San Diego Gas & Electric Residential Whole House Retrofit Programs

Quality Assurance & Quality Control Plan

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SUMMARY OF QA/QC PLAN UPDATES

DATE	VERSION	SECTION(S)	SUMMARY UPDATE
6-23-2011	1.1 (draft)	All	Primarily appendices
7-15-2011	1.2 (draft)	All	
7-29-2011	1.3	All	Sections 1-8
3-6-2012	1.4	All	Removal of processes related to JRT's and incorporation of processes related to use of database project submittal tool; section 2.2.3 clarification for customer participation for customers served by both SDG&E and SoCalGas; section 2.2.6 clarifications regarding qualified buildings; section 3 clarifications regarding load removal as qualifying measures; section 3.1.5 criteria for modeling pools with solar and gas heating; section 4.1 updates to on-site inspection sampling rates; section 8.2.1(b)(III) clarification for appeals process documentation regarding re-tests; updates to appendix A, B, C, D, E, I; Removal of exhibit 2 and related language in document; updates to exhibits 1, 4, 6 and 8.

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 in order 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 in an effort 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 outlined in this document for SDG&E's Whole House Retrofit Programs (WHRP), and presented to customers under the statewide *Energy Upgrade California* brand, include processes and procedures for both 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 EUC 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 WHRP's objective is to provide SDG&E customers with comprehensive energy savings through a quality product provided by professional contractors.

The critical steps of the QA/QC process are as follows:

Step 1 – Pre-Retrofit Submittal Package Quality Assurance Desktop Review
Step 2 – Onsite Pre-Retrofit Quality Control Inspection
Step 3 – Post-Retrofit Submittal Package Quality Assurance Desktop Review
Step 4 – Onsite Post-Retrofit Quality Control Inspection
Step 5 – Project Package Submitted to SDG&E for Rebate Processing

Status Changes throughout Database Processing include:

1. Application Draft – Project is in the process of being entered into the Database; contractor has access
2. Open Pending Approval – Project is in QA/QC review; only QA/QC has access
3. Approved – Contractor can complete project then submit completion information
4. Pending Review – Project is in QA/QC review; only QA/QC has access
5. Closed – Completed project has been sent to SDG&E for rebate processing
6. Expired – Project was not submitted for review within six months from date of test in
7. Invalid – Project was submitted then canceled by contractor

2. Quality Assurance - Quality Control Process

The following is a general description of the QA/QC review process (See Appendix I for a summary of this.):

2.1 After the contractor and customer agree upon a scope of work, the contractor submits a completed Pre-Retrofit Submittal Package to the SDG&E WHRP database consisting of:

- 2.1.1 Customer Application Form (Exhibit 1)
- 2.1.2 Customer Data
- 2.1.3 Contractor Data
- 2.1.4 Pre-Retrofit Project Survey Data
- 2.1.5 Advanced Path Only: Test-In modeling files and associated reports accurately reporting the existing pre-retrofit conditions and all proposed energy improvements and savings calculations (Appendix D). Projects must include the installation of all feasible Basic Path measures.
- 2.1.6 Note: Project Submittals are valid for a period of no more than 6 months from the date of Pre-Retrofit Submittal. Post Retrofit project submittals received after the 6 month timeframe will be expired in the database, and a new project submittal will be required.

2.2 100% of Pre-Retrofit Submittal Packages are QA reviewed within 3 working days. In no case is any project to proceed before the 3 working day review period without prior written approval of the QA/QC vendor. The QA/QC review will consist of the following:

- 2.2.1 QA/QC vendor review for completeness and accuracy of submitted documents
- 2.2.2 Customer eligibility
- 2.2.3 Customers in the combined utility area of SDG&E and SoCalGas will proceed through the SDG&E program; customers will complete a joint SDG&E/SCG program application.
- 2.2.4 Review of prior participation in SDG&E rebate programs. Submittal approval will require a SDG&E review of the customer name and account for prior participation in SDG&E rebate programs. SDG&E will then forward to RHA a list of any rebate programs the customer has previously participated in. *(This process is independent of the critical path and will not affect the 3 working day timeline for notification.)*
- 2.2.5 Determination to perform on-site inspection WHRP database pre-selects projects for on-site QC inspection per sampling tier (in accordance with section 4.1.2 of this plan).
- 2.2.6 Dwelling definitions and guidelines for qualification are as follows:

1. Any building with 5 or more dwelling units may qualify for the SDG&E Multi Family Whole Building Performance Pilot and will not qualify for SDG&E's singe family Whole House Retrofit Programs (WHRP).

2. Any building with 2, 3 or 4 units and which there is any shared spaces, such as attics, hallways or other shared space; the units may qualify for the SDG&E Multi Family Whole Building Performance Pilot and will not qualify for SDG&E's singe family Whole House Retrofit Programs (WHRP).

3. Any building with 2, 3 or 4 units which have more than one shared wall among any two units may qualify for the SDG&E Multi Family Whole Building Performance Pilot and will not qualify for SDG&E's singe family Whole House Retrofit Programs (WHRP).

4. Any building with 2, 3 or 4 units which have only one shared wall between units and no shared spaces, may qualify to participate in SDG&E's singe family Whole House Retrofit Programs on a unit by unit basis, provided they meet ALL of the requirements below:

    - There is no communication between units and any installed measures will in no way affect the adjacent unit. The contractor will be required to conduct advanced pressure diagnostic testing and simultaneous air infiltration and combustion safety testing on all adjacent units to determine if communication exists.
    - 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 singe family Whole House Retrofit Program (WHRP) eligibility guidelines for participation

2.3 QA/QC vendor shall notify contractor within 1 business day from the date of pre-retrofit submittal if one of the following applies. If neither is applicable, no notice will be provided, and the project continues to the QA review per section 2.5.

2.3.1 If the pre-project submittal has been selected for on-site QC pre-inspection OR:

2.3.2 The pre-project submittal will not be accepted and re-submittal will be required if any of the following apply:

a. Failing CAZ/CAS (Triggers protocols per Appendix H: Health and Safety Issues Protocols)
b. Inconsistent information between the database and EnergyPro modeling file as it relates to 1) existing or proposed equipment or 2) the conditioned square footage of the home (without explanation provided)
c. Incomplete customer Application, database information or other items listed in section 2.1 above
d. Blower door results are below minimum BAS, and there are no notes about installed mechanical ventilation in SOW.

2.4 If the contractor has not received any notice per section 2.3 within 1 working day, they may assume that the project will NOT have on-site PRE-Project QC inspection and verification. In such cases, project moves to QA desktop review per section 2.6.

2.5 Pre-retrofit QA review: If the project is NOT selected for pre-retrofit QC inspection and verification, then within 3 working days of the pre-retrofit submittal date, the contractor and contractor training and support vendor will receive notice regarding the outcome of the pre-retrofit quality assurance review.

Unless prior written approval from the QA/QC vendor has been obtained, contractors may NOT commence work within the 3 day review period. If the contractor has NOT been notified within 3 working days from the date of pre-retrofit submittal, the contractor may proceed with the project and assume that the pre-retrofit submittal is accepted AS-IS and no corrections or modifications will be required and that the submittal will be the basis for initial calculated energy savings. Contractor and contractor training and support vendor will be notified by the QA/QC vendor of the following items:

2.5.1 Paperwork Issues (i.e., discrepancies between job information in the database, Scope of Work, BLD file, and/or Customer Application):

2.5.2 EnergyPro Modeling Issues (ADVANCED path only):

2.5.3 Missing or incomplete information in either of the above

2.5.4 Any items that must be corrected then re-submitted in a revision of job information in the database.

2.5.5 Quality Control inspection findings (only if selected for QC per section 2.8)

2.5.6 Best Practice Recommendations

2.5.7 Any safety concerns

2.6 When corrections are required, contractor shall make required changes to the job in the database and notify QA/QC vendor via comment section in the database with any notes. It is the contractors responsibility to ensure notification of changes are received the by QA/QC Vendor. This can be an email or a phone call at the discretion of the contractor.

2.7 Except as otherwise noted below, contractors will receive ONE correction memo for the Pre-Retrofit QA Desktop Review and QC inspection. Items may only be added to subsequent memos for the following reasons:

2.7.1 Serious health and safety issues previously identified or not.

2.7.2 ANY changes made by contractor to the submittal package that impact previously reviewed items regardless of whether or not they were identified on a previous memo.

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

2.8 On Site QC Pre-Inspection: Pre-Retrofit on-site QC verification is performed by the quality control vendor in accordance with section 4 of this plan. Except as otherwise provided for in this plan, work may not proceed without prior written approval from QA/QC vendor or until notified by QA/QC vendor.

All “Stop Work” and “Emergency” situations resulting from Combustion Safety Testing MUST be addressed immediately and in accordance with Appendix H (health and safety communication protocols.

2.8.1 Customer Scheduling: RHA will initiate contact with occupant/homeowner within 2 working days of the pre-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, at a different time of day. In the event the

customer does not return repeated RHA attempts to schedule, RHA will notify CCSE and contractor via email and phone regarding the issue.

2.8.2 Incentive applicants, the property owner, or their designated representatives must be present at time of pre-retrofit QC inspection and sign the inspector's *Energy Upgrade California* Quality Control Inspection Sign-off form, (Exhibit 7) 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 QC inspection. *EXCEPTION: Due to program QC requirements and except as otherwise allowed for purposes of QC mentoring, in no case shall a customer or property owner who has submitted an application for an SDG&E incentive under this program be permitted to designate, or utilize the participating EUC contractor responsible for the project as their representative during the QC inspection, this restriction shall include all sub-contractors to the EUC contractor and all others with a business relationship with the EUC contractor.*

2.9 Pre-retrofit QC review: If the project is selected for pre-project QC inspection and verification, then within 3 working days from the date of Pre-Project on-site QC inspection and verification, the contractor and contractor training vendor will receive notice regarding the outcome of the Pre-Project quality assurance review and the Pre-Project on-site QC inspection and verification. *Unless prior written approval from the QA/QC vendor has been obtained, contractors may NOT commence work within the 3 working day period following on-site QC inspection and verification.* If the contractor has NOT been notified within 3 working days from the date of pre-project on-site inspection and verification, the contractor may proceed with the project and assume that the Pre-Retrofit submittal is accepted AS-IS and no corrections or modifications will be required and that the Pre-Retrofit submittal will be the basis for initial calculated energy savings. Contractor will be notified directly by the QA/QC vendor of the following items and contractor training vendor will be copied:

2.9.1 Whether or not the project may proceed

2.9.2 Deficiencies noted in any diagnostic testing

2.9.3 Deficiencies noted in the energy savings models

2.9.4 Any items that must be corrected and updated in the database.

2.9.5 Any items that must be corrected prior to submitting a Post Project Submittal Package

2.9.6 Best practices recommendations

2.9.7 Any 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 as provided in Appendix H.

2.10 Upon QA and/or QC approval and processing of the Pre-Retrofit Submittal Package, a workflow is opened in the WHRP database for the contractor to process a Post-Retrofit Submittal Package.

2.11 The contractor completes the scope of work, performs all test-out procedures, modeling adjustments and any pre-project submittal corrections noted on the pre-retrofit review as eligible for correction with the post-retrofit submittal, and then submits a completed Post-Project Submittal Package to the SDG&E WHRP database consisting of:

2.11.1 Final energy modeling file accurately reporting in the building tree the existing pre-retrofit conditions and all installed improvements and test data..

2.11.2 Supporting test data

2.11.3 Product receipts as applicable

2.11.4 Building Permits information

2.12 Post-retrofit QA review: 100% of post-retrofit submittal packages are QA reviewed within 3 working days including a determination for on-site QC inspection to be performed by the WHRP database per sampling tier as described in section 4.1.2 of this plan.

2.13 Contractor shall be notified within 1 business day from the date of post-project submittal if one of the following applies. If neither is applicable, no notice will be provided, and the project continues to the QA review per section 2.12.

2.13.1 If the pre-project submittal has been selected for on-site QC post-inspection (in accordance with section 4.1.5 of this plan) OR:

2.13.2 The post-project submittal will NOT be accepted and will be returned without comment for one or more of the following conditions: (see section 3, QA protocols for more information)

a. Failing CAZ/CAS (triggers protocols per Appendix H: Health and Safety Issues Protocols)
b. Inconsistent information between Test-out EnergyPro (energy software) model, database information and actual installed measures
c. Missing building permit information or job has not passed final inspection
d. ALL corrections on pre-correction memo are not corrected or addressed
e. Final Blower door results are below minimum BAS, and there are no notes about installed mechanical ventilation in database or SOW.
f. Project submittal has been closed in the database due to exceeding the 6 month maximum submittal timeframe.

2.14 If the contractor has not received any notice (per item 2.13) within 1 working day, they may assume that the project will NOT have on-site post-project QC inspection and verification. In such cases, project moves to QA desktop review per section 3.1. If the project is NOT selected for post-project QC inspection and verification, then within 3 working days of the post-project submittal date, the contractor and contractor training vendor will receive notice regarding the outcome of the Post Retrofit quality assurance 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 AS-IS and no corrections or modifications will be required and that the Post Retrofit submittal will be the basis for calculated energy savings. (*Exception: In the rare event that extenuating circumstances (i.e. database failure) , if the QA/QC contractor is not able to process a review within the 3 day period, the contractor will be notified (within the original 3 day period) of the needed extension (no more than 3 additional days). This provision is provided on a case by case basis upon express prior approval of SDG&E.)* Contractor will be notified directly by the QA/QC vendor of the following items and contractor training vendor will be copied:

2.14.1 Paperwork Issues (i.e., discrepancies between job information in the database, Scope of Work, BLD file, and/or Customer Application):

2.14.2 EnergyPro Modeling Issues (ADVANCED path only):

2.14.3 Missing or incomplete information in either of the above

2.14.4 Any items that must be corrected and re-submitted in a revision of the job information in the database.

2.14.5 Quality Control inspection findings (only if selected for QC per section 2.17)

2.14.6 Best Practice Recommendations

2.14.7 Any 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 as provided in Appendix H.

2.15 Except as otherwise noted below, contractors will only receive ONE correction memo for post-inspection. Items may only be added to subsequent memos for the following reasons:

2.15.1 Serious health and safety issues previously identified or not.

2.15.2 ANY changes made by contractor to the job information in the database regardless of whether or not are related to any identified corrections from previous memo.

2.16 When corrections are required, contractor shall submit corrections as one change, with ALL corrections.

2.17 On Site QC Post-inspection: Post-project on-site QC verification is performed by quality control vendor in accordance with section 4 of this plan.

2.18 Customer Scheduling: RHA will initiate contact with occupant/homeowner within 2 working days of the post project submittal to schedule on-site QC verification and inspection. 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, at a different time of day. In the event the customer does not return repeated RHA attempts to schedule, RHA will notify CCSE and contractor via email and phone regarding the issue.

2.18.1 Incentive applicants, the property owner or their designated representatives must be present at time of QC inspection and sign the inspector's *Energy Upgrade California* Quality Control Inspection Sign-off form, (Exhibit 7) 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 QC inspection. EXCEPTION: Due to program QC requirements and except as otherwise allowed for purposes of QC mentoring, in no case shall a customer or property owner who has submitted for an SDG&E incentive under this program be permitted to designate, or utilize the participating EUC contractor responsible for the project as their representative during the QC inspection; this restriction shall include all sub-contractors to the EUC contractor and all others with a business relationship with the EUC contractor.

2.19 Post-Retrofit QC review: If the project IS selected for post-project QC inspection and verification, then within three (3) working days from the date of the Post-Retrofit on-site QC verification and inspection, the contractor and contractor training vendor will receive notice regarding the outcome of the Post Retrofit quality assurance review and the Post-Retrofit on-site QC inspection and

verification. If the contractor has NOT been notified within 3 working days from the date of the post-retrofit on-site QC inspection and verification, the contractor may assume that the post-retrofit submittal is accepted AS-IS and 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 and contractor training vendor will be copied:

2.19.1 Whether or not the project is approved for rebate submittal

2.19.2 Deficiencies noted in any diagnostic testing

2.19.3 Deficiencies noted in the test-out model and reports

2.19.4 Any items that must be corrected prior to submitting a Post Project Job Submittal

2.19.5 Missed energy savings opportunities

2.19.6 Any 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 as provided in Appendix H.

2.20 Resubmittal: In any case where Post-Retrofit QA/QC corrections or re-submittals are required, the contractor will receive notice regarding the outcome of such corrections or re-submittals within 3 working days from the date of re-submittal. If the contractor is NOT notified within 3 working days, the contractor may assume that the re-submittal is accepted AS-IS and no further corrections or modifications will be required.

2.21 Upon successful completion of the Post Retrofit Submittal review, the WHRP database then generates a Project Completion Report.

2.22 After receiving the original wet signature hard copy signed Customer Application and all other required documentation such as building permits and product receipts, the QA/ QC vendor submits all project information and materials to SDG&E for incentive processing.

2.23 QA/ QC vendor provides a Project Summary Report to the customer and a confirmation notice to the participating contractor.

2.24 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.

2.25 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:

2.25.1 New Year's Day

2.25.2 Presidents' Day

2.25.3 Martin Luther King Day

2.25.4 Memorial Day

2.25.5 Independence Day

2.25.6 Labor Day

2.25.7 Thanksgiving Thursday AND Thanksgiving Friday

2.25.8 December 25th

3. Quality Assurance Protocols

The SDG&E WHRP 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 desk-top review process confirms that complete and realistic 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 WHRP.

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. Only approved energy efficient measures are used to calculate possible energy savings (see Appendix B),

NOTE: Load reduction not listed in Appendix B is NOT included in energy efficient savings calculations.

Per the QA/QC process in section 2 above, the initial project review will focus on submittal completeness and basic accuracy. Verifier will check the items listed below and the submittal will be returned without comment for one or more of the following conditions:

- Failing CAZ/CAS (Triggers and unsafe condition process).
- Inconsistent information between the Job information in the database, and EnergyPro modeling file as it relates to: 1) existing or proposed equipment and their condition and efficiencies or 2) the conditioned square footage of the home (without explanation provided).
- Incomplete customer Application, job information in the database or other items listed in section 2.1 above without an explanation being provided.
- Blower door results are below minimum BAS, and there are no notes about installed mechanical ventilation in SOW.

For Advanced Path projects, the QA process will include a review of the energy model(s) developed to assess the current, proposed, and final results of the retrofit project for the home. If a pre-project submittal includes a Point of Sale (POS) rebate appliance, it will be tracked in the WHRP database. A POS rebate for an energy saving measure may reduce the WHRP incentive amount offered by SDG&E under the *Energy Upgrade California* Program.

By program design, there is a significant difference in the complexity of work, and therefore the QA requirements, of the Basic and Advanced path projects. QA requirements for Pre- and Post-Desktop Reviews are discussed below and are required for all WHRP projects. Additional requirements for advanced path projects Pre- and Post-Desktop review are also presented.

3.1 Pre-Project Submittal Package Quality Assurance Review Protocol (Desktop Review)

3.1.1 Customer Application Form QA Review

a. QA/QC vendor to review customer application form, noting fields that are left blank or inaccurate.
b. SDG&E will note in WHRP database any prior participation in SDG&E rebate programs. SDG&E will verify customer status and note in the WHRP database.
c. QA/ QC vendor to verify that customer is eligible to participate in WHRP Programs for which customer is applying.
d. QA/QC vendor to verify the selected contractor meets program requirements.
e. Customer name and signature is present.
f. Verifies proof of ownership and recent (90 days) SDG&E bill if residence is a rental (if applicable).

3.1.2 Pre-Retrofit Project Submittal Data Requirements (Appendix E)
a. Verify all required data fields are completed
b. Verify reasonableness existing conditions
c. Verify eligibility of existing conditions for program participation requirements
I. Basic Path
i. Attic Insulation R-Value eligibility in accordance with (Appendix I)
ii. Air Infiltration Feasibility eligibility in accordance with Appendix I)
iii. Duct Sealing Feasibility eligibility in accordance with (Appendix I)
iv. Combustion Appliance Safety Test Performed (Appendix I)
II. Advanced Path
i. Air Infiltration Blower Door test results
ii. HVAC Systems Information
iii. Duct Test Results and Duct R-Value

3.1.3 Review of Proposed Project Measures
a. Basic Path
I. Ensure all measures can be installed (Appendix I)
b. Advanced Path
I. Review for each measure eligibility per Appendix B and Appendix I
II. 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.

3.1.4 Contractor Data Verification
a. Contractor License status
b. Verification of contractor BPI Building Analyst Certification (Advanced Path Only)

3.1.5 Review of Pre-Project Modeling Files and Reports (Advanced Path Only)
For a complete set of minimum energy modeling verifications refer to Appendix D.
a. Verify that the Pre-Project Modeling report submittal is provided in digital format.
b. Verify Pre-Project Modeling report submittal includes at a minimum the following:
I. Cover Page
II. Table of Contents
III. HVAC system Heating and Cooling Loads Summary
IV. Room Load Summary
V. ECON-1 energy Use and Cost Summary
VI. ECON-2 energy Upgrade Recommendations

c. Verify that modeling software files accurately reflect the pre-retrofit conditions of the home, according to the minimum data input criteria provided in Appendix D.
d. Verify all building data inputs are input as "existing" components in the building tree, and all recommended improvements accounted for in the Alternatives tab under the Calculations section.
e. Verify that contractor/rater accurately accounted 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 (pool pumps, multiple systems etc.). Pools with solar and gas heating systems will be modeled as "Solar or not heated". Pools with gas heaters can be modeled as "Solar or not heated" when the gas appliance connector has been safely removed.
f. Verify all existing conditions data accurately reflects the pre-retrofit conditions found in the field. Default values (Appendix G) shall be used when nameplate data is not available and when necessary testing cannot be performed.
g. Verify 12 months of accurate gas and electric usage data from utility bills are input into the modeling file. (Note: If no usage data or less than 12 months of data is available, verify contractor has provided reason for missing data)

3.2 Post-Project Submittal Package Quality Assurance Review Protocol (Desktop Review)

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

All Post-Retrofit Job Reports will be QA reviewed for completeness and accuracy by the QA/QC vendor in accordance with the process outlined in section 2 above. The Post-Retrofit Job Report is entered into the database by the contractor.

The QA Review of Post-Retrofit Project Submittal Package forms will be conducted in seven steps:

3.2.1 Prior to formal review of the Post-Retrofit Project Submittal Package, the submittal will be paired with the Customer Application and Pre-Retrofit Project Submittal Package materials on file. This review will also verify that basic project information (e.g., the program path and site location) is consistent across all submitted documents. The post-project submittal will NOT be accepted and will be returned <u>without comment</u> for one or more of the following conditions:

a. Failing CAZ/CAS (Triggers protocols per Appendix H: Health and Safety Issues Protocols)
b. Inconsistent information between Test-out EnergyPro model, database information and actual installed measures
c. Missing permit number or job has not passed final inspection
d. ALL corrections on pre-correction memo are not corrected or addressed
e. Final Blower door results are below minimum BAS, and there are no notes about installed mechanical ventilation in SOW.

3.2.2 The Post-Retrofit Project Submittal Package will be evaluated for completeness. The QA reviewer will begin the review process by comparing the Pre-Retrofit Project Submittal Package to the Post-Retrofit Project Submittal Package 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 returned to the contractor for correction.

3.2.3 The accuracy of the information presented in the Post-Retrofit Project Submittal Package will be assessed. The QA reviewer will check that the content and test results appearing in the Post-Retrofit Project Submittal Package fall within standard parameters.

The savings modeling component of all advanced path submittal packages 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 overlooked, however any inaccuracy impacting the overall savings calculation, which would impact the rebate amount, will be returned for re-submittal. Rebates are determined by the calculated savings level achieved.

3.2.4 Verify that modeling software files accurately reflect the post-retrofit conditions of the home, according to the minimum data input criteria provided in Appendix D.

3.2.5 The final modeling software report and file 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 Alternatives Tab. The report will provide the appropriate calculated savings for determining the final rebate amount, and reports shall include at a minimum:

a. Cover Page
b. Table of Contents
c. HVAC System Heating and Cooling Loads Summary
d. Room Load Summary
e. ECON-1 Energy Use and Cost Summary
f. ECON-2 Energy Upgrade Recommendations

3.2.6 The contractor will provide information for all required building permits obtained, permit inspection results will be verified by QA/QC provider. The QA/QC provider shall verify building permit requirements for each project as part of all Post Project Submittal Package reviews. The Post-Project Submittal Package may not proceed to incentive processing until verification of completed final building inspection has been verified by the QA/QC provider.

3.2.7 When pre-project submittals indicate that approved appliances will be installed as an energy saving measure counting towards the incentive as part of the whole house incentives being offered under the WHRP, the following QA/QC requirements will apply:

a. QA/QC vendor will ensure that a receipt for the appliance is submitted as part of the Post-Project Submittal Package.
b. QA/QC vendor will verify that the appliance is an approved project measure that was not installed prior to the project proposal.
c. QA/QC vendor will check the receipt against the SDG&E provided list of point of sale retailers (Appendix C).

3.3 Quality Assurance Inspection Reports

In an effort to provide feedback to contractors undergoing QA review, the WHRP program QA/QC vendor will prepare and submit a monthly QA Review QC Inspection Report to the program

Contractor Training and Support vendor. The report will provide the contractors with an overall rating for the Quality Assurance portion of the process.

A second monthly report is provided to SDG&E with a list of appliances included as incentives that were also given POS rebates, the listing includes; customer name, SDG&E account number, participating retailer, date, item measure code, serial numbers, model numbers, etc. as required.

4. Quality Control Protocols

On-site inspections represent a more in-depth verification of the installation of energy efficiency measures for both Basic and Advanced projects. 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.

Both basic and advanced pathway projects of the WHRP rely on a complete and accurate summary of the completed condition of the participating property as presented by the Contractor Post-Retrofit 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.

The on-site pre-inspection 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.

The on-site post-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.

4.1 Quality Control Sampling Rates

4.1.1 Each Contractor has separate sampling rates for both Basic and Advanced projects. Sampling rates are provided in the table below and described herein.

4.1.2 Sampling Rate Table

QA/QC Element	Tier 1 Rate	Tier 2 Rate	Tier 3 Rate	Performance Based
QA Desk Review (Pre&Post)	100%	100%	100%	100%
Pre-Inspection	100% of first 10 jobs	7 of next 20 jobs (35%)	10% (after 30th job)	Case by Case Basis
Post-Inspection	100% of first 10 jobs	7 of next 20 jobs (35%)	5% (after 30th job)	Case by Case Basis

4.1.3 Sampling rates described herein are MINIMUM sampling rates and may be modified without cause, at the QA/QC vendor discretion for reasons including but not limited to:

a. Contractor performance

b. Customer complaints
c. At the request of the Contractor Training vendor
d. As otherwise described in this plan

4.1.4 Minimum Sampling Rates for Pre-Project Quality Control

a. 100% of the first ten projects
b. Seven of the next twenty projects
c. 10% of projects after the thirtieth project utilizing computerized algorithms to randomly select projects
d. Performance based sampling rates may be set on a case by case basis by QA/QC provider, with SDG&E approval, for identified under-performing contractors

4.1.5 Minimum Sampling Rates for Post-Project Quality Control

a. 100% of the first ten projects
b. Seven of the next twenty projects
c. 5% of projects after the thirtieth project utilizing computerized algorithms to randomly select projects
d. Performance based sampling rates may be set on a case by case basis by QA/QC provider, with SDG&E approval, for identified under-performing contractors

4.1.6 Quality Control Inspections and Verifications performed as part of any contractor training and mentoring component of this program will not count towards the sampling rates as described in this plan.

4.2 Diagnostic Performance Testing

4.2.1 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 on the QC report and checked against contractor submittals. Diagnostic tests may include but will not be limited to the following:

a. Shell leakage (blower door)
b. Duck leakage (duct blaster)
c. HVAC system airflow verification (flow hood)
d. Exhaust fan flow
e. Combustion appliance safety (CAS)
    I. CAZ testing for worst case depressurization for all combustion appliance zones.
    II. CAS combustion equipment inspection and testing (Carbon Monoxide), draft, gas leaks and visual inspection.
f. Temperature variability.

4.2.2 Adherence to BPI Technical Standards, except where otherwise described in this document, is required.

4.3 On-site Pre-Retrofit QC Inspection Protocols

4.3.1 By design, there is a significant difference in the complexity of work, and therefore the QC requirements, for basic path projects versus advanced path projects. On-site pre-inspections represent the beginning of in-depth verification of energy efficiency measures installations for both basic and advanced projects. On-site pre-inspections will be preceded by the Pre-Project Submittal Package Quality Assurance protocols as outlined in section 3 of this document (desktop review).

4.3.2 Upon selection of the project for on-site quality control inspection, the QA/QC vendor shall notify the contractor, contractor training vendor, SDG&E inspection designee and the customer applicant within 3 working days (72 hours) of receiving the Pre-Project Submittal Package, that the project has been selected for on-site quality control inspection.

4.3.3 The QA/QC vendor shall make appointment with the customer applicant for the earliest possible date to perform the QC inspection. All on-site verification work will be conducted when the homeowner or program applicant is home and available to assist the inspector in locating existing energy efficient measures, access points, etc.

4.3.4 The QA/QC vendor shall notify SDG&E and the Contractor Training vendor of the scheduled date, time and location of the on-site QC inspection.

4.3.5 The contractor may not be present at time of inspection. Only the homeowner, customer applicant, SDG&E inspector, Contractor Training vendor, or their respective designees may be present at time of QC inspection.

4.3.6 All tests and observation procedures will follow the practices of the CEC 2008 Title 24 HERS protocols and BPI Building Analyst and Envelope Specialist standards. The QC inspector will replicate contractor calculations, tests, and notes on site.

4.3.7 Should prior to, during the course of, or at any time post 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.

a. If the hazard presents an imminent danger, the program manager will immediately make a determination regarding completing the verification visit and the disposition of the hazard.
b. 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.
c. In all cases where an unsafe or potentially unsafe condition or hazardous material exists as defined in section 4.3.7, the protocols of Appendix H shall be in effect.

4.3.8 The QC inspector will record all observations and measurements on a Pre-Retrofit Inspection Form (exhibit 3), including all supplemental information produced while conducting the site visit. Supplemental information may include notes, pictures, or test equipment read-outs.

4.3.9 Upon completion of the QC inspection, the QA/QC vendor will compare the Pre-Project Submittal Package and the QC pre-retrofit inspection materials.

a. All diagnostic test comparisons 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.
b. In all cases the QA/QC inspector test results will prevail and are not subject to appeal. For further information see section 8 of this plan: Appeals Process.

4.3.10 The QC inspector shall prepare a Pre-Retrofit QC Inspection Report (exhibit 4) which shall include summary and detailed supporting information.

4.3.11 In no case what so ever, except as defined in section 4.3.7 shall the QC inspector, nor any witness to the on-site inspection, make any representation to the homeowner or customer applicant, verbally or otherwise in any manner, including responses to direct and indirect customer questions, regarding or in relation to, any results of the QC inspection including but not limited to contractor performance, diagnostic readings, reports or conclusions.

4.3.12 The QC inspector and all authorized witnesses to the QC inspection shall, at all times:

a. Conduct him or herself in the utmost professional manner reflecting their role as a representative of SDG&E and *Energy Upgrade California*.
b. Wear all appropriate safety gear
c. Identify themselves to homeowners, applicants and occupants
d. Display appropriate identification when on-site

4.3.13 Basic Path Pre-Retrofit QC Inspection Steps

a. 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.
b. The QC inspector has customer sign that they were present for the QC inspection in accordance with exhibit 7.
c. Inspector conducts initial walk through inspection to become acquainted with home layout and equipment locations.
d. Inspector will record the results of all tests and visual inspections on the pre-inspection form.
e. Inspector will photo document all critical components with a digital camera that contains a time and date stamp.
f. 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.
g. Inspector observe home for evidence of significant damage that may impact success of the retrofit including but not limited to:
    I. Moisture-related damage
    II. Structural damage
    III. Pest Infestation
    IV. Environmental hazards (asbestos, lead paint, etc.)
    V. EPA RRP rule in effect (pre-1978 homes)
h. As applicable, Inspector conducts diagnostic tests as described in section 4.2.1 and performs associated calculations.
i. Inspector verifies that proposed energy efficient measures are not already in place.
j. Inspector conducts evaluations for the following energy efficient measures:
    I. Air sealing feasibility, ensure there are adequate opportunities for air sealing to make a significant flow reduction in infiltration as described in Appendix I.
    II. Attic insulation: Evaluate attic for insulation feasibility as described in Appendix I ensuring:
        i. Adequate attic ventilation exists (per 2008 Title 24 and CBC 2007)
        ii. Attic floor can be sealed prior to insulating
        iii. No hazards exist (e.g., knob and tube, exposed wiring, pest infestation, or structural instability)
        iv. Existing insulation values match Pre-Retrofit Job Application data and are R-11 or less
    I. Duct system visual evaluation (prior to leakage testing) as described in Appendix I, including:
        i. Potential presence of asbestos containing materials

ii. System is fundamentally sound and distribution system is repairable. Normal maintenance items such as reconnection of duct disconnects shall be performed prior to testing system for savings calculations.
iii. System is accessible

I. Low Flow showerheads and thermostatic control valves evaluation as describe in Appendix I including:
i. Pipes are sound and not corroded
ii. Low flow fixtures are not in place and adequate

I. Water heater pipe insulation feasibility as described in Appendix I, ensuring:
i. No apparent leaks in system
ii. Pipes are accessible and connections are not corroded

4.3.14 Advanced Path Pre-Retrofit QC Inspection Steps

a. The Advanced Path Pre-Retrofit QC Inspection Steps shall include all items of section 4.3.13 for Basic Path Pre-Retrofit QC Inspection Steps.

b. In addition to the basic path requirements pre-inspection of advanced path projects shall include the following:

I. Compare information and condition of existing HVAC system to job information data.

II. Evaluation of the existing HVAC system to verify replacement feasibility, potential hazards and any required additional tests. Normal maintenance items such as reconnection of duct disconnects shall be performed prior to testing system for savings calculations.

III. Conduct basic verification of energy modeling measurements and test-in data against site observations. 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 shall be noted.

IV. Evaluate feasibility of storage or tank less water heaters. Ensure appropriate gas line sizing, structural stability access to unit, vent termination feasibility, and that existing energy efficient water heater is not in place.

V. Evaluate feasibility of 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. Ensure existing central A/C or heat pump is in place or in the projects proposal.

VI. Evaluate feasibility of retrofitting existing hardwired fixtures, including access to grounded circuits, and condition of existing fixtures and wiring.

VII. 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.).

4.4 On-site Post-Retrofit QC Inspection Protocols

4.4.1 The onsite post-inspection is intended to document the improvements that were actually conducted and assess the quality of the contactor's work. By design, there is a significant difference in the complexity of work, and therefore the QC requirements, for basic path projects versus advanced path projects. On-site post-inspections represent the beginning of in-depth verification of energy efficiency measures installations for both basic and advanced

projects. Onsite post-inspections are the final step of an in-depth verification of energy efficiency measures installations for both basic and advanced projects. On-site post-inspections will be preceded by the Contractor Post-Project Submittal Package Quality Assurance process (desktop review).

4.4.2 Upon selection of the project for on-site post-project quality control inspection, the QA/QC vendor shall notify the contractor, contractor training vendor, SDG&E inspection designee and the customer applicant within 3 working days (72 hours) of receiving the Post-Project Submittal Package, that the project has been selected for on-site quality control inspection.

4.4.3 The QA/QC vendor shall make appointment with the customer applicant for the earliest possible date to perform the QC inspection. All on-site verification work will be conducted when the homeowner or program applicant is home and available to assist the inspector in locating existing energy efficient measures, access points, etc.

4.4.4 The QA/QC vendor shall notify SDG&E and the Contractor Training vendor of the scheduled date, time and location of the on-site QC inspection.

4.4.5 The contractor may not be present at time of inspection. Only the homeowner, customer applicant, SDG&E inspector, Contractor Training vendor, or their respective designees may be present at time of QC inspection.

a. Owners or their designated representatives must be present at time of QC inspection and sign the inspector's reports indicating presence on site. If an owner designates a representative to act on their behalf, owner shall provide notice of such designation, including name of designee, in writing to the QA/QC provider in advance or at the day of QC inspection. *EXCEPTION: Due to program QC requirements and except as otherwise allowed for purposes of QC mentoring, in no case shall a customer who is submitting for an SDG&E incentive under this program be permitted to designate, or utilize the participating EUC contractor responsible for the project as their representative during the QC inspection.*

4.4.6 All tests and observation procedures will follow the practices of the CEC 2008 Title 24 HERS protocols and BPI Building Analyst and Envelope Specialist standards. The QC inspector will replicate contractor calculations, tests, and notes on site.

4.4.7 At any time prior to, during the course of, 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.

a. If the hazard presents an imminent danger, the program manager will immediately make a determination regarding completing the verification visit and the disposition of the hazard.
b. UNDER NO CONDITIONS SHALL AN INSPECTOR LEAVE A SITE IN A STATE WHERE AN UNSAFE CONDITION IS KNOWN TO EXIST, UNLESS EXPRESSLY INSTRUCTED TO DO SO BY THE QA/QC PROGRAM MANAGER.
c. In all cases where an unsafe or potentially unsafe condition or hazardous material exists as defined in section 4.4.7, the protocols of Appendix H shall be in effect.

4.4.8 The QC inspector will record all observations and measurements on a Post-Retrofit Inspection Form (Exhibit 5), including all supplemental information produced while conducting the site visit. Supplemental information may include notes, pictures, or test equipment read-outs.

4.4.9 Upon completion of the QC inspection, the QA/QC vendor will compare the Post-Project Submittal Package and the QC pre-retrofit inspection materials.

a. All diagnostic test comparisons 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 Blaster Testing.

b. In all cases the QA/QC inspector test results will prevail and are not subject to appeal. For further information see section 8 of this plan: Appeals and Dispute Resolution.

4.4.10 The QC inspector shall prepare a Post-Retrofit QC Inspection Report (Exhibit 6) which shall include both summary and detailed supporting information.

4.4.11 In no case what so ever, except as defined in section 4.4.7 shall the QC inspector, nor any witness to the on-site inspection, make any representation to the homeowner or customer applicant, verbally or otherwise in any manner, including responses to direct and indirect customer questions, regarding or in relation to, any results of the QC inspection including but not limited to contractor performance, diagnostic readings, reports or conclusions.

4.4.12 The QC inspector and all authorized witnesses to the QC inspection shall, at all times:

a. Conduct him or herself in the utmost professional manner reflecting their role as a representative of SDG&E and *Energy Upgrade California*.

b. Wear all appropriate safety gear

c. Identify themselves to homeowners, applicants and occupants

d. Display appropriate identification when on-site

4.4.13 Basic Path Post-Retrofit QC Inspection Steps

a. 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.

b. The inspector may ask the customer for a short tour of the home to show where improvements were made.

c. The inspector notes any overlooked remediation opportunities.

d. The inspector notes whether any installed measures could have been done differently for improving home performance.

e. Inspector will record the results of all tests and visual inspections on the post-inspection form.

f. Inspector will photo document all critical components with a digital camera that contains a time and date stamp.

g. As applicable, inspector conducts diagnostic tests as described in section 4.2.1; and performs associated calculations.

h. The inspector performs visual inspections of claimed improvements to verify that each measure is new.

i. The inspector verifies that all measures were installed in accordance with program requirements and technical standards:

I. Air sealing per Appendix I

II. Attic insulation per Appendix I

i. Adequate attic ventilation exists (per CBC 2007).

ii. Exhaust vents terminating in the attic.

iii. No hazards exist (e.g., knob and tube, exposed wiring, pest infestation, or structural instability).

iv. Adequate blocking for Heat Producing Devices, Whole House Fans, Combustion Air Openings, Attic Access Door, Eave and Soffit vents.
v. Clearance Zone for maintained appliances.
vi. Insulation value matches Post-Retrofit Job Report data and is properly installed including access door.

I. Duct System per Appendix I
II. Low Flow showerheads and thermostatically controlled restriction valves per Appendix I.
III. Water heater pipe insulation per Appendix I.

j. The QC inspector conducts an in person Customer Satisfaction Survey in accordance with exhibit 2.
k. The QC inspector has customer sign that they were present for the QC inspection in accordance with exhibit 7.

4.4.14 Basic Path Post-Retrofit QC Inspection Steps

a. The Advanced Path Pre-Retrofit QC Inspection Steps shall include all items of section 4.3.13 for Basic Path Pre-Retrofit QC Inspection Steps.
b. In addition to the basic path requirements pre-inspection of advanced path projects shall include the following:

I. Compare HVAC system to Post-Retrofit Job Report data.
II. Conduct basic review of energy modeling measurements and test-out data against site observations. Verify square footage, location, windows and doors, wall, floor and roof assemblies; and verify equipment against energy model assumptions. Significant discrepancies shall be noted.
III. Storage or tank less water heaters. Ensure appropriate gas line sizing, structural stability access to unit, vent termination feasibility.
IV. 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. Central A/C or heat pump is in place.
V. The retrofitting of hardwired fixtures, including access to grounded circuits, and condition of wiring.
VI. 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.).

5. Project QA/QC Rating System

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

5.1 Project QA/QC Ratings

5.1.1 Projects that receive major or serious deficiency ratings will still be able to continue through the program; however contractors may be contacted for remediation of quality or job completeness issues.

5.1.2 Patterns of issues in quality, completeness or accurate reporting of installations will be documented and noted in monthly reports.

5.1.3 Contractors with documented patterns of workmanship issues will be recommended for additional program and/or technical training.

5.1.4 If necessary, additional training will be provided by the Contractor Training vendor in the areas of onsite test-in test-out protocol and correctly filling in fields of the Contractor Job Application and Report Forms, as well as correctly and precisely completing the software modeling.

a. The contractor will be required to finish the training before submitting additional new projects.
b. The ratings of projects submitted after the training will also be recorded on the contractor's scorecard.
c. The contractor's ratings on a going forward basis will average performance on projects submitted post-training. In effect, this provides a clean slate for the contractor after training.
d. After retraining contractor sampling rate will restart the QC inspection minimums.

5.2 Project Ratings System

*	Serious Deficiencies
**	Major Deficiencies
***	Minor Deficiencies
****	Pass No Deficiencies - No Best Practices
*****	Pass with one Best Practice
******	Pass with more than one Best Practice
*******	Pass with All Best Practices for Zero Energy Homes

5.2.1 Minor Deficiencies

a. 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.
b. Examples of minor deficiencies are:
    I. Poor quality insulation installation, i.e. visible voids and gaps.

5.2.2 Major Deficiencies

a. Major deficiencies 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.
b. Examples of major deficiencies are:
    I. Work not performed by a Participating Contractor.
    II. Major differences between contractor's test-out numbers and verifier's test-out numbers.

5.2.3 Serious Deficiencies

a. Serious deficiencies are defined as any health and safety issue
b. Examples of serious deficiencies are:

I. Elevated carbon monoxide levels.
II. Fire hazards.

5.2.4 Best Practices

a. When a project has achieved performance targets through best practices that resulted in exceptional results, the project will receive higher ratings on the QA/QC report. Best Practice standards are identified on the Technical Specifications sheets for each eligible energy efficient measure.
b. If a Contractor's verification results show no deficiencies in performance and the customer survey is positive, the Contractor is given good marks but encouraged to achieve California performance targets.

5.3 Contractor Training Vendor QA/QC Ratings Report

5.3.1 In order to provide feedback to program administrators, contractor training and support staff in regards to QC on-site verifications, the QA/QC vendor will prepare and submit a monthly QA Review and QC Inspection Report to SDG&E and the program Contractor Training vendor. The report will provide contractor ratings with regard to evaluations of contractor performance of both Pre-Retrofit and Post-Retrofit QC Inspections. The review identifies contractors who may need additional training, mentoring or corrective action.

6. Contractor Action Levels and QC Mentoring

6.1 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 administrator and training vendor regarding levels of corrective action according to the following parameters:

6.1.1 QA/QC will review new and existing contractor job files on a monthly basis 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.

6.1.2 The quality assurance issues will be categorized according to two primary metrics:

6.1.3 Nature of quality assurance issue

6.1.4 Level or severity of the issue

6.1.5 Nature of quality assurance issue: The 3 primary categories of issues are:

a. Paperwork or submittal issues (completeness, accuracy of information, etc.)
b. Energy modeling, calculations or building assessments for audits
c. Installation or building diagnostics issues

6.1.6 Severity of quality assurance issue: The 3 primary categories of issues are:

a. Health and Safety, or major deficiencies (Rating scale of 1-2)
b. Minor deficiencies and inconsistencies (Ratings of 3-4)
c. Minor ongoing issues not requiring specific action (minor paperwork issues, very minor installation issues)

6.1.7 Action Levels: The QA/QC team will provide feedback to the program staff according to 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.

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

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

a. 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.
b. 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.
c. 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.

6.2 Contractor QC Mentoring

6.2.1 Integral to the success of the EUC program is a formalized contractor mentoring process. QC mentoring is necessary for the EUC program for numerous reasons, including:

- Homes are complex structures and the BPI 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.

6.2.2 The RTS contractor (CCSE) is responsible for training and mentoring of contractors for compliance with program requirements and technical standards. However, 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 BPI standards, state energy codes, industry best practices and the program guidelines. Observations and follow up mentoring with the QC vendor will be available to the contractor for up to 3 of the first 5 projects to undergo QC pre- and post-inspections. QC Mentoring will also be available on a limited basis to contractors at their request with program management approval.

6.2.3 Mentoring Plan: The components of a proposed contractor QC inspection mentoring program are outlined below and are applied in accordance with the contractor action levels in section 6.1:

a. QC mentoring will only be allowed in cases where QC mentoring is part of a training mentoring program.
b. In cases where the JTS has notified the QA/QC provider that a project has been selected for mentoring by the JTS, the contractors and CCSE will have the option to be present on the jobsite to observe the QC inspection
c. In ALL cases of QC mentoring, CCSE must be present.
d. The field mentoring session will be conducted by the QA/QC provider.
e. The contractor will be able to observe the test procedure and have access to the test results.
f. Discussion of the test results will NOT be allowed at the in the customers presence, the QA/QC provider will review the results with the contractor at a neutral location after the inspection has been completed.
g. The goal of the field mentoring session is show the contractor how pre- and post-retrofit site conditions are being evaluated and how to set up the proper test procedures to insure that the results meet the BPI technical standards and the program guidelines.
h. Following the observation and mentoring session, the QA/QC provider will provide SDG&E and the contractor training vendor any relevant notes regarding the contractors mentoring session.
i. At the conclusion of the mentoring session, no further contact or discussion of the specific project between the QA/QC provider and the contractor will be allowed. All questions after the QC mentoring session shall be directed to the contractor training vendor.

7. Emergency Replacement of Major Systems

7.1 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 the WHRP.

7.1.1 Major systems that qualify under this provision are identified as:
a. HVAC Systems or components
b. Hot water heater replacements

7.1.2 In the event that 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 situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.
a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
b. The QA/QC vendor may field-verify the equipment to be replaced.
c. The contractor can proceed with emergency work.
d. To include the emergency work as part of any WHRP project scope, contractors must follow all other procedures for participation in the WHRP program.
e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the

QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.

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

8. Appeals Process

To ensure a high level of program satisfaction for both contractors and customers, a contractor appeal process is provided following any QA/QC findings or reports that would negatively impacted 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.

The components of the appeal process are as follows:

8.1 QA/QC vendor will complete the Pre- or Post-project QA/QC review and submit the review form to contractor and contractor training vendor in accordance with this plan.

8.1.1 If the review requires changes to the contractors submitted pre- or post-project EnergyPro modeling, and:

8.1.2 If the changes to the model result in a reduction in the incentive from the contractors' post-project proposed incentive level, and:

8.1.3 The contractor can provide substantive evidence to dispute the QA/QC teams findings, then:

8.1.4 The project is eligible for the appeals process described below.

8.2 Contractor initiates and appeal:

8.2.1 Within 5 business days of receiving the pre- or post-project QA /QC review, Contractor must submit to QA/QC vendor and SDG&E a notice to appeal in writing (provide digital file and hard copy):

a. The subject line will read: Notice to appeal QA/QC findings for (Insert Job #)

b. The documentation will state the following:

I. Project name, number and submittal date

II. Clearly list the specific changes requested by the QA/QC verifier that the contractor is disputing.

III. 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. If a contractor decides to submit a 'retest' as appeals documentation, such 'retests' must be witnessed by the SDG&E contractor training vendor as a mentoring opportunity, or another independent third party such as a BPI certified HERS Rater.

IV. If the contractor is requesting an on-site meeting to review project findings, a request for the meeting is to be included.

8.3 Appeals Review: Within 5 working days, SDG&E, contractor training vendor and QA/QC vendor will review the documentation provided and make a determination whether an on-site visit is warranted.

8.3.1 If a site visit is warranted, Contractor will work with QA/QC vendor, contractor training vendor and homeowner to agree to a time for on-site meeting.

8.3.2 If customer cannot accommodate an on-site meeting, review team will make a determination of findings on the appeal.

8.3.3 If NO site visit is warranted, review team will make a determination regarding the justification for appeal and communicate findings to contractor in writing.

Note: All project findings from this appeals process are final.

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

PWHRP participating Contractor(s) – Prescriptive Whole House Retrofit Program, or participating *Energy Upgrade California* contractors who have met and maintain all Program requirements to be participating contractors who are eligible to offer "Basic Path" projects to SDG&E customers.

WHPP participating Contractor(s) - Whole House Performance Program, or participating *Energy Upgrade California* contractors who have met and maintain all Program requirements to be participating contractors who are eligible to offer "Advanced Path" 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.

Energy Upgrade California- SDG&E's Whole House Retrofit Program (WHRP), is presented to customers under the statewide *Energy Upgrade California* brand, The WHRP's objective is to provide SDG&E customers with comprehensive energy savings through a quality product provided by professional contractors.

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

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

APPENDIX B: VER-B-1.1 (3.6.2012) – ELIGIBLE ENERGY UPGRADE MEASURES

ADVANCE PATH ELIGIBLE MEASURES (PERFORMANCE PROGRAM)	
CURRENT ELIGIBLE ENERGY UPGRADE CALIFORNIA MEASURES	
MEASURE	**MEASURE CODE**
Attic Insulation	BP2*
Cool Roof Installation (CRRC-certified)	AP13
Cooling System Upgrade	AP6
Dishwasher Upgrade	AP12
Domestic Hot Water Heater Upgrade (non-solar)	AP9
Domestic Hot Water Pipe Insulation	BP4*
Door Upgrade	AP16
Duct Insulation	AP3
Duct Test and Seal	BP3*
Exterior Lighting Upgrade – Permanently Installed High-Efficacy	AP5
Floor Insulation	AP2
Heating System Upgrade	AP7
Interior Lighting Upgrade – Permanently Installed High-Efficacy	AP4
Lighting Control - Dimmer (Interior)	AP18
Lighting Control - Occupant Sensor (Interior & Garage)	AP17
Lighting Control - Photosensor (Exterior)	AP19
Low-Flow Shower Head	BP6*
Other Measure	AP20
Radiant Barrier Installation	AP14
Refrigerator Removal	AP11
Refrigerator Upgrade	AP10
Thermostatic Shut-Off Valve	BP5*
Wall Insulation	AP1
Whole House Fan Installation	AP8
Whole House Air Sealing	BP1*
Window Upgrade	AP15

8.4 **Note all indicated (*) Basic Path feasible measures MUST be installed in order to proceed with Advanced Path Projects**

REQUIRED BASIC PATH MEASURES (PRESCRIPTIVE PROGRAM)	
CURRENT ELIGIBLE ENERGY UPGRADE CALIFORNIA MEASURES	
MEASURE	**MEASURE CODE**
Whole House Air Sealing	BP1
Attic Insulation	BP2
Duct Test and Seal	BP3
Domestic Hot Water Pipe Insulation	BP4
Thermostatic Shut-Off Valve	BP5
Low-Flow Shower Head	BP6

INELIGIBLE ADVANCED ENERGY UPGRADE MEASURES
MEASURES WILL NOT COUNT TOWARD % ENERGY REDUCTION
Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.
Pool Pump Upgrade
Clothes Washer Upgrade
Clothes Dryer Upgrade

APPENDIX C: VER-C-1.1 (3.6.2012) – POINT OF SALE INSTANT REBATES

These retailers participate in SDG&E's Home Energy Efficiency Rebate program and provide instant rebates at the time of sale. These rebates will be checked against the submitted projects by QAQC contractor to ensure only one rebate is provided for the measure.

- B&B Appliance
- Home Depot
- Humphrey Appliance Lowe's
- The Navy Exchange 32nd Street
- Phillips Maytag

2012 Home Energy Efficiency Rebate Products:

REBATE PRODUCT	REBATE
Attic or Wall Insulation	$0.15 per sq.ft.
Central Furnace (Natural Gas)	$200
Dishwashers	$30
Pool Pumps and Motors (Variable Speed)	$200
Refrigerators	$25
Room Air Conditioning	$50
Water Heaters (Electric and Natural Gas)	$30 or $75
Whole House Fan	$50
Clothes Washer	$35

APPENDIX D: VER-D-1.0 (7.29.2011) – ENERGY MODELING MINIMUM INPUTS

Minimum EUC Data Requirements for EnergyPro Modeling February 21, 2011

I. **BUILDING:**

A. **1st Level -Residential Building**

1. **Project Design Data tab:**
   a. Project City:
   b. Front orientation (N, S, E, W, NW, SW, NE, NE)
   c. Year built:
   d. Total square footage:
   e. Number of Stories:
2. **Utility tab:**
   a. Electricity rate schedule:
   b. Gas rate schedule:
   c. Principle heating source:
3. **HERS tab:**
   a. Inside refrigerator kWh/yr:
   b. Garage refrigerator kWh/yr:
   c. Dishwasher energy factor:
   d. Gas or electric range:
   e. Gas or electric dryer (in conditioned space?)
   f. Washer location (conditioned/unconditioned space?)
   g. Swimming pool (gas-heated, electric-heated, not heated, cover?):
   h. Spa (gas-heated, electric-heated, solar+gas-heated, solar+electric-heated):
   i. Lighting targeted for replacement with high-efficacy pin-based lighting (indoor/outdoor type, quantity, location, control):

B. **2nd Level – DHW**

1. **Domestic Hot Water tab:**
   a. Existing hot water system details:
   b. Type (gas-fired, electric-fired, heat pump, indirect gas):
   c. Model:
   d. Volume:
   e. Input Btu/hour:
   f. Energy Factor:
   g. Pipes Insulated?

