



Testimony of Arn McIntyre

**On Behalf of the
National Association of Home Builders**

Before the

House Energy and Commerce Committee

***“Hearing on Building a 100 Percent Clean Economy:
Solutions for the U.S. Building Sector”***

September 20, 2019

Introduction

Chairman Rush, Ranking Member Upton, I am pleased to appear before you today on behalf of the National Association of Home Builders (NAHB) to share our views regarding energy use within residential buildings. My name is Arn McIntyre and I am a green builder from Grand Rapids, Michigan. As Principle at Performance Home Corporation and McIntyre Builders Inc, I have focused on designing and constructing high performance homes for 25 years. Most notably, I built the first independently certified green home in Michigan in 2002. I also served as one of the founding members of the consensus committee, that developed the first National Green Building Standard in 2008.

NAHB represents over 140,000 members who are involved in building single-family and multifamily housing, remodeling, and other aspects of residential and light commercial construction. NAHB's members construct approximately 80 percent of all new housing in the United States.

NAHB is leading the way to improve energy efficiency in the residential sector for new and existing homes. As a longtime leader in the drive to make new and existing homes more energy efficient while prioritizing housing affordability, this hearing offers a valuable opportunity for NAHB to examine the role clean energy plays in the housing market and to identify the challenges the industry faces in doing so.

This testimony emphasizes the following points:

- New homes are much more energy-efficient than the existing housing stock. More stringent energy conservation requirements for new homes will significantly increase the cost of these homes and harm housing affordability. This would encourage people to remain in older, less energy-efficient homes.
- Improving the energy efficiency of the 130 million homes built before 2010 that are much less energy efficient than today's new homes would significantly reduce emissions. This is a much more effective way to achieve energy savings than targeting new homes.
- Climate change mitigation programs that recognize and promote voluntary-above code compliance for energy efficiency have a proven track record and demonstrate that mandates are not necessary.
- Mandating net zero or near net zero energy emissions or usage is extremely difficult, costly and impractical in most if not all of the nation.
- Any federal intrusion into the building codes adoption process could have a dramatic impact on each states' ability to implement the codes that best fit their jurisdiction.
- Incentives play an important role in providing homeowners a cost-effective way to invest in energy efficiency.

Residential Energy Usage Overview

Energy production and consumption is the largest source of global greenhouse gas (GHG) emissions. Greenhouse gases are chemicals that, when released into the atmosphere, have the potential to cause climate change. In recent years, how energy is produced and used has been receiving a lot of attention. Part of this attention has fallen upon the housing sector and the role it plays in generating greenhouse gases.

Much of the responsibility for tracking greenhouse gas emissions has been assigned to the Energy Information Administration (EIA), the statistical agency housed inside the U.S. Department of Energy. To do so, the EIA has divided end users into four broad categories – transportation, industrial, residential and commercial. In 2018, the residential sector used 16 percent of the energy consumed in the U.S.¹

But because new homes only account for a small share of the total housing inventory, they use only a small share of the annual energy consumption attributed to the residential sector. Therefore, any efforts to address the energy consumption of homes must take into account these discrepancies between the new and existing housing stock. Likewise, while individually, the impacts of each sector may be considered significant, any efforts to reduce greenhouse gas emissions are likely to be more effective if directed broadly across all sectors, rather than focused narrowly on one sector to the exclusion of others.

Mandates Problematic

Many have suggested that more stringent building energy codes or meeting other mandatory requirements, such as net-zero, are the only answers to improving residential energy efficiency and reducing greenhouse gas emissions. NAHB strongly disagrees, as both options are problematic and unnecessary.

NAHB has long been a supporter of the development and implementation of reasonable, practical, and cost-effective building codes and standards. We have established a highly knowledgeable and active member committee to oversee and participate in code development, as well as seasoned staff that are dedicated to advocating for builders and consumers. Our participation is evident with the International Code Council (ICC), ASHRAE, the National Fire Protection Association, and others, through which we aim to find workable solutions that are affordable and practical as well as safe and energy efficient.

State and local governments play a key role in the codes adoption process and determining the value of and need for certain code requirements initially developed at the national level. State and local energy code adoption processes typically consist of a thorough consideration of the code's applicability within the jurisdiction, along with costs, technology, and resources, among other factors. Since the codes are developed at a national level, many energy efficiency

¹ U.S. Energy Information Administration, *Monthly Energy Review*, August 27, 2019.

provisions are based on national construction and energy cost averages. There is also assumed availability of tools, training, technology and construction techniques.

Because many states and local governments don't fit the mold of the national averages, they frequently find the need to amend the model codes prior to adoption. Some states make few changes to the model codes, others hand-pick the provisions and/or amend certain requirements, and others use the model code as a baseline to create their own state-specific code. Any federal intrusion into the building codes adoption process could have a dramatic impact on each state's ability to implement the codes that best fit their jurisdiction. Likewise, federal mandates that impose building code requirements across the board will have similar unacceptable results. One reason the codes work is because they can be tailored to local conditions, market forces, and consumer wants and needs. A blanket mandate ignores these factors.

Further, any requirements for homes to meet net zero or near zero emissions or energy usage are even more problematic. The current demand for net or near zero energy homes represents a sliver of the housing market. Designed and built to produce as much energy as they consume, net zero homes require careful planning, which will increase upfront design and engineering costs. Using passive techniques, such as orienting the house to take advantage of the sun for heating and cooling, net zero design also creates further challenges because it requires treating the home as a system instead of discrete elements. This requires additional thought and consideration because changing one aspect of the design will affect another part of the house that one might ordinarily think of as separate or unrelated and additional modifications may be required.

With high-quality insulation and an air-tight building envelope, the amount of energy needed in the home decreases, but to achieve net zero, additional systems must be incorporated, such as solar photovoltaics (PV), solar hot water, and special controls for heat pumps to maintain needed comfort levels. Other aspects typically include highly-efficient windows, lighting, and appliances. While individually, some of these installations may be workable, considering zero energy generally requires the installation of most of them, the total costs can be prohibitive. In addition, some of these elements do not work well in certain geographic regions. Clearly, mandating net zero or near net zero is extremely difficult, costly and impractical in most if not all of the country.

While NAHB has long been an advocate for energy efficiency codes that are cost-effective and affordable for home buyers throughout the nation, the energy codes are growing increasingly stringent, increasingly unworkable and marginally cost-effective- at best. Mandating adherence to overly burdensome requirements – particularly for new construction – adversely impacts housing affordability, disadvantages new construction, and may not yield the intended results.

- Housing Affordability Must be Maintained

Any federal energy mandates would hit the housing industry in a variety of ways. Like many industries, energy prices and production costs for energy-consuming raw materials and the machinery used in residential construction are a serious financial concern.

Significant jumps in the costs of energy during the housing production process would ultimately translate into higher prices for the new homebuyer. Furthermore, measures to control the consumption of energy within the operation of a home- i.e., aggressive energy codes and standards, mandates or green building requirements, etc. – also increase the price of newer, more energy-efficient homes. This is problematic.

NAHB's research shows that housing affordability in the single-family market is at a 10-year low.² Only 56.6 percent of new and existing homes sold in the fourth quarter of 2018 (October through December) were affordable to families earning the U.S. median income of \$71,900. Although the national median home price decreased from the third quarter of 2018 to the fourth quarter, average mortgage rates rose by 17 basis points over the same period. This was the fourth straight quarterly rate hike and the highest rate level since the second quarter of 2011.

As a result, owning or renting a suitable home is increasingly out of financial reach for many households. In fact, almost a third of the nation's households are cost burdened and pay more than 30 percent of their income for housing.³ At the same time, net new households are being formed faster than new single family and multifamily homes are coming on line to accommodate them, so there is both a surge in need and not nearly enough supply.

And finally, making things worse, NAHB estimates that nearly 25 percent of the final cost of a single-family home and nearly 30 percent of the cost of a multifamily home is due to government regulations at all levels of government. This is further exacerbating the supply/demand curve and making the housing market even more challenging. For example, NAHB estimates that if the median U.S. new home price goes up by \$1,000, more than 127,000 households would be priced out of the housing market nationwide.

Clearly, the nation is experiencing a regulatory and housing affordability crisis. President Trump recognized this earlier this year when he issued an Executive Order Establishing a White House Council on Eliminating Regulatory Barriers to Affordable Housing through which he directed the agencies and others to address, reduce and remove the multitude of overly burdensome regulatory barriers that artificially raise the cost of housing development and help to cause the lack of housing supply.

Unfortunately, many of the energy efficiency suggestions made to date will only exacerbate the current crises. As each model building codes gets updated, the price to comply can increase exponentially. The change in the energy provisions from the 2006 IECC code to the 2018 IECC code, for example, are estimated to cost between \$4,500 to over \$9,000 depending on climate zone for an average sized home. Likewise, the

² Rose Quint, "[Housing Affordability Holds Steady at a 10-Year Low in the Fourth Quarter](#)," NAHB Eye on Housing Blog, February 14, 2019.

