

ROBERT G. CASSILLY
Harford County Executive

ROBERT S. McCORD
Director of Administration



RICHARD C. TRUITT
Director of Inspections,
Licenses and Permits

2021 IECC Residential Energy Efficiency Selection for New Construction

All new residential one and two family dwellings must comply with the residential provisions of the 2021 IECC unless the building is considered a "Low Energy Building" as defined in Section R402.1

Applicants must select one compliance path option from page 1 along selecting applicable additional energy feature from tables on Page 2. Additional compliance documentation must be submitted with this form for the Total UA Alternative, Total Building Performance or Energy Rating Index Compliance Alternative path options.

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**Prescriptive Compliance
Option R402.1**

Table R402.1.2 Maximum Assembly U Factors and Fenestration Requirements (2021 IECC)

Climate Zone	Fenestration U Factor	Skylight U Factor	Glazed Fenestration SHGC	Ceiling U Factor	Wood Frame Wall U Factor	Mass Wall U Factor	Floor U Factor	Basement Wall U Factor	Crawl Space Wall U Factor
4 Except Marine	0.30	0.55	0.40	0.024	0.045	0.098	0.047	0.059	0.065

Must select Additional Energy Feature from Table 1.

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**Prescriptive R Value
Alternative R402.1.3**

Table R402.1.3 Insulation minimum R values and Fenestration Requirements by Component (2021 IECC)

Climate Zone	Fenestration U Factor	Skylight U Factor	Glazed Fenestration SHGC	Ceiling R value	Wood Frame Wall R value	Mass Wall R value	Floor R value	Basement Wall R value	Slab R value & Depth	Crawl Space Wall R value
4 Except Marine	0.30	0.55	0.40	60 or R49 with raised heel	30 or 20 & 5ci or 13 & 10ci or 0 & 20 ci	8/13	19	10 ci or 13	10 ci, 4ft	10ci or 13

Must select Additional Energy Feature from Table 1.

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**MD Prescriptive R Value
Alternative R402.1.3.1**

Table R402.1.3.1 MD Alternative Insulation minimum R values and Fenestration Requirements by Component (2021 IECC)

Climate Zone	Fenestration U Factor	Skylight U Factor	Glazed Fenestration SHGC	Ceiling R value	Wood Frame Wall R value	Mass Wall R value	Floor R value	Basement Wall R value	Slab R value & Depth	Crawl Space Wall R value
4 Except Marine	0.30	0.55	0.40	49 or R38 with raised heel	20 or 15 & 3 ci	8/13	19	10 ci or 13	10 ci, 4ft	11ci or 13

Must select Additional Energy Feature(s) to equal or exceed 6% from Table 2.

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Total UA Alternative R402.1.5

Select Additional Energy Feature from Table 1.

Additional compliance report required.

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Total Building Performance R405

Must Select option from Table 3.

Additional compliance report required.

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**Energy Rating Index Compliance
Alternative R406**

Energy Rating Index Value must be 5% less than the Energy Rating Index Target

Additional compliance report required.

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NGBS ICC 700 Silver Rating or Better

Proof of registration with Home Innovation Research Labs required.

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THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST

2021 IECC Residential Energy Efficiency Selection for New Construction

Page 2

Table 1 Select only 1 option. R402.1, R402.1.3 or	
<input type="checkbox"/> Option 1.	Enhanced Envelope Performance.
<input type="checkbox"/> Option 2A.	More Efficient HVAC Equipment Performance. Greater than or equal to 95 AFUE natural gas furnace and 16 SEER air conditioner.
<input type="checkbox"/> Option 2B.	More Efficient HVAC Equipment Performance. Greater than or equal to 10 HSPF/16 SEER air source heat pump.
<input type="checkbox"/> Option 2C.	More Efficient HVAC Equipment Performance. Greater than or equal to 3.5 COP ground source heat pump.
<input type="checkbox"/> Option 3A.	Reduced energy use in service water heating. Greater than or equal to 0.82 EF fossil fuel service water heating system.
<input type="checkbox"/> Option 3B.	Reduced energy use in service water heating. Greater than or equal to 2.0 EF electric service water heating system.
<input type="checkbox"/> Option 3C.	Reduced energy use in service water heating. Greater than or equal to 0.4 solar fraction solar water heating system.
<input type="checkbox"/> Option 4A.	More efficient duct thermal distribution system option. 100 percent of ducts and air handlers located entirely within the building thermal envelope.
<input type="checkbox"/> Option 4B.	More efficient duct thermal distribution system option. 100 percent of ductless thermal distribution system or hydronic thermal distribution system located completely inside the building thermal envelope.
<input type="checkbox"/> Option 4C.	More efficient duct thermal distribution system option. 100 percent of duct thermal distribution system located in conditioned space as defined by Section R403.3.2.
<input type="checkbox"/> Option 5.	Improved air sealing and Efficient Ventilation System option.

Table 3 Select Only 1 Option R405	
<input type="checkbox"/> Option 1.	One of the additional efficiency package options in Table 1 shall be selected without including such measures in the proposed design under Section R405.
<input type="checkbox"/> Option 2.	The proposed design of the building under Section R405.3 shall have an annual energy cost that is less than or equal to 95 percent of the annual energy cost of the standard reference design.

Table 2 MD Alternative Additional Packages Must select one or more options to meet or exceed 6%. R402.1.3.1		
<input type="checkbox"/> 1	≥ 2.5% reduction in total UA	1%
<input type="checkbox"/> 2	≥ 5% reduction in total UA	2%
<input type="checkbox"/> 3	> 7.5% reduction in total UA	2%
<input type="checkbox"/> 4	0.22 U factor windows	3%
<input type="checkbox"/> 5	High performance cooling system (Greater than or equal to 18 SEER and 14 EER air conditioner)	3%
<input type="checkbox"/> 6	High performance cooling system (Greater than or equal to 16 SEER and 12 EER air conditioner)	3%
<input type="checkbox"/> 7	High performance gas furnace (Greater than or equal to 96 AFUE natural gas furnace)	5%
<input type="checkbox"/> 8	High performance gas furnace (Greater than or equal to 92 AFUE natural gas furnace)	4%
<input type="checkbox"/> 9	High performance heat pump system (Greater than or equal to 10 HSPF/18 SEER air source heat pump.)	6%
<input type="checkbox"/> 10	High performance heat pump system (Greater than or equal to 9 HSPF/16 SEER air source heat pump.)	5%
<input type="checkbox"/> 11	Ground source heat pump (Greater than or equal to 3.5 COP ground source heat pump.)	6%
<input type="checkbox"/> 12	Fossil fuel service water heating system (Greater than or equal to 82 EF fossil fuel service water heating system.)	3%
<input type="checkbox"/> 13	High performance heat pump water heating system option (Greater than or equal to 2.9 UEF electric service water heating system.)	8%
<input type="checkbox"/> 14	High performance heat pump water heating system. (Greater than or equal to 3.2 UEF electric service water heating system.)	8%
<input type="checkbox"/> 15	Solar hot water heating system (Greater than or equal to 0.4 solar fraction solar water heating system.)	6%
<input type="checkbox"/> 16	More efficient HVAC distribution system. (100 percent of ductless thermal distribution system or hydronic thermal distribution system located completely inside the building thermal envelope.)	10%
<input type="checkbox"/> 17	100% of ducts in conditioned space. (100 percent of duct thermal distribution system located in conditioned space as defined by Section R403.3.2.)	12%
<input type="checkbox"/> 18	Reduced total duct leakage. (When ducts are located outside conditioned space, the total leakage of the ducts, measured in accordance with R403.3.5, shall be in accordance with one of the following: a. Where air handler is installed at the time of testing, 2.0 cubic feet per minute per 100 square feet of conditioned floor area. b. Where air handler is not installed at the time of testing, 1.75 cubic feet per minute per 100 square feet Of conditioned floor area.)	1%
<input type="checkbox"/> 19	2 ACH50 air leakage rate with ERV or HRV installed. (Less than or equal to 2.0 ACH50, with either an Energy Recovery Ventilator (ERV) or Heat Recovery Ventilator (HRV) installed.)	10%
<input type="checkbox"/> 20	2 ACH50 air leakage rate with balanced ventilation. (Less than or equal to 2.0 ACH50, with balanced ventilation as defined in Section 202 of the 2021 International Mechanical Code.)	4%
<input type="checkbox"/> 21	1.5 ACH50 air leakage rate with ERV or HRV installed. (Less than or equal to 1.5 ACH50, with either an ERV or HRV installed.)	12%
<input type="checkbox"/> 22	1 ACH50 air leakage rate with ERV or HRV installed. (Less than equal to 1.0 ACH50, with either an ERV or HRV installed.)	14%
<input type="checkbox"/> 23	Energy Efficient Appliances (Minimum 3 appliances not to exceed 1 form each type with follow efficiencies. Refrigerator Energy Star Program Requirements, Product Specification for Consumer Refrigeration Products, Version 5.1 (08/05/2021), Dishwasher Energy Star Program Requirements for Residential Dishwashers, Version 6.0 (01/29/2016), Clothes Dryer Energy Star Program Requirements, Product Specification for Clothes Dryers, Version 1.1 (05/05/2017) and Clothes Washer Energy Star Program Requirements, Product Specification for Clothes Washers, Version 8.1 (02/05/2018)	7%
<input type="checkbox"/> 24	Renewable Energy Measure. (See Footnote 4 of Table R408.3 capacity to produce a minimum of 1.0 watt of on site renewable energy per square foot of conditioned floor area.)	11%

This document shall become part of the official permit record. Any deviation from the original submittal will require the permit to be amended along with the submission of applicable documentation supporting the new selections. An amending fee of \$120.00 will be assessed at time of submittal.

Project Address: _____

Applicant Signature: _____ Date: _____

Permit Number: _____

Department Approval: _____

Additional documentation received: ☐