C. **3rd Level - HVAC System**

1. **General tab:**
   a. Existing System details:
      - Model Name:
      - System type (split DX, package, etc.):
      - Heating tab:
        - Heating type (gas furn., electric resistance, heat pump, etc.):
        - Furnace type (central, gravity wall, floor furnace, etc.):
        - Output Btu:
        - Efficiency (AFUE):
      - Cooling tab:
        - Output Btu (or tons?):
        - Efficiency – SEER:

C. **3rd Level - HVAC System (cont'd)**

- Efficiency – EER:

 Distribution tab:

- Distribution type (heating ducted/ductless, cooling ducted/ductless, radiant floor, baseboard, etc.)
- Duct location (conditioned, crawlspace, attic vented/un-vented, etc.)
- Duct insulation R-value:
- Duct leakage %/CFM25:

 HERS Credits tab:

- Building leakage testing - Airflow CFM50:

D. **4th Level: Building Zone**

1. **General tab:**
   a. Zone type (conditioned or unconditioned space):
   b. Floor #:

E. **5th Level: Room Zone**

1. **General tab:**
   a. Area:
   b. Average ceiling height:
   c. Year built:
2. **Occupant tab:**
   a. Number of kitchens:
   b. Number of bedrooms:

F. **6th Level –Assemblies**

1. **Exterior Wall details (per side – front, right, rear, left)**
   a. Orientation:
   b. Area:
   c. Assembly type, R-value:
2. **Window details:**
   a. General tab:
      Approx. total area in square feet:
      Glazing (single/double):
      Frame (metal/non-metal):
3. **Exterior Shading tab:**
   a. Shading device (bug screen, awning, etc.)
   b. Overhang and sidefins (window height and width, overhand and sidefin horizontal projection, distance above window, right and left extension):
4. **Door details:**
   a. Approx. total area in square feet:
   b. Type (wood, metal insulated/non-insulated):
5. **Raised floor?**
   a. Area:
   b. Assembly/insulation type, R-value:
6. **Slab on grade?**
   a. Area:
   b. Slab exterior perimeter:

F. **6th Level –Assemblies (cont'd)**

7. **Roof details:**
   a. Area:
   b. Assembly:
   c. Skylight:
      - General tab:
        - Area:
        - Glazing:
        - Curb/no curb:
      - Exterior shading tab:
        - Bug screen, awning, etc.
      - Daylighting tab:
        - Skylight well (reflectance, height, width, length)
8. **Lighting details (if designated for replacement):**
   a. Luminaire type/watts ea:
   b. Quantity:
   c. Controls (none, occ. sensor, dimmer)

II. **CALCULATIONS:**

A. **Res. Performance**

1. **Options tab:**
   a. Alternative Energy Measures – Run Measures Combined Together
2. **Alternatives tab - Proposed retrofit details:**
   a. Attic insulation assembly/insulation type/R-value:
   b. Wall insulation assembly/insulation type/R-value:
   c. Floor Insulation assembly/insulation type/R-value:
   d. Window replacement: model name/U-factor/SHGC/frame type/changes in area?:
   e. HVAC replacement: model name/system type/heating type/heating output/AFUE/cooling capacity in tons/SEER
   f. Duct leakage: % and CFM25:
   g. Duct Insulation R-value:
   h. Building Leakage CFM50:
   i. New pin-based high efficacy lighting: Indoor/outdoor, controls
   j. Domestic Hot Water Heater replacement: model/type/volume/input Btu/ energy factor
3. **Calibration tab:**
   a. Electricity monthly billing data
   b. Gas monthly billing data
   c. Billing data normalized

III. **REPORTS:**

A. **Residential Performance:**

1. **Cover Page**
2. **Table of Contents**
3. **HVAC System Heating and Cooling Loads Summary**
4. **Room Load Summary**
5. **ECON-1 Energy Use and Cost Summary**
6. **ECON-2 Energy Upgrade Recommendations**

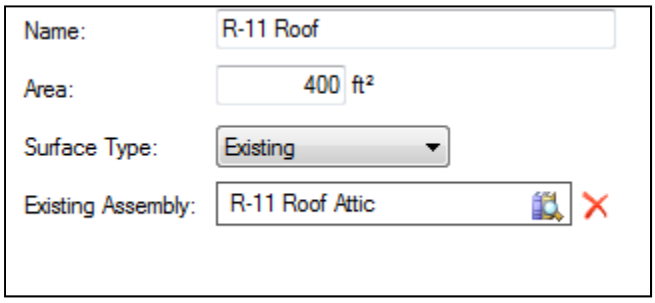
APPENDIX D-1: VER-D1-1.1 (3.6.2012) – ENERGYPRO.BLD FILE QA MINIMUM VERIFICATIONS

General:

1. Verification of existing physical conditions takes place in the Building Tree.
2. Verification of potential improvements takes place in the Calculations under the Alternatives Tab.

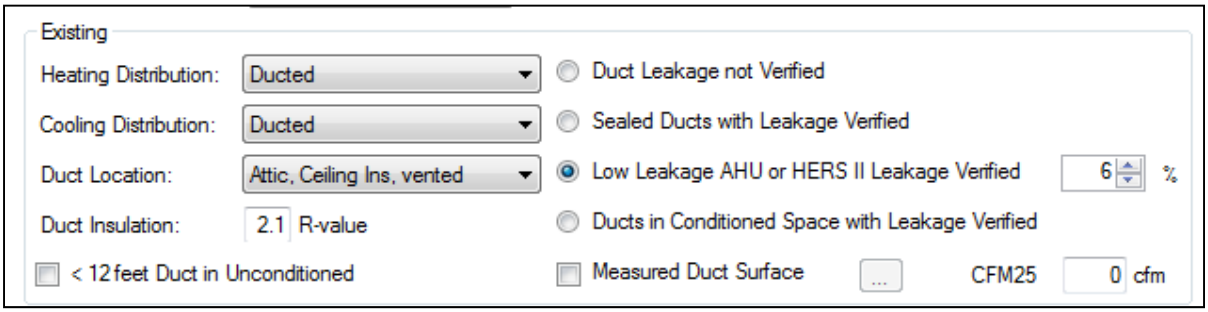
Minimum QA Checklist Requirements:

- General Note: In the building tree, all "Surface Type" values in the model should be set to existing. These include floors and slabs, walls, windows and doors, roofs and skylights. It also includes HVAC and DHW systems.



- In the Res DHW tab check that the "Domestic Hot water" tab is completed (not the hot water heating or hydronic tabs, unless the home has hydronic heating or boiler), and that the proper vintage default is selected if no DHW information is provided in the sketch.
- In the zone icons: Ensure each heating/cooling system and or separated living space (such as an attached studio) is represented by a zone.
- In the Room Icons: Each conditioned room must be separated by square footage if the Load Calculations are to be used for determining the HVAC sizing. *Note: This is only necessary on jobs with HVAC change-outs as a part of the scope of work.*
- In the Occupant Tab located in the Room Icon: Make sure the Number of Kitchens and Number of Bathrooms correctly represents the sketch or building description provided.
- Verify the location and existing conditions in walls, windows roof etc. match the information provided in the EUC reservation/application form.
    - Note: Verifier can easily utilize the Cooling Load reports to verify the total Area and orientation of both Opaque and Glazing inputs and compare to the sketch provided.
- For projects with Attics: Make sure the Roof Area input reflects the flat ceiling and not the actual exterior roof square footage.
- For projects with Pools: Pools with solar and gas heating systems will be modeled as "Solar or not heated". Pools with gas heaters can be modeled as "Solar or not heated" when the gas appliance connector has been safely removed.
- Ensure that the HVAC system is set to existing and matches the information on the reservation/application form.

- It is important that the Distribution Tab show type as “Existing” and that Duct Insulation is set to appropriate R-Value.



    - Ensure actual test in/test out duct leakage for the home has been input via the Leakage Verified option and matches the information on the forms. The actual duct leakage must be input using the data from the pre- or post-test.
- On the HERS Credits Tab located in the System Icon:
    - Make sure that no HVAC Measures have been utilized. This is not applicable for the EUC program, as the advanced path requires the improvements to be input as verified through contractor testing.
    - The building Envelope should have either the Specific Leakage Area or the Airflow input.
        - Models with “Duct Leakage not Verified” are using an unrealistic leakage percentage for an existing house. Example:
    - The Building Leakage should be set to “Existing” with actual Blower Door Test results input:

Calculations verifications:

- If the Calculation(s) show an incremental improvement(s) to the Score but the Savings remains at “0”, verify that costs have been properly input in the Alternatives Tab located in the Calculations option and make sure the Utility tab has Utility Rate Schedules defined. IF provided, verify the rate schedule matches the information provided (copy of bill or extract of bill).
- Verification of proper input for Billing Data takes place in the Calculations under the Calibration Tab. Reported monthly Utility Bill data must be entered and the Normalized Billing Data option must be checked. If billing data does not match customer data, or billing data is not provided, check if justification of NO billing data is provided by contractor.
- Confirm the recommended (or installed if test out) improvements match the contractor’s submitted data, especially the reservation/application form data. Improvement numbers and measures must match.
- In the “Options” Tab under Calculations, ensure the “Ignore Internal Loads” check box is NOT checked, especially if the improvements include HVAC change outs.
- If any of the Recommended Improvements show “$0” Savings or no improvement in the totals at the bottom of the page:
    - For the simulation to properly account for potential improvements, the corresponding inputs in the building tree must be set to “Existing”.
- Negative numbers in the dollar savings and/or an increase in the Heating and Cooling for a Building Leakage Alternative and/or HVAC Duct Leakage Alternative
    - Check the Duct Leakage (in the Distribution Tab) and/or the Building Leakage (in the HERS Credits Tab) inputs are in the model are wrong or set to “0”

    - Check to see that an estimate of improvement has been input into the Alternatives Tab in the Calculations area.
- When defining a heating only HVAC unit from the contractor's data, make sure that both the Cooling Output and Sensible inputs are set to "0".
    - Note: an existing project with a heating only system with an Alternative HVAC with cooling will use more energy due to the additional contribution of the AC resulting in a report showing no savings.
- HVAC Alternatives with cooling should have both a SEER and an EER reflecting the data on the reservation/application form. This information is found in the Alternatives Tab under Calculations, and by clicking on the HVAC system information box (a new window will appear). Default Title 24 EER's (example: 10 EER) should not be used.
- 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 nameplate data or match values in the Vintage Table. The table is provided in Appendix G of this document

APPENDIX E: VER-E-1.1 (3.6.2012) – DATA COLLECTION: LIST OF DATA FIELDS COLLECTED IN DATABASE

Attic Insulation	Roof Type
Attic Insulation	Insulation Type
Attic Insulation	R-Value
Attic Insulation	Sky Light
Attic Insulation	Sky Light Type
Attic Insulation	Sky Light Area
Floor Insulation	Floor Type
Floor Insulation	Insulation Type
Floor Insulation	R-Value
Wall Insulation	Wall Type
Wall Insulation	Insulation Type
Wall Insulation	R-Value
Windows	Windows - Front Wall
Windows	Type
Windows	Area
Windows	Type
Windows	Area
Windows	Windows - Left Wall
Windows	Type
Windows	Area
Windows	Type
Windows	Area
Windows	Windows - Right Wall
Windows	Type
Windows	Area
Windows	Type
Windows	Area
Windows	Windows - Back Wall
Windows	Type
Windows	Area
Windows	Type
Windows	Area
Air Infiltration	ASHRAE 62-89 Minimum Building Airflow Standard
Air Infiltration	Air Infiltration Blower Door Results
Air Infiltration	Make-Up Mechanical Ventilation Per ASHRAE 62-89
Air Infiltration	Mechanical Ventilation
Air Infiltration	Mechanical Ventilation Location
DWH System 1	Water Heater Location
DWH System 1	Water Heater Type
DWH System 1	Water Heater Fuel Type

DWH System 1	Tank Volume
DWH System 1	Total Input
DWH System 1	Energy Factor
DWH System 1	Pipe Insulation
DWH System 1	CAZ Base Pressure WRT Outside
DWH System 1	CAZ WCD WRT Outside
DWH System 1	CA Spillage
DWH System 1	CA Draft Pressure
DWH System 1	CA Undiluted CO
DWH System 2	Water Heater Location
DWH System 2	Water Heater Type
DWH System 2	Water Heater Fuel Type
DWH System 2	Tank Volume
DWH System 2	Total Input
DWH System 2	Energy Factor
DWH System 2	Pipe Insulation
DWH System 2	CAZ Base Pressure WRT Outside
DWH System 2	CAZ WCD WRT Outside
DWH System 2	CA Spillage
DWH System 2	CA Draft Pressure
DWH System 2	CA Undiluted CO
HVAC System 1	Heating System Location
HVAC System 1	Heating System Type
HVAC System 1	Furnace Type
HVAC System 1	Combustion Vent Type
HVAC System 1	Heating System Brand
HVAC System 1	Heating System Model Number
HVAC System 1	Heating System Model Year
HVAC System 1	Heating System Fuel Type
HVAC System 1	Heating System Efficiency
HVAC System 1	Heating System Total Output
HVAC System 1	CAZ Appliance
HVAC System 1	CAZ Base Pressure WRT Outside
HVAC System 1	CAZ WCD WRT Outside
HVAC System 1	CA Spillage
HVAC System 1	CA Draft Pressure
HVAC System 1	CA Undiluted CO
HVAC System 1	Cooling System Type
HVAC System 1	Cooling System Brand
HVAC System 1	Cooling System Model Number
HVAC System 1	Cooling System Model Year
HVAC System 1	Cooling System Total Output
HVAC System 1	Cooling System Efficiency
HVAC System 1	Capacity

HVAC System 1	HVAC Duct Location
HVAC System 1	HVAC Duct Type
HVAC System 1	HVAC Duct Pressurization
HVAC System 1	HVAC Duct Leakage - Supply + Return
HVAC System 1	HVAC Duct R-Value
HVAC System 2	Heating System Location
HVAC System 2	Heating System Type
HVAC System 2	Furnace Type
HVAC System 2	Combustion Vent Type
HVAC System 2	Heating System Brand
HVAC System 2	Heating System Model Number
HVAC System 2	Heating System Model Year
HVAC System 2	Heating System Fuel Type
HVAC System 2	Heating System Efficiency
HVAC System 2	Heating System Total Output
HVAC System 2	CAZ Appliance
HVAC System 2	CAZ Base Pressure WRT Outside
HVAC System 2	CAZ WCD WRT Outside
HVAC System 2	CA Spillage
HVAC System 2	CA Draft Pressure
HVAC System 2	CA Undiluted CO
HVAC System 2	Cooling System Type
HVAC System 2	Cooling System Brand
HVAC System 2	Cooling System Model Number
HVAC System 2	Cooling System Model Year
HVAC System 2	Cooling System Total Output
HVAC System 2	Cooling System Efficiency
HVAC System 2	Capacity
HVAC System 2	HVAC Duct Location
HVAC System 2	HVAC Duct Type
HVAC System 2	HVAC Duct Pressurization
HVAC System 2	HVAC Duct Leakage - Supply + Return
HVAC System 2	HVAC Duct R-Value
Interior Lighting - Hardwired Fixtures	INTERIOR Screw-In Incandescent Fixtures
Interior Lighting - Hardwired Fixtures	Screw-In CFL Fixtures
Interior Lighting - Hardwired Fixtures	High-Efficacy Fixtures
Exterior Lighting - Hardwired Fixtures	EXTERIOR Screw-In Incandescent Fixtures
Exterior Lighting - Hardwired Fixtures	Screw-In CFL Fixtures
Exterior Lighting - Hardwired Fixtures	High-Efficacy Fixtures
Household Appliances	Dishwasher Efficiency Factor
Household Appliances	Inside Refrigerator kWh/year
Household Appliances	Garage Refrigerator kWh/year

Household Appliances	Clothes Dryer Type
Household Appliances	Range Type
Household Appliances	Clothes Washer Location
Household Appliances	Clothes Dryer Location
Household Appliances	Swimming Pool Heating Type
Econ 2 Energy Data	Test-In Annual Electricity Consumption (kWh)
Econ 2 Energy Data	Test-In Annual Natural Gas Consumption (Therms)
Econ 2 Energy Data	Test-In Calculated Annual kW Demand
Econ 2 Energy Data	Proposed Annual Savings %
Econ 2 Energy Data	PROPOSED Annual Electricity Consumption (kWh)
Econ 2 Energy Data	PROPOSED Annual Natural Gas Consumption (Therms)
Econ 2 Energy Data	PROPOSED Calculated Annual kW Demand

HOME INFORMATION TAB

Building Year Built
Home Orientation
Average Ceiling Height
Conditioned Square Footage
Floors
Occupant Quantity
Bedroom Quantity
Climate Zone
Principal Heating Source

APPENDIX F: 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. Database 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 G: VER-G-1.0 (7.29.2011) – 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.

Table R3-50 – Default Assumptions for Existing Buildings – Vintage Table Values								
Conservation Measure	Before 1978	1978 to 1983	1984 to 1991	1992 to 1998	1999 - 2000	2001-2003	2004-2005	2006 and Later
INSULATION U-FACTOR								
Roof/Ceiling	0.079	0.049	0.049	0.049	0.049	0.049	0.049	0.049
Wall	0.356	0.110	0.110	0.102	0.102	0.102	0.102	0.102
Raised Floor –Crawl Space	0.099	0.099	0.099	0.046	0.046	0.046	0.046	0.046
Cool Roof	0.10	0.10	0.10	0.10	0.10	0.10	0.10	Pres Pkg.
Radiant Barrier	None	None	None	None	None	None	Pres Pkg	Pres Pkg
Raised Floor-No CrawlSp	0.238	0.238	0.238	0.064	0.064	0.064	0.064	0.064
Slab Edge F-factor =	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Ducts	R-2.1	R-2.1	R-2.1	R-4.2	R-4.2	R-4.2	R-4.2	R-4.2
LEAKAGE								
Building (SLA)	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Duct Leakage Factor (See Table 4-13)	0.86	0.86	0.86	0.86	0.86	0.89	0.89	0.89
FENESTRATION								
U-factor	Use Standards Table 116-A , §116 for all Vintages							
SHGC	Use Standards Table 116-A , §116 for all Vintages							
Shading Dev.	Use Table R3-27 and R3-28 for all Vintages in the Residential ACM Manual Performance Approach							
SPACE HEATING EFFICIENCY								
Gas Furnace (Central) AFUE	0.75	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
Hydronic/Comb Hydronic	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heat Pump HSPF	5.6	5.6	6.6	6.6	6.8	6.8	6.8	7.4
Electric Resistance HSPF	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	8.9	9.7	9.7	9.7	9.7	13.0
WATER HEATING								
Energy Factor	0.525	0.525	0.525	0.525	0.575	0.575	0.575	0.575

APPENDIX H: 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 EUC program and process. Please note: EUC 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.

The protocols refer to 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.

    1.2. 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.

    1.3. 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.

2. 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:

    2.1. 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.

    2.2. 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.

3. Communication procedure:

    3.1. For Non-critical health and safety observations, QA/QC vendor will note observations in QC inspection report and provide according to QA/QC timelines.

    3.2. For Critical health and Safety hazards observed, QA/QC vendor will contact contractor, JTS vendor and SDG&E via email (subject line: Critical Health and Safety Issue (Job#)) within 1 working day from the date of inspection.

        3.2.1. 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 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 on the inspection form and requesting homeowner initials.

APPENDIX I: VER-I-1.1 (3.6.2012) – QA/QC PROCESS FLOW AND TIMELINE

QA/QC PROCESS FLOW

Stage	Process Source	Cycle Time	Step Process	Database Status Application - Job
Step 1 – Initial Submittal	Contractor	Cycle start upon submittal	1. Contractor submits project proposal to Database a. Upload a copy of completed customer Application b. Enter all Job and Customer information in the database c. Upload a competed Energy Pro file (.pdf) (advanced path only) d. Upload a competed Energy Pro Econ 2 file (.bld) (advanced path only) e. Upload additional supporting documentation and pictures f. Upload a copy of Contract between resident and Contractor	DRAFT OPEN Contractor can edit/save details
Step 2 – Rebate Program Research	SDG&E	1 – 2 Days (separate process)	2. Submittal approval requires SDG&E review of the customer name and account for prior participation in SDG&E rebate programs. List of previous rebate program participation will be provided to the QA/QC Contractor. a. Note: All submittals received after 3:00 PM will be processed the following business day.	PENDING APPROVAL OPEN Open to QA/QC only contractor can only view
Step 3 – Pre-selection for Inspection	RHA & Contractor	Within 24 hours of Step 1	3. Database selects project for Pre-Inspection a. CCSE/Contractor notified of job selected for inspection. b. Contractor notifies resident within 48 hours. c. RHA makes initial contact with customer within 48 hours. c. RHA schedules Pre-Inspection with resident.	PENDING APPROVAL OPEN Open to QA/QC only contractor can only view
Step 4 – Initial Desk Review	RHA	Within 3 working days of Step 1 or completion	4. Desk Review 5. Database selects project for Pre-Inspection 6. RHA submits QAQC job review form for customer application	PENDING APPROVAL OPEN

		of QC Site visit.	forms needing correction on all projects a. RHA submits issues report for corrections (if needed). b. Note: Projects selected for QC will receive corrections report upon completion of on-site QC inspection.	Open to QA/QC only contractor can only view
Step 1 – Repeat	Contractor		7. Contractor resubmits corrected information	DRAFT OPEN Contractor can edit/save pre details
Step 5 – Pre-Inspection	RHA		8. On-site Pre-Inspection conducted. a. RHA notifies CCSE/Contractor within 24 hours if hazard correction required. b. If no correction is required, plan is approved. c. RHA submits inspection report within 3 working days of inspection date. d. *Note: RHA schedules pre-inspection per customer timeline, requesting earliest available date.*	APPROVED OPEN Contractor can edit/save post details
		Any time after DRAFT	9. Project is canceled	INVALID CLOSED
Step 6 – Project Construction	Contractor	Within 6 months	10. Contractor corrects noted hazardous condition(s). 11. Contractor completes Scope of Work (SOW). a. Contractor performs all test-out procedures and modeling adjustments (if required). b. Contractor schedules final building department inspection (as applicable)	APPROVED OPEN Contractor can edit/save details
		Beyond 6 months	12. Contractor must retest and resubmit project	EXPIRED CLOSED
Step 7 – Post Retrofit Submittal	Contractor		13. Contractor submits Post-Retrofit Reporting Information to database. a. Upload final energy modeling file.	PENDING REVIEW OPEN

				b. Input supporting test data and update proposed information in database. c. Upload product receipts, if applicable. d. Upload building permits with Final Inspection (if applicable).	Open to QA/QC only contractor can only view
Step 8 – Pre-selection for Post-Inspection	RHA & Contractor	Within 1 working day of Step 7	14.	Database selects project for Post-Inspection a. CCSE/Contractor notified of job selected for inspection within 1 working day of Step 7. b. Contractor notifies resident within 2 working days. c. RHA makes contact with resident within 2 working days to schedule Post-Inspection.	PENDING REVIEW OPEN Open to QA/QC only contractor can only view
Step 9 – Post-project QA	RHA	Within 72 hours of Step 7 or completion of post QC visit.	15.	Desk Review of Post-Retrofit Information. a. Verification of final building department inspection is complete (if required). b. RHA submits issues report for corrections (if required) Projects selected for QC will receive corrections report after QC inspection.	PENDING REVIEW OPEN PENDING REVIEW OPEN
Step 10 – Post-project QC Inspection	RHA		16.	Post-Inspection conducted. a. RHA notifies CCSE/Contractor within 24 hours if hazard correction required. b. If no correction is required, plan is approved. c. RHA submits inspection report within 3 working days of inspection date. d. *Note: RHA schedules post-inspection per customer timeline, requesting earliest available date.*	PENDING REVIEW OPEN Open to QA/QC only contractor can only view
Step 11 – Final QA/QC Processing	Contractor		17.	Contractor performs corrections and resubmits paperwork.	APPROVED OPEN

Step 12 – Final Review and submittal	RHA	18. Final Desk Review is conducted.	PENDING REVIEW	OPEN
		19. Project Completion Report is generated, a copy is provided to the customer, and a confirmation notice to the participating contractor.	COMPLETE	CLOSED
		20. Project Completion Report is submitted to SDG&E for rebate processing and savings reporting		
Step 14 – Rebate Generation	SDG&E	21. SDG&E processes rebates.	COMPLETE	CLOSED

Reference: Working days are defined in sections 2.24 and 2.25 of the QA/QC plan.

APPENDIX J: VER-J-1.0 (7.29.2011) – JOB DOCUMENTATION REVIEW DOCUMENTS

Appendix J1:

Notice of Returned Project Submittal

July 1, 2011

Mr. John Doe
Doe Contracting
12345 X Street
Coronado, CA 92118

Dear _____:

Thank you for your recent submittal of the following job under the SDG&E Energy Upgrade California program:

Date of Submittal by Contractor:
Submitting Contractor:
Project Name:

Please note that the pre-project submittal will not be accepted at this time, and is returned for one (or more) of the following conditions:

- ☐ Fails CAZ/CAS testing, indicating an unsafe condition.
- ☐ Substantial inconsistencies in information provided, between the Job Reporting Template (JRT) and EnergyPro modeling file pertaining to:
  - ☐ 1) existing or proposed equipment, or
  - ☐ 2) the conditioned square footage of the home (without explanation provided)
- ☐ Incomplete Customer Application or JRT forms.
- ☐ Blower door results are below minimum BAS, **and** there are no provided notes regarding recommended or installed mechanical ventilation in the Scope of Work.
- ☐ Project submittal has been closed in the database due to submittal exceeding the 6 month maximum timeframe.

Please review all aspects of your project submittal to ensure compliance with minimum program submittal requirements and re-submit your project at your earliest convenience. Your prompt correction of the issue(s) described above is most appreciated. Upon correction/re-submittal of the paperwork for you will be issued a Job number and submittal date.

Should you have any questions regarding this job evaluation or the proposed work, please contact your Energy Upgrade CA representative.

Respectfully,

INSERT NAME OF SUBMITTING PERSON
Program Analyst

Appendix J2:

QA/QC Job Review

Pre – Retrofit Findings

Memo Date:	
Date Paperwork Submitted by Contractor:	
Submitting Contractor:	
Project Name:	
ID#:	
Path:	Path Type
QA Desk Review Date:	
QC Inspection Date:	

Contractor Pre-Retrofit Rating (Scale of 1-7): Select Rating *See Ratings explained on back of page.*

I. PAPERWORK ISSUES (i.e., discrepancies between JRT, Scope of Work, and/or Customer Application):

Description of Issue	Required Action

II. ENERGYPRO MODELING ISSUES (ADVANCED path only):

Description of Issue	Required Action

III. QUALITY CONTROL INSPECTION FINDINGS

Select QC Status

Description of Issue	Required Action

IV. "BEST PRACTICE" RECOMMENDATIONS

Description of "Best Practice"

Note: This review may not include all necessary final corrections. Each document submittal is subject to review for possible errors and/or discrepancies

Contractor Pre-Retrofit Ratings Explained:

1	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. Action: Contractor may not proceed with Scope of Work until Hazardous issue is resolved.
2	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. Action: Contractor must make corrections to the affected paperwork and re-submit before job will be Pre-Retrofit inspected.
3	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. Action: Contractor must make corrections to the affected paperwork and re-submit before job will be Pre-Retrofit inspected.
4	Pass: No Deficiencies require correction and "Best Practices" are already followed by Contractor. Action: Contractor may proceed with Scope of Work without further administrative action.
5	Pass, with one Best Practice recommendation. Action: Contractor may proceed with Scope of Work without further administrative action.
6	Pass, with more than one Best Practice noted. Action: Contractor may proceed with Scope of Work without further administrative action.
7	Pass with all Best Practices for Zero Energy Home rating. Action: Contractor may proceed with Scope of Work without further administrative action.

Appendix J3:

QA/QC Job Review

Post – Retrofit Findings

Memo Date:	
Date Paperwork Submitted by Contractor:	
Submitting Contractor:	
Project Name:	
ID#:	
Path:	**Path Type**
QA Desk Review Date:	
QC Inspection Date:	

Contractor Post-Retrofit Rating (Scale of 1-7): Select Rating *See Ratings explained on back of page.*

I. PAPERWORK ISSUES (i.e., discrepancies between JRT, Scope of Work, and/or Customer Application):

Description of Issue	Required Action

II. ENERGYPRO MODELING ISSUES (ADVANCED path only):

Description of Issue	Required Action

III. QUALITY CONTROL INSPECTION FINDINGS

Select QC Status

Description of Issue	Required Action

IV. "BEST PRACTICE" RECOMMENDATIONS

Description of "Best Practice"

Note: This review may not include all necessary final corrections. Each document submittal is subject to review for possible errors and/or discrepancies

Contractor Post-Retrofit Ratings Explained:

1. 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. 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. 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.
4. Pass. No Deficiencies or Best Practices.
5. Pass, with one Best Practice recommendation.
6. Pass, with more than one Best Practice noted.
7. Pass with all Best Practice for Zero Energy Home rating.

EXHIBIT 1: VER-EX1.1-(3.6.2012) CUSTOMER APPLICATION FORM

(Primary fields only, complete form available at https://energycenter.org/upgrade/)

energy upgrade™ CALIFORNIA

Section 1: Required Customer Information — Application Form

Customer Information	
First and Last Name (as it appears on SDG&E bill)	Property Address
	Mailing Address (if different from property address)
SDG&E Account Number	City, State, Zip
Incentive Applicant First and Last Name	E-Mail Address
Telephone Number	Alternate Telephone Number
For Property Owner if Property Owner is Not Residing at the Address	
Property Owner First and Last Name (if different from incentive applicant)	Telephone Number
Mailing Address	Alternate Telephone Number
City, State, Zip	E-Mail Address

Prime Contractor Information	
Contractor ID#	Contractor Business Name
Contractor Contact Name	Telephone Number
Contractor Contact Title	E-Mail Address

Make Incentive Check Payable To:			
Payee Federal Tax ID or SSN			
Payee (Print Name)			
Mailing Address	City	State	Zip

Payment Release Authorization

PROPERTY OWNER UNDERSTANDS AND AGREES THAT BY SIGNING THIS PAGE, I AM AUTHORIZING THIS PAYMENT OF MY INCENTIVE TO THE THIRD PARTY NAMED ABOVE, AND THAT I WILL NOT BE RECEIVING THE INCENTIVE CHECK FROM SDG&E. I ALSO UNDERSTAND THAT MY RELEASE OF THE PAYMENT TO A THIRD PARTY DOES NOT EXEMPT ME FROM THE PROGRAM REQUIREMENTS OUTLINED IN THE APPLICATION PACKAGE. I AUTHORIZE THIS PAYMENT RELEASE ON CONDITION THAT THE THIRD PARTY HAS A CALIFORNIA STATE LICENSE BOARD LICENSE, IS THE INSTALLER OF THE PRODUCTS FOR WHICH I AM REQUESTING AN INCENTIVE.
IN ADDITION, I UNDERSTAND THAT THIS IS ONLY AUTHORIZING PAYMENT OF INCENTIVE TO A THIRD PARTY AND IS NOT A GUARANTEE OF PAYMENT OR PAYMENT AMOUNT. I AGREE TO HOLD SDGE HARMLESS FOR ANY OUTCOMES SHOULD THE PAYMENT AMOUNT BE MORE OR LESS THAN I AM REQUESTING IN THIS APPLICATION.

Section 1: Required Customer Information (continued) Application Form

Incentive program (select one):

- ☐ Basic Home Energy Upgrade Path: $1,000
- ☐ Advanced Home Energy Upgrade Path:
  - 10% energy savings = $1,250
  - 15% energy savings = $1,500
  - 20% energy savings = $2,000
  - 25% energy savings = $2,500
  - 30% energy savings = $3,000
  - 35% energy savings = $3,500
  - 40% energy savings = $4,000

I understand that the incentive amount will be determined in accordance with program requirements and verified by SDGE prior to and at the completion of the installation of energy saving measures and a measurement of impacts of such measures utilizing complex software. I understand and acknowledge that any representations made to me by my participating contractor, while in good faith, but prior to SDGE verification are estimates only and could change upon final verification and modeling.

Applicant

Contractor

Total project gross costs (not including any incentives)

Total project net costs (after all incentives including this one)

Property type:

- ☐ Single-Family Detached Home
- ☐ Single-Family Attached Home (up to four-plex)
- ☐ Condominium
- ☐ Apartment
- ☐ Mobile Home

Do you:

- ☐ Own
- ☐ Rent

Section 1: Required Customer Information (continued) Survey Form

How did you hear about Energy Upgrade California?

_____

What method did you use to complete SDG&E's Home Energy Efficiency Survey?

- ☐ Online
- ☐ On paper

Did the SDG&E rebate influence your decision to complete your energy efficiency project(s)? ☐ YES ☐ NO

Have you previously participated in any SDG&E incentive/rebate programs? ☐ YES ☐ NO

Did you finance any portion of this project? ☐ YES ☐ NO

If so, please indicate type of financing:

- ☐ Government programs
- ☐ Private unsecured (i.e. personal loan, credit card)
- ☐ Private secured (i.e. mortgage, home equity line of credit)

How many contractors did you interview prior to selecting a contractor?

_____

How many contractor quotes did you review prior to selecting a contractor?

_____

How long have you owned this home?

_____

May we contact you about your experiences in this program? ☐ YES ☐ NO

Would you like to be contacted regarding solar or other energy efficiency program offerings? ☐ YES ☐ NO

Did the contractor answer all of your questions? ☐ YES ☐ NO

Please check all that apply regarding why you chose to do this home energy-improvement project:

- ☐ High Bills
- ☐ Drafts
- ☐ Hot/Cold Rooms
- ☐ Air Quality Problems
- ☐ Odors
- ☐ Moisture Issues
- ☐ Water Leaks
- ☐ Window Problems
- ☐ Door Problems
- ☐ Environment
- ☐ Oil Dependence Use

energy upgrade™ CALIFORNIA

Terms and Conditions

1. I understand that incentive reservation requests and subsequent applications are accepted on a first-come, first-served basis while funding is available or until discontinued by the California Public Utilities Commission (CPUC). This program will end December 31, 2012 or earlier if all allocated funds are depleted or program is terminated before that date. Qualified energy efficiency measures are eligible for incentives if the corresponding incentive application is received by SDG&E no later than January 31, 2013.
2. I am a property owner of a detached single-family residence with an active meter(s) served by SDG&E. I understand that I am only eligible to receive incentives that correspond directly to the type of service (e.g. natural gas or electric distribution) for which my detached single-family residence currently receives service from SDG&E. Detached single-family residence must be fully constructed. New construction does not qualify.
3. I certify that the qualified energy efficiency measures were purchased and completely installed between January 1, 2010 and December 31, 2012. These energy efficiency measures are for use in my detached single-family residence.
4. I have submitted one or more of the following required documents establishing proof-of-purchase for the energy efficiency measures applied for in this application: a) paid itemized sales receipt(s); b) building permits per local jurisdiction; c) paid contractor invoice; or paid home improvement contract (HIC), with manufacturer name(s), model number(s); and any other required documentation.
5. I certify that all energy efficiency measures were purchased new and I understand that the following energy efficiency measures do not qualify: used, rebuilt, resale, rented, won as prizes, provided by insurance companies, or new parts installed in existing measures.
6. I understand that incentives will only be paid for energy efficiency measures that meet the program specifications described on the incentives energy efficiency measures forms and related specifications sheets.
7. I understand that under certain circumstances incentives may be taxable and, if greater than $600, may be reported to the IRS unless I am exempt from reporting. SDG&E may report my incentive payment to me on IRS Form 1099 unless I have checked corporation or exempt from reporting tax status. I understand that I should consult my tax advisor concerning the taxability of incentives. SDG&E is not responsible for any taxes that may be imposed as a result of my receipt of this incentive.
8. I understand that incentives cannot exceed the combination of purchase price and installation cost.
9. I understand that the qualified energy efficiency measures have been installed by a participating contractor in the basic path or the advance path.
10. I am responsible for meeting all program requirements and complying with my state / county / city governments, property owner and / or homeowner's association requirements (if any) in my area regarding local conditions, restrictions, codes, ordinances, rules, and regulations pertaining to all installations. I further understand that it is my sole responsibility to ensure all incentivized measures are installed as per all manufacturers' specifications.
11. The customer must complete a comprehensive Home Energy Efficiency Survey either online or complete a paper copy and mail it to the provided SDG&E address.
12. I agree that SDG&E has no liability whatsoever concerning the quality, safety or installation of the energy efficiency measures, including its fitness for a particular purpose, workmanship, or any other matter.
13. I understand that SDG&E is not responsible for items lost or destroyed in transit.
14. I understand and agree that the choice of the energy efficiency measures, selection of participating contractor, manufacturer, or dealer, purchase of materials, work performed, and the payment thereof, are my sole responsibility. I waive any and all claims against SDG&E, its parent company, its directors, officers, employees and authorized agents, and will indemnify SDG&E for any claims arising out of or relating to the installation and / or use of energy efficiency measures referred to in this application. I ALSO UNDERSTAND THAT SDG&E MAKES NO WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF MERCHANTIBILITY FOR ANY PARTICULAR PURPOSE, USE, OR APPLICATION OF THE MEASURES REGARDING MANUFACTURERS, DEALERS, MATERIALS, AND WORKMANSHIP. Without limiting the generality of the foregoing, none of such parties shall be liable for any type of damages, whether direct, indirect, incidental, consequential, exemplary, reliance, punitive or special damages, including damages for loss of use, regardless of the form of action, whether in contract, indemnity, warranty, strict liability or tort, including negligence of any kind.
15. I agree to allow SDG&E's quality assurance team or its representatives and / or California Public Utilities Commissions (CPUC) representatives reasonable access to verify existing site conditions prior to the commencement of work, and I agree to this inspection to be eligible to participate in the program and receive incentives for the qualified measures. I understand that this inspection is for the purpose of determining that the pre-construction existing site conditions are as represented and that all proposed existing conditions and proposed measures meet all program requirements.
16. I agree to allow SDG&E's quality assurance team or its representatives and / or California Public Utilities Commissions (CPUC) representatives reasonable access to verify the installed measures. I agree to this inspection to be eligible to participate in the program and receive an incentive for the qualified measures. I understand that this inspection is for the purpose of determining that the installed measures meet all program(s) requirements.
17. I understand that I cannot receive energy efficiency incentives for the same measures, or for the replacement for the measure installed from more than one California Investor-Owned Utility or other third-party programs offering incentives, financing, and other incentives funded with CPUC Public Goods Charge funds.
18. Property Owner: Your signature is required (page 3) if the incentive check is to be made payable to another licensed individual or entity.
19. Proof of Property Ownership from owner, and a copy of a recent SDG&E bill from tenant are required when owner has purchased and installed measure in a rental home. Name and address shown on Proof of Ownership must match name and install address listed on the application form, and address shown on SDG&E bill must match the install address listed on the application form.
20. I understand that if I have released payment to a third party as provided on page 1 of this application, this is only authorizing payment of incentive to a third party and is not a guarantee of payment or payment amount. I agree to hold SDGE harmless for any outcomes should the payment amount be more or less than I am requesting in this application.
21. I understand that the incentive amount will be determined in accordance with program requirements and verified by SDGE prior to and at the completion of the installation of energy saving measures and a measurement of impacts of such measures utilizing complex software. I understand and acknowledge that any representations made to me by my participating contractor, while in good faith, but prior to SDGE verification are estimates only and could change upon final verification and modeling. I agree to hold SDGE harmless for any outcomes should the payment amount be more or less than I am requesting in this application.

[NOTE: Only the property owner or the entity that installed the measures at the site address named above, may receive the incentive payment]

I HAVE READ, UNDERSTAND AND AGREE TO THE ABOVE TERMS & CONDITIONS. I CERTIFY THAT THE INFORMATION I HAVE PROVIDED IS TRUE AND CORRECT AND THE ENERGY EFFICIENCY MEASURES FOR WHICH I AM REQUESTING A REBATE MEET THE REQUIREMENTS LISTED ON THE ENERGY EFFICIENCY MEASURES FORM AND SPECIFICATIONS SHEETS AND WILL OR HAVE BEEN COMPLETELY INSTALLED.

☐ By checking this box, I confirm that I have used a licensed contractor, as appropriate, and followed applicable permitting requirements for this installation.

Signature (Please Print Name) Date (Month/Day/Year)

EXHIBIT 2: VER-EX2.0-(7.29.2011)

Customer Satisfaction Survey (Exhibit 2) has been removed; there is no Exhibit 2 currently.

SDG&E ENERGY UPGRADE CALIFORNIA

QUALITY ASSURANCE CHECKLIST
FOR
BASIC DESKTOP REVIEW

JOB ID# _____ **CONTRACTOR:** _____

RHA Steps	BASIC Data Verification	Missing / Incomplete
1. Print all forms and create a folder. 2. Save forms to RHA server.	❑ Ensure all required forms are provided.	❑
3. Print Data Quick information 4. Verify the SDG&E Customer Application information against the Pre-Retrofit Job Application (JRT).	Ensure completeness for the Application: ❑ Customer Information ❑ Account Number ❑ Ownership ❑ Contractor Information ❑ Incentive Recipient Information ❑ Required signatures Ensure completeness for the JRT: ❑ Square footage ❑ Year home was built ❑ Number of stories ❑ Number of bedrooms ❑ Other:_____	 ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑
5. Email SDGE for verification of customer's account and previous participation in POS or 3rd party rebates. 6. Document response from SDGE in database.	❑ Confirm entry into database	N/A
7. BASIC REVIEW Verify accuracy and completion of the Scope of Work against the Pre-Retrofit Job Application (JRT).	For all forms, confirm matching data for the: ❑ Customer information, ❑ Climate zone On Customer Application: ❑ Rebate costs ❑ Recipient information ❑ Completeness of survey ❑ Required signatures ❑ Other: _____ On Scope of Work: ❑ Home information ❑ Insulation types and R-values ❑ DHW information ❑ HVAC systems ❑ Other: _____	 ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑
8. BASIC REVIEW ***Measure Feasibility Check*** Review contractor paperwork for feasibility of approved measures	Identify measure feasibility for: ❑ Duct sealing ❑ Attic insulation ❑ Air infiltration ❑ Thermostatic shut-off shower valve ❑ Other:_____	 ❑ ❑ ❑ ❑ ❑

SDG&E ENERGY UPGRADE CALIFORNIA

QUALITY ASSURANCE CHECKLIST
FOR
BASIC DESKTOP REVIEW

JOB ID# _____ CONTRACTOR: _____

QA Work and Comments

RHA Steps	BASIC Data Verification	Missing / Incomplete
9. RHA internal review of comments to date to ensure that comments to Contractor are complete.	Notes:	N/A
10. Document results for initial communication Contractor. Due within 72 hours of submittal of paperwork to RHA.	Notes:	N/A

QUALITY CONTROL CHECKLIST
FOR
BASIC FIELD INSPECTIONS

JOB ID# _____ CONTRACTOR: _____

BASIC **PRE**-RETROFIT QUALITY CONTROL INSPECTION

RHA Steps	BASIC Pre-Retrofit QC Inspection	Measure Feasible?	Hazardous Condition Present?
1. RHA visual verification of feasibility for Contractor-suggested measures.	Check measures to be inspected below : ❑ Duct sealing ❑ Attic insulation ❑ Air infiltration ❑ Thermostatic shut-off shower valve ❑ Other1:_____ ❑ Other2: _____	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Inspector Notes:			

BASIC **POST**-RETROFIT QUALITY CONTROL INSPECTION

RHA Steps	BASIC Post-Retrofit QC Inspection	Measure installed in conformance with Standards?	Measure to be processed for Rebate?
2. RHA visual and diagnostic verification of correct installation (in accordance with program standards) of EUC measures.	Check measures to be inspected below: ❑ Duct sealing ❑ Attic insulation ❑ Air infiltration ❑ Thermostatic shut-off shower valve ❑ Other1:_____ ❑ Other2: _____ Confirm diagnostics results for: ❑ Duct leakage test ❑ Blower door test Perform CAZ and CAS testing ❑ CAZ ❑ CAS	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Inspector Notes:			

SDG&E ENERGY UPGRADE CALIFORNIA
QUALITY ASSURANCE CHECKLIST
FOR
ADVANCED DESKTOP REVIEW (PRE- AND POST-)

JOB ID# _____ **CONTRACTOR:** _____

RHA Steps	ADVANCED Data Verification	Missing / Incomplete
1. Print all forms and create a folder. 2. Save forms to RHA server.	❑ Ensure all required forms are provided.	❑
11. Print Data Quick information 12. Verify the SDG&E Customer Application information against the Pre-Retrofit Job Application (JRT).	Ensure completeness for the Application: ❑ Customer Information ❑ Account Number ❑ Ownership ❑ Contractor Information ❑ Incentive Recipient Information ❑ Required signatures Ensure completeness for the JRT: ❑ Square footage ❑ Year home was built ❑ Number of stories ❑ Number of bedrooms ❑ Other:_____	 ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑
3. Email SDGE for verification of customer's account and previous participation in POS or 3rd party rebates. 4. Document response from SDGE in database.	❑ Confirm entry into database	N/A
5. BASIC REVIEW Verify accuracy and completion of the Scope of Work against the Pre-Retrofit Job Application.	For all forms, confirm matching data for the: ❑ Customer information, ❑ Climate zone On Customer Application: ❑ Rebate costs ❑ Recipient information ❑ Completeness of survey ❑ Required signatures ❑ Other: _____ On Scope of Work: ❑ Home information ❑ Insulation types and R-values ❑ DHW information ❑ HVAC systems Other: _____	 ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑
6. ADVANCED REVIEW *Measure Feasibility Check* Review contractor paperwork for feasibility of approved measures	Match data between the JRT and ECON2 for: ❑ Duct sealing ❑ Attic insulation ❑ Air infiltration ❑ Thermostatic shut-off shower valve ❑ Other:_____	 ❑ ❑ ❑ ❑ ❑

SDG&E ENERGY UPGRADE CALIFORNIA
QUALITY ASSURANCE CHECKLIST
FOR
ADVANCED DESKTOP REVIEW (PRE- AND POST-)

JOB ID# _____ **CONTRACTOR:** _____

ECON2 Review and Comments

RHA Steps	ADVANCED Data Verification	Missing / Incomplete
7. ADVANCED REVIEW Verify accuracy and completion of the ECON2 and Scope of Work against the Pre-Retrofit Job Application Note: All of the fields from the BASIC forms are required, plus the additional data at right.	Match data between the JRT and ECON2 for: ❑ Measure descriptions ❑ Blower door results as compared to BAS ❑ HVAC ducting (% leakage, pressurization and R-value) ❑ Lighting and household appliance information ❑ CAS/CAZ tests for gas appliances in the home Match data to ECON2 report: ❑ kWh demand ❑ Therm demand ❑ kW demand ❑ Other:_____	 ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑

ENERGYPRO .BLD File and Comments

RHA Steps	ADVANCED Data Verification	Missing / Incomplete
8. Verify accuracy of the following items in EnergyPro .bld file against the Job Reporting Template (JRT).	❑ Project city ❑ Building dimensions ❑ Ceiling height ❑ Number of stories ❑ Conditioned area ❑ Front orientation ❑ Foundation type ❑ Pre-retrofit conditions ❑ Existing DHW equipment ❑ Pipe insulation ❑ Existing HVAC equipment ❑ Existing duct insulation ❑ Existing duct leakage CFM25 ❑ Model as "EXISTING" ❑ Existing attic insulation ❑ Existing floor insulation ❑ Existing wall insulation ❑ Existing windows ❑ Existing lighting for replacement ❑ Furnace CAZ testing ❑ DHW CAZ testing ❑ Existing building CFM50 ❑ Billing Data	❑ ❑
9. Comments		

SDG&E ENERGY UPGRADE CALIFORNIA
QUALITY ASSURANCE CHECKLIST
FOR
ADVANCED DESKTOP REVIEW (PRE- AND POST-)

JOB ID# _____ CONTRACTOR: _____

QA Work and Comments

RHA Steps	ADVANCED Data Verification	Missing / Incomplete
10. RHA internal review of comments to date to ensure that comments to Contractor are complete.	Notes:	N/A
11. Document results for initial communication Contractor. Due within 72 hours of submittal of paperwork to RHA.	Notes:	

SDG&E ENERGY UPGRADE CALIFORNIA

QUALITY CONTROL CHECKLIST
FOR
ADVANCED FIELD INSPECTIONS

JOB ID# _____ CONTRACTOR: _____

ADVANCED **PRE**-RETROFIT QUALITY CONTROL INSPECTION

RHA Steps	ADVANCED Pre-Retrofit QC Inspection	Measure Feasible?	Hazardous Condition Present?
3. Verify home orientation, sketch house with window/door details and square footage. 4. RHA visual verification of feasibility for Contractor-suggested measures. 5. Document results for Pre-Retrofit QC Inspection Report.	Check measures to be inspected below : ❑ Attic insulation ❑ Duct condition ❑ Duct insulation ❑ Attic ventilation Verify existing condition of: ❑ DHW appliance and pipe insulation ❑ HVAC equipment _____ _____ ❑ Lighting ❑ Household appliance(s): _____ _____ _____ ❑ Other1: _____ ❑ Other2: _____ Confirm diagnostics results for: ❑ Duct leakage test ❑ Blower door test Perform CAZ and CAS testing ❑ CAZ ❑ CAS	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Inspector Notes:			

SDG&E ENERGY UPGRADE CALIFORNIA

QUALITY CONTROL CHECKLIST
FOR
ADVANCED FIELD INSPECTIONS

JOB ID# _____ **CONTRACTOR:** _____

ADVANCED **POST**-RETROFIT QUALITY CONTROL INSPECTION

RHA Steps	BASIC Post-Retrofit QC Inspection	Measure installed in conformance with Standards?	Measure to be processed for Rebate?
6. RHA visual and diagnostic verification of correct installation (in accordance with program standards) of EUC measures. 7. Document results for Post-Retrofit QC Inspection Report	Check installed measures: ❑ Attic insulation ❑ Duct condition ❑ Duct insulation ❑ Attic ventilation Verify retrofitted condition of: ❑ DHW appliance and pipe insulation ❑ HVAC equipment _____ _____ ❑ Lighting ❑ Household appliance(s): _____ _____ _____ ❑ Other1: _____ ❑ Other2: _____ Confirm diagnostics results for: ❑ Duct leakage test ❑ Blower door test Perform CAZ and CAS testing ❑ CAZ ❑ CAS ❑ Final gas appliance safety inspection	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No
Inspector Notes/Inspection Details:			

EXHIBIT 4: VER-EX4.1-(3.6.2012) PRE/POST-RETROFIT INSPECTION REPORT

ENERGY UPGRADE CALIFORNIA - San Diego Gas & Electric
Advanced Energy Upgrade Pre-Retrofit Inspection Form

Inspection 9 **Application** 4

CUSTOMER INFORMATION / PROJECT LOCATION

Electric Account Number	555555555
Customer Full Name	Joe Jones
Customer Address	555 Main St
City	San Diego
Zip Code	92555
Customer Primary Phone	(123) 555-5555
Customer Email	

CONTRACTOR INFORMATION

Contractor ID	1
Company Name	Your Remodeling
Contractor Name	John Smith
Contractor Primary Phone	858-555-5555
Contractor Email	js@yourremodeling.com

INSPECTOR INFORMATION

Inspector Name	
Inspector Badge Number	
Schedule Time	
Completed Time	

HOME INFORMATION

Year Home Built	1957
Home Orientation - Front Wall (Street Facing)	northeast
Front Length	
Side Length	
Conditioned Square Footage	1825
Number of Floors	1
Number of Occupants	4
Number of Bedrooms	3

HOUSE INFORMATION	TEST-IN VALUE	INSPECTION VALUE
Attic Insulation		
Roof Type	attic	
Roof Type	attic	
Insulation Type	Fiberglass	
Insulation Type	Fiberglass	
R-Value	11	
R-Value	11	

Inspection 9 **Application** 4

Floor Insulation

Floor Type	2x6 16"oc Raised Floor	
Floor Type	2x6 16"oc Raised Floor	
Insulation Type	Fiberglass	
Insulation Type	Fiberglass	
R-Value	11	
R-Value	11	

Wall Insulation

Wall Type	2x4 16"oc	
Wall Type	2x4 16"oc	
Insulation Type	none	
Insulation Type	none	
R-Value	0	
R-Value	0	

Windows

Type	smc	
Type	smc	
Area	100	
Area	100	
Type	dmc	
Type	dmc	
Area	25	
Area	25	
Type	smc	
Type	smc	
Area	100	
Area	100	

Air Infiltration

ASHRAE 62-89 Minimum Building Airflow Standard	2086	
ASHRAE 62-89 Minimum Building Airflow Standard	2086	
Air Infiltration Blower Door Results	2850	
Air Infiltration Blower Door Results	2850	

Inspection 9 **Application** 4

DWH System 1

Water Heater Fuel Type	Natural Gas	
Water Heater Fuel Type	Natural Gas	
Tank Volume	50	
Tank Volume	50	
Total Input	40000	
Total Input	40000	
Energy Factor	0.575	
Energy Factor	0.575	

Inspection 9 **Application** 4

HVAC System 1

Heating System Location	closet	
Heating System Location	closet	
Heating System Type	split	
Heating System Type	split	
Furnace Type	central	
Furnace Type	central	
Combustion Vent Type	induced	
Combustion Vent Type	induced	
Heating System Brand	carrier	
Heating System Brand	carrier	
Heating System Model Number	1235	
Heating System Model Number	1235	
Heating System Model Year	09	
Heating System Model Year	09	
Heating System Fuel Type	gas	
Heating System Fuel Type	gas	
Heating System Efficiency	80	
Heating System Efficiency	80	
Heating System Total Output	65000	
Heating System Total Output	65000	
HVAC Duct Location	crawl space	
HVAC Duct Location	crawl space	
HVAC Duct Pressurization	325	
HVAC Duct Pressurization	325	
HVAC Duct Leakage - Supply + Return	18	
HVAC Duct Leakage - Supply + Return	18	
HVAC Duct R-Value	2	
HVAC Duct R-Value	2	

Inspection 9 **Application** 4

Household Appliances

Dishwasher Efficiency Factor	0.79	
Dishwasher Efficiency Factor	0.79	
Inside Refrigerator kWh/year	542	
Inside Refrigerator kWh/year	542	
Garage Refrigerator kWh/year	0	
Garage Refrigerator kWh/year	0	
Clothes Dryer Type	Gas	
Clothes Dryer Type	Gas	
Range Type	GasNoPilot	
Range Type	GasNoPilot	
Clothes Washer Location	Unconditioned	
Clothes Washer Location	Unconditioned	
Clothes Dryer Location	Unconditioned	
Clothes Dryer Location	Unconditioned	
Swimming Pool Heating Type	Solar	
Swimming Pool Heating Type	Solar	
Well Pump Exists	false	
Well Pump Exists	false	
Sewer Grinder Pump Exists	false	
Sewer Grinder Pump Exists	false	

Windows

Type	zmc	
Type	zmc	
Area	75	
Area	75	

Attic Insulation

Sky Light	no	
Sky Light	no	

EXHIBIT 5: VER-EX5.0-(7.29.2011) INSPECTION HANDBOOK

Incorporated by reference; see current version of RHA EUC Inspection Handbook

EXHIBIT 6: VER-EX6.0-(7.29.2011) REFERENCED TECHNICAL AND INSTALLATION STANDARDS

1. SDG&E Measure Installation Standards

Incorporated by reference; to current version of EUC 2011 – 2012 Whole House Rebate Program Installation Specifications for Customers Served by San Diego Gas and Electric Company

2. SDG&E QA/QC Reference Standards

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

a. 2008 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 Standards)
  - 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

b. 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

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

d. 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

EXHIBIT 7: VER-EX7.0-(7.29.2011) CUSTOMER QC PRESENCE SIGN-OFF FORM

Energy Upgrade California Quality Control Inspection Sign-off

Customer Name: _____

Project ID: _____

Date: _____

Time: _____

Address: _____

_____

Quality Inspector: _____

Signature: _____

Customer Present for Inspection: _____

Signature: _____

EXHIBIT 8: VER-EX8.1-(3.6.2012) PROJECT COMPLETION SUMMARY REPORT

ENERGY UPGRADE CALIFORNIA - San Diego Gas & Electric
Project Completion Report

CUSTOMER INFORMATION / PROJECT LOCATION	
Project ID#	
Customer SDG&E Account Number	
Customer First Name	
Customer Last Name	
Project Street Address	
Project City	
Project Zip Code	
Customer Email	
Customer Phone Number	

CONTRACTOR INFORMATION	
Contractor ID#	
Company Name	
Contractor First Name	
Contractor Last Name	
Contractor Street Address	
Contractor City	
Contractor Zip Code	
Contractor Email	
Contractor Phone Number	

REBATE CHECK PAYEE	
Federal Tax ID or SSN	
First Name	
Last Name	
Street Address	
City	
Zip Code	

REBATE INFORMATION	
Program Participation	
Product Description	
Approved Rebate Amount	

PROJECT INFORMATION	
Date of Project Completion	
Total Pre-Rebate Project Cost	
Total Post-Rebate Project Cost	
Total Project Man-hours	
Climate Zone	
Year Home Built	
Total Conditioned Floor Area	
Number of Floors	

PROPERTY OWNER - If Not Owner Occupied	
Owner Occupied	
Property Owner - First Name	
Property Owner - Last Name	
Mailing Address	
City	
State	
Zip	
Email	

PROJECT ENERGY SAVINGS	
kWh	
kW	
Therms	
Total Energy Savings	
Building Permit Number	
Inspection Pass Date	

QA/QC PROCESSES	
Pre-Retrofit Desktop Review	
Pre-Retrofit Field Inspection	
Post-Retrofit Desktop Review	
Post-Retrofit Field Inspection	

ENERGY UPGRADE MEASURES COMPLETED	
MEASURE DESCRIPTION	MEASURE CODE

Quality Assurance Agent

Signature _____