U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Federal Priorities and New Opportunities

2021 DOE National Energy Codes Conference

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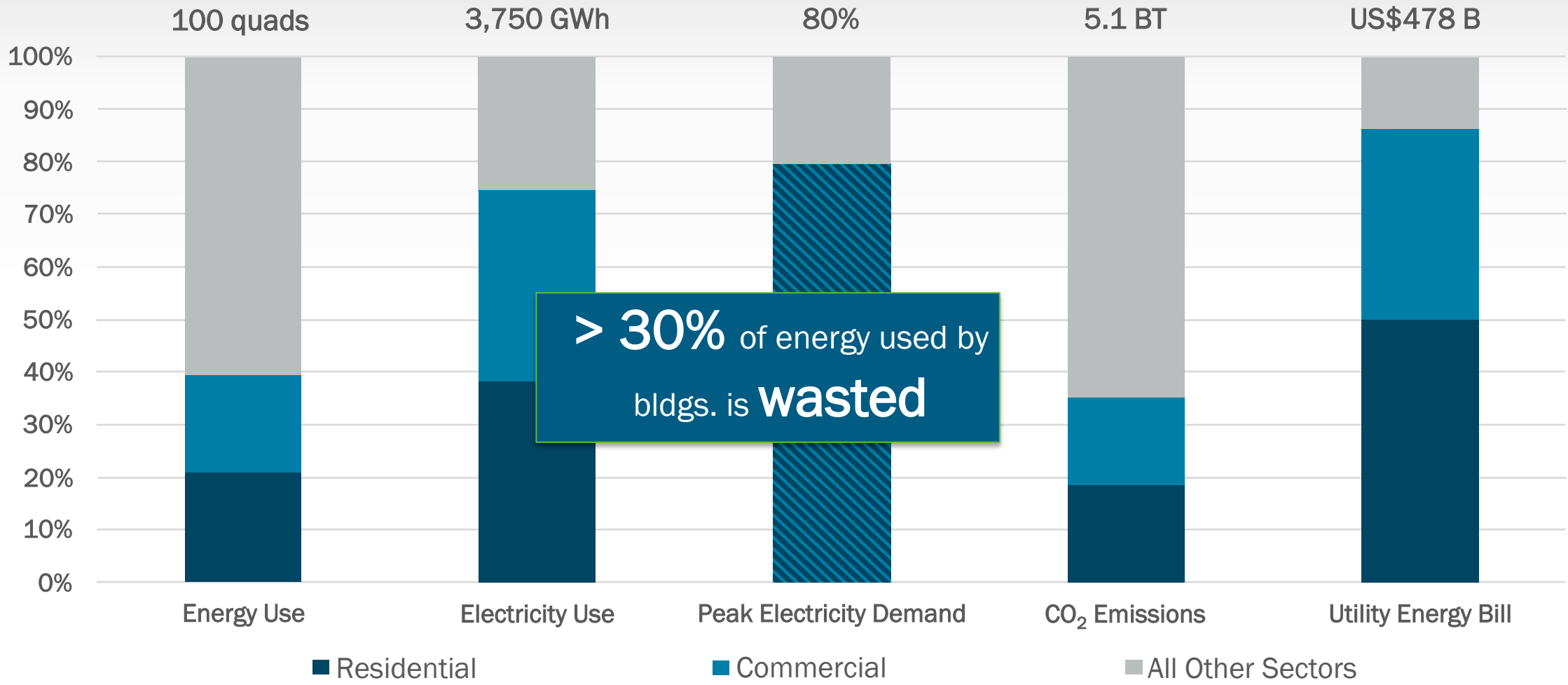
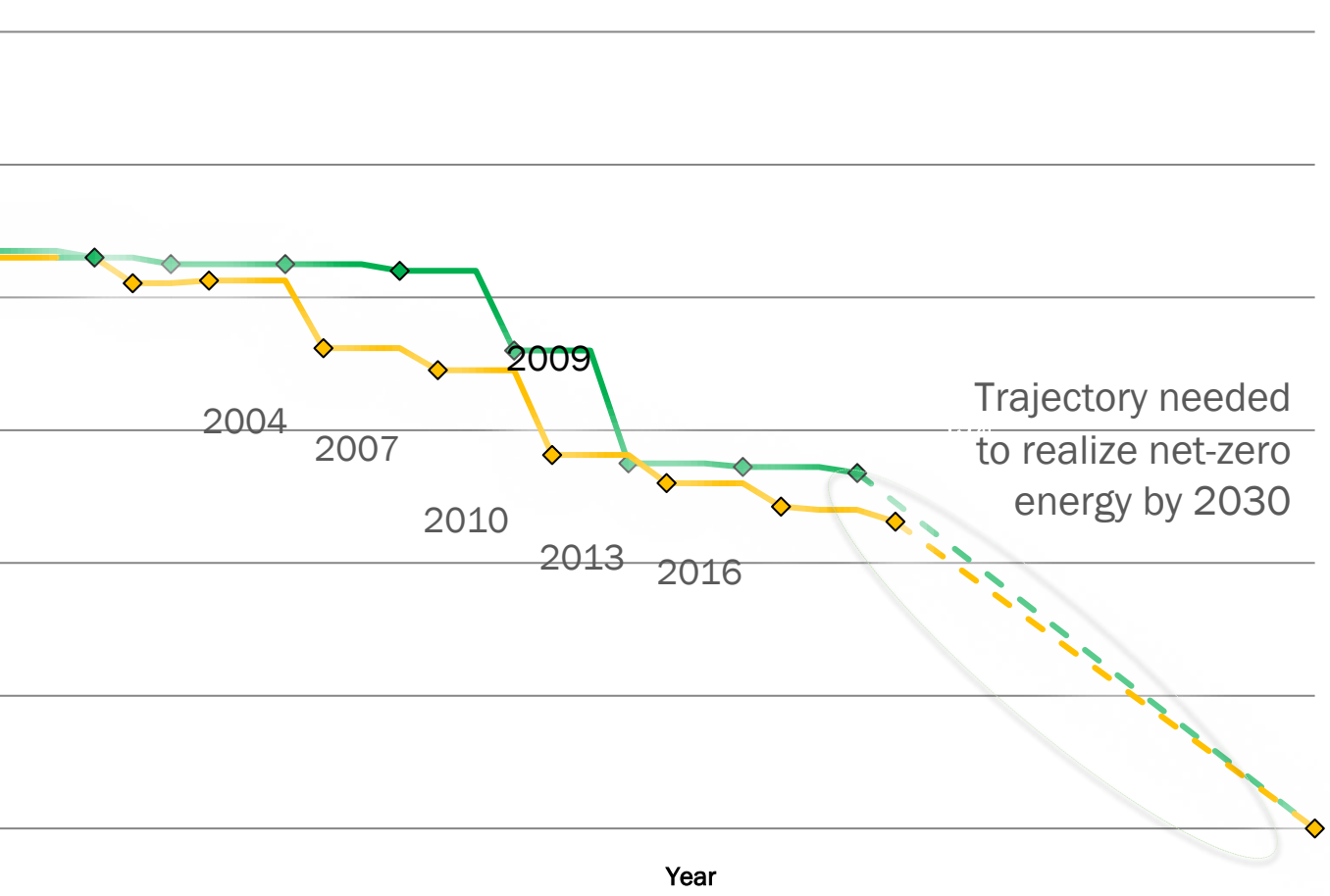
Buildings are the Largest Sector of US Energy Economy



