



Virginia Energy Code Field Study: Energy Savings Opportunities



OVERVIEW

The Southeast Energy Efficiency Alliance (SEEA) conducted a study of 138 new single-family homes under construction in Virginia to determine the level of compliance with the building energy code using an accepted methodology. The study was initiated in August 2017 and continued through May 2018. During this time, the residential code in Virginia adhered to the 2012 International Energy Conservation Code (IECC) with additional state-specific amendments.

Significant savings opportunities for improving compliance in **all seven high-impact areas** were identified. Each year, this has the potential to cut household energy costs by **\$2,936,843**. The full report can be found [here](#).

AT A GLANCE

Goal

Assess energy efficiency and energy savings potential

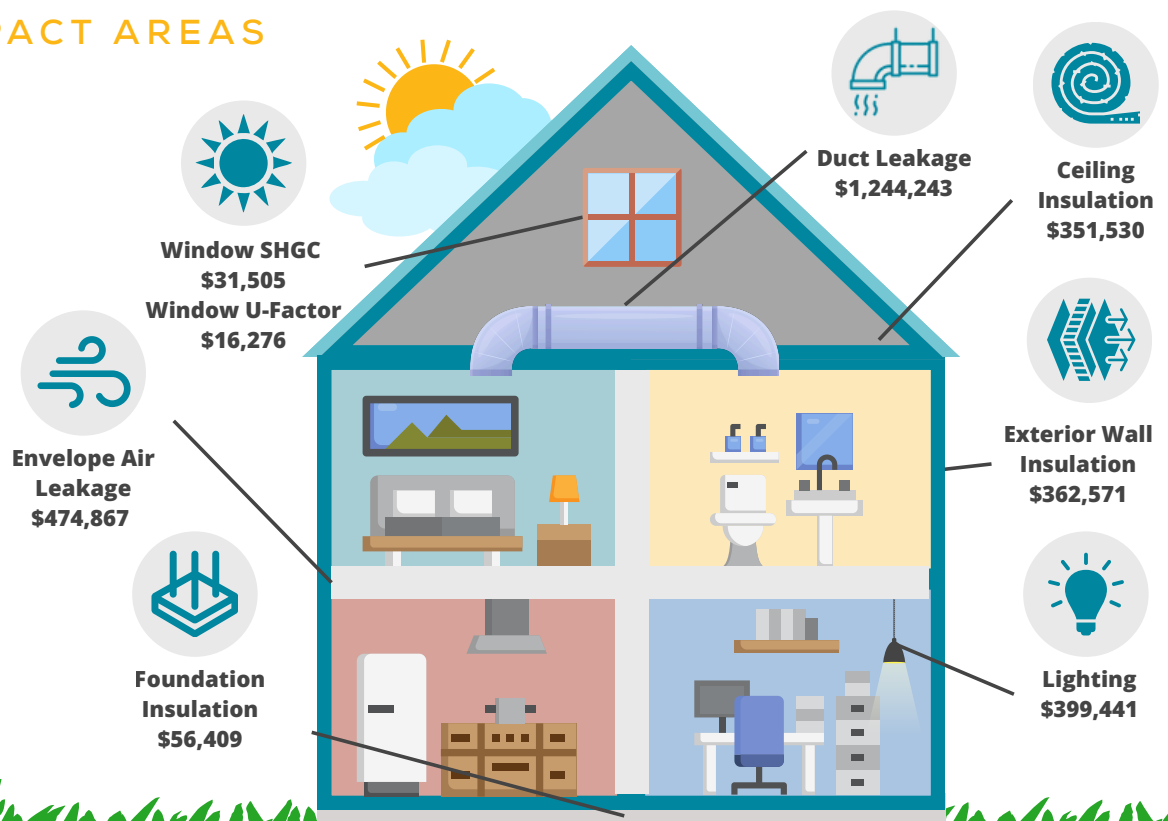
Annual Savings Potential

\$2,936,843

Largest Savings Impact

Duct Leakage

HIGH-IMPACT AREAS



ENVELOPE AIR LEAKAGE

- Compliance with the 5 ACH50 requirement was observed in 78% of cases.
- Reductions in envelope air leakage rate represent an opportunity for improvement.

DUCT LEAKAGE

- Most field observations did not meet the requirement.
- Ductwork leakage requirements were met in 37% of homes.
- Reductions in duct leakage represent an opportunity for improvement.

CEILING INSULATION

- Compliance with the R-value requirement was achieved in 96% of observations; 82% met the requirement, and 14% exceeded it.
- Only 75% of observations met the U-Factor requirement with Grade I insulation installation quality, indicating an opportunity for future improvement.

LIGHTING

- Only 65% of homes met the prescriptive compliance for lighting efficacy with all 65% exceeding the requirement.

WALL INSULATION

- Wall insulation met or exceeded the prescriptive R-value requirement in 94% of homes.
- Overall assembly performance is a continued savings opportunity with only 23% compliance with U-Factor due to poor Insulation Installation Quality (IIQ).

WINDOWS

- There was 99% compliance with the prescriptive window U-Factor requirements, with 95% exceeding compliance.
- There was 99% compliance with the 2015 Virginia Energy Efficiency Council (VAEEC) requirement for window SHGC, with all 99% exceeding compliance.

FOUNDATION & FOUNDATION INSULATION

- **Basements:**
 - Most basement wall insulation R-value observations met or exceeded the prescriptive requirements.
 - However, only 50% met the U-Factor requirement, with approximately 30% of homes having Grade I insulation installation quality.
- **Slabs:**
 - No observations met the slab edge insulation requirements.
 - All observations of slab edge insulation were R-4, below the R-10 requirement.
- **Floors:**
 - Most floor observations met the R-value requirements.
 - However, only 6% of observations had Grade I insulation installation quality, and only 6% were compliant with the U-Factor.
- **Crawlspaces:**
 - All crawlspace R-value (and U-factor) observations met or exceeded the requirement

