

# 10305 Hwy 159W

Bellville, TX 77418

Builder: Chesmar

Model: Custom Community: N/A

This report is based on a proposed design and does not confirm field enforcement of design elements.

## THIS HOME IS CERTIFIED TO MEET THE 2015 INTERNATIONAL ENERGY CONSERVATION CODE

### Building Features

Ceiling Attic, R-30

Duct Supply R-6.0, Return R-6.0

Above Grade Walls R-13

Duct Leakage to Outside 0 CFM @ 25Pa (0 / 100 ft<sup>2</sup>)

Foundation Walls N/A

Total Duct Leakage 70 CFM @ 25Pa (Rough-In, with Air Handler)

Framed Floor N/A

Heating Air Source Heat Pump • Electric • 9 HSPF

Slab R-5.9 Perimeter, R-0.0 Under

Cooling Air Source Heat Pump • Electric • 14.5 SEER

Infiltration 1.25 ACH50

Water Heating Water Heater • Propane • 0.82 Energy Factor

Window U-Value: 0.34, SHGC: 0.2

As a 3rd party extension of the code jurisdiction utilizing these reports, I certify that this energy code compliance document has been created in accordance with the requirements of Chapter 4 of the adopted International Energy Conservation Code based on Climate Zone 2. If rating is Projected, I certify that the building design described herein is consistent with the building plans, specifications, and other calculations submitted with the permit application. If rating is Confirmed, I certify that the address referenced above has been inspected/tested and that the mandatory provisions of the IECC have been installed to meet or exceed the intent of the IECC or will be verified as such by another party.

Name:

Brady Littleton

Signature:

*Brady Littleton*

Organization:

French Inspection

Digitally signed:

6/4/21 at 7:53 PM

Ekotrope RATER - Version 4.0.0.hf.2686

2015 IECC compliance results calculated using Ekotrope RATER's energy and code compliance algorithm  
Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users  
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# IECC 2015 Performance Compliance

## Property

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Model: Custom  
Community: N/A

## Organization

French Inspection  
Brady Littleton  
8323304708

## Inspection Status

Results are projected

Larry Coomer Residents  
Initial House Design

## Builder

Chesmar

This report is based on a proposed design and does not confirm field enforcement of design elements.

## Annual Energy Cost

Design	IECC 2015 Performance	As Designed
Heating	\$299	\$222
Cooling	\$369	\$299
Water Heating	\$460	\$460
<b>SubTotal - Used to determine compliance</b>	<b>\$1,129</b>	<b>\$981</b>
Lights & Appliances	\$696	\$696
Onsite generation	\$0	\$0
<b>Total</b>	<b>\$1,825</b>	<b>\$1,677</b>

R405.3 Source Energy Exception: The proposed home uses 14.2 MBtu LESS source energy than the reference home.

## Requirements

- 405.3 Performance-based compliance passes by 17.6%
- R402.4.1.2 Air Leakage Testing Air sealing is 1.25 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
- R403.6.1 Mechanical Ventilation Efficacy
- Mandatory Checklist Mandatory code requirements that are not checked by Ekotrope must be met.
- R405.2 Duct Insulation

**Design exceeds requirements for IECC 2015 Performance compliance by 17.6%.**

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Organization: French Inspection

Signature: Brady Littleton  
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# IECC 2015 Building UA Compliance

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## Building UA

Elements	IECC Reference	As Designed
Ceilings	79.5	84.4
Above-Grade Walls	219.4	223.9
Windows, Doors and Skylights	129.4	118.0
Slab Floor:	158.1	125.4
Framed Floors	0.0	0.0
Foundation Walls	0.0	0.0
Rim Joists	0.0	0.0
<b>Overall UA (Design must be equal or lower):</b>	<b>586.4</b>	<b>551.7</b>

## Requirements

- ✓ 402.1.5 Total UA alternative compliance passes by 5.9%.
- ✓ 402.3.2 Glazed Fenestration SHGC Average SHGC: 0.20 Max SHGC: 0.25
- ✓ R402.4.1.2 Air Leakage Testing Air sealing is 1.25 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
- ✓ R403.6.1 Mechanical Ventilation Efficacy
- ✓ Mandatory Checklist Mandatory code requirements that are not checked by Ekotrope must be met.
- ✓ R403.3.3 Duct Testing
- ✓ 403.5.3 Hot water pipe insulation

