Appeal of provisions for Electric Vehicle Charging Infrastructure in the 2024 draft International Energy Conservation Code Commercial and Residential

Building Owners and Managers Association International

and the

National Multifamily Housing Council

December 2023

Specific description of the issue being appealed

The 2024 International Energy Conservation Code – Residential (IECC-R) and International Energy Conservation Code – Commercial (IECC-C) have requirements for the provision of electric vehicle charging infrastructure (EVCI) and equipment for the monitoring of electric vehicle (EV) charging. These requirements are outside of the scope and intent of the IECC–R and IECC-C.

IECC-R Scope

R101.2 Scope. (Not subject to public input) *This code applies to the design and construction of detached one-and two-family dwellings and multiple single-family dwellings(townhouses) and Group R-2, R-3 and R-4* ***buildings*** *three stories or less in height above grade plane.* **<emphasis added>**

IECC-R Intent

R101.3 Intent. (Not subject to public input) *The International Energy Conservation Code - Residential Provisions provide market-driven, enforceable requirements for the design and construction of* ***residential buildings****, providing* ***minimum efficiency requirements for buildings*** *that result in the maximum level of energy efficiency that is safe, technologically feasible, and life cycle cost effective, considering economic feasibility, including potential costs and savings for consumers and building owners, and return on investment.* ***Additionally, the code provides jurisdictions with optional supplemental requirements****, including requirements that lead to achievement of zero energy* ***buildings****, presently, and, through glidepaths that achieve zero energy* ***buildings*** *by 2030 and on additional timelines sought by governments,* ***and achievement of additional policy goals as identified by the Energy and Carbon Advisory Council and approved by the Board of Directors****. The code may include non-mandatory appendices incorporating additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others. Requirements contained in the code will include, but not be limited to, prescriptive- and performance-based pathways. The code will aim to simplify code requirements to facilitate the code's use and compliance rate. The code is updated on a three-year cycle with each subsequent edition providing increased energy savings over the prior edition. The IECC residential provisions shall include an update to Chapter 11 of the International Residential Code. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this intent. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.* **<emphasis added>**

Statement describing precisely why the issue is being appealed

Requirements for EVCI are outside of the scope of the IECC-R, which apply to R-2, R-3, and R-4 **buildings**. **<emphasis added>** IECC-R Section R201.1 says, "*Unless stated otherwise, the following words and terms in this code shall have the meanings indicated in this chapter*." The term 'building' follows Section R201.1 and is defined in IECC-R Section R202 as:

"Any structure used or intended for supporting or sheltering any use or occupancy, including any mechanical systems, service water-heating systems and ***electric power and lighting systems*** *located on the building site and* ***supporting the building****."* **<emphasis added>**

EVCI, as codified in Section R404.7, may be located on a building site, but it does not "*support a building*."

Other than perhaps some automotive related uses, no building needs to have EVCI to fulfill its purpose. Certainly, no residential building needs to provide EVCI to fulfill its purpose of providing clean, safe, and affordable housing for people; residential buildings are not even required to provide garages or parking for residents under the construction codes promulgated by the ICC.

For that matter, the *International Building Code* and *International Residential Code* do not require air-conditioning in buildings even though there are an average of 702 heat-related deaths each year (some will not be associated with building occupancy).[1]

Why would a building that is not required to provide equipment and energy for building air conditioning – arguably a life-safety feature - be required to provide equipment and energy for an electric vehicle to be used offsite? Notably, even the advocates for requiring EVCI at residential buildings argue that it is for the 'convenience' of building residents and that EVCI is 'an amenity,' as documented in recorded consensus committee and subcommittee meetings.

Factually, proponents of EVCI requirements in the IECC development process have not argued that EVCI is needed to support buildings, rather the opposite has been argued, that buildings should support electric vehicles by providing EVCI.

It is also helpful to remember that in the 2019 Group B IECC appeals, the ICC Board of Directors already ruled that requiring EVCI was outside of the scope of the 2021 IECC. The scope of the 2021 IECC is:

*"R101.2 Scope. This code applies to residential buildings, building sites and **associated** systems and equipment."* **<emphasis added>**

The scope of the 2021 IECC-R, as applicable to the defined term "*residential buildings*," is not substantively different than the scope of the 2024 draft IECC-R, both apply to residential buildings three stories or less in height above grade plane. But where the 2021 scope, via the defined term "*buildings*," as used in the definition of "*residential buildings,"* specifically includes "***associated** systems and equipment*," the 2024 IECC-R, via the definition of '*building*,' clarifies that certain systems and equipment must **support** the building to be within scope.

In other words, the scope of the 2024 IECC is **narrower** regarding associated systems and equipment. The ICC Board has not expanded the scope to admit EVCI that was previously ruled out-of-scope.

EVCI proponents point to the R101.3 Intent of the 2024 IECC-R to say the code applies to EVCI, but that argument fails, given ICC's direction in a February 15, 2022 memorandum to Energy Code Development Committees, Subcommittees and Interested Parties that *"Any content within the scope **and** intent of the code may be included either in the body of the code as minimum requirements or as an adoptable appendix based on the determination of the responsible Consensus Committee.*[2] **<emphasis added>** Content must be within both the intent **and** the scope to be codified. EVCI is excluded by the scope.

Further, EVCI is not a building, and the parts of the intent statement that do not specifically apply to buildings are "*achievement of additional policy goals as identified by the Energy and Carbon Advisory Council and approved by the Board of Directors"* and "*The code may include nonmandatory appendices*

[1] https://ephtracking.cdc.gov/Applications/heatTracker/

[2] https://www.iccsafe.org/wp-content/uploads/IECC-Discount-Rates-and-Code-Content-Memorandum_02_15.22.pdf

incorporating additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others."

To date, no additional policy goals, identified by the Energy and Carbon Advisory Council and approved by the ICC Board of Directors, have been communicated to the IECC consensus committees. This means the most generous reading of the plain language of the R101.3 Intent regarding EVCI is that EVCI could be included in a nonmandatory appendix. Arguably, "*additional energy efficiency and greenhouse gas reduction resources"* suitable for inclusion in nonmandatory appendices must still be within the scope of the IECC.

Further, as previously noted, proponents for the inclusion of EVCI qualify the provision of EVCI as an amenity and/or convenience needed to support electric vehicles. Requiring amenities and conveniences for non-building purposes runs afoul of this part of the IECC-R's intent: " … *enforceable requirements for the design and construction of residential buildings, providing* ***minimum efficiency requirements for buildings*** *…"* Amenities and conveniences to support EVs cannot rise to the level of "*minimum*" efficiency requirements for buildings. Hence, mandated EVCI fails to meet this element of the IECC-R intent.

EVCI clearly falls outside of the scope of the IECC-R and potentially fails to fully meet the intent of the IECC-R unless added as a non-mandatory appendix "*incorporating additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others*."

IECC-C Scope

C101.2 Scope (Not subject to public input). *This code applies to the design and construction of* ***buildings*** *not covered by the scope of the IECC – Residential Provisions.* **<emphasis added>**

IECC-C Intent

C101.3 Intent. (Not subject to public input) *The International Energy Conservation Code - Commercial Provisions provide market-driven, enforceable requirements for the design and construction of commercial* ***buildings****, providing* ***minimum efficiency requirements*** *for* ***buildings*** *that result in the maximum level of energy efficiency that is safe, technologically feasible, and life cycle cost effective, considering economic feasibility, including potential costs and savings for consumers and building owners, and return on investment. Additionally, the code provides jurisdictions with supplemental requirements, including ASHRAE 90.1, and* ***optional requirements*** *that lead to achievement of zero energy* ***buildings****, presently, and through glidepaths that achieve zero energy* ***buildings*** *by 2030 and on additional timelines sought by governments,* ***and achievement of additional policy goals as identified by the Energy and Carbon Advisory Council and approved by the Board of Directors****. Requirements contained in the code will include, but not be limited to, prescriptive- and performance-based pathways. The code* ***may include non-mandatory appendices*** *incorporating* ***additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others****. The code will aim to simplify code requirements to facilitate the code's use and compliance rate. The code is updated on a three-year cycle with each subsequent edition providing increased energy savings over the prior edition. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this intent. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.* **<emphasis added>**

Except for the exclusion of residential occupancies three stories or less above grade plane, the scope of the IECC-C relies upon the same definition of "*building*" as the IECC-R and is therefore functionally equivalent regarding what building systems are included in the scope of the IECC-C.

Similarly, the intent of the IECC-C is parallel to the intent of the IECC-R regarding applicability to buildings, minimum efficiency requirements, additional policy goals as identified by the Energy and Carbon Advisory Council and approved by the Board of Directors, and non-mandatory appendices incorporating additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others.

Given the clearly minimal distinctions in scope and intent between the IECC-R and the IECC-C, reasons previously given proving EVCI out-of-scope of the IECC-R are equally applicable to the IECC-C.

Note that the IECC-C also requires monitoring of EV charging loads, a specific feature of EVCI also failing to meet the scope and intent of the IECC-C.

Incorporation of requirements in the IECC that fail to meet the scope and intent of the IECC represent a material and significant irregularity of process.

Detailed description of how the issue being appealed will adversely affect the appellants

The National Multifamily Housing Council (NMHC) provides a voice for America's apartment industry. Our membership is engaged in all aspects of the apartment industry, including ownership, development, management, and finance. NMHC represents the principal officers of the apartment industry's largest and most prominent firms.

The Building Owners and Managers Association (BOMA) International is the leading trade association for commercial real estate professionals for more than 100 years. It represents the owners, managers, service providers and other property professionals of all commercial building types, including office, industrial, medical, corporate, and mixed-use. BOMA International is the voice of commercial building owners and operators.

According to recent research commissioned by NMHC, the U.S. needs to build 4.3 million new apartment homes by 2035 to meet the demand for rental housing.[3] This includes an existing shortage of 600,000 apartments stemming from underbuilding due in large part to the 2008 financial crisis. Further, underproduction of housing has translated to higher housing costs – resulting in a consequential loss of affordable housing units (those with rents less than $1,000 per month), with a decline of 4.7 million affordable apartments from 2015-2020.

