

Transforming Buildings in America's Zero Carbon Action Plan

Benjamin Prosky (AIANY and the Center for Architecture)

Prof. Jeffrey D. Sachs (Columbia & SDSN)

Laurie Kerr FAIA (LK Policy Lab)

Roger Platt JD (USGBC & GBCI)

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AIA
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SUSTAINABLE DEVELOPMENT
SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

Four Pillars of a Net Zero Energy System

Electricity Decarbonization



95 % reduction in
emissions
intensity

Energy Efficiency



40% reduction in
per-capita final
energy demand

Electrification



300% increase in
share of energy
from electricity

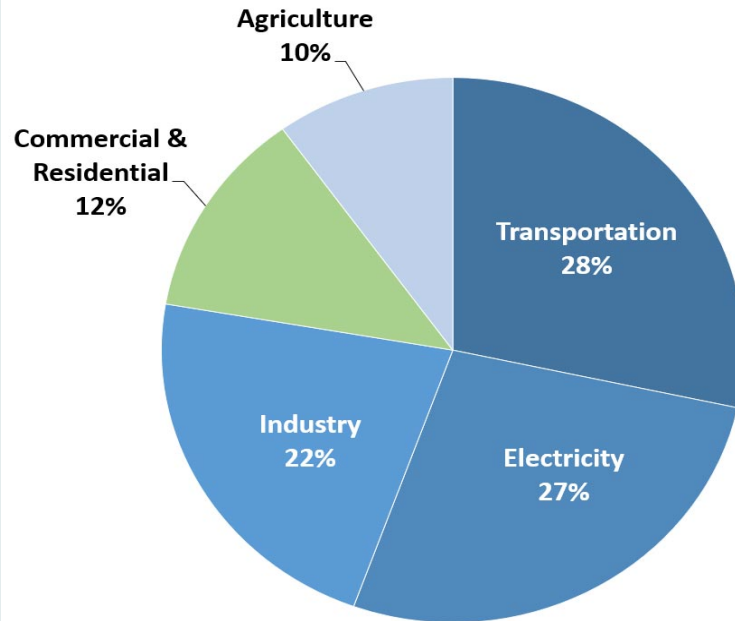
Carbon Capture



800 MMT-carbon
capture and
use/storage

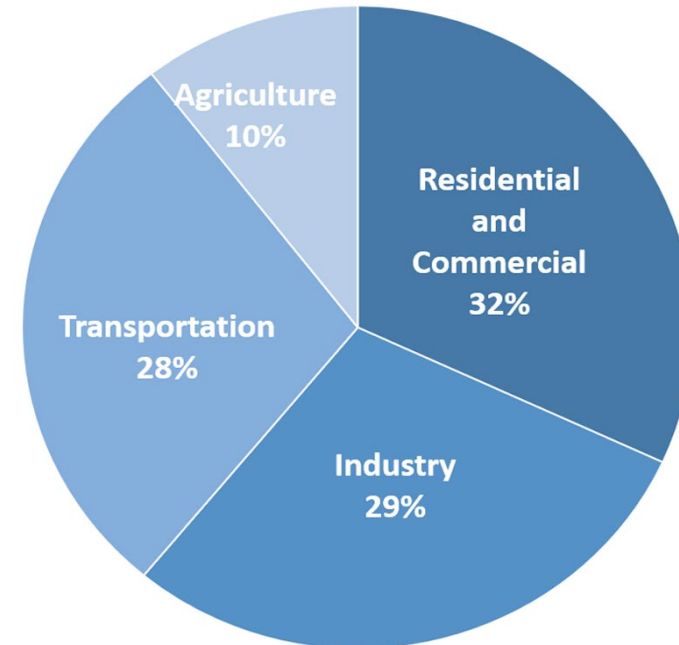
32% of US carbon emissions comes from energy used in buildings

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2018



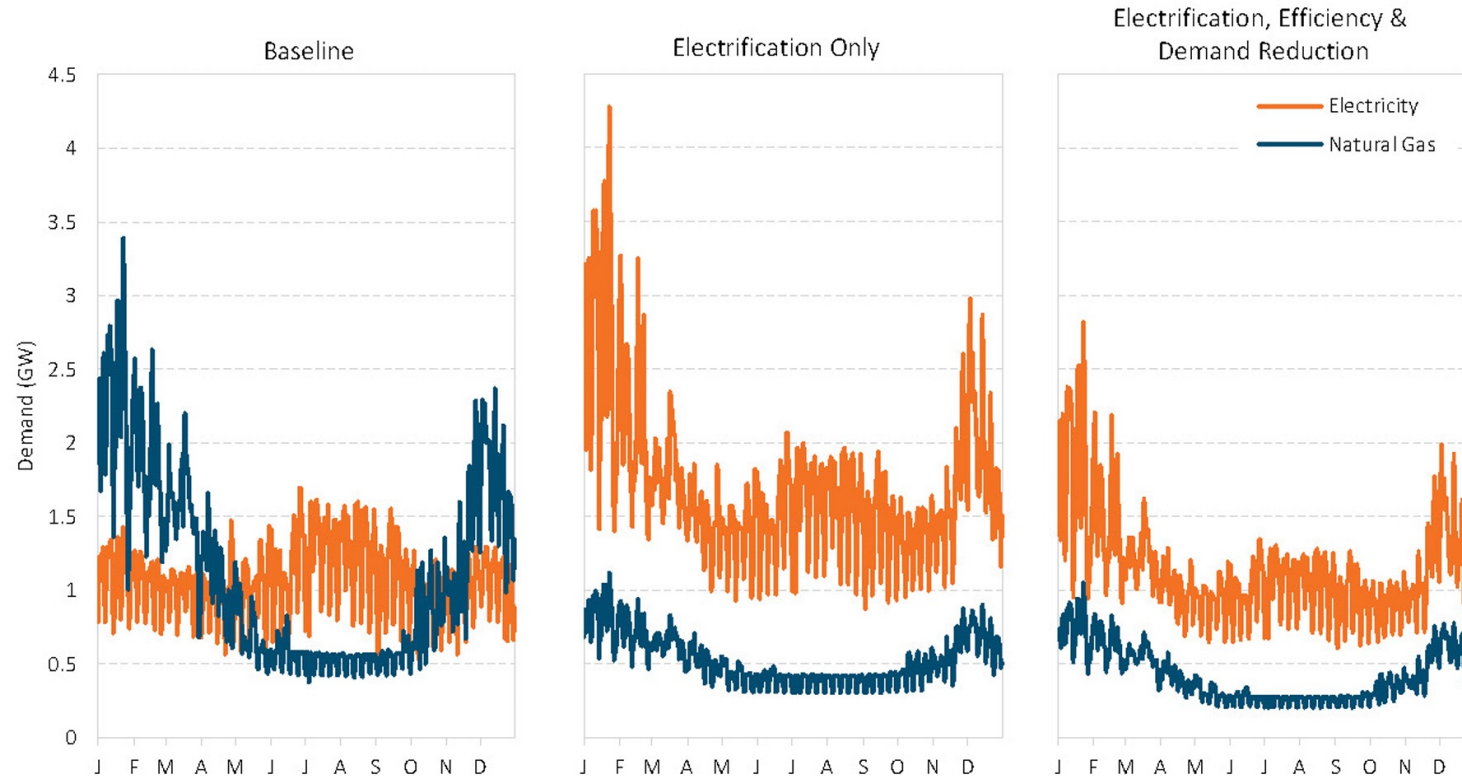
U.S. Environmental Protection Agency (2020). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018

Total U.S. Greenhouse Gas Emissions
by Sector with Electricity Distributed



U.S. Environmental Protection Agency (2020). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018

Why Energy Efficiency is Essential to Meeting the Overall Goal at a Reasonable Cost

