Resilient and Efficient Codes Implementation

Infrastructure Investment & Jobs Act

National Energy Codes Conference
July 20, 2022
Infrastructure Investment and Jobs Act (IIJA)

Section 40511: Cost-effective Codes Implementation for Efficiency & Resilience

Highlights:

• $225 million for implementation activities supporting updated energy codes
• Encourages “partnerships” comprised of states and other key stakeholders
• Intended to support code updates—not limited to only the latest codes (currently the 2021 IECC and Standard 90.1-2019)
• Amplifies technical assistance supporting code implementation, and builds on many traditional activities, while scaling these efforts significantly

> DOE engaged stakeholders and the general public to seek feedback on priorities and activities of the program
Where are we today?

Progress made by DOE toward Section 40511 execution:

- **Request for Information (RFI)** issued on April 18 (comments due May 20)
  - Received comments from over 70 entities
  - DOE has reviewed and considered all comments received

- **Public workshop** held on April 27
  - Over 200 participants across a wide range of interests
  - Learn more about the workshop at energycodes.gov

> We’ll be talking more about Section 40511 during today’s session, including summarizing key topics, feedback received, and next steps
Overview: Section 40511 of the IIJA
Cost-Effective Codes Implementation for Efficiency & Resilience
Section 40511: Eligible Entities

ELIGIBLE ENTITY.—The term ‘eligible entity’ means—“(A) a relevant State agency, as determined by the Secretary, such as a State building code agency, State energy office, or Tribal energy office; and “(B) a partnership.

(A) State agencies
- To be determined by the Secretary of Energy
- Examples: State energy offices, Tribal energy offices

(B) Partnerships
- More on this momentarily...

> What state agencies are most relevant to the initiative?
- Energy, code administration, resilience, safety, others?
Section 40511: Partnerships

PARTNERSHIP.—The term ‘partnership’ means a partnership between an eligible entity described in paragraph (1)(A) and 1 or more of the following entities: “(A) Local building code agencies. “(B) Codes and standards developers. “(C) Associations of builders and design and construction professionals. “(D) Local and utility energy efficiency programs. “(E) Consumer, energy efficiency, and environmental advocates. “(F) Other entities, as determined by the Secretary.

Partnership between:
- Local building code agencies
- Codes and standards developers
- Associations of builders, design and construction professionals
- Local and utility energy efficiency programs
- Consumer, energy efficiency, and environmental advocates
- Other entities as determined by the Secretary of Energy

> What “other entities” should be considered or emphasized?
> What can (and should) constitute an effective partnership?
Section 40511: Code Updates

**UPDATED BUILDING ENERGY CODE.**—An update to a building energy code under this section, including an amendment that results in increased efficiency compared to the previously adopted building energy code, shall include any update made available after the existing building energy code, even if it is not the most recent updated code available.

 Updates:

• Increase energy efficiency compared to the previously/currently adopted code
• Can be any update more recent than the existing/currently adopted code
• Are not constrained to the most recent code editions (e.g., 2021 IECC and 90.1-2019)

> How should DOE evaluate and prioritize the impact of a proposed update?
> How should DOE balance recent vs. planned vs. aspirational updates?
CRITERIA; PRIORITY.—In awarding grants under subsection (b), the Secretary shall—

1. Consider:
   - Impact: Prospective energy savings and plans to measure the savings
   - Long-term sustainability of measures and savings
   - Prospective benefits, and plans to assess benefits, including resilience and peak load reduction, occupant safety and health, and environmental performance
   - Demonstrated capacity to carry out the proposed project
   - Need for assistance

2. Prioritize partnerships

> What methods are appropriate for measuring and determining savings impacts?
> How should DOE evaluate the sustainability and long-term effects of a project?
> Are there additional benefits that should be considered/prioritized?
Section 40511: Sample Activities

Examples specified in the IIJA:
• Create or enable state or regional partnerships to provide training and materials
• Collect and disseminate data on construction and code implementation
• Develop and implement a plan for effective implementation, including measuring compliance
• Address implementation needs in rural, urban, suburban areas
• Implement updates in energy codes

> What types of partnerships can help DOE maximize its technical assistance activities supporting building energy codes?

> What additional activities should be considered?
Feedback: Request for Information (RFI)

Cost-Effective Codes Implementation for Efficiency & Resilience
Request for Information (RFI) and Public Workshop

DOE issued an RFI and held a public workshop to better understand current implementation needs, as well as to help guide this new initiative.

The RFI and public workshop featured several key areas of interest:

1. Adoption
2. Workforce Development
3. Implementation and Compliance
4. Innovative Approaches
5. Energy and Environmental Justice (EEJ)
6. Partnerships

> DOE asked a number of questions across each of these topics
What outcomes are targeted under this initiative?

