

# North Carolina 2018 - R402.1.5 Total UA



**Property**

, NC 27546  
 Model: Granville 2680  
 Community: NA

**Organization**

Southern Energy Manager  
 Justin Smith

**Inspection Status**

Results are projected

**Builder**

Caviness and Cates

CC 2680-CZ 4 slab

Template - Caviness & Cates - CC 26

## Building UA

Elements	NC Reference	As Designed
Ceilings	49.7	44.5
Above-Grade Walls	179.8	146.1
Windows, Doors and Skylights	135.5	111.3
Slab Floor:	86.7	113.3
Framed Floors	4.7	4.7
Foundation Walls	0.0	0.0
Rim Joists	7.2	6.4
<b>Overall UA (Design must be equal or lower):</b>	<b>463.6</b>	<b>426.3</b>

## Requirements

✓	402.1.5	Total UA alternative for insulation and fenestration
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.23 Max SHGC: 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
✓	R402.5	Area-weighted average fenestration U-Factor
✓	R404.1	Lighting Equipment Efficiency
✓	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.
✓	R403.3	Duct Insulation
✓	403.3.3	Duct Testing

**Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 8%.**

Name: Justin Smith

Signature: Justin Smith

Organization: Southern Energy Management

Digitally signed: 1/16/20 at 11:43 AM

**Ekotrope RATER - Version 3.2.3.2336**

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

**Property**  
NC 27546  
Model: Granville 2680  
Community: NA

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

CC 2680-CZ 4 slab  
Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
Caviness and Cates

## General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,692
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	24,650
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	Granville 2680
Community	NA
Climate Zone	4A

## 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	178	On Grade	1	0	1,557.0 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

## Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location
over garage	R-19, 16"OC G1 Carpet	0	Above Grade	101.0 ft²	Unconditioned, attached garage

# Building Summary



**Property**  
 , NC 27546  
 Model: Granville 2680  
 Community: NA

**Organization**  
 Southern Energy Management  
 Justin Smith

**Inspection Status**  
 Results are projected

CC 2680-CZ 4 slab  
 Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
 Caviness and Cates

## Framed Floor Library List

Name	Effective R-value
R-19, 16"OC G1 Carpet	21.284

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 19 G2, 16"OC	99.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 G2, 16"OC	31.0 ft <sup>2</sup>	Unconditioned, attached garage

## Rim Joist Library List

Name	Effective Insulation R-value
R 19 G2, 16"OC	15.40

## Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 FG G2 16" O.C	Medium	1,327.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 FG G2 16" O.C	Medium	275.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 19 FG G2 16" O.C	Medium	793.0 ft <sup>2</sup>	Exposed Exterior
2nd floor attic	R 19 FG G2 16" O.C	Medium	327.0 ft <sup>2</sup>	Attic

## Wall Library List

Name	Effective R-value
R 19 FG G2 16" O.C	15.977

# Building Summary



**Property**  
 , NC 27546  
 Model: Granville 2680  
 Community: NA

**Organization**  
 Southern Energy Management  
 Justin Smith

**Inspection Status**  
 Results are projected

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

CC 2680-CZ 4 slab  
 Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
 Caviness and Cates

## Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front 2nd unshaded	30/23	2nd floor ambient		0	0	0	East	27.0 ft <sup>2</sup>
front shaded	30/23	1st floor ambient		5	1	6	East	47.0 ft <sup>2</sup>
left unshaded	30/23	1st floor ambient		0	0	0	South	45.0 ft <sup>2</sup>
rear 2nd unshaded	30/23	2nd floor ambient		0	0	0	West	45.0 ft <sup>2</sup>
rear shaded	30/23	1st floor ambient		10	2	9	West	48.0 ft <sup>2</sup>
rear unshaded	30/23	1st floor ambient		0	0	0	West	60.0 ft <sup>2</sup>
right 2nd unshaded	30/23	2nd floor ambient		0	0	0	North	36.0 ft <sup>2</sup>
right unshaded	30/23	1st floor ambient		0	0	0	North	31.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
30/23	0.23	0.300

