David Matero, AIA

AIA Maine, Vice President
MUBEC Board Member

David Matero
Architecture

MUBEC

Established 2008

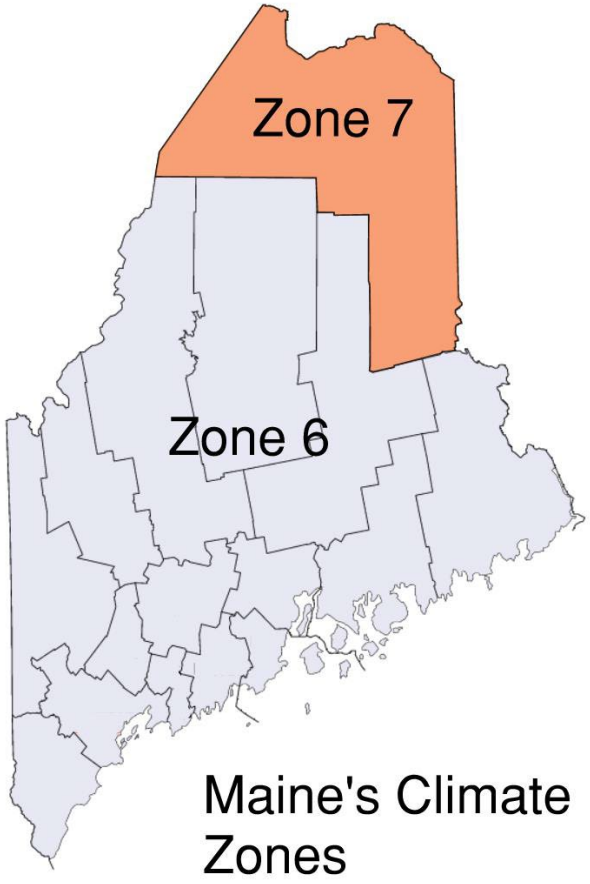
- 2008 Bureau of Building Codes
- 2010 Moved to State Fire Marshal’s Office
- 2014 Moved to Economic Development
- 2018 Moved to State Fire Marshal’s Office
- 2025 Will move to MOCA

MUBEC 2015 → 2021
April 7, 2025

International Residential Code (IRC)
International Building Code (IBC)
International Existing Building Code (IECC)
International Energy Conservation Code (IECC)
International Mechanical Code (IMC)

2019 ASHRAE 62.1 (Indoor Air Quality)
2019 ASHRAE 62.2 (Indoor Air Quality Residential)
or CSA-F327-M91 Canadian Standards

Maine Specific Amendments



Enforcement

Municipalities with at least 4,000 residents must enforce MUBEC.

Smaller towns have the option to enforce MUBEC.

Regardless of size of town, location, or local enforcement, ALL construction in the state of Maine must still meet MUBEC standards

Information required on Construction Documents

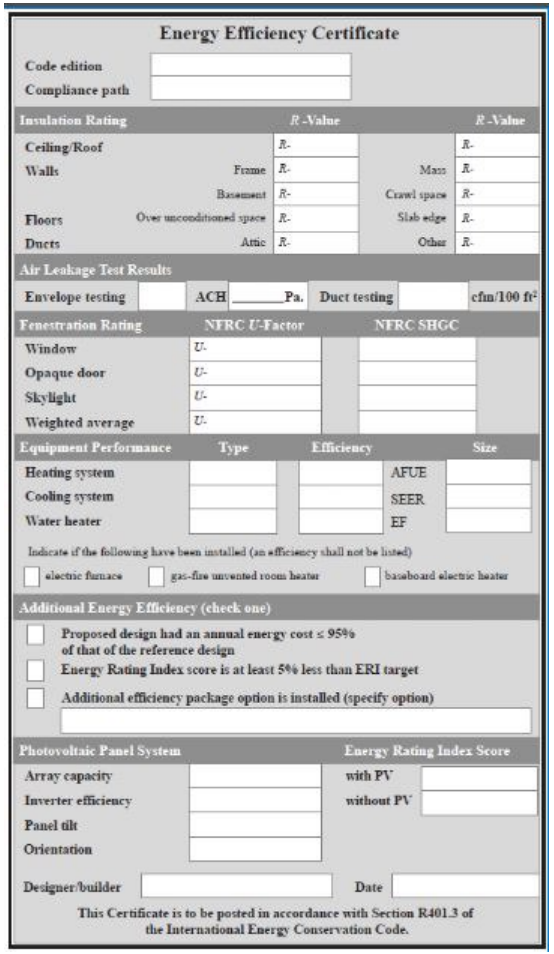
Residential projects

1. **Energy compliance path**
2. Insulation materials and their R-values
3. Fenestration U-factors and SHGC
4. Area-weighted U-factor and SHGC calculations
5. Mechanical system design criteria
6. Mechanical and service water-heating systems and equipment types, sizes and efficiencies
7. Equipment and system controls
8. Duct sealing, duct and pipe insulation and location
9. Air sealing details

Permanent Certificate posted

Certificate

- Requirements for the certificate are expanded to include
  - Code edition
  - Compliance path
  - Additional energy efficiency option
  - PV system information
  - Energy Rating Index score



