Resilient and Efficient Codes Implementation: RFI Workshop Summary

Wednesday, April 27, 2022

Workshop Overview

The U.S. Department of Energy (DOE) Building Energy Codes Program (BECP) held a stakeholder workshop on April 27, 2022, to solicit feedback on its request for information (RFI) regarding Residential and Efficiency Codes Implementation. The intent of the workshop was to complement the RFI, inform DOE on key priorities and opportunities surrounding implementation of building energy codes supporting energy efficiency and resilience objectives, and help guide the Department in effectively administering the building energy code provisions contained in Section 40511 of the Infrastructure Investment and Jobs Act (IIJA).

The workshop was organized by six key topic areas outlined in the RFI:

1. Energy Code Adoption and Updates
2. Workforce Development
3. Implementation and Compliance
4. Innovative Approaches
5. Energy and Environmental Justice
6. Partnerships

Each topic area included a brief introductory presentation followed by extensive audience engagement through *Mentimeter*[1] and discussion. The workshop was open to any interested stakeholder or member of the general public. Participant input was gathered through the webinar Q&A feature, as well as verbal commentary and questions, in addition to responses provided through Mentimeter. Participants were also encouraged to provide more comprehensive input through DOE's request for information (comments were due May 20, 2022). Input received by DOE during the public workshop is provided below via a non-attributed summary. Further input received through the RFI was reviewed following the comment period deadline, and DOE is considering all feedback received in determining the structure and direction of this new initiative under Section 40511 of the IIJA.

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[1] *Mentimeter* is an online audience engagement tool. Learn more: https://www.mentimeter.com/.
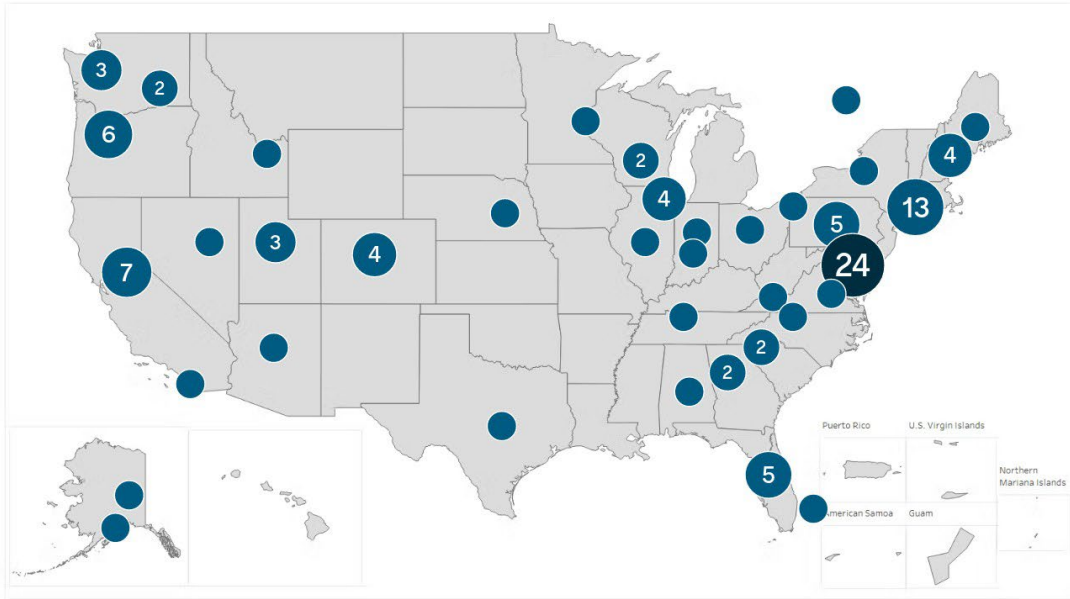
Figure: Reported geographic location of workshop participants

General Themes

The public workshop covered many questions pertaining to Section 40511 of the IIJA, and which will ultimately guide DOE in formulating its new initiative supporting building energy code implementation. Several general and overarching themes were expressed by stakeholders:

- Questions regarding how the initiative will be structured (e.g., eligibility criteria for funding)
- Partnerships and need to engage with a robust and diversified network of stakeholders
- Critical importance of local governments and stakeholders at the local level, including building departments, community-based organizations, primary and secondary schools, among others
- Equity, Energy and Environmental Justice (EJ) should be a high priority throughout the initiative; ensuring accessibility and equitability in code development and implementation processes
- Input regarding code editions and appropriate timing of code updates
- Need to evaluate and prioritize projects based on overall impact
- A need to be judicious with funding in order to successfully prompt widespread support for code implementation, including the potential to leverage other sources of federal funding (with references to examples such as DOE's State Energy Program and FEMA's Building Resilience Infrastructure and Communities, BRIC, program)

Feedback on each of the six topic areas identified in the RFI is detailed below, including key themes and a summary of responses that were received during the workshop.

Energy Code Adoption

Section 40511 of the IIJA specifies that funding appropriated through the IIJA is intended to support the implementation of updated building energy codes. This session of the workshop outlined the current energy code adoption landscape, and emphasized key questions from the RFI where DOE is seeking

feedback and direction. While there was a diverse range of responses for all questions posed in this section, several common answers and key themes emerged from the responses.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **How should DOE prioritize code updates?**
   a. The majority of respondents indicated that prioritization is necessary, overall favoring updates based on the current model energy codes (2021 IECC and Standard 90.1-2019)
   b. Approaches that DOE could consider in prioritizing energy code updates:
      i. Emissions reductions
      ii. Energy savings
      iii. Overall impact (based on construction starts, percentage improvement, etc.)
      iv. Implementation feasibility
      v. Resilience

   Other potential prioritization metrics mentioned: States with older codes, adopting newer codes, advanced codes, continuous updates, and life-cycle analyses.

2. **How should DOE prioritize updating to a code more advanced than the current model code?**
   a. Respondents thought DOE should prioritize projects supporting current model energy codes (as primary), but also provide support for more advanced codes based on factors such as emissions reduction, and proximity to energy targets (such as net-zero energy)
   b. Other responses ranged from prioritizing advanced codes (including stretch codes) to not prioritizing advanced codes (at all)

3. **What should DOE consider to be "updated" codes?**
   a. This question recognized that Section 40511 defines a code update as an improvement relative to the currently adopted code (and not necessarily the latest model codes), but also directs DOE to establish a competitive program where activities are evaluated based on potential impact (among other criteria)
   b. Top responses indicate that DOE should:
      i. Consider any improvement relative to currently adopted codes
      ii. Discourage or not consider weakening amendments
      iii. Encourage or require continuous updates
      iv. Establish a minimum threshold for consideration based on a recent model code edition (and the 2018 IECC or 2021 IECC were suggested as appropriate)
   c. DOE also inquired upon the timing of updates, and assured vs. aspirational updates:
      i. The audience felt that ongoing or planned code updates should be considered as part of a funding application
      ii. However, the amount of time in the future for when a completed or planned code update should be considered varied greatly, from months to several years
      iii. To help ensure energy code updates can be sustained over time, many pointed to legislation, compliance support, and suggested a need to tie multiyear funding to continuous code updates

Workforce Development

Workforce development is essential to effectively implement building energy codes, especially before and after an energy code is updated. This supports states, local governments, and range of industry professionals in understanding and embracing new technologies, construction practices, and changing code requirements. Recognizing the level of importance of this activity, the IIJA highlights partnerships and the development of training and materials capable of educating a broad spectrum of energy codes stakeholders. The DOE Building Energy Codes Program has a history of funding energy code training at the state and local levels to increase industry understanding and improve energy code implementation.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **What types of workforce education and training programs would best help advance DOE's energy code priorities like adoption, compliance, and stretch codes?**
   a. This question was formatted as a "word cloud" and generated responses including:
      i. Building science training
      ii. Field training
      iii. Apprenticeship programs
      iv. Code official support
      v. Training on new technologies
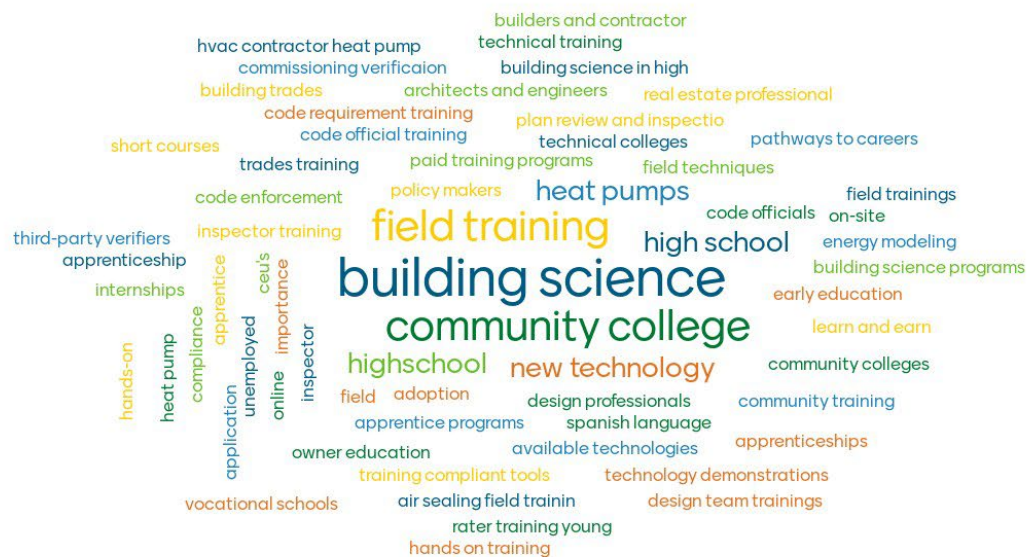
Figure: What types of workforce education and training programs would best help advance DOE's energy code priorities?

2. **What are strategies to support an equitable workforce?**
   a. DOE-provided example; improving diversity in the existing workforce and expanding training programs to underserved communities
   b. There were several suggested strategies to support an equitable workforce, with the top related answers including:
      i. Engaging the community and creating accessible training

  ii. Developing partnerships with community colleges and high schools in disadvantaged communities

  iii. Providing free training within disadvantaged communities

  iv. Ensuring training can turn into careers, and;

  v. Scholarships are made available

3. **How should DOE prioritize training a new workforce entering the job market versus training the existing workforce on the latest in energy code and building construction trends?**

  a. DOE asked respondents to consider the prioritization of the existing workforce vs. training a new workforce entering the market

  b. The largest number of respondents (47%) favored an equal prioritization of new and existing workforce segments
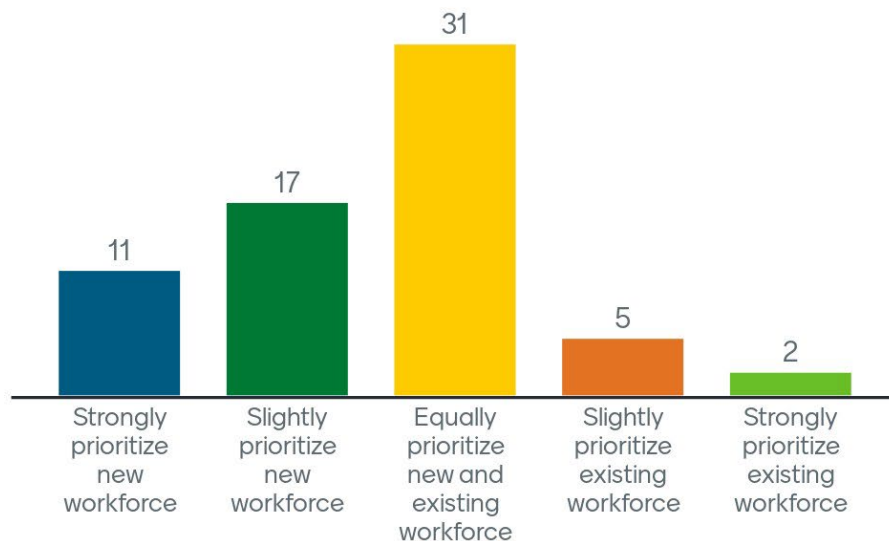
Figure: How should DOE prioritize training a new workforce entering the job market versus training the existing workforce on the latest in energy code and building construction trends?

