Meeting the Energy Conservation Codes

International Energy Conservation Code, 2018 Edition: Developed and published by the International Codes Council, the IECC-2018 "establishes minimum regulations for energy efficient buildings using prescriptive and performance-related provisions. This code is founded on principals intended to establish provisions consistent with the scope of an energy conservation code that adequately conserves energy; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction." The IECC allows for three different methods to gain approval for the Building Envelope. These methods are: Prescriptive approach, Performance approach and the HERS Rating approach.

Prescriptive Approach: The code option in which particular measures are required, such as specific air sealing characteristics and insulation levels or R-values. Under the prescriptive approach, these R-values are set by using the climate zone chart and are minimal requirements.

Performance Based: The energy code approach that requires an expected level of energy use based on modeling. Under Section 405 in the 2018 IECC allows a house to be evaluated based upon its annual energy consumption. This performance evaluation is typically performed by using Energy Modeling software such as the REM design or REM rate software. This software must show that the building will perform at least 30% more efficient than the baseline standard for the same home design. The REM programs will produce a standard IECC compliance report and a compliance certificate.

HERS Rating: This method of evaluation requires a certified HERS rater perform a number of test to provide an actual HERS rating for approval. Like the performance approach, this method heavily relies on a reduction of air infiltration which increases performance.

Spray Foam Insulation: There are many ways of increasing the performance of a home to comply with the performance approach to the 2018 IECC. One of the most effective ways to improve the efficiency of a home is to decrease the amount of air infiltration and increasing the thermal resistance of the insulated building envelope. Using a product such as spray foam insulation will provide the superior thermal insulation envelope as well as an air barrier (ASTM E283)
Using the Spray Foam Insulation approach will typically not meet the R-value requirements of the Prescriptive approach. However, this approach will meet the requirements for the Performance and HERS rating Approach with R-values that are substantially lower than the prescriptive approach. In Fact, The REM program will typically show that a Spray foam house at the lower R-values will outperform the prescriptive home by 30-50%.

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