Energy Efficiency Certificate

Code edition

Compliance path

Insulation Rating		R-Value		R-Value
Ceiling/Roof		R-		R-
Walls	Frame	R-	Mass	R-
	Basement	R-	Crawl space	R-
Floors	Over unconditioned space	R-	Slab edge	R-
Ducts	Attic	R-	Other	R-

Air Leakage Test Results

Envelope testing ____ ACH ____ Pa. Duct testing ____ cfm/100 ft²

Fenestration Rating	NFRC U-Factor	NFRC SHGC
Window	U-	
Opaque door	U-	
Skylight	U-	
Weighted average	U-	

Equipment Performance	Type	Efficiency		Size
Heating system			AFUE	
Cooling system			SEER	
Water heater			EF	

Indicate if the following have been installed (an efficiency shall not be listed)

☐ electric furnace ☐ gas-fire unvented room heater ☐ baseboard electric heater

Additional Energy Efficiency (check one)

☐ Proposed design had an annual energy cost ≤ 95% of that of the reference design

☐ Energy Rating Index score is at least 5% less than ERI target

☐ Additional efficiency package option is installed (specify option)

Photovoltaic Panel System		Energy Rating Index Score	
Array capacity		with PV	
Inverter efficiency		without PV	
Panel tilt			
Orientation			

Designer/builder ____ Date ____

This Certificate is to be posted in accordance with Section R401.3 of the International Energy Conservation Code.

Compliance Path

Prescriptive Compliance Option	**Total Building Performance Option**	**Energy Rating Index Option**	**MUBEC Adopted Alternatives**
Comply with Section R401 through R404	Comply with Section R405	Comply with Section R406	DOE Zero Energy Ready Homes Certificate
Plus one additional efficiency package option, R408	**Plus** one additional efficiency option, R408 or annual energy cost of proposed design is 95% of that of the reference design	Reduction of ERI target by at least 5% (ERI 54 target in zone 6, ERI 53 target in zone 70	Phius or Passive House Certification
UA Calculation, REScheck, Ekotrobe, Rem/Rate		Resnet, HERS rating	Passive House Planning package

Additional Efficiency Package Options

- Enhanced envelope performance
- More efficient HVAC equipment option
- Reduced energy use in service water-heating option
- More efficient duct thermal distribution system option
- Improved air-sealing and efficient ventilation

Prescriptive Compliance Option, R402.1.3

INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT

	Fenestration U-Factor	Skylight U-Factor	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
CZ 6 / 2015	0.32	0.55	49	20+5 or 13+10	15/20	30	15/19	10, 4 ft	15/19
CZ 6 / 2021	**0.30**	0.55	**60***	**30 or 20+10ci or 13+15ci or 0+20ci**	15/20	30	**15ci or 19 or 13 & 5ci**	10ci, 4 ft	**15ci or 19 or 13 & 5ci**
CZ 7 / 2015	0.32	0.55	49	20+5 or 13+10	19/21	38	15/19	10, 4 ft	15/19
CZ 7 / 2021	**0.30**	0.55	**60***	**30 or 20+10ci or 13+15ci or 0+20ci**	19/21	38	**15ci or 19 or 13 & 5ci**	10ci, 4 ft	**15ci or 19 or 13 & 5ci**

*R402.2.1. R-60 can be reduced to R-49 if the insulation is uncompressed above the ceiling and top plate.

Bold = Changes from the 2015 IECC
Red = Maine-specific amendment

Slide from passivehausMaine

Prescriptive Compliance Option

Meet the maximum U-factor in Table R402.1.2	**Meet the minimum component R-values in Table R402.1.3**	**Meet the Total UA alternative requirements in section R402.1.2**

Maine Specific Amendments

2021 IECC	Maine Specific Amendments
R402.4.1.2 Testing: The building or dwelling unit shall be tested for air leakage. The maximum are leakage rate for any building or dwelling unit under any compliance path shall not exceed 5.0 air changes per hour or 0.28 cubic feet per minute per square foot of dwelling unit enclosure area	Section R402.1.1.3 Delete “5.0” and insert “3.0” in its place Delete “0.28” and insert “0.20” in its place
Insert a new section **“R402.4.7 Bulkhead enclosures. “**	R402.4.7 Bulkhead enclosures. Where a bulkhead enclosure is installed for basement access, a wall and vertical door must be installed at the base of the stairs or where the bulkhead enclosure meets the basement wall and must be air sealed in accordance with Table R402.4.1.1

Stretch Code

- **Commercial Projects:** The Total Building UA for the project, calculated as outlined in C402.1.5, shall exceed the UA requirements by at least 15% over a code compliant project

- **Residential Projects:** The Total Building UA for the project, calculated as outlined in R402.1.5, shall exceed the UA requirements by at least 15% over a code compliant project. For residential projects that do not include fossil fuels for any use (heating, cooling, hot water, backup heat, cooking, etc.) the Total Building UA shall exceed the UA requirements by at least 10% over a code compliant project. This electrification incentive allows the use of fossil fuels for backup power generation.