



Building a Clean Buildings Sector

RFF Live Series

JUNE 29, 2021

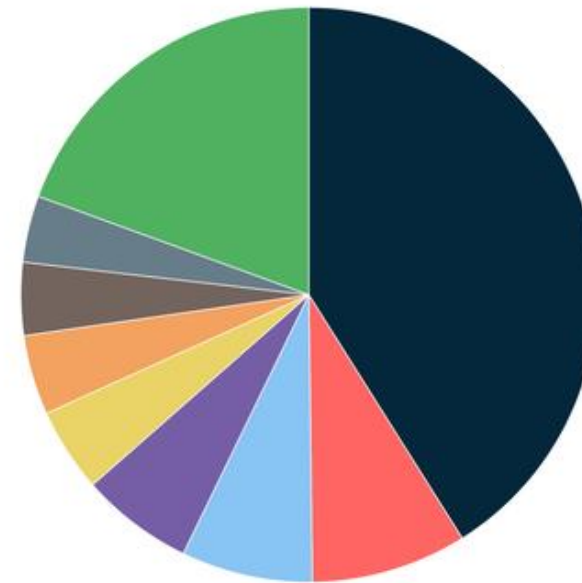


The Federal Building Stock

- The US Government operates over **1 billion square feet** of buildings (not including DOD) in the US
- A large percentage (about 41 percent) of this is office space
- Most is located in Washington DC, Maryland, Virginia, Texas, and California, but some federal buildings are located in every state
- Energy use varies significantly by building type and climate

Figure 3. Breakdown of Federally-Operated Buildings By Use (Square Footage)

● Office ● Hospital ● Warehouses ● Laboratories ● Service ● Industrial
● Other Institutional Uses ● Prisons and Detention Centers ● Other



Data Source: General Services Administration FY 2019 Federal Real Property Profile Data for Civilian Agencies

