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Project Name: 2306-22-0336 Chula-Vista ADU -- 999 L-Shape -- Reverse 3BR RF

Calculation Date/Time: 2023-06-27T16:05:54-07:00

Calculation Description: Title 24 Analysis

Input File Name: 2306-22-0336 Chula-Vista ADU -- 999 L-Shape -- Reverse 3BR

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GENER	AL INFORMATION									
01	Project Name	06-22-0336 Chula-Vista ADU 999 L-Shape Reverse 3BR RF								
02	Run Title	Title 24 Analysis								
03	Project Location	276 4th Avenue								
04	City	Chula Vista	05	Standards Version	2022					
06	Zip code	91910	07	Software Version	EnergyPro 9.1					
08	Climate Zone	10	09	Front Orientation (deg/ Cardinal)	All orientations					
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)	999	19	Glazing Percentage (%)	13.51%					
20	ADU Bedroom Count	n/a								
	_		- A		·					

COMPLIANCE F	ESULTS
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

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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	38.1	41.7	30.1							
Proposed Design										
North Facing	35.7	36.2	27.2	2.4	5.5	2.9				
East Facing	36.3	39.5	28.9	1.8	2.2	1.2				
South Facing	36.1	37.2	27.7	2	4.5	2.4				
West Facing	36.6	39.1	28.7	1.5	2.6	1.4				

RESULT³: PASS

- Standard Design PV Capacity: 2.49 kWdc
- Proposed PV Capacity Scaling: North (2.49 kWdc) East (2.49 kWdc) South (2.49 kWdc) West (2.49 kWdc)

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

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

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

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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	0.79	3.54	1.07	7.66	-0.28	-4.12
Space Cooling	1.82	36.5	1.36	30.02	0.46	6.48
IAQ Ventilation	0.46	4.85	0.46	4.85	0	0
Water Heating	2.34	23.77	1.57	17.07	0.77	6.7
Self Utilization/Flexibility Credit				0		0
North Facing Efficiency Compliance Total	5.41	68.66	4.46	59.6	0.95	9.06
Space Heating	0.79	3.54	1.16	8.35	-0.37	-4.81
Space Cooling	1.82	36.5	1.54	34.79	0.28	1.71
IAQ Ventilation	0.46	4.85	0.46	4.85	0	0
Water Heating	2.34	23.77	1.57	17.06	0.77	6.71
Self Utilization/Flexibility Credit				0		0
East Facing Efficiency Compliance Total	5.41	68.66	4.73	65.05	0.68	3.61

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ENERGY USE SUMMARY			RF.ribd22x			
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	0.79	3.54	1.23	8.97	-0.44	-5.43
Space Cooling	1.82	36.5	1.37	30.27	0.45	6.23
IAQ Ventilation	0.46	4.85	0.46	4.85	0	0
Water Heating	2.34	23.77	1.57	17.12	0.77	6.65
Self Utilization/Flexibility Credit				0		0
South Facing Efficiency Compliance Total	5.41	68.66	4.63	61.21	0.78	7.45
Space Heating	0.79	3.54	1.3	9.33	-0.51	-5.79
Space Cooling	1.82	36.5	1.49	33.1	0.33	3.4
IAQ Ventilation	0.46	4.85	0.46	4.85	0	0
Water Heating	2.34	23.77	1.57	17.1	0.77	6.67
Self Utilization/Flexibility Credit		CIT		0		0
West Facing Efficiency Compliance Total	5.41	68.66	4.82	64.38	0.59	4.28

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NERGY USE INTENSITY									
	Standard Design (kBtu/ft ² - yr)	Proposed Design (kBtu/ft ² - yr)	Compliance Margin (kBtu/ft ² - yr)	Margin Percentage					
North Facing									
Gross EUI ¹	22.83	21.22	1.61	7.05					
Net EUI ²	8.31	6.7	1.61	19.37					
East Facing									
Gross EUI ¹	22.83	21.72	1.11	4.86					
Net EUI ²	8.31	7.2	1.11	13.36					
South Facing									
Gross EUI ¹	22.83	21.28	1.55	6.79					
Net EUI ²	8.31	6.76	1.55	18.65					
West Facing									
Gross EUI ¹	22.83	21.74	1.09	4.77					
Net EUI ²	8.31	7.22	1.09	13.12					
Nietes									

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^{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.

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REQUIRED PV SYS	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 (%)	
2.49	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98	

REQUIRED SPECIAL FEATURES

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

- Insulation below roof deck
- 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 building 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
- Verified heat pump rated heating capacity

BUILDING - FEATURES INFORMA	UILDING - 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					
2306-22-0336 Chula-Vista ADU 999 L-Shape Reverse 3BR RF	999	1	3	1	0	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				
New ADU	Conditioned	New HVAC1	999	8	DHW Sys 1	New				

