
Executive Order 20-04: Directive 3(D) Report

**Oregon
Building
Codes Division**

Background

Executive Order 20-04 was signed by Governor Brown on March 10, 2020. It is intended to build on Executive Order 17-20, and further Oregon's goal of reducing greenhouse gas emissions. The EO provides 13 directives to multiple state agencies, including directives to specific agencies with reporting requirements and deadlines. The first reporting deadline is on May 15, 2020, and requires the specified state agencies to report on proposed actions within their statutory authority to reduce green house gases and mitigate climate change impacts. While the Department of Consumer and Business Services Building Codes Division (BCD) is not a mandated reporter in the EO, the Governor's office requested BCD also provide a report.

BCD Statutory Authority

BCD, in partnership with its seven advisory boards, has statutory authority to adopt and amend a state building code. BCD does not have statutory authority to unilaterally adopt or amend the building code, and requires approval from the appropriate advisory board. Historically, BCD has worked with its advisory boards to adopt some of the most energy efficient building codes in the country. Oregon's state codes are based on national model codes and incorporate additional energy efficiency measures. Oregon was the first state in the country to adopt the ASHRAE 90.1-2016 standard as a statewide, mandatory code, and is among the national leaders in energy efficiency for both residential and commercial construction.

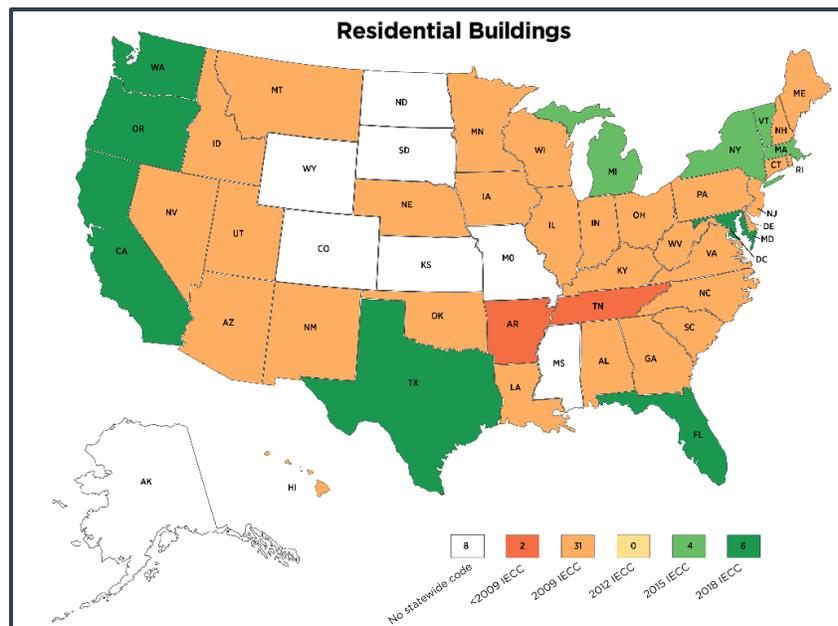


Figure 1: Status of state energy code adoption: Residential buildings
(US Dept of Energy)

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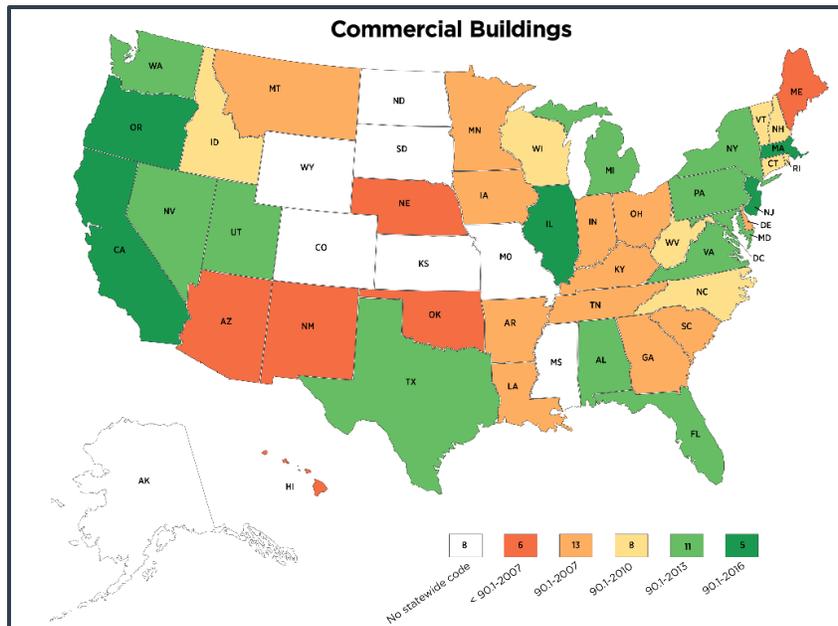