In fact, the total share of cost-burdened apartment households (those paying more than 30% of their income on housing) has increased steadily over several decades and reached 57.6% in 2021.[4] During this same period, the total share of *severely* cost-burdened apartment households (those paying more than half their income on housing) increased from 20.9 to 31.0%.[5]

[3] Hoyt Advisory Services, "Estimating the Total U.S. Demand for Rental Housing by 2035." (2022), https://www.weareapartments.org/
[4] American Housing Survey, U.S. Census Bureau, "NMHC tabulations of 1985 American Housing Survey microdata." (2021).
[5] *Id.*

Further, the Biden Administration has recognized this immense need to bolster the nation's housing production and outlined a strategy to improve housing supply conditions through the *Housing Supply Action Plan*. The plan underscores that this national supply shortfall "*burdens family budgets, drives up inflation, limits economic growth, maintains residential segregation, and exacerbates climate change*."[6] And that *"[r]ising housing costs have burdened families of all incomes, with a particular impact on low- and moderate-income families, and people and communities of color."*[7]

Of relevance to the proposed IECC requirement for EVCI, and its attendant material and equipment needs, including for additional, larger electrical distribution transformers, the *Housing Supply Action Plan* specifically identifies the need to control materials costs and address supply chain challenges. This concern is underscored in comments by Peter Ferrell, director of government relations at the National Electrical Manufacturers Association: "*Over the last three years, average lead times to procure distribution transformers went from eight to 12 weeks to up to three years." "These long lead times have an impact on national security, grid reliability and resilience, and new-home construction."*[8]

It is becoming increasingly difficult to build housing that is affordable to a wide range of income levels. Ongoing materials and equipment shortages and strained supply chain conditions pressures housing development and results in costs and delays that impact overall affordability and availability. In addition, ill-timed, unnecessary, or unduly burdensome laws, policies, and regulations – such as requirements to provide EVCI - prevent us from delivering the housing our country so desperately needs. Elevated regulatory costs, particularly, create a barrier to affordable housing supply. Recent research published by NMHC and the National Association of Home Builders found that regulation imposed by all levels of government accounts for 40.6 percent of multifamily development costs.[9]

Following extreme, pandemic-fueled volatility in product costs, supply chain stability, and staffing constraints, the apartment construction and renovation pipeline has seen some moderation yet continues to face difficult conditions. Construction delays are prevalent – with 88 percent of respondents reporting delays in NMHC's September 2023 Quarterly Survey of Apartment Construction and Development Activity. Further, 48 percent of respondents reported experiencing repricing increases in projects over the last three months. Respondents experiencing delayed starts cited a range of causes including lack of construction financing and project infeasibility, while the availability of necessary products and materials, or lack thereof, saw the largest increase in responses, with 30 percent of respondents citing materials sourcing and delivery challenges as a contributing factor to delayed starts (up from 10 percent in the last quarter).

Apartment builders and developers also continue to be impacted by escalations in materials costs. The prices of a myriad of essential building products and equipment continue to rise, with respondents reporting a 7% average increase in residential appliance costs over a three-month period. A sizeable portion of respondents further reported relying on alternative brands or suppliers to mitigate price increases and supply shortages for appliances (58%).

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[6] "President Biden Announces New Actions to Ease the Burden of Housing Costs." (May 16, 2022) https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/

[7] *Id.*

[8] https://www.builderonline.com/building/transformer-shortage-leaves-builders-powerless-to-finish-thousands-of-homes_o

[9] National Multifamily Housing Council and National Association of Home Builders, "Regulation: 40.6 Percent of the Cost of Multifamily Development." (2022) https://www.nmhc.org/globalassets/research--insight/research-reports/cost-of-regulations/2022-nahb-nmhc-cost-of-regulations-report.pdf

Adding EVCI materials and equipment required by the IECC to already constrained supply chains fundamentally reduces the ability of NMHC members to meet the nation's housing needs and BOMA International members to meet the changing, post-pandemic needs of commercial building inventories.

Statement indicating the requested remedial action

NMHC and BOMA International request that all provisions requiring EVCI and the monitoring of EV charging loads be deleted from the IECC for failure to comply with the respective scopes and intents of the IECC-R and IECC-C.

Alternatively, if EVCI and the monitoring of EV charging loads are found by the appeals board to comply with the intents of the IECC-R and IECC-C to potentially *"include nonmandatory appendices incorporating additional energy efficiency and greenhouse gas reduction resources developed by the Code Council and others,"* NMHC and BOMA International request that all provisions addressing EVCI and the monitoring of EV charging loads be placed in nonmandatory language appendices of the applicable codes. In accordance with the direction provided by the aforementioned February 15, 2022 memorandum, nonmandatory appendices are informational and not adoptable, meaning such appendices are drafted in nonmandatory language.

The names and mailing addresses of individuals and organizations that may have an interest in or be affected by the matter being appealed

Bryan Holland Michael Stone NEMA 1300 17th St N #900, Arlington, VA 22209, USA bryan.holland@nema.org mike.stone@nema.org	Mark Rodriguez Sunrun 225 Bush St #1400 San Francisco, CA 94105 mark.rodriguez@sunrun.com	Bob Raymer Leading Builders of America 1455 Pennsylvania Avenue NW # 400, Washington, DC 20004 rraymer@cbia.org
Ingrid Malmgren Plug In America 1270 S Alfred St #351268 Los Angeles, CA 90035-9668 imalmgren@pluginamerica.org	Matthew Frommer SWEEP 2334 Broadway Ste A, Boulder, CO 80304 mfrommer@swenergy.org	Brenda Cassellius Fresh Energy 408 St Peter St # 350, St Paul, MN 55102 cassellius@fresh-energy.org
Emily Kelley ChargePoint, Inc. 240 East Hacienda Avenue Campbell, CA 95008 emily.kelly@chargepoint.com	Jeremy Williams Building Technologies Office US Dept of Energy Forrestal Building 1000 Independence Avenue, SW Washington, DC 20585 jeremy.williams@ee.doe.gov	Andrew Poliakoff Electrify America 2003 Edmund Halley Drive Reston, VA 20191 andrew.poliakoff@electrifyamerica.com
Steve Rosenstock Edison Electric Institute 701 Pennsylvania Avenue, N.W. Washington, D.C. 20004-2696 srosenstock@eei.org	Noelani Derrickson Tesla 1 Tesla Road Austin, TX 78725 nderrickson@tesla.com	Michael Jouaneh Lutron 7200 Suter Road Coopersburg, PA 18036-1299 mjouaneh@lutron.com
Sean Denniston New Buildings Institute 151 SW 1st Ave Suite 300 Portland, OR 97204 sean@newbuildings.org	Joe Cain Solar Energy Industries Association 1425 K St NW Ste 1000, Washington, DC, 20005 JoeCainPE@gmail.com	Genevieve Cullen Electric Drive Transportation Association 1250 Eye Street NW, Suite 902 Washington, DC 20005 gcullen@electricdrive.org
Sharon Bonesteel SRP Headquarters 1500 N. Mill Ave. Tempe, AZ 85288 sharon.bonesteel@srpnet.com	Patricia Chawla Austin Energy 4815 Mueller Blvd. Austin, TX 78723-3573 Patricia.Chawla@austinenergy.com	Michael Tillou Rob Salcido PNNL 902 Battelle Blvd, Richland, WA 99354 michael.tillou@pnnl.gov victor.salcido@pnnl.gov
Howard Wiig Hawaii State Energy Office 235 S. Beretania Street, 5th Flr Honolulu, HI 96813 howard.c.wiig@hawaii.gov	Vladimir Kochkin NAHB 1201 15th Street NW Washington, DC 20005 vkochkin@nahb.org	
Bryan Bomer 2425 Reedie Dr, 7th floor, Wheaton, MD 20902 bryan.bomer@montgomerycountymd.gov	Amy Martino Building Site Synergy 210 North Plum Street Media, PA 19063 amartino@buildingsitesynergy.com	

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POWERED BY TRACKING

Heat & Health Tracker

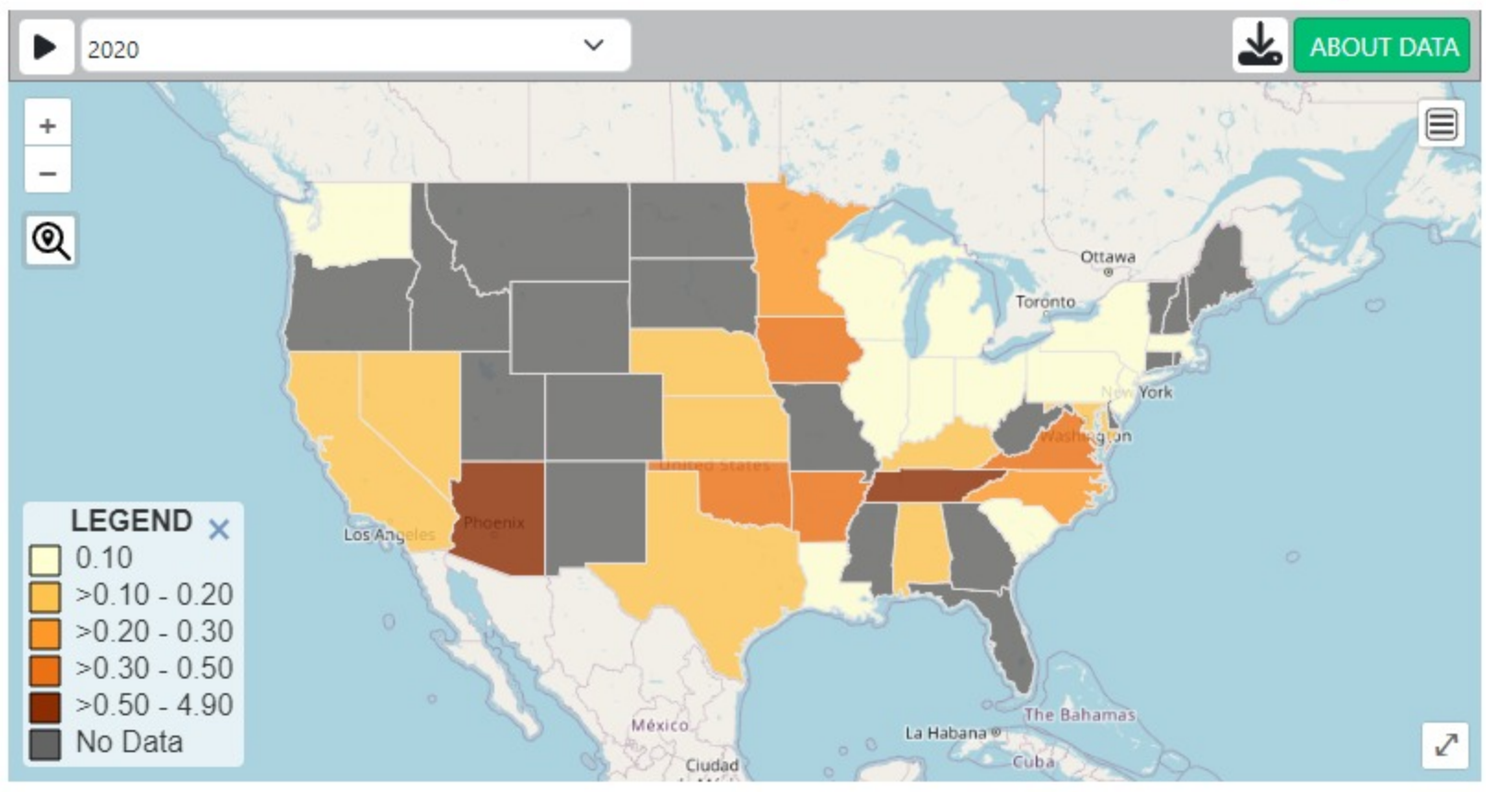
Home

Extreme heat events have long threatened public health in the United States. The CDC Heat & Health Tracker provides local heat and health information so communities can better prepare for and respond to extreme heat events. Use the search on the right to explore how extreme heat affects your county, populations who are at risk, and response resources.

