

North Carolina 2018 - R402.1.5 Total UA



Property

8487 Old US 421
Lillington, NC 27546

Organization

Southern Energy Management
Justin Smith

Inspection Status

Rater ID (RTIN): 4555660
Field Confirmed (Confirmed)

TM Homes - 8487 Old US 421
8487 Old US 421

Builder

TM Homes

Building UA

Elements	NC Reference	As Designed
Ceilings	51.6	46.0
Above-Grade Walls	107.0	82.7
Windows, Doors and Skylights	109.2	94.6
Slab Floor:	91.3	91.3
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):	359.1	314.6

Requirements

✓	R402.1.5	Total UA alternative compliance passes by 12.4%.	The proposed home meets the UA requirement by 12.4%
✓	R402.3.2	Average SHGC: 0.23 Max SHGC: 0.30	Average SHGC of 0.23 is greater than the maximum of 0.30.
✓	R402.2.10	Slab-on-grade floors	
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 0.25 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 0.23. 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 12.4%.

Name:	Justin Smith	Signature:	<i>Justin Smith</i>
Organization:	Southern Energy Management	Digitally signed:	4/3/25 at 8:48 AM

Ekotrope RATER - Version 4.1.2.3602

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: 3	Number Of Floors: 1
Conditioned Floor Area [sq. ft.]: 1,527	Has Electric Vehicle Ready Space: No
Unconditioned, attached garage? Yes	Conditioned Volume [cu. ft.]: 15,189
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	R 10 G1 Perimeter	189	On Grade	1	0	1,527.0 ft²	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
R 10 G1 Perimeter	Wood Frame / Other	No	0	2	10	Yes	No	0.00

Wall

Name	Library Type	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
1st floor ambient	R 19 FG G1 16" O.C	Medium	0.75	1,368.0 ft²	Exposed Exterior	16.805
1st floor garage	R 19 FG G1 16" O.C	Medium	0.75	333.0 ft²	Unconditioned, attached garage	16.805

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	32/23	1st floor ambient		Yes	6	1	7	Southeast	46.0 ft²
left unshaded	32/23	1st floor ambient		Yes	0	0	0	Southwest	18.8 ft²
rear shaded	32/23	1st floor ambient		Yes	10	2	9	Northwest	40.2 ft²
rear unshaded	32/23	1st floor ambient		Yes	0	0	0	Northwest	105.0 ft²
right unshaded	32/23	1st floor ambient		Yes	0	0	0	Northeast	58.0 ft²

Glazing Library List

Name	Shgc	U-factor
32/23	0.23	0.320

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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	24.0 ft²	Exposed Exterior	0.200
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	20.0 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 (Pitch)	Ceiling Framing Height [in.]	Eave Height [in.]	Eave Length [ft]	Surface Color	Solar Absorptance	Surface Area	Location
ceiling flat	R 38 Attic BLOWN FG G1 2x6 16"OC w/ Radiant Barrier	1,636.11	No	No	N/A	N/A	N/A	N/A	Dark	0.9	1,113.0 ft²	Attic
ceiling vaulted	R 38 Attic FG VAULTED G1 2x8 16" OC w/ Radiant Barrier	608.58	No	No	N/A	N/A	N/A	N/A	Dark	0.9	608.6 ft²	Vaulted Roof

Roof Insulation Library List			Whole House Infiltration		
Name	Has Radiant Barrier	Effective R-value	Infiltration	Measurement Type	Shelter Class
R 38 Attic BLOWN FG G1 2x6 16"OC w/ Radiant Barrier	Yes	37.887	1215 CFM at 50 Pa	Blower-door tested	4
R 38 Attic FG VAULTED G1 2x8 16" OC w/ Radiant Barrier	Yes	36.693			

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

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 a/c	z 14.3 SEER2 2.5 ton		0%	100%	0%	Unspecified
whole house furnace	z 80 AFUE Gas Furn 64k		100%	0%	0%	Unspecified

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Equipment Type: z 14.3 SEER2 2.5 ton

Equipment Type	Air Conditioner
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heat Pump System Type	Ducted Split System
Cooling Efficiency	14.3 SEER2
Cooling Capacity [kBtu/h]	28

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

Equipment Type: z 80 AFUE Gas Furn 64k

Equipment Type	Furnace
Fuel Type	Natural Gas
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	80 AFUE
Heating Capacity [kBtu/h]	64
Use default EAE	Yes
EAE [kWh]	808.2

Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house furnace
Cooling Equipment	whole house a/c
Sq. Feet Served	1,527
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft²]	412.29
Return Duct Area [ft²]	152.7
Leakage to Outdoors	61 CFM @ 25Pa (3.99 / 100 ft²)
Total Leakage	61 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

Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	88
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	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

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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 - JS 04/03/2025
-confirm HVAC specs
-confirm ventilation, modeled as none
-confirm cfl lighting %
-modeled to worst case orientation

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), Ceiling Fan