**Design exceeds requirements for IECC 2015 Prescriptive compliance by 5.9%.**

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Organization: French Inspection

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Digitally signed: 6/4/21 at 7:53 PM

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# IECC 2015 Emissions Comparison

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Chesmar

Annual Carbon Dioxide (CO <sub>2</sub> ) [tons/yr]	2015 IECC	Rated Home	Savings	% Saved
Heating	1.9	1.4	0.5	25.7%
Cooling	2.4	1.9	0.5	19.2%
Water Heating	1.0	1.0	0.0	0%
Lights & Appliances	4.5	4.5	0.0	0%
Photovoltaics	-0.0	-0.0	0.0	0%
<b>TOTAL</b>	<b>9.9</b>	<b>8.9</b>	<b>1.0</b>	<b>9.7%</b>

Annual Sulfur Dioxide (SO <sub>2</sub> ) [lbs/yr]	2015 IECC	Rated Home	Savings	% Saved
Heating	4.3	3.2	1.1	25.7%
Cooling	5.3	4.2	1.0	19.2%
Water Heating	0.0	0.0	0.0	0%
Lights & Appliances	9.9	9.9	0.0	0%
Photovoltaics	-0.0	-0.0	0.0	0%
<b>TOTAL</b>	<b>19.4</b>	<b>17.3</b>	<b>2.1</b>	<b>10.8%</b>

Annual Nitrogen Oxide (NO <sub>x</sub> ) [lbs/yr]	2015 IECC	Rated Home	Savings	% Saved
Heating	2.4	1.8	0.6	25.7%
Cooling	3.0	2.4	0.6	19.2%
Water Heating	2.3	2.3	0.0	0%
Lights & Appliances	5.6	5.6	0.0	0%
Photovoltaics	-0.0	-0.0	0.0	0%
<b>TOTAL</b>	<b>13.3</b>	<b>12.1</b>	<b>1.2</b>	<b>8.9%</b>

# IECC 2015 Fuel Summary Comparison

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Annual Energy Cost [\$ /yr]	2015 IECC	Rated Home	Savings	% Saved
Electric	\$1,364	\$1,217	\$147	10.8%
Propane	\$460	\$460	\$0	0%

Annual End-Use Cost [\$ /yr]	2015 IECC	Rated Home	Savings	% Saved
Heating	\$299	\$222	\$77	25.8%
Cooling	\$369	\$299	\$70	19%
Water Heating	\$460	\$460	\$0	0%
Lights & Appliances	\$696	\$696	\$0	0%
Onsite Generation	-\$0	-\$0	\$0	0%
Service Charges	\$0	\$0	\$0	0%
Total	\$1,825	\$1,677	\$148	8.1%

Annual End-Use Consumption	2015 IECC	Rated Home	Savings	% Saved
Heating [Electric kWh]	2,659.4	1,976.7	682.7	25.7%
Cooling [Electric kWh]	3,286.0	2,655.9	630.0	19.2%
Hot Water [Propane Gallons]	163.3	163.3	0.0	0%
Lights & Appliances [Electric kWh]	6,193.3	6,193.3	0.0	0%
Total [Electric kWh]	12,138.6	10,825.9	1,312.7	10.8%
Total [Propane Gallons]	163.3	163.3	0.0	0%
Total Onsite Generation kWh	0.0	0.0	0.0	0%

Peak Electric Consumption	2015 IECC	Rated Home	Savings	% Saved
Peak Winter kW	1.10	1.03	0.07	6.7%
Peak Summer kW	3.00	2.49	0.51	17%

## Utility Rates

Electricity	US Average
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# IECC 2015 Proposed Home Summary

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## General Building Information

Number Of Bedrooms	3
Number Of Floors	1
Conditioned Floor Area [sq. ft.]	2,649
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	27,650
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	Custom
Community	N/A
Climate Zone	2A

## 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	1 in XPS	227	On Grade	0	0	2,649.0 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
1 in XPS	Wood Frame / Other	No	0	2	5.85	No	0.00

