



## Residential Energy Use Comparison: IN (CZ 4 + 5) IN 2009 IECC, 2018 IECC

The adoption of the unamended 2018 International Energy Conservation Code (IECC) will greatly benefit Indiana residents by improving the comfort, air quality, efficiency and performance of newly constructed residential buildings. In addition to improving building performance, the 2018 IECC will ensure critical efficiency components are installed - for all income levels - when it's most cost-effective to do so, during the initial construction of the building. Below are findings which highlight the potential for energy and energy cost savings when building to the unamended 2018 IECC in climate zone 4 and 5.<sup>1</sup> On the back of this sheet MEEA provides a description of specific code improvements that largely influence building improvements.

### Comparison of Current Indiana Code against the 2018 IECC as Written

- If the unamended 2018 IECC were adopted, **a future homeowner could expect to reduce energy use by 25% and save ~\$500** per year on energy bills.
- If the 2018 IECC were passed as written, the **local economy could expect to gain \$6.6 million in the first year.**

	Reduced Energy Use Per Home	Annual Energy Cost Savings Per Unit	Simple Payback Period <sup>2</sup>	Net Positive Cash Flow <sup>2</sup>	Life-cycle Cost Savings <sup>2</sup>
Climate Zone 4	24%	\$427	5.2 years	10 months	\$5,670
Climate Zone 5	25%	\$491	4.4 years	8 months	\$6,825
<b>Annual Statewide Economic Gain:<sup>3</sup> \$ 6,600,000/yr</b> <b>Annual Statewide Energy Savings: 607,000 MMBTU</b>					

### Importance for Low-Income Households

Low-income households - which include an increasingly larger share of elderly adults - operate on fixed incomes and tight budgets.<sup>4</sup> Both the energy savings and building health benefits associated with adopting the 2018 IECC are especially critical to improving the lives of this at-risk community for the following reasons:

- This population **spends double the amount of their income on energy bills** compared to the national average.<sup>5</sup>
- **These residents do not have the opportunity to retrofit after the home is built;** improving comfort, efficiency, and occupant health needs to be done during construction.
- Considering buildings are around for 50 -100 years, **all newly built homes could eventually be occupied by low-income residents.**

\* Sources listed on the back of this page



## Significant Improvements from Adopting the 2018 IECC:

### Building Thermal Envelope

- **Air Infiltration:** Tighter building envelopes and envelope testing
  - A tighter building envelope and a reduced air leakage rate will improve air quality, comfort and building efficiency.
  - This is verified by diagnostic blower door test; it is difficult to meet the requirement and realize energy benefits without testing.
- **Insulation:** Increased wall, ceiling and basement insulation (Climate zone dependent)
  - Increasing insulation is most cost-effective during initial construction and is not often addressed after the home is constructed.
- **Windows:** More efficient windows
  - More efficient windows and increased insulation improve the building thermal envelope resulting in improved efficiency and comfort.
- **Mechanical Ventilation:** Whole house mechanical ventilation that meets the 2015 IRC/IMC is required
  - Controlled ventilation guarantees the exchange of fresh and filtered air in the home, resulting in better indoor air quality.

### HVAC System

- **Duct Tightness:** More effective duct systems through reduced leakage
  - A tighter duct system and a reduced leakage rate improve air quality and duct system efficiency.
  - This requirement is verified with a diagnostic duct leakage test when the ducts are not entirely within conditioned space.

### Lighting

- **Lighting:** 40% increase in efficient lighting
  - This change will result in cost-effective electricity savings for the homeowner.

#### Sources:

1. Based on MEEA REM/Design analysis using DOE model home specifications - IN 2009 IECC to 2018 IECC home. Determined energy savings and multiplied that by EIA Indiana 2016 residential energy costs.
2. Based on the US DOE methodology for residential cost-effectiveness in energy codes.  
<https://www.energycodes.gov/development/residential/methodology>  
Incremental Costs of \$2,260 (cz4) and \$2,197 (cz 5) were derived from the following sources: PNNL, RS Means, Home Depot, and local energy raters.
3. Based on 14,640 new construction building permits in 2016. Source: U.S. Census data, 2016 1+2 Unit residential homes in Indiana: <https://www.census.gov/construction/bps/txt/tb2u2016.txt>
4. Now over 25 million American's 60+ live at or below 250% of the federal poverty level.  
<https://www.ncoa.org/news/resources-for-reporters/get-the-facts/economic-security-facts/>
5. See ACEEE and EE for All. Lifting the High Energy Burden in America's Largest Cities  
[http://energyefficiencyforall.org/sites/default/files/Lifting%20the%20High%20Energy%20Burden\\_0.pdf](http://energyefficiencyforall.org/sites/default/files/Lifting%20the%20High%20Energy%20Burden_0.pdf)