Search for location here

Enter zip or county here

Daily Heat-Related Illness | Weekly Heat-Related Illness | **Heat and Worker Health**



About the Data
The Heat and Worker Health map shows the rate of work-related injuries, illnesses, and fatal injuries, due to heat per 10,000 full-time workers by state for the selected year. Information is provided by the Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses.

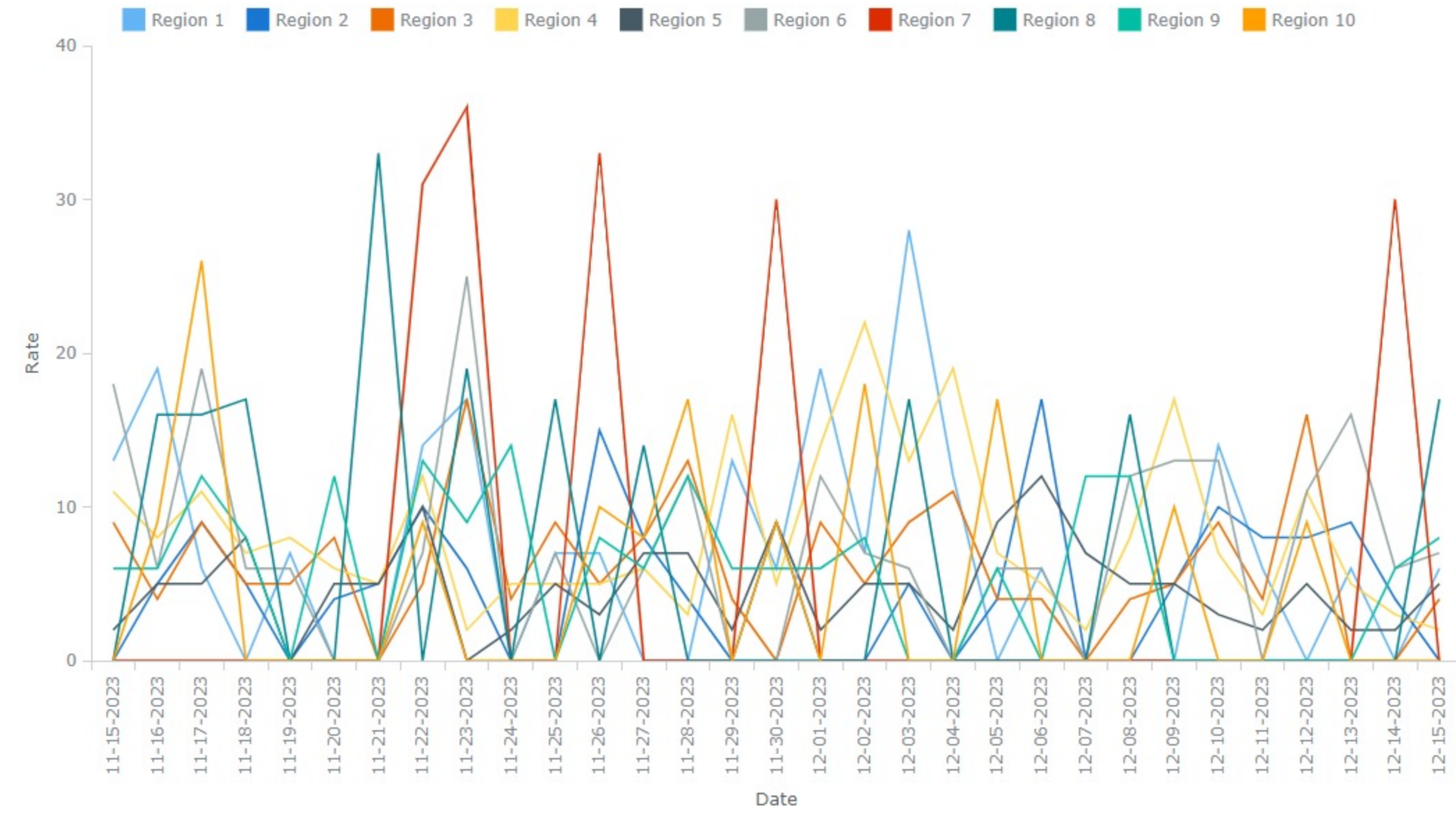
Rate of Emergency Department Visits for Heat-Related Illness

The Heat-Related Illness chart shows daily rates for each U.S. Department of Health and Human Services (HHS) region of emergency department (ED) visits associated with heat-related illness (HRI) per 100,000 ED visits using data available through the National Syndromic Surveillance Program (NSSP) at the Centers for Disease Control and Prevention. Use the drop-downs to select specific regions and time ranges. (more info). The max rate refers to the highest region-specific ED visitation rate observed between 2018-2023.

Region

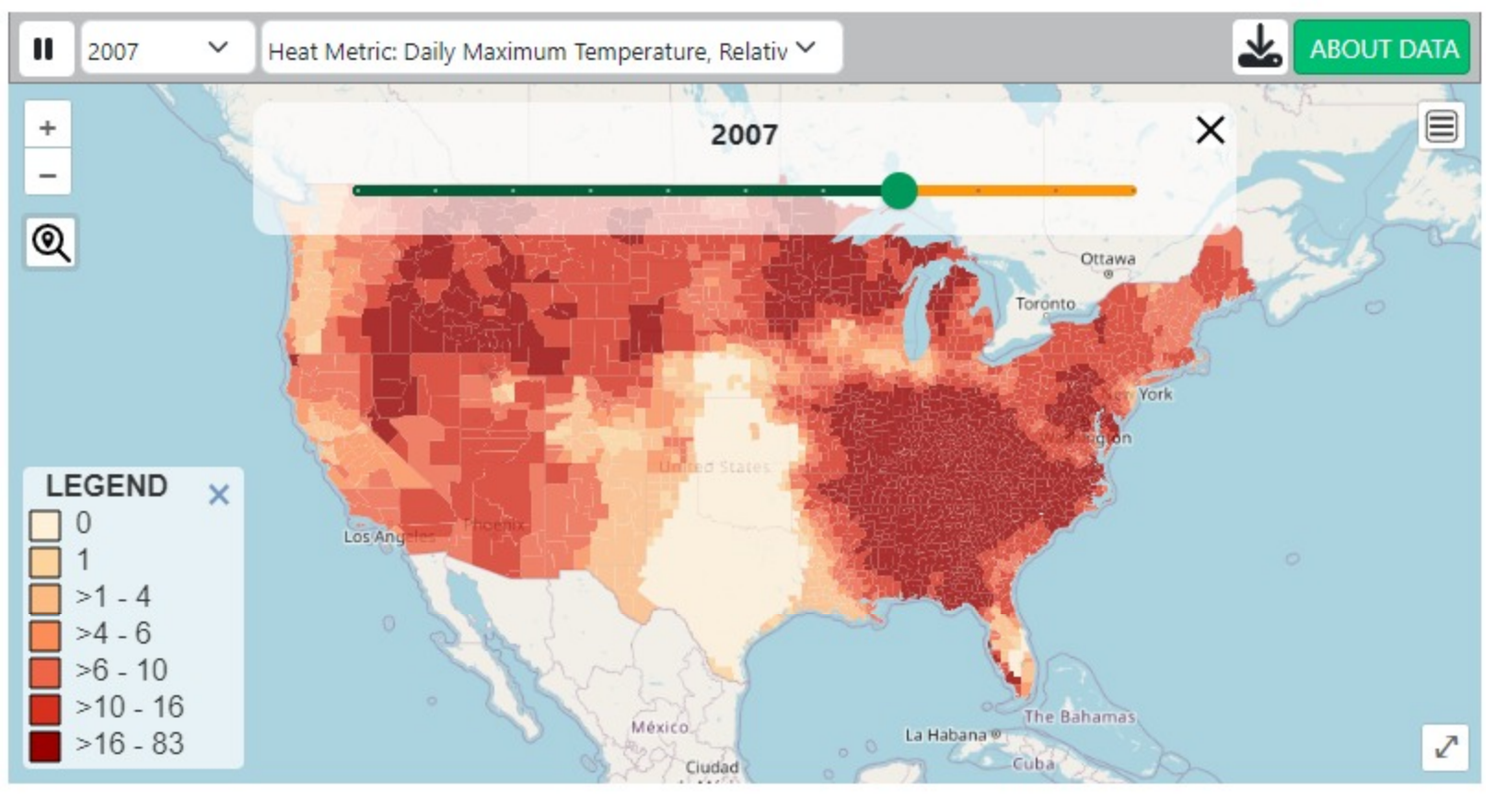
All Regions

Choose a date range
11/15/2023 – 12/15/2023



Heat Exposure Data

Historical | Current | Monthly Forecast | Projected



Annual average temperature over the contiguous U.S. increased by 1.2°F (0.7°C) over the period 1986–2016 relative to 1901–1960.
- Fourth National Climate Assessment

The frequency of cold waves has decreased since the early 1900s, and the frequency of heat waves has increased since the mid-1960s.
- Fourth National Climate Assessment

About the Data
The historical extreme heat day map shows the annual number of days with a daily maximum temperature above the 95th percentile in U.S. counties during 1979–2019.
(more info)

Heat-Related Illness & Deaths

Hot weather is associated with an increase in heat-related illnesses, including cardiovascular and respiratory complications, renal failure, electrolyte imbalance, kidney stones, negative impacts on fetal health, and preterm birth. Specifically, death rates are noted to rise during and after heat waves. Deaths result from

- heat stroke and related conditions,
- cardiovascular disease,
- respiratory disease, and
- cerebrovascular disease.

Heat & Health Trends

Extreme summer heat is increasing in the United States. Climate projections indicate that extreme heat events will be more frequent and intense in coming decades. However, some heat-related illness and death risks have diminished in recent decades, possibly due to better forecasting, heat-health early warning systems, and increased access to air conditioning for the U.S. population. Despite this, extreme heat events remain a cause of preventable death nationwide.

Heat Vulnerabilities

Anyone can be at risk to the health effects of heat, but some are more vulnerable, including pregnant people, people with heart or lung conditions, young children, older adults, athletes, and outdoor workers. Additionally, urban heat islands, combined with an aging population and increased urbanization, are projected to increase the vulnerability of urban populations to heat-related health impacts in the future.

International Code Council
Central Regional Office
4051 Flossmoor Road
Country Club Hills, IL 60478
t: 888.ICC.SAFE (422.7233)
f: 708.799.4981
www.iccsafe.org

ICC MEMORANDUM

TO: Energy Code Development Committees, Subcommittees and Interested Parties
FROM: Mike Pfeiffer, PE, Senior Vice President of Technical Services
RE: Discount Rates and Code Content
DATE: February 15, 2022

The Code Council appreciates the considerable effort to date by members of the Commercial and Residential Consensus Committees, Subcommittees and interested parties to develop the 2024 International Energy Conservation Code and Chapter 11 of the International Residential Code under a standards development process. We are aware of two issues before the committees which if not resolved expeditiously may lead to an inability to complete the Committees' work in a timely manner. This memorandum provides direction to the committees on the use of discount rates in cost effective analysis and the placement of code content in the IECC and IRC, as applicable.