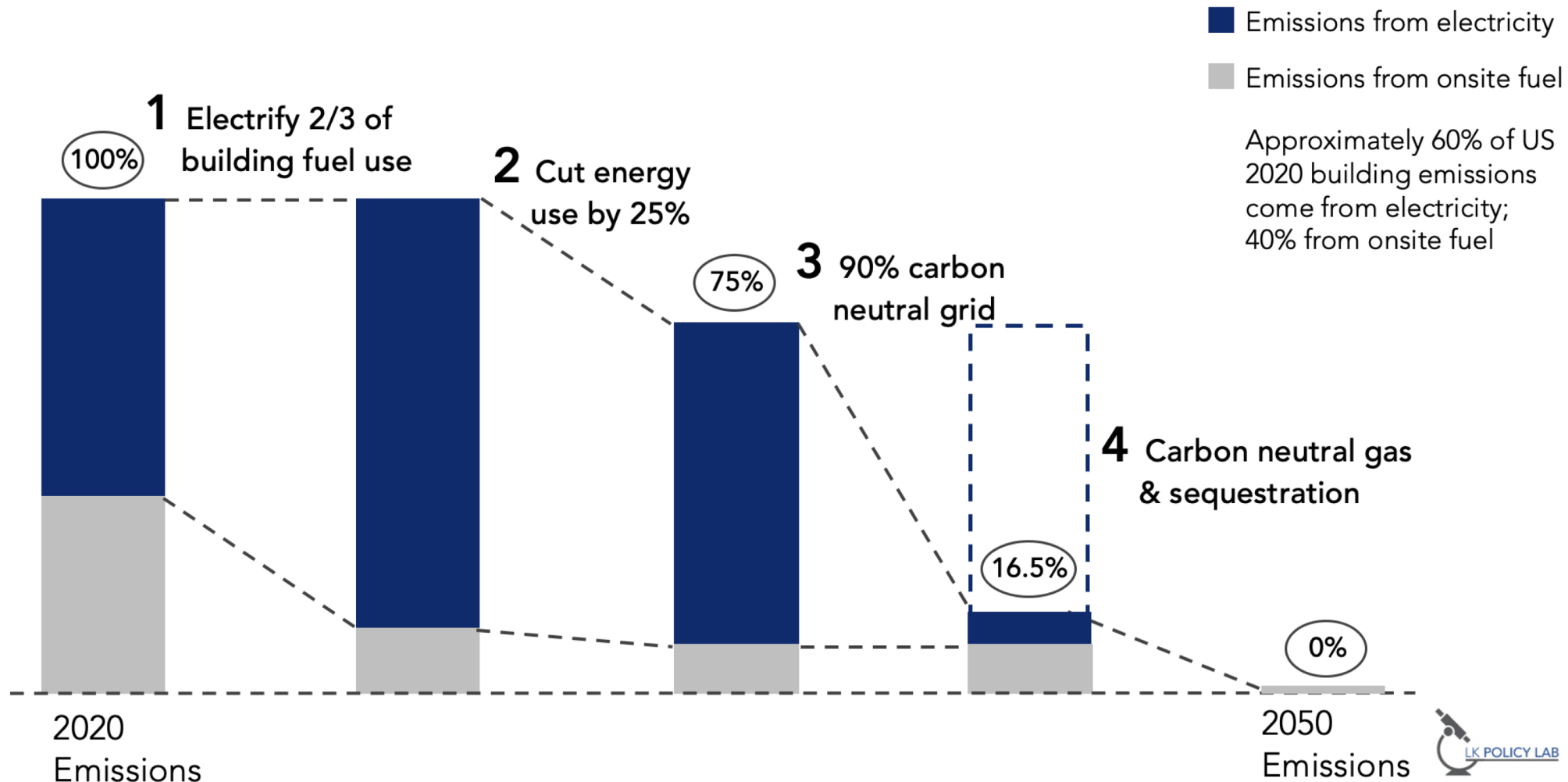




Range of Players w/Jurisdiction is Multi-Agency & Multi-Levels of Government

- Feds:
 - Federal Buildings via GSA, DOD, DOS, VA, FEMP, DOE
 - Private Sector Buildings via Energy Star State and Local Buildings via DOE programs
 - Building appliances - DOE
 - Land Use – EPA, NEPA
 - Tax Policy and Federal Finance Subsidies (E.G. FANNIE MAE)
- State, Local, Tribal, and Territories:
 - jurisdiction over building codes, land use, utilities

Conceptual Steps to Decarbonization



Overview of Building Decarbonization Plan

Overarching structure:

- Set national goal of zero carbon America by 2050
- Cabinet Department of Climate and Resilience or White House Office to coordinate the decarbonization effort, including buildings
- Create a detailed plan by Jan 2021; coordinate with federal agencies and states; annual reporting on progress

A 5-point plan for buildings:

1. Retrofits in Stimulus Package
2. Codes and Standards
3. Leading by Example and Promoting Subnational Action
4. Advance R+D, Education, and American Manufacturing
5. Use Federal Fiscal Tools

1. Include building retrofits in the Covid-19 stimulus package

Jumpstart the recovery by allocating \$20 B each year for the next 4 years to modernize and decarbonize America's building stock

Ensure that the jobs created are living wage and equitable

Concentrate on two areas:

- Low-income housing in rural, suburban, and urban communities
- Buildings serving the public at the federal, state, and local levels, including military bases, public hospitals, community colleges, etc.

2. A national energy code for zero carbon buildings & stronger appliance standards

- *Codes and standards are the least cost path to an efficient, decarbonized building stock.*

New buildings: By 2025, buildings should be designed to be fossil fuel free and carbon neutral once the grid is greened and utilize low carbon construction materials and techniques.

Existing buildings: By 2025, carbon intensive equipment should be phased out upon replacement and efficiency standards for replacements set to achieve 2050 targets.

Appliance standards: Ensure that appliance standards are up to date, that equipment, such as computers and monitors, are captured, and carbon is part of the efficiency equation.

3. Lead by Example with Federal, State & Local Portfolios; Promote local policies

Federal Portfolio: Commit to decarbonize Federal Government operations by 2040, including buildings, fleets, the military, procurement, etc.

State and Local Portfolios: Support programs by states, local, and tribal governments to decarbonize their operations

Support state and local governments in adopting and enforcing the national model codes. Support state and local governments in the development and enforcement of other advanced building decarbonization policies and programs

4. Promote America's Leadership through RDD+D, Education, and Manufacturing

Research and Development: Allocate 5% of federal RDD + D funding to low carbon building technologies, I.e. carbon neutral gas, high temperature heat pumps, and low carbon construction products

Education: Invest in the next generation of building energy/carbon professionals

Entrepreneurship and Manufacturing: Support nascent technologies and subsidize the manufacture of clean technologies in America

5. Promote decarbonized buildings through the federal fiscal tools

Tax incentives for low carbon technologies or buildings

Loans or green banks for low carbon new construction and retrofits

Mortgage underwriting changes to Fannie Mae or Freddie Mac to preference low carbon and/or low energy buildings