³ "The State of the Nation's Housing 2018." Joint Center for Housing Studies of Harvard University. 2018.

national average cost for a typical residential 6-kilowatt photovoltaic system, a basic requirement for a net zero home, is close to \$18,000. Most potential homebuyers and those who are renovating or upgrading their existing homes do not have the financial resources to cover such exuberant costs.

NAHB recognizes that energy efficiency is in the best interest of the nation's population, economy, environment, security and energy independence in the long term. However, housing affordability should not be compromised, and voluntary initiatives and programs must be in place to incentivize industries to begin recording and reducing emissions instead of mandates.

- New Homes Already Efficient

New construction is more energy-efficient than existing construction because of better insulation, energy efficient appliances and HVAC equipment, among other improvements. For example, single-family detached homes built in 2000-2009 on average used about 100.1 Btu per square foot of heated area per year, in contrast to 120.6 Btu for homes built in 1970-1979 and 135.4 Btu for homes built before 1950. Although the size of new homes has increased, the total energy used on heating and cooling has not, especially when newer homes are compared to homes built before 1950.⁴ With the growing interest in voluntary efforts to further reduce energy usage in new construction, overall consumption is likely to continue to decrease.

Despite these gains over time, new homes are still being targeted for increased energy efficiency. This makes little sense. Of the 137 million houses in the U.S., 130 million were built before 2010 and on average, approximately 1 million new homes are built every year. In other words, the housing stock is being replaced very slowly. If the focus of federal energy efficiency efforts remains targeted on new construction, it will take decades to reach reduction goals because in 20 years, 68 percent of the U.S. housing stock will still be pre-1990. Clearly, targeting new construction through building codes or other mandates makes little sense in the broader scope.

Further, if policies are adopted that apply more stringent energy conservation requirements to new homes, the cost of these homes will significantly increase. This may encourage people to remain in older, less energy-efficient homes, which would result in higher energy usage, higher greenhouse gas emissions, and lower standards of living, among other impacts. Any policies must address all sources equally and not inadvertently penalize new construction. To realize real energy savings, Congress should focus on retrofitting the existing housing stock.

⁴ Emrath, Paul, Ph.D. and Joshua Miller, Ph.D., "How Much Energy Homes Use and Why," HousingEconomics.com, November 2014.

- **Occupant Behavior Significantly Impacts Energy Usage**

Household behavior, such as how long lights are left on, can have as great an impact on residential electricity consumption as the number of built-in appliances or other amenities provided by home builders. In fact, the energy-use impact of items purchased by the occupants after a home is built can be twice as large as the impact of items typically installed by a builder.⁵ In other words, even the most stringent building energy codes will not guarantee measurable energy use reductions. Even a net-zero home, can waste a tremendous amount of energy if the occupant does not subscribe to the concept of efficiency.

Clearly, occupant behavior is a significant factor in energy consumption. Electricity use (not including space heating and cooling) accounts for over 70 percent of energy use, irrespective of when a home was built. Leaving the television on, doing laundry, running the dishwasher, and even working from home can all drastically increase energy use in a home and thwart energy efficiency efforts. Because of this, relying on builders alone to meet specific mandates will not meet overall goals and could, due to cost issues, undermine the overall federal effort.

NAHB strongly discourages Congress from including mandates, such as building codes or meeting a net zero standard as solutions toward a clean economy. Building codes have little to offer in the form of emissions reductions and can impose significant costs on new home construction, supporting industries, and, ultimately, consumers. Rather, Congress should support voluntary programs, retrofitting existing buildings, education and other policies aimed at encouraging consumers to use energy more wisely.

Voluntary Programs Promote Energy Efficiency

NAHB supports climate change mitigation programs that recognize and promote voluntary-above code compliance for energy efficiency in lieu of mandates. There are a number of programs, certifications, and other options that recognize homes that are built following high-performance or green practices and show verifiable reductions in greenhouse gas emissions. These programs and participation in them demonstrate that mandates are not necessary. In the markets where consumers support sustainability and energy efficiency, these programs and others are successful in promoting and facilitating their adoption and the associated benefits.

- **National Green Building Standard Invites Efficiency**

NAHB continues to lead the way to improve energy efficiency in the residential sector for new and existing homes. NAHB launched the development of a green building standard for residential buildings, now known as the ICC 700 National Green Building Standard (NGBS), in 2008. The NGBS is an affordable yet rigorous standard that applies to all types of residential buildings, from single-family homes to multifamily buildings of

⁵ Emrath, Paul, Ph.D. and Joshua Miller, Ph.D., "How Much Energy Homes Use and Why," HousingEconomics.com, November 2014.

all sizes, retrofits and land development. It focuses on energy efficiency, water conservation, resource conservation, indoor environmental quality, site design and home owner education and is the basis of a national certification program administered by the Home Innovation Research Labs. This rigorous certification requires buildings to improve in every category to achieve a higher certification level. The NGBS is also the first and only residential green building standard approved by the American National Standards Institute (ANSI), which guarantees that the NGBS was developed using a true consensus process.

The NGBS continues to evolve and is updated on a continuous basis to quickly respond to new solutions and innovations in design, materials, technologies, commissioning, building operation strategies, market preferences, financial transactions, etc. The NGBS is directly tied to the national building codes published by ICC to ensure compatibility and seamless implementation by all stakeholders, including developers, designers, jurisdictions and building operators. The upcoming 2020 edition of the NGBS is expected to be released in early 2020. Unlike building codes, the NGBS becomes effective and available immediately after its publication. This allows designers and builders to take instant advantage of the updates and not have to wait for the standard to be adopted by each local jurisdiction. The NGBS has proven to be a useful and relied-upon voluntary option for green building, as nearly 190,000 units have been certified, to date.

- Efficiency Options Create Market Demand

Because one size never fits most, it is important that builders have choices when it comes to finding strategies to reduce energy usage. As such, NAHB strongly opposes any federal mandate because they typically lack the flexibility needed for realistic, widespread application. Voluntary, above-code programs such as ENERGY STAR for homes and DOE's Better Buildings program have proven track records reducing energy usage. Flexibility in program choice allows builders to choose the program or green certification that best suits their needs and the desires of the homebuyers based on their ability to afford and willingness to pay for the associated above code features. NAHB's *What Home Buyers Really Want* survey also suggests that there is significant market demand for ENERGY STAR homes – when asked to rank 175 features based on how essential they are to a home-purchasing decision, ENERGY STAR appliances, windows, and whole-house certifications ranked among the top ten most wanted features. Such brand recognition demonstrates that there is a demand for voluntary, above-code federal programs, allowing for competition and choice in the market.

NAHB strongly urges Congress to promote voluntary, market-driven, and viable green building initiatives. These programs promote lower total ownership costs through utility savings as well as provide the flexibility builders need to construct homes that are cost-effective, affordable, and appropriate to a home's geographic location.

Incentives Crucial to Success

Incentive programs are an important tool to reduce the barriers that many energy efficiency opportunities pose and encourage more home owners to invest in energy efficiency. For example, due to the high initial costs associated with purchasing and/or installing many energy efficient features, many homeowners are unable to finance desired or necessary upgrades. In those instances, without any assistance, those homeowners would likely forego the improvements. Incentives provide benefits to both parties and have proven to be an attractive alternative.

Tax incentives see the fastest results and are the most effective at advancing energy efficiency improvements. Sections 25C for qualified improvements in existing homes (building components), 45L for new homes and 179D for commercial buildings have permeated the market and assisted many families and building owners to invest in efficiency. Not only does this reduce energy consumption, NAHB estimates that for every \$100,000 spent on remodeling, 1.11 full-time equivalent jobs are created. The remodeling activity generated by the 25C tax credit in 2009 was associated with over 278,000 full-time jobs. Unfortunately, because these tax incentives keep expiring and being retroactively renewed, the positive impact of these incentives has decreased since 2011.

Other opportunities to help fund upgrades could include grants, insurance discounts, interest rate reductions, increased property valuations or other options. We urge Congress to continue to identify and institute different incentives, programs and awareness campaigns so that it can optimize participation in energy efficiency efforts and do so without establishing unnecessary mandates. In doing so, Congress is urged to target upgrades to the existing housing stock, as this demographic is the biggest consumer of electricity within the residential sector.

Conclusion

NAHB wants to work as a partner with all levels of government to encourage energy efficiency, however, we must also make sure that housing affordability is not jeopardized in the process. NAHB urges Congress to focus on solutions that are market driven, such as above code voluntary programs and other incentives, and to focus on increasing the energy efficiency of the existing housing stock. Any federal mandates would have a negative impact on housing affordability and will prevent healthy competition in the marketplace. NAHB looks forward to working with the committee to find reasonable solutions to get to a 100 percent clean economy.