Additional themes expressed related to workforce development, education and training include:

- Developing career pathways
- Partnerships with community colleges and technical schools
- Free access to training and resources
- Professional development certifications
- Open-source training materials

Implementation and Compliance

Recognizing the importance of energy code implementation, the program established through the energy code provisions in the IIJA should specifically focus on enabling the cost-effective implementation of updated building energy codes. As highlighted in the DOE presentation, activities to improve energy code compliance and implementation have taken many forms including energy code field studies, compliance tools, cost-effectiveness, and other analyses, stretch code modules, and

training and educational resources. These are just some of many ideas for cost-effective implementation.

Responses to the implementation and compliance-related questions were varied and included many innovative approaches.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **What tools and resources are most needed to effectively support energy code implementation?**
   a. Tools and resources most mentioned by attendees included: local training, compliance software enhancements, 3rd party verification support, hiring more code officials, and simplifying code compliance.
2. **In which areas can DOE best support the implementation of updated energy codes?**
   a. Attendees suggested DOE could best support energy code implementation through developing compliance tools, funding local training, focusing on certain states without a code or with an outdated code, and supporting code officials.
3. **How can DOE effectively support long-term compliance improvements?**
   a. Utility code support programs, representation of EJ communities, sharing compliance data, innovative ideas, and tying funding to energy code implementation were mentioned as effective strategies to support long-term compliance improvements.

When asked about which technologies, measures, and stakeholders are most critical, respondents mentioned a need for local training, simplifying code compliance, and a focus on commissioning and heat pump technologies. 3rd party support programs, energy code field studies, utility support, and compliance technicians were most referenced as successful implementation models that can be emulated.
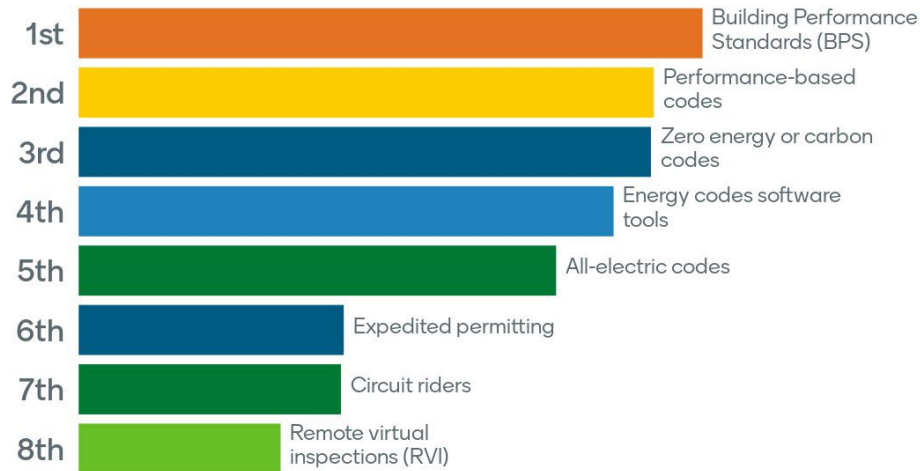
Innovative Approaches

As alluded to by some of the attendee responses in the implementation section, new and innovative ideas to support energy codes and other policies are essential. Many innovative approaches are currently being implemented which include, but are not limited to, energy stretch codes, performance-based codes, building performance standards (BPS), remote virtual inspections, circuit riders, and a variety of energy code software tools.

Many new ideas were highlighted during the question-and-answer period during this session.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **Rank innovative approaches covered in this presentation by importance to resilient and efficient codes implementation.**
   a. When asked about the importance of topics covered in the presentation, the audience ranked those topics in the following order: 1.) BPS, 2.) Performance-based codes, 3.) Zero energy or carbon codes, 4.) Energy codes software, 5.) all-electric codes, and 6-8 included expedited permitting, circuit rider, and RVI, in that order. Other key innovative approaches mentioned included energy efficiency appraisals, embodied carbon, energy codes that cover existing buildings, solar and storage, and passive house codes.

Figure: Ranking innovative approaches by importance to resilient and efficient codes implementation

1. **What types of stretch code provisions are needed that are not currently available or what existing provisions could be improved?**
   a. Stretch code provisions either not available or in need of improvement include envelope modeling, ASHRAE 90.2, embodied carbon, resilience, and healthy buildings, among other things.
2. **How can DOE support activities that help improve the synergy between BPS and energy codes?**
   a. In general, attendees thought that activities related to energy monitoring and reporting, aligning metrics and targets, education, and conducting more research and analysis are key to improving the synergy between BPS and energy codes.

Other common themes to questions in this section include developing a BPS adoption toolkit which would include model language, target setting, and stakeholder engagement strategies, and ensuring EJ community representation. To improve the code inspection, permitting and approvals process, ways to automate compliance, creating peer exchange networks, engaging with more 3rd party inspectors, and developing a compliance database were mentioned.

Equity, Energy and Environmental Justice (EJ)

As outlined by the [Justice40 Initiative](#), promoting equity and addressing long-term, systemic injustices is imperative across federal programs. Among other things, disadvantaged communities (DACs) often have much higher rates of energy burdens and environmental exposures, and limited access to low-cost capital, energy jobs, and clean energy technologies. The Justice40 initiative seeks to address these injustices by directing 40% of the overall benefits of certain Federal investments to flow to DACs. With the historic investment in energy code adoption and implementation through the IIJA, there is an opportunity to address EJ issues and improve outcomes in historically underrepresented communities.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **What EJ concerns or priorities are most relevant for this new initiative?**

a. Top answers to this question include affordable housing, funding and benefits to EJ communities, increased EJ community engagement, decreasing the energy burden, and more representation of EJ interests during the code development process.

2. **How can DOE support meaningful and sustained engagement with relevant disadvantaged communities?**
   a. The most common answer to this question involved making engagement opportunities accessible to EJ stakeholders. Among other ideas, accessibility can be improved by providing financial support to stakeholders, providing childcare to attendees, meeting stakeholders in their community, and hosting during accessible hours.

3. **What strategies, policies, and practices can DOE deploy to support EJ goals? How should these be measured and evaluated?**
   a. Some of the strategies that can be employed include BIPOC-led training, letting communities identify priorities and set metrics, requiring EJ engagement and providing credit for EJ engagement within the review process.

Other themes that emerged from the Q&A period involve learning from other affordable housing programs, conducting community needs assessments, requiring EJ community partners in each application, and increasing EJ representation and interests in all processes, including code and workforce development.

Partnerships

As described in the energy code provision in the IIJA, partnerships are prioritized given their potential for a greater impact. Many during the workshop demonstrated experience with effective partnerships and provided ideas for what is effective.

The following represent questions presented by DOE followed by a summary of participant responses.

1. **What types of strategic partnerships can best help address challenges and support widespread implementation of updated energy codes?**
   a. Noted strategic partnerships include the use of 3rd party verifiers, manufacturers, local chapter associations, regional energy efficiency organizations, EJ communities, state adoption and energy agencies, and a host of other partners.

2. **What state agencies can best support the objectives of this initiative?**
   a. Among others, State agencies thought to best support the initiative include state energy offices, building code agencies, environmental protection agencies, and health departments.

3. **What is the role of local governments? How can we best reach local governments?**
   a. Local governments were identified as key players in energy code activities; engagement strategies include engagement through the community, community-based organizations, the local building department and others such as schools.

Overarching Questions

DOE asked several questions related to the design and implementation of the initiative:

1. **What types of activities should DOE start working on now to lay the groundwork for project applicants?**

a. Common activities mentioned include conducting proactive outreach to relevant stakeholders, developing metrics for EJ commitment, and developing a set of prioritized criteria for the initiative.

2. **What types of cross-cutting support (e.g., technical assistance) would be valuable from the DOE/national laboratories, and/or from other federal agencies, to provide in proposal development or project execution?**
    a. Support needed from DOE and national laboratories includes developing compliance tools, conducting research and analysis, sharing knowledge and best practices, and other things such as an adoption roadmap.

3. **How should DOE prioritize different criteria when evaluating applicants?**
    a. Contrasting considerations across six questions:
        i. Relatively balanced preference for rural vs. urban areas
            1. Some comments emphasized the importance of suburban areas, particularly as construction grows in suburban areas as a result of the Covid-19 pandemic
        ii. Balanced preference for residential vs. commercial construction
        iii. Moderately balanced support for leading vs. lagging states, with a slight preference to emphasize support for lagging states (i.e., those with outdated energy codes)
        iv. Clear preference to support updates focused on current model energy codes (compared to updates based on previous editions)
        v. Balanced preference between traditional code support activities and new/innovative approaches
        vi. Balanced preference for activities solely based on DOE funding vs. activities which leverage other funding sources
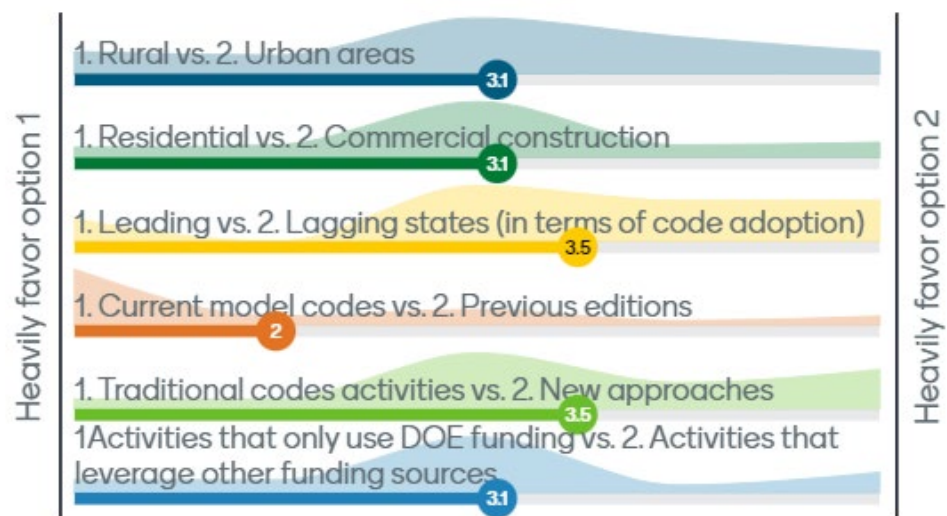
Figure: How should DOE prioritize different criteria when evaluating applicants?

b. Other criteria mentioned for DOE to evaluate include EJ community engagement, existing buildings, construction volume, and demonstrated success.
4. **How should DOE track overall outcomes from this funding? What metrics should DOE request from each project team?**
   a. Based on responses, DOE should assess and track EJ community impact, energy code compliance rates, achieved savings (energy, carbon, etc.), stakeholder participation levels, and adoption rates.

Additional Information

DOE greatly appreciates the response to the recent RFI and public workshop, and is actively considering all feedback received. Additional information will be released in the coming weeks via the Building Energy Codes Program.

Learn more at www.energycodes.gov.