

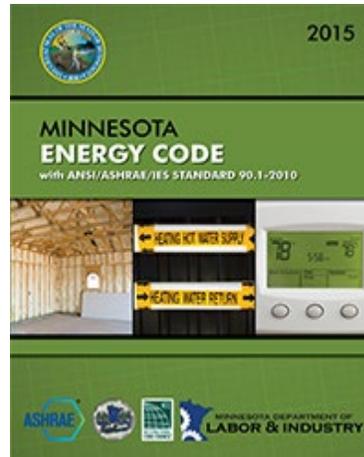
# Background on Energy Efficiency (DOE & Minnesota)

# Energy Efficiency Improvements (DOE)

- The Department of Energy (DOE) reviews the energy savings impact of updated code editions and publishes its findings in the *Federal Register*. The DOE determination and accompanying technical analysis serve as useful guidance to state and local governments as they review and update their building codes
- The IECC is developed by the International Code Council (ICC) through an established industry review and consensus process with updated editions typically published every three years.

# Energy Efficiency Improvements (DOE)

- The current Minnesota energy code for residential buildings was adopted on February 14, 2015 and included adoption of the *2012 International Conservation Code (IECC)*



- Since Minnesota's adoption of the 2012 IECC in 2015, two additional editions of the IECC have been published, the 2015 and 2018.

# Energy Efficiency Improvements (DOE)

## U.S. Department of Energy (DOE) Final Determination Regarding Energy Efficiency Improvement in **2015** & **2018** editions of the International Energy Conservation Codes (IECC) for Residential Buildings ([www.energycodes.gov/development/determinations](http://www.energycodes.gov/development/determinations))

	2015 IECC	2018 IECC	Total
% Energy Cost Savings	.73	1.97	2.7
% Source Energy Savings	.87	1.91	2.78
<b>% Site Energy Savings</b>	<b>.98</b>	<b>1.68</b>	<b>2.66</b>

- Energy Cost: The total cost of energy required for building functions.
- Source Energy: The energy required to power a building including generation or distribution.
- Site Energy: The energy consumed at the end of the generation cycle within the building site, sometimes referenced as “behind the meter” or **as shown on the building’s utility bill.**

# Energy Efficiency Improvements (DOE)

## 2015-06-11 Determination Regarding Energy Efficiency Improvements in the 2015 International Energy Conservation Code for Residential Buildings

DOE found that the vast majority of changes in the 2015 IECC appear to be neutral (*i.e.*, have no direct impact on energy savings) within the context of the determination analysis. DOE also found that *beneficial* changes (*i.e.*, increased energy savings) outweigh any changes with a *detrimental* effect on energy efficiency in residential buildings.

In total, 76 individual changes were identified, and of these changes:

- 6 were considered beneficial;
- 62 were considered neutral;
- 5 were considered negligible
- 2 were considered detrimental and;
- 1 was considered unquantifiable

# Energy Efficiency Improvements (DOE)

## 2015-06-11 Determination Regarding Energy Efficiency Improvements in the 2015 International Energy Conservation Code for Residential Buildings

DOE's analysis identified several changes that compose most of the .98 % site energy savings associated with the 2015 IECC code:

- Control requirements for certain hot-water heating systems
- Increased insulation on return ducts to control condensation
- Pipe insulation for  $\frac{3}{4}$ " water line
- Scopes historic buildings
- Scopes tropical locations

# Energy Efficiency Improvements (DOE)

## 2019-12-10 Determination Regarding Energy Efficiency Improvements in the **2018** International Energy Conservation Code for Residential Buildings

DOE reviewed the 2018 IECC to identify changes that have a direct impact on energy efficiency, and which could be reasonably quantified in estimating national average savings impacts.

In total, 47 individual changes were identified, and of these changes:

- **11 were expected to reduce energy use;**
- 3 were expected to increase energy use, and;
- 33 were considered administrative or not energy related.