## Framed Floor

None Present

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## Framed Floor Library List

None Present

## Rim Joist

None Present

## Rim Joist Library List

None Present

## Wall

Name	Library Type	Surface Color	Surface Area	Location
Exterior Wall	2 x 4 7/16" OSB R13 Brick 16" OC Chesmar	Light	2,270.0 ft <sup>2</sup>	Exposed Exterior
Garage Wall	2 x 4 Garage Wall R 13 16" oc Chesmar	Medium	665.0 ft <sup>2</sup>	Unconditioned, attached garage

## Wall Library List

Name	Effective R-value
2 x 4 7/16" OSB R13 Brick 16" OC Chesmar	11.853
2 x 4 Garage Wall R 13 16" oc Chesmar	11.141

## Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
EAST Window / Glass Door	Chesmar Bulk	Exterior Wall		Yes	0	0	0	East	10.4 ft <sup>2</sup>
NORTH Window / Glass Door	Chesmar Bulk	Exterior Wall		Yes	0	0	0	North	90.0 ft <sup>2</sup>
SOUTH Window / Glass Door	Chesmar Bulk	Exterior Wall		Yes	0	0	0	South	146.0 ft <sup>2</sup>

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Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
WEST Window / Glass Door	Chesmar Bulk	Exterior Wall		Yes	0	0	0	West	18.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
Chesmar Bulk	0.2	0.340

## Skylight

None Present

## Skylight Library List

None Present

## Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorbance	Surface Color	Surface Area	Location
Front Door	Chesmar Opaque Door R-2.1	Exterior Wall		0.9	0.75	Medium	48.0 ft <sup>2</sup>	Exposed Exterior
Garage	Chesmar Opaque Door R-2.1	Garage Wall		0.9	0.75	Medium	11.0 ft <sup>2</sup>	Exposed Exterior

## Opaque Door Library List

Name	Effective R-value
Chesmar Opaque Door R-2.1	2.10



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## Roof Insulation

Name	Library Type	Attic Exterior Area [ft <sup>2</sup> ]	Clay or Concrete	Roof Tiles	Surface Color	Surface Area	Location
Cathedral Ceiling	2x8, R30 Batt Cathedral	412		No	Medium	412.0 ft <sup>2</sup>	Attic
Roof	2x8 R30 Cellulose Loose Fill	3,321		No	Medium	2,237.0 ft <sup>2</sup>	Attic

## Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
2x8 R30 Cellulose Loose Fill	No	32.681
2x8, R30 Batt Cathedral	Yes	25.884

## Whole House Infiltration

Infiltration	Measurement Type	Sheiter Class
1.25 ACH 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

## Onsite Generation

None Present

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## Onsite Generation Library List

None Present

## Solar Generation

None Present

## Dehumidifier

None Present

## Dehumidifier Library List

None Present

## Conditioning Equipment

Name	Library Type	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Cooling Equipment	Lennox 16 Seer Heat Pump	100%	100%	0%	Attic
Water Heater	Larry Water Heater	0%	0%	100%	Unspecified

## Equipment Type: Larry Water Heater

Equipment Type	Water Heater
Fuel Type	Propane
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.615 Energy Factor
Tank Capacity (gal.)	40

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## Equipment Type: Lennox 16 Seer Heat Pump

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	9 HSPF
Heating Capacity [kBtu/h]	44.5
Cooling Efficiency	14.5 SEER
Cooling Capacity [kBtu/h]	47

## Distribution System

Distribution Type	Forced Air
Heating Equipment	Cooling Equipment
Cooling Equipment	Cooling Equipment
Sq Feet Served	2,649
# Return Grilles	3
Supply Duct R Value	6
Return Duct R Value	6
Supply Duct Area [ft <sup>2</sup> ]	715.23
Return Duct Area [ft <sup>2</sup> ]	397.35
Leakage to Outdoors	0 CFM @ 25Pa (0 / 100 ft <sup>2</sup> )
Total Leakage	70 CFM25
Total Leakage Duct Test Conditions	Rough-In, with Air Handler
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Conditioned Space
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

## Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	70.42253521

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