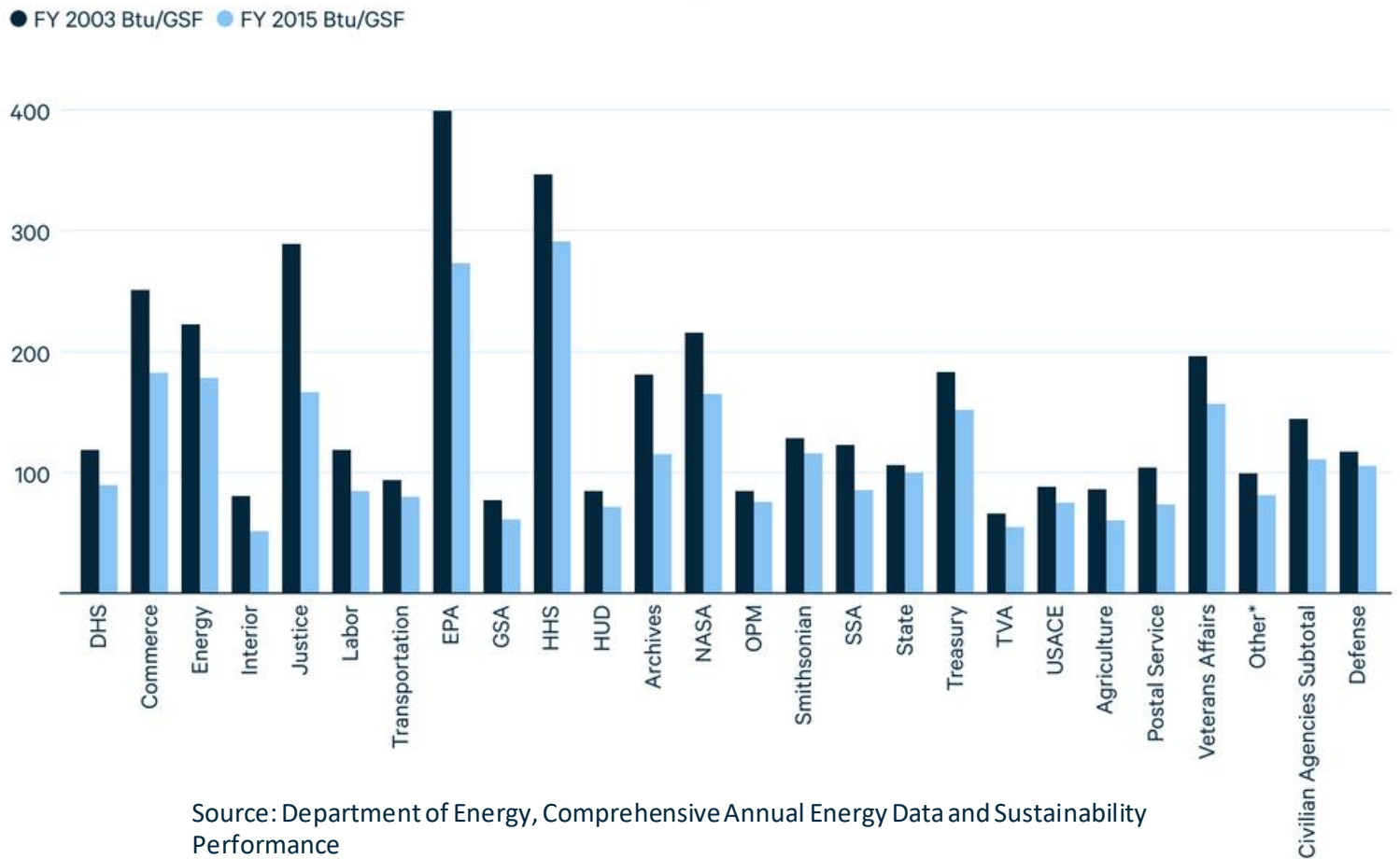


Existing Standards

- **Energy performance requirement**

- Require that each agency reduce annual energy use intensity by 30 percent below FY 2003 baseline by 2015.
- The Obama Administration initially extended these rules through FY2025 but they were revoked by the Trump Administration

Figure 4. Energy Use Intensity Across Federal Agencies in FY 2003 and FY 2015



Existing Standards

- **Benchmarking, Disclosure, and Energy/Water Evaluations**
 - Requires “covered” federal buildings (buildings covering at least 75 percent of an agency’s energy use) to benchmark and disclose energy use annually and conduct energy and water evaluations every four years.
- **Requirements for New or Majorly Modified Buildings**
 - Requires them to reduce fossil fuel-generated energy consumption by 100 percent by 2030 (with incremental goals).
 - Must be sustainably designed to achieve 30 percent reduction in energy use overall (relative to an energy code from 2005)



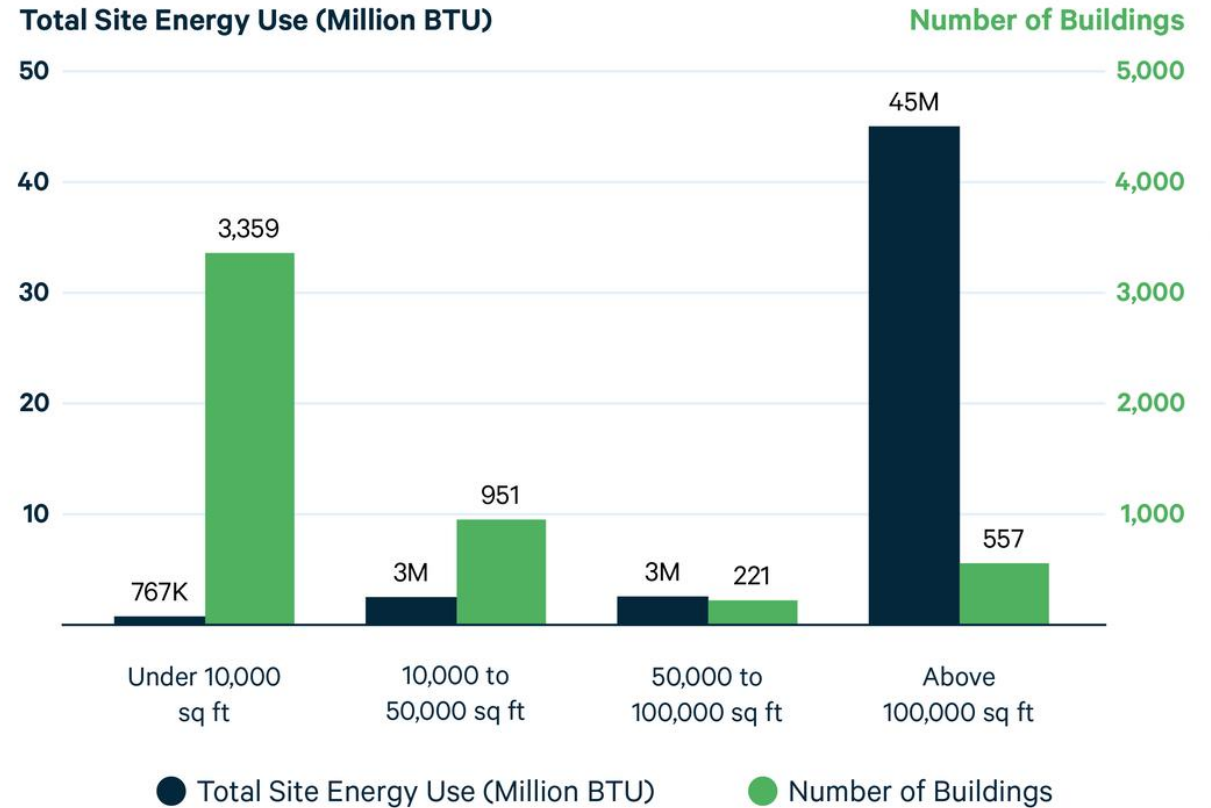
Issues with Data

- Building-level energy data is only publicly available for the designated “covered” buildings subject to benchmarking requirements (though this does cover the most energy-consuming buildings)
- Data does not include a unique identifier by building to enable comparison over time
- Many data entry errors



Scope

- Close to 90% of energy consumption comes from largest buildings (>100,000sq.ft.)
 - Initial BPS target buildings
- Improve data collection for smaller buildings to include at later date



