GENERAL INFORMATION					
01	**Project Name**	1 Story Example Compact Distribution			
02	**Calculation Description**	2100 ft2 CEC Prototype with tile roof			
03	**Project Location**	1516 Ninth St			
04	**City**	Sacramento, CA	05	**Standards Version**	Compliance 2020
06	**Zip Code**	95814	07	**Compliance Manager Version**	BEMCmpMgr 2019.0.11 Alpha (1301)
08	**Climate Zone**	CZ12	09	**Software Version**	CBECC-Res 2019.0.11 Alpha (1068)
10	**Building Type**	Single Family	11	**Front Orientation (deg/Cardinal)**	0
12	**Project Scope**	Newly Constructed	13	**Number of Dwelling Units**	1
14	**Total Cond. Floor Area (ft^2)**	2100	15	**Number of Zones**	1
16	**Slab Area (ft^2)**	2100	17	**Number of Stories**	1
18	**Addition Cond. Floor Area(ft^2)**	n/a	19	**Gas Type**	Natural Gas
20	**Addition Slab Area (ft^2)**	n/a	21	**Glazing Percentage (%)**	18.6%

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

Energy Use ($kTDV/ft^2$-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	23.41	23.75	-0.34	-1.5%
Space Cooling	16.88	10.91	5.97	35.4%
IAQ Ventilation	2.61	2.61	0.00	0.0%
Water Heating	12.05	10.70	1.35	11.2%
Self Utilization Credit	--	0.00	0.00	--
Compliance Total	**54.95**	**47.97**	**6.98**	**12.7%**

ENERGY DESIGN RATING

	Energy Design Ratings		Compliance Margins	
	Efficiency[1] (EDR)	**Total[2] (EDR)**	**Efficiency[1] (EDR)**	**Total[2] (EDR)**
Standard Design	**45.4**	**25.7**		
Proposed Design	42.5	22.4	2.9	3.3

RESULT [3]: COMPLIES

[1]Efficiency measures include improvements like a better building envelope and more efficient equipment
[2]Total EDR includes efficiency, photovoltaics and batteries
[3]Building complies when all efficiency and total margins are greater than or equal to zero

- Standard Design PV Capacity: 2.69 kW

REQUIRED PV SYSTEM - SIMPLIFIED

DC System Size (kWdc)	Module Type	Array Type	CFI	Azimuth (deg)	Tilt Input	Tilt Angle (deg)	Tilt (x in 12)	Inverter Eff. (%)
2.00	**Standard**	**Fixed (open rack)**	☒	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**

ENERGY DESIGN RATING BATTERY INPUTS

The battery model does not currently include energy consumption for cooling the battery during charging in environments above 77°F or to keep the battery from freezing in winter, if outdoors.

		Charging		Discharging	
Control	**Capacity (kWh)**	**Efficiency**	**Rate (kW)**	**Efficiency**	**Rate (kW)**
Basic	**5.00**	**0.95**	**n/a**	**0.95**	**n/a**

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**
- **Cool roof**
- **Insulation below roof deck**
- **Window overhangs and/or fins**
- **PV System: 2 kWdc**
- **Battery System: 5 kWh**

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:
- **High quality insulation installation (QII)**
- **IAQ mechanical ventilation**
- **Whole House Fan Airflow and Fan Efficacy**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified Refrigerant Charge**
- **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 (ft^2)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
1 Story Example Compact Distribution	2100	1	3	1	1	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**
Conditioned	Conditioned	HVAC System 1	2100	9	DHW System	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	Conditioned	R21 R5 Stucco Wall	0	Front	270	146.25	90
Left	Conditioned	R21 R5 Stucco Wall	90	Left	324	72	90
Back	Conditioned	R21 R5 Stucco Wall	180	Back	450	154.02	90
Right	Conditioned	R21 R5 Stucco Wall	270	Right	414	38	90
GarToHouse Front	Conditioned>>Garage	Gar House R21	n/a	n/a	180	20	n/a
GarToHouse Left	Conditioned>>Garage	Gar House R21	n/a	n/a	90	0	n/a
Ceiling (below attic) 1	Conditioned	R38 Ceiling below attic	n/a	n/a	2100	n/a	n/a
Gwall Front	Garage	Garage Wall R-0	0	Front	180	108	90
Gwall Left	Garage	Garage Wall R-0	90	Left	198	0	90
Gwall Right	Garage	Garage Wall R-0	270	Right	108	0	90
Gar Ceiling	Garage	R0 ClgBlwAttic Cons	n/a	n/a	440	n/a	n/a

ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Gar Attic	Tile Roof	Ventilated	5	0.2	0.85	No	No
Attic	Tile R-19 below deck	Ventilated	5	0.2	0.85	No	Yes

