

North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Property

157 Rainbow Dr
Dunn, NC 28334

Organization

Southern Energy Management
Justin Smith

Inspection Status

Results are projected

BVA Builders - 157 Rainbow Dr

157 Rainbow Dr

Builder

BVA Builders

This report is based on a proposed design and does not confirm field enforcement of design elements.

Building UA

Elements	NC Reference	As Designed
Ceilings	31.9	21.5
Above-Grade Walls	79.0	78.0
Windows, Doors and Skylights	56.7	44.8
Slab Floor:	63.7	83.1
Framed Floors	0.0	0.0
Foundation Walls	0.0	0.0
Rim Joists	0.0	0.0
Overall UA (Design must be equal or lower):	231.3	227.4

Requirements

✓	R402.1.5	Total UA alternative compliance passes by 1.7%.	The proposed home meets the UA requirement by 1.7%
✓	R402.3.2	Average SHGC: 0.30 Max SHGC: 0.30	Average SHGC of 0.30 is greater than the maximum of 0.30.
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 0.23 CFM50 / ft ² Shell Area. It must not exceed 0.30 CFM50 / ft ² Shell Area.
✓	R402.5	Area-weighted average fenestration SHGC	Area-weighted average fenestration SHGC is 0.3. The maximum allowed value is [No Limit].
✓	R402.5	Area-weighted average fenestration U-Factor	
✓	R404.1	Lighting Equipment	
✓	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.	2015 IECC Mandatory Checklist must be checked as complete.
✓	R403.3.1	Duct Insulation	Duct insulation meets the requirements specified in North Carolina 2018 Code Section 403.3.1.
✓	403.3.3	Duct Testing	

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 1.7%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: Justin Smith
Digitally signed: 3/3/25 at 3:35 PM

Ekotrope RATER - Version 4.1.2.3582

North Carolina 2018 Prescriptive compliance results calculated using Ekotrope RATER's energy and code compliance algorithm, including appropriate amendments.

Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users.

Ekotrope disclaims all liability for the information shown on this report.

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General Building Information

Number Of Bedrooms: 2	Number Of Floors: 1
Conditioned Floor Area [sq. ft.]: 1,064	Has Electric Vehicle Ready Space: No
Unconditioned, attached garage? No	Conditioned Volume [cu. ft.]: 9,576
Total Units in Building: 1	Residence Type: Single family detached
Number of Floors in Building: N/A	Floor Number: N/A
Model: N/A	Community:
RESNET/IECC 2006-2018 Climate Zone: 4A	IECC 2021 Climate Zone: 3A

Envelope Components

Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab on grade	Uninsulated	132	On Grade	1	0	1,064.0 ft ²	Exposed Exterior	Conditioned Space

Slab Library List

Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Perimeter Insulation Is Exterior	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	No	No	0.00

Wall

Name	Library Type	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
1st floor ambient	R 15 FG G1 16" O.C	Medium	0.75	1,188.0 ft ²	Exposed Exterior	13.156

Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front shaded	30/30	1st floor ambient		Yes	6	1	6.1	Northwest	27.5 ft ²
front unshaded	30/30	1st floor ambient		Yes	8	1	6	Northwest	27.5 ft ²
left unshaded	30/30	1st floor ambient		Yes	0	0	0	Northeast	41.3 ft ²
rear unshaded	30/30	1st floor ambient		Yes	0	0	0	Southeast	13.8 ft ²
right unshaded	30/30	1st floor ambient		Yes	0	0	0	Southwest	13.8 ft ²

Glazing Library List

Name	Shgc	U-factor
30/30	0.3	0.300

Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location	Effective R-value
front door	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft ²	Exposed Exterior	0.200
side door	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	18.0 ft ²	Exposed Exterior	0.200

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Roof Insulation

Name	Library Type	Attic Exterior Area [ft²]	Clay or Concrete Roof Tiles	Does the Roof have Eaves?	Roof Slope	Ceiling Framing Height [in.]	Eave Height [in.]	Eave Length [in.]	Surface Color	Solar Absorptance	Surface Area	Location
attic	R 49 Attic BLOWN FG G1 2x4 16"OC w/ Radiant Barrier	1,564.08	No	No	N/A	N/A	N/A	N/A	Dark	0.9	1,064.0 ft²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 49 Attic BLOWN FG G1 2x4 16"OC w/ Radiant Barrier	Yes	49.495

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
766 CFM at 50 Pa	Blower-door tested	4

Mechanicals, Lights & Water

Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	100	0	100	0	100

Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heater	z 50 gal. 0.92 EF Elec		0%	0%	100%	Unspecified
whole house heat pump	z 24k 14.3 SEER2 7.5 HSPF2		100%	100%	0%	Unspecified

Equipment Type: z 24k 14.3 SEER2 7.5 HSPF2

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	ECM (Variable Speed)
Heat Pump System Type	Split System
Heating Efficiency	7.5 HSPF2
Heating Capacity [kBtu/h]	24
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 COP
Use default Supplemental Heat	Yes
Cooling Efficiency	14.3 SEER2
Cooling Capacity [kBtu/h]	24

Equipment Type: z 50 gal. 0.92 EF Elec

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.92 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

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Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house heat pump
Cooling Equipment	whole house heat pump
Sq. Feet Served	1,064
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft ²]	287.28
Return Duct Area [ft ²]	106.4
Leakage to Outdoors	42 CFM @ 25Pa (3.95 / 100 ft ²)
Total Leakage	42 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	100
Percent Return Area	100

Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	100

Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	75
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Drain Water Heat Recovery?	No

Appliances & Notes

Clothes Dryer

Cef	3.01
Fuel Type	Electric
Field Utilization	Timer Controls
Is Outside Conditioned Space	No
Clothes Dryer Available	Yes
Defaults Type	HERS Reference
Is Ventless	No
Is Heat Pump	No

Clothes Washer

Label Energy Rating	151 kWh/Year
Annual Gas Cost	\$12.00
Electric Rate	\$0.11/kWh
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.15473684
Defaults Type	High Efficiency
Load Type	Front-load
Loads Per Week	6
Is Outside Conditioned Space	No
Clothes Washer Available	Yes

Dishwasher

Dishwasher Defaults Type	Custom
Dishwasher Size	Standard
Dishwasher Efficiency	270 kWh
Annual Gas Cost	\$33.12
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Is Outside Conditioned Space	No
Dishwasher Available	Yes

Appliances and Controls

Programmable thermostat?	Yes
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Range/Oven Outside Conditioned Space?	No
Refrigerator Consumption	538 kWh/Year
Refrigerator Outside Conditioned Space?	No

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Notes

Initial inputs by __JS 03/03/25__

-confirm cfl lighting %

Components Not Found: Foundation Wall, Foundation Wall Library List, Framed Floor, Rim Joist, Skylight, Mechanical Ventilation, Onsite Generation, Solar Generation, Dehumidifier, Whole House Fan, Whole House Fan Library List, HVAC Grading (Not Conducted)