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OPAQUE SURFACES	PAQUE 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)				
New Front Wall	New ADU	R-21 w/R-5 Wall	0	Front	294	59	90				
New Left Wall	New ADU	R-21 w/R-5 Wall	90	Left	259	24	90				
New Back Wall	New ADU	R-21 w/R-5 Wall	180	Back	306	72	90				
New Right Wall	New ADU	R-21 w/R-5 Wall	270	Right	257	0	90				
New Roof Attic	New ADU	R-38 w/R-19 B.R.D.	n/a	n/a	489	n/a	n/a				
New Roof Attic 2	New ADU	R-38 w/R-19 B.R.D.	n/a	n/a	510	n/a	n/a				
New Raised Floor	New ADU	R-19 Floor Crawlspace	n/a	n/a	999	n/a	n/a				

ATTIC	ATTIC									
01	02	03	04	05	06	07	08			
Name	Construction	Туре	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof			
Attic New ADU	Attic RoofNew ADU	Ventilated	3.76577	0.1	0.85	No	No			

FENESTRATION / 0	GLAZING					1//			-				
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Туре	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading
Window W6	Window	New Front Wall	Front	0			1	24	0.3	NFRC	0.23	NFRC	Bug Screen
Window W7	Window	New Front Wall	Front	0			1	3	0.3	NFRC	0.23	NFRC	Bug Screen
Window W8	Window	New Front Wall	Front	0			1	12	0.3	NFRC	0.23	NFRC	Bug Screen
Window W1	Window	New Left Wall	Left	90			1	12	0.3	NFRC	0.23	NFRC	Bug Screen
Window W2	Window	New Left Wall	Left	90			1	12	0.3	NFRC	0.23	NFRC	Bug Screen
Window W3	Window	New Back Wall	Back	180			1	24	0.3	NFRC	0.23	NFRC	Bug Screen

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CA Building Energy Efficiency Standards - 2022 Residential Compliance

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FENESTRATION /	GLAZING	·					RF.ribd2	.2x					
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Туре	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading
Window W4	Window	New Back Wall	Back	180			1	24	0.3	NFRC	0.23	NFRC	Bug Screen
Window W5	Window	New Back Wall	Back	180			1	24	0.3	NFRC	0.23	NFRC	Bug Screen

OPAQUE DOORS	AQUE DOORS										
01	02	03	04								
Name	Side of Building	Area (ft ²)	U-factor								
Front Door D1	New Front Wall	20	0.2								

OPAQUE SURFACE CONSTR	RUCTIONS						
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
R-21 w/R-5 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: 3 Coat Stucco
Attic RoofNew ADU	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / 0	0.059	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-6.0 insul.
R-19 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.046	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10

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	OPAQUE SURFACE CONST	RUCTIONS		RF.ribo	RF.ribd22x						
Ī	01	02	03	04	05	05 06		08			
	Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers			
	R-38 w/R-19 B.R.D.	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board			

BUILDING ENVELOPE - HERS VERIFICA	TION			
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 SYS	TEMS							
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 Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	None	n/a	DHW Heater 1 (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 Pum Model		Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
DHW Heater 1	1	50	AOSmith	AOSmithHPTU50	Outside	New ADU	New ADU

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WATER HEATING - HERS VE	VATER 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 Sys 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required					

SPACE CONDITIONIN	G 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
New HVAC1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pump System 1	1	n/a	n/a	Setback

HVAC - HEAT PUMPS	VAC - HEAT PUMPS												
01	02	03	04	05	06	07	08	09	10	11	12	13	
			Heating					Cooling					
Name	System Type	Number of Units	Efficiency Type	HSPF / HSPF2 / COP	Cap 47	Cap 17	Efficiency Type	SEER / SEER2	EER / EER / CEER	Zonally Controlled	Compressor Type	HERS Verification	
Heat Pump System 1	Ductless MiniSplit HP	1	HSPF2	7.5	36000	24000	EER2SEER2	14.3	11.7	Not Zonal	Single Speed	Heat Pump System 1-hers-htpump	

HVAC HEAT PUMPS -	AC HEAT PUMPS - HERS VERIFICATION											
01	02	03	04	05	06	07	08	09				
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge	Verified HSPF/HSPF2	Verified Heating Cap 47	Verified Heating Cap 17				
Heat Pump System 1-hers-htpump	Not Required	0	Not Required	Not Required	No	No	Yes	Yes				

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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	59	0.35	Exhaust	No	n/a	No	Yes		



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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT					
1. I certify that this Certificate of Compliance documentation is accurate and co	mplete.				
Documentation Author Name: Kenneth Ponce	Documentation Author Signature: Kenneth Ponce				
Company: So Cal Title 24	Signature Date: 06/27/2023				
Address: 8659 Red Oak Street, Suite I	CEA/ HERS Certification Identification (If applicable):				
City/State/Zip: Rancho Cucamonga, CA 91730	Phone: 909-257-7547				
RESPONSIBLE PERSON'S DECLARATION STATEMENT					
I certify that the energy features and performance specifications identified or	responsibility for the building design identified on this Certificate of Compliance. In this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. If if it is a compliance are consistent with the information provided on other applicable compliance documents, worksheets, or approval with this building permit application.				
Responsible Designer Name: Mike Moore	Responsible Designer Signature: Mike Moore				
Company: Snap ADU	Date Signed: 06/27/2023				
Address: PO Box 2685	License:				
City/State/Zip: Carlsbad, CA 92018	Phone: (760) 259-1985				

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