

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 1 Residence 2

Calculation Date/Time: 14:57, Wed, Dec 20, 2017

Calculation Description: Title 24 Analysis

Input File Name: Parcel_1.ribd16x

| GENERAL INFORMATION | | | | |
|---------------------|--|---------------------------|----|---|
| 01 | Project Name | Residence 2 | | |
| 02 | Calculation Description | Title 24 Analysis | | |
| 03 | Project Location | 11 Wilson Avenue Parcel 2 | | |
| 04 | City | Rancho Cucamonga | 05 | Standards Version |
| 06 | Zip Code | 91737 | 07 | Compliance Manager Version |
| 08 | Climate Zone | CZ10 | 09 | Software Version |
| 10 | Building Type | Single Family | 11 | Front Orientation (deg/Cardinal) |
| 12 | Project Scope | Newly Constructed | 13 | Number of Dwelling Units |
| 14 | Total Cond. Floor Area (ft²) | 4758 | 15 | Number of Zones |
| 16 | Slab Area (ft²) | 2558 | 17 | Number of Stories |
| 18 | Addition Cond. Floor Area | n/a | 19 | Natural Gas Available |
| 20 | Addition Slab Area (ft²) | n/a | 21 | Glazing Percentage (%) |

| 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 |

This compliance analysis is valid only for permit applications through October 24, 2017

| ENERGY USE SUMMARY | | | | |
|---------------------------------------|-----------------|-----------------|-------------------|---------------------|
| 04 | 05 | 06 | 07 | 08 |
| Energy Use (KTDV/ft ² -yr) | Standard Design | Proposed Design | Compliance Margin | Percent Improvement |
| Space Heating | 7.96 | 7.11 | 0.85 | 10.7% |
| Space Cooling | 12.68 | 13.44 | -0.76 | -6.0% |
| IAQ Ventilation | 0.82 | 0.82 | 0.00 | 0.0% |
| Water Heating | 4.00 | 3.61 | 0.39 | 9.8% |
| Photovoltaic Offset | ---- | 0.00 | 0.00 | ---- |
| Compliance Energy Total | 25.46 | 24.98 | 0.48 | 1.9% |

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ENERGY DESIGN RATING

Energy Design Rating (EDR) is an alternate way to express the energy performance of a building using a scoring system where 100 represents the energy performance of the Residential Energy Services (RESNET) reference home characterization of the 2006 International Energy Conservation Code (IECC) with California modeling assumptions. A score of zero represents the energy performance of a building that combines high levels of energy efficiency with renewable generation to "zero out" its TDV energy. Because EDR includes consideration of components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics), it is not used to show compliance with Part 6 but may instead be used by local jurisdictions pursuing local ordinances under Title 24, Part 11 (CALGreen).

As a Standard Design building under the 2016 Building Energy Efficiency Standards is significantly more efficient than the baseline EDR building, the EDR of the Standard Design building is provided for Information. Similarly, the EDR score of the Proposed Design is provided separately from the EDR value of installed PV so that the effects of efficiency and renewable energy can both be seen

| EDR of Standard Design | EDR of Proposed Design | EDR Value of Proposed PV | Final EDR of Proposed Design |
|--------------------------|--|--------------------------|------------------------------|
| 34.6 | 34.2 | 0.0 | 34.2 |
| <input type="checkbox"/> | Design meets Tier 1 requirement of 15% or greater code compliance margin (CALGreen A4.203.1.2.1) and QII verification prerequisite. | | |
| <input type="checkbox"/> | Design meets Tier 2 requirement of 30% or greater code compliance margin (CALGreen A4.203.1.2.2) and QII verification prerequisite. | | |
| <input type="checkbox"/> | Design meets Zero Net Energy (ZNE) Design Designation requirement for Single Family in climate zone CZ10 (Riverside) (CALGreen A4.203.1.2.3) including on-site photovoltaic (PV) renewable energy generation sufficient to achieve a Final Energy Design Rating (EDR) of zero or less. The PV System must be verified. | | |

