Buildings, Energy Efficiency and Climate Change

U.S. Building Sector End Use Energy Consumption

- 39% Residential Buildings
- 18% Commercial
- 40% HVAC
- 35% Lighting
- 15% Office/IT equipment
- 10% Hot water
- 28% Transportation

Buildings are Key to Addressing Climate Change

- Buildings account for 40 percent of all energy use in the U.S.
- 40 percent of a building’s energy use is related to heating and cooling
- Heating, cooling and hot water cost in an energy efficient home are 30 to 40 percent lower than in conventional new homes
- 90 percent of the 115 million homes in the U.S. are under-insulated
- A tight, well insulated building envelope can reduce heat loss by 25-50 percent
- For every pound of carbon dioxide emitted in the production of insulation, up to 330 pounds of carbon dioxide are avoided by using insulation
Building codes and Resiliency

**Resilience (noun)**

Resilience addresses what happens when the power goes out, when roads are closed, when building occupants may be isolated from critical support services for long periods of time.

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**Emergency response and recovery: why the building envelope matters**

- Reduced electrical demand during times of stress on the electric system
- Efficient buildings maintain temperatures
- Reduce flammability of structures
- Improved indoor air quality

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**Resiliency and Building Codes**

Adopting modern building codes saves $11 for every $1 invested through earthquake, flood and wind mitigation benefits

Adopting modern building codes saves $4 for every $1 invested in wildfire mitigation benefits

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**Reforming Disaster Recovery Act of 2019 (H.R. 3702, passed the House of Representatives, November 18, 2019)** – Requires states using federal Community Development Block Grant Disaster Recovery Program funding for building construction to comply with updated building codes

**2018 Disaster Recovery and Reform Act (Public Law 115-254)** – Allows states to use federal pre-disaster mitigation funding to support the adoption and implementation of modern building codes
Energy Codes: Development, State Adoption and Impact

Energy Codes are Developed by Stakeholders

- Model codes updated every three years through a process overseen by the International Code Council with substantial public input
- Code changes approved by ICC eligible voters - government employees engaged in administration and enforcement of regulation relating to public health and safety (8000 eligible members nationwide)

Energy Codes and the Department of Energy

- DOE plays a limited but important role in energy code development, state adoption and implementation
  - analyze and comment during code development proceedings
  - Determine whether updated codes result in energy savings
  - Technical assistance to states for code adoption and compliance

Energy Codes are Adopted by States

- Model energy codes are adopted by the states at their discretion
- States may adopt with or without modification
- 21 States currently enforce the 2018 energy conservation code

Cities and States Use Energy Codes to Meet Clean Air Act and Climate Goals

- California – residential construction is currently zero energy; commercial construction will be zero energy by 2030
- Texas started using energy codes in 2000 to cost-effectively reduce emissions and meet Clean Air Act requirements
- To calculate how updated building energy codes reduce CO2 emissions in your state or community, go to https://energyefficientcodes.org/resources/?sf_s=calculator
Legislation that Promotes Building Efficiency

- **SAVE Act** – establishes practical mortgage lending rules that allow lenders to consider a home’s energy efficiency and expected monthly energy bills when determining a homeowner’s ability to afford monthly mortgage payments

- **Home Energy Savings Act** – expands the 25C home energy tax credit from $500 to $1200 for homeowner efficiency upgrades

- **Energy Savings and Industrial Competitiveness Act** – provides assistance to state and local governments and homebuilders to adopt updated building code and construct better buildings

- **Reforming Disaster Recovery Act** – Ensures that buildings constructed using Federal disaster funding are built to modern building codes

- **Climate Leadership and Environmental Action for our Nation’s Future** – Authorizes the HOMES Act, which provides rebates to homeowners undertaking energy retrofits