GENERAL INFORMATION					
01	**Project Name**	Renner Residence			
02	**Calculation Description**	Title 24 Analysis			
03	**Project Location**	Renner Residence			
04	**City**	Mountain Ranch	05	**Standards Version**	Compliance 2017
06	**Zip Code**	95246	07	**Compliance Manager Version**	BEMCmpMgr 2016.3.1 (1149)
08	**Climate Zone**	CZ12	09	**Software Version**	CBECC-Res 2016.3.1 (1019)
10	**Building Type**	Single Family	11	**Front Orientation (deg/Cardinal)**	270
12	**Project Scope**	Newly Constructed	13	**Number of Dwelling Units**	1
14	**Total Cond. Floor Area (ft^2)**	1170	15	**Number of Zones**	1
16	**Slab Area (ft^2)**	1170	17	**Number of Stories**	1
18	**Addition Cond. Floor Area(ft^2)**	n/a	19	**Natural Gas Available**	Yes
20	**Addition Slab Area (ft^2)**	n/a	21	**Glazing Percentage (%)**	15.2%

COMPLIANCE RESULTS	
01	**Building Complies with Computer Performance**
02	**This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.**
03	**This building incorporates one or more Special Features shown below**

ENERGY USE SUMMARY

04	05	06	07	08
Energy Use ($kTDV/ft^2$-yr)	**Standard Design**	**Proposed Design**	**Compliance Margin**	**Percent Improvement**
Space Heating	22.96	19.90	3.06	13.3%
Space Cooling	14.69	12.47	2.22	15.1%
IAQ Ventilation	1.40	1.40	0.00	0.0%
Water Heating	12.86	11.36	1.50	11.7%
Photovoltaic Offset	----	0.00	0.00	----
Compliance Energy Total	**51.91**	**45.13**	**6.78**	**13.1%**

REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Whole house fan**
- **Non-standard roof reflectance**
- **Window overhangs and/or fins**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Verified Refrigerant Charge**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft^2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Renner Residence	1170	1	2	1	2	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
1st Floor	Conditioned	HVAC1	1170	8	DHW Sys 1	n/a

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window & Door Area (ft^2)	Tilt (deg)
Front 2x6 Wall	1st Floor	R-21 w/1 Foam Wall + R-4	270	Front	360	0	90
Left 2x6 Wall	1st Floor	R-21 w/1 Foam Wall + R-4	0	Left	208	38	90
Back 2x6 Wall	1st Floor	R-21 w/1 Foam Wall + R-4	90	Back	360	89.6667	90
Right 2x6 Wall	1st Floor	R-21 w/1 Foam Wall + R-4	180	Right	16	0	90
Garage Wall	1st Floor>>Garage	R-21 Wall - Interior	n/a	n/a	208	0	n/a
Roof	1st Floor	R-38 Attic Roof	n/a	n/a	1120	n/a	n/a
FAU Platform	1st Floor	R-19 Attic Roof	n/a	n/a	50	n/a	n/a
Roof-2	1st Floor	R-38 Attic Roof	n/a	n/a	1120	n/a	n/a
Front Wall - Garage	Garage	R-0 Wall	270	Front	192	0	90
Back Wall - Garage	Garage	R-0 Wall	90	Back	192	0	90
Right Wall - Garage	Garage	R-0 Wall	180	Right	208	0	90
Roof - Garage	Garage	R-0 Attic Roof	n/a	n/a	624	n/a	n/a

OPAQUE SURFACES – Cathedral Ceilings

01	02	03	04	05	06	07	08	09	10
Name	Zone	Type	Orientation	Area (ft^2)	Skylight Area (ft2)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof
Cathedral Ceiling	1st Floor	R-38 Roof Cathedral	Front	51	50.4	4	0.17	0.83	No

ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic House	Attic Roof House	Ventilated	4	0.17	0.83	Yes	No
Attic Garage	Attic Roof Garage	Ventilated	4	0.17	0.83	No	No
Attic House-2	Attic Roof House 2	Ventilated	4	0.17	0.83	Yes	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
1-3050 Oper	Window	Left 2x6 Wall (Left-0)	3.0	5.0	1	15.0	0.30	0.30	Insect Screen (default)
1-3050 Oper 2	Window	Left 2x6 Wall (Left-0)	3.0	5.0	1	15.0	0.30	0.30	Insect Screen (default)
1-2040 Oper	Window	Left 2x6 Wall (Left-0)	2.0	4.0	1	8.0	0.30	0.30	Insect Screen (default)
1-5040 Oper	Window	Back 2x6 Wall (Back-90)	5.0	4.0	1	20.0	0.30	0.30	Insect Screen (default)
1-3010 Oper	Window	Back 2x6 Wall (Back-90)	3.0	1.0	1	3.0	0.30	0.30	Insect Screen (default)
1-10068 SGD	Window	Back 2x6 Wall (Back-90)	10.0	6.7	1	66.7	0.30	0.30	Insect Screen (default)
Skylight 1	Skylight	Cathedral Ceiling (Front-270)			1	2.4	0.30	0.30	
Skylight 2	Skylight	Cathedral Ceiling (Front-270)			1	48.0	0.30	0.30	

OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
	Overhang					Left Fin				Right Fin			
Window	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	Dist L	Bot Up	Depth	Top Up	Dist R	Bot Up
1-3050 Oper	2.15	0.5	0	0	0	0	0	0	0	0	0	0	0
1-3050 Oper 2	2.15	0.5	0	0	0	0	0	0	0	0	0	0	0
1-2040 Oper	2.15	0.5	0	0	0	0	0	0	0	0	0	0	0
1-5040 Oper	6	0.5	0	0	0	0	0	0	0	0	0	0	0
1-3010 Oper	6	0.5	0	0	0	0	0	0	0	0	0	0	0
1-10068 SGD	6	0.5	0	0	0	0	0	0	0	0	0	0	0