The RFI also emphasized several desired outcomes:

1. Develop the next-generation workforce
2. Facilitate energy code updates
3. Advance new and innovative policies and tools
4. Increase equity in code-related policies and planning
5. Improve energy code compliance

See the official RFI and full list of questions at:

https://www.energycodes.gov/RECI-codes-workshop
Feedback on Key Topic Areas
Who participated in the RFI and Public Workshop?

Diversity of Voices:

- RFI comment period over 30 days
- DOE held workshop to gather additional input
- Nearly 200 attended the workshop
- DOE received over 70 sets of RFI comments
Key Themes: Energy Code Adoption

• How should code updates be evaluated?
  – Emissions reduction, energy savings, estimated impact (e.g., construction starts, percentage improvement, etc.), implementation potential

• What is considered a code update?
  – Latest model code, at least 2018 IECC, any improvement, no weakening amendments, count recent & future code updates (e.g., 1-3 yrs.)

• How can model code adoption and updates be sustained over time?
  – Require or prioritize implementation plans, compliance support (tools, training, tech. support), legislation, funding tied to actual adoption
Adoption: What metric should DOE prioritize when assessing impacts of an updated state or local energy code (e.g. energy, emissions, etc.)?
Key Themes: Workforce Development

• How should DOE balance support for the new vs. existing workforce?
  – Prioritize both with a call to “widen the tent” (e.g., increased diversity, career pathways, high school programs)

• How can DOE best support an equitable workforce?
  – Community outreach and accessible training, secondary and higher-ed partnerships, free training programs, career pathways, scholarships

• What are the most effective training methods and tools?
  – Training: In-person and online training, certification programs, code consultants, compliance collaboratives
  – Tools: COMcheck/REScheck updates, remote/virtual tools, inspection software, energy modeling, automated plan review, electronic permitting and digitization
How should DOE prioritize training a new workforce entering the job market versus training the existing workforce on the latest energy code?
Workforce: How can DOE encourage workforce training programs to be sustained long-term, beyond the period of funding?

Career Pathways:
- Accessible career pathways
- Have a plan for beyond training to directly provide jobs after training
- How to ensure that people who go through training get good jobs? How to create an effective partnership
- Traditionally marginalized workers should be supported into good paying careers
- Successful job placement as a priority

School Programs:
- CC & Tech School Programs: Establishing programs in Tech high schools and Community colleges
- CC & Tech School Programs: High school and community college curriculum
- CC & Tech School Programs: Partner with Trades and Community colleges
- CC & Tech School Programs: curriculum based and incorporate in Education system
- CC & Tech School Programs: programs that include community colleges and high school work, as those

Open Source Training:
- Create online modules for code officials, builders and design teams that can be reused in different projects
- Provide open source training materials. Collaborate with
- Keep training up to date

Effective Partnerships:
- Connections with home building associations, building officials, existing home energy raters
- Important to have life family sustaining wages and benefits in quality of
- Partner with community and philanthropy
- Partner with community and philanthropy

CEU Requirements:
- Continuing education credits
- Encourage requirements for continuing education
- Prioritize funding for programs that include Excel training for certification

Sustaining Programs:
- Continued multiyear funding
- Funding opportunities
- Apprenticeship Programs: mentorship and certifications
- Build Training Infrastructure: Fund infrastructure (training facilities etc.)
- Certifications & Incentives: Certifications that make a difference in the job market

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY
Implementation: How can DOE effectively support long-term compliance improvements? (e.g., field studies, compliance collaboratives, utility code support programs)

Utililty Support: Convence state utility regulators to support savings attribution for utilities

Utility Support: Utility support; incentivize via rebates for existing buildings to comply with existing requirements

Utility Support: Organize evaluation programs

Utility Support: Utility incentives for third-party verified energy code compliance

Utility Support: Sell utility programs to resiliency (and distributed generation)

Energy Justice Representation: EJ communities at all tables

EJ Representation: EJ communities at all tables

EJ Representation: King County WA greenbuilding program that prioritizes racial and EJ communities

EJ Representation: Inclusion of BIPOC design and construction professionals

EJ Representation: Inclusion of BIPOC design and construction professionals

State Agency Funding: Federal and state help on bill payment

State Agency Funding: Statewide code

State Agency Funding: State support

Compliance Data: Data access and analysis support

Compliance Data: Submetering and access to data

Compliance Data: Institute data

Innovative Ideas: Compliance verification and enhancement strategy

Innovative Ideas: Would love to see some of this funding go

Innovative Ideas: Innovate beyond "more of the same" outcome based codes work along with BPS? What we are doing

Tie Funding to Implementation: Require accountability where funding is granted

Tie Funding to Implementation: Requiring low-cost code compliance studies

Tie Funding to Implementation: Funding over 3-5 years - compliance study, then training on findings is a 4+ year project

Tie Funding to Implementation: Multiple released funding based on achievement

Tie Funding to Implementation: "Skin in the game" (matching funds)

Tie Funding to Implementation: “Skin in the game” (matching funds)

Tie Funding to Implementation: Need to be embedded in permitting process. A permanent state office, continued support about updates to code etc.

Field Studies: Support regular, low-cost code compliance studies

Field Studies: Support needs to be embedded in permitting process. A permanent state office, continued support about updates to code etc.

Field Studies: Highlighting the codes in advanced municipalities

Field Studies: Long-term grant funded positions for energy code enforcement.

Public Awareness: Educational marketing of savings and benefits of new codes

Local Funding: Long-term grant funded positions for energy code enforcement.

Local Funding: Support needs to be embedded in permitting process. A permanent state office, continued support about updates to code etc.

Local Funding: Support needs to be embedded in permitting process. A permanent state office, continued support about updates to code etc.

Local Training: Workforce training around high performance standards like Passive house, and skills like air barrier testing, details to duct seal etc.

Support Labeling: Support for certification labeling, labeling programs for above code products, require labeling on products

Research: Fund evaluations of natural experiments (e.g., across state or local boundaries) as well as innovative programs designed explicitly to improve compliance, ID

Research: Studies that connect weatherization assistance programs with new codes to make the case for code updates and savings on WAPs

Research: Studies that connect weatherization assistance programs with new codes to make the case for code updates and savings on WAPs

Case Studies: Case studies and networking

Federal Legislation: Outside of scope of funding but update federal statutes to add some teeth to state adoption and enforcement of energy codes.
How can DOE foster innovation in energy code implementation?

- Encourage partnerships between regions, states, local governments, and other local governmental bodies (e.g., councils of governments)
- Encourage partnerships with utilities
- Provide flexibility and don’t be overly prescriptive to the type of innovation
- Cities are uniquely positioned to test innovative approaches; fund cities
- Better understand how codes need to change to adapt to climate change
- Incentivize adoption of an energy code and BPS together to ensure alignment
- Deploy a circuit rider (code consultant) in each state to support code updates and stretch code development
Please rank innovative approaches covered in this presentation by importance to resilient and efficient codes implementation.

1st: Building Performance Standards (BPS)
2nd: Performance-based codes
3rd: Zero energy or carbon codes
4th: Energy codes software tools
5th: All-electric codes
6th: Expedited permitting
7th: Circuit riders
8th: Remote virtual inspections (RVI)
Key Themes: Innovative Approaches (continued)

• How can DOE create alignment between building codes and BPS?
  – Align code and BPS metrics, require commissioning in codes, benchmarking, industry education, analyze how new buildings perform against BPS

• How can DOE improve implementation in existing buildings?
  – Expand code reqs. during retrofit, adjust threshold when code applies, Streamline compliance in existing buildings (e.g., RVI, expedited permitting)

• What other complementary policies should be considered?
  – Implement time of sale disclosures, develop more robust incentives, expand EE appraisals
Innovative Approaches: What are other key innovative approaches that were not yet covered in the discussion?
Key Themes: Energy and Environmental Justice (EEJ)

- What EEJ concerns are most relevant to the initiative?
  - Funding and benefits to EEJ Communities, community engagement, energy burden, affordable housing, indoor air quality, resilience

- How can DOE best support disadvantaged communities?
  - Accessible engagement (e.g., stipends, childcare, direct outreach), removing barriers to entry, workforce development, community partnerships

- What strategies can best support EEJ goals?
  - Digital and streamlined compliance tools, require DEI plan & EEJ project partners, measurement and evaluation of project outcomes, fund projects at local level, reduce program application burden
EEJ: How can we ensure that environmental justice concerns are mitigated through the development of effective building energy codes?

Community Engagement:
- Engage Minority and CBOs that are familiar in DACs to conduct the initial and ongoing MBO program to help assure a level of comfort followed by greater involvement of those communities.

Needs Assessment:
- Partner with communities to identify needs and plan together how codes will meet that goal.

Energy Retrofit Banks:
- Establish energy retrofit banks.

Intersection between codes and BPS:
- Complement new building focused policy with existing building policy that will not harm renters and will reduce energy burden.

Prioritize Highest Energy Burden:
- Prioritizing areas with the highest energy burden for implementation.

Learn from Other Programs (e.g., LIHTC):
- DOE Host a Forum on LIHTC Barriers and Solutions development in the market.

Learn from Other Programs (e.g., build):
- The LIHTC community works miracles to get affordable housing built – DOE should work with them to ID barriers and ways to remove them.

Direct Funding & Benefits to EEJ Communities:
- Cost is going to be a big thing – energy burden runs deep in EJ communities. More incentives is going to be key.

Prioritize Improved Air Quality:
- Focus on codes that include all electric pathways help address the air quality burden. Higher standards for envelope help with renters energy burden.

Require EEJ In RFP:
- Require this in the RFP.

Representation: Development:
- have EJ communities at the table when developing the codes.

Learn from other Programs (e.g. LIHTC):
- Have DOE write a strongly-worded letter to ICC to include them in the development process.

DOE Engage in code development:
- Have DOE write a strongly-worded letter to ICC to include them in the development process.
Key Themes: Strategic Partnerships

• The IIJA specifies that partnerships should be prioritized

• How can DOE encourage successful partnerships?
  – Interests commonly cited include: Federal, state, local agencies (especially those involved in code adoption and implementation), regional organizations, National Labs, industry and practitioners (e.g., builders, designers, engineers, manufacturers, trade organizations), NGOs, universities and academia

• What is the appropriate role for local governments?
  – Local governments should be an active partner, local building departments are critical, EEJ happens at local level, areas for innovation
Partnerships: Which stakeholders are critical to a successful partnership? Are there additional (non-project) partners and stakeholders who should be emphasized?
Feedback on Prioritization and Evaluation
How should DOE prioritize different criteria when evaluating applicants? [1 = heavily favor of option one, 5 = heavily favor option two.]

- 1. Rural vs. 2. Urban areas
- 1. Residential vs. 2. Commercial construction
- 1. Leading vs. 2. Lagging states (in terms of code adoption)
- 1. Current model codes vs. 2. Previous editions
- 1. Traditional codes activities vs. 2. New approaches
- 1. Activities that only use DOE funding vs. 2. Activities that leverage other funding sources
Partnerships: What other criteria should DOE prioritize when evaluating applicants?

**EJ Community Engagement**
- Benefits to a local EJ community
- Inclusion of EJ communities, equity, energy burden
- Impact based on demonstrated successes and benefits

**Existing Buildings**
- Effective addressing existing buildings
- More funding for states that get the most existing buildings up to current standards

**Construction Volume**
- Cities with lots of new construction
- scorer number and square footage for new multifamily

**Data Collection**
- Creating data can be used and maintained into the future

**Energy Use Reporting**
- Sustained monitoring of building performance
- Energy burden lessened

**Energy Use Reporting**
- Reporting

**Reduce Energy Burden**
- Reduction of energy burden

**Statewide Influence**
- Ability to have a statewide influence

**Historic Buildings**
- City with many historic buildings

**National Influence**
- Ability to have national influence

**New Materials**
- New material options

**Partnerships**
- Partnerships

**Market Transformation**
- Market transformation

**Pilot Studies**
- Real examples that validate proposal (pilot study etc.)

**Sustained Impact**
- Whether partnerships will have natural momentum to persist and do valuable work after the period of performance

**Replicability**
- Replicability

**Model Code Adoption**
- Number of communities adopting current code

**Zoning**
- Coordination with zoning densification policies

**Emissions Reduction**
- GHG emission

**Emissions Reduction**
- Eliminating fossil fuels and ghgs

**Energy Savings**
- Large energy users

**Energy Savings**
- What is the actual predicted energy savings/ghg emissions saved?

**Non-energy Benefits**
- Non-energy benefits
Partnerships: How should DOE track overall outcomes from this funding? What metrics should DOE request from each project team?

**EJ Community Impact**
- Ask the EJ and CBOs and representative leaders themselves by hiring them to develop their own community needs assessments.
- Equity and benefits to WBE and MBE and emerging small local businesses.
- Ensure equity and benefits to WBE and MBE and emerging small local businesses.
- Consider harms healed if any towards reparations and justice.

**Achieved Savings**
- Savings Achieved: Actual carbon reduction.
- Savings Achieved: Actual energy savings.
- Savings Achieved: Energy savings achieved.

**Stakeholder Participation**
- Stakeholder Participation Levels: Community voices.
- Stakeholder Participation Levels: from.
- Innovative Approaches: Research.
- Workforce development: Workforce development.

**Compliance Rates**
- Compliance Rates: % compliance improvement per dollar spent.
- Compliance Rates: % of buildings that comply with current code.
- Compliance Rates: Adoption rates.
- Compliance Rates: Adoption rates.
Next Steps

Planned next steps in executing Section 40511 of the IIJA:

– Next Step: **Notice of Intent (NOI)** with additional details

– **Funding Opportunity Announcement (FOA)** in Fall 2022

> Teaming list available on [EERE Exchange](#)—get added by emailing becp@pnnl.gov with the subject “RECI FOA: Teaming Partner Information”

> Sign-up for BECP updates at [www.energycodes.gov/subscribe](#)

> Keep an eye out for more information soon!