Discount Rates:

In the framework and subsequent committee procedures issued by the Code Council Board of Directors, the procedures for use of cost effectiveness analysis are provided. Per these procedures, "underlying assumptions should be clearly documented including compliance with any parameters set by the committees and approved by the Board." Groups tasked by the committees to develop parameters have successfully reached consensus on many of the items. However, agreement on the discount rate(s) to be used has not been reached to date.

The direction below points to discount rates set by the U.S. Office of Management and Budget (OMB) for use in analysis conducted by federal agencies (including the U.S. Department of Energy). These rates are currently used to support the statutory review DOE conducts upon release of a new edition of the IECC. Cost effectiveness analysis is an important tool for use by the committee in determining the resolution of a proposal. It is up to individual committee members and the Consensus Committees to determine the weight they place on results of a cost effectiveness analysis as it relates to the action taken on the proposals for which cost effectiveness is a consideration.

The Code Council provides the following direction:

> *Consistent with guidance from the U.S. Office of Management and Budget (Circular A-4) the Committees shall conduct cost effectiveness analysis using discount rates of both 3 percent and 7 percent for evaluation of the public input proposals currently under consideration. If OMB revises these rates prior to the posting of Public Comment Draft 1 for comment, the updated discount rates will be used for those comments.*

Code Content:

In the new framework approved by the Board in March 2021, a new scope and intent were developed for the IECC and Chapter 11 of the IRC. While this new scope and intent is considerably more detailed than the prior scope and intent, there is some confusion within the Committees on what topics can be addressed within the body of the IECC or IRC Chapter 11 as minimum requirements as opposed to an IECC or IRC appendix.

International Code Council
Central Regional Office
4051 Flossmoor Road
Country Club Hills, IL 60478
t: 888.ICC.SAFE (422.7233)
f: 708.799.4981
www.iccsafe.org

The scope and intent of ICC codes and standards are set by the Board of Directors in accordance with Council Policy 28. The Board has not previously provided updates or clarification to the scope or intent of codes or standards during an active development process, allowing the development process to proceed to resolution. If a topic is contained in the scope or intent statement, it may be included either in the base of the code or as an appendix, as determined by the consensus body. Generally, appendices in the I-Codes fall under one of two categories: available for state/local adoption and for informational purposes only. In both cases, they undergo the rigors of the process no differently than text considered for the minimum requirements in the code. Each appendix in the respective I-Code notes the specific application of the appendix.

The Code Council provides the following direction:

> *Any content within the scope and intent of the code may be included either in the body of the code as minimum requirements or as an adoptable appendix based on the determination of the responsible Consensus Committee. Where content is to be included in an adoptable appendix, the appendix must include mandatory enforceable language.*

Cc: Dominic Sims, CEO

WE ARE APARTMENTS

The country needs to build 4.3 million more apartments by 2035.

Our Resources

NATIONAL DATA

Apartments and their residents contribute $3.4 trillion to the U.S. economy annually, supporting 17.5 million jobs.

The number of affordable units (those with rents less than $1,000 per month) declined by 4.7 million from 2015 to 2020.

Our Resources

The apartment industry stands ready to work with urban, suburban and rural communities in every region to meet the housing demand of Americans across all income levels.

Our Resources

Hoyt Advisory Services; NMHC / NAA; 2021 American Community Survey, U.S. Census Bureau

MAY 16, 2022

President Biden Announces New Actions to Ease the Burden of Housing Costs

BRIEFING ROOM | STATEMENTS AND RELEASES

New Biden-Harris Administration Housing Supply Action Plan To Help Close the Housing Supply Gap in the U.S.

As President Biden said last week, lowering inflation is his top economic priority. Today, the President announced new actions to ease the burden of increasing housing costs by increasing housing supply and supply housing to low-income families. The plan includes legislative and administrative actions to increase housing supply, including a proposal to Congress to provide a tax credit to incentivize the construction and rehabilitation of affordable housing units in the near-term year. Tribes aligned with other jurisdictions will be able to use the tax credit to finance new construction and rehabilitation projects. Creating this pool of low-cost affordable units and more attainable homeownership for Americans is more important than ever, as the housing supply shortfall is at an all-time low, and the housing supply shortfall is growing.

The Plan will help renters who are struggling with high rental costs, with a proposal to Congress to provide a refundable tax credit to cover a substantial portion of their rent. The policies to boost supply are an important element of bringing homeownership within reach for Americans. The Plan also includes actions to ease the burden of rent and mortgage payments, and to make housing more affordable by reducing utility costs for renters, as housing costs make up about one-third of all the market basket for inflation, according to the Consumer Price Index.

Under the Plan, the Administration will:

- **Increase production that will ease rental housing and lead our policies with higher rents or certain housing-related grant provisions, for the first year or two.**
- **Employ an efficiency-focused approach to federal grant processes, ensuring that where planning grant currently under consideration) including building codes, zoning, permitting, and environmental review, and streamlining processes, and multifamily buildings.**
- **Expand and improve existing, forward-looking, federal financing, including for affordable multifamily development and preservation. This includes expanding the Federal Housing Administration's (FHA) multifamily loan portfolio, and commitment that is also long-term mortgage-secure credit, established by exploring the feasibility of future. Our purchase of these loans, promoting the development of affordable housing and homeownership, including expand affordable housing development and commencing where to the Low Income Housing Tax Credit (LIHTC), which provides credits to private investors to finance the construction and rehabilitation of rental housing for low-income families, and the Rural Housing Service's (RHS) Section 515 program, which provides low-interest loans to finance the construction of rental housing in rural areas.**
- **Ensure that more government-owned supply of homes and other housing units is available for affordable rent — even public land, and vacant lots — not large multifamily investment.**

Work with the private sector to address supply chain challenges and improve housing technology to **provide construction in 2022 on the most cost-focused housing units per year 2022.**

Today's strong housing sector sets the stage for the challenge. Direct and indirect housing-related spending accounted for 15.8 percent of GDP in the first quarter of 2022 — constituting housing supply shortfall to keep pace with demand and household formation. This increased between housing supply and demand, and the housing supply shortfall is growing. The housing supply shortfall is at an all-time low, and the housing supply is more than 1.5 million units short of the demand for housing. Housing supply shortfalls, factors contained growth, economic overheated segregation, and discrimination, and a lack of investment in the housing supply in underserved communities have led to a housing supply that is not meeting the needs of families and people and communities of color.

As the Joint Center for Housing Studies of Harvard University has shown, over time, it has been the burden of housing costs to harvest the supply of quality housing units, and the burden of housing costs has increased for renters. Rents have increased faster than incomes, and the supply of affordable units has decreased, and vacancy rates concentrated in disadvantaged areas that are demonstrated.

The President continues to support a range of policies to increase housing production and preservation, that independent analysis. A proposal to the President's consideration would provide a refundable tax credit to cover a substantial proposal would Finance Tax Credit (Low-Income Housing Tax Credit) provisions, the Department of HUD, and the Neighborhood Reinvestment Corporation (NeighborWorks) and the Rural Housing Service. The President recommends increasing the Credit's annual limit on the production and preservation of affordable housing units.

Building on the actions the Administration announced last September to build more affordable housing units, the President's budget proposes a new Housing Supply proposal and four administrative steps being launched — partnership with the private sector, and the Department of Housing and Urban Development (HUD) to develop the housing supply plan, the 2022 Plan.

Providing incentives for Land Use and Zoning Reform and Medium Residential Buildings

One of the most significant issues constraining housing supply and production is the lack of available and affordable land, which is a large part driven by restrictive zoning and land use laws and regulations that have been enacted over the years. Zoning and land use regulations have been a key driver of housing affordability, where proximate homeownership and employment, and access to quality schools and other amenities. Zoning and land use regulations have a long discriminatory and racist history. For example, "zoning" was used to segregate people of color, and to keep people out of neighborhoods throughout the country.

The Administration will encourage the following innovative steps:

- **Leveraging transportation funding from the Bipartisan Infrastructure Law (BIL):** Under the new Bipartisan Infrastructure Law, the Federal Transportation program is leveraging state and local governments to boost housing supply and to make it easier to build affordable housing near transit. For example, the Low-Income Transportation Planning Grants (LITP) released three funding applications for competitive grant programs creating smart growth and equitable development plans with a focus on anti-displacement strategies, two policies to promote transit and to make smart and sustainable investments in transit-oriented development. The Administration also announced that DOT will continue to include language encouraging flexibly derived local and regional transit-oriented development plans and transit-oriented development in BIL and other transportation discretionary grant programs.
- **Integrating affordable housing into DOT Programs.** DOT will also issue updated guidance guidelines for Surface Transportation Grants and Transportation Infrastructure Finance and Innovation Act (TIFIA) program projects that include transit-oriented development.
- **Including Analysis on Effects the U.S. Economic Development Administration (EDA) Grant Programs.** Consistent with EDA's grant guidelines, the recipient of grants to determine the economic impact. Since fiscal 2016 EDA's investment priorities (EDA directly includes "Strategic Investments" to Support Economic Development, including housing development projects. Our proposal would include the Administration, and the second proposal, EDA will add language to its investment priorities to ensure that grantees and recipients of EDA grants consider the potential impacts of their activities on housing markets.

These actions build on the strategies that the Administration has proposed and continues to call on Congress to pass:

- **Extending Foundation Grants.** The Housing Foundations Program, which is a competitive grant program, is a key part of the President's Budget. To the Move-Up and Downsize Initiative, and the HUD Office of Lead Hazard Control and Healthy Homes (OLHCHH) to develop innovative and evidence-based approaches to reduce lead and other hazards in homes. The President's budget proposes a 10-year, $1 billion, mandatory, discretionary grant program. The President's budget also includes a $5 billion, 10-year, mandatory, discretionary grant program to provide grants to state and local governments to reduce lead and other hazards in homes. The President's budget also includes a $5 billion, 10-year, mandatory, discretionary grant program to provide grants to state and local governments to reduce lead and other hazards in homes.

Housing Supply Fund project to reduce affordable housing barriers. Building on the Administration's Housing Supply Plan, the President's budget proposes a $5 billion, 10-year, mandatory, discretionary grant program. The Office of HUD's Section 8 Housing Choice Affordable Housing Barriers the center and the Office of Lead Hazard Control and Healthy Homes (OLHCHH) to develop innovative and evidence-based approaches to reduce lead and other hazards in homes

Zonda. Rental Housing Outlook ›

Building

Posted on: September 26, 2023

BUILDER

TRANSFORMER SHORTAGE LEAVES BUILDERS POWERLESS TO FINISH THOUSANDS OF HOMES

As the housing shortage continues to mount, a critical distribution transformer shortage (with additional hurdles) is impeding home building and development.

By Leah Draffen

Adobe Stock

Thousands of completed homes are sitting empty as builders impatiently await the delivery of distribution transformers, a backlog exasperated by a lack of domestic manufacturing capabilities.

The chronic shortage comes as the industry struggles to overcome the supply chain issues caused by the pandemic. And as the conversation around the housing crisis heats up, the shortage is an unexpected roadblock to an industry struggling to get more homes to market.

"Coming out of the pandemic, we were experiencing significant shortages and delays in getting distribution transformers necessary to build communities," says Alex Strong, NAHB senior federal legislative director. "I think that problem has only gotten worse. Frankly, we haven't been able to catch up as a country."