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-factor**	**Assembly Layers**
Attic Roof Garage	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4 Top Chrd* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
Attic Roof House	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O.C.	R 18	0.055	• *Under Roof Joists: R-5.0 insul.* • *Cavity / Frame: R-13.0 / 2x4 Top Chrd* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R-0 Attic Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4*
R-38 Attic Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4* • *Over Ceiling Joists: R-28.9 insul.*
R-38 Roof Cathedral	Cathedral Ceilings	Wood Framed Ceiling	2x12 @ 16 in. O.C.	R 38	0.030	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-38 / 2x12* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R-0 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.302	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: Wood Siding/sheathing/decking*
R-21 w/1 Foam Wall + R-4	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 21	0.051	• *Inside Finish: Gypsum Board* • *Sheathing / Insulation: R4 Sheathing* • *Cavity / Frame: R-21 / 2x6* • *Exterior Finish: Synthetic Stucco*
R-21 Wall - Interior	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 21	0.064	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-21 / 2x6* • *Other Side Finish: Gypsum Board*
R-19 Attic Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4* • *Over Ceiling Joists: R-9.9 insul.*
Attic Roof House 2	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O.C.	R 18	0.055	• *Under Roof Joists: R-5.0 insul.* • *Cavity / Frame: R-13.0 / 2x4 Top Chrd* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: 10 PSF (RoofTile)*

SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab-on-Grade	1st Floor	1170	118	None	0.8	No
Slab-on-Grade - Garage	Garage	624	74	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**CFM50**
Not Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06
Name	**System Type**	**Distribution Type**	**Water Heater**	**Number of Heaters**	**Solar Fraction (%)**
DHW Sys 1	DHW	Standard	DHW Heater 1 (1) DHW Heater 1-2 (1)	2	.0%

WATER HEATERS

01	02	03	04	05	06	07	08	09	10	11	12
Name	**Heater Element Type**	**Tank Type**	**Number of Units**	**Tank Volume (gal)**	**Uniform Energy Factor / Energy Factor / Efficiency**	**Input Rating / Pilot / Thermal Efficiency**	**Tank Insulation R-value (Int/Ext)**	**Standby Loss / Recovery Eff**	**First Hour Rating / Flow Rate**	**NEEA Heat Pump Brand / Model / Other**	**Tank Location or Ambient Condition**
DHW Heater 1	Gas	Consumer Instantaneous (UEF)	1	0	0.9 UEF	<= 200 kBtu/hr	R-0/R-0	n/a	3.3 GPM	n/a	n/a
DHW Heater 1-2	Gas	Consumer Instantaneous (UEF)	1	0	0.9 UEF	<= 200 kBtu/hr	R-0/R-0	n/a	3.3 GPM	n/a	n/a

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	**System Type**	**Heating Unit Name**	**Cooling Unit Name**	**Fan Name**	**Distribution Name**
HVAC1	Other Heating and Cooling System	Heating Component 2	Cooling Component 1	HVAC Fan 1	Air Distribution System 1

HVAC - HEATING UNIT TYPES

01	02	03	04
Name	**System Type**	**Number of Units**	**Efficiency**
Heating Component 2	CntrlFurnace	1	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08
			Efficiency				
Name	**System Type**	**Number of Units**	**EER**	**SEER**	**Zonally Controlled**	**Compressor Type**	**HERS Verification**
Cooling Component 1	SplitAirCond	1	12.5	14	Not Zonal	Single Speed	Cooling Component 1-hers-cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	**Verified Airflow**	**Airflow Target**	**Verified EER**	**Verified SEER**	**Verified Refrigerant Charge**
Cooling Component 1-hers-cool	Required	350	Required	Not Required	Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	**Type**	**Duct Leakage**	**Insulation R-value**	**Duct Location**	**Bypass Duct**	**HERS Verification**
Air Distribution System 1	DuctsAttic	Specified Lower Leakage Target	6	Attic	None	Air Distribution System 1-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	**Duct Leakage Verification**	**Duct Leakage Target (%)**	**Verified Duct Location**	**Verified Duct Design**	**Buried Ducts**	**Deeply Buried Ducts**	**Low-leakage Air Handler**
Air Distribution System 1-hers-dist	Required	5.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	**Type**	**Fan Power (Watts/CFM)**	**HERS Verification**
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	**02**	**03**
Name	**Verified Fan Watt Draw**	**Required Fan Efficiency (Watts/CFM)**
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	**02**	**03**	**04**	**05**	**06**
Dwelling Unit	**IAQ CFM**	**IAQ Watts/CFM**	**IAQ Fan Type**	**IAQ Recovery Effectiveness(%)**	**HERS Verification**
SFam IAQVentRpt	34	0.25	Default	0	Required

COOLING VENTILATION					
01	**02**	**03**	**04**	**05**	**06**
Name	**Airflow Rate (CFM/ft2)**	**Cooling Vent CFM**	**Cooling Vent Watts/CFM**	**Total Watts**	**Number of Fans**
Cool Vent Fan 1	4.717948717948718	3260	0.17	554	1
Cool Vent Fan 3	4.717948717948718	2260	0.14	316	1

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/HERS Certification Identification (If applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT	
I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance. 2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.	
Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone: