

# North Carolina 2018 - R402.1.5 Total UA



**Property**

112 Sears Dr  
Cameron, NC 28326  
Model: Taggart  
Community: Liberty Meadows

**Organization**

Southern Energy Manager  
Justin Smith

**Inspection Status**

Results are projected

**Builder**

SMG Precision Properties

Template - SMG Precision - Liberty  
Meadows Lot 24 - CZ 4 slab -  
Liberty Meadows Lot 24

**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	37.3	35.4
Above-Grade Walls	174.9	129.8
Windows, Doors and Skylights	109.4	98.0
Slab Floor:	72.6	94.4
Framed Floors	6.1	6.6
Foundation Walls	0.0	0.0
Rim Joists	8.4	6.8
<b>Overall UA (Design must be equal or lower):</b>	<b>408.7</b>	<b>371.0</b>

## Requirements

✓	R402.1.5	Total UA alternative compliance passes by 9.2%. The proposed home meets the UA requirement by 9.2%
✓	402.3.2	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 90.0% 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 9.2%.**

Name: Justin Smith Signature: Justin Smith  
 Organization: Southern Energy Management Digitally signed: 3/7/23 at 1:57 PM

Ekotrope RATER - Version 4.1.0.3112

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.]	2,289
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	20,542
Total Units in Building	1
Residence Type	Single family detached
Number of Floors in Building	-
Floor Number	-
Model	Taggart
Community	Liberty Meadows
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	152	On Grade	1	0	1,115.0 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	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	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	129.0 ft <sup>2</sup>	Unconditioned, attached garage

## Framed Floor Library List

Name	Effective R-value
R 19, 16"OC G1 Carpet	19.566

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 19 G1, 16"OC	125.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 G1, 16"OC	27.0 ft <sup>2</sup>	Unconditioned, attached garage

## Rim Joist Library List

Name	Effective Insulation R-value
R 19 G1, 16"OC	17.30

## Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 Adv. Framing G1 16" O.C	Medium	1,129.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 Adv. Framing G1 16" O.C	Medium	239.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 19 Adv. Framing G1 16" O.C	Medium	1,216.0 ft <sup>2</sup>	Exposed Exterior

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

Template - SMG Precision - Liberty Meadows Lot 24  
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## Wall Library List

Name	Effective R-value
R 19 Adv. Framing G1 16" O.C	17.492

## 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	33/28	2nd floor ambient		Yes	0	0	0	West	51.2 ft <sup>2</sup>
front shaded	33/28	1st floor ambient		Yes	6	1	6	West	7.0 ft <sup>2</sup>
front unshaded	33/28	1st floor ambient		Yes	0	0	0	West	27.0 ft <sup>2</sup>
left 2nd unshaded	33/28	2nd floor ambient		Yes	0	0	0	North	27.0 ft <sup>2</sup>
left unshaded	33/28	1st floor ambient		Yes	0	0	0	North	27.0 ft <sup>2</sup>
rear 2nd unshaded	33/28	2nd floor ambient		Yes	0	0	0	East	34.0 ft <sup>2</sup>
rear unshaded	33/28	1st floor ambient		Yes	0	0	0	East	72.5 ft <sup>2</sup>
right unshaded	33/28	1st floor ambient		Yes	0	0	0	South	27.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
33/28	0.28	0.330

## 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
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft²	Exposed Exterior
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	20.0 ft²	Unconditioned, attached garage

## Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

## Roof Insulation

Name	Library Type	Attic Exterior Area [ft²]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
attic	R 38 Attic BLOWN FG G1 2x10 24"OC NO Radiant Barrier	1,828.68	No	Dark	1,244.0 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	35.115

## Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1643 CFM at 50 Pa	Blower-door tested	4

## Mechanical Ventilation

None Present

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MANAGEMENT  
ENERGY EFFICIENCY & SOLAR POWER

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## Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	90	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

## Whole House Fan

None Present

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## 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
1st floor heat pump	z 24k 14 SEER 8.0hspf		49%	49%	0%	Attic
2nd floor heat pump	z 24k 14 SEER 8.0hspf		51%	51%	0%	Attic
Water Heating	z 50 gal. 0.95 EF Elec		0%	0%	100%	Unconditioned Garage

### Equipment Type: z 24k 14 SEER 8.0hspf

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8 HSPF
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 SEER
Cooling Capacity [kBtu/h]	24

### Equipment Type: z 24k 14 SEER 8.0hspf

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8 HSPF
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 SEER
Cooling Capacity [kBtu/h]	24

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## Equipment Type: z 50 gal. 0.95 EF Elec

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.95 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

## Distribution System

Distribution Type	Forced Air
Heating Equipment	1st floor heat pump
Cooling Equipment	1st floor heat pump
Sq. Feet Served	1,115
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	301.05
Return Duct Area [ft <sup>2</sup> ]	111.5
Leakage to Outdoors	44 CFM @ 25Pa (3.95 / 100 ft <sup>2</sup> )
Total Leakage	44 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
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



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## Distribution System

Distribution Type	Forced Air
Heating Equipment	2nd floor heat pump
Cooling Equipment	2nd floor heat pump
Sq. Feet Served	1,174
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	316.98
Return Duct Area [ft <sup>2</sup> ]	117.4
Leakage to Outdoors	46 CFM @ 25Pa (3.92 / 100 ft <sup>2</sup> )
Total Leakage	46 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented)
Percent Supply Area	100
Percent Return Area	100
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
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

## Ceiling Fan

Has Ceiling Fan	No
Cfm Per Watt	100

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SMG Precision Properties

## Water Distribution

Water Fixture Type	Low-flow
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	75
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	20
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 Efficiency	270 kWh
Dishwasher Size	Standard
Annual Gas Cost	\$22.23
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Is Outside Conditioned Space	No

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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 \_\_\_\_\_ JS 03/07/23 \_\_\_\_\_

- confirm HVAC specs
- confirm water heater specs
- confirm ventilation entry
- modeled to worst case orientation
- confirm cfl lighting %