

# North Carolina 2018 - R402.1.5 Total UA



**Property**  
 , NC 27546  
 Model: Wisteria

**Organization**  
 Southern Energy Manager  
 Justin Smith

**Inspection Status**  
 Results are projected

Garman Homes - Wisteria 2034  
 plan - CZ 4 slab - ecoSelect  
 Wisteria plan

**Builder**  
 Garman Homes

**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	35.6	33.8
Above-Grade Walls	177.5	167.4
Windows, Doors and Skylights	103.6	85.0
Slab Floor:	66.5	85.8
Framed Floors	15.9	18.4
Foundation Walls	0.0	0.0
Rim Joists	7.9	7.8
<b>Overall UA (Design must be equal or lower):</b>	<b>407.0</b>	<b>398.2</b>

## Requirements

✓	R402.1.5	Total UA alternative compliance passes by 2.2%. The proposed home meets the UA requirement by 2.2%
✓	402.3.2	Average SHGC: 0.30 Max SHGC: 0.30 Average SHGC of 0.30 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 0.3. 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 2.2%.**

Name: Justin Smith Signature: Justin Smith  
 Organization: Southern Energy Management Digitally signed: 9/26/22 at 10:10 AM

### Ekotrope RATER - Version 4.0.1.2996

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.

# Building Summary



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

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## General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,034
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	19,154
Total Units in Building	1
Residence Type	Single family detached
Number of Floors in Building	-
Floor Number	-
Model	Wisteria
Community	
RESNET/IECC 2006 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	143	On Grade	1	0	848.0 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 Hardwood	0	Above Grade	338.0 ft <sup>2</sup>	Unconditioned, attached garage

## Framed Floor Library List

Name	Effective R-value
R 19, 16"OC G1 Hardwood	18.371

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 15 G1, 16"OC	102.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 G1, 16"OC	41.0 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	918.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 Adv. Framing G1 16" O.C	Medium	369.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 15 Adv. Framing G1 16" O.C	Medium	1,314.0 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	30/30	2nd floor ambient		Yes	0	0	0	West	75.0 ft <sup>2</sup>
front shaded	30/30	1st floor ambient		Yes	6	1	7	West	10.0 ft <sup>2</sup>
left 2nd unshaded	30/30	2nd floor ambient		Yes	0	0	0	North	12.0 ft <sup>2</sup>
left unshaded	30/30	1st floor ambient		Yes	0	0	0	North	20.0 ft <sup>2</sup>
rear 2nd unshaded	30/30	2nd floor ambient		Yes	0	0	0	East	45.0 ft <sup>2</sup>
rear unshaded	30/30	1st floor ambient		Yes	0	0	0	East	84.0 ft <sup>2</sup>
right 2nd unshaded	30/30	2nd floor ambient		Yes	0	0	0	South	12.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
30/30	0.3	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
front door	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft²	Exposed Exterior
garage door	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 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	1,945.04	No	Dark	1,186.0 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
1532 CFM at 50 Pa	Blower-door tested	4

## Mechanical Ventilation

Ventilation Type	Ventilation Rate [ft³ / Minute]	Operational hours per day	Fan Watts	Runs once every three hours	Energy Recovery Percent	Model Number	Manufacturer
Exhaust Only	153 CFM	8	53.55 Watts (Default)	Yes	0		

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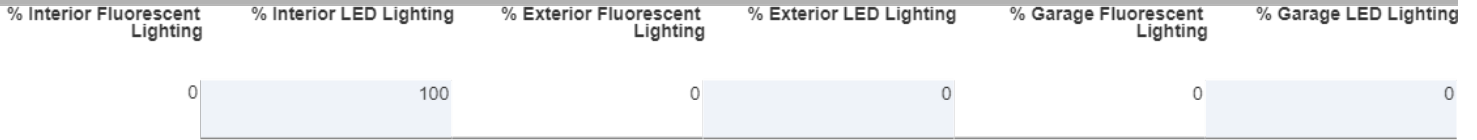
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## Lighting



## 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
Water Heater	RL94e (NG)		0%	0%	100%	Unconditioned Garage
whole house a/c	z 14 SEER A/C 3 ton		0%	100%	0%	Attic
whole house furnace	z 93 AFUE Gas Furn 48k		100%	0%	0%	Attic

### Equipment Type: RL94e (NG)

Equipment Type	Residential Water Heater
Fuel Type	Natural Gas
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.81 Energy Factor
Tankless?	Yes

### 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)
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	36

### Equipment Type: z 93 AFUE Gas Furn 48k

Equipment Type	Furnace
Fuel Type	Natural Gas
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	93 AFUE
Heating Capacity [kBtu/h]	48
Use default EAE	No
EAE [kWh]	411

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## Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house furnace
Cooling Equipment	whole house a/c
Sq. Feet Served	2,034
# Return Grilles	3
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	549.18
Return Duct Area [ft <sup>2</sup> ]	305.1
Leakage to Outdoors	81 CFM @ 25Pa (3.98 / 100 ft <sup>2</sup> )
Total Leakage	81 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented)
Percent Supply Area	60
Percent Return Area	60
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	40
Percent Return Area	40
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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## Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	72
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	170
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

## Appliances and Controls

Programmable thermostat?	Yes
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 by \_\_AT 5/4/2022\_\_

- confirm window specs
- ventilation modeled as exhaust, confirm this is accurate
- confirm cfl lighting percentage
- modeled to worst case orientation
- optional 3rd floor not included