SAN DIEGO GAS & ELECTRIC

ENERGY UPGRADE CALIFORNIA – HOME UPGRADE

Policies
&
Procedures

Home Upgrade
Energy Upgrade California®

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SUMMARY OF P&P PLAN UPDATES

DATE	VERSION	SECTION	SECTION(S)
Pre Dec. 2014 Changes	All	All	All
Dec. 2014	5.3	3.3.2 - 3.3.4	Measure rules, eligibility, requirements
Dec. 2014	5.3	4.1	Pre-Retrofit Submittal requirements
Dec. 2014	5.3	6.1	Post-Retrofit Submittal requirements
Dec. 2014	5.3	1.6.4	Modeling Software requirement
Dec. 2014	5.3	3.2	Inspection scheduling rules
Feb. 2014	5.4	Appendix	Application/My Action Plan/data collection form removed
Feb. 2014	5.4	1.1	Home upgrade Incentive Tier
March 2014	5.4	1.6.4	Approved energy modeling software
March 2014	5.4	3.3.3-3.3.4	Measure eligibility and points
March 2014	5.4	Appendix B	Measure codes
March 2014	5.4	10.3	Inspection Tier rule clarification
June 2015	5.5	4.2	Desktop review
June 2015	5.5	6.1	Air sealing photo requirements
June 2015	5.5	10.3.1	Clarification Post Tier rules
June 2015	5.5	1.6.1	Updated eligibility section (removed statement of verifying customer's double dip report prior to completion package being submitted.)
June 2015	5.5	3.3.3	Vintage clarification
June 2015	5.5	1.6.3	Added new section-Split jobs
June 2015	5.5	All	CAS/CAZ updates
June 2015	5.5	3.3.4	Mandatory / Recommended Measures
September 2015	5.6	4.3	Updated Language in table
September 2015	5.6	6	Measure refusal clarification
September 2015	5.6	1.4	Updated Draft Status
September 2015	5.6	6.1	Updated table added language to invoice section
September 2015	5.6	3.3.3	Added language for ability to claim measures, clarification on insulation
September 2015	5.6	10.2, 10.3.1	Tier level clarification
September 2015	5.6	15.3	New section added, Portal Access (raters)
September 2015	5.6	16	New section added, General Customer Relations
September 2015	5.6	All	Removed references of Appendix I and Appendix H
December 2015	5.7	1.2	Removed stand-alone rebate language for submitting through portal.
December 2015	5.7	1.6.3 and 6.1	Split application document requirements
December 2015	5.7	1.6.5	Approved Energy Software list update
December 2015	5.7	3.3.3	AC/Furnace unit duct seal requirements additional language. Window requirements updated to include 50% glass door.
December 2015	5.7	3.3.4	Floor Insulation Point increase
December 2015	5.7	3.3.4	Mandatory Measure language included
December 2015	5.7	4.1	E-sign language updated to support date requirement
December 2015	5.7	6	Language added for measures not installed
December 2015	5.7	6.1	Table language updated for itemized pricing
December 2015	5.7	Appendix H	Data Collection form added
February 2016	5.7.1	All	Changed Duct Replacement Language to Duct Seal
February 2016	5.7.1	3.3.4	Kicker Point update to language (35 kicker points to 3 base measures)
March 2016	5.8	15.4	Added new language for subcontractors

March 2016	5.8	6.2	Removed section 5& 7 explaining stand-alone measures
March 2016	5.8	All	Updated Multi-Family and Single-Family language for consistency throughout document
March 2016	5.8	3.3.4	Mandatory Non-feasibility criteria for "opt out"
March 2016	5.8	15.3	Added language for access not granted for non-participating contractors
March 2016	5.8	3.3.3	U-value correction from 0.33 to 0.32
March 2016	5.8	6.1	Added language to equipment photo section to provide photo of existing AC if claiming the measure
March 2016	5.8	All	Energy Pro references updated to other software types. Have Keith review Appendix D
March 2016	5.8	6.1	Removed "Recommended Measures" from "Mandatory Measure" list in table.
March 2016	5.8	8	Removed "original wet signature hard copy" for program consistency
March 2016	5.8	6.2	Removed Pre-project information language and stand-alone measures language in table for program consistency.
March 2016	5.8	6.1	Added language for invoice criteria when incentive is being signed over to the customer vs. contractor
March 2016	5.8	3.3.3	Updated HVAC section to include all electric houses for Home Upgrade projects. Pre-existing condition for central A/C if claiming A/C measure
March 2016	5.8	6.6, 3.3.8	Updated QC memo entries and QA review note instances
March 2016	5.8	1.1	Removed non-active Advanced Calculator link
March 2016	5.8	3.3.1	Removed 30-day rule
March 2016	5.8	4.1, 4.1.1, 6.1	Updated document to include A/C pre-photo requirement
March 2016	5.8	3.3.4	Clarification added to kicker point requirements
March 2016	5.8	3.3.3	Updated language for recommended measures in eligibility table
March 2016	5.8	3.3.2	Language added to explain HVAC systems must be pre-existing to have it qualify as a "replacement" for Home Upgrade jobs
March 2016	5.8	10.3.1, 11	Updated language to support ratings only being applied to jobs that have been inspected
March 2016	5.8	6.2, 10.3.1	Added language about spot checks for contractor "self-reported" issues
September 2016	5.9	5.1	Added photo requirements for mandatory measures
September 2016	5.9	5.1	Added language to support window photo requirements
September 2016	5.9	5.1	Added clarification for subcontractor Invoice requirements for Post-Retrofit review
September 2016	5.9	2	Removed previous section 2 mentioning assessment data/energy kits
September 2016	5.9	3, 5	Updated requirements for document uploads to be PDF or Word Documents
September 2016	5.9	5.1	Removed option to upload Data Collection form. Updated language to define data must be input to support new SDG&E database data collection requirements.
September 2016	5.9	5.1	Updated post-retrofit permit documentation requirements.
September 2016	5.9	2.3.3	Added clarification to pre-requirement for wall insulation.

September 2016	5.9	Appendix B	Updated table to display current program measures and removed “SA” column.
September 2016	5.9	2.3.2	Updated language to display Heat Pump Water Heater from Electric Tanked Water Heater under Home Upgrade list of measures. Updated Advanced Home Upgrade to include more generalized “Appliance Upgrade” vs. only refrigerator upgrade.
September 2016	5.9	9.2, 9.3.1	Inspection Rating update – redundancy of rule. Removed from footnote.
January 2017	6.0	5.1	Updated permit submission requirements per SB1414
January 2017	6.0	1.5.5, 3.5	Updated language pertaining to approved AHU project modeling software and documentation submission requirements, including removal of mentions of EnergyPro
January 2017	6.0	2.3.3	Provided clarification on Advanced path projects
January 2017	6.0	9	Updated inspection pull rate to 15%
January 2017	6.0	2.3.3	Updated HU project site eligibility vintage requirements and joint territory application language.
January 2017	6.0	1.1, 2.3.4	Updated measure rebate amounts and removed point system so that incentives are calculated as dollar values.
January 2017	6.0	2.3.4	Updated building leakage tables to remove 15% building leakage amounts by vintage.
January 2017	6.0	Exhibit 1	Added CPA (Contractor Participation Agreement).
January 2017	6.0	Exhibit 2	Added PECI calculator used for HU project savings calculations.
January 2017	6.0	Appendix D	Removed EnergyPro Modeling Guidelines.
January 2017	6.0	1.5.2	Added qualifying language for participating homes.
January 2017	6.0	8.3	Updated fuel-switching language.
February 2017	6.0	2.3.3	Window U-Factor updated to .30
February 2017	6.0	2.3.3	Window SHGC added
February 2017	6.0	2.3.3	Updated measure technical specifications for 2017 program changes
March 2017	6.0	All	Updated language to support EECP changes including but not limited to paperwork submittal process, inspection process, Pre-and Post-retrofit submittal process, etc.
March 2017	6.0	2.3.2	Added CRC requirements for CO alarms.
March 2017	6.0	2.3.1	Added language regarding “Double-Dipping”
April 2017	6.0		Added language for the photo requirement with attic insulation measure. Updated the general measures list for both HU and AHU. Added the cool roof measure back in the advanced path measures list.
August 2017	6.0	5.1	Added the acceptance of CF3R’s for duct leakage compliance.
March 2018	6.0	(Section)	
December 2018	6.1	All Section	Removed all language pertaining to Home Upgrade Prescriptive path. Removed tables and prescriptive measures and their associated points/dollars. Any program guidelines that solely pertain to home upgrade procedures have also been removed.
January 2019	6.1	5	Updated post submittal package requirements to include AHRI certificate for all HVAC equipment claimed
January 2020	6.2	1.4	Removed all references to the SDG&E Multi-Family EUC program

January 2020	6.2	5.1	Updated post-retrofit requirements for demonstrating infiltration reduction measure
January 2020	6.2	3.0	Removed requirements to conduct pre-retrofit blower door testing as part of the pre-retrofit process

NOTE: Changes to the QA/QC process or protocols shall not be applied retroactively to existing projects submitted prior to the new version date, without express written notice and approval from SDG&E to affected contractors.

1. INTRODUCTION

It is generally accepted that **Quality Assurance (QA)** refers to procedures that are built into a process to ensure that the products and services produced meet the minimal acceptable level of quality. **Quality Control (QC)** is recognized as a series of processes or tests performed on a product after it has been produced to identify defects or deficiencies. The combination of Quality Assurance and Quality Control processes is a proven method for achieving, maintaining, and measuring quality in a wide variety of applications.

The policies and procedures outlined in this document are for SDG&E territory Advanced Home Upgrade and include information for program operating policies and procedures as well as quality assurance review and quality control verification. Throughout this document, quality assurance review and quality control verification will be referred to as QA and QC.

The QA/QC processes and procedures consist of third-party reviews and verifications at defined milestones throughout the production cycle of each individual home energy retrofit. This independent review and verification process will ensure the customer is receiving quality retrofits in compliance with the Home Upgrade program goals and will evaluate the performance of contractors as they complete the required administrative tasks, perform quality installations, and adhere to health and safety requirements. An integral part of the QA/QC effort is to recognize and encourage superior performance of participating contractors. The Home Upgrade's objective is to provide SDG&E customers with comprehensive energy savings through a quality product provided by professional contractors.

This P&P is intended to provide an easily understood guideline regarding the QA documentation and QC verification required for Advanced Home Upgrade jobs. The requirements for the Advanced Home Upgrade are presented in a clearly labeled table.

1.1 INCENTIVE TIERS

ADVANCED HOME UPGRADE JOBS			
Site Savings %	Base Incentive	Advanced Home Upgrade Kickers	
10%	$ 1,000	kWh Kicker = $0.75 / kWh	**There will not be kWh kicker for Pool Pumps and they will not be included in the energy model.**
15%	$ 1,500	Therm Kicker = $2.00 / Therm	
20%	$ 2,000	**EXAMPLE:** 20% Site Savings + 1,000 kWh's + 150 Therms	
25%	$ 2,500	20% Site Savings = $2,000 Base Incentive	
30%	$ 3,000	1,000 kWh * 0.75 = $750 kWh Kicker	
35%	$ 3,500	150 Therm * 2.00 = $300 Therm Kicker	
40%	$ 4,000	$2,000 + $750 + $300 = $3,050	
45%	$ 4,500	**Total Incentive = $3,050**	

- *The pool pump incentive is $200.00.*

1.2 CRITICAL STEPS OF THE HOME UPGRADE PROCESS

Advanced Home Upgrade Jobs
1) Pre-Retrofit Submittal Package Quality Assurance Desktop Review
2) Onsite Pre-Retrofit Quality Control Inspection (if applicable)
3) Post-Retrofit Submittal Package Quality Assurance Desktop Review
4) Onsite Post-Retrofit Quality Control Inspection (if applicable)
5) Submitted to SDG&E for Incentive Processing

1.3 JOB STATUS

For more details on job statuses, please reference EECP user guide for Advanced Home Upgrade.

- Applications/Reservation Workflow
  - Contractor enters pre-retrofit data and submits application for approval *prior* to installation using the following URL:
  - https://sdge-eecp.semprautilities.com/OnlineApp/#enrollment/?programId=7
  - A scope of work document and BPI test-in results (data collection form) will be uploaded in this workflow step.
- Pre-Retrofit Inspection Workflow
  - Pre-retrofit on-site inspection performed by QA/QC vendor.
- Pre-Retrofit QA Desktop Review Workflow
  - Pre-retrofit modeling output is analyzed alongside submitted photo documentation and other provided documents to ensure compliance.
- Installation Workflow

- Contractor enters post retrofit data and uploads supporting documents (application, final invoice, closed permit, test-out data collection form, photo documentation).
- Test Results are recorded on a data collection form and uploaded into EECP.
- Post-Retrofit Energy Model uploaded into EECP.

- Post-Retrofit Inspection Workflow
  - Post-retrofit inspection performed by QA/QC vendor.
- Submitted to SDG&E
  - QA/QC vendor will review and submit completed project to SDG&E for processing.

1.4 ADVANCED HOME UPGRADE PROGRAM OVERVIEW

The following is a general description of the SDG&E Advanced Home Upgrade Program

1.4.1 SDG&E CUSTOMER ELIGIBILITY

1) QA/QC vendor will verify and list multiple program participation after the enrollment reservation is generated and submitted to the utility. It is the contractor's responsibility during the customer enrollment to verify that the measures being installed have not/will not be applied to another SDG&E program, such as: "Residential HVAC Upstream"
2) Customers in the combined utility area of SDG&E and SoCal Gas will proceed through the SDG&E program; customers will check the box labeled "Joint Territory Project" on page 1 of the application.

1.4.2 BUILDING ELIGIBILITY

Dwelling must have a pre-existing primary heat source to qualify.

Dwelling Definitions – Single Family vs. Multi-family

Dwelling definitions and guidelines for qualification for both options in single family are as follows:

1. Any building with 5 or more dwelling units does not may qualify for the SDG&E Single Family Advanced Home Upgrade Program.
2. Any building with 2, 3 or 4 units and which there is any shared spaces, such as attics, hallways or other shared space; does not qualify for the SDG&E Single Family Advanced Home Upgrade Program.
3. Any building with 2, 3 or 4 units which have more than one shared wall among any two units will not qualify for SDG&E's Advanced Home Upgrade Program.
4. Any building with 2, 3 or 4 units which have only one shared surface between units and no shared spaces, may qualify to participate in SDG&E's Advanced

Home Upgrade on a unit by unit basis, provided they meet ALL the requirements below:

- There is no communication between units and any installed measures will in no way affect the adjacent unit.
- Each residence must be separately metered (gas & electric) and have an active SDG&E utility account
- Each unit must be an independent residence and have its own mailing address (unit, suite, apt. numbers okay)
- Each residence/customer must meet SDG&E's single-family Home Upgrade eligibility guidelines for participation

1.4.3 QA/QC GENERAL INFO

The SDG&E Advanced Home Upgrade relies on complete and accurate records of the initial and post retrofit condition of the subject property as presented by the participating contractor.

The Pre-Project and Post-Project QA desktop review process confirms that complete and accurate information is presented, and all necessary documents are included. This process verifies that the retrofit project meets all minimum requirements for participation in SDG&E's Advanced Home Upgrade.

The QA review of contractor Pre-Retrofit Project Submittals and Post-Retrofit Project Submittals will focus on assessing the completeness of the forms, reasonableness of the data presented, inclusion of all required supplemental documentation and the qualifying energy savings calculation of the project. The QA/QC vendor will follow internal processes in determining project compliance. Only approved energy efficient measures are used to calculate possible energy savings.

The QA process will include a review of the energy model(s) developed to assess the current, proposed, and final energy savings results of the retrofit project for the home.

QA requirements for Pre- and Post-Desktop Reviews are discussed below and are required for all Advanced Home Upgrade projects. Requirements for Advanced Home Upgrade Pre- and Post-Desktop review are presented below.

1.4.4 APPROVED MODELING SOFTWARE

Contractor must use the most current version of their modeling software. Currently there are three approved energy modeling software for use on Advanced Home Upgrade jobs. They are as follows:

- Snugg Pro
- Cake Systems
- Optimizer

2. ADVANCED HOME UPGRADE SUBMITTAL & QA/QC

On-Site QC Inspection verification is performed by the quality control vendor. Except as otherwise provided for in this plan, work may not proceed without prior approval from QA/QC vendor.

> *All "Stop Work" and "Emergency" situations resulting from Combustion Safety Testing MUST be addressed immediately.*

Incentive applicants, the property owner, or their designated representatives must be present at time of the On-Site QC Inspection and sign the inspector's *Advanced Home Upgrade* Quality Control Inspection Sign-off form indicating presence on site. If an owner designates a representative to act on their behalf, the applicant or owner shall provide written notice of such designation, including name of designee, to the QA/QC provider in advance or at the day of the On-Site QC Pre-Inspection or Post-Inspection.

On-site inspections represent a more in-depth verification of the installation of energy efficiency measures for Advanced Home Upgrade. All onsite pre/post-inspections will include testing, measurement, equipment verification and the preparation of an Inspection Report including photo attachments. On-site post-inspections will emphasize safety, quality installations, and adherence to project scope and program requirements. Inspections may be conducted with the QC inspector present, any discrepancies or issues discovered may be corrected in the presence of the QC inspector so that job may be approved without scheduling another visit.

Advanced Home Upgrade rely on a complete and accurate summary of the completed condition of the participating property as presented by the Contractor Project Submittal package. For those projects selected for on-site Quality Control inspection, the QA/QC verifier will replicate all tests, critical measurements, verify all energy efficiency measures as new, and verify installation of all measures in accordance with technical guidelines of this plan.

Advanced Home Upgrade jobs may be selected for an On-Site QC Pre-Inspection which will provide an assessment of the Contractor's ability to clearly document and accurately estimate the potential energy savings associated with the recommended retrofit measures. All inspections will be reviewed as part of the Post-Retrofit Submittal Package review.

Advanced Home Upgrade and Home Upgrade on-site inspection will provide an assessment of the Contractor's ability to install approved energy efficient measures and to clearly document and accurately measure the energy savings associated with the installed retrofit measures.

2.1 MANDATORY INSPECTION CRITERIA:

Project submittals that contain the following will be pulled for an inspection regardless of whether they were pulled at random:

1. Any baseline values in the Energy Model that is less efficient (ie., higher U-Factor or Lower R-Value) than the vintage table defaults must be accompanied by supporting documentation, including but not limited to photographs. Acceptance of this documentation as evidence to support the value in question is at the discretion of SDG&E and/or the QC Contractor. An inspection may still be performed. At the discretion of the QC Contractor, the scope of this inspection may be to visually verify the anomalous value.
2. Any test result that exceeds the capacity or range of the equipment used to obtain those results will be pulled for an inspection. For Example: Blower Door test results of greater than 6000 cfm.
3. Any test result that exceeds the possible parameters of the equipment/situation being tested. For Example: Total System Airflow of 1000 and a duct leakage test of 1050.
4. Any modeled improvement for an Advanced Home Upgrade job that exceeds the definition or value of the approved measure per existing program documentation must be accompanied at the post-retrofit submission through additional documentation, including but not limited to photographs. Going above and beyond the approved measures is encouraged and in the interest of not putting an additional burden on the process, QC Contractor may at their discretion and/or the discretion of SDG&E perform a visual inspection of only the measures that exceed the standards. Additional documentation may also be accepted in lieu of any inspection. A full inspection may also be performed.
5. If a QC inspection was not pulled at random and if submitted information is found to be inaccurate to the actual existing condition as verified by a reliable source, such as either Google Earth or a drive by visual verification by QC Contractor an inspection may be pulled.

Additional Inspection Processes and Procedures below may apply:

2.2 ON-SITE QC INSPECTION TIMELINE & SCHEDULING ELIGIBILITY

Advanced and Home Upgrade Jobs
Advanced Home Upgrade jobs are not eligible for a collaborative pre-inspection without first submitting the required pre-retrofit submittal data. This is to ensure the project has been sold to the customer and contractor is confident it will continue through the program. At minimum, must include: 1) Scope of Work (proposal or bid document) 2) Customer info (address, phone, etc.) 3) Home Info (vintage, climate zone, AC, etc.)
The contractor must notify the homeowner of a scheduled collaborative inspection. If for any reason an inspection fails to occur as scheduled, it is the responsibility of the contractor to notify the homeowner. If the homeowner is not present at inspection, the contractor may sign the inspection release form in lieu of homeowner, if homeowner has given permission to the contractor in writing to do so.
SCHEDULING ELIGIBILTY CRITERIA
Contractor Eligible for Scheduling Collaborative Inspections

The contractor must schedule inspections in the following timely manner:
1) Contractor must schedule an inspection cancellation a minimum of 72 hours in advance
2) Contractor penalty for non-compliance: i) 2 early cancellations for no shows in 6 months allowed ii) More than 2 will result in post-submittal required prior to post-inspection QC scheduling 1. First offense: 5 job waiting period 2. Second offense: 10 job waiting period 3. Third offense: 1 year waiting period
3) Each inspector shall schedule two 4-hour blocks per day i) Inspector shall wait on-site no more than 1 hour for a no show/no call before contractor must reschedule the inspection

2.3 TIMELINES & GENERAL GUIDELINES

A contractor may not start work without approval from QA/QC and must comply with inspection guidelines and other policy documents. An application /reservation must be in approved (*Closed - Work Complete*) status prior to installation of measures. QA/QC will be timely in their response to keep jobs moving and not delay the progress of the job. Please reference EECP reference guide for additional information.

2.3.1 GENERAL MEASURE ELIGIBILITY

Advanced Home Upgrade jobs are limited to the measures that are in the table below. Target data is included in the installation specifications for all eligible measures. For Advanced Home Upgrade jobs, any measure that can be modeled and meets minimum specifications is allowed with the following exceptions:

- Load removal (i.e., Fridge removal, AC removal, etc.)
- Maintenance issues (i.e., Refrigerant charge, Disconnected ducts, modifying existing controls)
- Solar of any kind
- Fuel Switching

General Measure List

Advanced Home Upgrade
Attic Insulation & Attic Air Sealing
Building Leakage Reduction
Duct Sealing
Duct Insulation
Wall Insulation
Floor Insulation
Windows
Heating Equipment
Cooling Equipment
Water Heaters (Tank or Tankless)
Heat Pump Water Heater
Cool Roof

*Note: Advanced Home Upgrade jobs claiming cooling and/or heating systems must be replacing the system (**Heating system must be gas**). Meaning the system must be pre-existing for a replacement to take place. For measure specification requirements, reference the installation specifications document.*

2.3.2 PROGRAM MEASURE ELIGIBILITY REQUIREMENTS

All measures must abide by the current installation specifications.

CAS/CAZ Test-in and Test-out results are required for both Pre-and Post-Retrofit and recorded in the EECP database. The Post-Retrofit data and all Test-out results are mandatory and must be recorded in EECP at the time of post-retrofit submittal.

A customer may proceed through Advanced Home Upgrade multiple times for the same premises if duplicate measures are not claimed and all other eligibility rules are met.

Advanced Home Upgrade – Measure Eligibility
Measures must be modeled in approved modeling software to determine total savings. Minimum of 10% site savings is required after any regulatory adjustments if applicable.
Minimum of 3 measures to qualify. 1 base measure and 2 flex measures must be done.
The incentive is calculated based on the Site Savings from the software modeling report and any additional regulatory or utility adjustment as applicable (such as kWh kickers and Therm kickers).
All measures in the advanced path must meet the prescriptive targets (measure specifications) before modeled savings can be claimed.

The installation specifications illustrate the required targets for available measures. It is against program policy to claim rebates from the SDG&E Advanced Home Upgrade program and other SDG&E incentive rebate programs for the same measure. This is considered "double dipping." Advanced Home Upgrade targets are listed in the following table and illustrate the Measure specific eligibility rules and measure targets for participation in Advanced Home Upgrade:

Advanced Home Upgrade Project Site Eligibility	
Item	**Criteria**
Customer:	Must be a current SDG&E customer (If customer has SoCal Gas for Natural Gas, the SoCal Gas account number must also be provided on the customer application)
HVAC:	• System must be the same type before and after • All electric homes qualify and are eligible for program participation for select measures
# of Measures Required:	3+ (1 Base measure and 2 other measures. Additional eligibility rules below)
Minimum Incentive:	*The project rebate total must exceed $1,000 to qualify*
Measure Eligibility Rules	
Air Conditioner, Ducts or Furnace Equipment Replacement **Existing Condition Requirement:**	If Heating/Cooling unit is upgraded, then Duct Seal is mandatory. If unable to reach the 10% target and duct sealing measure isn't being claimed, AC or Furnace measure cannot be claimed without pictures or notes in the portal documenting infeasibility. Rebate incentives may be counted for the duct insulation separate from the duct seal measure. Propane is not eligible. May not Fuel Switch.

• Heating system must be the same type and fuel before and after. • Central A/C unit must be pre-existing.	
Insulation Requirement **Existing Condition Requirement:** • Attic must start at less than R-19. • Walls being insulated must start as R-0 (uninsulated). • Floor Insulation must be below R-19	Insulation Measures must address all accessible surface area. The accessible surface area must account for at least 50% of the surface type (wall plane, attic plane, etc.) i.e., if the Attic Plane consists of 50% cathedral ceiling that cannot be further insulated and 50% open attic (flat), the entire open attic portion must be insulated per the R-value specifications to qualify. The installation specification for duct insulation R-value must be followed. For buried duct credit, ducts must have R-6 insulation before burying to claim R-8 value. Proof of pre-existing condition must be provided. Newly installed floor insulation must be ≥ R-19.
Windows **Existing Condition Requirement** • U factor >0.67	Must replace all windows or a minimum of window area ≥ 14% of the conditioned floor area. U factor of ≤0.30 and SHGC of ≤0.23 Reference title 24 requirements. Door that is over 50% glass is counted as a window
Water Heater **Existing Condition Requirement** • Gas Starting <.57 EF • Electric starting <.88 EF	May not Fuel Switch. Propane is ineligible. Gas EF ≥ 0.67 OR 0.70 Electric EF ≥ 2.00 (Install Heat Pump water heaters in garage or outside only)
CO Alarm	Install in homes with attached garage or gas appliance. In accordance with Section R315 of the CRC, when a building permit is issued for alterations, repairs, or additions exceeding $1,000, functioning CO Alarms must be present in all locations required by code.
DHW Pipe Wrap	Recommended to be installed - insulate ≥ 1st 5 ft. of both cold and hot water pipes to >R-4.2, unless not feasible
TCV (Thermostatic Control Valve)	Recommended to be installed
Low-Flow Showerhead	Recommended to be installed
Propane Appliances	Not Eligible
Fuel Switching	Not Eligible

All Advanced Home Upgrade measures must meet requirements as specified in the current Installation Specifications in addition to Technical Specifications to qualify for incentives. If a measure does not adhere to program standards and specifications, corrections must be performed to comply with program policies to qualify for an incentive.

2.3.3 ADVANCED HOME UPGRADE MEASURES AND SPECIFICATIONS

Category	Measure	Technical Specifications
Base Measures	Whole Building Air Sealing	Post Installation Blower Door Test must be within 0.35 and 0.5 ACHn (Air Changes Per Hour – Natural). Any project that claims Whole Building Air Sealing must provide photo documentation of post-retrofit blower door result (manometer reading) and air sealing work performed.
	Attic Insulation and Air Sealing	R-30 is the minimum requirement in all climate zones.
	HVAC Duct Leakage	Seal ductwork to ≤ 10% leakage (leakage to outside or total duct leakage) of system airflow. Pre-retrofit default duct leakage rates will be determined based on the vintage of the home and can be found in Appendix C
Flex Measures	Wall Insulation	Insulate ≥ R13 for 2 x 4 and ≥ R20 for 2 x 6 (or fill cavity completely {pre-existing condition must be R-0})
	Floor Insulation	Insulate ≥ R-19 (Batts shall be installed that are of sufficient thickness to fill the joist bay, even if a higher R-value batt must be used)
	HVAC Duct Insulation	The installed insulation must achieve a minimum assembly value of R8
	HVAC Upgrade (Heating and Cooling)	• Natural Gas Central Furnace: Must be at least ≥ 92% AFUE Strongly recommend ≥ 95% AFUE • Split or Packaged Central Air Conditioner: Must be ≥ 15 SEER and ≥ 80 AFUE for packaged systems. • Split or Packaged Central Heat Pump: Must be ≥ 15 SEER and HSPF 8.
	Domestic Hot Water Heater	• Gas Storage Water Heater: High-efficiency gas storage water heaters must be EF ≥ 0.67 and ≥ 30 gallons and ≤ 55 gallons. • Hybrid Electric Heat Pump Water Heater: Must be EF ≥ 2.00 and ≥ 40 gallons. • Natural Gas On-Demand Water Heater: Tankless water heaters (natural gas on demand) must be EF ≥ 0.82 and replace a conventional tank type natural gas water heater.
	High Performance Dual-Pane Windows	U-Factor ≤ 0.30 and SHGC ≤ 0.23 Garages and other non-living areas do not qualify unless they are a part of the home's conditioned (i.e. heated and/or cooled) space.
Bonus Measures	Cool Roof	Where more than 50% of the roof is being replaced. Low-Slope: Rise to run ratio ≤ 2:12 (9.5 degrees from the horizontal); 3-year aged solar reflectance ≥ 0.63; thermal emittance ≥ 0.75 or SRI ≥ 75 Steep-Slope: Rise to run ratio ≥ 2:12 (9.5 degrees from the horizontal); 3-year aged solar reflectance ≥ 0.20; thermal emittance ≥ 0.75 or SRI ≥ 16.
	Radiant Barrier	Radiant barrier must be installed in all areas above conditioned space and installer must follow manufacturer installation requirements. Equipment and materials must meet or exceed all applicable local, state and federal standards.
	Lighting	Lighting must be hardwired, and fixtures must be UL listed (and either EnergyStar® qualified or Title 24 labeled). Replacement recessed light fixtures must be rated ICAT (insulation contact air tight)

Advanced Home Upgrade Vintage Specific Leakage Area Table

STARTING DEFAULT LEAKAGE BY VINTAGE	
Vintage	**Default Specific Leakage Area**
Pre 1950	10.2
1950 - 1977	8.0
1978 +	4.9

TARGET TEST-OUT LEAKAGE BY VINTAGE	
Vintage	**30% Reduction SLA Target**
Pre 1950	7.1
1950 - 1977	5.6
1992 +	3.4

2.3.4 PACKAGE REVIEW TIMELINE

Advanced Home Upgrade Jobs
If the project is NOT selected for On-Site QC Inspection and verification. Job may proceed once application/reservation is approved by QA/QC vendor.
Pre-and Post-Retrofit On-Site inspections may be collaborative. Test-in and test-out data is still required to be uploaded to the EECP database by contractor.
Post-Retrofit information is uploaded by the contractor. The Desktop Review will take place within 3 working days of the submittal of the job.
If the project is selected for On-Site QC Inspection and verification. QA/QC vendor will contact customer for inspection scheduling. If a collaborative inspection is requested, available dates will be provided to contractors, and contractors will schedule directly with customer and QA/QC vendor.
After Desktop Review is completed, if corrections are needed, the installation workflow will be re-opened to allow contractors to submit corrections.
Corrections will be re-submitted by Contractor for QA review (within 3 working days of submittal)
Job is sent to SDG&E for final processing

2.3.5 DEFINITION OF WORKING DAY:

For the purposes of calculating working days the first working day shall be defined as the first working day following the day of submittal. Thus, for any project submittals submitted prior to 8 am of any defined working day, the first working day will commence at 8 am. Submittals received after 8 am of any given working day, the first working day will be defined as 8 am the following working day.

Working days shall be defined as Monday through Friday 8 am to 5 pm Pacific Standard Time. The following holidays will not be considered working days:

		Labor Day
New Year's Day		
Martin Luther King Day	Memorial Day	
Presidents' Day	Independence Day	Thanksgiving Thursday

Thanksgiving Friday Christmas Eve Christmas Day

2.3.6 CONTRACTOR NOTIFICATION OF THE QA REVIEW ISSUES

Contractor will be notified by email by the QA/QC vendor of the following items:

Advanced Home Upgrade Jobs (Pre-and Post) & Home Upgrade Jobs (Post Only)
Paperwork Issues (i.e., discrepancies between job information in EECP, Scope of Work, BLD file, and/or Customer Application)
Failing CAZ/CAS
Incomplete Customer Application, EECP information or other items listed in section above.
Blower door results are below minimum BAS, and there are no notes about installed mechanical ventilation in SOW.
Energy Model Modeling Issues/discrepancies
Missing or incomplete information
Any items that must be corrected then re-submitted in a revision of job information in EECP.
Quality Control inspection findings (only if selected for QC)
Best Practice Recommendations
Any safety concerns

2.3.7 CORRECTIONS / CLARIFICATIONS:

When corrections or clarifications are required by the QC Vendor, contractor shall make all required changes/clarifications to the job and resubmit for review. The Contractor will also notify QA/QC vendor of any additional information via email. It is the contractor's responsibility to ensure additional notes or exceptions requested are received and understood by the QA/QC Vendor.

Notes/comments will be input into an email for any corrections noted during the Post-Retrofit QA Desktop Review. Installation workflow may be reopened for the following reasons:

1) Any changes made by contractor to the submittal package that impact previously reviewed items regardless of whether they were identified on a previous memo.
    a. Serious health and safety issues
    b. Diagnostic failures
    c. Etc.
2) Any paperwork issues

Note: Any items representing an imminent safety concern to occupants must be brought to contractor and customer attention immediately using safety notification process.

3. PRE-RETROFIT STEPS

Reference the EECP User guide for job entry steps. Contractor must comply with policy documents as required by the program.

3.1 SUBMITTAL PACKAGE REQUIRED ITEM DETAIL:

Customer Application
Customer information must be accurate and match SDG&E records. Both Signatures and written names are required at several points on the application. Contractor information, customer information and all other required fields must be complete, or the application will not be processed. Application must be current for the date of the customer signature.

Customer Data
Customer information must include the accurate Customer, Owner and incentive recipient contact information as presented in the most recent application.

Data Collection Form
This form contains the information considered critical by the program and must be uploaded for Pre- and Post-Retrofit. The pre-retrofit data collection form should be uploaded at the application/reservation workflow step. The post-retrofit data collection form should be uploaded at the installation workflow step.

Infiltration Calculator
All projects must submit an air infiltration calculation worksheet demonstrating compliance with Building Airflow Standards. Should the minimum infiltration target not be met, mechanical ventilation must be included as part of the work scope.

House Info
All fields on the Advanced Home Upgrade House Info tab must be filled in. This is the general information about the house characteristics such as vintage, stories, construction type, AC existing, etc.

Pre-Retrofit Project Info
For Advanced Home Upgrade, all data gathered that is necessary to create an accurate model must be in the model as defined by program and modeling software. CAS/CAZ information not contained in the model should be submitted on the data collection form. The contractor is responsible for the accuracy of the final information sent to the utility and must submit the final information in EECP.

Contractor Data

Contractor information must be present where required including sub-contractors used on a job and who performed the required BPI testing.

Test-In Modeling Files
Detailed test-in information is only required for advanced home upgrade. Part of the information is the energy model for the home being served. The model must meet all program requirements and accurately represent the pre-retrofit condition of the home. The three-approved modeling software programs are SnuggPro, Optimizer, and CAKE.

Scope of Work
A contractor bid document that contains a clear scope of work that shows the cost for each measure applied for in the program, including the mandatory measures that do not have rebates or associated savings, is required.

Job Sketch
A drawing that indicates building energy characteristics and dimensions must be created to gather accurate information for the modeling/savings assumptions or creation of accurate pricing information. It is not required now but is highly recommended.

Pre-Retrofit Project Summary Report
If an energy model is created using approved software, provide the Project Summary Report. If software is used, you must provide a report from the software that is a summary of the following:

- Site Energy Savings %
- kWh existing/proposed/savings
- Therm existing/proposed/savings
- kW existing/proposed/savings

Pre-Retrofit Pictures
Photo documentation is required for Advanced Home Upgrade to determine existing conditions. Photos should clearly illustrate each measure's energy and performance characteristics and must be legible and date stamped. Photo requirements for specific measures are detailed below:

- Water Heater
    - Name plate showing model number to determine efficiency characteristics
    - View of the entire water heater with surrounding platform and piping.

- Attic
    - Must show at least 75% of attic area
    - Any heat producing devices which require damming
    - Measurement of insulation depth

- Ducts
  - Existing Ductwork to determine R-Value of insulation
  - When claiming buried duct credit, photo of pre-existing R6 ducts must be provided

- HVAC
  - View of existing system to be replaced including: Condenser, Coil and Furnace
  - Name plate showing model numbers for each HVAC component (This is used to determine existing efficiency characteristics)

- Hazardous Conditions (Asbestos, Gas Leaks, etc.)
  - Provide photo documentation of health or safety issues that prevent pre-retrofit diagnostic testing.

3.2 PRE-RETROFIT SUBMITTAL PACKAGE QA REVIEW

(DESKTOP REVIEW)

Advanced Home Upgrade Jobs
Double dip report will be pulled to verify no prior participation in SDG&E rebate programs.
QA/ QC vendor to verify project meets minimum eligibility to participate in Advanced Home Upgrade, including but not limited to: 1) All required measures are in scope of work, model and EECP correctly or documentation of Non-feasibility is listed 2) Minimum 10% energy savings in energy model 3) Signed Customer Contract (SOW) is uploaded
QA/QC Vendor may verify contractor standing through recruitment vendor at any time. Contractor must maintain all insurance, licenses, certifications and program requirements/documentation. It is the contractor's responsibility to keep current documentation with SDG&E.
QA/QC Vendor Verifies proof of account ownership
Recent (90 days) SDG&E bill if residence is a rental (if applicable).

3.3 PRE-RETROFIT DATA COLLECTION REQUIREMENTS

To enter a job in EECP you will need to have record of the job site account number and street address.

Advanced Home Upgrade Jobs
All required Advanced Home Upgrade data fields must be completed, match submitted energy model including test-in data, scope of work and any other project info including, but not limited to: 1) Home Information 2) Eligibility Info 3) Existing Info 4) Proposed Measures (Site Savings %, kWh kicker, therm kicker) 5) Upload Files (SOW, CAS/CAZ Data Collection form, Test-in modeling report)

Existing conditions must be accurate and will be verified using available online resources such as Google earth, property records, Zillow, etc. If discrepancy found, picture documentation may be required (i.e. Un-permitted addition)
Verify eligibility of existing conditions for program participation requirements, including but not limited to (additional non-feasibility requirements are in the Installation specifications) 1) HVAC Systems Information 2) Duct R-Value 3) Attic Type and condition 4) Safety Issues 5) CAS/CAZ test results 6) BPI Certified Person who performed BPI testing
Pre-Photos required

3.4 REVIEW OF PROPOSED PROJECT MEASURES

(SCOPE OF WORK)

Advanced Home Upgrade Jobs
If at any time before completion of the project, the customer and contractor agree on changes to the original scope of work, the contractor must notify QA/QC provider before implementation of such change. QA/QC provider will determine if any documentation will need to be resubmitted and/or additional documentation will be required, depending upon the overall impact of the agreed upon change.

