

North Carolina 2018 - R402.1.5 Total UA



Property

8461 Old US 421
Lillington, NC 27546

Organization

Southern Energy Management
Justin Smith

Inspection Status

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

TM Homes - 8461 Old US 421
8461 Old US 421

Builder

TM Homes

Building UA

Elements	NC Reference	As Designed
Ceilings	48.3	42.5
Above-Grade Walls	121.9	120.3
Windows, Doors and Skylights	82.3	70.4
Slab Floor:	97.4	97.4
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):	349.9	330.6

Requirements

✓	R402.1.5	Total UA alternative compliance passes by 5.5%.	The proposed home meets the UA requirement by 5.5%
✓	R402.3.2	Average SHGC: 0.23 Max SHGC: 0.30	Average SHGC of 0.23 is greater than the maximum of 0.30.
✓	R402.4.2.2	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 0.23. 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 5.5%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: *Justin Smith*
Digitally signed: 2/11/25 at 9:39 AM

Ekotrope RATER - Version 4.1.2.3568

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.
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**SOUTHERN ENERGY
MANAGEMENT**
ENERGY EFFICIENCY & SOLAR POWER

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General Building Information

Number Of Bedrooms: 3	Number Of Floors: 1
Conditioned Floor Area [sq. ft.]: 1,610	Has Electric Vehicle Ready Space: No
Unconditioned, attached garage? Yes	Conditioned Volume [cu. ft.]: 14,490
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	202	On Grade	1	0	1,610.0 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
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 15 FG G1 16" O.C	Medium	0.75	1,494.0 ft ²	Exposed Exterior	13.156
1st floor garage	R 15 FG G1 16" O.C	Medium	0.75	324.0 ft ²	Unconditioned, attached garage	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	32/23	1st floor ambient		Yes	6	1	7	Southeast	32.4 ft ²
left unshaded	32/23	1st floor ambient		Yes	0	0	0	Southwest	16.2 ft ²
rear shaded	32/23	1st floor ambient		Yes	6	2	9	Northwest	40.0 ft ²
rear unshaded	32/23	1st floor ambient		Yes	0	0	0	Northwest	97.2 ft ²
right unshaded	32/23	1st floor ambient		Yes	0	0	0	Northeast	9.2 ft ²

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	20.0 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	Ceiling Framing Height [in.]	Eave Height [in.]	Eave Length [in.]	Surface Color	Solar Absorptance	Surface Area	Location
ceiling	R 38 Attic BLOWN FG G1 2x6 16"OC w/ Radiant Barrier	2,366.7	No	No	N/A	N/A	N/A	N/A	Dark	0.9	1,610.0 ft²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 38 Attic BLOWN FG G1 2x6 16"OC w/ Radiant Barrier	Yes	37.887

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1159 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

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

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	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

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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	1,610
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft²]	434.7
Return Duct Area [ft²]	161
Leakage to Outdoors	64 CFM @ 25Pa (3.98 / 100 ft²)
Total Leakage	64 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]	90
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

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

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Notes

- initial inputs - JS 02/11/2025
- 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