Total buildings sector delivered energy consumption

Buildings delivered energy consumption
AEO2022 Reference case
quadrillion British thermal units

2021

history projections

residential buildings
commercial buildings

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Residential and commercial buildings energy consumption

Residential sector delivered energy consumption
AEO2022 Reference case
quadrillion British thermal units

2021
history | projections

Electricity
Natural gas
Petroleum and other liquids
Other

Commercial sector delivered energy consumption
AEO2022 Reference case
quadrillion British thermal units

2021
history | projections

Electricity
Natural gas
Petroleum and other liquids
Other

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Change in population and residential housing stocks

Residential housing unit and population changes by region and type in 2021 and 2050

AEO2022 Reference case

millions, residential housing units and millions, U.S. population

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Commercial buildings floorspace growth

Commercial floorspace in 2021 and growth in floorspace from 2021 to 2050
AEO2022 Reference case

percentage growth

- office: 0.9%
- mercantile/service: 1.0%
- warehouse: 1.2%
- education: 1.1%
- assembly: 0.6%
- other: 1.3%
- lodging: 1.2%
- food sales/service: 1.0%
- health care: 1.2%

Population-weighted heating and cooling degree days

Population-weighted heating degree days by census division
AEO2022 Reference case
thousand degree days

Population-weighted cooling degree days by census division
AEO2022 Reference case
thousand degree days

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Residential and commercial electricity and natural gas prices

Electricity prices in the residential and commercial sectors
AEO2022 Reference case
2021 cents per kilowatthour

Natural gas prices in the residential and commercial sectors
AEO2022 Reference case
2021 dollars per thousand cubic feet

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Residential and commercial energy intensity

Indexed residential delivered energy intensity
AEO2022 Reference case
indexed annual energy use per household
2021 = 1.0

Indexed commercial delivered energy intensity
AEO2022 Reference case
indexed annual energy use per square foot
2021 = 1.0
Residential and commercial overall energy intensity by end use

Residential energy intensity by end use
AEO2022 Reference case

- space heating
- other uses
- water heating
- space cooling
- refrigeration and freezing
- laundry and dishwashing
- TVs and PCs
- lighting
- cooking

2021
2050

Residential and commercial overall energy intensity by end use
AEO2022 Reference case

- space heating
- other uses
- water heating
- space cooling
- refrigeration
- ventilation
- computers/office equip.
- lighting
- cooking

2021
2050

Note: Intensities reflect all energy sources consumed, including both purchased electricity and electricity produced onsite for own use.

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Residential and commercial electricity intensity by end use

Residential electricity intensity by end use
AEO2022 Reference case
- space heating
- other uses
- water heating
- space cooling
- refrigeration and freezing
- laundry and dishwashing
- TVs and PCs
- lighting
- cooking

2021
2050

Commercial electricity intensity by end use
AEO2022 Reference case
- space heating
- other uses
- water heating
- space cooling
- refrigeration
- ventilation
- computers/office equipment
- lighting
- cooking

2021
2050

Note: Intensities reflect both purchased electricity and electricity produced onsite for own use.

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Commercial building end-use intensities
Indexed commercial service provided per square foot of floorspace

AEO2022 Reference case

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
Residential and commercial onsite generation versus purchased electricity

Residential sector electricity consumption
AEO2022 Reference case
quadrillion British thermal units

Commercial sector electricity consumption
AEO2022 Reference case
quadrillion British thermal units

Residential electricity use and miscellaneous electrical loads

Electricity consumed to meet residential end-use demand
AEO2022 Reference case
quadrillion British thermal units

Characterized miscellaneous electric loads in the residential sector
AEO2022 Reference case
quadrillion British thermal units

Note: The other MELs category includes aggregated energy use for end uses not explicitly characterized in the right-hand chart, as well as unspecified electricity consumption.

Commercial electricity use and miscellaneous electrical loads

Electricity consumed to meet commercial end-use demand
AEO2022 Reference case
quadrillion British thermal units

Characterized miscellaneous electric loads in the commercial sector
AEO2022 Reference case
quadrillion British thermal units

Note: The other MELs category includes aggregated energy use for end uses not explicitly characterized in the right-hand chart, as well as unspecified electricity consumption.

Residential and commercial solar photovoltaic generation capacity

Residential solar distributed generation capacity
AEO2022 Reference and side cases
gigawatts direct current

2021

2020          2030          2040           2050

Commercial solar distributed generation capacity
AEO2022 Reference and side cases
gigawatts direct current

2021

2020          2030           2040           2050

Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022)
www.eia.gov/aeo
Commercial distributed generation capacity

Commercial distributed generation capacity
AEO2022 Reference case
gigawatts direct current

2020 2030 2040 2050

- natural gas-fired combined heat and power
- municipal solid waste/other
- wind
- solar

Commercial non-solar distributed generation capacity
AEO2022 Reference case
gigawatts direct current

2020 2030 2040 2050

- microturbines
- natural gas-fired engines
- fuel cells
- natural gas-fired turbines
- municipal solid waste/other
- wind

Residential and commercial lighting consumption and lighting shares

Electricity consumed to meet lighting demand
AEO2022 Reference case
quadrillion British thermal units

- Commercial lighting
- Residential lighting

Lighting shares by type
AEO2022 Reference case

- Residential sector
- Commercial sector

Note: Includes both purchased electricity and onsite generation for own use.