3.5 REVIEW OF PRE-RETROFIT MODELING FILES & REPORTS

Advanced Home Upgrade Jobs
Verify that the Pre-Retrofit Modeling report submittal is provided.
Verify Pre-Retrofit Modeling report submittal includes at a minimum the following: o Pre-Project Summary Report
Verify that modeling software files accurately reflects the pre-retrofit conditions of the home, per the minimum data input criteria.
Verify all building data inputs are input as “Base” condition components in the building tree, and all recommended improvements are accounted for in the “Refine” column.
Verify that contractor/rater accurately account for all building components including building enclosure (shell) elements, heating and cooling systems, domestic hot water systems, appliances, building configuration and system zones as well as any relevant ancillary loads (multiple systems, multiple large appliances etc.). Swimming Pools, Pool Pumps, PV and Solar Thermal should not be included in the model.
Verify all existing conditions data accurately reflects the pre-retrofit conditions found in the field or pictures. Default values shall be used when nameplate data is not available and when necessary testing cannot be performed.
When AHU-Utility Bill Calibration path is selected, verify 12 months of accurate gas and electric usage data from utility bills input into the modeling file. (Note: If no usage data or less than 12 months of data is available, project cannot utilize this path)

4. PRE-RETROFIT INSPECTION STEPS

The following steps pertain specifically to the Pre-Retrofit inspection. General information is located above in the “Advanced Home Upgrade & QA/QC” section. Contractors must comply with the ***inspection guidelines*** and other policy documents as required by the program.

4.1 ON-SITE QC PRE-INSPECTION STEPS

1) Inspector introduces him/herself, presents identification, states purpose of visit, and reviews the procedures with customer. Ensures ready access to all necessary areas and rooms.
2) The QC inspector has customer or authorized customer representative sign that they were present for the QC inspection.
3) Inspector conducts initial walk through inspection to become acquainted with home layout and equipment locations.
4) Inspector will record the results of all BPI testing and visual inspections on the pre-inspection form.
5) Inspector will photo document all critical components with a digital camera that contains a time and date stamp.
6) Inspector will complete evaluation of home condition to determine readiness for energy retrofit. QC inspector will make basic observations regarding structural damage but will not make any claims regarding soundness of the building or its equipment.
7) Inspector observe home for evidence of significant damage that may impact success of the retrofit including but not limited to:

    a) Moisture-related damage
    b) Structural damage
    c) Pest Infestation
    d) Environmental hazards (asbestos, lead paint, etc.)
    e) EPA RRP rule in effect (pre-1978 homes)

8) Inspector verifies that proposed energy efficient measures are not already in place.
9) Inspector conducts evaluations including, but not limited to the following energy efficient measures:

    a) **Air sealing feasibility**

    Ensure there are adequate opportunities for air sealing to make a significant flow reduction in infiltration.

    b) **Attic insulation**

Evaluate attic for insulation feasibility as described ensuring adequate attic ventilation exists per current code regulations and that:

1. No hazards exist (e.g., knob and tube, exposed wiring, pest infestation, or structural instability)
2. Existing insulation values match Pre-Retrofit Job Application data and is ≤ R-19

c) **Duct system**

Visual evaluation, including:

1. Potential presence of asbestos containing materials
2. System is fundamentally sound and distribution system is repairable.
3. Normal maintenance items such as reconnection of duct disconnects shall be performed prior to testing system for savings calculations.
4. System is accessible

d) **HVAC Systems**

Compare information and condition of existing HVAC system to job information data including, but not limited to:

1. Evaluation of the existing HVAC system to verify replacement feasibility, potential hazards and any required additional tests.
2. Normal maintenance items such as reconnection of duct disconnects shall be performed prior to testing system for savings calculations.
3. Conduct basic verification of energy modeling measurements and test-in data against site observations.
4. Verify square footage, location, type and size of walls, windows and doors, existing wall, floor and roof assemblies; and verify existing equipment against energy model assumptions. Significant discrepancies off by more than 10% of Inspector findings shall be noted.
5. Evaluate whole house fan including potentially inadequate joist sizing and/or spacing to support fan, access to grounded electrical lines, adequate attic ventilation, and potential attic environmental hazards.
6. Ensure documented central A/C or heat pump is in place or in the project's proposal.

e) **DHW Systems**

1. Evaluate condition of storage and/or tankless water heaters.
2. Ensure appropriate gas line sizing, structural stability access to unit, vent termination, and existing energy efficient water heater is not in place.

f) **Lighting**

1. Evaluate feasibility of retrofitting existing hardwired fixtures, including access to grounded circuits, and condition of existing fixtures and wiring, noting any open Junction boxes and flying splices.

g) **Windows**

1. Evaluate feasibility of energy efficient window installation including verifying that existing windows match energy model data, structure and window bucks are structurally sound, and proposed windows are appropriate for the siding type (new construction, fin over retrofit, block frame, etc.).

h) **Notice of Hazardous Condition**

A notice will be presented to the customer if a health and safety issue is identified by the inspector.

4.2 ON-SITE QC PRE-INSPECTION PROTOCOLS

Advanced Home Upgrade Jobs Only
All tests and observation procedures will follow the practices of the BPI Building Analyst and Envelope Specialist standards and the Inspection Guidelines. The QC inspector will make every attempt to replicate contractor calculations, tests and notes on site.
Should prior to, during, or at any time after the on-site pre-project inspection, the inspector observes, notices, or becomes aware of a hazardous or potentially hazardous condition, the inspector will immediately inform the customer of the situation and contact the QA/QC program manager.
If the hazard presents an imminent danger, the program manager will immediately decide regarding completing the verification visit and the disposition of the hazard. UNDER NO CONDITIONS SHALL AN INSPECTOR LEAVE A SITE IN A STATE WHERE AN IMMEDIATE HAZARDOUS CONDITION IS KNOWN TO EXIST, UNLESS EXPRESSLY INSTRUCTED TO DO SO BY THE QA/QC PROGRAM MANAGER.
In all cases where an unsafe or potentially unsafe condition or hazardous material exists as defined above, the protocols of Health and Safety Issue shall be in effect.
The QC inspector will record all observations and measurements on a Pre-Retrofit Inspection Form, including all supplemental information produced while conducting the site visit. Supplemental information may include notes, pictures, or test equipment read-outs.
Upon completion of the QC inspection, the QA/QC vendor will compare the Pre-Project Submittal to the QC pre-retrofit inspection materials.
All diagnostic test comparisons and measurements will be considered passable if submitted test results are within 10% of QA/QC inspector test results. This includes but is not limited to Blower Door and Duct Testing and square footage.
The QC inspector shall prepare a Pre-Retrofit QC Inspection Report which shall include summary and detailed supporting information.
QA/QC inspector may not discuss results or findings of inspection with customer except in the case of health and safety related fails as defined under Health and Safety Fail.
The QC inspector and all authorized witnesses to the QC inspection shall, always: • Conduct him or herself in the utmost professional manner reflecting their role as a representative of SDG&E and *Advanced Home Upgrade*. • Wear all appropriate safety gear • Identify themselves to homeowners, applicants and occupants • Display appropriate identification when on-site

5. POST-RETROFIT STEPS

A completed Post-Retrofit Submittal Package is intended to document the work that was conducted in the home, present the test-out results, and report the calculated amount of energy savings achieved. This information will document that the job meets the requirements of Advanced Home Upgrade to qualify for a rebate matching the level of savings achieved.

All Post-Retrofit Job information will be QA reviewed for completeness and accuracy by the QA/QC vendor in accordance with the process outlined above. The Post-Retrofit Job information is entered into EECP by the contractor.

Note: If a measure that was installed needs to have additional work completed, or materials installed to comply with health and safety requirements and is not completed, due to customer refusal or any other reason, the measure will not be approved for payment. If job measure is not feasible, the customer refuses, or if the measures is pre-existing, the measure may not be claimed for the job.

- *Example: Air-Sealing has been completed and requires mechanical ventilation that the customer refuses the air-sealing measure will not be claimed.*

5.1 POST-RETROFIT SUBMITTAL PACKAGE

Advanced Home Upgrade Jobs
The completed Post-Retrofit Submittal Package should consist of the following:
1) Blower Door ACH/SLA data a. Include pictures of manometer screen and blower door set up (further defined under item #9 Pictures). b. Volumetric and BAS calculations and recommendations
2) Duct Blaster leakage data a. Include pictures of manometer screen and duct blaster set up (further defined under item #8 Pictures). b. Pictures of duct system after retrofit c. CF3R's are an acceptable form of compliance given they demonstrate duct leakage ≤ 10% **If HVAC measures are not being claimed (Furnace upgrade, AC upgrade or duct sealing, duct insulation), default values shall be used for pre- and post-retrofit duct leakage. The default chart can be found at the end of this document in Appendix C.*
3) All necessary test-out data a. All CAS/CAZ, BAS, BPI, etc. b. Include Pictures as necessary
4) Final Invoice updated to reflect all changes from initial Scope of Work. Final Invoice must include the following: a. **Customer name, address and signature** (Customer signature must be on the original Scope of Work, the invoice, or both). b. **Itemized line items for each measure** being claimed through the program. c. **Include the mandatory measures** i. CO Alarm, when installed d. **Cost of the Project before calculating AHU rebates** e. **Rebate Amount** (Ensure this value matches the rebate value on Post-Retrofit Energy Model) f. **Total cost of project less rebate amount** (project costs must be greater than incentive amount).
5) Include Pictures of all claimed measure areas/items sufficient to demonstrate compliance with program requirements and standards.

For Air Sealing – Please include blower door setup, and readings:

1. Blower door in door frame with fan running to demonstrate ring used and setup
2. Manometer Reading at 50 pascals
3. When claiming infiltration reduction savings, photo documentation must be provided demonstrating air sealing work performed in a minimum of 3 of the following 10 areas listed below:
    a. Attic Plane
    b. Attic Drop-Down Stair or Scuttle
    c. Floor Plane
    d. Electrical Penetrations
    e. Plumbing Penetrations
    f. Garage Wall
    g. Doors
    h. Windows
    i. Recessed CAN Lights (Using approved material)
    j. HVAC Boots

For Duct Sealing/Replacement – Please include photo documentation of the following:

a. Duct Testing Equipment attached to return
b. CFM Manometer Reading @ 25 Pascals
c. If/when performing *leakage to outside* testing, provide blower door manometer readings @ +25 pascals and duct testing manometer readings @ 0 pascals with corresponding CFM
d. Duct R-Value

For Attic Insulation – Please provide photo documentation showing broad view of work over as much of the insulated area as possible. Please submit photos showing the following:

a. Blocking around HPD's
b. Baffles at vented soffits/eaves
c. Insulation Depth
d. Insulated & Weather-stripped attic access

For Wall Insulation – Please provide photos of wall insulation at time of installation (drill & fill holes).

For Equipment – Please show the following (Condenser, Coil, Furnace, DHW)

1. Nameplate Data (Model Number, Serial Number, Input Capacity, Output Capacity)
2. Proper Venting & CVA grills
3. Photo of unit in place
4. Photo of lined platform return, if/when in unconditioned space

For Mandatory Measures – Provide a photo of installed CO alarm

For Windows – Please include labels displaying U-value & SHGC for each different type of window that was installed. Show installed windows following installation guidelines.

Other Measures – Please show any pictures necessary to document compliance with the standards.

AHRI Certificate – When claiming HVAC is a part of the project's scope of work, an AHRI Certificate must be provided demonstrating properly matching equipment
Post-model and project summary data based on updated building model.
9) Permit (if applicable) – Document upload or data entry for permit information must be completed. a. For jobs requiring a permit, per SB1414 the permit must be closed to receive payment. The permit closure date must be noted, or the closed permit must be attached to the portal.

**Picture documentation must have a date and time stamp*

Incentive amounts **must** match on the Invoice, Post-Retrofit Energy Model and EECP. If incentive is being sent directly to the customer, it will be assumed the customer is updated with the updated incentive amount should the any changes occur.

5.2 POST-PROJECT SUBMITTAL QUALITY ASSURANCE REVIEW

(DESKTOP REVIEW)

Advanced Home Upgrade Jobs
1) QA/QC vendor will follow internal processes. The submittal will be compared with the Customer Application and Pre-Retrofit Documentation on file. This review will also verify that basic project information (e.g., site location) is consistent across all submitted documents. The post-project submittal will NOT be accepted, and job will be failed if one or more of the following conditions is present: a. Failing CAZ/CAS b. Inconsistent information between Test-out Energy Model, scope of work, final invoice, EECP information and actual installed measures c. Missing permit and/or permit number when applicable d. ALL corrections are not addressed e. Final Blower door results are below 70% of BAS, and there are no notes about installed mechanical ventilation and/or MV calculator provided
2) The Post-Retrofit Project Submittal will be evaluated for completeness. The QA reviewer will begin the review process by comparing the Pre-Retrofit Project Submittal to the Post-Retrofit Project Submittal noting any missing or contradictory data. Next, the reviewer will check any supplemental material to verify all required information has been provided. Missing, incomplete, or illegible documents will be noted and will need to be re-uploaded/re-submitted.
3) The accuracy of the information presented in the Post-Retrofit Project Submittal will be assessed. The QA reviewer will check that the content and test results appearing in the Post-Retrofit Project Submittal meet program requirements.
4) The savings modeling component of all Advanced Home Upgrade submittals will undergo a series of checks to ensure the minimum of inputs are correctly completed by the contractor, and that the information corresponds to all other submitted data. Inconsequential inaccuracies may be corrected by QA team; however, any inaccuracy impacting the overall savings calculation, which would impact the rebate amount, will be returned for correction and re-submittal. Rebates are determined by the calculated savings level achieved.
5) The final modeling software report shall be submitted at the completion of the retrofit job, accurately showing the pre-retrofit conditions, test-out data and the installed improvements in the improved section. The report will provide the appropriate calculated savings for determining the final rebate amount, and reports shall include at a minimum:

a. Pre-Project Summary Report with Home Upgrade Recommendations

b. Post-Project Summary Report with Home Upgrade Recommendations

6) The contractor will provide information for all required building permits obtained. Any project claiming an HVAC upgrade will require a closed permit to be attached to the portal or the date of permit closure to comply with SB1414.

** If a safety issue or any additional issue is found, during the desktop review from information submitted, QA/QC inspectors may request additional information/pull an inspection for a "spot check" for the issue found.*

5.3 POST-RETROFIT SUBMISSION & POST-INSPECTION SCHEDULING

All Jobs
If the contractor was notified that the job was selected for a collaborative On-Site QC Post-Inspection, the contractor may schedule the inspection with the customer based on available dates provided by the QA/QC vendor. The contractor should notify the homeowner of a scheduled inspection within two working days. If for any reason an inspection fails to occur as scheduled, or is rescheduled, it is the responsibility of the contractor to notify the homeowner. If the homeowner is not present at the inspection, the contractor may sign the inspection release form in lieu of the homeowner if the homeowner has given permission to the contractor in writing to do so.
SCHEDULING ELIGIBILTY CRITERIA:
Collaborative Inspection Scheduling
The contractor must schedule inspections based on available dates provided by the QA/QC vendor.
1) Contractor must schedule a pre-inspection cancelation a minimum of 72 hours in advance
2) Each inspector shall schedule two 4-hour blocks per day i) Inspector shall wait on-site no more than 1 hour for a no show/no call before contractor must reschedule the inspection
Inspection Scheduling
1) QC Team will schedule the inspection directly with the client once all Post-Retrofit Job information has been submitted.
2) RHA will initiate contact with occupant/homeowner within 3 working days of the post-retrofit submittal to schedule on-site QC inspection and verification. In the event the inspection is not scheduled at the initial contact, RHA will make a second attempt to schedule the inspection on a different day. In the event the customer does not return repeated RHA attempts to schedule, RHA will notify the contractor regarding the issue.

5.4 ON-SITE QC POST-INSPECTION

Reference the inspection guidelines document

(ALL JOBS)

1) Inspector introduces him/herself, presents identification, states purpose of visit, and reviews the procedures with customer. Ensures ready access to all necessary areas and rooms.
2) The inspector may ask the customer for a short tour of the home to show where improvements were made.
3) The inspector notes any overlooked remediation opportunities.

4) The inspector notes whether any installed measures could have been done differently for improving home performance.
5) Inspector will record the results of all tests and visual inspections on the post-inspection form.
6) Inspector will photo document all critical components with a digital camera that contains a time and date stamp.
7) As applicable, inspector conducts diagnostic tests and performs associated calculations.
8) The inspector performs visual inspections of claimed improvements to verify that each measure is new:
    a) The inspector verifies that all measures were installed in accordance with program requirements and technical standards:
    b) Air sealing.
    c) Attic insulation.
    d) Attic ventilation is not negatively impacted by measures included in SOW.
    e) Exhaust vents terminating in the attic.
    f) No hazards exist (e.g., knob and tube, exposed wiring, pest infestation, or structural instability).
    g) Adequate blocking for Heat Producing Devices, Whole House Fans, Combustion Air Openings, Attic Access Door, Eave and Soffit vents.
    h) Clearance Zone for maintained appliances.
    i) Insulation value matches Post-Retrofit Job data and is properly installed including access door.
    j) Duct System.
    k) Low Flow showerheads & thermostatically controlled restriction valves.
    l) Water heater pipe insulation.
    m) The QC inspector may conduct an in-person Customer Satisfaction Survey.
    n) The QC inspector has customer or authorized designee sign that they were present for the QC inspection.
    o) Compare HVAC system to Post-Retrofit Job Report data.
    p) Conduct basic review of energy modeling measurements and test-out data against site observations.
        a. Verify square footage, location, windows and doors, wall, floor and roof assemblies; and verify equipment against energy model assumptions. Significant discrepancies shall be noted.
    q) Storage or tank less water heaters.
        a. Ensure appropriate gas line sizing, structural stability access to unit, vent termination feasibility.
    r) Whole house fan, including potentially inadequate joist sizing and/or spacing to support fan, access to grounded electrical lines, adequate attic ventilation, and attic environmental hazards.
    s) Central A/C or heat pump is in place.
    t) The retrofitting of hardwired fixtures, including access to grounded circuits, and condition of wiring.
    u) Energy efficient window installation including verifying that windows match energy model data, structure and window bucks are structurally sound, and windows are appropriate for the siding type (new construction, fin over retrofit, block frame, etc.)

9) Notice of Hazardous Condition will be presented to Customer if a safety issue is identified by the inspector. For additional info see Health and Safety Fails.

5.5 ON-SITE QC POST-INSPECTON GENERAL RULES

(ALL JOBS)

The onsite post-inspection is intended to document the improvements that were conducted and assess the quality of the contactor's work.
On-site post-inspections represent the beginning of in-depth verification of energy efficiency measures installations for Advanced Home Upgrade.
Onsite post-inspections are the final step of an in-depth verification of energy efficiency measure installations for Advanced Home Upgrade.
The contractor may be present at time of inspection if eligible. Post-inspections may be conducted jointly in the presence of the QC inspector and any discrepancies disclosed may be corrected in the presence of the QC inspector if feasible.
The contractor (or QC Inspector if non-collaborative) shall make an appointment with the customer applicant for the earliest possible date to perform the QC inspection jointly with the QC inspector.
If the homeowner is not present at the inspection the contractor may sign the inspection release form in lieu of the homeowner with the homeowner's written consent. (Written consent must be uploaded to EECP)
All tests and observation procedures will follow the practices of the CEC Title 24 HERS protocols and BPI Building Analyst and Envelope Specialist standards. The CAS/CAZ protocols will follow utility policy. The QC inspector will replicate contractor calculations, tests, and notes on site.
At any time prior to, during, or post on-site post-project inspection, should the inspector observe, notice, or become aware of a hazardous or potentially hazardous condition, the inspector will immediately inform the customer of the situation and contact the QA/QC program manager.
QC Vendor inspector will document condition of project including any additions/work done not related to ADVANCED HOME UPGRADE. For example, if a Room Addition is added during the project timeline, but was not in the submitted SOW, it would still be required to be documented and included in the model.
If the hazard presents an imminent danger, the program manager will immediately decide regarding completing the verification visit and the disposition of the hazard.
The QC inspector, contractor, and all authorized witnesses to the QC inspection shall, always: • Conduct him or herself in the utmost professional manner reflecting their role as a representative of SDG&E and *Home Upgrade*. • Wear all appropriate safety gear • Identify themselves to homeowners, applicants and occupants Display appropriate identification when on-site

5.6 POST-RETROFIT SUBMITTAL & POST-INSPECTION REVIEW

Advanced Home Upgrade Jobs
100% of Post-Retrofit Submittal Packages are QA reviewed within 3 working days of submittal of post-retrofit data. If submission platform errors exist that impact this review timeline, RHA will notify contractors within 3 working days.

The On-Site QC Post-Inspection shall be reviewed as part of the post-retrofit review.
Within 3 working days of the post-project submittal date, the contractor will receive notice regarding the outcome of the Post Retrofit Submittal Package and On-Site QC Post-Inspection review. If the contractor has NOT been notified within 3 working days from the date of the post-project submittal, regarding the outcome of the QA review, then the contractor may assume the Post Retrofit submittal is accepted and no corrections or modifications will be required and that the Post Retrofit submittal will be the basis for calculated energy savings.
Contractor will be notified directly by the QA/QC vendor of the following items: 1) Paperwork Issues (i.e., discrepancies between job information in EECP, Scope of Work, Building File, Customer Application and/or Final Invoice) 2) Energy Modeling Issues or Discrepancies; if discrepancies of missing or inaccurate inputs are found on pre-retrofit energy model report following post-retrofit inspection, QA/QC vendor may request necessary changes 3) Missing or incomplete information of the above required documentation 4) Any items that must be corrected and re-submitted in a revision of the job information in EECP. 5) Quality Control inspection findings (only if selected for QC) 6) Best Practice Recommendations 7) Any health or safety concerns

Note: Any items representing an imminent safety concern to occupants must be brought to contractor and customer attention immediately using safety notification process.

Contractors will receive E-mail notifications based on Post-Retrofit QA reviews and QC inspections for any corrections noted. Items may only be added to subsequent E-mails for the following reasons:

1) Serious health and safety issues previously identified or not.
2) ANY changes or corrections made by contractor to the submittal package that impact previously reviewed items regardless of whether they were identified previously.

Additional issues causing the failure of a job include, but are not limited to:

1) Failing CAZ/CAS.
2) Inconsistent information found between pre-retrofit energy model report, post-retrofit energy model report, EECP and actual installed measures.
3) Missing building permit information.
4) ALL requested corrections in post-retrofit communication are not corrected and/or addressed.
5) Final Blower door results are below 70% of BAS, and there are no notes about installed mechanical ventilation or MV calculator uploaded to demonstrate compliance.
6) S.O.W. Deficiencies related to the results of any diagnostic testing.

6. DIAGNOSTIC PERFORMANCE TESTING

The QA/QC vendor will comply with inspection guidelines and other policy documents as required by the program. The QA/QC vendor will utilize industry standard diagnostic tools as needed to verify the contractor's reporting. Determinations of selected tests to be performed will depend on the project scope, observed results, and other factors. All results are documented and checked against contractor submittals. Diagnostic tests may include but will not be limited to the following:

1) Shell Leakage (blower door testing)
2) Duct Leakage (total leakage and/or leakage to outside)
3) HVAC System Airflow Verification (flow hood, plenum matching, calculated)
4) Exhaust Fan Flow
5) *Combustion Appliance Safety (CAS) Combustion Appliance Inspection and Testing for Carbon Monoxide, Gas Leak Testing and Visual Inspection of Proper Venting and Combustion Ventilation Air (CVA).
6) *Combustion Appliance Zone (CAZ) Testing Worst Case Depressurization (WCD) within all Combustion Appliance Zones.

** Please see CAS/CAZ section in the Inspection Guidelines (Chapter 5) for detailed info on CAS/CAZ requirements*

Adherence to Program Standards, except where otherwise described in this document, is required.

7. PROJECT COMPLETION

After receiving the signed Customer Application and all other required documentation such as building permits and product receipts, the QA/QC vendor will follow internal processes to submit the job through EECP for final SDG&E review and incentive processing.

To complete a project and submit for an incentive the following documents must be present:

7.1 PROJECT COMPLETION PACKET:

Submittal Type	Advanced Home Upgrade Jobs
Upload	1) Original Signed ADVANCED HOME UPGRADE Application (Electronic signature allowed)
Upload	2) Scope of Work

Upload	3) Pre-Project Energy Modeling Report
Upload	3) Pre-Retrofit CAS/CAZ Data Collection form
Upload	4) Post-Retrofit CAS/CAZ Data Collection form
Upload	4) Post-Project Energy Modeling Report
Upload	5) Subcontractor Invoice (if applicable)
Upload	6) Final Invoice
Upload	7) Permit (Final inspection date required)

8. SAVINGS CALCULATIONS PROTOCOL FOR FUEL SWITCHING AND PROPANE SERVICED HOMES

SDG&E does not incentivize energy savings related to propane fossil fuel loads or fuel switching. SDG&E Home Upgrade customers that choose to switch fuels from or to a fuel served by SDG&E may not receive an incentive for any savings achieved because of that fuel switch. SDG&E Customers that fuel switch or have any portion of their home fuel needs supplied by propane may apply the following savings allocation protocols:

8.1 ADVANCED HOME UPGRADE FUEL SWITCHING & PROPANE CALCULATION

Case 1: SDG&E Electric and Non-SDGE Propane

SDG&E customers participating in Advanced Home Upgrade that have propane gas service for their fossil fuel loads (i.e. space heating, domestic hot water, and/or appliances) and SDG&E electric for all other loads will receive an incentive adjusted to account for only the electric savings portion of the total energy savings percentage. The propane fossil fuel savings will be removed from the savings reported in the Modeled Project Summary manually by QA/QC Vendor to determine the final percent energy savings and corresponding incentive level. The final customer incentive will reflect only savings related to electricity savings.

Case 2: SDG&E Electric, SDG&E or SCG Natural Gas, and Non-SDGE Propane*

SDG&E customers participating in Advanced Home Upgrade that have both propane *and* natural gas service for their fossil fuel loads (e.g. customer has natural gas space heating and appliances and a propane domestic hot water) and SDG&E electric service for all other loads will receive an incentive adjusted to account for only the electric and natural gas savings portion of the total energy savings percentage; propane fossil fuel savings will not be incentivized. The propane fossil fuel savings will be removed from the end use load savings reported in the Modeled Project Summary manually by QA/QC Vendor to determine the final

percent energy savings and corresponding incentive level. The final customer incentive will reflect only savings related to electricity and natural gas savings.

***** *Due the rarity of the Case 2 circumstance, the percent savings and incentive level estimation for Case 2 customers will be calculated on a case basis. Please contact Program Implementer or QA/QC Vendor for guidance.*

Case 3: Fuel Switching

To consider Fuel Switching under Advanced Home Upgrade, the project must pass the three-prong test as put forth in the current effective version of the EE Policy Manual. A summary of this language from the current version (R.09-11-014) as of the writing of this manual is inserted here:

"Cost Effectiveness Requirements for Fuel Substitution Programs/ Measures/ Projects. *Fuel substitution programs/projects may offer resource value and environmental benefits. Fuel-substitution programs should reduce the need for supply without degrading environmental quality. For purposes of applying these tests, fuel substitution proponents must compare the technologies offered by their program/measure/project with the industry standard practice same-fuel substitute technologies available to prospective participants that would have TRC and PAC benefit-cost ratio of 1.0 or greater. The burden of proof falls on the party sponsoring the analysis to show that the baseline comparison adheres to this requirement. Fuel substitution program/measures/projects with a predominantly load building or load retention character are not eligible for funding, and the proponent of a fuel-substitution program carries the burden of proof to demonstrate that the program/measure/project focuses on energy efficiency and creates net resource value. Fuel-substitution programs/projects, whether applied to retrofit or new construction applications, must pass the following three-prong test to be considered further for funding[1]:*

1. *The program/measure/project must not increase source-BTU consumption. Proponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC-established heat rate.*
2. *The program/measure/project must have TRC and PAC benefit-cost ratio of 1.0 or greater. The TRC and PAC tests used for this purpose should be developed in a manner consistent with Rule IV.4.*
3. *The program/measure/project must not adversely impact the environment. To quantify this impact, respondents should compare the environmental costs with and without the program using the most recently adopted values for avoided costs of emissions.[2] The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis."*

[1] Rules for fuel substitution programs were most recently modified by D.09-12-022.

[2] Most recently updated by D.12-05-015 at 31

Measures for which savings are entirely propane are not eligible. The following may not be submitted for incentive if the fuel source is propane:

Propane FAU Heating System
Propane Wall Heater
Propane Water Heater
Any other propane only measure

8.1.1 REPORTING HOME UPGRADE SAVINGS TO THE UTILITY

When reporting savings to the utility for Advanced Home Upgrade jobs that have propane, the Therm savings reported by the work-paper will be manually removed and only kWh and kW savings will be reported.

9. QUALITY CONTROL SAMPLING RATES

All contractors will be inspected at a minimum of 15% inspection rate. The jobs will be tracked based on the contractor completing the work, not on the company/rater entering the job. The QA/QC vendor and/or SDG&E has the authority to adjust this sample rate up or down at any point, in addition to pulling any specific job at any point. Possible reasons for a sample rate adjustment are as follows:

1. High quality installations and no paperwork issues observed over an extensive period
2. Consecutive failures on inspections OR one single inspection with multiple critical failures
3. Project SOW with measures that aren't typically claimed by that specific contractor.
4. Based on program mentor's feedback for new contractors
5. Customer complaints

9.1 MINIMUM SAMPLING RATES FOR ON-SITE QCINSPECTION

Sampling	Advanced Home Upgrade Jobs
Pre-Inspection Rate	15% of all jobs
Post-Inspection Rate	15% of all jobs

10. Collaborative QA/QC

The QA/QC vendor will provide positive and constructive feedback to contractors, while maintaining a zero-tolerance policy for any misrepresentation. To properly document contractor performance and compliance with program policies and standards, projects and corresponding contractors will receive a pass/fail rating for each *inspected* project. Ratings will not be made available to the public, but may be used to identify additional training opportunities, track contractor performance and make changes to program design.

10.1 PROJECT QA/QC RATINGS

Projects that receive major or serious deficiency ratings will still be able to continue through the program; however, contractors will be expected to correct the issues before an incentive is issued.

Contractors with documented patterns of workmanship issues will be recommended for additional program and/or technical training. If necessary, additional training will be provided by the program mentor in the areas of onsite test-in/test-out protocol and correctly filling in fields of the Contractor Job Application and EECP information, as well as correctly and precisely completing the software modeling and installing measures in the field. This determination will be made on a case basis by SDG&E, QA/QC and other program implementers.

INSPECTION PASS/FAIL

1. **Fail - Serious Deficiencies:**
   "Serious Deficiency" is defined as any health and safety issue, such as elevated carbon monoxide levels or the presence of a fire hazard.
2. **Fail - Major Deficiencies:**
   "Major Deficiency" is generally defined as work NOT performed as part of the contracted scope of work, very poor installation quality, or large discrepancies between Contractor testing results and QC verifiers testing results.
3. **Fail - Minor Deficiencies:**
   "Minor Deficiency" is generally defined as non-health and safety items concerning minor issues related to installation. It may also refer to minor issues concerning diagnostic testing, performance modeling or other minor deficiency of an administrative nature. In cases where the modifications will not affect the savings tier, RHA will make changes on behalf of the contractor where possible.
4. **Pass**, No Deficiencies or Best Practices

Serious Deficiencies

Serious deficiencies are defined as any health and safety issue

Examples of serious deficiencies are:

1. Elevated carbon monoxide levels
2. Fire hazards due to Electrical issues or Combustion Clearances
3. Any Structural Hazards created by or immediate structural hazards existing and obvious

Major Deficiencies

Major deficiencies are generally defined as work NOT performed as part of the contracted scope of work, very poor installation quality, or large discrepancies between Contractor testing results and QC inspectors testing results.

Examples of major deficiencies are:

1. Work not performed by a Participating Contractor, but claimed on SOW/EECP/Model
2. Work Not Meeting the Installation specifications, particularly the intent of the standard.
3. Major differences between contractor's test-out numbers and inspector's test-out numbers (>10%).

Minor Deficiencies

Minor deficiencies are generally defined as non-health and safety items concerning minor issues related to installation. It may also refer to minor issues concerning diagnostic testing, performance modeling, or other minor deficiency of an administrative nature.

Examples of minor deficiencies are:

1. Minor insulation installation issues, i.e. visible voids and gaps that do not impact the overall performance of the measure.
2. Spelling errors and minor discrepancies between customer information and / or house information that does not impact the incentive tier or safety of the project.

Best Practices

Best Practice standards are identified on the Technical Specifications sheets for each eligible energy efficient measure. If a Contractor's verification results show no deficiencies in performance, the inspection will be passed, but contractors will be encouraged to achieve California performance targets.

11. CONTRACTOR ACTION LEVELS AND QC MENTORING

Contractor Quality Assurance Action Levels

The QA/QC vendor will follow a clear and objective procedure to identify patterns of quality assurance issues, and make recommendations to the program regarding levels of corrective action per the following parameters:

1) QA/QC will review new and existing contractor job files monthly to identify patterns of issues, including the nature and level (severity) of those issues. This analysis will be the basis for recommended additional mentoring, training, or corrective action by the program administrator.

The quality assurance issues will be categorized per two primary metrics:

1) Nature of quality assurance issue
2) Level or severity of the issue

Nature of Quality Assurance issue

The 3 primary categories of issues are:

1) Paperwork or submittal issues (completeness, accuracy of information, etc.)
2) Energy modeling, calculations or building assessments for audits
3) Installation or building diagnostics issues

Severity of Quality Assurance issue
The 3 primary categories of issues are:

1) Health and Safety, or major deficiencies
2) Minor deficiencies and inconsistencies
3) Minor ongoing issues not requiring specific action
   (minor paperwork issues, very minor installation issues)

Action Levels: The QA/QC team will provide feedback to the program staff per these criteria and provide one of four (4) paths of action, depending on the frequency, prevalence (percent of total jobs submitted having issues) and severity of the findings.

Level 1: Ongoing feedback (best practices recommendations, technical support from RTS provider, etc.)
Level 2: Recommend conference call between Training Vendor, contractor, and QA/QC representative to discuss remediation and clarify requirements.
Level 3: Recommend additional mentoring and training, or recommend QC inspection mentoring session (depending on nature of issue)
Level 4: Recommend immediate review of files by program staff to establish custom action plan for contractor.

Decision matrix for action levels: The following decision process shall be followed to determine action level recommendation:

For all non-critical inconsistencies or minor quality issues, follow a chronology of recommendations beginning with **Level 1** and moving to progressive levels only if issues are not remediated within a reasonable time frame.

For serious quality installation, major or ongoing inconsistencies in submittals or inaccurate reporting of energy audit results, recommendation may move to **Level 2 and/or Level 3.**

For serious health and safety issues, fraudulent representation of project conditions (including deceptive energy modeling practices) or other issues requiring immediate attention by program administrator, QA/QC team may move directly to **Level 4**.

Contractor QC Mentoring
Integral to the success of the HOME UPGRADE program is a formalized contractor mentoring process. QC mentoring is necessary for the HOME UPGRADE program for numerous reasons, including:

- Homes are complex structures and the home performance requirements are sometimes general and need to be reviewed with the contractors.

- In home testing processes are complex, and procedures are at times subject to interpretation and varying home conditions require experience-based decisions.
- Actual field conditions can vary from documentation, based on weather and other variables.
- Intensive process evaluation and mentoring at beginning stages are critical to rapid improvement in contractor performance and compliance.
- The opportunity for a contractor to be exposed to an onsite QC inspection will allow the contractor and their staff to be exposed to the process and formulate questions regarding technical or programmatic aspects.

Additional field observation and mentoring regarding the inspection process and results will assist contractors in ensuring they are conducting their home evaluations and retrofits based on Program standards, state energy codes, industry best practices and the program guidelines. Observations and follow up mentoring with the QC vendor will be mandatory for the contractor for the first 3 projects to undergo QC pre-and post-inspections. Mentoring will also be available on a limited basis to contractors at their request with program management approval.

12. EMERGENCY REPLACEMENT OF MAJOR SYSTEMS

It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in Advanced Home Upgrade.

Major systems that qualify under this provision are identified as:

a. HVAC Systems or components
b. Domestic Hot Water replacements

If a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.

12.1 STEPS FOR REQUESTING AN EMERGENCY REPLACEMENT

The contractor will provide the QA/QC with the following information:

1) Customer contact information,
2) Make/model/serial numbers of existing equipment,
3) Pictures of the Original Equipment in place including name tag,
4) Date the replacement will be installed
5) Photos of new Equipment in place

6) Receipts Documenting proof of purchase of new equipment.
The QA/QC vendor may field-verify the equipment to be replaced
The QC Vendor will notify the contractor via an email that the contractor can proceed with emergency work

To include the emergency work as part of any Advanced Home Upgrade project scope, contractors must follow all other procedures for participation in the Advanced Home Upgrade program.

All changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency and need to be pre-approved by the QA/QC vendor, and must be documented in the Pre-Retrofit Project Submittal Package.

All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

13. CONTRACTOR COMPLIANCE

Contractors must maintain program eligibility as defined in the contractor/rater participation agreement which includes, but is not necessarily limited to the following:

- General Liability
- California Contractor or Specialty Contractor License
- Bonding as required for your licensure
- Most recent signed contractor participation agreement

While it is not required that contractors have a BPI certified person on staff, they must use a BPI certified technician to perform Diagnostic and safety testing. The BPI number of the certified technician is required to be entered in the portal to indicate who performed the test.

13.1 QA/QC CONTRACTOR COMPLIANCE VERIFICATION

QA/QC is tasked with performing spot checks on the contractor compliance documents. QA/QC may at any time request the Program Implementers records for a given contractor to verify the records are current. The Program Implementer may take up to 3 working days to produce the contractor documents. If no documents are produced the QA/QC Vendor will do one of the following:

Non-Compliance Action Levels

1. Remove contractor's name from the list of participating contractors on SDG&E website
    a. Access to EECP may be restricted
2. Set a deadline for Contractor to get in Compliance

Action Level 1 will occur if the contractor does not have current insurance, licensure or bonding. It will also occur if the contractor has not signed any Contractor Participation Agreement. In these cases, access to EECP may be restricted and the contractor's name will be removed from the list of participating contractors on SDG&E website.

Action Level 2 will occur if the contractor's participation type has changed or if they have not signed the most recent Contractor Participation Agreement but have an acceptable older signed version on file. Deadlines for compliance are on a case by case basis based on the amount of time considered reasonable to sign and return the most recent CPA.

13.2 CONTRACTOR COMPLIANCE DOCUMENT TRANSFER

Some private information may be contained in these documents and as such a secure transfer of these records is required. Transfer may occur via the following:

- Sempra Electronic Data Transfer
- Secure FTP site
- EECP
- Fax
- Copies given in person

13.3 SUBCONTRACTORS

Contractors are able to use non-participating contractors to complete aspects of the scope of work for Advanced Home Upgrade job (ex. Attic insulation, BPI testing, windows, etc.)

- It is the participating contractor's responsibility to ensure testing, and install work is being completed to program standards.
- It is the participating contractor's responsibility to enter any and all job information into EECP to support work completed for each job.
- If a non-participating subcontractor is used for testing, the subcontractor must be actively certified in BPI and provide their BPI ID.
- If the participating contractor is using subcontractor services for any part of the installation work, the work completed must:
    - Be included on the original proposal/SOW document.
        - No "piggybacking" will be allowed for work completed prior to the SOW proposal date.
    - A separate invoice (in addition to the final customer invoice) will need to be included in the submittal packet for any Home Upgrade work completed and billed to customer by the subcontractor.
        - This does not apply to subcontracted work if it is included in the invoice between the prime contractor and customer.

14. EXCEPTION REQUEST PROCESS

To ensure a high level of program satisfaction for both contractors and customers, a contractor exception request process is available following any QA/QC findings or reports that would negatively impact the incentive amount estimated by the contractor.

The reasons for this process include:

- If there is a change in incentive amount, contractors must be able to respond to customer inquiries with detailed information as to why there is a change in incentive
- Contractors need feedback on differences in testing results as part of the mentoring process
- Existing conditions at residence may be evaluated differently
- In case a mistake is made by QC Vendor
- Project doesn't meet the program's site or measure eligibility criteria

APPEALS PROCESS

1. **If a contractor wishes to dispute QA/QC findings or to submit a project that does not comply with program requirements as outlined in this document or the installation specifications, the contractor must contact the program implementer to generate an exception request.**
2. **The program implementer will generate the exception request with relevant details about the project. The exception request will include the following:**
    - **a.** Project name, enrollment number and submittal date
    - **b.** A summary of the justification for the dispute of findings, including photos, technical information or other justification for the appeal of the specific findings listed.
3. **QA/QC will review the exception request and provide comments applicable to the exception request, particularly focusing on project consistency, program precedent, program intentions, impacts to project savings, and references to program policies.**
4. **SDG&E will review the exception request and either approve or deny the request. The contractor will be notified by the program implementer of the decision. If approved, the exception request will be uploaded to EECP.**

15. APPENDICES

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APPENDIX A: VER-A-1.0 (7.29.2011) – DEFINITIONS

ADVANCED HOME UPGRADE participating Contractor(s) *– Advanced Home Upgrade* contractors who have met and maintain all Program requirements to be participating contractors who are eligible to offer "Home Upgrade" projects to SDG&E customers.

WHPP participating Contractor(s) - Whole House Performance Program, or participating *Home Upgrade* contractors who have met and maintain all Program requirements to be participating contractors who are eligible to offer "Advanced Home Upgrade" projects to SDG&E customers.

HEES – Home Energy Efficiency Survey, offered free to all SDG&E customers through "MyAccount."

"Test-In" and "Test-Out" reports – Reports provided by a contractor, derived from California Energy Commission (CEC) approved energy use modeling software. "Test-In" refers to the existing building baseline energy usage and "Test-Out" refers to building energy usage after energy saving measures have been installed by the participating contractor.

Quality Control - A series of processes or tests performed on a product after it has been produced to identify defects or deficiencies.

Quality Assurance - Refers to procedures that are built into a process to ensure that the products and services produced meet the minimal acceptable level of quality.

APPENDIX B: VER-F-1.0 (7.29.2011) – DATA SECURITY PROTOCOLS

RHA Hosting Security Features

1. External firewall system by McMillan Consulting in turn with CISCO routers and firewalls.
2. Servers are stored in a secure locked location with only high-level administrative access.
3. Programming Language is PHP
4. Job Portal technology is MySQL and all data is stored securely on local servers.
5. Online systems are secured with 256bit AES standard encryption verified with standard https protocols.
6. Sensitive data is secured by MD5 256bit encryption with a randomly generated 64 bit secure key.
7. All hosting, machine and data passwords are rotating and randomly generated with access level considerations.

APPENDIX C: VER-G-6.0 (3.15.2018) – DEFAULT VALUES FOR ENERGY MODELING

- Existing construction assemblies should reflect the vintage of the house, and/or the contractors submitted data. For reference use the Vintage Table Values in Appendix B located in the Residential Manual.
- Existing HVAC output and efficiency must match contractor's data or match values in the Vintage Table.
- If efficiency information is unavailable for mechanical equipment, must use default year from manufacture date of existing equipment.

	BEFORE 1950	1950-1977	1978-1983	1984-1991	1992	1993-1998	1999-2000	2001	2002-2003	2004-2005	2006 AND LATER
Leakage											
Building (SLA) – Advanced Home Upgrade	10.2	8.o	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Duct Leakage Percentage	28%	28%	28%	28%	28%	28%	28%	22%	22%	22%	22%
Space Heating Efficiency											
Gas Furnace (central) AFUE	0.75	0.75	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Gas Heater (room) AFUE	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hydronic/ Combined Hydronic	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heat Pump (HSPF)	5.6	5.6	5.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	7.4
Electric Resistance Radiant (HSPF)	3.413	3.413	3.413	3.413	3.413	3.413	3.413	3.413	3.413	3.413	3.413
Space Cooling Efficiency											
All Types (SEER)	8.0	8.0	8.0	8.9	9.7	9.7	9.7	9.7	9.7	9.7	13.0
Water Heating											
Gas Heater (EF)	0.525	0.525	0.525	0.525	0.525	0.525	0.575	0.575	0.575	0.575	0.575
Insulation R-Value											
Roof/Ceiling	R-11	R-11	R-19	R-19	R-19	R-19	R-19	R-19	R-19	R-19	R-19
Wall	none	none	R-11	R-11	R-13	R-13	R-13	R-13	R-13	R-13	R-13
Raised Floor – Crawl Space	none	none	none	none	R-13	R-13	R-13	R-13	R-13	R-13	R-13
Raised Floor – No Crawl Space	none	none	none	none	R-13	R-13	R-13	R-13	R-13	R-13	R-13

Duct Insulation	R-2.1	R-2.1	R-2.1	R-2.1	R-4.2	R-4.2	R-4.2	R-4.2	R-4.2	R-4.2	R-6

APPENDIX D: VER-H-6.0 (3.14.2018) – WINDOW DEFAULT VALUES

U-Factor:

Table 110.6-A Default Fenestration Product U-Factors

FRAME	PRODUCT TYPE	SINGLE PANE [3, 4] U-FACTOR	DOUBLE PANE [1,3,4] U-FACTOR	GLASS BLOCK [2,3] U-FACTOR
Metal	Operable	1.28	0.79	0.87
	Fixed	1.19	0.71	0.72
	Greenhouse/Garden Window	2.26	1.40	N/A
	Doors	1.25	0.77	N/A
	Skylight	1.98	1.30	N/A
Metal, Thermal Break	Operable	N/A	0.66	N/A
	Fixed	N/A	0.55	N/A
	Greenhouse/Garden Window	N/A	1.12	N/A
	Doors	N/A	0.59	N/A
	Skylight	N/A	1.11	N/A
Non-Metal	Operable	0.99	0.58	0.60
	Fixed	1.04	0.55	0.57
	Greenhouse/Garden Window	0.99	0.53	N/A
	Doors	1.94	1.06	N/A
	Skylight	1.47	0.84	N/A

[1] For all dual-Glazed Fenestration products, adjust the listed U-factors as follows:
a. Add 0.05 for products with dividers between panes if spacer is less than 7/16 inch wide.
b. Add 0.50 to any product with true divided lite (dividers through the panes).
[2] Translucent or transparent panels shall use glass block values when not rated by NFRC 100.
[3] Visible transmittance (VT) shall be calculated by using reference Nonresidential Appendix NA6.
[4] Windows with window film applied that is not rated by NFRC 100 shall use default values from this table

SHGC:

Table 110.6-B Default Solar Heat Gain Coefficient (SHGC)

FRAME TYPE	PRODUCT	GLAZING	FENESTRATION PRODUCT SHGC		
			SINGLE PANE [2,3] SHGC	DOUBLE PANE [2,3] SHGC	GLASS BLOCK [1,2] SHGC
Metal	Operable	Clear	0.80	0.70	0.70
	Fixed	Clear	0.83	0.73	0.73
	Operable	Tinted	0.67	0.59	N/A
	Fixed	Tinted	0.68	0.60	N/A
Metal, Thermal Break	Operable	Clear	N/A	0.63	N/A
	Fixed	Clear	N/A	0.69	N/A
	Operable	Tinted	N/A	0.53	N/A
	Fixed	Tinted	N/A	0.57	N/A
Non-Metal	Operable	Clear	0.74	0.65	0.70
	Fixed	Clear	0.76	0.67	0.67
	Operable	Tinted	0.60	0.53	N/A
	Fixed	Tinted	0.63	0.55	N/A

[1] Translucent or transparent panels shall use glass block values when not rated by NFRC 200.
[2] Visible transmittance (VT) shall be calculated by using reference Nonresidential Appendix NA6.
[3] Windows with window film applied that is not rated by NFRC 200 shall use default values from this table.

APPENDIX E: VER-H-1.0 (7.29.2011) – HEALTH AND SAFETY ISSUE PROTOCOLS

Health and Safety Communication Protocol:

The communication protocol provides timelines and points of contact regarding observed health and safety violations or hazardous conditions pertaining to the HOME UPGRADE program and process. Please note: HOME UPGRADE program assumes no responsibility for the existing or created conditions of the home and offers no warranties or guarantees of work performed. Observations are provided on an informational basis only. For action levels regarding Health and Safety please see the CAS/CAZ section of the Installation Specifications. Note that pre-existing safety issues other than those identified by required BPI testing do not need to be corrected but must be communicated to the owner per the "Notice of unsatisfactory condition" form at the end of this section.

There are **two** primary levels of health and safety notification:

1. **Non-critical health and safety concerns**: These include non-time critical observations by QC inspection staff and may include, but are not limited to:

    1.1. Environmental hazards: Minor mold and mildew on interior surfaces, possible lead based paint, potential presence of ACM (Asbestos Containing Materials) insect infestation, pests etc. When BOM is identified by the contractor, auditor or Energy Field Technician a Notice of Unsatisfactory Conditions (NOUC) shall be completed. The comments section of the NOUC should be used to describe the BOM, its location, and a recommendation remediated.

2.

    2.1. CAS/CAZ hazards: Non-critical CAS issues such as failed spillage tests, non-conforming vent pipes or other appliance elements, inadequate CVA (combustion ventilation air) etc.

    2.2. Other non-conforming health and safety observations: These may include non-critical structural damage directly impacting retrofit work, non-conforming electrical or mechanical system components etc.

3. **Critical health and safety hazards**: These included time-sensitive serious health and safety hazards observed by QC inspection staff and included but are not limited to:

    3.1. Serious Combustion Safety hazards: Failed steady state draft tests for appliances communicating with living space, gas leaks, failed ambient or ambient appliance CO tests exceeding BPI action levels, cracked gas heat exchangers etc.

    3.2. Critical environmental or structural hazards: Serious structural deficiencies relating to the retrofit work (broken joists/roof structure, other structural failures potentially affecting worker/occupant immediate safety) or fire/safety hazards created because of work performed.