Distribution transformers lower the voltage from power lines to an appropriate level for a home. Without them, builders are left with finished homes without certificates of occupancy, developed lots awaiting construction, and stalled new master plan developments.

The NAHB has been on the forefront of this issue, along with other building and utility trade groups, as backlogs of transformers have become depleted and worries over other potential delays arise.

At the end of last year, the organization sent a joint letter urging Congress to act on the shortages. Those conversations have continued throughout 2023, with home builders noting the shortage as a significant challenge.

In Houston, Strong says the NAHB has received reports of several thousands of homes being finished but powerless because of the shortage. He is seeing the story replaying in many areas of the country as the delays are much longer than expected, and manufacturers turn to refurbishing units to try and speed things up.

According to KB Home's earnings call last week, electrical equipment issues are causing delays in some of the builder's community openings.

"We've got a number of communities that we know are coming, we just don't know when. They're generally ready to go outside of waiting for [transformers] to be installed and energized," executive vice president and co-chief operating officer Rob McGibney said during the question-and-answer portion of the call.

KB Home isn't alone. The NAHB notes that 80% of builders and apartment developers are reporting shortages. While the obvious answer is to produce more transformers, the U.S. relies heavily on foreign manufacturers for production and the steel used to build the units, according to a report from The Conference Board.

"We need to produce more here domestically, and if we can't domestically, then we need to import more or more components that go into them," Strong says. "Second, Congress needs to be appropriating funds and doing everything in their power to encourage additional production and also shouldn't be doing anything to disrupt the existing supply chain or otherwise slow down the production of distribution transformers."

Shad Schmid, president of the Greater San Antonio Builders Association and co-founder and partner of King Fish Development, says last year he saw delays of 12 to 18 months to get transformers. Still, as interest rates have risen, the lowered demand in his market has cut the delay to roughly five months. He commends the local energy provider for finding additional transformer sources.

"As long as we're planning, I would say we're OK right now," Schmid says. "However, if the Feds start dropping rates and activity picks up, we could be back in the same situation again."

He said he worries about a repeat of early 2022 when King Fish was set to develop 80 lots on the west side of San Antonio and knew of the potential transformer delay.

"As soon as we got our design done and the contract and invoice for the installed power, we paid that bill right away because we knew it would get us in the queue. We were ready for power in late summer, around July, but our transformers didn't get installed until April or May of this year."

With heightened nervousness surrounding natural disasters, including hurricanes and wildfires, some building groups and electric providers are additionally speaking out against the proposed new efficiency standards for distribution transformers from the Department of Energy (DOE).

The ruling would require all transformers to be produced under a new standard, including amorphous steel cores that are considered more energy efficient. The DOE estimates that the proposed standards, if finalized, would reduce carbon dioxide emissions by 340 million metric tons over the next 30 years.

"Over the last three years, average lead times to procure distribution transformers went from eight to 12 weeks to up to three years," says Peter Ferrell, director of government relations at the National Electrical Manufacturers Association (NEMA). "These long lead times have an impact on national security, grid reliability and resilience, and new-home construction.

"NEMA, along with utility and home builder groups, have implored the DOE to withhold unnecessary regulations on these already extremely efficient products, 99.55% efficient in some cases, which could further exacerbate this production timeline. Instead, the DOE should work with manufacturers to reduce lead times so that home construction and grid modernization can continue without further delays."

While a clear answer isn't in sight for addressing the shortage, Strong recommends builders encourage the administration and Congress to prioritize it.

He says, "Just as the housing shortfall and housing affordability issues are very important nationwide, this particular challenge should be just as important because it's cutting into the ability to address the need for additional housing supply."

ABOUT THE AUTHOR

LEAH DRAFFEN

Leah Draffen is an associate editor for Zonda's *Builder* and *Multifamily Executive* magazines. She earned a B.A. in journalism and minors in business administration and sociology from Louisiana State University.

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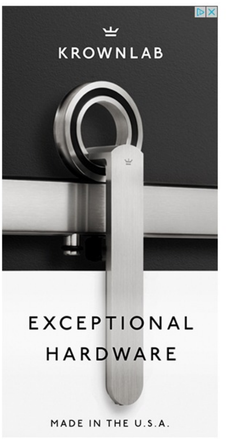

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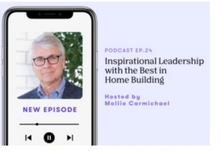

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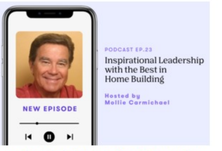

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Podcasts

National Association of Home Builders

NATIONAL MULTIFAMILY HOUSING COUNCIL

Regulation: 40.6 Percent of the Cost of Multifamily Development

Paul Emrath, National Association of Home Builders (NAHB)
Caitlin Sugrue Walter, National Multifamily Housing Council (NMHC)

Regulation imposed by all levels of government accounts for an average of 40.6 percent of multifamily development costs, according to research by NAHB and NMHC.

Apartment development can be subject to a significant array of regulatory costs, including a broad range of fees, standards and other requirements imposed at different stages of the development and construction process. This joint research effort surveyed NAHB and NMHC members to quantify how much regulation exists and how much it is adding to the cost of developing much-needed new multifamily properties.

About NAHB

The National Association of Home Builders (NAHB) strives to protect the American Dream of housing opportunities for all, while working to achieve professional success for its members who build communities, create jobs and strengthen our economy. NAHB Multifamily provides services, benefits and opportunities to members with an interest in multifamily housing, including multifamily member meetings, newsletters, events, webinars and multifamily housing awards. It coordinates with other NAHB departments on advocacy efforts, economic studies and resources for multifamily housing. For more information, please visit NAHB Multifamily at nahb.org/nahb-community/councils/multifamily-council.

About NMHC

Based in Washington, D.C., the National Multifamily Housing Council (NMHC) is the leadership of the apartment industry. We bring together the prominent owners, managers and developers who help create thriving communities by providing apartment homes for 40 million Americans, contributing $3.4 trillion annually to the economy. NMHC provides a forum for insight, advocacy and action that enables both members and the communities they help build to thrive. For more information, contact NMHC at 202/974-2300, e-mail the Council at info@nmhc.org, or visit NMHC's website at nmhc.org.

Introduction

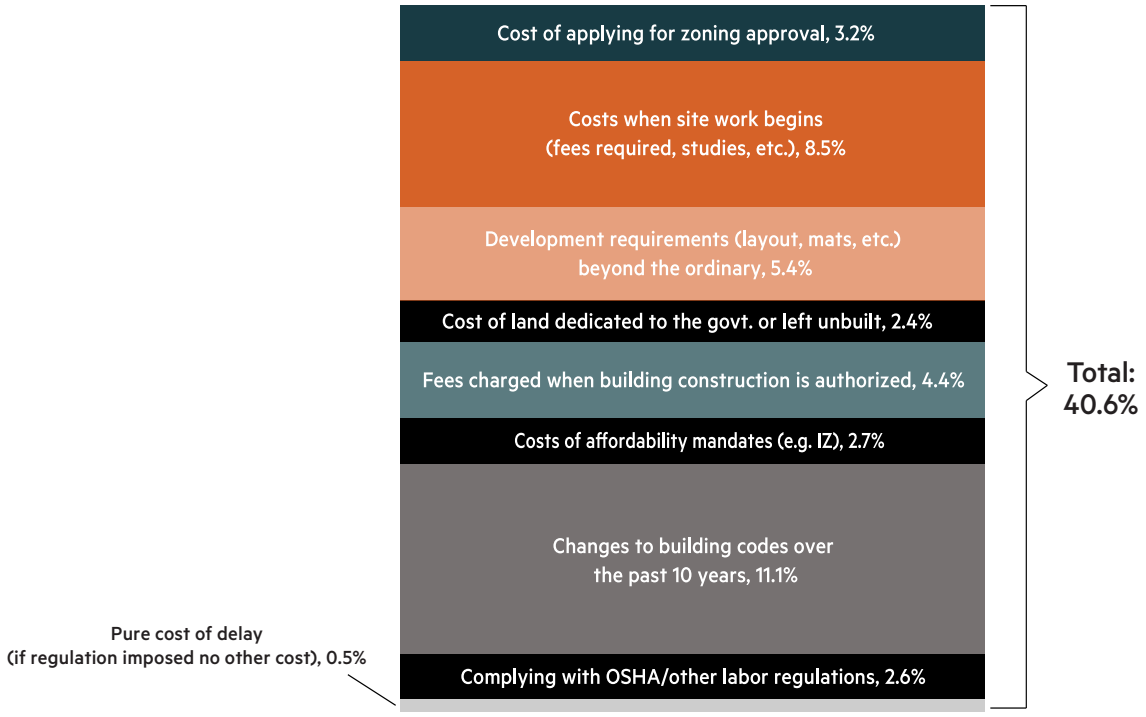
Multifamily development is subject to a variety of regulations at all levels of government. While some of these regulations are necessary to protect the health and safety of residents as well as the integrity of the building or community, it is informative to know the financial impact of each type of regulation, particularly in an era of widespread cost increases and worsening affordability problems for renters. Each added cost means the developer must increase rents for the project to remain financially feasible.

Regulations cover a wide-range of issues, and while they may be well-intentioned, the costs and burdens of any regulation must be carefully weighed against the benefits. Few would argue, for example, that basic safety standards for structures and workers are unnecessary. But, when regulation constitutes an average of 40.6 percent of a project's development costs, this raises questions about how thoroughly governments are considering the consequences of their actions. Are they aware of how much regulation currently exists? Do they realize how multiple regulations with conflicting standards can cause delays and increase costs? And do they understand the extent to which these increased costs translate into higher rents and make it difficult to build new housing that families with modest incomes can afford?

Recently, the National Association of Home Builders (NAHB) and the National Multifamily Housing Council (NMHC) undertook a joint research effort to find out how much government regulation adds to the cost of building new multifamily housing via a survey distributed to multifamily developers. (See Appendix 2).

The research finds that an average of **40.6 percent of total development costs** can now be attributed to complying with regulations imposed by all levels of government. Figure 1 shows how this percentage breaks down among the various types of regulation.

Figure 1. Average Cost of Regulation as a Percent of Total Multifamily Development Cost



Source: NAHB and NMHC

Perhaps more importantly, some of these regulatory mandates can discourage developers from building in the very marketplaces that have the greatest need for more housing. This can prove to be particularly burdensome in a world of rising costs. For example, 47.9 percent of multifamily developers said they avoid building in jurisdictions with policies such as inclusionary zoning, and a full 87.5 percent will avoid building in a jurisdiction with rent control in place.

There are also significant obstacles to development at the community level that are unrelated to governmental regulation. For instance, our research shows that "Not in My Backyard" (NIMBY) opposition to multifamily development adds an average of **5.6 percent to total development costs** and delays the delivery of new housing by an average of **7.4 months**. While most Americans agree that we need more housing and more housing affordable to middle-income households, too many change their opinion when someone proposes to put that new housing in their neighborhood. The intensity of opposition is escalated if that housing is rental housing.

About the Research

NAHB and NMHC distributed an identical survey in April 2022 to their respective memberships to access a wide range of development scales across the United States. The primary purpose was to quantify how much regulation exists for developers to contend with and how much that regulation is adding to the cost of developing new multifamily properties.

