# AIA WASHINGTON COUNCIL

*ISSUE BRIEF*

## EFFICIENCY FIRST IN WASHINGTON'S BUILDINGS

***PLEASE SUPPORT E2SHB 1747 & E2SSB 5854***

KEY POINTS

- *Consumption is predicted to increase; the time to act is now.*
- *Because codes are measured by building sector, buildings will still have some latitude and time to increase their effectiveness.*
- *The Department of Energy and the National Renewable Energy Laboratory find these standards achievable.*
- When specific and measurable goals are set, the resulting performance is better than if no goals or vague goals are set


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**Why E2SHB 1747 and E2SSB 5854? What is the Urgency?**
***Consumption is predicted to increase.***

→ According to the Department of Energy:
- Buildings consume 40% of primary energy
- 70% of electricity produced in the USA is used by buildings

→ By 2025, commercial building electricity consumption is expected to increase by 50%.

→ Privately owned buildings account for 93% of total US building stock.

→ According to the Environmental Protection Agency's Energy Star Program:
- "By 2035, 75 % of the buildings in the United States will be either new or renovated." Substantial renovation is the trigger for when buildings must comply with the current building codes.

**How Do Energy Codes Impact Building Construction Practices?**
***Energy codes set performance standards by building sector.***

Within building sectors, some specific buildings will outperform others. Thus, while overall energy usage will go down, a specific building will have latitude in its specific performance. By setting an overall energy performance goal for all buildings in the state, and goals for each building sector, Washington has been able to improve its building energy consumption. Yet, overall energy use related to buildings continues to rise. It is important to continue to make the energy conservation requirements more stringent in Washington in order to get an overall net decrease in energy consumption from the state's buildings.

**Are These Standards Achievable?**
***The Department of Energy and the National Renewable Energy Laboratory find these standards achievable.***

A NREL Study from 2007 stated that having zero energy commercial buildings was "largely achievable" by 2025 for sustainably in more than half (62%) of buildings. NREL stands for the National Renewable Energy Laboratory**,** which was commissioned by the Department of Energy (DOE) to study the question of market viability and technological feasibility for zero energy buildings.

The Department commissioned the study after it set a goal of developing market viable, zero energy, buildings (ZEB) for the commercial sector by 2025. The Department of Energy has set the same goals for the residential sector by 2020.

ZEB refers to a building or building sector that produces more net energy than it consumes measured on an annual basis. Due to how the measurement is taken, a ZEB may produce extra energy or consume extra energy at different times, but on the whole it will produce more than it consumes.

***Continued >***

***Are these standards achievable continued >***

There are several other findings from NREL studies that also support the achievability of ZEB goals:

Commercial Construction

- "We found... [the zero energy building] goal to be technically achievable or large portions of the commercial building sector and recommend that it be pursued… Our analysis shows not only that segments of the sector can achieve zero energy consumption, but also that they can become net energy producers. This means that some commercial buildings could produce enough electricity on site to meet their own demands and export surplus electricity to the utility grid. Thus, we recommend that the ZEB goal be formulated for new construction in the sector as a whole so that subsectors that produce more energy than they consume." - *Assessment of the Technical Potential for Achieving Net Zero-Energy Buildings in the Commercial Sector, December 2007*

- "All (the buildings) use much less energy than comparable energy code-compliant buildings. We found that the buildings' energy consumption was 25% - 70% lower than code." - *Lessons Learned from Case Studies of Six High-Performance Buildings, June 2006*

Residential Construction

- "The design of the 1200 square foot, 3-bedroom Denver zero energy home carefully combines envelope efficiency, efficient equipment, appliances and lighting, and passive and active solar features to reach the zero energy goal. The home was designed using … simple, easily maintained mechanical systems and volunteer-friendly construction techniques."- *A Cold Climate Case Study for Affordable Zero Energy Homes, June 2006*

- "Simple energy efficiency improvements can cut energy costs by over 40 percent in most affordable housing. Some low-income families may spend over 15 percent of their income on energy to operate their homes. The money that these families save on energy can help them make mortgage payments and pay for food, clothing, and other essentials. Studies show that a dollar saved on energy stays within the community." - *Technology Fact Sheet, Energy Efficiency Pays, Systems approach cuts home energy waste and saves money, March 1999*

- Zero Energy Homes lead to higher owner satisfaction, lower utility bills and higher resale value. *Comparative Analysis of Homebuyer Response to New Zero Energy Homes, July 2004*

E2SHB 1747 and E2SSB 5854, set similar goals for all building sectors in Washington by 2031.

**How Do We Achieve Greater Energy Efficiency in Buildings?**

***Setting goals***

According to *Improving Sustainability of Buildings through a Performance-Based Design Approach, July 2004*, "Building performance typically follows the design goals established early in the design process; in other words, you get what you ask for. When specific and measurable goals are set, the resulting performance is better than if no goals or vague goals are set. Goals help the design team focus their efforts on specific aspects of the design to improve the performance."

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