

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0518787

Insp Area: 2

Thos Bros: 317A2

Site Address: 4291 WARREN AV SAC

Parcel No: 016-0065-007

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR
NORTHERN AIR MECH
50 GREENBRIER DR
OROVILLE CA 95966

OWNER
BENNIE W JOHNSON REVOCABLE LIVING TRUST
3031 F STREET #203
SACRAMENTO, CA 95816

ARCHITECT

Nature of Work: HVAC CUT-IN ROOF MOUNT GAS PACK 3 1/2 TON

CONSTRUCTION LENDING AGENCY: I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name _____ Lender's Address _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C-20 License Number 732849 Date 11-30-05 Contractor Signature [Signature]

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00);

I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. _____ B & PC for this reason: _____

Date _____ Owner Signature _____

PAID
CITY OF SACRAMENTO
NOV 30 2005

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date _____ Applicant/Agent Signature _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: STATE COMP INS.FUND Policy Number 2380001895 Exp Date 07/01/2006

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 11-30-05 Applicant Signature [Signature]

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

0518787
4791 Warren Av.

CERTIFICATE OF RESIDENTIAL ENERGY EFFICIENCY (Page 1 of 3)

Project Address: 4291 Warren Ave	Contractor Name / License No. Northern Air Mechanical / 732849
Contractor Contact Floyd Patterson	Permit Number 0518787
Contractor Phone (916) 688-1111	Sample Group Number 13326
Contractor Email f.patterson@northernair.com	Certificate Number CC14-1790353906
Contractor Address PO Box 10000	City/State/Zip Elk Grove / CA / 95758
Firm: ACIS	HERS Provider: CalCERTS
Street Address: PO Box 10000	City/State/Zip: Elk Grove / CA / 95758

Copies to: Homeowner, Building Department
This CF-4R has been registered with the CalCERTS® registry in accordance with the Title 24 & Title 20 of the CCR. CalCERTS® is an approved HERS provider of the California Building Commission.

HERS RATER COMPLIANCE STATEMENT
The house was Tested and Sampled. Part of sample was taken, but was not tested.
As the HERS rater provides the test results and verification, the HERS rater must check and verify that the new distribution system is fully ducted and sealed. The CF-4R must be used on every tested building. The HERS rater must not release the CF-4R until a properly installed and sealed duct system has been installed for the sample and tested buildings.

- The installer has provided a copy of the duct installation details.
- New Distribution System: All ductwork must not use flexible ductwork (such as pleurins or platform returns in lieu of ducts).
- New systems where ductwork is not fully sealed, mastic and drawbands are used in combination with cloth backed, rubber gaskets or other approved duct sealant.

MINIMUM REQUIREMENTS FOR LEAKAGE REDUCTION COMPLIANCE CREDIT:

NEW CONSTRUCTION		Measured Values	
1	Duct Presentation: Test results (CFM/line)	N/A	
2	Enter Tested Leakage (CFM/line) (Pre-Test or Post-Test) or (Sealing) or (Sealed)	1400	
3	Pass if Leakage Percentage <= 1% (Line 2 / Line 1)	N/A	N/A
ALTERATIONS: Duct System or HVAC Equipment Change-Out			
4	Enter Tested Leakage (CFM/line) Pre-Test of Existing Duct System Prior to Duct System Alteration	58	
5	Enter Tested Leakage (CFM/line) Post-Test of New Duct System or Altered Duct System for Duct System Alteration	58	
6	Enter Reduction in Leakage (CFM/line) (Line 4 - Line 5)		
7	Enter Tested Leakage (CFM/line) to Existing (Only if Applicable)		
8	Enter New Duct System Leakage Percentage <= 1% (Line 5 / Line 2)		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
TEST OR VERIFICATION STANDARDS FOR ALTERED DUCT SYSTEM and/or HVAC EQUIPMENT CHANGE-OUTS			
9	Pass if Leakage Percentage <= 1% (Line 5 / Line 2)	4.1%	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Existing Duct System <= 1% [100 x (Line 4 / Line 2)]:		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage <= 1% [100 x (Line 4 - Line 5)] and Verification by Pressure Test and Visual Inspection		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
12	Pass if Sealing of all penetrations into the duct system by Pressure Test and Visual Inspection		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Pass/Fail of Lines #9 through #12 pass			<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 1 of 3) CF-1R

Project Title: Robert Alvarez
 Project Address: 4891 Warren Ave. SAC 95822
 Documentation Author: Doug McClure Telephone: (916) 448-5475
 Compliance Method (Package or Computer): Prescriptive Climate Zone: Zone 10

Date: 12-02-05

Building Permit #
Plan Check / Date
Field Check / Date
Contracting Agency/Utility