Some of these questions quantify the impact of regulations, such as inclusionary zoning and rent control, that not only may directly increase the costs of projects that are built but affect the supply and cost of housing in the community by causing some projects not to be built at all. An additional set of questions asked about the financial impact of NIMBYism, an issue that has been widely identified as one of the major cost drivers impacting affordability but where little quantifiable data currently exists.

A total of 49 usable responses were received. The responses from the survey were combined with existing public data and other survey collections to calculate the financial cost as a percent of total development cost for each regulation. A detailed description of the assumptions used in the calculations can be found in Appendix 1.

Total Cost of Regulations

Regulatory costs that exist during the multifamily development process can be divided into several categories. Table 1 shows the share of developer respondents subject to these various regulations and the average cost of each category as a percentage of the total development cost.

Table 1. Average Regulatory Costs as a Share of Total Multifamily Development

	Share With the Regulatory Cost	Regulation as a Percent of Total Development Cost	
		Average When Present*	Average Across All Properties
Cost of applying for zoning approval	93.9%	3.4%	3.2%
Costs when site work begins (fees, required studies, etc.)	98.0%	8.7%	8.5%
Dev. requirements (layout, mats, etc.) beyond the ordinary	91.8%	5.8%	5.4%
Cost of land dedicated to the goverment or left unbuilt	51.0%	4.7%	2.4%
Fees charged when building construction is authorized	95.9%	4.6%	4.4%
Costs of affordability mandates (e.g., inclusionary zoning)	38.8%	6.9%	2.7%
Changes to building codes over the past 10 years	100.0%	11.1%	11.1%
Complying with OSHA/other labor regulations	93.9%	2.7%	2.6%
Pure cost of delay (if regulation imposed no other cost)	95.9%	0.5%	0.5%
TOTAL COST OF REGULATION	**100.0%**	**40.6%**	**40.6%**

* The base is different for every percentage in this column, so the line items are not additive.

Source: NAHB and NMHC

Understanding Table 1

The last column of the table shows the averages across all multifamily developments in the survey, even those not subject to a particular type of regulation (i.e., the "zeroes" are averaged in). The column to the left of that shows average costs calculated ***only*** for those properties that ***are*** subject to the regulation.

Note that because each percentage in the "Average When Present" column is calculated for a different set of properties, the rows in that column do not add up to the total. The primary reason for including this column is so readers interested in the comparatively uncommon regulations—such as requiring developers to leave some of their land unbuilt and affordability mandates such as inclusionary zoning—can see how costly these regulations tend to be when they are present.

The other categories of regulation in the table are widespread (impacting over 90 percent of multifamily developers). For them, the differences between the "Average When Present" and "Average Across All Properties" columns are negligible.

As Table 1 indicates, the highest average regulatory cost is the result of changes to building codes over the past 10 years (11.1 percent of total development costs). The second highest are the costs imposed when site work begins (8.7 percent). The lowest average cost impact was the pure financial cost of delay, consisting of 0.5 percent when present, lower than the average cost of complying with Occupational Safety and Health Administration (OSHA) or other labor regulations (2.7 percent when present).

The first significant interaction between a multifamily developer and the government typically occurs when the developer applies for zoning approval to allow multifamily housing to be built on a particular parcel of land. Regulatory costs at this stage can vary from costs associated with fees owed to the local jurisdiction for proceeding through the approval process to market or environmental impact studies that must be commissioned from private consultants.

In some cases, a developer can acquire land that allows for multifamily structures to be built on it without requiring rezoning or a special exemption. However, this is rare, with 93.9 percent of the respondents indicating that they must dedicate resources to rezone the land to allow multifamily construction. When they exist, these costs average 3.4 percent of the total development cost.

Once site work begins, local jurisdictions often require a variety of fees or other studies. Examples of fees could include impact fees (fees charged only on a new development to be used for capital improvements) or utility impact fees. Almost all respondents (98.0 percent) reported paying some of these costs in their typical project, representing an average of 8.7 percent of total development costs when present.

Most respondents (91.8 percent) were also required by their local jurisdiction to include certain design features in their project design that go beyond what they would ordinarily include. Examples include energy-efficiency upgrades or specific design requirements for facades. When present, complying with these requirements amounted to an average of 5.8 percent of total development costs.

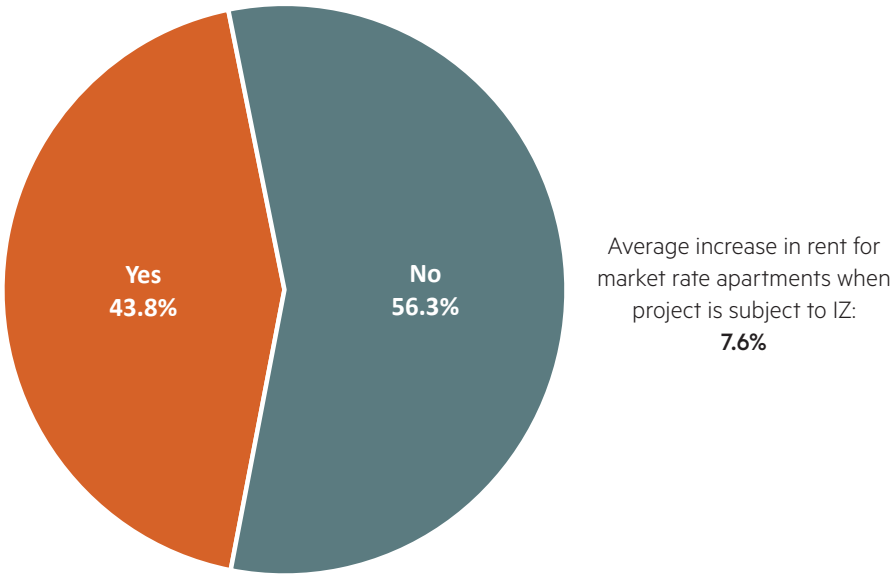
Governments can also require developers to leave a portion of the development site dedicated for government use or left unbuilt. This requirement reduces the amount of developable area, which means the revenue from that area is lost and must either be absorbed or made up for elsewhere. This requirement was present for approximately half (51.0 percent) of respondents; when present, it represented an average of 4.7 percent of total development costs.

Jurisdictions also often charge fees when site work is completed to authorize building construction. Examples of these costs include a fee when filing for a building permit or fees for additional utility hook-ups. Almost all respondents (95.9 percent) reported paying some sort of fee at this phase of development, with an average cost of 4.6 percent of total development cost when present.

Local affordability mandates are another important cost driver. These mandates are designed to increase the supply of affordable apartments. A common example is inclusionary zoning, where developers must offer a certain percentage of apartments at below-market rent levels. In many cases, a density bonus is provided to developers, which allows them to include more units in their project than ordinarily permitted by zoning to offset those lowered rents.

Unfortunately, these incentives are often inadequate and do not fully cover the lost rental revenue. In those cases, developers are forced to raise rents on the unrestricted apartments to fill the gap or to abandon the project altogether because it is no longer financially feasible.[1] These mandates were present in slightly over one-third (38.8 percent) of respondents' typical projects, and when present, they made up an average of 6.9 percent of total development costs (Figure 2). Respondents subject to inclusionary zoning report having to raise rents by an average of 7.6 percent.

Figure 2. Is Respondent's Typical Project in a Jurisdiction with Inclusionary Zoning? (Percent of Respondents)



Source: NAHB and NMHC

[1] NAHB has developed an Inclusionary Zoning Calculator Tool to help developers and local jurisdictions determine if incentives are adequate to allow a project to be built.

The increase in costs to comply with changes to building codes over the past 10 years was the largest driver of development cost, amounting to 11.1 percent of total development costs.

Most jurisdictions have been adopting, revising and enforcing building codes for decades, and an entire industry has emerged supporting and encouraging changes to existing building codes. While building codes play an important role in protecting resident safety and building integrity, they have evolved well beyond their original purpose and now are also used to promote public policies like energy efficiency and sustainability.

Building code development and adoption are complex, and it is essential to consider impacts to housing affordability throughout the process. State and local jurisdictions adopt and enforce building codes, but federal policymakers are also active in the development of international model codes, and they promote the adoption of certain code editions. For example, the U.S. Department of Energy encourages states to adopt the most stringent versions of the model energy codes. Various policy groups, industry organizations and individual companies also advocate for code changes that promote specific goals. These changes do not always balance the needs of housing affordability and have the potential to drive up construction costs[2] without improving building safety or integrity.

Developers are also subject to complying with Occupational Safety and Health Administration (OSHA) requirements and other labor regulations throughout the development process. While measures to protect the safety and health of construction workers are essential, NAHB has argued that some OSHA policies, like applying its beryllium standards to residential construction, simply drive construction costs up without impacting health or safety.

Fully 93.9 percent of respondents said they had to comply with these regulations and that they added 2.7 percent to total development costs.

Almost all respondents (95.9 percent) also reported that complying with regulations caused some sort of delay for their typical project. We estimate that "pure" cost of delay—the financial cost that taking the time to comply with that regulation would incur—would be an average of 0.5 percent of total development costs. This may not seem like a substantial number, but in an era of rising costs and diminishing affordability, any additional cost can impact project feasibility.

Affordability Mandates and Neighborhood Opposition Can Discourage Development Altogether

Aside from increasing development costs, some regulations and restrictions can impact whether development even occurs, which is incredibly harmful given the nation's shortage of housing.

There are many factors a developer considers when choosing a potential site for a future development; primary among them is the market demand for the proposed units. Increasingly, however, developers are also forced to consider whether their chosen jurisdiction imposes affordability mandates on new development. Two of the most popular mandates are inclusionary zoning and rent control because they are wrongly deemed to be "quick and free" fixes to housing affordability challenges.

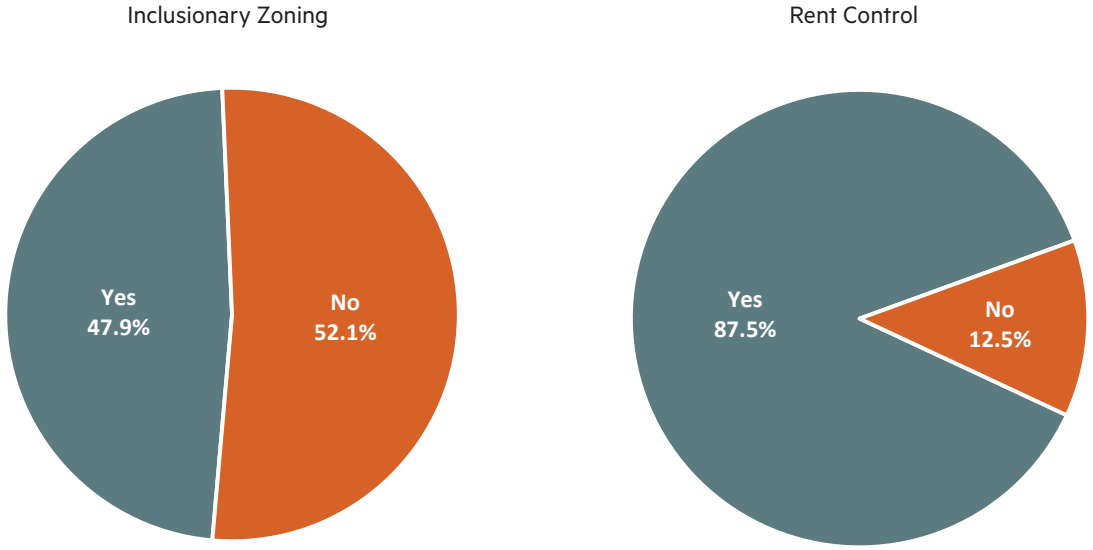
[2] NAHB's subsidiary Home Innovation Research Labs has recently produced a report showing that codes adopted in 2018 increase construction costs for standard types of multifamily buildings between $2,500 and $25,000.

Research has shown, however, that these quick fixes, particularly rent control, have many pitfalls. One major pitfall of both, as shown in Figure 3, is that it can deter development completely. Almost half of the respondents (47.9 percent) reported that they avoid building in jurisdictions with inclusionary zoning policies. The response was more acute for rent control—the overwhelming majority of respondents (87.5 percent) reported they avoid building in jurisdictions where rent control is present.

In fact, these mandates can impact the financial feasibility of a project, both in the short-term and long term. As a result, developers may simply choose to avoid jurisdictions with these mandates because of the difficulty in making a project pencil out.

Rent control regulations similarly differ depending on the local jurisdiction. In its basic form, rent control is a restriction on how much a property owner can raise a resident's rent, ignoring market conditions. Some rent control laws exempt new construction from price controls, and others institute a cap on how much an owner can raise a resident's rent, often tied to the Consumer Price Index (CPI).

Figure 3. Do Multifamily Developers Avoid Building in Jurisdictions with Certain Policies? (Percent Of Respondents)

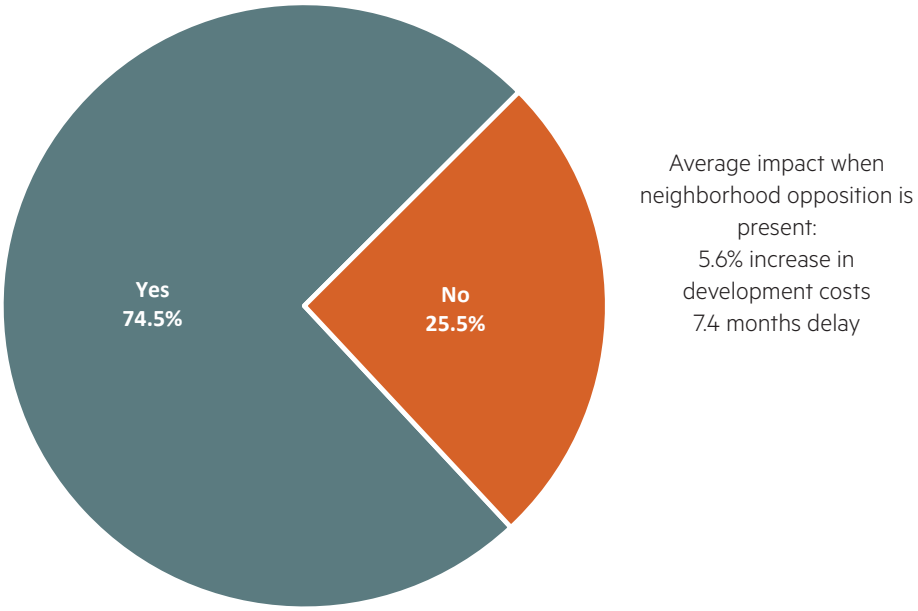


Source: NAHB and NMHC

Another major impediment to whether a project gets built can be neighborhood opposition. Opposition against multifamily development by current residents, commonly referred to as "Not in My Backyard" (NIMBY) opposition, can take many different forms. Residents may fight against rezoning attempts or may even file lawsuits to attempt to prevent development from occurring. Approximately three-quarters (74.5 percent) of respondents reported encountering neighborhood opposition to multifamily construction (Figure 4). The resources required to overcome this opposition add an average 5.6 percent increase in development costs when present. They also delay the development timeline by an

average of 7.4 months.

Figure 4. Have Developers Encountered Neighborhood Opposition To Multifamily Construction? (Percent Of Respondents)



Source: NAHB and NMHC

Conclusion

As the above discussion has demonstrated, multifamily development can be subject to many regulatory costs, including a broad range of fees, standards and other requirements imposed at different stages of the development and construction process. Because of this, it may not be surprising that regulation imposed by all levels of government accounts for 40.6 percent of multifamily development costs on average.

This research was solely restricted to the impact of regulations on total development costs. It is important to note that developers are also dealing with rapidly rising land, material, and labor costs. Combined, these costs make it virtually impossible for private sector developers to deliver housing at a price point that many working Americans can afford.

When multifamily development costs rise, it unavoidably translates to higher rents and reduced rental housing affordability. Multifamily developers cannot secure financing to build their projects unless they can demonstrate to lenders that the rents will be sufficient to cover costs and pay off the loans.

The purpose of this report is not to argue that all regulation is bad and should be eliminated, but that some of these regulations are likely duplicative as multiple levels of government impose regulations on the same project. In addition, many of these regulations do not have a relationship to resident safety or building integrity.

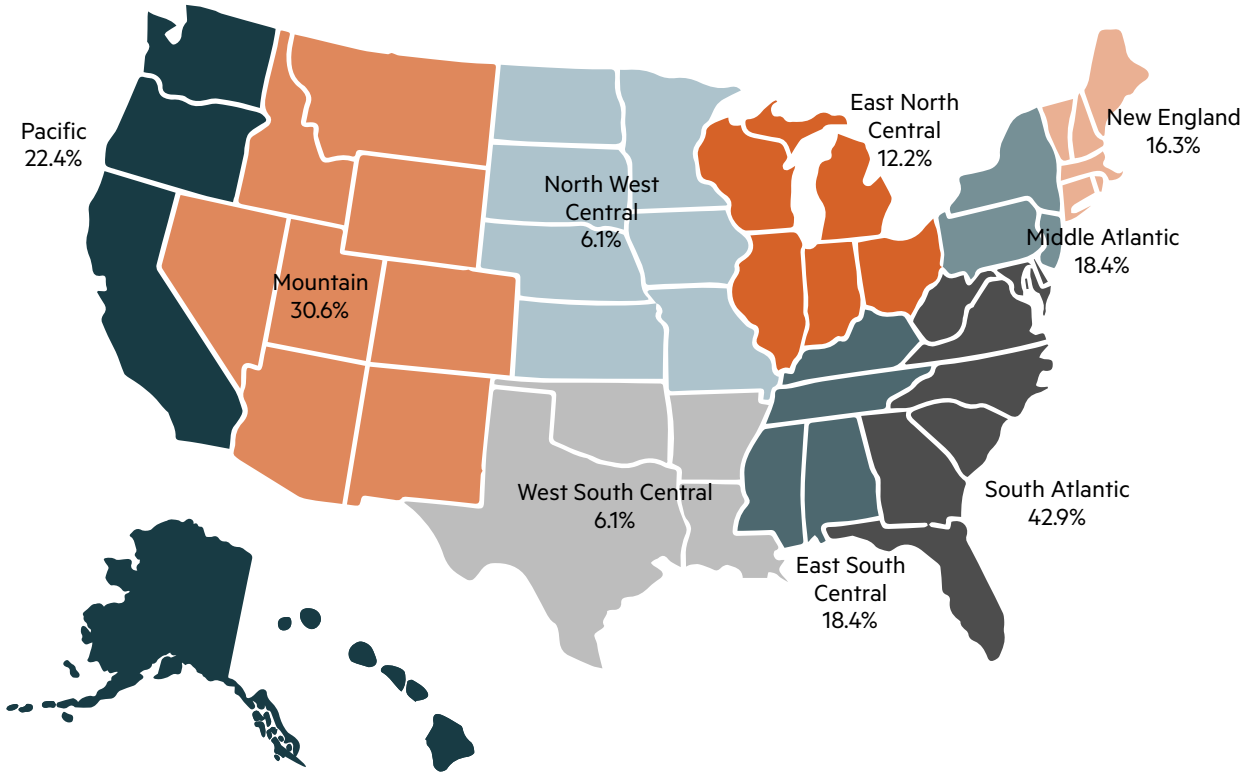
The research aims to raise awareness of how much regulation currently exists, how much it costs and to encourage governments to do a thorough job of considering the implications for housing affordability when proposing and implementing new directives. It is also to help inform local leaders that they also have the power to waive some of these duplicative costs, thus lowering the rent required for the project to remain financially feasible and improving affordability.

Respondent Profile

A total of 49 usable responses were received from multifamily developers, with a slightly higher concentration of NAHB members than NMHC members (and no duplicates). In one instance, two survey responses were accepted from one member company because the respondents represented different geographic areas.

All geographic areas in the United States were represented (see Figure 5). Respondents were able to choose more than one region of operation. The South Atlantic region (DE, DC, FL, GA, MD, NC, SC, VA, WV) had the largest representation, with 42.9 percent of respondents operating there, followed by the Mountain region (AZ, CO, ID, NM, MT, UT, NV, WY) with 30.6 percent and the Pacific region (AK, CA, HI, OR, WA) with 22.4 percent. The West North Central (IA, KS, MN, MO, NE, ND, SD) and West South Central (AR, LA, OK, TX) had the lowest representation at 6.1 percent of respondents each.

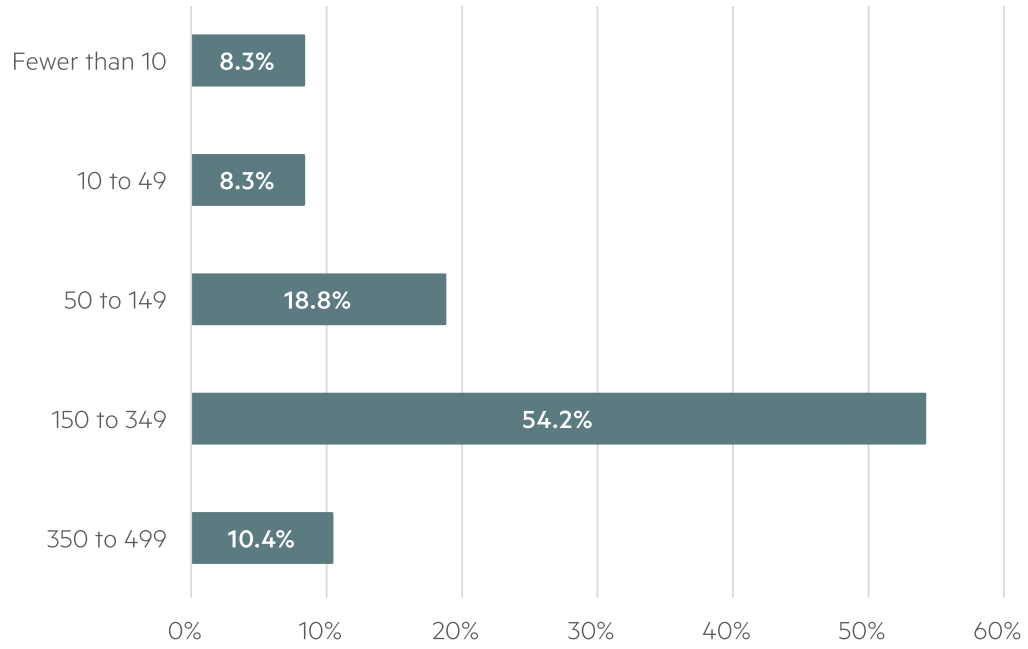
Figure 5. Share of Respondents Who Build in Each of the Nine Census Divisions



Source: NAHB and NMHC; U.S. Census Bureau

The respondents' typical project size varied widely: from fewer than 10 units to 499 (see Figure 6). The majority of respondents (54.2 percent) reported a typical project size of 150 to 349 units. Note that this is project size, not building size, meaning that each category could comprise both garden-style communities, which frequently have units spread across multiple buildings, as well as high-rise buildings, where all units are traditionally in one building.

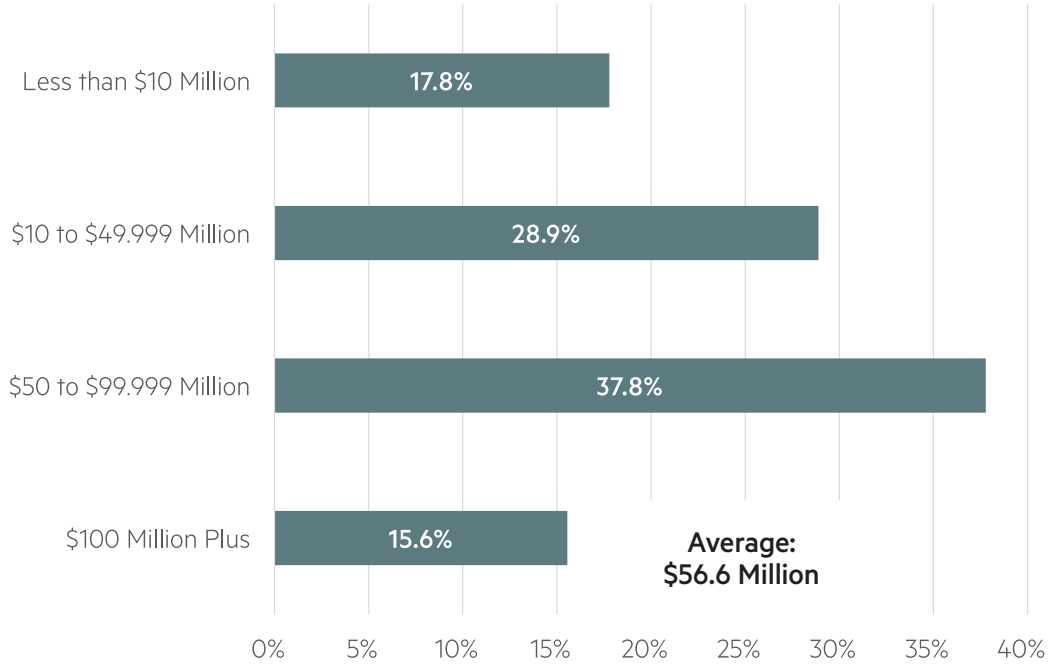
Figure 6. Number of Apartments in Respondent's Typical Project (Percent of Respondents)



Source: NAHB and NMHC

The typical total development cost varied as well but was slightly more evenly distributed (Figure 7). The average total development cost of respondents for a typical project was $53.6 million. Barely over one-third (37.6 percent) reported a typical development cost of $50 to $99.99 million. Small and large projects were equally represented, with 17.8 percent of respondents reporting a cost of less than $10 million and 15.6 percent indicating the typical project costs at least $100 million.

Figure 7. Total Development Costs for Respondent's Typical Project (Percent of Respondents)



Source: NAHB and NMHC

Appendix 1: Assumptions Used in the Calculations

To calculate a final effect on development costs, many of the NAHB-NMHC survey responses need to be combined with additional information. Primarily these are assumptions about the terms of development and construction loans, how long construction typically takes, and how to allocate costs to different stages of the development and construction process. This appendix lists all the assumptions used in the calculations and gives the sources for each.

Loan Terms

1. 1 point charged for all land acquisition, development, and construction (AD&C) loans, based on results from a Quarterly Finance Survey (QFS) that NAHB was conducting in the early to mid-2000s.

A 7.65 percent interest rate on all AD&C loans. The QFS indicates that rates are typically set one point above prime, and 6.65 percent is NAHB's estimate of the prime rate that would prevail in the long run under neutral Federal Reserve policy.

The estimates also assume that three-fourths of any category of costs are financed, based on typical AD&C loan-to-value ratios in the QFS.

Construction Lags

The source for information lags not directly collected in the NAHB-NMHC questionnaire is the Survey of Construction, conducted by the Census Bureau and partially funded by the Department of Housing and Urban Development.

Preliminary estimates are taken from the published annual tables, averaged over the 2001-2016 period:
Authorization to start = 1.71 months
Start to completion = 10.87 months

If the project is 5-9 units
- Authorization to start = 1.95 months
- Start to completion = 11.64 months

If the project is 10+ units
- Authorization to start = 1.94 months
- Start to completion = 13.21 months

The NAHB-NMHC survey collected data on how much time regulation adds to the development process. To assign this to a particular phase of the development, the following assumptions are used.

The regulatory delay is split and attributed half to the lag between applying for zoning approval and the beginning of site work and half to the period after site work begins. If half of the regulatory delay exceeds the lag between applying for approval and the beginning of site work, the excess is also attributed to the period after site work begins.

It is first assumed that the resulting regulatory delay is attributable to the period between the start of site work and the start of building construction, minus three months (the assumed minimum time it would take to do site work in the absence

of regulation, based on conversations with developers). If any regulatory delay remains after being allocated to the zoning approval and site work periods, it is then attributed to the building construction period, and the start-to-completion lag is adjusted upward beyond the SOC-based average, accordingly.

The analysis assumes all loans are paid off when the buildings are completed.

Cost Breakdown

To implement the process described in the paragraph above and calculate a "pure" cost of delay (i.e., the effect regulatory delay would have even if the regulation imposed no other cost), estimates of costs incurred during different phases of the development process are needed.

The breakdown is based on the split between lot and construction costs in NAHB's Construction Cost Surveys (averaged over surveys conducted since 2000) and the Census Bureau's "non-construction cost factor" for raw land. The calculations also assume three-fourths of these costs are financed, based on typical AD&C loan-to-value rations in the QFS.

Resulting assumptions:

- Only the cost of applying for zoning occurs at the very start of the development process. Financing costs associated with this are charged to the regulatory cost of the application and not counted in the pure cost of delay.
- 10.2 percent of total development represents costs financed by a land acquisition loan at the start of the site work phase.
- 10.8 percent of total development costs represent costs financed by a development loan during the site work phase, assuming draws on the loan occur on average halfway through this phase.
- 54.0 percent of total development costs represent costs incurred after building construction has started and financed with a construction loan, again assuming draws on the loan occur on average halfway through the site work phase.

Appendix 2: Survey Questionnaire

1. **What regions do you build in? Please select all that apply.**
   - New England (CT, ME, MA, NH, RI, VT)
   - Mid Atlantic (NJ, NY, PA)
   - South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV)
   - East North Central (IN, IL, MI, OH, WI)
   - West North Central (IA, KS, MN, MO, NE, ND, SD)
   - East South Central (AL, KY, MS, TN)
   - West South Central (AR, LA, OK, TX)
   - Mountain (AZ, CO, ID, NM, MT, UT, NV, WY)
   - Pacific (AK, CA, HI, OR, WA)

2. **How many units does your typical multifamily project have?**
   - 2-4 Units
   - 5-9
   - 10-49
   - 50-149
   - 150-349
   - 350-499
   - 500 units or more

3. **What is the total dollar amount spent on development costs in your typical project?**

   $_____

4. **For a typical piece of land, how much does it cost to apply for zoning approval as a % of total development cost?** *(Include costs of fiscal or traffic impact or other studies and any review or other fees that must be paid by the time of application. Please enter "0" if application costs are Zero percent).*

   _____%

5. **For a typical project, how many months does it take between the time you apply for zoning approval and the time you begin site work?**

   _____months

6. **How much does it cost to comply with regulations when site work begins, as a % of total development costs?** *(Include costs of complying with environmental or other regulations as well as the cost of hook-up or impact or other fees.) Please enter "0" if cost of complying with these regulations is Zero percent.*

   _____%

7. **How much do development requirements that go beyond what you would otherwise do (in terms of property layout, landscaping, materials used on building facades, etc.) add to your cost as a % of total development costs?** *(Please enter "0" if the jurisdiction's requirements don't go beyond what you would normally do.)*

   _____%

8. **In the typical case, what is the value of any land that must be dedicated to the local government or otherwise left unbuilt (for parks, open green space, etc.) as a % of total development cost?** *(Please enter ")" if dedicating land is required infrequently.)*

   _____%

9. **How many months does it take between the time you begin site work and the time you obtain authorization to begin construction of the apartment building(s)?**

   _____months

10. **How much extra time (in months) overall does complying with regulations add to the development process?** *(Please enter "0" if regulations typically cause no delay).*

    _____months

11. **When you obtain authorization to begin construction, how much do you pay in additional fees as a % of total development costs? In many cases, this will be only a permit fee but include any additional impact or hook-up or inspection fees if they kick in at this time.** *(Please enter "0" if fees paid during or after construction are Zero percent).*

    _____%

12a. In the typical case, does a jurisdiction have inclusionary zoning/affordable housing requirements that apply to your project?

- o Yes
- o No

12b. *[If the answer to 12a is "yes"].* **In the typical case, how much do these requirements (or a fee in lieu of affordable housing) cost as a % of total development cost?** *(Please enter "0" if inclusionary zoning/affordable housing mandates/fees in lieu of affordable housing are encountered infrequently).*

_____%

12c. *[If the answer to 12a is "yes"].* **In the typical case, how much do these additional requirements raise the rents of market-rate units?**

_____%

13. **Do you typically avoid building in a jurisdiction if it has an inclusionary zoning requirement?**
    - o Yes
    - o No

14. **Do you typically avoid building in a jurisdiction that has rent control?**
    - o Yes
    - o No

15. **Over the past 10 years, how much have changes in construction codes and standards added to the cost of building a typical multifamily project as a % of total development costs?** *(Please enter "0" if code changes have had minimal impact on costs).*

    _____%

    - Please select if you have not been in operation for the past 10 years

16. **How much does complying with OSHA or other labor regulations cost, as a % of total development cost?** *(Please enter "0" if labor regulations have no impact on development costs).*

    _____%

17. **Have you experienced added costs or delays due to neighborhood opposition to multifamily construction?**
    - Yes
    - No

18. **In the typical case, how much costs are added to a project due to neighborhood opposition to multifamily development as a % of total development costs?**

    _____%

19. **In a typical case, how much extra time (in months) does it take to address neighborhood opposition to multifamily development?**

    _____months

20. **Comments:**