Figure 2: Status of state energy code adoption: Commercial buildings (US Dept of Energy)

BCD has been able to keep Oregon as a national leader for energy efficient building codes by utilizing its existing statutory authority to adopt uniform statewide building codes that are technically and economically feasible. These codes are required statewide, creating consistency and predictability. This approach also helps Oregon achieve extremely high compliance rates as contractors are able to train their workers to one standard, regardless of the jurisdiction a project is in.

As part of Oregon’s unique building code system, Oregon statute requires both the appropriate advisory board and BCD to jointly approve of any code change. This approach ensures that the stakeholder advisory boards are partners in the code change process, and that important construction industry stakeholders are able to have their voices heard. This partnership between the construction industry, the boards, and BCD has created one of the leading energy efficiency codes in the country, while providing predictability and stability to the construction industry.

Current statutory authority will allow BCD, with its advisory boards, to continue to adopt increasingly energy efficient model codes on a predictable timeline. This will maintain Oregon’s place as a national leader for both residential and commercial energy efficiency, reduce the built environment’s greenhouse gas emissions, and establish a path for Oregon buildings to achieve net-zero energy use.

BCD will propose to the boards that they maintain their role in energy efficiency leadership by continuing to adopt and update energy codes in Oregon on a predictable three-year schedule, based on the most recent published versions of national model codes. The commercial energy code will continue to be based off the most recent published version of the ASHRAE 90.1

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standard, while the residential energy code will continue to advance the existing Oregon residential energy code provisions, which exceed published national model codes. BCD will continue to work with the boards to make amendments as necessary to meet the goals as outlined in Executive Orders 17-20 and 20-04.

Additional Information

The Governor's office has requested additional information in response to the following:

- 1. The agency's plans for implementation of the specific directives, including articulation of clear deliverables, outcomes, timelines, and identification of lead staff.**

BCD is directly responsible for directives 6(A), 6(B), and 6(C) in EO 20-04.

Directive 6(A):

This directive requires BCD, through its advisory boards, and in cooperation with the Oregon Department of Energy (ODOE), to adopt a building energy efficiency goal for 2030 that represents a 60% reduction in building site energy consumption from the residential and commercial energy codes that were in effect in 2006.

BCD has had discussions with ODOE to determine the 2006 baseline and both agencies have made substantial progress towards determining the 2006 baseline. The baseline will incorporate existing analysis and determinations made by ASHRAE and the Pacific Northwest National Laboratory. This work between BCD and ODOE has been ongoing as a result of EO 17-20, and includes the same methodologies used for determining the US DOE Zero Energy Ready Home equivalent.

With the baseline determined, the performance based target of a 60% reduction can be calculated and incorporate prescriptive measures from EO 17-20. This approach will be communicated to the Residential and Manufactured Structures Board, Building Codes Structures Board, and the Construction Industry Energy Board. The performance based 60% reduction goal will then be accomplished via regularly scheduled code updates which take place on approximately three-year cycles.

BCD already has Oregon codes modeled and calculated via independent third-party evaluation for federal verification purposes. Verification also enables BCD to ensure that any increased costs in construction due to additional code requirements result in meaningful energy savings for Oregonians. These evaluations will continue, and will provide the required reporting mechanism to measure progress on the 60% reduction goal.