GENERAL INFORMATION

Total Conditioned Floor Area: _____ ft² Average Ceiling Height: _____ ft
 Conditioned Slab Floor Area: _____ ft²
 Building Type: _____ Single Family _____ Addition
 (check one or more) _____ Multi-Family _____ Existing-Plus-Addition
 Front Orientation: _____ North / South / East / West / All Orientations
 (specify front orientation in degrees from True North and circle one)
 Number of Stories: _____
 Number of Dwelling Units: _____
 Floor Construction Type: _____ Slab/Raised Floor (circle one or both)

RADIANT BARRIER (required in climate zones 2, 4, 5, 12) Required for this submittal: yes no

BUILDING ENVELOPE INSULATION

Component Type	Frame Type wd = wood sl = steel	Cavity Insulation R-Value	Shedding Insulation R-Value	Total R- Value ¹	Assembly U-Factor	Location/Comments (stair, garage, typical, etc.)
Wall						
Wall						
Roof						
Roof						
Floor						
Floor						
Slab Edge						

¹ For non-wood-framed walls, Total R-Value and Assembly U-Factor are not required for a wood-framed wall that meets cavity R-value insulation requirements for the Prescriptive Package.

FENESTRATION

Penetration #/Type/Fac.	Orient- ation	Area (ft ²)	Penetration U-Factor	Penetration SHGC	Shading Devices	
					Exterior Shading Dev.	Overhangs/ Fins
Front						
Front						
Left						
Left						
Rear						
Rear						
Right						
Right						
Skylight						
Skylight						

Robert Becerra
Project Title

12/02/2005
Date

HVAC SYSTEMS

Note: Input hydronic or combined hydronic data under Water Heating Systems, except Design Heating Load.

Heating Equipment Type (furnace, heat pump, etc.)	Minimum Efficiency (AFUE or HSPF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Heat Pump Configuration (split or package)
Gas/elct.	80%	ducted/ attic	R-4.2	setback	slit
Cooling Equipment Type (air conditioner, heat pump, evap. cooling)	Minimum Efficiency (SEER)	Duct Location (attic, etc.)	Duct R-Value	Thermostat Type	Heat Pump Configuration (split or package)
same	10 seer	same	same	same	same

SEALED DUCTS and TXVs (or Alternative Measures)

- Sealed Ducts (all climate zones)
(Installer testing and certification and HERS rater field verification required)
- TXVs, readily accessible (climate zones 2 and 8-15 only)
(Installer testing and certification and HERS Rater or field verification required)
- Refrigerant Charge/Air Flow (climate zones 2 and 8-15 only)
(Installer testing and certification and HERS Rater or field verification required)

OR

- Alternative to Sealed Ducts and TXVs (see Package C or D Alternative Package Features for Project Climate Zone)

Climate Zone	Window SHGC	Window U-Factor	SEER	Heating
MVA				

WATER HEATING SYSTEMS

Water Heater Type	Distribution Type	Number in System	Rated ¹ Input (kW or Btu/hr)	Tank Capacity (gallons)	Energy ¹ Factor or Recovery Efficiency	Standby ¹ Loss (%)	External Tank Insulation R-Value
MVA							

1. For small gas storage water heaters (rated inputs of less than or equal to 75,000 Btu/hr), electric resistance, and heat pump water heaters, list Energy Factor. For large gas storage water heaters (rated input of greater than 75,000 Btu/hr) list Rated Input, Recovery Efficiency and Standby Loss. For instantaneous gas water heaters, list rated input and recovery efficiency.

SPECIAL FEATURES (add extra sheets if necessary) Package C and D: TXVs, Sealed Ducts, Radiant Barriers (see installation requirements for radiant barriers in Section 8.13 of the 2001 Residential Manual). Package C: thermal mass (thermal mass type, covering, thickness, and description).

Nov 03 05 12:40p

RCIS

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P.3

CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 3 of 3) CB-1R

Robert Barera 12-02-05

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. When this certificate of compliance is submitted for a single building plan to be built in multiple transactions, any shading feature that is verified is indicated in the Special Provisions section. The undersigned certifies that compliance using duct sealing and EXV's requires transfer testing and certification and field verification by an approved EERS rater.

Designer or Owner (per Uniform and Reference Code)

Name: Robert Barera
Title: owner
Address: 11891 Winwood Ave
Sec 95822
Telephone: (916) 480-1561

[Signature] 12/02/05

Documentation Author

Name: Donna McClure
Address: Northcoast Mechanical
30 Greenfield Dr.
Orville Ca 95964
Telephone: (916) 449-5475

[Signature] 12-02-05

Enforcement Agency

Name: _____

Title: _____

Agency: _____

Telephone: _____

Signature: _____ Date: _____

INSTALLATION CERTIFICATE

(Page 1 of 13)

CF-6R

429 1/2 Warren Ave, Sacramento, Ca. 95822

0518787

Site Address

Permit Number

An installation certificate is required to be posted at the building site or made available for all appropriate inspections. (The information provided on this form is required; however, use of this form to provide the information is optional.) After completion of final inspection, a copy must be provided to the building department (upon request) and the building owner at occupancy, per Section 10-103(b).

HVAC SYSTEMS

Heating Equipment

Equip. Type (plg. heat source)	CBC Certified Mfr Name and Model Number	# of Identical Systems	Efficiency (AFUE, etc.) to CF-1R value	Duct Location (attic, etc.)	Duct or Piping R-value	Heating Load (Btu/hr)	Heating Capacity (Btu/hr)
GAS/ELECT. PACKAGE	GOODMAN GPC10420701	0	80%	ATTIC	R-4, 2		70K Btu/hr.

Cooling Equipment

Equip. Type (plg. heat source)	CBC Certified Compressor Unit Mfr Name and Model Number	# of Identical Systems	Efficiency (SEER, etc.) to CF-1R value	Duct Location (attic, etc.)	Duct R-value	Cooling Load (Btu/hr)	Cooling Capacity (Btu/hr)
SAME	SAME	0	10 SEER	SAME	SAME		42K Btu/hr.

1. \geq costs greater than or equal to.

I, the undersigned, verify that equipment listed above is: 1) the actual equipment installed; 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the Energy Efficiency Standards for residential buildings; and 3) equipment that meets or exceeds the appropriate requirements for manufactured devices (from the Appliance Efficiency Regulations or Part 6), where applicable.

Darryl M. Chinn 12/29/05
Signature, Date

NorthernAir Mechanical

Installing Subcontractor (Co. Name)

OR General Contractor (Co. Name) OR Owner

WATER HEATING SYSTEMS

Heater Type	CBC Certified Mfr Name & Model Number	Distribution Type (SM, Point-of-Use)	If Recirculation, Control Type	# of Identical Systems	Rated Input (kW or Btu/hr)	Tank Volume (gallons)	Efficiency (EF, UEF)	Standby Loss (Btu/hr)	Estimated Installation R-value

- 2. For small gas storage (rated input of less than or equal to 75,000 Btu/hr), electric resistance and heat pump water heaters, list Energy Factor. For large gas storage water heaters (rated input of greater than 75,000 Btu/hr), list Recovery Efficiency, Standby Loss and Rated Input.
- 3. R-12 external insulation is mandatory for storage water heaters with a tank volume of less than 0.58.

Faucets & Shower Heads:

All faucets and showerheads installed are certified to the Commission, pursuant to Title 24, Part 6, Section 111.

I, the undersigned, verify that equipment listed above by signature is: 1) the actual equipment installed; 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the Energy Efficiency Standards for residential buildings; and 3) equipment that meets or exceeds the appropriate requirements for manufactured devices (from the Appliance Efficiency Regulations or Part 6), where applicable.

Signature, Date

Installing Subcontractor (Co. Name) OR

General Contractor (Co. Name) OR Owner

COPY TO: Building Department
HERS Provider (if applicable)
Building Owner at Occupancy

429 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

FENESTRATION/GLAZING:

Manufacturer/Brand Name (GROUP LIKE PRODUCTS)	Product U-Factor ¹ (≤ CF-1R value) ²	Product SHGC ¹ (≤ CF-1R value) ²	# of Panels	Total Quantity of Lite Product (Optional)	Square Feet	Exterior Shading Device or Overhang	Comments/Location/Special Features
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							

N/A

¹ Manufactured fenestration products use the values from the product label. Field fabricated fenestration products use the default values from Section 116 of the Energy Efficiency Standards.

² Installed U-Factor must be less than or equal to values from CF-1R. Installed SHGC must be less than or equal to values from CF-1R, or a shading device (exterior or overhang) is installed as specified on the CF-1R. Alternatively, installed weighted average U-Factors for the total fenestration area are less than or equal to values from CF-1R.

I, the undersigned, verify that the fenestration/glazing listed above my signature: 1) is the actual fenestration product installed; 2) is equivalent to or has a lower U-Factor and lower SHGC than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the *Energy Efficiency Standards* for residential buildings; and 3) the product meets or exceeds the appropriate requirements for manufactured devices (from Part 6), where applicable.

Item #s (if applicable)	Signature, Date	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor
		N/A
Item #s (if applicable)	Signature, Date	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor
		N/A
Item #s (if applicable)	Signature, Date	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor
		N/A

COPY TO: Building Department
HERS Provider (if applicable)
Building Owner at Occupancy

INSTALLATION CERTIFICATE

(Page 3 of 13)

CF-6R

4291 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

DUCT LEAKAGE AND DESIGN DIAGNOSTICS

DUCT LEAKAGE REDUCTION

Pressurization Test Results (CFM @ 25 PA)

Test Leakage (CFM) 58 CFM

Fan Flow

If Fan Flow is Calculated as $400 \text{ cfm/ton} \times \text{number of tons}$, or as $21.7 \times \text{Heating Capacity}$ in Thousands of Btu/hr, enter calculated value here 1400 CFM
If fan flow is measured, enter measured value here

Leakage Fraction = $\frac{\text{Test Leakage}}{\text{Measured or Calculated Fan Flow}} = \frac{58}{1400} = 4.1\%$
Pass if leakage fraction ≤ 6.06

Pass Fail

For AEROSOL TYPE SEALANTS ONLY - The following diagnostic testing was completed:
Duct Fan Pressurization at rough-in measured leakage (CFM)

CHECK AFTER FINISHING WALL:

Yes No Pressure pan test or House pressurization test
 Yes No Visual inspection of Duct Connections

Pass Fail

THERMOSTATIC EXPANSION VALVE (TXV)

Yes No Thermostatic Expansion Valve is installed and Access is provided for inspection

Yes is a pass

Pass Fail

DUCT DESIGN

1. Yes No ACCA Manual D Design calculations have been completed, Duct Design is on the plans and duct installation matches plans.

2. Yes No TXV is installed or Fan flow has been verified. If no TXV, verified fan flow matches design from CF-1R.
Measured Fan Flow = _____

Yes for both 1 and 2 is a Pass

Pass Fail

I, the undersigned, verify that the above diagnostic test results and the work I performed associated with the test(s) is in conformance with the requirements for compliance credit. [The builder shall provide the HERS provider a copy of the CF-6R signed by the builder and peers or sub-contractors certifying that diagnostic testing and installation meet the requirements for compliance credit.]

[Signature] 12/20/05

NorthernAir Mechanical

Tests Performed

Signature, Date

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name)

COPY TO:

Building Department
HERS Provider (if applicable)
Building Owner or Occupancy

4294 Warren Ave, Sacramento, Ca. 95822

0518787

Site Address

Permit Number

REFRIGERANT CHARGE AND AIRFLOW MEASUREMENT

Verification for Required Refrigerant Charge and Adequate Airflow for Split System Space Cooling Systems without Thermostatic Expansion Valves

Outdoor Unit Serial #

Outdoor Unit Make

Outdoor Unit Model

Cooling Capacity

Date of Verification

Date of Refrigerant Gauge Calibration (must be checked monthly)

Date of Thermocouple Calibration (must be checked monthly)

N/A

Standard Charge and Airflow Measurement (outdoor air dry-bulb 55 °F and above):

Note: The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.

Measured Temperatures

- Supply (evaporator leaving) air dry-bulb temperature (Tsupply, db)
Return (evaporator entering) air dry-bulb temperature (Treturn, db)
Return (evaporator entering) air wet-bulb temperature (Treturn, wb)
Evaporator saturation temperature (Tevaporator, sat)
Suction line temperature (Tsuction, db)
Condenser (entering) air dry-bulb temperature (Tcondenser, db)

Superheat Charge Method Calculations for Refrigerant Charge

- Actual Superheat = Tsuction, db - Tevaporator, sat
Target Superheat (from Table 1)
Actual Superheat - Target Superheat
(System passes if between -5°F and +5°F)

Temperature Split Method Calculations for Adequate Airflow

- Actual Temperature Split = T return, db - Tsupply, db
Target Temperature Split (from Table 2)
Actual Temperature Split - Target Temperature Split
(System passes if between -3°F and +3°F or, upon remeasurement, if between +3°F and -25°F)

Standard Charge and Airflow Measurement Summary:

System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated

System Passes yes or no

4292 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

Alternate Charge and Airflow Measurement (outdoor air dry-bulb below 55 °F):

Weigh-In Charging Method for Refrigerant Charge

Actual liquid line length: _____ ft.

Manufacturers Standard liquid line length: _____ ft.

Difference (Actual - Standard): _____ ft.

Manufacturers correction (ounces per foot) _____ x difference in length = _____ ounces
(+ = add) (- = remove)

N/A

Measured Airflow Method for Adequate Airflow

Airflow criterion: Cooling Capacity _____ X 0.032 = _____ CFM

Measured Airflow is _____ CFM and passes since it is greater than the criterion.

Alternate Charge and Airflow Measurement Summary:

System charge shall be corrected and it shall also pass measured adequate airflow criterion.

System Passes _____ yes or _____ no

INSTALLATION CERTIFICATE

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CF-6R

4298 Warren Ave., Sacramento, Ca. 95822

0518282

Site Address

Permit Number

Table K-1: Target Superheat (Suction Line Temperature - Evaporator Saturation Temperature)

Condenser Air Dry-Bulb Temperature (°F)		Return Air Wet-Bulb Temperature (°F)																								
(T _{cond})	(T _{return})	(T _{cond})	(T _{return})																							
50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
8.8	10.1	11.5	12.8	14.2	15.6	17.1	18.5	20.0	21.5	22.1	24.6	26.2	27.8	29.4	31.0	32.4	33.8	35.1	36.4	37.7	39.0	40.2	41.5	42.7	43.9	45.0
8.6	9.9	11.2	12.6	14.0	15.4	16.8	18.2	19.7	21.2	22.7	24.2	25.7	27.3	28.9	30.5	31.8	33.2	34.6	35.9	37.2	38.5	39.7	41.0	42.2	43.4	44.6
8.3	9.6	11.0	12.3	13.7	15.1	16.5	17.9	19.4	20.8	22.3	23.8	25.3	26.8	28.3	29.8	31.3	32.6	34.0	35.3	36.7	38.0	39.2	40.5	41.7	43.0	44.2
7.9	9.3	10.6	12.0	13.4	14.8	16.2	17.6	19.0	20.4	21.9	23.3	24.8	26.3	27.8	29.3	30.7	32.1	33.5	34.8	36.1	37.5	38.7	40.0	41.3	42.5	43.7
7.5	8.9	10.2	11.6	13.0	14.4	15.8	17.2	18.6	20.0	21.4	22.9	24.3	25.7	27.2	28.7	30.1	31.5	32.9	34.3	35.6	36.9	38.3	39.5	40.8	42.1	43.3
7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	26.6	28.1	29.6	31.0	32.4	33.7	35.1	36.4	37.8	39.1	40.4	41.6	42.9
6.1	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7	19.1	20.5	21.9	23.3	24.7	26.1	27.5	28.9	30.4	31.8	33.2	34.6	35.9	37.3	38.6	39.9	41.2	42.4
6.0	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.2	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.9	31.3	32.7	34.1	35.4	36.8	38.1	39.4	40.7	42.0
6.3	7.4	8.8	10.2	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.4	22.8	24.2	25.5	27.											

INSTALLATION CERTIFICATE

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CF-6R

4222 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

Table K-1: Target Superheat (Suction Line Temperature - Evaporator Saturation Temperature) (continued)

Condenser Air Dry-Bulb Temperature (°F)	Return Air Wet-Bulb Temperature (°F)																											
	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
91																												
92														6.1	8.1	10.3	12.2	14.1	15.9	17.8	19.7	21.5	23.4	25.2	27.1	28.9	30.8	
93														5.4	7.5	9.8	11.7	13.5	15.4	17.3	19.2	21.1	22.9	24.8	26.7	28.5	30.4	
94															6.8	9.2	11.1	13.0	14.9	16.8	18.7	20.6	22.5	24.4	26.3	28.2	30.1	
95															6.2	8.7	10.6	12.5	14.4	16.3	18.2	20.2	22.1	24.0	25.9	27.8	29.7	
96															5.6	8.1	10.0	12.0	13.9	15.8	17.8	19.7	21.6	23.6	25.5	27.4	29.4	
97																7.5	9.5	11.4	13.4	15.3	17.3	19.2	21.2	23.2	25.1	27.1	29.0	
98																7.0	8.9	10.9	12.9	14.9	16.8	18.8	20.8	22.7	24.7	26.7	28.7	
99																6.4	8.4	10.4	12.4	14.4	16.4	18.3	20.3	22.3	24.3	26.3	28.3	
100																5.8	7.9	9.9	11.9	13.9	15.9	17.9	19.9	21.9	24.0	26.0	28.0	
101																5.3	7.3	9.3	11.4	13.4	15.4	17.5	19.5	21.5	23.6	25.6	27.7	
102																	6.8	8.8	10.9	12.9	15.0	17.0	19.1	21.2	23.2	25.3	27.3	
103																	6.2	8.3	10.4	12.4	14.5	16.6	18.6	20.7	22.8	24.9	27.0	
104																	5.7	7.8	9.9	11.9	14.0	16.1	18.2	20.3	22.4	24.5	26.7	
105																	5.2	7.2	9.3	11.5	13.6	15.7	17.8	19.9	22.1	24.2	26.3	
106																	6.7	8.8	11.0	13.1	15.2	17.4	19.5	21.7	23.8	26.0		
107																		8.3	10.5	12.6	14.8	17.0	19.1	21.3	23.5	25.7		
108																		7.9	10.0	12.2	14.4	16.6	18.7	21.0	23.2	25.4		
109																		7.4	9.5	11.7	13.9	16.1	18.4	20.6	22.8	25.1		
110																		6.9	9.1	11.3	13.5	15.7	18.0	20.2	22.5	24.7		
111																		6.4	8.6	10.8	13.1	15.3	17.6	19.9	22.1	24.4		
112																			5.9	8.1	10.4	12.6	14.9	17.2	19.5	21.8	24.1	
113																			5.4	7.6	9.9	12.2	14.5	16.8	19.1	21.5	23.8	
114																				7.2	9.5	11.8	14.1	16.4	18.8	21.1	23.5	
115																				6.7	9.0	11.4	13.7	16.1	18.4	20.8	23.2	
																				6.2	8.6	10.9	13.3	15.7	18.1	20.5	22.9	

INSTALLATION CERTIFICATE

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CF-6R

4298 Warren Ave. Sacramento, Ca. 95822

0518287

Site Address

Permit Number

Table K-2: Target Temperature Split (Return Dry-Bulb - Supply Dry-Bulb)

	Return Air Wet-Bulb (°F) (T _{return,wb})																									
50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
20.9	20.7	20.6	20.4	20.1	19.9	19.5	19.1	18.7	18.2	17.7	17.2	16.5	15.9	15.2	14.4	13.7	12.8	11.9	11.0	10.0	9.0	7.9	6.8	5.7	4.5	3.2
21.4	21.3	21.1	20.9	20.7	20.4	20.1	19.7	19.3	18.8	18.3	17.7	17.1	16.4	15.7	15.0	14.2	13.4	12.5	11.5	10.6	9.5	8.5	7.4	6.2	5.0	3.8
21.9	21.8	21.7	21.5	21.2	20.9	20.6	20.2	19.8	19.3	18.8	18.2	17.6	17.0	16.3	15.5	14.7	13.9	13.0	12.1	11.1	10.1	9.0	7.9	6.8	5.6	4.3
22.5	22.4	22.2	22.0	21.8	21.5	21.2	20.8	20.3	19.9	19.4	18.8	18.2	17.5	16.8	16.1	15.3	14.4	13.6	12.6	11.7	10.6	9.6	8.5	7.3	6.1	4.8
23.0	22.9	22.8	22.6	22.3	22.0	21.7	21.3	20.9	20.4	19.9	19.3	18.7	18.1	17.4	16.6	15.8	15.0	14.1	13.2	12.2	11.2	10.1	9.0	7.8	6.6	5.4
23.6	23.5	23.3	23.1	22.9	22.6	22.2	21.9	21.4	21.0	20.4	19.9	19.3	18.6	17.9	17.2	16.4	15.5	14.7	13.7	12.7	11.7	10.7	9.5	8.4	7.2	5.9
24.1	24.0	23.9	23.7	23.4	23.1	22.8	22.4	22.0	21.5	21.0	20.4	19.8	19.2	18.5	17.7	16.9	16.1	15.2	14.3	13.3	12.3	11.2	10.1	8.9	7.7	6.5
-	24.6	24.4	24.2	24.0	23.7	23.3	22.9	22.5	22.0	21.5	21.0	20.4	19.7	19.0	18.3	17.5	16.6	15.7	14.8	13.8	12.8	11.7	10.6	9.5	8.3	7.0
-	-	-	24.7	24.5	24.2	23.9	23.5	23.1	22.6	22.1	21.5	20.9	20.2	19.5	18.8	18.0	17.2	16.3	15.4	14.4	13.4	12.3	11.2	10.0	8.8	7.6
-	-	-	-	-	24.8	24.4	24.0	23.6	23.1	22.6	22.1	21.4	20.8	20.1	19.3	18.5	17.7	16.8	15.9	14.9	13.9	12.8	11.7	10.6	9.4	8.1
-	-	-	-	-	-	25.0	24.6	24.2	23.7	23.2	22.6	22.0	21.3	20.6	19.9	19.1	18.3	17.4	16.4	15.5	14.4	13.4	12.3	11.1	9.9	8.7
-	-	-	-	-	-	-	25.1	24.7	24.2	23.7	23.1	22.5	21.9	21.2	20.4	19.6	18.8	17.9	17.0	16.0	15.0	13.9	12.8	11.7	10.4	9.2
-	-	-	-	-	-	-	-	25.2	24.8	24.2	23.7	23.1	22.4	21.7	21.0	20.2	19.3	18.5	17.5	16.6	15.5	14.5	13.4	12.2	11.0	9.7
-	-	-	-	-	-	-	-	-	25.3	24.8	24.2	23.6	23.0	22.3	21.5	20.7	19.9	19.0	18.1	17.1	16.1	15.0	13.9	12.7	11.5	10.3
-	-	-	-	-	-	-	-	-	25.9	25.3	24.8	24.2	23.5	22.8	22.1	21.3	20.4	19.5	18.6	17.6	16.6	15.6	14.4	13.3	12.1	10.8

INSTALLATION CERTIFICATE

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CF-6R

429 1/2 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

DUCT LOCATION AND AREA REDUCTION DIAGNOSTICS

DUCT IN CONDITIONED SPACE

Yes No Duct in conditioned space or area matches CF-1R

N/A

Yes is a Pass Pass Fail

REDUCED DUCT SURFACE AREA

Measured duct exterior surface area in the following unconditioned duct locations (square feet):

Attics

Crawlspace

Basements

Other (e.g., garages, etc.)

Yes No Duct surface area matches CF-1R?

Yes is a Pass Pass Fail

I, the undersigned, verify that the duct surface area and duct location measured for duct surface area reductions and duct location improvements beyond those covered by the plans are the same as those on the plans. [The builder shall provide the HERS provider a copy of the CF-6R signed by the undersigned or sub-contractor certifying that diagnostic testing and installation meet the requirements for compliance.]

N/A
[Signature]
[Date]

Tests Performed

Signature, Date

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name)

COPY TO:

Building Department
HERS Provider (if applicable)
Building Owner at Occupancy

INSTALLATION CERTIFICATE

(Page 10 of 13)

CF-6R

429E Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

BUILDING ENVELOPE LEAKAGE DIAGNOSTICS

ENVELOPE SEALING INFILTRATION REDUCTION

Diagnostic Testing Results

Building Envelope Leakage (CFM @ 50 Pa) as measured by Rater

- 1. Yes No Is measured envelope leakage less than or equal to the required level from CF-1R?
- 2. Yes No Is Mechanical Ventilation shown as required on the CF-1R?
- 2a. Yes No If Mechanical Ventilation is required on the CF-1R (Yes in line 2), has it been installed?
- 2b. Yes No Check this box yes if mechanical ventilation is required (Yes in line 2) and ventilation fan watts are no greater than shown on CF-1R. Measured Watts = _____
- 3. Yes No Check this box yes if measured building infiltration (CFM @ 50 Pa) is greater than the CFM @ 50 value shown for an SLA of 1.5 on CF-1R (If this box is checked, mechanical ventilation is required.)
- 4. Yes No Check this box yes if measured building infiltration (CFM @ 50 Pa) is less than the CFM @ 50 value shown for an SLA of 1.5 on CF-1R, mechanical ventilation is installed and house pressure is greater than minus 1 Pa with all exhaust fans operating.

Pass if:

- d. Yes in line 1 and line 3, or
- e. Yes in line 1 and line 2, 2a and 2b, or
- f. Yes in line 1 and Yes in line 4.

Pass Fail

Otherwise fail.

I, the undersigned, verify that the building envelope leakage meets the requirements claimed for building leakage reduction below default assumptions as used for compliance on the CF-1R. This is to certify that the above diagnostic test results and the work I performed associated with the test(s) is in conformance with the requirements for compliance credit. [The builder shall provide the HERS provider a copy of the CF-6R signed by the builder, employees or sub-contractors certifying that diagnostic testing and installation met the requirements for compliance credit.]

Test Performed _____ Signature *Darryl M. Chumley* Date _____ NorthernAir Mechanical
 Testing Subcontractor (Ca. Name) OR
 General Contractor (Ca. Name)

COPY TO: Building Department
 HERS Provider (if applicable)
 Building Owner at Occupancy

4291 Warren Ave. Sacramento, Ca. 95822

0518787

Site Address

Permit Number

The following is an explanation of many of the input values required on this form:

HVAC SYSTEMS

Heating Equipment Type must be one of the following:

Furnace:	Gas (including Liquefied Petroleum Gases) or oil-fired central furnace & space heater
Boiler:	Gas or oil-fired boiler
PckgHeatPump:	Packaged central heat pump
SplitHeatPump:	Split central heat pump
RoomHeatPump:	Room heat pump
LgPkgHeatPump:	Large packaged heat pump (≥ 65,000 Btu/hr output)
Electric:	Electric resistance heating (fixed HSPF = 3.413); radiant electric resistance (fixed HSPF = 3.55)
CombinedHydro:	Reference water heater under water heating systems below

CEC Certified Manufacturer Name & Model Number from applicable Commission approved appliance directory.

of Identical Systems is for those systems with the same efficiency, duct location, duct R-value and capacity.

Efficiency from applicable Commission certified appliance directory.

Duct (or Piping) Location is attic, crawl space, CVC crawl space, conditioned space, unconditioned space or none.

Duct (or Piping) R-Value from Directory of Certified Insulation Materials and/or manufacturer's data.

