

# North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY  
MANAGEMENT  
ENERGY EFFICIENCY & SOLAR POWER

## Property

Kingwood Court  
Lillington, NC 27546  
Model: Kent

## Organization

Southern Energy Management  
Justin Smith

## Inspection Status

Results are projected

## Builder

Dream Finders - Fayetteville - Kent plan slab  
Dream Finders - Fayetteville  
Kent plan slab

**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	36.1	34.4
Above-Grade Walls	186.8	184.4
Windows, Doors and Skylights	90.4	82.0
Slab Floor:	73.9	73.9
Framed Floors	0.0	0.0
Foundation Walls	0.0	0.0
Rim Joists	6.8	6.7
<b>Overall UA (Design must be equal or lower):</b>	<b>394.0</b>	<b>381.4</b>

## Requirements

✓	R402.1.5	Total UA alternative compliance passes by 3.2%.	The proposed home meets the UA requirement by 3.2%
✓	402.3.2	Average SHGC: 0.27 Max SHGC: 0.30	Average SHGC of 0.27 is greater than the maximum of 0.30.
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 0.28 CFM50 / ft <sup>2</sup> Shell Area. It must not exceed 0.30 CFM50 / ft <sup>2</sup> Shell Area.
✓	R402.5	Area-weighted average fenestration SHGC	Area-weighted average fenestration SHGC is 0.27. 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 3.2%.**

Name: Justin Smith  
Organization: Southern Energy Management

Signature: Justin Smith  
Digitally signed: 1/17/24 at 10:47 AM

## Ekotrope RATER - Version 4.1.2.3317

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**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville  
Kent plan slab

## General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,000
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	18,340
Total Units in Building	1
Residence Type	Single family detached
Number of Floors in Building	-
Floor Number	-
Model	Kent
Community	
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	R 10 G1 Perimeter	154	On Grade	1	0	1,170.0 ft <sup>2</sup>	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

## Framed Floor

None Present

# Building Summary



**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville

## Framed Floor Library List

None Present

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 15 G1, 16"OC	87.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 G1, 16"OC	35.0 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 FG G1 16" O.C	Medium	1,071.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 15 FG G1 16" O.C	Medium	315.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 15 FG G1 16" O.C	Medium	649.0 ft <sup>2</sup>	Exposed Exterior
2nd floor attic	R 15 FG G1 16" O.C	Medium	649.0 ft <sup>2</sup>	Attic

## Wall Library List

Name	Effective R-value
R 15 FG G1 16" O.C	13.156

# Building Summary



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

**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville

## 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	35/27	1st floor ambient		Yes	6	1	7.1	Southwest	49.9 ft <sup>2</sup>
left 2nd unshaded	35/27	2nd floor ambient		Yes	0	0	0	Northwest	13.8 ft <sup>2</sup>
left unshaded	35/27	1st floor ambient		Yes	0	0	0	Northwest	27.5 ft <sup>2</sup>
rear 2nd unshaded	35/27	2nd floor ambient		Yes	0	0	0	Northeast	27.5 ft <sup>2</sup>
rear unshaded	35/27	1st floor ambient		Yes	0	0	0	Northeast	69.9 ft <sup>2</sup>
right 2nd unshaded	35/27	2nd floor ambient		Yes	0	0	0	Southeast	13.8 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
35/27	0.27	0.350

## Skylight

None Present

## Skylight Library List

None Present

## 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	18.0 ft <sup>2</sup>	Attic
front door	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft <sup>2</sup>	Exposed Exterior
garage door	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft <sup>2</sup>	Unconditioned, attached garage

# Building Summary



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

**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville

## Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

## Roof Insulation

Name	Library Type	Attic Exterior Area [ft <sup>2</sup> ]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
Attic	R 38 Attic BLOWN FG G1 2x8 24" OC NO Radiant	1,059.6	No	Dark	883.0 ft <sup>2</sup>	Attic
Vaulted Attic	R 30 Attic FG VAULTED G1 2x12 24" OC NO Radiant	321	No	Dark	321.0 ft <sup>2</sup>	Vaulted Roof

## Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 30 Attic FG VAULTED G1 2x12 24" OC NO Radiant	No	29.153
R 38 Attic BLOWN FG G1 2x8 24" OC NO Radiant	No	37.772

## Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1467 CFM at 50 Pa	Blower-door tested	4

## Mechanical Ventilation

None Present

## Lighting

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

# Building Summary



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

**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville

## 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

## Whole House Fan Library List

None Present

# Building Summary



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

**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville  
Kent plan slab

## Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heating	z 50 gal. 0.92 EF Elec		0%	0%	100%	Unspecified
whole house heat pump	z 36k 14.3 SEER2 7.5 HSPF2		100%	100%	0%	Unspecified

## Equipment Type: z 36k 14.3 SEER2 7.5 HSPF2

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	ECM (Variable Speed)
Heat Pump System Type	Split System
Heating Efficiency	7.5 HSPF2
Heating Capacity [kBtu/h]	36
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 COP
Use default Supplemental Heat	Yes
Cooling Efficiency	14.3 SEER2
Cooling Capacity [kBtu/h]	36

## 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

# Building Summary



**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville  
Kent plan slab

## Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house heat pump
Cooling Equipment	whole house heat pump
Sq. Feet Served	2,000
# Return Grilles	4
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	540
Return Duct Area [ft <sup>2</sup> ]	400
Leakage to Outdoors	80 CFM @ 25Pa (4 / 100 ft <sup>2</sup> )
Total Leakage	80 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented)
Percent Supply Area	80
Percent Return Area	80
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	20
Percent Return Area	20
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



# Building Summary



SOUTHERN ENERGY  
MANAGEMENT  
ENERGY EFFICIENCY & SOLAR POWER

## Property

Kingwood Court  
Lillington, NC 27546  
Model: Kent

## Organization

Southern Energy Management  
Justin Smith

## Inspection Status

Results are projected

## Builder

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

## Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	63
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	10
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 Defaults Type	ENERGY STAR Standard
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

# Building Summary



**Property**  
Kingwood Court  
Lillington, NC 27546  
Model: Kent

**Organization**  
Southern Energy Management  
Justin Smith

**Inspection Status**  
Results are projected

Dream Finders - Fayetteville - Kent plan slab CZ 4 - ecoSelec  
Kent plan slab

**Builder**  
Dream Finders - Fayetteville

## 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

- updated JS 01/17/24
- uninsulated slab modeled
- confirm attic insulation and hvac specs
- ventilation modeled as none
- confirm cfl lighting %
- modeled to worst case orientation