Lead BCD Staff: Mark Heizer, Mechanical and Energy Code Engineer; Kelly Thomas, Energy Policy Analyst

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Directive 6(B):

This directive has three subparts each with a different directive to BCD. These three subparts result in two different requirements (1) a reporting requirement, and (2) a requirement to adopt and update the Reach code on a regular, predictable cycle.

Reporting: The first requirement directs BCD, through its advisory boards, and in cooperation with ODOE, to report on the progress and options to meet the goal established by Directive 6(A), and submit that report to the Governor no later than September 15, 2020, with updates every three years thereafter. To implement this directive BCD will continue to update the residential and commercial energy codes on approximately three-year cycles. BCD currently uses the University of Oregon to provide an independent third-party verification of its code adoption progress. BCD will continue to use an independent third-party verification institute to provide data on code efficiency progress. This data can then be used to demonstrate progress towards the goal established under directive 6(A). The appropriate advisory boards and BCD can use this data to inform future decisions about code amendments, as well as provide the basis for the reporting requirements.

Reach code: The second requirement directs BCD to update the Reach code on the same timeline as code adoption. By statute the Reach code consists of optional provisions that a builder may choose to utilize, separate from the state building code.

Codes are typically updated on three-year cycles, resulting in a Reach code being adopted on approximately three-year cycles for the residential and structural code. Previous editions of the Reach code were developed with significant upfront expense and staff time. However, since the existing Oregon code system provides flexibility to designers and contractors to build above code, the Reach code did not see much utilization in the industry. Because a code item cannot be in both the Reach code and the state code at the same time, BCD focused its efforts on including all technically and economically feasible energy code items in the state building code to achieve immediate results in the construction industry. BCD's approach resulted in Oregon having some of the most efficient energy codes in the country with effective code enforcement and nation leading code compliance rates. This combination creates real world savings for Oregonians. These results were only able to be achieved through strong partnership with the advisory boards and construction industry stakeholders, who are ultimately responsible for turning code requirements into real world buildings.

The Reach code is created by statute in ORS 455.500. That statute requires that the Reach code be designed to increase energy efficiency, be "economically and technically feasible," and use "published and generally accepted codes and standards." BCD will continue to review both prescriptive and performance based approaches to designing an effective Reach code that meets

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statutory requirements. BCD, in consultation with the appropriate advisory boards, will update the Reach code on three-year cycles in alignment with specialty code update cycles.

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Directive 6(C):

This directive requires BCD, in cooperation with ODOE, to agree on metrics, based on best practice and academic research, to inform the baseline and reductions associated with the code updates set forth in section 6(B).

BCD staff will continue working with ODOE to determine the baseline code efficiency from 2006 as required by section 6(A), using existing agreed upon methodologies used to determine EO 17-20 prescriptive code requirement equivalencies. This baseline will be used to measure reductions for each code adoption under section 6(B), and captured in the reporting requirements under that same section, and create a path to reach the performance based goals of EO 20-04.

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2. Description of anticipated processes for advancing the work and engaging stakeholders; for example, workshops, rulemakings, etc.

BCD incorporates various opportunities for stakeholders and members of the public to engage in the code change process. Under existing statutory authority, BCD is required to get advisory board approval for any specialty code update. This process involves engaging with stakeholder representatives on the advisory boards (see the following page) as well as public input at board meetings. The board's code change process has also included the ability for public comment either at the code committee level, the board level, or both.

Once a code change has been approved by the appropriate advisory board, BCD undertakes formal rulemaking. BCD policy has always been to include at least one public hearing on code adoption rules, providing another opportunity for public feedback. BCD sends out regular updates on code change processes and maintains a website with all code change information. BCD also sends out notifications to its subscriber lists and publishes all opportunities for the public to engage in the process.

In addition to the opportunities for public engagement in the code change process, existing statute provides the opportunity for any member of the public to present a code amendment at any board meeting. These amendments do not need to be timed with an existing code cycle, and have been successfully used by stakeholders to get code amendments passed before the next scheduled code update.

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State Plumbing Board

ORS 693.115 –
Seven Members

- A journeyman plumber with 10 or more years of experience in the trade
- A licensed plumbing contractor
- A local plumbing inspector who is also a journeyman plumber
- A registered professional mechanical engineer
- An officer or employee of the Oregon Health Authority
- A plumbing equipment supplier who otherwise qualifies to sit on the board by industry experience OR a building official
- A member of the general public

Construction Industry Energy Board

ORS 455.492 –
Eleven Members

- Two members of the Electrical and Elevator Board who have electrical experience, to be selected by the Electrical and Elevator Board
- Two members of the Residential and Manufactured Structures Board who have practical experience in either the residential structure industry or the manufactured structure industry, to be selected by the Residential and Manufactured Structure Board
- Two members of the Building Codes Structures Board with practical experience in construction, to be selected by the Building Codes Structures Board.
- Two Members of the Plumbing Board with practical experience in construction, to be selected by the Plumbing Board
- Two members of the Mechanical Board with practical experience in construction, to be selected by the Mechanical Board
- An employee or officer of the state Department of Energy appointed by the director of the state Department of Energy

Mechanical Board

ORS 455.140 –
Ten Members

- A representative of the plumbing industry
- A sheet metal and air conditioner installer
- A municipal mechanical inspector with the highest level of certification issued by the Department of Consumer and Business Services
- A Heating Ventilation and Air Conditioning Contractor
- A Heating Ventilation and Air Conditioning Installer
- A Sheet Metal and air conditioner installer
- An insulation craftsman with experience with heat and frost insulation
- A representative of a natural gas company or other utility
- A member of the general public not receiving a compensation from any interest represented by one of the other represented stakeholders
- At least one member of the board must be an owner or operator of a contracting business with 10 or fewer employees at the time of their appointment

Electrical and Elevator Board

ORS 455.138 –
Fifteen Members

- A fire and casualty underwriter
- A representative of industrial plants regularly employing licensed electricians
- A representative of the power and light industry
- An electrical equipment supplier who otherwise qualifies by experience and training in the industry
- Two journeyman electricians
- An electrical inspector
- Two electrical contractors
- A municipal building official
- A journeyman elevator installer
- An owner or manager of a commercial office building
- A member of the general public not receiving a compensation from any interest represented by one of the other represented stakeholders

Residential and Manufactured Structures Board

ORS 455.135 –
Eleven Members

- A contractor specializing in the construction of residential structures
- A contractor specializing in remodeling of residential structures
- A contractor specializing in multi family structures three stories or fewer above grade
- A home designer or architect
- A building official
- A representative of residential building trade subcontractors
- A structural engineer
- A representative of a utility or energy supplier
- A manufacturer of manufactured dwellings
- A seller or distributor of manufactured dwellings
- A member of the general public not receiving a compensation from any interest represented by one of the other represented stakeholders

Building Codes Structures Board

ORS 455.132 –
Nine Members

- An architect or engineer
- A general contractor specializing in buildings more than three stories above grade
- A contractor specializing in heavy industry construction
- A representative of the building trade
- A representative of a utility or energy provider
- A representative of a fire protection agency
- A building official
- An owner or manager of a commercial office building
- A representative selected from a list of individuals recommended by the Oregon Disabilities Commission

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3. Description of the anticipated process for collaborating with ODOE and other relevant agencies as indicated by EO 20-04.

BCD and ODOE staff are in regular contact and collaborate on a variety of issues where there is overlap between BCD's mission to ensure safe building construction while supporting a positive business environment, and ODOE's mission to lead Oregon to a safe, clean, and sustainable energy future. ODOE also has representation on the Construction Industry Energy Board, providing opportunity to not only collaborate with BCD staff on a working level, but to interact directly with BCD stakeholders and board members. BCD and ODOE staff collaborate on industry conference presentations and share information and ideas on a regular basis.

BCD also collaborates with other state agencies through staff communications, board meetings, committees, and workgroups as needed. BCD intends to continue working with all relevant stakeholders, to execute the directives contained in EO 20-04.

4. Description of how work on EO 20-04 builds on, and complements EO 17-20.

The BCD related directives in EO 17-20 set out specific deliverables and timelines that generally align with existing BCD statutes, procedures, and processes. BCD and its advisory boards are still in the process of implementing all of the code related directives from EO 17-20. EO 20-04 directs BCD to achieve a performance based goal by 2030 for the state building codes. BCD anticipates using the existing specific, prescriptive directives from EO 17-20, model codes, and existing stakeholder and industry needs to meet the performance based goals of EO 20-04. By leveraging the existing and ongoing work of EO 17-20, and normally scheduled code updates, BCD plans on integrating the additional performance based goals from EO 20-04 into the state building code. Through this approach, BCD anticipates that it will be able to meet the performance reductions in EO 20-04 by 2030.

Conclusion

BCD, with its advisory boards and stakeholders, looks forward to continuing Oregon's national leadership on energy efficiency for new construction. When changing codes, the relevant advisory board must make a finding that "the added cost, if any, is necessary to the health and safety of the occupants or the public or necessary to conserve scarce resources." This balance between cost and efficiency is challenging when the easiest, most cost effective measures are already in the code. BCD and its boards are up to the challenge.

Attached are the principles BCD uses to guide our work and ensure the decisions BCD makes strike the correct balance. Achieving this balance provides predictable building codes based on technically and economically feasible model codes, providing all Oregonians with safe, energy efficient buildings to live and work in. BCD looks forward to continuing its work with its advisory boards, other state agencies, and stakeholders to continue Oregon's energy efficiency leadership.

Principles for Code Adoption

BCD has developed several principles to make sure the building code achieves our mission, which is to work with Oregonians to ensure safe building construction while supporting a positive business climate. Here are some of the principles that guide our work when considering revisions to the building code:

Take a long view. A long term strategy ensures predictability in the code. Code cycles generally vary from 3-6 years, and different states can be at different stages in the code cycle at a given time. It takes significant time to develop revisions to the code, and it is important to ensure stakeholders, boards, labor, and industry have the time and space to develop the best possible standards.

Coordinated approach. Oregon relies on builders, labor, contractors, and stakeholders to participate in policy work by leading the discussion through the seven advisory boards that assist in directing code adoption. Their expertise results in a better building code. Adopting the building code is not enough, labor and industry have to be trained to follow the code, and inspectors have to be trained to ensure compliance with the code. Rigorous training for labor, industry and inspectors mean that from the beginning of a project to its completion, all parties involved have the tools necessary to ensure the standards that are carefully developed through the code process are followed. BCD doesn't just set policy goals, it achieves them.

Focus on performance and choice. It is important in the building code not to create narrow paths that benefit particular companies or industries, but to instead ensure construction practices are the safest and most efficient for all buildings in Oregon. Proponents of proprietary products, testing, and inspection techniques may have incentives beyond what is safest, most efficient, and most cost effective. BCD's duty to all Oregonians, including labor, industry, and other stakeholder groups is to focus on creating choices to achieve technically feasible, safe, efficient, and cost effective buildings.

Evidence based. BCD collects evidence and best practices from across the nation and the world to develop codes that best suit Oregonians. There are a lot of voices in the discussion about how to best increase building efficiency, and as discussed above, some of those voices have incentives to support specific products, methods or testing that may not lead to more efficient codes. Our goal is always to rely on good research to make evidence-based decisions.

Independent verification. BCD utilizes an independent review process to verify that Oregon is achieving its efficiency goals. First through the University of Idaho, and now through the University of Oregon, BCD submits the commercial and residential energy codes for review to ensure Oregon is on pace to remain a national leader and that BCD is making data driven decisions about efficiency standards.

Consistency across the state. Any building in this state, whether urban, rural, affordable or extravagant, is built to the same efficiency standards. All Oregonians should have the benefit of a safe, affordable, and efficient home. This advantage of consistent, predictable codes, creates extremely high compliance rates and is part of what makes the Oregon model unique. Other states may say they have adopted a particular cutting-edge code, but if local jurisdictions never adopt it, state or local inspectors never enforce it, and labor is not trained to it, it is only as good as the paper it's written on. That's not the case in Oregon.