# Energy Efficiency Improvements (DOE)

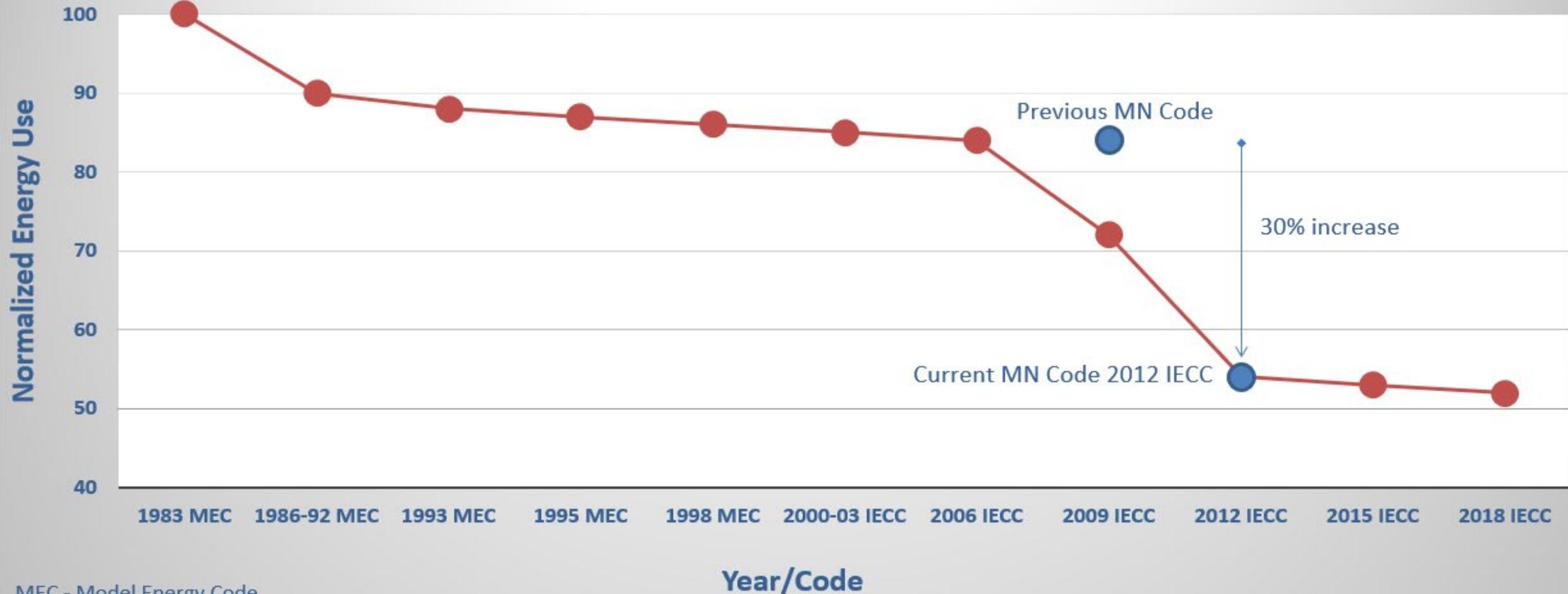
## 2019-12-10 Determination Regarding Energy Efficiency Improvements in the 2018 International Energy Conservation Code for Residential Buildings

Of the 11 deemed beneficial, DOE's analysis identified 2 (two) key changes that compose most of the 1.68% energy savings associated with the 2018 IECC code:

- Reduces window “U” factor from .32 to .30.  
*Most new homes built in Minnesota are typically constructed with window “U” values from .27 to .29.*
- Increases high-efficacy lighting from 75% to 90% of permanently installed fixtures.  
*Most new homes in Minnesota typically include high efficacy lighting (LED’s)*

# Energy Efficiency Improvements (DOE)

## Improvement in Residential Energy Codes (1983 - 2018)



MEC - Model Energy Code

IECC - International Energy Conservation Code