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
F-6060	Window	Front (Front-0)	6.0	6.0	1	36.0	0.30	0.23	Insect Screen (default)
F-4050 x3	Window	Front (Front-0)	4.0	5.0	3	60.0	0.30	0.23	Insect Screen (default)
F-1660 x2	Window	Front (Front-0)	1.5	6.0	2	18.0	0.30	0.23	Insect Screen (default)
F-3636	Window	Front (Front-0)	3.5	3.5	1	12.3	0.30	0.23	Insect Screen (default)
L-5040 x2	Window	Left (Left-90)	5.0	4.0	2	40.0	0.30	0.23	Insect Screen (default)
L-4040 x2	Window	Left (Left-90)	4.0	4.0	2	32.0	0.30	0.23	Insect Screen (default)
B1 SGD	Window	Back (Back-180)	6.0	6.7	1	40.0	0.30	0.23	Insect Screen (default)
B-6010	Window	Back (Back-180)	6.0	1.0	1	6.0	0.30	0.23	Insect Screen (default)
B-6040 x3	Window	Back (Back-180)	6.0	4.0	3	72.0	0.30	0.23	Insect Screen (default)
B-6050	Window	Back (Back-180)	6.0	5.0	1	30.0	0.30	0.23	Insect Screen (default)
B-3020	Window	Back (Back-180)	3.0	2.0	1	6.0	0.30	0.23	Insect Screen (default)
R-3030 x2	Window	Right (Right-270)	3.0	3.0	2	18.0	0.30	0.23	Insect Screen (default)
R-4050	Window	Right (Right-270)	4.0	5.0	1	20.0	0.30	0.23	Insect Screen (default)

OPAQUE DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
Front Dr	Front	20.0	0.20
GarToHouse Dr	GarToHouse Front	20.0	0.20
GDoor	Gwall Front	108.0	1.00

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
F-6060	1	1.33	3	10	0	0	0	0	0	0	0	0	0
F-4050 x3	1	1.33	6	6	0	0	0	0	0	0	0	0	0
F-1660 x2	4	1.33	3	3	0	0	0	0	0	0	0	0	0
F-3636	1	1.33	10	10	0	0	0	0	0	0	0	0	0
B1 SGD	6	1.33	4	4	0	0	0	0	0	0	0	0	0
B-6010	1	0	4	4	0	0	0	0	0	0	0	0	0
B-6040 x3	1	1.33	23	23	0	0	0	0	0	0	0	0	0
B-6050	1	1.33	10	10	0	0	0	0	0	0	0	0	0
B-3020	1	1.33	10	10	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**
Garage Wall R-0	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	none	0.347	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x6* • *Exterior Finish: 3 Coat Stucco*
R0 ClgBlwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Gar House R21	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 21	0.075	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-21 / 2x4* • *Other Side Finish: Gypsum Board*
Tile R-19 below deck	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	R 19	0.049	• *Under Roof Joists: R-6.0 insul.* • *Cavity / Frame: R-13.0 / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Tile Gap: present* • *Roofing: 10 PSF (RoofTile)*
Tile Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.400	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Tile Gap: present* • *Roofing: 10 PSF (RoofTile)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Ceiling Joists: R-28.9 insul.*
R21 R5 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 21	0.048	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-21 / 2x6* • *Sheathing / Insulation: R5 Sheathing* • *Exterior Finish: Synthetic Stucco*

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	Conditioned	2100	162	None	0.8	No
Gslab	Garage	440	44	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**
Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08
Name	System Type	Distribution Type	Water Heater	Number of Heaters	Solar Fraction (%)	Shower Drain Water Heat Recovery Efficiency	HERS Verification
DHW System	DHW	Standard	Small Instantaneous (1)	1	n/a	n/a	n/a

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
Small Instantaneous	Gas	Small Instantaneous	1	0	0.82 EF	<= 200 kBtu/hr	R-0/R-0	n/a	n/a	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
HVAC System 1	Other Heating and Cooling System	Furn 80	Split 14 11.7	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03	04
Name	System Type	Number of Units	Efficiency
Furn 80	CntrlFurnace	1	80 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08
Name	System Type	Number of Units	Efficiency EER	Efficiency SEER	Zonally Controlled	Compressor Type	HERS Verification
Split 14 11.7	SplitAirCond	1	11.7	14	Not Zonal	Single Speed	Split 14 11.7-hers-cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 11.7-hers-cool	Required	350	Not 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**
Attic Default	DuctsAttic	Sealed and tested	8	Attic	None	Attic Default-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**
Attic Default-hers-dist	Required	5.0	Not Required	Not Required	Not Required	Not Required	n/a

HVAC - FAN SYSTEMS

01	02	03	04
Name	**Type**	**Fan Power (Watts/CFM)**	**HERS Verification**
HVAC Fan 1	Single Speed PSC Furnace Fan	0.45	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	0.45

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	90	0.25	Default	0	Required

COOLING VENTILATION

01	02	03	04	05	06	07
Name	**Airflow Rate (CFM/ft2)**	**Cooling Vent CFM**	**Cooling Vent Watts/CFM**	**Total Watts**	**Number of Fans**	**HERS Verification**
Whole House Fan	1.5	3150	0.14	441	1	Required

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: