Resilient Efficient Buildings Task Force Presentation

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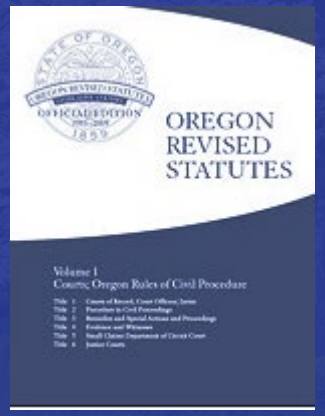
Agenda

- Building codes background and process
- How building codes impact our climate goals
- When do building codes apply
- How do Oregon’s codes stack up
- Looking forward

Background- Statutory Authority

- 455.020 Enables the Director of the Department of Consumer and Business Services (DCBS) to promulgate a state building code to govern the construction, reconstruction, alteration and repair of buildings and other structures. It shall provide for the use of modern methods, devices, materials, techniques and **practicable maximum energy conservation.**
- 455.015 Legislative findings. It is in the best interests of this state that state building code regulations **encourage economic development, experimentation, innovation** and **cost effectiveness** in construction, **especially construction in rural or remote parts of this state**.
- ORS 455.030 Rulemaking. When adopting codes the 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 scare resources**."



Background- Adopting Building Codes

- Oregon has a statewide building code, made up of the various specialty codes
  - The relevant codes to this discussion are the Oregon Residential Specialty Code (one and two family dwellings and low rise apartments) and Oregon Structural Specialty Code (commercial buildings, including multifamily, schools, factories, office buildings, mixed use, etc.)
  - Codes are promulgated in partnership with seven governor appointed, senate confirmed boards
  - Codes are coordinated to work together, avoiding conflicts between specialty codes

Background- Adopting Building Codes

- Codes are adopted generally as follows:
  - Residential, electrical, and plumbing adopted together on three year cycle (next code update October 2023)
  - Commercial and mechanical codes are adopted together on a three year cycle (next code update October 2022)
  - Commercial energy adopted based on ASHRAE adoption schedule
  - These codes generally have a “phase in period” to transition from the old code to the new code (a time where you can use either code)
  - Codes are published in code books through contracts with the national codemaking bodies
  - The code adoption process takes 12-18 months from kick off to adoption

Background- Adopting Building Codes

- Code adoption process basics
  - Division and relevant board designate **model code** (promulgated at national level using similar process, e.g. International Residential Code promulgated by the International Code Council)
  - Open public proposal period and accept public proposals
  - Board appoints a technical code review committee
  - Code review committee and BCD staff hold a series of public meetings to enable code committee to make recommendations on model code changes, Oregon amendments, and public code proposals
  - Board reviews committee recommendations and approves a code package, making the finding that the added cost, if any, is necessary to health and safety or to conserve scare resources

Background- Adopting Building Codes

- Code adoption process basics continued:
  - After board approval, division notices rulemaking and holds public hearing
  - After board approval, division can only “veto” items and revert to current code- division alone cannot amend or add to code without board approval
  - During rulemaking, code is in a parallel publishing process
  - Code is adopted and published
  - Division delivers code change training to inspectors and plans examiners, industry and others deliver code change training to workforce

Background- Principles of Code Adoption

- **Take a Long View**
  - Using executive orders and model codes to create predictability while we continue to progress the codes over time
- **Coordinated Approach**
  - Builders, labor, contractors, stakeholders, and board members all assist in ensuring our code is not just adopted, but carried out
- **Focus on Performance and Choice**
  - The code should ensure safe and efficient construction practices across the state, and should not be used to promote specific products or industries
- **Evidence Based**
  - Changes to the code should be based on reliable research and evidence
- **Independent Verification**
  - The division uses the University of Oregon to verify residential energy efficiency progress
- **Consistency across the state**
  - It is not enough to adopt the codes, there must be sufficient training for industry and local government to ensure consistent code application across the state

Background- Analyzing the costs of codes

- Cost information is captured throughout the code adoption process
  - Some cost analysis done at national model level
  - Code committee flags significant fiscal impacts of code changes
  - Board review includes discussion of cost and finding that added cost is necessary for safety or to conserve scare resources
  - Rulemaking includes fiscal impact statement, housing cost impact statement, etc.

Background- Analyzing the costs of codes

- Easier to identify costs related to materials or equipment, more difficult to understand impacts to things like training, stock building plans, etc.
- Because code is becoming more complex, we can no longer get large efficiency gains from things like more insulation or more efficient windows (easy to understand cost), and instead are looking at changes that impact how we build (cascading costs like training, plans)
- Ultimately, board must decide how much is too much- is it necessary for safety or to conserve scare resources

Background- Analyzing the costs of codes

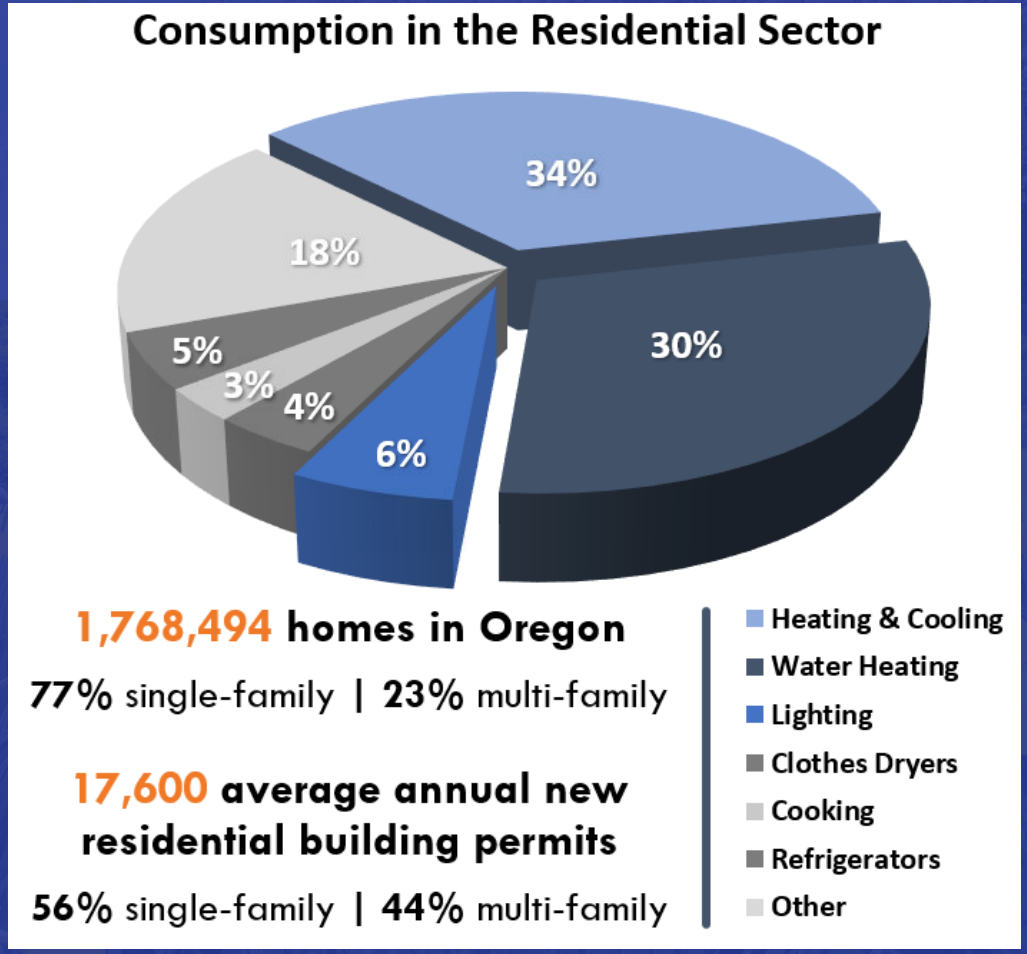
- Need to balance the cost of code changes against our affordable housing needs, including single family and multi family
- Reliable information is key for payback analysis
- The durability of the change matters- will the change last the life of the building (envelope improvements) or 10-15 years (equipment improvements)
- Code needs to be practical and affordable for every building type

Background- Adopting Building Codes

- Takeaways of code adoption process:
  - Both the relevant board and the division need to approve any change to the code
  - Thorough statutory process ensures public involvement throughout
  - Codes are large, complex documents with far reaching implications- need to be carefully coordinated to avoid unintended consequences
  - Codes have cascading impacts- apprenticeship and licensing, training and education, projects budgeted far in advance (e.g. school bonds), insurance, other agencies (e.g. OHA, DHS, DEQ, DLCD, OSFM) that have pieces of development process or regulation over particular building types

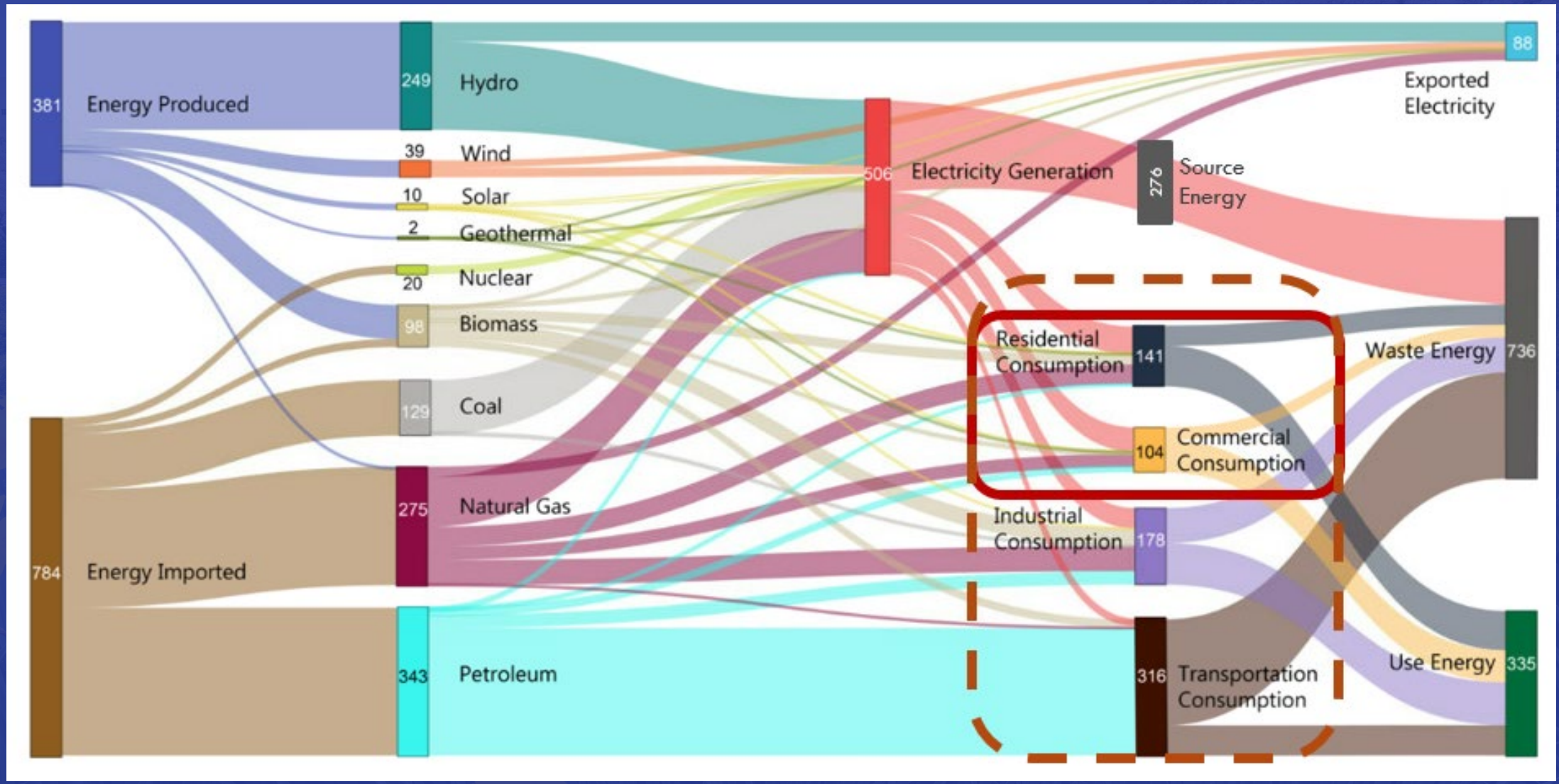
How do codes impact climate goals?

- Energy Efficiency
  - We use the most energy heating and cooling our homes and businesses
  - Making the building envelope tighter (less air leakage) reduces our energy consumption (insulation, windows, etc.)
  - The codes generally do not govern clothes dryers, cooking, refrigerators, and “other” (TVs, other electronics, plug loads)



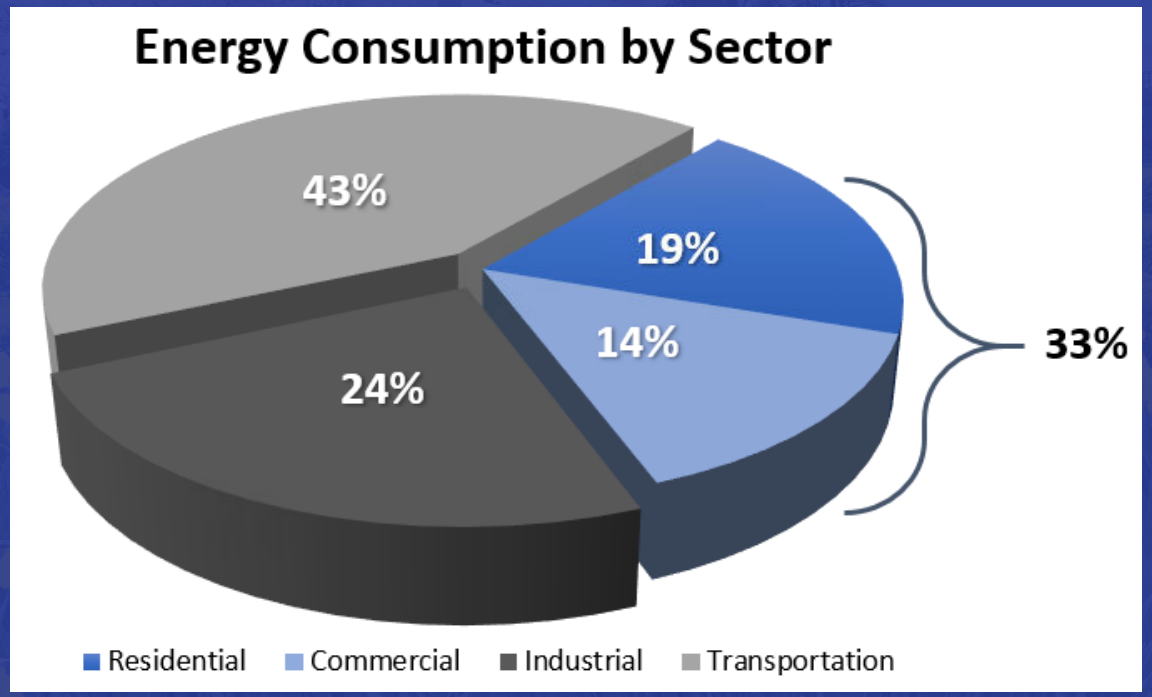
Data from ODOE’s 2020 Biennial Energy Report

How do codes impact climate goals?

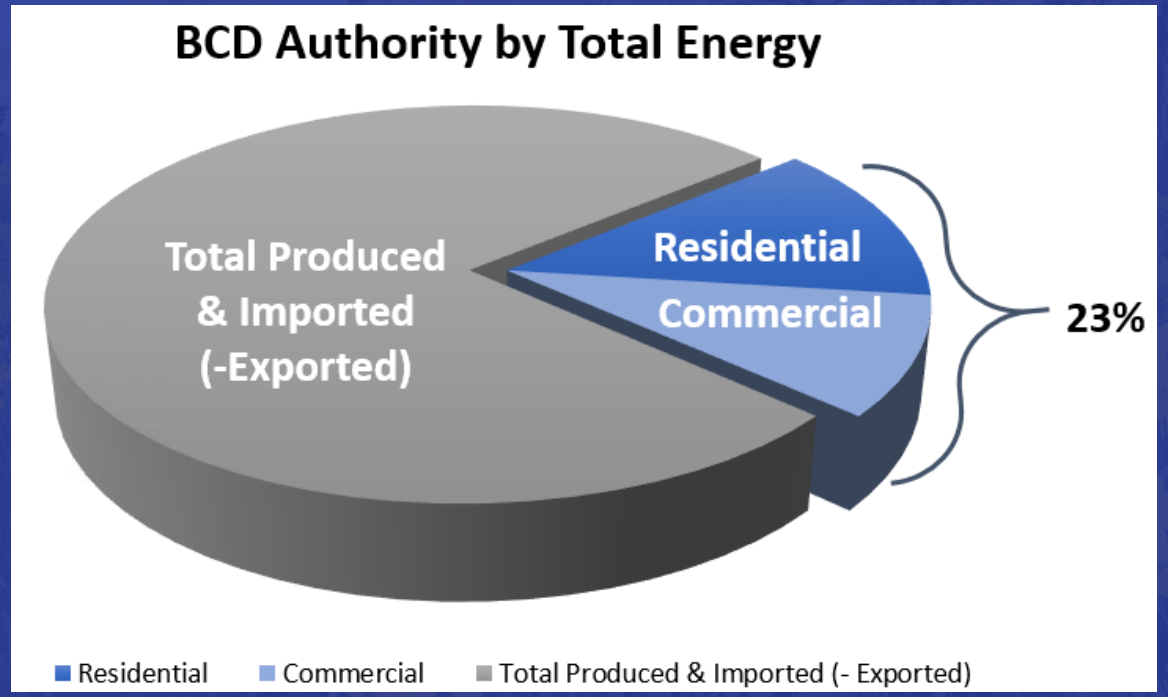


ODOE 2020 Biennial Energy Report: Oregon Energy Flow Sankey Diagram: The numbers in the diagram represent trillions of Btus (Tbtu's) of energy.

How do codes impact climate goals?



ODOE 2020 Biennial Energy Report: Residential and Commercial Sectors consume 33% of all four sectors.



ODOE 2020 Biennial Energy Report: Residential and Commercial Sectors consume 23% of the TOTAL Energy Oregon Produces and Imports.

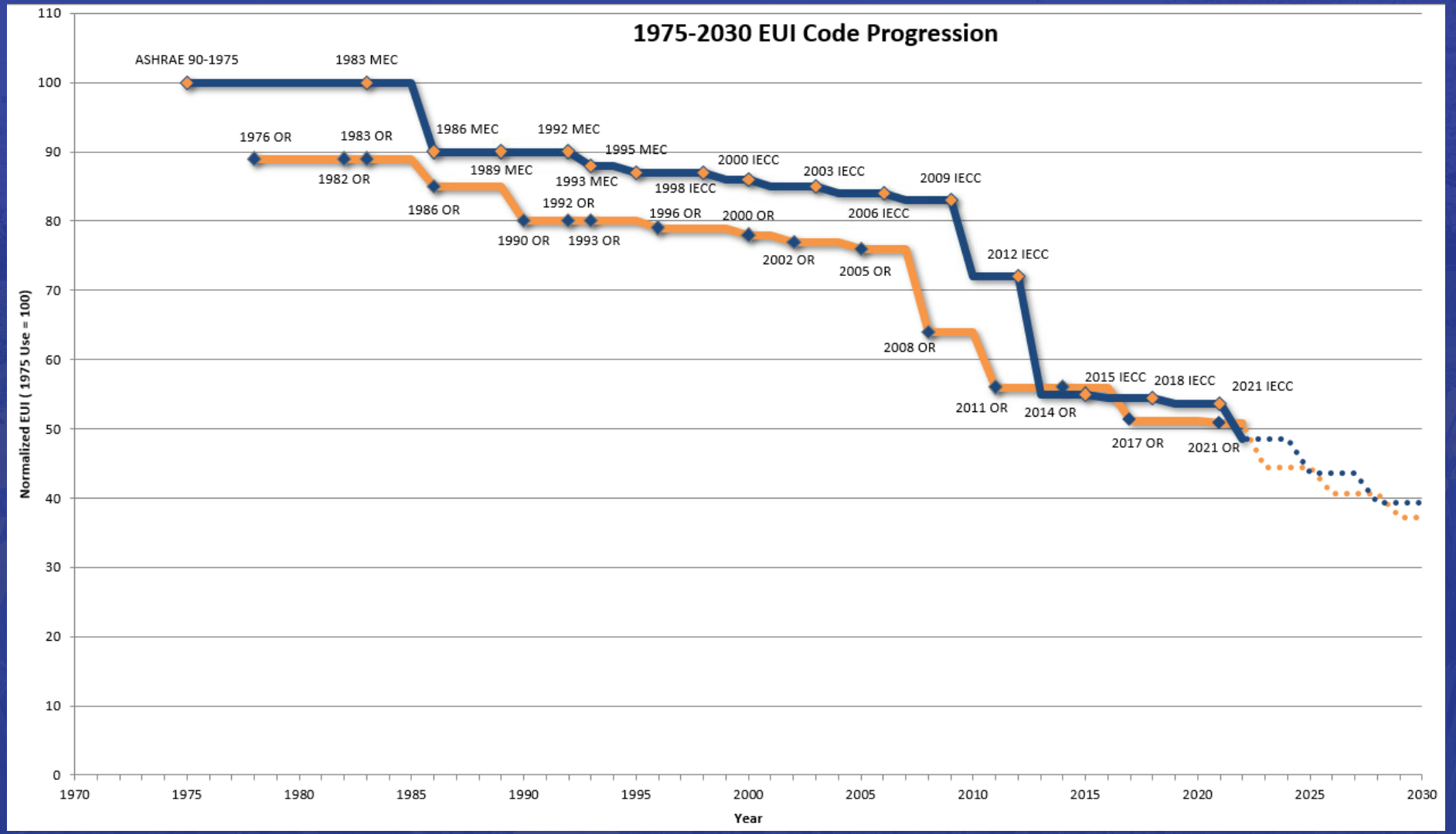
How do codes impact climate goals?

- Executive Orders
  - EO 17-20 includes several specific requirements, including solar ready building, and a zero energy ready home
  - EO 20-04 requires performance goals representing at least a 60% reduction in new building annual site consumption of energy, excluding electricity used for transportation or appliances, from the 2006 Oregon residential and commercial codes. It also requires regular updates to the reach code

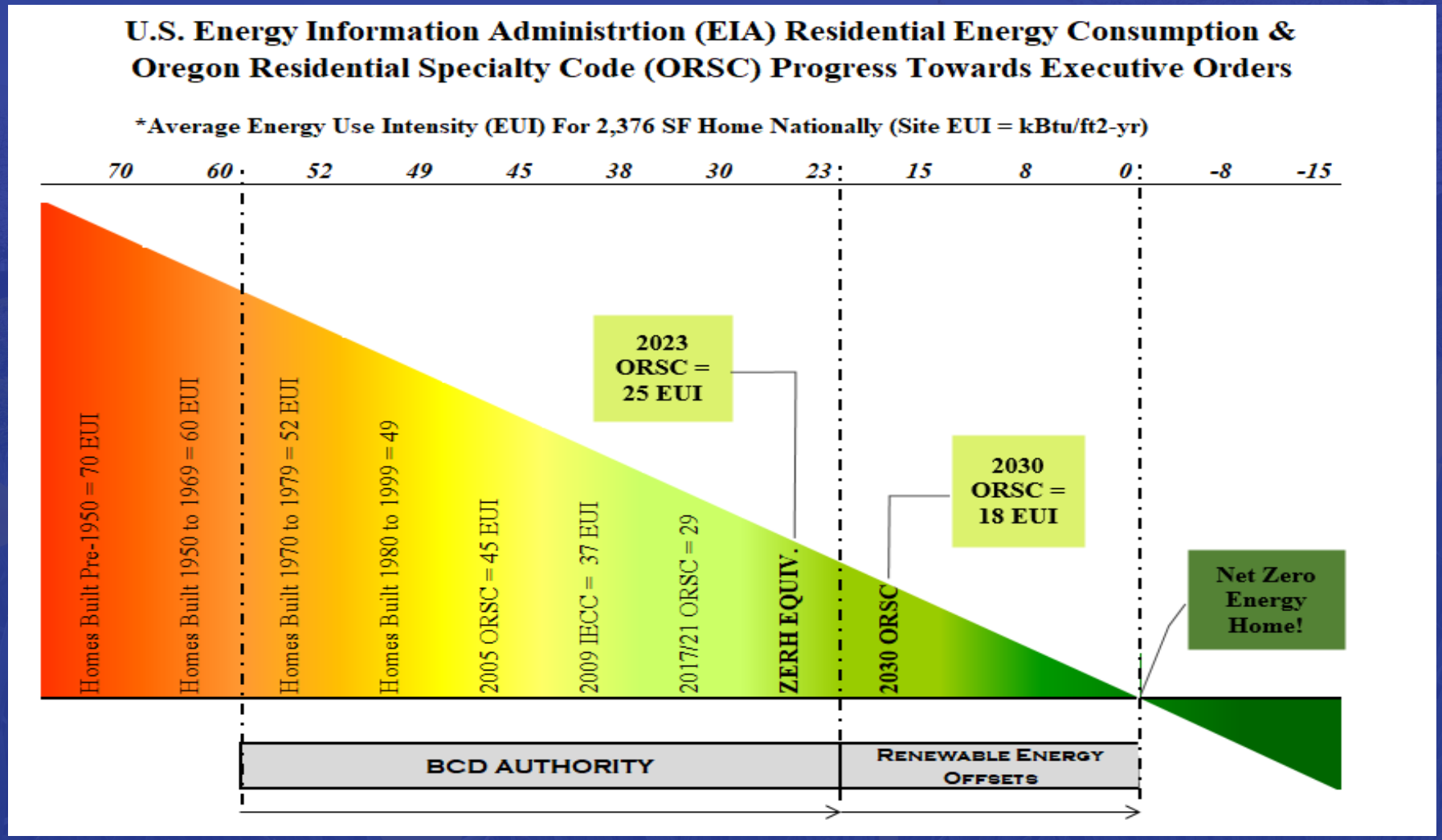
How do codes impact climate goals?

- Climate resiliency
  - Droughts
    - Adopted EPA Watersense requirement in plumbing code
    - Gray water recapture (EO 17-20)
  - Wildfire
    - Avoiding unintended consequences- keeping in mind who can control intake fans
    - Fire hardening under SB 762 for new construction- public education about fire hardening of existing buildings
  - Extreme weather events
  - Some climate impacts differ widely across the country- need to ensure we look at national model codes through an Oregon climate resiliency lens

Code adoption timeline



Code Adoption Timeline

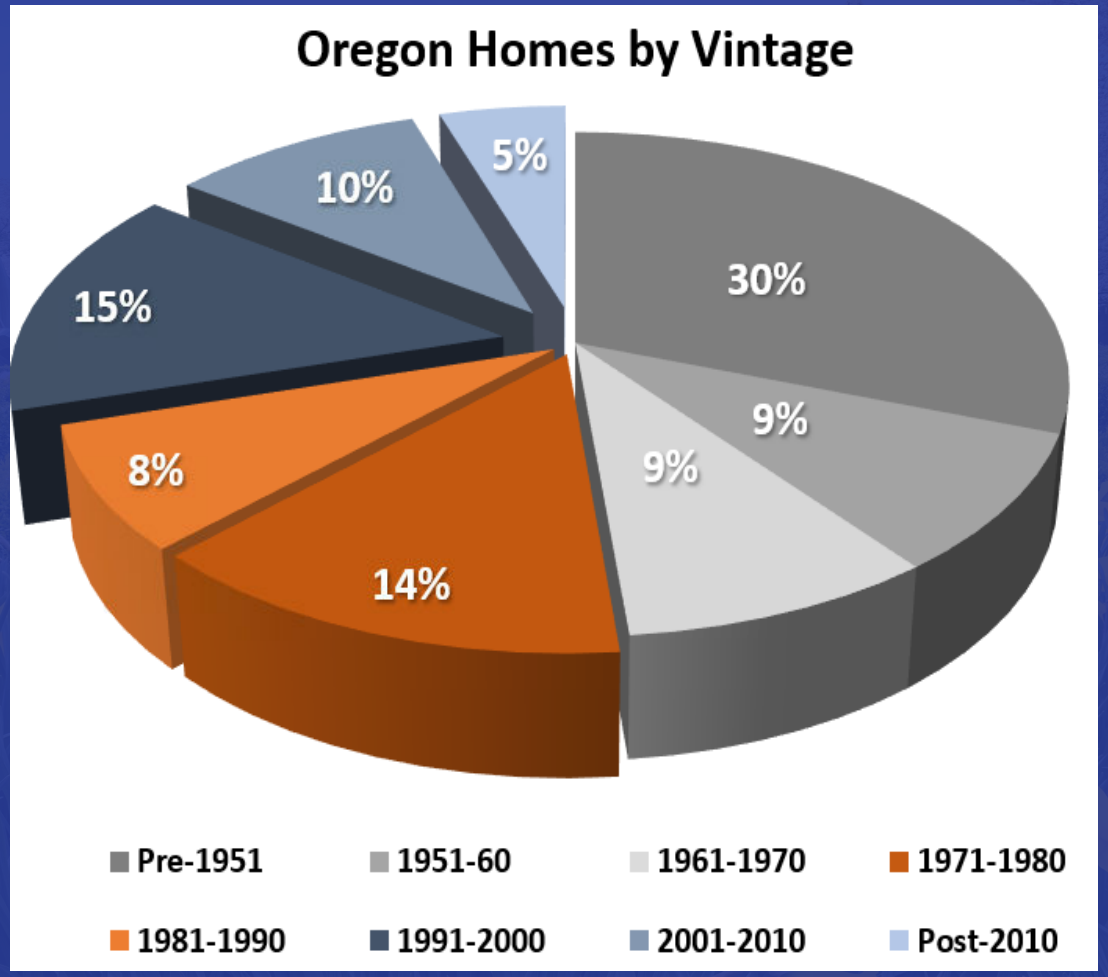


Data is actual EUIs calculated by BCD, not normalized.

When do codes apply?

- Codes apply to new construction, alteration, and repair
- Codes are not retroactive and do not apply to existing buildings unless the building owner takes some action (e.g. decides to do an addition or remodel)
- Energy efficiency codes apply to the maximum extent practical for alterations and repairs. Existing building component compliance paths provide flexibility
- Practical approach needed on existing buildings due to uniqueness, to encourage voluntary upgrades, adaptive reuse, facilitate increased levels of compliance, and to avoid unpermitted work

When do codes apply?



Building “above code”

- Mini/Maxi principle only applies to what local government can enforce
- For the purpose of builders/consumers, it is only a minimum standard. No limit on building “above code”
- True for safety and efficiency- can build a passive house, a fallout bunker, etc. without violating code
- Predictability of the code is key to incentive programs- they need to know where the code is going to be able to incentivize “above code” improvements

Reach Code

- The Reach Code is found in ORS 455.500
- It is an aspirational efficiency code- builders can choose to use it, and local government must accept projects built to the reach code
- It is to be based on “generally accepted codes and standards that achieve greater energy efficiency” than the state building code
- There is both a residential reach code, and a commercial reach code, each “reaching” from their respective base codes (e.g. residential reach code is a more efficient version of the residential code)

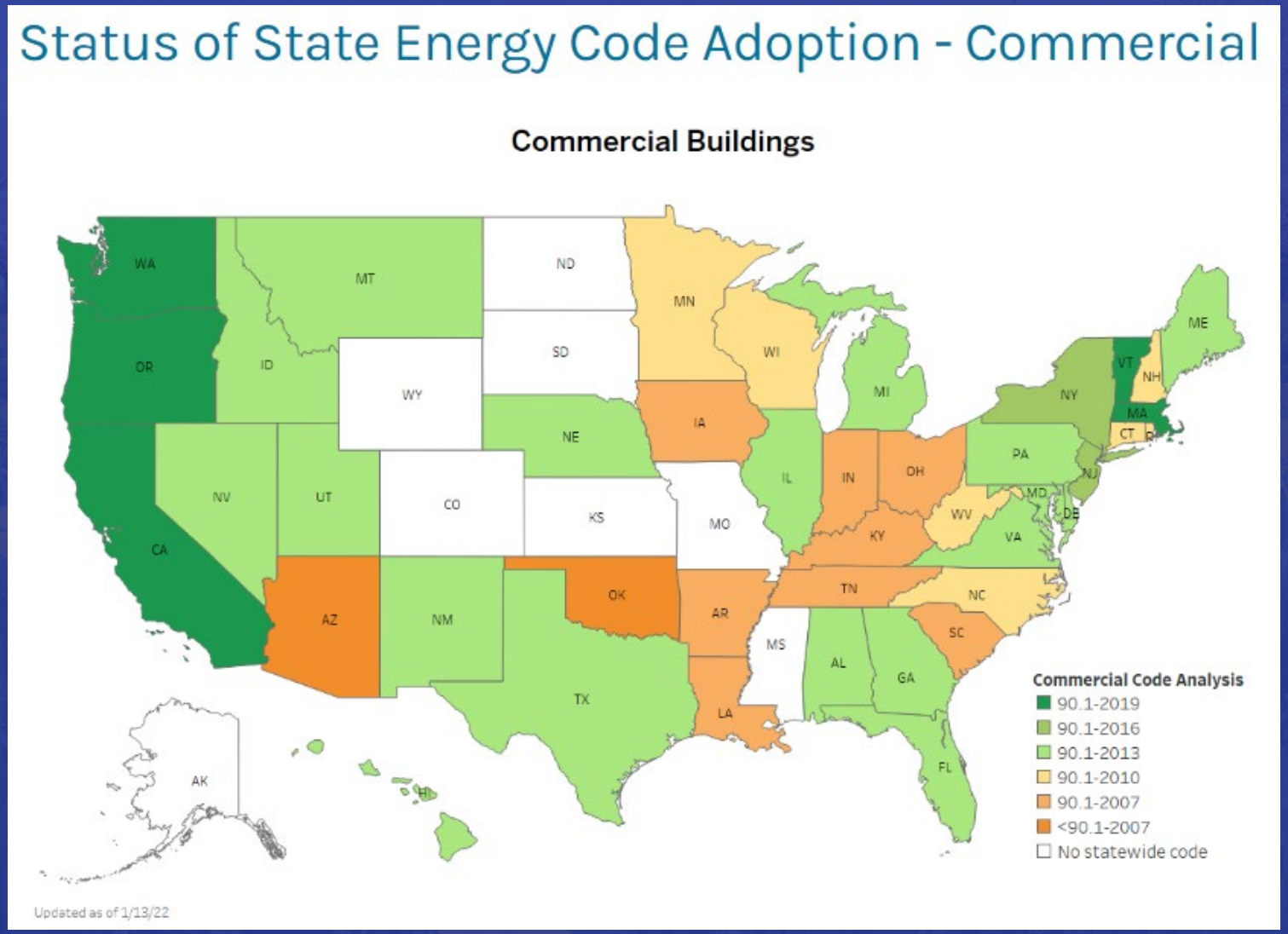
Reach Code

- BCD adopted the 2021 Oregon Residential Specialty Code in April, 2021 (delayed 6 months due to COVID), and adopted the Residential Reach Code in August 2021
- Oregon adopted the latest, most efficient national model commercial energy code in April 2021, and the commercial reach code is currently in development
- BCD does not have data on above code building- to the reach code or otherwise. Plans are checked against adopted codes- no tracking of “above code” choices

How do Oregon's codes compare?

- Oregon is a national leader in energy efficiency
- First in the nation to adopt ASHRAE 90.1- 2019- most efficient commercial code
- Oregon experts from public and private sectors are thought leaders on national energy efficiency policy- sitting on committees for national codemaking bodies and having Oregon specific amendments and approaches incorporated into the model codes

How do Oregon's codes compare?



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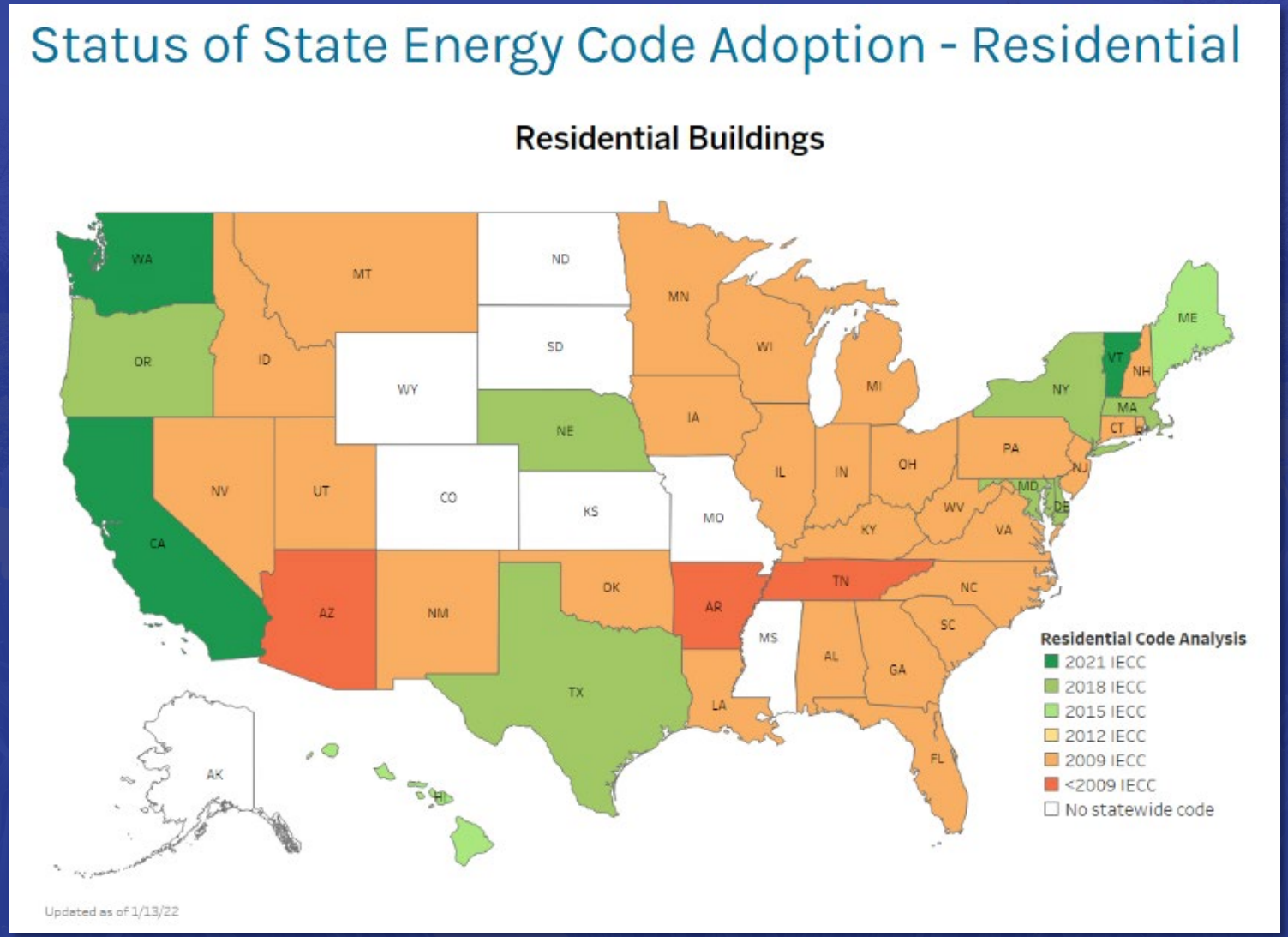

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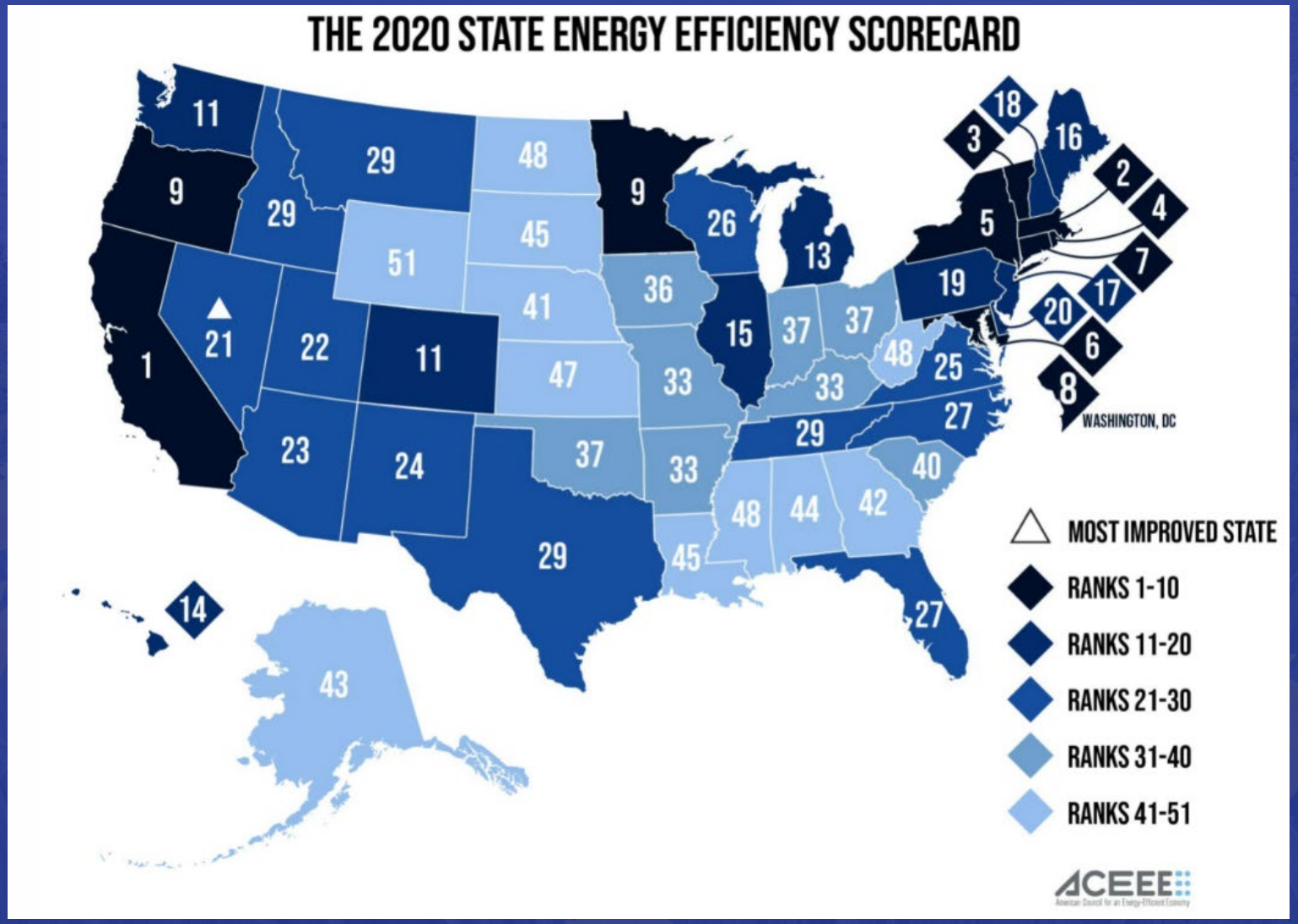

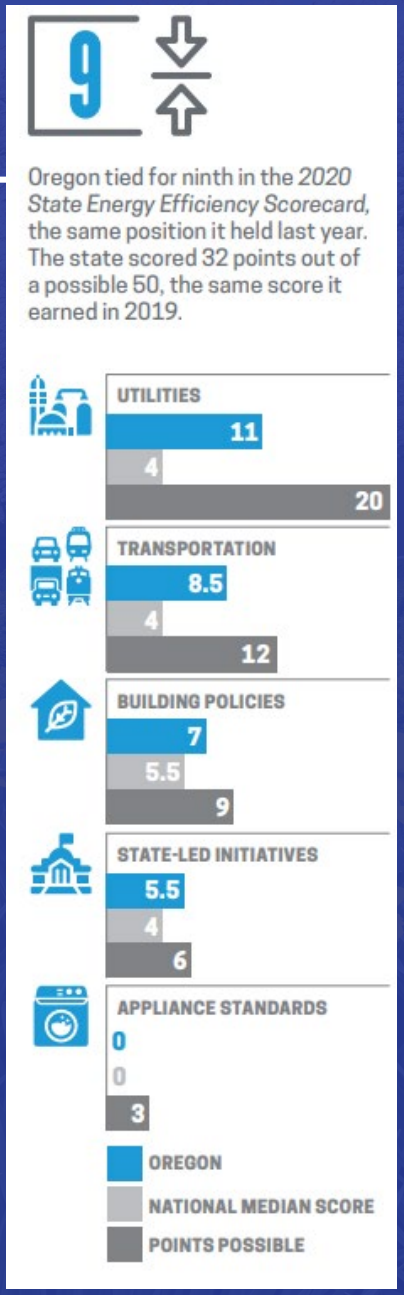

Code comparison takeaways

- Proud of Oregon's leadership, and committed to continual, predictable improvement
- Continually learning from successes (and failures) in other states
- Particularly useful for other states with similar challenges (e.g. looking to wildfire prone states for fire hardening and wildfire smoke mitigation)

Looking Forward

- We intend to continue to improve efficiency in the codes, and believe we can achieve the goals and directives laid out in the Governor's executive orders (17-20 and 20-04), while maintaining adherence to our principles of code adoption
- We are reaping the benefits of our early adoption and continual leadership of statewide efficiency codes
- Energy efficiency improvements in the codes are becoming more complex and more costly (low hanging fruit has already been picked)
- The building code is only one tool in the tool belt on improving efficiency in the built environment
- Our climate resiliency needs will require an enterprise approach to address the impacts of climate change on the built environment

Conclusion

Questions?

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