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

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 SEER
 - Fan Efficacy Watts/CFM
- HVAC Distribution System Verifications:**
- Duct Sealing
- Domestic Hot Water System Verifications:**
- -- None --

BUILDING - FEATURES INFORMATION

| 01 | 02 | 03 | 04 | 05 | 06 | 07 |
|-------------------------------|------------------------------|--------------------------|--------------------|-----------------|---------------------------------------|---------------------------------|
| Project Name | Conditioned Floor Area (ft2) | Number of Dwelling Units | Number of Bedrooms | Number of Zones | Number of Ventilation Cooling Systems | Number of Water Heating Systems |
| Joud Construction Residence 2 | 4758 | 1 | 4 | 2 | 2 | 1 |

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| 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 |
| First Floor | Conditioned | New Heating and Air 11 | 2558 | 10 | DHW Sys 1 | |
| Second floor | Conditioned | New Heating and Air 12 | 2200 | 10 | DHW Sys 1 | |

| 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) |
| Rear Wall | First Floor | R-19 Wall w/ R-5 | 90 | Back | 543.8 | 110 | 90 |
| Right Wall | First Floor | R-19 Wall w/ R-5 | 180 | Right | 567.8 | 106 | 90 |
| Left Wall | First Floor | R-19 Wall w/ R-5 | 0 | Left | 749 | 138.58 | 90 |
| Front Wall | First Floor | R-19 Wall w/ R-5 | 270 | Front | 316.6 | 99 | 90 |
| NorthEast Wall | First Floor | R-19 Wall w/ R-5 | 45 | - specify - | 70 | 11.97 | 90 |
| NorthWest Wall | First Floor | R-19 Wall w/ R-5 | 315 | - specify - | 70 | 43.97 | 90 |
| Roof | First Floor | R-38 Roof Attic w/ R-13 | | | 358 | | |
| Rear Wall 2 | Second floor | R-19 Wall w/ R-5 | 90 | Back | 494.5 | 100.72 | 90 |
| Right Wall 2 | Second floor | R-19 Wall w/ R-5 | 180 | Right | 731.3 | 143 | 90 |
| Left Wall 2 | Second floor | R-19 Wall w/ R-5 | 0 | Left | 731.3 | 77.5 | 90 |
| Front Wall 2 | Second floor | R-19 Wall w/ R-5 | 270 | Front | 484.5 | 44 | 90 |
| Roof 2 | Second floor | R-38 Roof Attic w/ R-13 | | | 2200 | | |

| ATTIC | | | | | | | |
|--------------------|------------------------|------------|-----------|------------------|----------------|-----------------|-----------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| Name | Construction | Type | Roof Rise | Roof Reflectance | Roof Emittance | Radiant Barrier | Cool Roof |
| Attic First Floor | Attic RoofFirst Floor | Ventilated | 4 | 0.1 | 0.85 | Yes | No |
| Attic Second floor | Attic RoofSecond floor | Ventilated | 4 | 0.1 | 0.85 | Yes | No |

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

CF1R-PRF-01

Project Name: Residence 2

Calculation Date/Time: 14:57, Wed, Dec 20, 2017

Page 4 of 9

Calculation Description: Title 24 Analysis

Input File Name: _Parcel_1.ribd16x

| 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 |
| Folding Doors | Window | Rear Wall (Back-90) | ---- | ---- | 1 | 110.0 | 0.60 | 0.67 | Insect Screen (default) |
| Window | Window | Right Wall (Right-180) | ---- | ---- | 1 | 10.0 | 0.32 | 0.25 | Insect Screen (default) |
| French Door | Window | Right Wall (Right-180) | ---- | ---- | 1 | 96.0 | 0.35 | 0.27 | Insect Screen (default) |
| Window 2 | Window | Left Wall (Left-0) | ---- | ---- | 1 | 95.9 | 0.32 | 0.25 | Insect Screen (default) |
| French Door 2 | Window | Left Wall (Left-0) | ---- | ---- | 1 | 42.7 | 0.35 | 0.27 | Insect Screen (default) |
| Window 3 | Window | Front Wall (Front-270) | ---- | ---- | 1 | 51.0 | 0.32 | 0.25 | Insect Screen (default) |
| French Door 3 | Window | Front Wall (Front-270) | ---- | ---- | 1 | 48.0 | 0.35 | 0.27 | Insect Screen (default) |
| Window 4 | Window | NorthEast Wall (- specify --45) | ---- | ---- | 1 | 12.0 | 0.32 | 0.25 | Insect Screen (default) |
| Window 5 | Window | NorthWest Wall (- specify --315) | ---- | ---- | 1 | 44.0 | 0.32 | 0.25 | Insect Screen (default) |
| French Door 4 | Window | Rear Wall 2 (Back-90) | ---- | ---- | 1 | 42.7 | 0.35 | 0.27 | Insect Screen (default) |
| Window 6 | Window | Rear Wall 2 (Back-90) | ---- | ---- | 1 | 58.0 | 0.32 | 0.25 | Insect Screen (default) |
| Window 7 | Window | Right Wall 2 (Right-180) | ---- | ---- | 1 | 143.0 | 0.32 | 0.25 | Insect Screen (default) |
| Window 8 | Window | Left Wall 2 (Left-0) | ---- | ---- | 1 | 77.5 | 0.32 | 0.25 | Insect Screen (default) |
| Window 9 | Window | Front Wall 2 (Front-270) | ---- | ---- | 1 | 44.0 | 0.32 | 0.25 | Insect Screen (default) |

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Project Name: Residence 2

Calculation Date/Time: 14:57, Wed, Dec 20, 2017

Calculation Description: Title 24 Analysis

Input File Name

Parcel_1.ribd16x

| OPAQUE SURFACE CONSTRUCTIONS | | | | | | |
|------------------------------|------------------------|---------------------|---|----------------------|-----------------------|---|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 |
| Construction Name | Surface Type | Construction Type | Framing | Total Cavity R-value | Winter Design U-value | Assembly Layers |
| Attic RoofFirst Floor | Attic Roofs | Wood Framed Ceiling | 2x4 Top Chord of Roof Truss @ 24 in. O.C. | none | 0.068 | <ul style="list-style-type: none"> Cavity / Frame: no insul. / 2x4 Top Chrd Roof Deck: Wood Siding/sheathing/decking Above Deck Insulation: R13 Sheathing Roofing: Light Roof (Asphalt Shingle) |
| R-19 Wall w/ R-5 | Exterior Walls | Wood Framed Wall | 2x6 @ 16 in. O.C. | R 19 | 0.050 | <ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: R-19 / 2x6 Sheathing / Insulation: R5 Sheathing Exterior Finish: 3 Coat Stucco |
| R-38 Roof Attic w/ R-13 | Ceilings (below attic) | Wood Framed Ceiling | 2x4 @ 16 in. O.C. | R 38 | 0.025 | <ul style="list-style-type: none"> Inside Finish: Gypsum Board Cavity / Frame: R-9.1 / 2x4 Over Ceiling Joists: R-28.9 insul. |
| Attic RoofSecond floor | Attic Roofs | Wood Framed Ceiling | 2x4 Top Chord of Roof Truss @ 24 in. O.C. | none | 0.068 | <ul style="list-style-type: none"> Cavity / Frame: no insul. / 2x4 Top Chrd Roof Deck: Wood Siding/sheathing/decking Above Deck Insulation: R13 Sheathing Roofing: Light Roof (Asphalt Shingle) |
| R-0 Floor No Crawlspace | Interior Floors | Wood Framed Floor | 2x12 @ 16 in. O.C. | none | 0.196 | <ul style="list-style-type: none"> Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12 Ceiling Below Finish: Gypsum Board |

| 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 | First Floor | 2558 | 0.1 | None | 0.8 | 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 | --- |

| 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 (2) | 2 | .0% |

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| WATER HEATERS | | | | | | | | | | |
|---------------|---------------------|---------------------|-----------------|-------------------|-----------------------------|--------------------|-----------------------------------|-----------------------------|---------------------|------------------------------------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| Name | Heater Element Type | Tank Type | Number of Units | Tank Volume (gal) | Energy Factor or Efficiency | Input Rating/Pilot | Tank Insulation R-value (Int/Ext) | Standby Loss / Recovery Eff | NEEA Heat Pump Type | Tank Location or Ambient Condition |
| DHW Heater 1 | Gas | Small Instantaneous | 2 | 0 | 0.91 EF | 180,000 Btu/hr | R-0 | n/a | 0 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 |
| New Heating and Air 11 | Other Heating and Cooling System | Heating Component 1 | Cooling Component 1 | HVAC Fan 1 | Air Distribution System 1 |
| New Heating and Air 12 | Other Heating and Cooling System | Heating Component 2 | Cooling Component 2 | HVAC Fan 2 | Air Distribution System 2 |

| HVAC - HEATING UNIT TYPES | | | |
|---------------------------|--------------|-----------------|------------|
| 01 | 02 | 03 | 04 |
| Name | System Type | Number of Units | Efficiency |
| Heating Component 1 | CntrlFurnace | 1 | 80 AFUE |
| Heating Component 2 | CntrlFurnace | 1 | 80 AFUE |

| HVAC - COOLING UNIT TYPES | | | | | | | |
|---------------------------|--------------|-----------------|------------|------|--------------------|-----------------|-------------------------------|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| Name | System Type | Number of Units | Efficiency | | Zonally Controlled | Compressor Type | HERS Verification |
| | | | EER | SEER | | | |
| Cooling Component 1 | SplitAirCond | 1 | 13.1 | 16 | Not Zonal | Single Speed | Cooling Component 1-hers-cool |
| Cooling Component 2 | SplitAirCond | 1 | 13.1 | 16 | Not Zonal | Single Speed | Cooling Component 2-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 | Required | Not Required |
| Cooling Component 2-hers-cool | Required | 350 | Required | Required | Not Required |

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| 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 | Sealed and tested | 8 | Attic | None | Air Distribution System 1-hers-dist |
| Air Distribution System 2 | DuctsAttic | Sealed and tested | 8 | Attic | None | Air Distribution System 2-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 | --- |
| Air Distribution System 2-hers-dist | Required | 5.0 | Not Required | Not Required | Not Required | Not 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 2 | Single Speed PSC Furnace Fan | 0.58 | HVAC Fan 2-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 |
| HVAC Fan 2-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 | 85 | 0.25 | Default | 0 | Required |

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

CF1R-PRF-01

Project Name: Residence 2

Calculation Date/Time: 14:57, Wed, Dec 20, 2017

Page 8 of 9

Calculation Description: Title 24 Analysis

Input File Name: Parcel_1.ribd16x

| 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 |
| WH Fan 1 | 1.471206389239176 | 3500 | 0.1 | 350 | 1 |
| WH Fan 2 | 1.471206389239176 | 3500 | 0.1 | 350 | 1 |



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| | |
|--|--|
| DOCUMENTATION AUTHOR'S DECLARATION STATEMENT | |
| 1. I certify that this Certificate of Compliance documentation is accurate and complete. | |
| Documentation Author Name: Navraaj S Kang | Documentation Author Signature: <i>Navraaj S Kang</i> |
| Company: SP Drafting | Signature Date: 2017-12-21 13:07:20 |
| Address: 8316 Red Oak St #202 | CEA/HERS Certification Identification (If applicable): NA |
| City/State/Zip: Rancho Cucamonga, CA 91730 | Phone: 909-257-7547 |
| RESPONSIBLE PERSON'S DECLARATION STATEMENT | |
| I certify the following under penalty of perjury, under the laws of the State of California: | |
| <ol style="list-style-type: none"> 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: 2017-12-21 13:10:46 |
| Address: ; | License: NA |
| City/State/Zip: ; | Phone: ; |

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration

Provider responsibility for the accuracy of the information.