## Skylight

None Present

## Skylight Library List

None Present

# Building Summary



**Property**  
 , NC 27546  
 Model: Granville 2680  
 Community: NA

**Organization**  
 Southern Energy Management  
 Justin Smith

**Inspection Status**  
 Results are projected

CC 2680-CZ 4 slab  
 Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
 Caviness and Cates

## Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
attic door	Fiberglass R-5	2nd floor attic		0.9	0.75	Medium	10.0 ft²	Exposed Exterior
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	18.0 ft²	Exposed Exterior

## Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

## Roof Insulation

Name	Library Type	Attic Exterior Area [s.f.]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
attic	R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	2,437.26	No	Dark	1,658.0 ft²	Attic

## Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	Yes	37.246

## Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1972 CFM at 50 Pa	Blower-door tested	4

## Mechanical Ventilation

None Present

# Building Summary



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

**Property**  
NC 27546  
Model: Granville 2680  
Community: NA

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

CC 2680-CZ 4 slab  
Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
Caviness and Cates

## Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	75	100	0	100	0

## Onsite Generation

None Present

## Onsite Generation Library List

None Present

## Solar Generation

None Present

## Solar Generation Library List

None Present

## Conditioning Equipment

Name	Library Type	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Air-source heat pump (1)	z 36k 13 Seer 7.7hspf	100%	100%	0%	Unspecified
Water Heating (2)	Z 50 gal. 0.91EF elec	0%	0%	100%	Unspecified

# Building Summary



**Property**  
NC 27546  
Model: Granville 2680  
Community: NA

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

CC 2680-CZ 4 slab  
Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
Caviness and Cates

## Equipment Type: Z 50 gal. 0.91EF elec

Fuel Type	Electric
Distribution Type	Hydronic Delivery
Hot Water Efficiency	0.91 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

## Equipment Type: z 36k 13 Seer 7.7hspf

Fuel Type	Electric
Distribution Type	Forced Air Ductless
Motor Type	PSC (Single Speed)
Heating Efficiency	7.7 HSPF
Heating Capacity [kBtu/h]	22
Cooling Efficiency	13 SEER
Cooling Capacity [kBtu/h]	36

# Building Summary



**Property**  
 , NC 27546  
 Model: Granville 2680  
 Community: NA

**Organization**  
 Southern Energy Management  
 Justin Smith

**Inspection Status**  
 Results are projected

CC 2680-CZ 4 slab  
 Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
 Caviness and Cates

## Distribution System

Distribution Type	Forced Air
Heating Equipment	Air-source heat pump (1)
Cooling Equipment	Air-source heat pump (1)
Sq. Feet Served	2692
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	545.1
Return Duct Area [ft <sup>2</sup> ]	201.9
Leakage to Outdoors	107 CFM @ 25Pa (3.97 / 100 s.f.)
Total Leakage	107 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Conditioned Space
Percent Supply Area	25
Percent Return Area	25
Duct 2	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	75
Percent Return Area	75
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

## Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	100



# Building Summary



**Property**  
NC 27546  
Model: Granville 2680  
Community: NA

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

CC 2680-CZ 4 slab  
Template - Caviness & Cates - CC 2680 base plan s

**Builder**  
Caviness and Cates

## Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	93
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

Fuel Type	Electric
Cef	2.62
Field Utilization	Timer Controls

## Clothes Washer

Label Energy Rating	151 kWh/Year
Electric Rate	\$0.11/kWh
Annual Gas Cost	\$12.00
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.155

## Appliances and Controls

Programmable thermostat?	Yes
Dishwasher Size	Standard
Dishwasher Efficiency	0.65 EF
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Refrigerator Consumption	691 kWh/Year

## Notes

Initial Inputs \_\_\_\_\_ JS 8/13/13 \_\_\_\_\_  
updated JS 09/30/19

- slab insulation included
- confirm HVAC specs
- modeled to worst case orientation