SPECIFIC EXAMPLES THAT WILL FAIL A JOB INCLUDE:

1. A gas leak is detected.

2. Possible asbestos containing material (PACM) is present at post-retrofit.
3. Knob and tube wiring are present and the following have not been posted near the primary entrance to the attic, crawlspace, or basement:
   a. Notice of Survey by a licensed C-10 Electrical Contractor.
   b. Warning Placard (must be present at every entrance).
4. Blower Door CFM50 is below 70% of BAS and MV calculator has not been provided demonstrating installation/compliance with MV standards.
5. Insufficient CVA.
6. Communication between return air and combustion air.
7. Appliance fails draft and/or spillage under "natural" conditions.
8. FAU supply register CO reading exceeds 1 ppm above the ambient CO reading under "worst-case" or "natural" conditions.
9. Room Ambient CO exceeds 35 ppm.
10. Room Ambient CO exceeds 9 ppm over a 24-hour period.
11. Kitchen ambient CO (measured in the center of the kitchen at 6') exceeds 9 ppm with:
    a. all burners operating, or
    b. the oven operating, or
    c. the broiler operating.
12. Open combustion FAU or water heater is located in a sleeping area or bathroom.
13. Free-standing unvented gas space heater is in a location that may have a direct effect on the living space (see definitions in 3.1).
14. Gas clothes dryer located in a living space, but does not exhaust outdoors.
15. Disconnected vent pipe on a combustion appliance that may have a direct effect on the living space.
16. Excessive rust in draft hood or heat exchanger.
17. Vent pipe terminates next to a window and it is not acceptable according to CMC Chapter 8.[3]
18. Disconnected vent pipe on a combustion appliance in an attached garage or within 4' of a window/door. [9]
19. Improper furnace or DHW vent termination. [9]
20. Misaligned, defective, or multiple draft hoods causing appliances to not vent properly. [9]
21. Any safety switches have been bypassed.
22. Inadequate clearance from combustibles.
23. Flame rollout.
24. Abnormal flame—such as large yellow flame (more than 50% yellow, when burner is not designed to burn yellow), soft lazy flame, smothering flame (flame recirculation), etc.
25. Delayed ignition.
26. Cracked heat exchanger.

[3] Does not include appliances/conditions listed in Advisory Conditions (Subsection 3.9, Table 3-9).

27. An HPD is in contact with combustible material or insulation.
28. IAQ requirements have not been met when attic insulation and attic air plane sealing is selected as a retrofit measure:
    a. Duct connections, including duct-to-register-boot connections, have not been sealed with UL-181 tape, draw bands, mastic, or other approved duct sealing material.
    b. Where ducts are inaccessible, register boot connections have not been sealed inside the boot with UL-181 aluminum tape, mastic, or other approved duct sealing material.
    c. Kitchen and bathroom exhaust fan(s) and vent(s) are not continuously connected/ducted to exhaust outdoors.
       –
29. HPD and IAQ photo documentation when requested does not include:
    a. Photos of pre-retrofit attic spaces in existing pre-retrofit condition.
    b. Photos of all HPDs with barriers/baffles installed with proper clearances to all combustible materials (including insulation) prior to insulation being installed. HPDs include, but are not limited to, the following:
       – Recessed light fixtures and EXPOSED fluorescent fixtures
         - Note that Type IC and IC/AT recessed fixtures do not require barriers.
         - IC means Insulation Contact (no clearance required), and AT means Airtight.
       – Doorbell transformers
       – Fan Motors
       – Gas vent pipes (including abandoned ones)
       – Masonry and metal chimneys (including abandoned ones)
       – Gas and Electric appliances (e.g. water heaters and furnaces).
       – Any other device that produces heat.
    c. Photos of all accessible duct connections including duct-to-register boot connections, showing that they have been sealed with UL-181 tape, draw bands, mastic, or other approved duct sealing material.
    d. Photos showing that kitchen and bathroom exhaust fan(s) and vent(s) are continuously connected and exhaust outdoors.
30. Low-flow showerhead rating less than 1.5 gallons per minute and/or a Thermostatic Control Valve (TCV) was installed when a tank less water heater supplies water to the shower.

ADVISORY CONDITIONS

Advisory conditions (listed in Table 3-9) are applicable only to existing appliances that do not directly affect the living space and the installation is not included in the scope of work. The homeowner must be advised when any such condition is present in the home.

31. Notification to the homeowner of the presence of any gas appliance advisory conditions (see Table 3-9) is the sole responsibility of the contractor.
32. Any immediate or potential hazard, such as charring from a vent system) or any other identified safety risk must be corrected by the contractor, regardless of whether the condition is listed in Table 3-9.
33. The QC vendor will inform the homeowner only of line item 9 in the Table 3-9 (NOx Rod Furnace subject to recall), unless any other condition poses an immediate hazard.
    a. A Notice of Unsatisfactory Condition must be filled out and signed by the homeowner.
    b. A copy will be given to the homeowner, and the file will be uploaded into EECP.

TABLE 3-9

Advisory Conditions—Natural Gas Appliances
34. Inoperable Appliance.
35. Insufficient CVA for domestic water heaters installed outside in an enclosure that is not directly connected to the outside wall of the living space (e.g., in a metal shed).
36. Vent pipe (other than Direct Vent) terminations for appliances in outdoor locations: a. Terminal is not at least 4' below, or 1' above an openable door/window or passive air inlet into the home, or b. Terminal is less than 4' from a wall and does not extend above the wall and roof.
37. DV (Direct Vent) terminal less than 12' from openable door/window or passive air inlet into the home.
38. Single-wall vent connector extends beyond the ceiling or wall, and no charring is present.
39. Misaligned, missing, or doubled draft hood
40. DHW component(s) missing or damaged[4]
41. Any clothes dryer exhausting into an appliance enclosure or garage, where lint is not affecting open combustion appliances. (Occupants must be advised to watch for accumulation of dryer lint at draft hood and CVA intake of open combustion appliances in the space.)
42. Horizontal FAU is a NOx Rod Furnace subject to recall.

4. Communication procedure:

4.1. For Non-critical health and safety observations, QA/QC vendor will note observations in notice of unsatisfactory condition letter and provide to customer.

4.2. For Critical health and Safety hazards observed, QA/QC vendor will contact contractor, Program Implementer, and SDG&E within 1 working day from the date of inspection.

4.2.1. In the event of a critical combustion safety hazard, inspector will make all reasonable attempts to immediately notify contractor and if necessary attempt to temporarily decommission (turn off gas and/or cap gas line) appliance. If neither option is available at the time of inspection, inspector will contact gas company service representative and alert them of the hazard.

Customer Communication: In the event of a CO (Carbon Monoxide) hazard exceeding, verified gas leak or major structural, QA/QC inspector will communicate with homeowner/designee the nature of the issue at the time of inspection, notating such via a notice provided here:

[4] DHW missing or damaged components include: (a) outer combustion chamber cover, (b) inner rollout shield, (c) T&P valve, (d) any part of the vent system, including the draft hood, and (e) defective gas control (e.g., missing/damaged control knob, thermostat dial)

NOTICE OF UNSATISFACTORY CONDITION

Notice of Unsatisfactory Condition

Applicant Name:	Applicant Address:	Enrollment#:
Contractor Name:	Technician Name:	

An inspection of the appliance(s) checked below has determined that the appliance(s) require(s) service that the technician/ inspector cannot provide**. Check all applicable appliances and all applicable condition codes. (See list of condition codes below).**

A. Furnace #1- Location:	Condition code(s):	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
B. Furnace #2- Location:	Condition code(s):	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
C. Water Heater	Condition code(s):	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
D. Other:	Condition code(s):	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

Condition Codes

1. A natural gas odor was detected
2. Continued use may be hazardous- Do not use this appliance until the condition has been serviced.
3. Kinked, uncoated brass connector or pre 1973.
4. High CO reading
5. Appliance tagged and shut down.
6. Other- *Explain:* _____

The technician/inspector has informed me that the indicated appliance(s) may be hazardous to operate and should not be used until the condition has been corrected. Continued use may result in property damage, personal injury and/or loss of life. All responsibility for this condition or use of the appliance(s) under existing conditions must be assumed by the user.

Customer Name: (Print)	Customer Signature:	Date:

☐ Customer refused to sign Date: Time:

Customer referred to: ☐Owner/landlord ☐Utility for service request ☐ Program Contractor

Comments:

Form # White– SDG&E Yellow– Customer Pink– Contractor *Revised 03/2018*

Appendix F: (10.12.14) - Data Collection Form

Owner Name: _____ Date:_____ **Collaborative Inspection?** Y | N

Address: _____ City: _____ Who Performed Testing?

Contractor: _____Inspector: _____ Job #: _____ Contractor ☐ QC ☐ Mentor ☐

▶ Job Type: Home Upgrade ☐ Advanced Home Upgrade ☐

HOME INFORMATION			
Year Built			
Avg. Ceiling Ht.		N Factor	19.8 24.5 Other:
Conditioned Fl. Area		Climate Zone	| 7 | 10 |
# Floors		CO Alarm Existing?	Y | N
BAS		Principle Heat Source	Gas Electric Propane
70% of BAS		Attached Garage?	Y | N

COMBUSTION APPLIANCE SAFETY TESTING (CAS)								
APPLIANCE	Gas Leak	Ambient	CO	Draft		Spillage		Roll
		CO	PPM	WC	Nat	WC	Nat	Out
Furnace	Y | N							Y | N
Water Heater	Y | N							Y | N
Stove Top		CO ppm: Burners - 1. 2. 3. 4. 5.						
Oven & Broiler		CO ppm:				Fuel Type:		
Clothes Dryer		Located in Garage? Yes ☐ No ☐				Check gas line for leaks? Yes ☐ No ☐		

COMBUSTION AIR ZONE TESTING (CAZ)				NOTES:
APPLIANCE	**WORST CASE DEPRESSURIZATION**			
Furnace	Base pa:	Worst Case pa:	Net pa:	Natural Pass | Fail
Water Heater	Base pa:	Worst Case pa:	Net pa:	Natural Pass | Fail

PRESSURE DIAGNOSTICS					
Blower Door		Duct Blaster		Ducts	
House pa:		Duct pa:		Conditioned Space %	
Base pa:		Flow Ring:		Unconditioned Space %	
Flow Ring:		Total Leakage:		Return Type:	Platform / Ducted
CFM50:		Leakage to Outside:		Notes:	

RECOMMENDATIONS / ISSUES:

Safety Issue? _____ (Owner Notified? **Yes** ☐ **No** ☐)

BPI Tech Name:		Signature:		BPI #:		Date:	

EXHIBIT 1: VER-EX1.0-(12.15.2016) PROGRAM CPA

HU Program CPA FINAL 9_03_2015.do

EXHIBIT 3: VER-EX3.0-(8.29.2014) REFERENCED INSTALLATION SPECIFICATIONS

1. SDG&E Measure Installation Specifications

Incorporated by reference; to current version of HOME UPGRADE 2015 Whole House Upgrade Program Installation Specifications for Customers Served by San Diego Gas & Electric Company

2. SDG&E QA/QC Reference Standards

2.1 Title 24 Standards (download at www.energy.ca.gov/title24)

c. 20013 Residential Compliance Manual (CEC-400-2008-016-CMF)

- Section 3—Building Envelope Requirements
  - 3.2—Fenestration
  - 3.3—Insulation (e.g., 3.3.2 Ceiling/Roof Insulation, and 3.3.3 Radiant Barriers)
- Section 4—Building HVAC Requirements
  - 4.2—Heating Equipment
  - 4.3—Cooling Equipment
  - 4.4—Air Distribution Ducts and Plenums (e.g., 4.4.4 Duct Installation Specifications)
  - 4.5—Controls (e.g., 4.5.1 Thermostats)

- 4.6—Indoor Air Quality and Mechanical Ventilation (based on ASHRAE 62.2)
- 4.9—Refrigerant Charge

- Section 5—Water Heating Requirements
- Section 6—Lighting
- Section 8—Additions, Alterations, and Repairs
  - 8.3—Building Envelope
  - 8.4—HVAC
  - 8.5—Water Heating
  - 8.6—Lighting

d. 2008 Reference Appendices (CEC-400-2008-004-CMF)

- RA1—HVAC Sizing
- RA2—Residential HERS Verification, Testing, and Documentation Procedures
- RA3—Residential Field Verification and Diagnostic Test Procedures
  - RA3.1—Procedures for Field Verification and Diagnostic Testing of Air Distribution Systems
  - RA3.2—Procedures for Determining Refrigerant Charge for Split System Cooling Systems
  - RA3.5—High Quality Insulation Installation Procedures

e. 2008 Building Energy Efficiency Standards (CEC-400-2008-001-CMF)

f. 2008 HERS Technical Manual (Phase II) (CEC-400-2008-012-CMF)

- Appendix A (A.1 Data Input, and A.2 On-Site Inspection Protocols)
- Appendix B—Standard Recommendations

2.2 2007 California Mechanical Code (updated 2/1/09)

a. Chapters 2 –13

b. Chapter 17—Standards (Standards for Equipment and Materials)

c. Appendix A

- UMC Standard 6-2—Standard for Metal Ducts
- UMC Standard 6-5—Standard for Installation of Factory-Made Air Ducts

d. Appendix B—Procedures to be Followed to Place Gas Equipment in Operation

2.3 Building Performance Institute (BPI)

a. BPI 101 Revised Home Energy Auditing Standard

b. BPI Technical Standards for the Building Analyst Professional

3. Best Practices Standards—Recommended

3.1 Building Performance Institute (BPI)

a. BPI 104 Envelope Professional Standard

b. BPI Technical Standards for the Heating Professional (11/20/07)

c. BPI Air Conditioning and Heat Pump Professional (Final 2003)

d. BPI Technical Standards for the Manufactured Housing Professional

3.2 Air Conditioning Contractors of America (ACCA)

ACCA Standard 5—HVAC Quality Installation Specification