Heating/Cooling Load refer to Commission approved load calculation procedure.

Heating/Cooling Capacity from the applicable Commission certified appliance directory. Note: location elevations over 2,000 ft above sea level require a derating of output capacity (refer to manufacturer's literature).

Cooling Equipment Type must be one of the following:

SplitAirCond:	Split system air conditioner
PckgAirCond:	Packaged air conditioner
Split Heat Pump:	Split system heat pump
PckgHeatPump:	Packaged heat pump
RoomHeatPump:	Room heat pump
LgPkgHeatPump:	Large packaged heat pump (≥ 65,000 Btu/hr output). Substitute EER for SEER when SEER is not available
RoomAirCond:	Room air conditioner. Minimum SEER varies*
LgPkgAirCond:	Large packaged air conditioner (≥ 65,000 Btu/hr output). Substitute EER for SEER when SEER is not available
EvapDirect:	Direct evaporative cooling system. For compliance calculation purposes, fixed values: SEER = 11.0; duct location = attic; duct insulation R-value = 4.2
EvapIndirect:	Indirect evaporative cooling system. For compliance calculation purposes, fixed values: SEER = 13.0; duct location = attic; duct insulation R-value = 4.2

*Refer to Energy Commission publication *Appliance Efficiency Regulations*, P400-92-029

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The following is an explanation of many of the input values required on this form:

WATER HEATING SYSTEMS

Distribution Systems Refer to *Residential Manual* for more details:

Standard:	Standard - Supply pressure based system, no pumps
Pipe Insulation:	Pipe Insulation on all 3/4-inch pipes
POU/HWR:	Point of Use/Hot Water Recovery System
Recirc/NoControl:	Recirculation loop with no controls
Recirc/Timer:	Recirculation loop with a timer
Recirc/Temp:	Recirculation loop with temperature control
Recirc/Time+Temp:	Recirculation loop with a timer and temperature control
Recirc/Demand:	Recirculation loop with demand control

Water Heater Type

	Information Needed			
	Energy Factor	Recovery Efficiency	Standby Loss	Rated Input
Storage Gas, Oil or Electric	Yes	No	No	No
Heat Pump	Yes	No	No	No
Instantaneous Gas	No	Yes	No	No
Instantaneous Electric	Yes	No	No	No
Large Storage Gas	No	Yes	Yes	Yes
Indirect Gas (Boiler)	No	Yes (AFUE)	No	Yes

FENESTRATION/GLAZING

Fenestration:	Windows, sliding glass doors, French doors, skylights, garden windows, and any door with more than one square foot of glass
Operator Type:	Slider, hinged, fixed
U-Factor:	Installed U-Factor must be less than or equal to value from CF-1R OR Installed weighted average U-Factor for the total fenestration area is less than or equal to value from CF-1R
SHGC:	Installed SHGC must be less than or equal to value from CF-1R OR Installed weighted SHGC for the total fenestration area is less than or equal to value from CF-1R OR An interior shading device, overhang, or exterior shading device is installed consistent with the CF-1R
Shading Device:	Include when the building complied using an <i>exterior</i> shading device: woven sunsreen, louvered sunsreen, low sun angle sunsreen, roll-down awning, roll-down blinds or slats (do not list bug screen), or an overhang (include depth in feet)

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The following is an explanation of many of the input values required on the Diagnostic portion of this form (page 3 of 6):

TYPE OF CREDIT

Refer to *Residential Manual* Chapters 4 and 5 for more details:

Reduced Duct Surface Area:	Calculated as the outside area of the duct. Areas must be measured and verified by a HERS rater.
Improved Duct Location:	Supply duct located in other than attic, as verified by location of registers (does not require HERS rater verification).
Catastrophic Leakage:	Pressure pan test readings must be less than 1.5 Pascal at a house pressure of 25 Pascal.
TXV:	Access cover required to facilitate verification.
Infiltration Reduction:	Infiltration is measured without mechanical ventilation operating. Mechanical ventilation is required for very tight house construction when credits for infiltration reduction using diagnostic testing are being used for achieving compliance. These very tight houses are defined as those with SLA of less than 1.5. The compliance documentation (CF-1R) will contain the measured CFM target value from a blower door test at 50 Pascal pressure difference that represents this SLA of 1.5. Mechanical ventilation is also required if the builder chooses to design the building to use mechanical ventilation and claims a credit for infiltration below an SLA of 3.0. The compliance documentation (CF-1R) will contain the measured CFM target value that represents this 3.0 SLA. If the builder claims credit in a design for infiltration reduction that is at an SLA of 3.0 or higher, and the actual measured SLA is 1.5 or greater, then mechanical ventilation is not required. If the SLA in this case were below 1.5, then mitigation (such as mechanical ventilation) would be required.