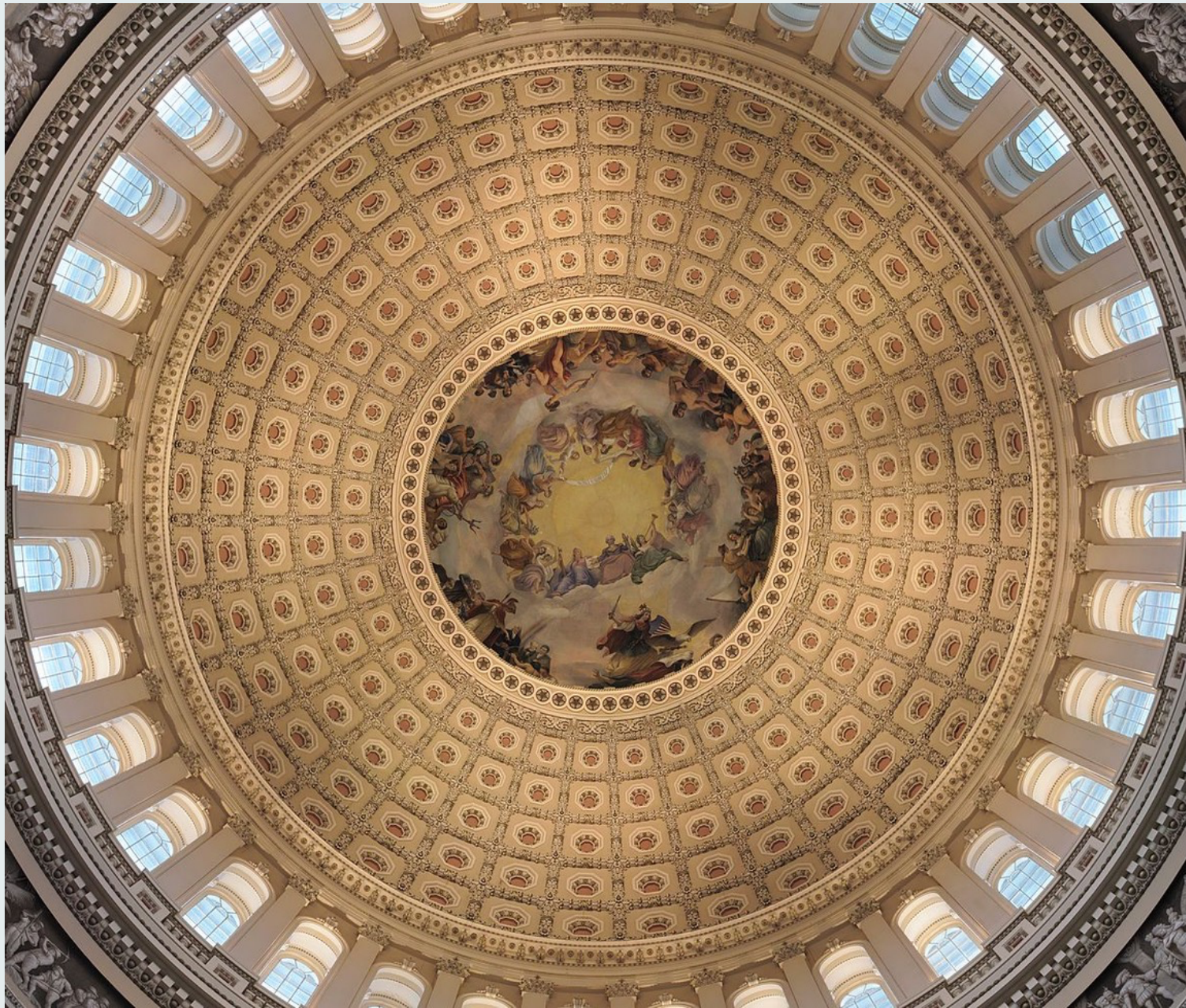
Powerful Dividends of Decarbonizing the Building Sector

Almost half a million good jobs each year for 30 years

- 480,000 additional jobs (direct and indirect) per year
- Many good blue-collar jobs in every county
- Industries include construction, architecture, engineering, HVAC, refrigeration, building materials manufacturing etc.

Energy poverty reduction

- Every dollar spent creates \$1.76 in annual reductions in energy bills for those who can least afford those bills



Upcoming Webinars (Eastern Time)



Equitable & Just Transition

November 10
3:00 – 4:00 pm



Policy & Implementation

November 12
1:00 – 2:00 pm



Materials

November 17
1:00 – 2:00 pm



Industry

November 18
3:00 – 4:00 pm



Food & Land-Use

November 24
3:00 – 4:00 pm