Subset of federal civilian buildings in the US covered by EISA 432. Source: FEMP EISA 432 Compliance Tracking System for FY2019



Metric

Consumption	Emissions	ENERGY STAR Score
-------------	-----------	-------------------

- Unit: kbtu/sq.ft.
 - Pros:
 - Under control of building managers
 - Cons:
 - Requires on-site efficiency gains
- Unit: lb CO2e/sq.ft.
 - Pros:
 - Aligned with federal goals
 - Encourages electrification
 - Cons:
 - Calculation required

Building specific target

- Each building receives individual baseline
 - ex. 2020-2021
- Targets are % reduction from baseline



Flexibility

Banking

- Allowed carryover of excess compliance to future compliance periods

Portfolio Compliance

- Compliance at agency or agency/region level

Prescriptive Pathway

- Allows buildings to comply by approving ex-ante a list of improvement measures "equivalent" to the target percent reduction



Time-of-day Pilot

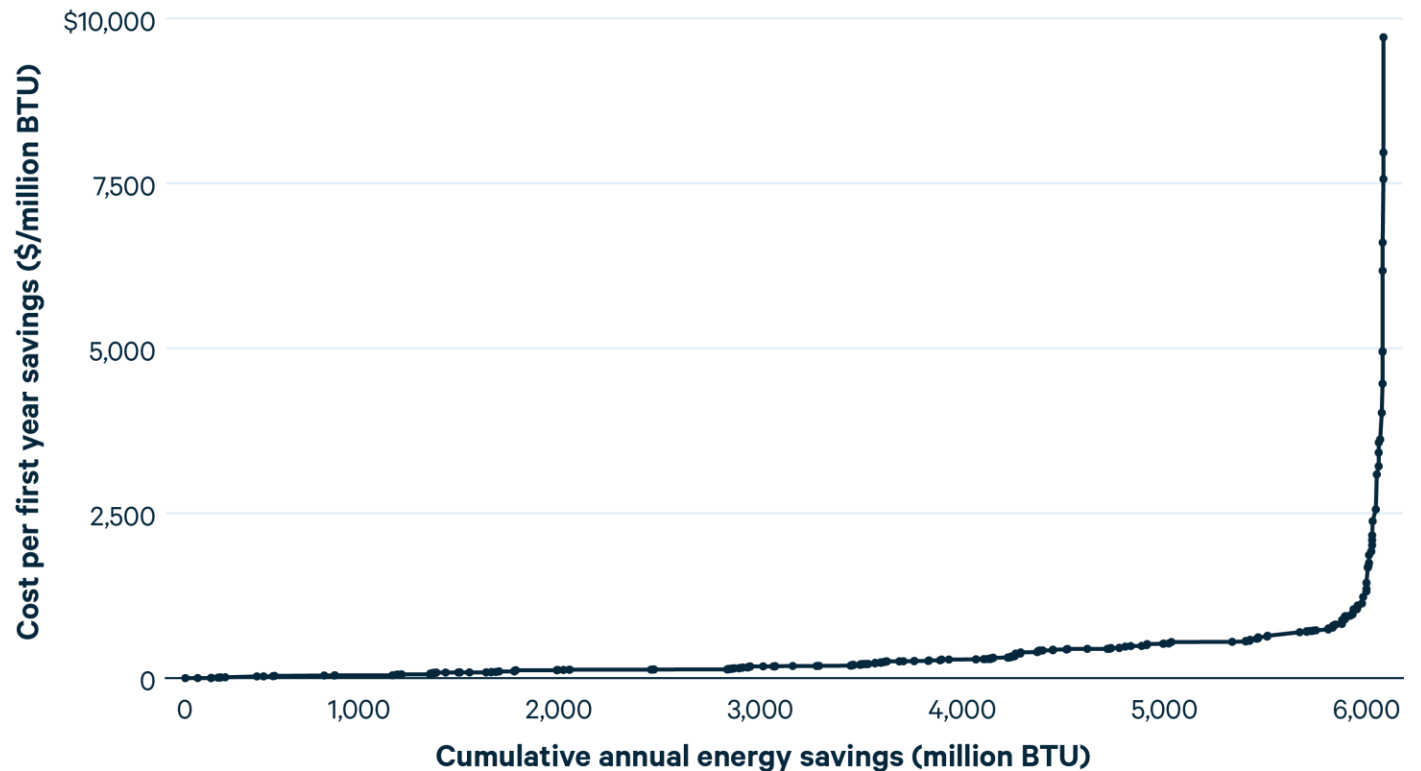
- Opt-in use of time-of-day emissions rates from electricity grid
 - Encourage buildings to provide demand response and load shaping services



Compliance

- Tracking of penalties for non-compliant buildings with shadow price of carbon
- Shadow price estimated from federal building marginal abatement cost curve

Figure 10. Incremental Cost of Energy Savings in Federal Buildings for Projects after 2017



Source: FEMP EISA 432 Compliance Tracking System, Initiated Projects





Thank you.

- Find out more about RFF online: www.rff.org
- Follow us on Twitter: [@rff](https://twitter.com/rff)
- Subscribe to receive updates: rff.org/subscribe