BTO is working to achieve a carbon-neutral US building sector by 2050

Sources: US EIA (Monthly Energy Review, Annual Energy Outlook 2020, Electric Power Monthly, Natural Gas Summary)

Building Energy Codes: Building Better Buildings



Source: Pacific Northwest National Laboratory

- ~ **US$138 billion** energy cost savings
- ~ **900 MMT** of avoided carbon emissions
- ~ **13 quads** of primary energy

These savings equate to annual emissions of:

- ~ 191 million passenger vehicles
- ~ 94 million homes

Emerging Themes in Building Energy Codes

- Net zero energy / Net zero carbon (+Readiness)
  - ICC specified an optional stretch goal of zero energy by 2030; optional zero-ready appendices in the 2021 IECC
- Electrification (+Readiness):
  - Pre-wiring for future electric appliances, reserved space for heat pump water heaters
- Renewable integration (PV):
  - CA T24, ASHRAE Standard 90.1
- Grid integration:
  - Grid-interactive water heaters, smart thermostats, methods for evaluating grid-interactive measures
- Electric Vehicles: Pre-wiring or actual charging
- Performance-based codes
- Existing Buildings: Building Performance Standards (BPS)

> Opportunity: DOE can bolster support for these efforts through increased technical analysis—both for the model codes and by working with states/locals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JUST ANNOUNCED!
DOE Building Energy Codes Program

Model Energy Code Determinations

> Every household in the U.S. should have the opportunity to benefit from the latest building codes and standards.

JUST ANNOUNCED: Model energy code Determinations:

- **Commercial**: 4.7% site energy savings based on Standard 90.1-2019
- **Residential**: 9.4% site energy savings based on the 2021 IECC

Adopting the latest building codes is a critical opportunity to increase energy efficiency in buildings, as well as to ensure modern standards for health, comfort, durability and resilience in their homes, businesses, and communities.

DOE is challenging states, local governments, and the design and construction industry to update their building energy codes based on the latest model codes, and to help ensure all construction meets or exceeds these standards.

New Technical Assistance Supporting Energy Codes

> DOE is ramping-up efforts to support building energy codes and help states and local governments embrace the latest standards.

JUST ANNOUNCED: New technical assistance to support state and local adoption and implementation of building energy codes:

- State, regional and national partnerships to support energy codes
- Innovative "stretch" concepts, from PV and EV charging, to advanced EE, building performance standards for existing buildings, to smart homes and more!
- Workforce education and training initiatives that help workers take advantage of new technologies, construction practices, and evolving building standards
- Technical analyses to quantify impacts on energy savings, cost-benefit, jobs and the economy, and related GHG impacts

Who are we working with?

Program Partners include:

- ✓ State agencies (state energy offices, code and safety agencies)
- ✓ Local governments (building code and safety departments)
- ✓ Model code and standard organizations (ASHRAE, ICC)
- ✓ Federal government agencies (EPA, HUD, FEMA, OMB)
- ✓ Trade and professional organizations, home builders, NGOs
- ✓ DOE national laboratories (PNNL / NREL / LBNL)
- ✓ Research teams

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Building Energy Codes
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Key Stakeholders

Designers, builders, contractors, policymakers, building officials, government agencies, energy-efficiency organizations, manufacturers, and more…

And all of *you*!

How big are the stakes?

Building energy codes are projected to result in (2020 through 2040):

$138 billion in energy cost savings to homes and businesses

13 quads of primary energy savings

900 million metric tons of avoided CO_2 emissions

REFERENCE: https://www.energycodes.gov/impacts

Thanks!

Thanks for spending this week – and the coming months and years – with DOE and our BTO Building Energy Codes family. Stay in touch!

energycodes.gov

www.energy.gov/eere/buildings/building-technologies-office

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