

# North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY  
MANAGEMENT  
ENERGY EFFICIENCY & SOLAR POWER

## Property

71 Barn Door Drive  
Lillington, NC 27546  
Model: 628 slab

## Organization

Southern Energy Management  
Justin Smith

## Inspection Status

Results are projected

## Builder

Chesapeake - 628 base plan slab - ecoSel  
628 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	52.7	47.4
Above-Grade Walls	190.0	179.1
Windows, Doors and Skylights	160.3	131.6
Slab Floor:	82.1	106.8
Framed Floors	21.2	23.0
Foundation Walls	0.0	0.0
Rim Joists	9.5	9.3
<b>Overall UA (Design must be equal or lower):</b>	<b>515.8</b>	<b>497.2</b>

## Requirements

✓	R402.1.5	Total UA alternative compliance passes by 3.6%.	The proposed home meets the UA requirement by 3.6%
✓	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	At least 75.0% of fixtures shall be high-efficacy lamps, currently 100.0% are high-efficacy.
✓	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 3.6%.**

Name: Justin Smith  
Organization: Southern Energy Management

Signature: Justin Smith  
Digitally signed: 3/19/24 at 9:16 AM

## Ekotrope RATER - Version 4.1.2.3359

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	5
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	3,016
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	26,744
Total Units in Building	1
Residence Type	Single family detached
Number of Floors in Building	-
Floor Number	-
Model	628 slab
Community	
RESNET/IECC 2006-2018 Climate Zone	4A
IECC 2021 Climate Zone	3A

## Foundation Wall

None Present

## Foundation Wall Library List

None Present

## Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab	Uninsulated	171	On Grade	1	0	1,308.0 ft <sup>2</sup>	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

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## Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location
over garage	R 19, 16"OC G1 Carpet	0	Above Grade	450.0 ft <sup>2</sup>	Unconditioned, attached garage

## Framed Floor Library List

Name	Effective R-value
R 19, 16"OC G1 Carpet	19.567

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 15 G1, 16"OC	128.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 G1, 16"OC	43.0 ft <sup>2</sup>	Unconditioned, attached garage

## Rim Joist Library List

Name	Effective Insulation R-value
R 15 G1, 16"OC	13.30

## Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 15 Adv. Framing G1 16" O.C	Medium	1,150.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 Adv. Framing G1 16" O.C	Medium	389.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 15 Adv. Framing G1 16" O.C	Medium	1,368.0 ft <sup>2</sup>	Exposed Exterior

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## Wall Library List

Name	Effective R-value
R 15 Adv. Framing G1 16" O.C	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	East	105.0 ft <sup>2</sup>
front shaded	30/28	1st floor ambient		Yes	7	1	7	East	57.0 ft <sup>2</sup>
left 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	South	16.0 ft <sup>2</sup>
left unshaded	30/28	1st floor ambient		Yes	0	0	0	South	18.0 ft <sup>2</sup>
rear 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	West	61.0 ft <sup>2</sup>
rear unshaded	30/28	1st floor ambient		Yes	0	0	0	West	95.1 ft <sup>2</sup>
right 2nd unshaded	30/28	2nd floor ambient		Yes	0	0	0	North	30.0 ft <sup>2</sup>
right unshaded	30/28	1st floor ambient		Yes	0	0	0	North	18.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
30/28	0.28	0.300

## Skylight

None Present

## Skylight Library List

None Present

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## Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
attic door	Fiberglass R-5			0.9	0.75	Medium	18.0 ft <sup>2</sup>	Exposed Exterior
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft <sup>2</sup>	Exposed Exterior
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	20.0 ft <sup>2</sup>	Unconditioned, attached garage

## Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

## Roof Insulation

Name	Library Type	Attic Exterior Area [ft <sup>2</sup> ]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
attic	R 38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant	2,584.26	No	Dark	1,758.0 ft <sup>2</sup>	Attic

## Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant	Yes	37.074

## Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
2139 CFM at 50 Pa	Blower-door tested	4

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## Mechanical Ventilation

None Present

## 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

## Onsite Generation

None Present

## Onsite Generation Library List

None Present

## Solar Generation

None Present

## Dehumidifier

None Present

## Dehumidifier Library List

None Present

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## Whole House Fan

None Present

## Whole House Fan Library List

None Present

## Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heating	z 50 gal. 0.58 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. 0.58 EF Gas

Equipment Type	Residential Water Heater
Fuel Type	Natural Gas
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.58 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.76

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## 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	3,016
# Return Grilles	4
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	814.32
Return Duct Area [ft <sup>2</sup> ]	603.2
Leakage to Outdoors	120 CFM @ 25Pa (3.98 / 100 ft <sup>2</sup> )
Total Leakage	120 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Conditioned Space
Percent Supply Area	30
Percent Return Area	30
Duct 2	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	70
Percent Return Area	70
Duct 3	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 4	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 5	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 6	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0

## HVAC Grading

HVAC Grading Not Conducted



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## Ceiling Fan

Has Ceiling Fan	No
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## Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	85
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Drain Water Heat Recovery?	No

## 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

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## 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 09/04/19  
updated JS 09/29/23

- \*\*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