GENERAL INFORMATION					
01	Project Name	1 Story Example PV+Battery			
02	Run Title	1 Story Example			
03	Project Location	715 P Street			
04	City	Sacramento, CA	05	Standards Version	2022
06	Zip code	95814	07	Software Version	CBECC-Res 2022.2.1
08	Climate Zone	12	09	Front Orientation (deg/ Cardinal)	0
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed	13	Number of Bedrooms	3
14	Addition Cond. Floor Area (ft^2)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft^2)	n/a	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft^2)	2100	19	Glazing Percentage (%)	18.60%
20	ADU Bedroom Count	n/a			

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 DESIGN RATINGS

	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	**Efficiency[1] EDR (EDR2efficiency)**	**Total[2] EDR (EDR2total)**	**Source Energy (EDR1)**	**Efficiency[1] EDR (EDR2efficiency)**	**Total[2] EDR (EDR2total)**
Standard Design	42.9	43.2	33.9			
Proposed Design	38.1	41.9	27.3	4.8	1.3	6.6
RESULT[3]: PASS						

[1]Efficiency EDR includes improvements like a better building envelope and more efficient equipment

[2]Total EDR includes efficiency and demand response measures such as photovoltaic (PV) system and batteries

[3]Building complies when source energy, efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

- Standard Design PV Capacity: 2.80 kWdc
- PV System resized to 2.80 kWdc (a factor of 1.402) to achieve 'Standard Design PV' PV scaling

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft^2 -yr)	Standard Design TDV Energy (EDR2) (kTDV/ft^2 -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft^2 -yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft^2 -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	6.6	28.95	6.67	29.2	-0.07	-0.25
Space Cooling	0.42	14.92	0.31	11.15	0.11	3.77
IAQ Ventilation	0.33	3.56	0.33	3.56	0	0
Water Heating	1.39	14.67	1.61	16.42	-0.22	-1.75
Self Utilization/Flexibility Credit				0		0
Efficiency Compliance Total	**8.74**	**62.1**	**8.92**	**60.33**	**-0.18**	**1.77**
Photovoltaics	-1.09	-36.85	-1.09	-38.79		
Battery			-1.74	-11.98		
Flexibility						
Indoor Lighting	0.74	7.43	0.74	7.43		
Appl. & Cooking	2.86	19.63	2.86	19.63		
Plug Loads	2.59	27.07	2.59	27.07		
Outdoor Lighting	0.19	1.72	0.19	1.72		
TOTAL COMPLIANCE	**14.03**	**81.1**	**12.47**	**65.41**		

ENERGY USE INTENSITY

	Standard Design (kBtu/ft^2 - yr)	Proposed Design (kBtu/ft^2 - yr)	Compliance Margin (kBtu/ft^2 - yr)	Margin Percentage
Gross EUI[1]	18.29	18.63	-0.34	-1.86
Net EUI[2]	11.17	11.5	-0.33	-2.95

Notes
1. Gross EUI is Energy Use Total (not including PV) / Total Building Area.
2. Net EUI is Energy Use Total (including PV) / Total Building Area.

REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	**Exception**	**Module Type**	**Array Type**	**Power Electronics**	**CFI**	**Azimuth (deg)**	**Tilt Input**	**Array Angle (deg)**	**Tilt: (x in 12)**	**Inverter Eff. (%)**	**Annual Solar Access (%)**
2.8	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98

BATTERY SYSTEMS

01	02	03	04	05	06	07
Control	**Capacity (kWh)**	**Charging**		**Discharging**		**Round Trip Efficiency**
		Charging Efficiency	**Charging Rate (kW)**	**Discharging Efficiency**	**Discharging Rate (kW)**	
Basic	5	0.95	n/a	0.95	n/a	0.9

REQUIRED SPECIAL FEATURES

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

- PV System: 2.8 kWdc
- Battery System: 5 kWh
- Whole house fan
- Cool roof
- Insulation below roof deck
- Window overhangs and/or fins
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

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 buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

- Quality insulation installation (QII)
- Indoor air quality ventilation
- Kitchen range hood
- Whole house fan airflow and fan efficacy
- Minimum Airflow
- Verified Refrigerant Charge
- Fan Efficacy Watts/CFM
- Duct leakage testing

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 PV+Battery	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**	**Status**
Conditioned	Conditioned	HVAC System 1	2100	9	DHW System	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window and Door Area (ft2)**	**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
Gar Ceiling	Garage	R0 ClgBlwAttic Cons	n/a	n/a	440	n/a	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

ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise (x in 12)**	**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	11	12	13	14
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft^2)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**
F-6060	Window	Front	Front	0	6	6	1	36	0.3	NFRC	0.23	NFRC	Bug Screen
F-4050 x3	Window	Front	Front	0	4	5	3	60	0.3	NFRC	0.23	NFRC	Bug Screen

