure for the purpose of calculating the multiple measure bonus.
- b. For homes with electric heat, the multiple measure bonus does not double.

**I. Applicability of single-measure standards.**

1. Any measure installed as part of a home performance retrofit project must conform to meet, or exceed the requirements of the parallel SMUD single-measure energy efficiency program standard (e.g., windows that are installed as part of a HPP retrofit project must meet or exceed SMUD's single measure window energy efficiency standards).

**J. Rebates and Rebate Levels**

1. The SMUD Home Performance Program rebate is based on the measures installed and selected on the *Menu* tab of the Jobs Reporting Template.
2. Two or more upgrade measures must be selected. Note that, for the purposes of counting measures, an HVAC replacement plus duct sealing is considered one measure. The total kWh savings must be 10% or more. The energy savings estimate is calculated in the Job Reporting Template (JRT) on the *Savings* tab.
3. The SMUD rebate is not affected by natural gas or propane savings, overall site energy savings, Time Dependent Valuation (TDV) savings, or rebates provided by other utility providers. The SMUD rebate is based only on the percent kWh savings and the number and type of measures chosen from the menu.
  - a. No rebate check will be processed until all Quality Assurance, Quality Control, verification, and any corrective actions are completed to SMUD's satisfaction.
  - b. The SMUD rebate value is not finalized until the job is approved by the program administrators.

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c. The program reviewers have final discretion over the SMUD rebate amount.

4. How much SMUD will pay the customer?

a. Please go to <http://cbpca-hpp.org/library/> to find the most updated version and rebates associated, below is an example of the menu:

Measure	Description	Requirements		Rebate
		Pre-upgrade	Post-upgrade	
<b>SHELL MEASURES</b>				
<b>Attic insulation</b>	Insulate attic above all conditioned areas to R-38 or greater.	≤ R-29	Sealed attic floor, ≥ R-38 (knee walls ≥ R-19) (existing insulation must be completely replaced)	\$100 for every 100 sqft of attic insulation, \$2000 max
		≤ R-29	Sealed attic floor, ≥ R-38 (knee walls ≥ R-19) (re-use of existing insulation allowed if uncontaminated and free of debris)	\$50 for every 100 sqft of attic insulation, \$1500 max
		≤ R-29	≥ R-38 (knee walls ≥ R-19) (re-use of existing insulation allowed if uncontaminated and free of debris)	\$15 for every 100 sqft of attic insulation, \$1000 max
<b>Air sealing</b>	Air seal the building to reduce leakage	-	Minimum 15% infiltration reduction vs. test-in	\$25 for every 500 sqft conditioned floor area, \$200 max
		-	Minimum 30% infiltration reduction vs. test-in	\$50 for every 500 sqft conditioned floor area, \$400 max
<b>Air sealing and air quality</b>	Air seal the building to reduce leakage and install adequate mechanical ventilation	Does not already have adequate mechanical ventilation meeting ASHRAE criteria	Minimum 30% infiltration reduction vs. test-in Adequate continuous mechanical ventilation installed	\$300 + \$50 for every 500 sqft conditioned floor area, \$600 max
<b>Wall insulation</b>	Insulate walls to R-13 or greater	No insulation	≥ R-13, all exterior walls of living space	\$50 for every 100 sqft of insulation, \$1000 max

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<b>Window replacement</b>	Replace windows with efficient ones	-	U-factor $\leq$ 0.30, SHGC $\leq$ 0.25	\$75 for every 25 sqft of upgraded window area, \$1000 max
<b>Crawlspace insulation &amp; vapor barrier</b>	Insulate floors or crawlspaces to R-19 or better. Measure must include a vapor barrier (6 MIL plastic).	No insulation	$\geq$ R-19, vapor barrier (6 MIL plastic)	\$500
<b>HVAC MEASURES</b>				
<b>Replace HVAC</b>	New or replacement electric HVAC system	-	Split central AC $\geq$ 15 SEER, $\geq$ 12.5 EER	\$500
		-	Split central AC $\geq$ 16 SEER, $\geq$ 13 EER	\$650
		-	Split central AC $\geq$ 18 SEER, $\geq$ 13 EER	\$850
		-	Packaged central AC $\geq$ 15 SEER, $\geq$ 12 EER	\$500
		-	Packaged central AC $\geq$ 16 SEER, $\geq$ 12 EER	\$650
		-	Split heat pump $\geq$ 15 SEER, $\geq$ 12.5 EER, $\geq$ 8.5 HSPF	\$500
		-	Split heat pump $\geq$ 16 SEER, $\geq$ 12.5 EER, $\geq$ 9 HSPF	\$650
		-	Split heat pump $\geq$ 18 SEER, $\geq$ 13 EER, $\geq$ 10 HSPF	\$850
		-	Packaged heat pump $\geq$ 15 SEER, $\geq$ 12 EER, $\geq$ 8.2 HSPF	\$500
		-	Packaged heat pump $\geq$ 16 SEER, $\geq$ 12 EER, $\geq$ 8.2 HSPF	\$650
		-	Mini-split heat pump $\geq$ 15 SEER, $\geq$ 8.5 HSPF With DC inverter technology Enter # of indoor heads installed	\$250 per indoor head, \$1000 max Post-upgrade condition: Is central AC system present and operational?
<b>HVAC sizing bonus</b>	Downsize the HVAC unit	-	Downsized unit	\$100 per 1/2 ton reduction, \$300 max
<b>HVAC airflow bonus</b>	Ensure adequate measured airflow per CFM	-	Achieve 400 CFM/ton of measured airflow	\$400
		-	Achieve 450 CFM/ton or better of measured airflow	\$450
<b>Ducts</b>	Add ducts	No existing central system or duct system	New central and duct system, $\geq$ R-8, $\leq$ 5% duct leakage	\$250 per system, \$350 max
	Seal to $\leq$ 8% measured leakage	$>$ 8% duct leakage	$\leq$ 8% duct leakage	\$250 per system, \$350 max
	Replace ducts	Existing duct system	New duct system, $\geq$ R-8, $\leq$ 5% duct leakage	\$500 per system, \$800 max
	Straighten, shorten, and set ducts on attic floor and deep bury them	Not buried	Deep buried	\$200
<b>Whole-house fan</b>	Install permanent whole-house fan	No whole house fan or whole house $<$ 1000 CFM	Whole-house fan $\geq$ 1000 CFM	\$150 per fan, max \$300

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Domestic hot water replacement	Replace existing electric DHW to a heat pump DHW. Warranty must be ≥ 6 years on sealed system, safety UL 174 & UL 1995.	Existing electric DHW	Heat Pump DHW, EF ≥ 2.0; first hour rating ≥ 50 gallons/hr; insulate first 5 feet of hot and cold water pipes from the storage tank	\$1,000
	Replace existing electric DHW to electric DHW with EF 0.92 or greater	Existing electric DHW, < 0.88 EF	≥ 0.92 EF; max 60 gallons; insulate first 5 feet of hot and cold water pipes from the storage tank	\$150
Pool pump	Replace pool pump	Single-speed	Variable-speed	\$400
		Two-speed	Variable-speed	\$250
Lighting fixtures	Replace 5 standard screw-in lighting sockets with pin-based high-efficacy sockets and bulbs	Standard screw-in socket or no socket	<a href="#">Pin-based sockets and bulbs meeting Title 24 high-efficacy standards</a>	\$100 per 5 socket and bulb upgrades (max \$500)
<b>PILOT MEASURES</b>				
Smart Thermostat	WiFi enabled thermostats (EcoBee 3G or Nest 3G)	No Pre-existing smart thermostat	EcoBee 3G or Nest 3G (list might grow in the future)	\$75
EV Readiness	An "EV ready" home is pre-wired for convenient installation of a future EV charger or Electric Vehicle Supply Equipment (EVSE)	Home is not EV Ready	Dedicated 240 V single phase 40 A circuit with ground, wired from the electrical panel out to a junction box within 10' of on-site parking space	\$500
<b>BONUS REBATES</b>				
Five or more measures	Perform 5 or more upgrade measures (HVAC upgrade with tonnage reduction and/or duct sealing and/or smart thermostat count as one measure)	-	-	\$300

## VII. Increased Rebates for Homes with Electric Heat

- A. Most building shell and HVAC measure rebates are **doubled** for homes with electric resistance or electric heat pump heating. Affected measures include envelope insulation, air sealing, window upgrades, HVAC replacement, HVAC downsizing, and duct sealing/ replacement/burying.
- B. If the pre-upgrade home has an electric heating system, any HVAC system replacement must upgrade the home to a heat pump with a minimum HSPF of 8.5 (split systems) or 8.0 (packaged systems).
- C. Increased rebates are calculated based on the pre-upgrade heat source entered in the Job Reporting Template (JRT). However, fuel switching from electric heat to gas heat is not eligible for double rebates, nor is switching from gas to electric eligible for double rebates.
- D. The maximum total rebate for homes with electric heat is \$8,000.

## VIII. Additional Rebate Programs

- A. SMUD single-measure rebates.
  1. Customers may NOT receive a single-measure rebate through any of SMUD’s single measure rebate programs and also request a rebate for the same piece of equipment or installed measure as part of the HPP. Evidence that a Participating Contractor has applied for both a single-measure rebate and an HPP rebate based upon the same equipment installation will require the Participating Contractor to reimburse SMUD for the amount of the smaller rebate within 30 days

of SMUD notifying the Participating Contractor. Failure to do so will cause the Participating Contractor to be placed on probation and, possibly, expelled from the HPP.

2. Information about SMUD's single-measure rebates can be located at:

<https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/>.

B. SMUD solar rebates.

1. Photovoltaic installations are not included in the SMUD HPP. Information about rebates for PV installations can be located at the California Solar Initiative website at

<http://www.gosolarcalifornia.org/>

C. Where to find information about the PG&E Home Upgrade program and its rebates.

1. For customers to receive a rebate from PG&E for non-electric home performance improvements, a SMUD Participating Contractor also must be a PG&E Home Upgrade Participating Contractor.

Build it Green is PG&E's program administrator. Information regarding PG&E's Whole House/Energy Upgrade California program can be located at <http://builditgreenutility.org/>

## IX. Job Submission and Review Process

Below are the processes and tools Participating Contractors will need to submit an HPP job:

- A. **Job Reporting Template (JRT):** The JRT is an Excel spreadsheet that enables contractors to provide essential information about a customer, pre-retrofit home conditions, project measures, and post-retrofit home conditions. The JRT *Menu Tab* enabled contractors to determine the rebate amount based on the measures chosen from that menu. The JRT can be downloaded at: <http://cbpca-hpp.org/library/>

- B. **Vision Database:** All documents submitted to the program for review are uploaded and managed via the Vision system, which is located at <http://smudhpp.programprocessing.com/>. Go to <http://cbpca-hpp.org/submit-jobs/job-submission-process/> for information on how to upload documents, download files, and leave notes within the Vision system.

- C. **Job Submission Process:** The HPP job submission and review process includes the following steps:

1. **PRE-UPGRADE WALKTHROUGH AND DOCUMENTATION**

- a. **COMPLETE WALK-THROUGH OF HOME** — Complete a visual walk-through and perform basic measurements (e.g., home square footage, attic area and insulation quality) to help the customer select a scope of work for their home. No test-in diagnostics are required.
- b. **COMPLETE MENU AND JOBINFO TABS (PRE-UPGRADE AND PROPOSED COLUMNS) OF THE JRT TO ESTIMATE SMUD HPP REBATE** — The contractor can use default values to help estimate the SMUD Home Performance Program rebate. Default diagnostic values have been pre-entered in the JRT. Default duct leakage: 28%. Default infiltration: 4.9 SLA, converted to CFM50 in the JRT.

- c. **SIGN CONTRACT WITH CUSTOMER, SCHEDULE WORK START DATE** — Schedule start date in accordance with state law, which requires a three-day right-to-rescind waiting period before work begins.
2. **BEGIN WORK**
  3. **SUBMIT PRE-UPGRADE JOB REPORTING DOCUMENTS WITHIN 30 DAYS OF WORK STARTING**
    - a. Upload the pre-retrofit JRT to the Vision system.
    - b. HPP requires a pre-upgrade JRT to be submitted within 30 days of work starting in order for SMUD to measure its program “pipeline” and to have an ongoing record of customers participating in the program.
      - i. The following documents are required to be uploaded as part of the post-retrofit submission:
        - A. JRT with *Menu* and *Job Info* tabs completed
        - B. Any additional documentation to help Program Administrator review the retrofit project.
  4. **FINISH UPGRADE WORK**
    - a. **COMPLETE UPGRADE WORK ACCORDING TO YOUR CONTRACT**
    - b. **PERFORM DIAGNOSTIC TEST-OUT** — Full test-out diagnostics (blower door, duct leakage, Combustion Appliance Safety) are required for all projects.
    - c. **FILL OUT POST-UPGRADE COLUMN OF *JOBINFO* TAB** — Use this tab as a guide for the test-out data that you need to collect while performing the post-retrofit home performance assessment.
  5. **SUBMIT POST-UPGRADE JOB REPORTING DOCUMENTS**
    - a. Upload the pre-retrofit JRT and signed SMUD Rebate Application to the Vision database. The *RebateApp* tab of JRT provides a SMUD Rebate Application that is pre-populated with the customer’s name and address.
    - b. The following documents are required to be uploaded as part of the post-retrofit submission:
      - i. JRT with *Menu* and *JobInfo* tabs completed.
      - ii. PG&E Test Measurement Form (if home has natural gas or propane service).
      - iii. SMUD Rebate Application (signed by contractor and customer).
      - iv. Photos of deep buried ducts (if applicable) according to [Deep Buried Duct Protocol](#).

- v. Any additional documentation to help Program Administrator review the retrofit project.
- vi. If the program administrators have any questions about the submission, the contractor will be notified through the Vision system and be asked to clarify the issue before any rebate is issued.
- c. If a Participating Contractor can complete the upgrade within 30 days after work begins, he/she can submit both pre-upgrade walkthrough and post-upgrade test-out information in a one JRT via a single Vision upload.

**6. RECEIVE REBATE APPROVAL**

- a. Participating Contractors will be notified via Vision if any revisions to the rebate application are needed. Contractors will be notified via Vision when the rebate has been approved. BKi will submit the job to SMUD for rebate check processing.

**7. IN-FIELD QUALITY CONTROL**

- a. A random sample of Participating Contractor projects will be selected for in-field quality control (verification). All Participating Contractors must participate in the QC program through which SMUD evaluates program effectiveness and contractors success. On-site post-retrofit QC verification will be scheduled according to each contractor's random sample rate, which is determined by SMUD and guided by BPI technical standards.

**8. CUSTOMER SURVEY**

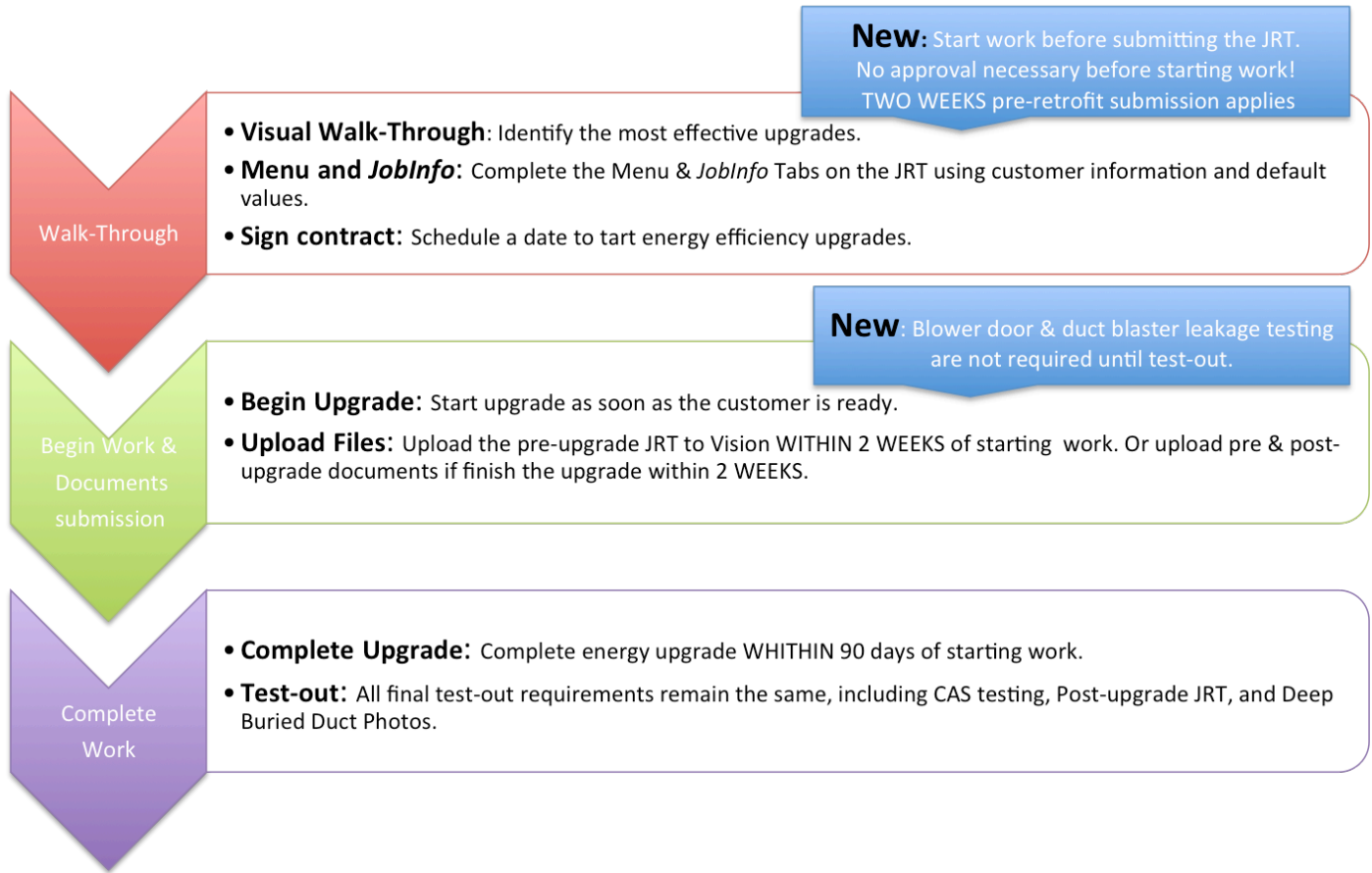
- a. SMUD will provide the homeowner with the HPP customer survey, which concentrates on both non-energy and energy-related benefits. The overall emphasis of the survey is to gain information on customer satisfaction with the program and the Participating Contractor.

**9. DISPUTE RESOLUTION**

- a. SMUD responds to every customer complaint, and seeks a fair settlement acting as a non-party. All disputed retrofit jobs will be reported to SMUD with the goal of protecting the homeowner from poor service, protecting the Participating Contractor from unreasonable client demands, and protecting the reputation of the SMUD HPP.



# HPP Step-By-Step Submission Process



## X. Quality Assurance (QA)/Quality Control (QC) /Mentoring/Verification

### A. Purpose of Desktop QA.

1. Within 30 days after work begins, contractor submits pre-upgrade documentation so that HPP Program Administration team can keep tabs on the program pipeline.
2. Post-retrofit QA confirms the final scope of work for rebate eligibility, improved home conditions, the appropriate rebate level, and includes confirmation of home vintage and associated default values, automated reviews of test-in and test-out data, automated review of job scope and simulated energy savings, and combustion safety test results to confirm safety conditions.
3. Post-retrofit QA also helps to ensure compliance with BPI technical standards.

### B. Purpose of Field QC and Verification.

1. Post-retrofit (test-out) Verification takes place after the project has been completed to validate quality work, to ensure that all appropriate safety measures have been implemented, and to check that all HPP requirements are met.

2. SMUD or its representatives will directly inspect and retest the completed work of no less than five (5) percent of all projects to ensure that appropriate recommendations are being presented to homeowners and improvements are completed according to established standards. SMUD or its representatives will evaluate each Participating Contractor's work randomly. QC inspections may occur at any time before, during, or after the project to ensure quality workmanship, accurate assessment data, compliance with installation practices, and program requirements. The sampling rate for any Participating Contractor may be adjusted at the discretion of SMUD. An increase in verification sampling may be caused by issues such as customer concerns, poor results from mentoring sessions or field verification inaccurate or questionable data submission. Customer requests for third-party verification will be fulfilled at the Participating Contractor's expense, unless that verification is part of a Verification/Mentoring session.

C. Documents related to Verification and Mentoring.

1. Contractor and Customer documents available at <http://cbpca-hpp.org/qc>
  - a. Verification Visit: What Homeowners Can Expect – to be provided to homeowners.
  - b. SMUD Customer Survey – to be provided to homeowner.
  - c. How to Prepare for Mentoring – provided to the contractor prior to a mentoring session (explains what to bring and who must attend the mentoring session).
  - d. Field Quality Control Protocols – summarizes field verification process and protocols.
  - e. Combustion Appliance Safety Testing Guidelines – summarizes CAS testing protocols and best practices
2. Contractor documents available at <http://cbpca-hpp.org/library/>
  - a. Job Reporting Template (QC Verifier Tabs) – to record data.
3. Program Administrator communications supporting verification and mentoring.
  - a. Homeowner Confirmation E-Mail – sent to homeowner by program verifier to confirm date and time of verification.
  - b. QC Report – prepared by verifier to record data and observations.
  - c. QC Letter – prepared by verifier to communicate verification results to Participating Contractor.

D. Who are the verifiers?

1. The QC verifier is an experienced BPI Building Analyst approved by EFCA and SMUD who inspects completed retrofit projects. Each verifier's training exceeds the requirements of the Home Performance with ENERGY STAR program. Each verifier signs a privacy policy to safeguard Participating Contractor liability and privacy.

2. For more information on QC Verification processes, go to <http://cbpca-hpp.org/qc/>.

E. Termination.

1. SMUD may terminate a Participating Contractor's enrollment in the HPP for any violation or failure to comply with terms of program or the Contractor Participation Agreement upon written notice to the Participating Contractor.
2. In the event of termination, the Participating Contractor agrees to waive any claim for damages, including loss of anticipated profit, resulting from contract termination.
3. While it is impossible to note every type of violation or unacceptable conduct that could lead to termination, Participating Contractors should refer to the Contractor Participation Agreement for specific examples. Those examples, however, do not constitute an exhaustive list.