

North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Property

130 Barn Door Drive
Lillington, NC 27546
Model: 6260

Organization

Southern Energy Management
Justin Smith

Inspection Status

Results are projected

Builder

Chesapeake - 6260 base plan slab - ecoSe
6260 base plan slab

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	47.1	42.4
Above-Grade Walls	186.1	175.5
Windows, Doors and Skylights	118.2	97.5
Slab Floor:	77.4	100.5
Framed Floors	18.2	19.8
Foundation Walls	0.0	0.0
Rim Joists	9.0	8.8
Overall UA (Design must be equal or lower):	456.0	444.5

Requirements

✓	R402.1.5	Total UA alternative compliance passes by 2.5%.	The proposed home meets the UA requirement by 2.5%
✓	R402.3.2	Average SHGC: 0.28 Max SHGC: 0.30	Average SHGC of 0.28 is greater than the maximum of 0.30.
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 4.80 ACH at 50 Pa. It must not exceed 5.00 ACH at 50 Pa.
✓	R402.5	Area-weighted average fenestration SHGC	Area-weighted average fenestration SHGC is 0.28. 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 2.5%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: Justin Smith
Digitally signed: 12/5/24 at 11:35 AM

Ekotrope RATER - Version 4.1.2.3531

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: 4	Number Of Floors: 2
Conditioned Floor Area [sq. ft.]: 2,618	Has Electric Vehicle Ready Space: No
Unconditioned, attached garage? Yes	Conditioned Volume [cu. ft.]: 24,220
Total Units in Building: 1	Residence Type: Single family detached
Number of Floors in Building: N/A	Floor Number: N/A
Model: 6260	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	Uninsulated	162	On Grade	1	0	1,184.0 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

Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location	Effective R-value
over garage	R 19, 16"OC G1 Carpet	0	Above Grade	387.0 ft ²	Unconditioned, attached garage	19.567

Rim Joist

Name	Library Type	Surface Area	Location	Effective Insulation R-value
1st floor ambient	R 15 G1, 16"OC	127.0 ft ²	Exposed Exterior	13.30
1st floor garage	R 15 G1, 16"OC	35.0 ft ²	Unconditioned, attached garage	13.30

Wall

Name	Library Type	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
1st floor ambient	R 15 Adv. Framing G1 16" O.C	Medium	0.75	1,140.0 ft ²	Exposed Exterior	13.771
1st floor garage	R 15 Adv. Framing G1 16" O.C	Medium	0.75	318.0 ft ²	Unconditioned, attached garage	13.771
2nd floor ambient	R 15 Adv. Framing G1 16" O.C	Medium	0.75	1,296.0 ft ²	Exposed Exterior	13.771

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 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	Northeast	57.0 ft ²

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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	30/28	1st floor ambient		Yes	7	1	9	Northeast	19.5 ft²
front unshaded	30/28	1st floor ambient		Yes	7	1	9	Northeast	18.0 ft²
left 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	Southeast	39.0 ft²
left shaded	30/28	2nd floor ambient		Yes	13	2.3	9	Southeast	23.1 ft²
rear 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	Southwest	45.0 ft²
rear unshaded	30/28	1st floor ambient		Yes	12	1	7	Southwest	36.0 ft²
right 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	Northwest	8.0 ft²
right unshaded	30/28	1st floor ambient		Yes	0	0	0	Northwest	54.0 ft²

Glazing Library List

Name	Shgc	U-factor
30/28	0.28	0.300

Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location	Effective R-value
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft²	Exposed Exterior	0.200
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft²	Unconditioned, attached garage	0.200

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 38 Attic BLOWN FG G1 2x10 24"OC NO Radiant Barrier	2,309.37	No	No	N/A	N/A	N/A	N/A	Dark	0.9	1,571.0 ft²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 38 Attic BLOWN FG G1 2x10 24"OC NO Radiant Barrier	No	37.074

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1937 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	0	0	0

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Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heating	z 50 gal. 0.59 EF Gas		0%	0%	100%	Unspecified
whole house a/c	z 14 SEER A/C 3 ton		0%	100%	0%	Unspecified
whole house furnace	z 92 AFUE Gas Furn 64k		100%	0%	0%	Unspecified

Equipment Type: z 14 SEER A/C 3 ton

Equipment Type	Air Conditioner
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heat Pump System Type	Unspecified
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	36

Equipment Type: z 50 gal. 0.59 EF Gas

Equipment Type	Residential Water Heater
Fuel Type	Natural Gas
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.59 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.76

Equipment Type: z 92 AFUE Gas Furn 64k

Equipment Type	Furnace
Fuel Type	Natural Gas
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	92 AFUE
Heating Capacity [kBtu/h]	64
Use default EAE	No
EAE [kWh]	591

Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house furnace
Cooling Equipment	whole house a/c
Sq. Feet Served	2,618
# Return Grilles	4
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft²]	706.86
Return Duct Area [ft²]	523.6
Leakage to Outdoors	104 CFM @ 25Pa (3.97 / 100 ft²)
Total Leakage	104 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented)
Percent Supply Area	70
Percent Return Area	70
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	30
Percent Return Area	30

Water Distribution

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

Appliances & Notes

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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

Clothes Washer

Label Energy Rating	153 kWh/Year
Annual Gas Cost	\$12.00
Electric Rate	\$0.11/kWh
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.1547
Defaults Type	Custom
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	\$22.23
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Is Outside Conditioned Space	No
Dishwasher Available	Yes

Appliances and Controls

Thermostat Cooling Setpoint	**** 75.0
Thermostat Heating Setpoint	**** 70.0
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

Notes

initial inputs by - JS 1/4/18
updated JS 05/12/23

- **no slab insulation modeled**
- confirm window specs
- confirm if radiant barrier installed, modeled as yes
- confirm HVAC specs
- confirm ventilation entry, modeled as none
- confirm cfl lighting %
- modeled to worst case orientation

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