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft^2)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**
F-1660 x2	Window	Front	Front	0	1.5	6	2	18	0.3	NFRC	0.23	NFRC	Bug Screen
F-3636	Window	Front	Front	0	3.5	3.5	1	12.25	0.3	NFRC	0.23	NFRC	Bug Screen
L-5040 x2	Window	Left	Left	90	5	4	2	40	0.3	NFRC	0.23	NFRC	Bug Screen
L-4040 x2	Window	Left	Left	90	4	4	2	32	0.3	NFRC	0.23	NFRC	Bug Screen
B1 SGD	Window	Back	Back	180	6	6.67	1	40.02	0.3	NFRC	0.23	NFRC	Bug Screen
B-6010	Window	Back	Back	180	6	1	1	6	0.3	NFRC	0.23	NFRC	Bug Screen
B-6040 x3	Window	Back	Back	180	6	4	3	72	0.3	NFRC	0.23	NFRC	Bug Screen
B-6050	Window	Back	Back	180	6	5	1	30	0.3	NFRC	0.23	NFRC	Bug Screen
B-3020	Window	Back	Back	180	3	2	1	6	0.3	NFRC	0.23	NFRC	Bug Screen
R-3030 x2	Window	Right	Right	270	3	3	2	18	0.3	NFRC	0.23	NFRC	Bug Screen
R-4050	Window	Right	Right	270	4	5	1	20	0.3	NFRC	0.23	NFRC	Bug Screen

OPAQUE DOORS

01	02	03	04
Name	**Side of Building**	**Area (ft^2)**	**U-factor**
Front Dr	Front	20	0.2
GarToHouse Dr	GarToHouse Front	20	0.5
GDoor	Gwall Front	108	1

OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Window	Overhang					Left Fin				Right Fin			
	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

SLAB FLOORS

01	02	03	04	05	06	07	08
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Gslab	Garage	440	44	none	0	0%	No
Slab On Grade	Conditioned	2100	162	none	0	80%	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Interior / Exterior Continuous R-value**	**U-factor**	**Assembly Layers**
Garage Wall R-0	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-0	None / None	0.347	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x6 Exterior Finish: 3 Coat Stucco
R21 R5 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-21	None / 5	0.048	Inside Finish: Gypsum Board Cavity / Frame: R-21 / 2x6 Sheathing / Insulation: R-5 Sheathing Exterior Finish: Synthetic Stucco
Gar House R21	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-21	None / None	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	None / None	0.049	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Under Roof Joists: R-6.0 insul.
Tile Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.4	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
R0 ClgBlwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O. C.	R-0	None / None	0.481	Cavity / Frame: no insul. / 2x4 Btm Chrd Inside Finish: Gypsum Board
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Btm Chrd Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04	05
Quality Insulation Installation (QII)	**High R-value Spray Foam Insulation**	**Building Envelope Air Leakage**	**CFM50**	**CFM50**
Required	Not Required	N/A	n/a	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	**System Type**	**Distribution Type**	**Water Heater Name**	**Number of Units**	**Solar Heating System**	**Compact Distribution**	**HERS Verification**	**Water Heater Name (#)**
DHW System	Domestic Hot Water (DHW)	Standard	Heat Pump	1	n/a	None	n/a	Heat Pump (1)

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	**# of Units**	**Tank Vol. (gal)**	**NEEA Heat Pump Brand**	**NEEA Heat Pump Model**	**Tank Location**	**Duct Inlet Air Source**	**Duct Outlet Air Source**
Heat Pump	1	50	Generic	WhirlpoolHPSE2K50	Garage	Outside	Outside

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	**Pipe Insulation**	**Parallel Piping**	**Compact Distribution**	**Compact Distribution Type**	**Recirculation Control**	**Shower Drain Water Heat Recovery**
DHW System - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	**System Type**	**Heating Unit Name**	**Heating Equipment Count**	**Cooling Unit Name**	**Cooling Equipment Count**	**Fan Name**	**Distribution Name**	**Required Thermostat Type**
HVAC System 1	Heating and cooling system other	Furn 80	1	Split 14 11.7	1	Furnace Fan	Attic Default	Setback

HVAC - HEATING UNIT TYPES

01	02	03	04
Name	**System Type**	**Number of Units**	**Heating Efficiency**
Furn 80	Central gas furnace	1	AFUE-80

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08	09
Name	**System Type**	**Number of Units**	**Efficiency Metric**	**Efficiency EER/EER2/CEER**	**Efficiency SEER/SEER2**	**Zonally Controlled**	**Mulit-speed Compressor**	**HERS Verification**
Split 14 11.7	Central split AC	1	EER/SEER	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/EER2**	**Verified SEERSEER2**	**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	08	09	10	11	12
Name	Type	Design Type	Duct Ins. R-value		Duct Location		Surface Area		Bypass Duct	Duct Leakage	HERS Verification
			Supply	Return	Supply	Return	Supply	Return			
Attic Default	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler	Low Leakage Ducts Entirely in Conditioned Space
Attic Default-hers-dist	Yes	5.0	Not Required	Not Required	Not Required	Credit not taken	Not Required	No

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
Furnace Fan	HVAC Fan	0.45	Furnace Fan-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
Furnace Fan-hers-fan	Required	0.45

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	**Airflow (CFM)**	**Fan Efficacy (W/CFM)**	**IAQ Fan Type**	**Includes Heat/Energy Recovery?**	**IAQ Recovery Effectiveness - SRE**	**Includes Fault Indicator Display?**	**HERS Verification**	**Status**
SFam IAQVentRpt	90	0.35	Exhaust	No	n/a	No	Yes	

COOLING VENTILATION

01	02	03	04	05	06	07	08	09
Name	**Airflow Rate (CFM/ft2)**	**Cooling Vent CFM**	**Cooling Vent Watts/CFM**	**Total Watts**	**Number of Fans**	**CFVCS Type**	**Exhausts to**	**HERS Verification**
Whole House Fan	1.5	3150	0.14	441	1	Not a CFVCS	Attic	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: