

PG&E Home Upgrade Post-Installation Verification Field Quality Control Assessment

Job Address: 1234 XYZ Street, Sacramento	Job Code:
Conditioned Floor Area: 2000 sq. ft.	Verification Date:
Contractor: XYZ	CAS Failure:
Build It Green FQC Specialist: Michael B.	Field Order Number:
Average Ceiling Height: 8 ft.	Score:

Fail 0 (F0): Contractor has left the home in an unsafe condition that threatens occupants' health and safety and requires immediate corrective action. Verifier has notified the homeowner of the unsafe conditions and has called PG&E to assess the situation. Follow-up is required for all CAS failures and corrective action is mandatory.

Emergency Condition	Pass/ Fail
Significant gas leak(s) accompanied by a strong odor and/or hissing. Location:	Pass
Room ambient CO exceeded 9 ppm during CAS testing. Baseline: ppm Peak Room Ambient: ppm Appliances Fired on:	Pass
CO flue measurement exceeded 400 ppm (300 ppm for oven/broiler). Appliance: ppm	Pass
Defective heat exchanger. Evidence of cracks, holes, metal fatigue, excessive rust or soot. Appliance(s):	Pass
Other:	Pass
Notes:	
Corrective Action:	

Fail 1 (F1): CAS test results did not meet Program standards and/or triggered a "stop work" action based on BPI Technical Standards for the Building Analyst Professional. Verifier has notified the homeowner of the unsafe conditions and has called PG&E to assess the situation. **Follow-up is required for all CAS failures and corrective action is mandatory.**

CAS Test for Every Natural Gas Appliance	Pass/ Fail																																																																
Disconnected, missing, damaged, rusted out or incorrectly installed vent (include missing draft diverter).	Pass																																																																
Soldered or kinked flex connector, or a flex connector clearly labeled prior to 1973 was found on any gas appliance.	Pass																																																																
Gas line not properly capped.	Pass																																																																
CO Testing for all natural gas appliances. CO flue measurements, use thresholds of: >100 ppm Air Free for Furnace/ DHW; >25 ppm as measured for range top, gas log fireplaces; >225 ppm as measured for oven/broiler. Appliance ambient CO measurements, use thresholds of: >1 ppm for furnace; >9 ppm for DHW, range top, oven/broiler, gas dryer:																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Appliance</th> <th>Air Free</th> <th>As Measured</th> <th>Appliance Ambient</th> <th>Input</th> <th>Output</th> <th>Notes:</th> <th>Pass/ Fail</th> </tr> </thead> <tbody> <tr> <td>FAU</td> <td>ppm</td> <td>ppm</td> <td>ppm</td> <td>kBtu/hr.</td> <td>kBtu/hr.</td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>DHW</td> <td>ppm</td> <td>ppm</td> <td>ppm</td> <td>kBtu/hr.</td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>Gas Log</td> <td></td> <td>ppm</td> <td>ppm</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>Dryer</td> <td></td> <td></td> <td>ppm</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>Oven</td> <td></td> <td>ppm</td> <td>ppm</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>Broiler</td> <td></td> <td>ppm</td> <td>ppm</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td>Stove Top</td> <td></td> <td>ppm</td> <td>ppm</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> </tbody> </table>	Appliance	Air Free	As Measured	Appliance Ambient	Input	Output	Notes:	Pass/ Fail	FAU	ppm	ppm	ppm	kBtu/hr.	kBtu/hr.		Pass	DHW	ppm	ppm	ppm	kBtu/hr.			Pass	Gas Log		ppm	ppm				Pass	Dryer			ppm				Pass	Oven		ppm	ppm				Pass	Broiler		ppm	ppm				Pass	Stove Top		ppm	ppm				Pass	Pass
Appliance	Air Free	As Measured	Appliance Ambient	Input	Output	Notes:	Pass/ Fail																																																										
FAU	ppm	ppm	ppm	kBtu/hr.	kBtu/hr.		Pass																																																										
DHW	ppm	ppm	ppm	kBtu/hr.			Pass																																																										
Gas Log		ppm	ppm				Pass																																																										
Dryer			ppm				Pass																																																										
Oven		ppm	ppm				Pass																																																										
Broiler		ppm	ppm				Pass																																																										
Stove Top		ppm	ppm				Pass																																																										
Communication at FAU between cold air return and products of combustion.	Pass																																																																
Spillage and draft tests for every natural and induced draft appliance. For spillage test, use 5 minute limit under WCD or 1 minute under natural conditions (if necessary).																																																																	
Outside Temperature: °F Min. Acceptable Draft Pressure: -2.50 Pa																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Gas Appliance</th> <th rowspan="2">Heating System Type</th> <th rowspan="2">Vent Type</th> <th colspan="2">WCD at 5 min.</th> <th colspan="2">All Appliances on when commonly vented (WCD)</th> <th colspan="2">Natural Conditions</th> <th colspan="2">All Appliances on when commonly vented (Nat)</th> <th rowspan="2">Draft Test</th> <th rowspan="2">Pass/ Fail</th> </tr> <tr> <th>Spillage Test Pass/ Fail</th> <th>Draft Pressure</th> <th>Spillage Test Pass/ Fail</th> <th>Draft Pressure</th> <th>Spillage Test Pass/ Fail</th> <th>Draft Pressure</th> <th>Spillage Test Pass/ Fail</th> <th>Draft Pressure</th> </tr> </thead> <tbody> <tr> <td></td> <td>Sealed Combustion</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td></td> <td>Induced Draft</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> </tr> <tr> <td></td> <td>Natural Draft</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> <td></td> <td style="text-align: center;">N/A</td> <td></td> <td style="text-align: center;">Pass</td> </tr> </tbody> </table>	Gas Appliance	Heating System Type	Vent Type	WCD at 5 min.		All Appliances on when commonly vented (WCD)		Natural Conditions		All Appliances on when commonly vented (Nat)		Draft Test	Pass/ Fail	Spillage Test Pass/ Fail	Draft Pressure	Spillage Test Pass/ Fail	Draft Pressure	Spillage Test Pass/ Fail	Draft Pressure	Spillage Test Pass/ Fail	Draft Pressure		Sealed Combustion		Pass		N/A		Pass		N/A		Pass		Induced Draft		Pass		N/A		Pass		N/A		Pass		Natural Draft		Pass		N/A		Pass		N/A		Pass	Pass							
Gas Appliance				Heating System Type	Vent Type	WCD at 5 min.		All Appliances on when commonly vented (WCD)		Natural Conditions				All Appliances on when commonly vented (Nat)		Draft Test	Pass/ Fail																																																
	Spillage Test Pass/ Fail	Draft Pressure	Spillage Test Pass/ Fail			Draft Pressure	Spillage Test Pass/ Fail	Draft Pressure	Spillage Test Pass/ Fail	Draft Pressure																																																							
	Sealed Combustion		Pass		N/A		Pass		N/A		Pass																																																						
	Induced Draft		Pass		N/A		Pass		N/A		Pass																																																						
	Natural Draft		Pass		N/A		Pass		N/A		Pass																																																						
WCD limits per CAZ			Combustion air (CVA) requirements per CAZ																																																														
Location	WCD Limit	Net WCD	Pass/ Fail	Net Free Area	Volume	Total Input	CVA Rule	Pass/ Fail																																																									
	Pa	Pa	Pass			kBtu/hr.	Rule	Pass																																																									
	Pa	Pa	Pass			kBtu/hr.	Rule	Pass																																																									
Other:																																																																	
Notes:																																																																	
Corrective Action:																																																																	

Discrepancy 0 (D0): The contracted scope of work does not meet home performance standards and/or Program requirements. Corrective action is strongly recommended and may be required. Areas of technical performance need improvement.	
Home Performance Measure and/or Requirement	Pass/ Fail
Floor Insulation meets EUC installation specifications. Modeled R-Value: _____ Verified R-Value: _____ In full contact with subfloor: <input type="text" value="N/A"/> Installed to uniformly fill the cavity (side-to-side and end-to-end): <input type="text" value="N/A"/>	Pass
Wall insulation meets EUC installation specifications. Reported Insulated Wall Area: 0 Sq. Ft. Verified Insulated Wall Area: 0 Sq. Ft. Discrepancy: #DIV/0!	Pass
Roof insulation meets EUC installation specifications. Modeled R-Value: _____ Verified R-Value: _____ Insulation Uniformity: <input type="text" value="N/A"/> Attic Rulers Visible: <input type="text" value="N/A"/> Access Insulated: <input type="text" value="N/A"/> Knee-Walls Insulated: <input type="text" value="N/A"/> Dams/ Baffles Installed: <input type="text" value="N/A"/>	Pass
Duct insulation meets EUC installation specifications. Modeled R-Value: _____ Verified R-Value: _____ Installed with Vapor Barrier: <input type="text" value="N/A"/> Both Plenums Insulated: <input type="text" value="N/A"/>	Pass
Duct Sealing meets EUC installation specifications. Use of mastic and draw bands: <input type="text" value="N/A"/> Minimal communication between cold air return and CAZ: <input type="text" value="N/A"/>	Pass
Duct work meets EUC installation specifications. Flex ducts fully extended/ not crimped: <input type="text" value="N/A"/> Ducts properly strapped: <input type="text" value="N/A"/>	Pass
Air sealing meets EUC installation specifications. Significant communication between conditioned space and: Attic: <input type="text" value="N/A"/> CAZ: <input type="text" value="N/A"/> Crawlspace: <input type="text" value="N/A"/> Garage: <input type="text" value="N/A"/>	Pass
Upgraded windows installed to EUC installation specifications, and are operating properly.	Pass
Upgraded combustion appliances installed to EUC installation specifications, and are operating properly.	Pass
Serious moisture issues have been addressed and were included in the SOW per program requirements.	Pass
Gas line Inspection resulted in verified fuzz leak. Location(s): _____	Pass
Spillage test failed and no other CAS failures were found (must be cleared by A GSR).	Pass
Vent termination found to be acceptable.	Pass
Gas dryer verified to be venting to the outside.	Pass
Insufficient fire clearance found (e.g. attic or duct insulation in contact with vents, pipe insulation within 6" of the draft diverter).	Pass
Combustion appliance vent not mechanically secure. Draft diverter misaligned.	Pass
CO monitors or detectors have been installed.	Pass
Minimum building ventilation standards (BPI Building Airflow Standards or ASHRAE 62.2) are not being met and mechanical ventilation is required but has not been installed.	Pass
Other:	N/A
Notes:	
Corrective Action:	

Discrepancy 1 (D1): Significant discrepancies in modeling or testing data submitted in the post installation application.						
Diagnostic Test and Modeling Assessment					Pass/ Fail	
All upgrades in the energy model submitted with the post installation application were installed.					Pass	
Duct leakage is within 3.5% of what was reported. <i>For Home Upgrade Measures, duct leakage is: under 6% for new systems; under 10% for existing systems.</i>					Pass	
System 1	Ring:					
Verified CFM25:	Supply Reference Location:					
Reported CFM25:	Reported Leakage		Verified Leakage		Difference in Leakage	
Rated Output:	kBtu/Hr.	Heating: #DIV/0!	Heating: #DIV/0!	Heating: #DIV/0!	Heating: #DIV/0!	
Cooling Capacity:	Tons	Cooling: #DIV/0!	Cooling: #DIV/0!	Cooling: #DIV/0!	Cooling: #DIV/0!	
Actual Airflow:	CFM	Actual: #DIV/0!	Actual: #DIV/0!	Actual: #DIV/0!	Actual: #DIV/0!	
Building leakage is within 10% of the reported CFM50. <i>For Home Upgrade Measures, CFM50 calculates under 15% / 30% of SLA.</i>					Pass	
Depressurization Test		Verified CFM50:	Occupants/ Bedrooms:			
Location:	Reported CFM50:		N Factor:			
Ring:	Reduction from Default SLA: #DIV/0!		ACHn: #DIV/0!			
Discrepancy in CFM50: #DIV/0!						
Upgraded combustion appliances were modeled correctly.					Pass/ Fail	
		Furnace	Reported AFUE:	Verified AFUE:		
		Air Conditioner	Reported SEER:	Verified SEER:		
Upgrades were modeled with over a 20% discrepancy (e.g. entire roof modeled to be upgraded, but 25% of the roof was vaulted and could not be insulated; Fenestration (windows, skylights, sliding glass doors) is found to be under 20% of what was modeled; Ducts were not modeled in the correct location, etc.).					Pass	
Total Modeled Upgraded Window Area:	0	Sq. Ft.	Total Verified Upgraded Window Area:	0		Sq. Ft.
Total Modeled Upgraded Roof Area:		Sq. Ft.	Total Verified Upgraded Roof Area:			Sq. Ft.
Total Modeled Upgraded Floor Area:		Sq. Ft.	Total Verified Upgraded Floor Area:			Sq. Ft.
Total Modeled Conditioned Floor Area:	0	Sq. Ft.	Total Verified Conditioned Floor Area:	0		Sq. Ft.
Discrepancy in building square footage negatively affected BPI Building Airflow Standard calculations.					Pass	
Other:					Pass	
Notes:						

Pass with Minor Discrepancies (P0): Contractor's performance meets most technical standards and program requirements but some areas of technical performance need improvement.					
Findings					Pass/ Fail
Installed measures did not meet all technical installation standards, but no serious deficiencies were found and contractor can correct items (e.g. gaps or voids in insulation that can be filled).					Pass
CO flue measurement fell between 26-100 ppm for any appliance and no note of requirements or recommendations per BPI standards was made to the homeowner on the Test Measurement Form. Range top, and oven/broiler (as measured) have different limits (refer to BPI BA Technical Standards).					Pass
Measured CFM50 falls below BAS and mechanical ventilation must be recommended, but no notes of a recommendation to the home owner were made on the Test Measurement Form (TMF).					Pass
Some incorrect data was gathered and submitted in the post-installation application but had no significant impacts on the work completed or effectiveness of the job.					Pass
Building Leakage was included as an improvement on the energy model but ACHn still remained over 0.7.					Pass
Other:					Pass
Notes:					

Pass 1 (P1): Exceptional Work Completed					
Passes All Program Health & Safety Requirements.					Pass
Test-out reporting was verified to be accurate.					Pass
Comprehensive home performance work scope met quality installation standards and high priority items have been installed. All technical standards for installation have been met (BPI Technical Standards, program requirements).					Pass
Installed measures were consistent with program requirements; work not performed was by customer decision.					Pass