

Trends in Renewable Energy



for

Renewable Energy: Technology, Trends, and Economics

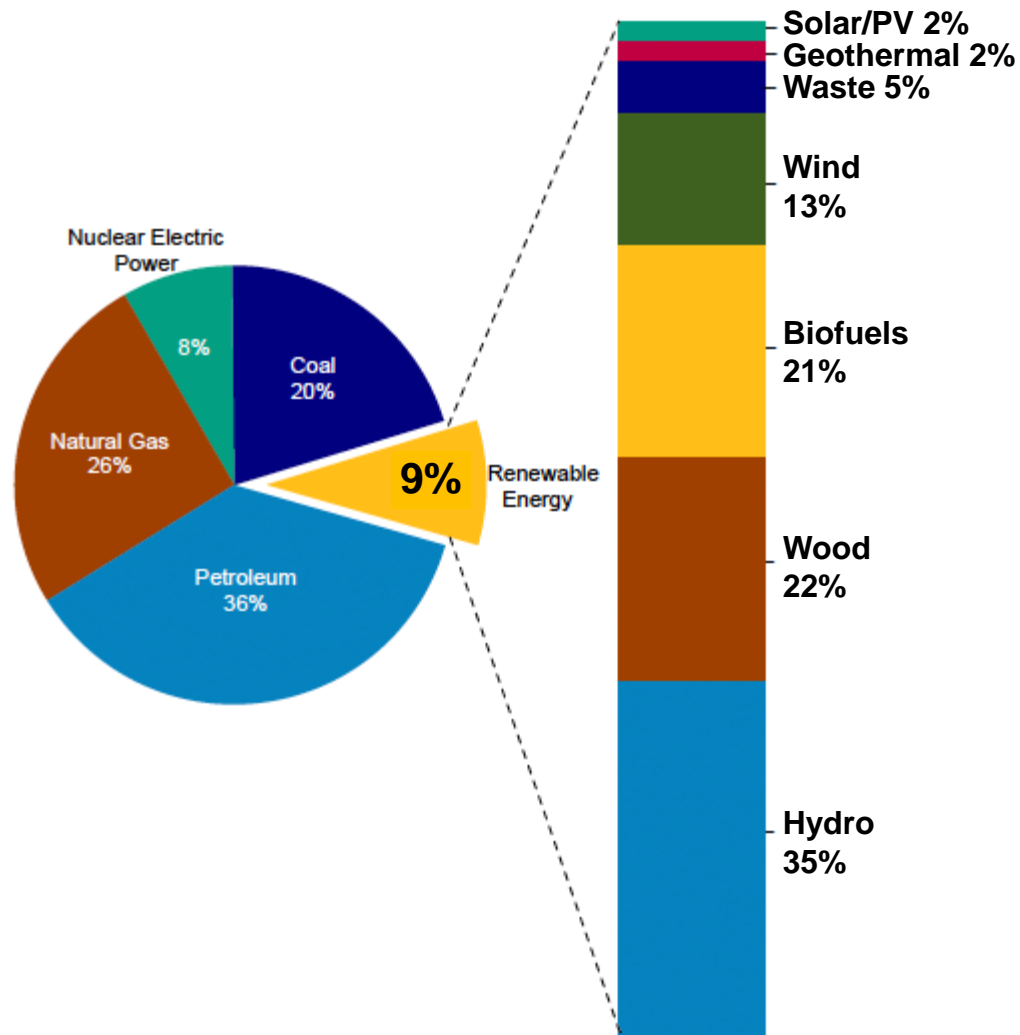
EESI/ACORE

February 5, 2013 Washington, D.C.

by

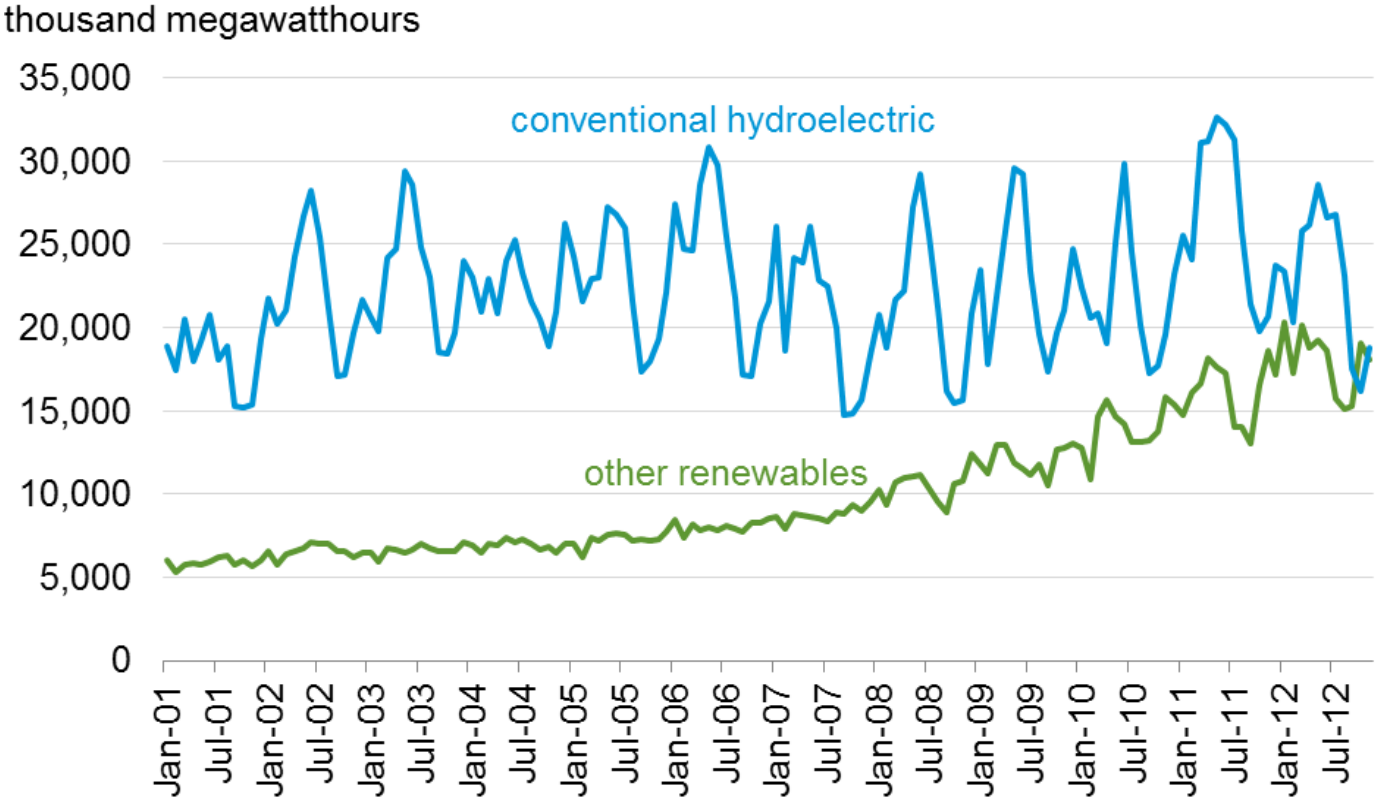
Shirley Neff, Senior Advisor

U.S. primary energy consumption, 2011



Source: EIA, Annual Energy Review 2011

Electricity generation from conventional hydroelectric and other renewable sources, 2001-2012

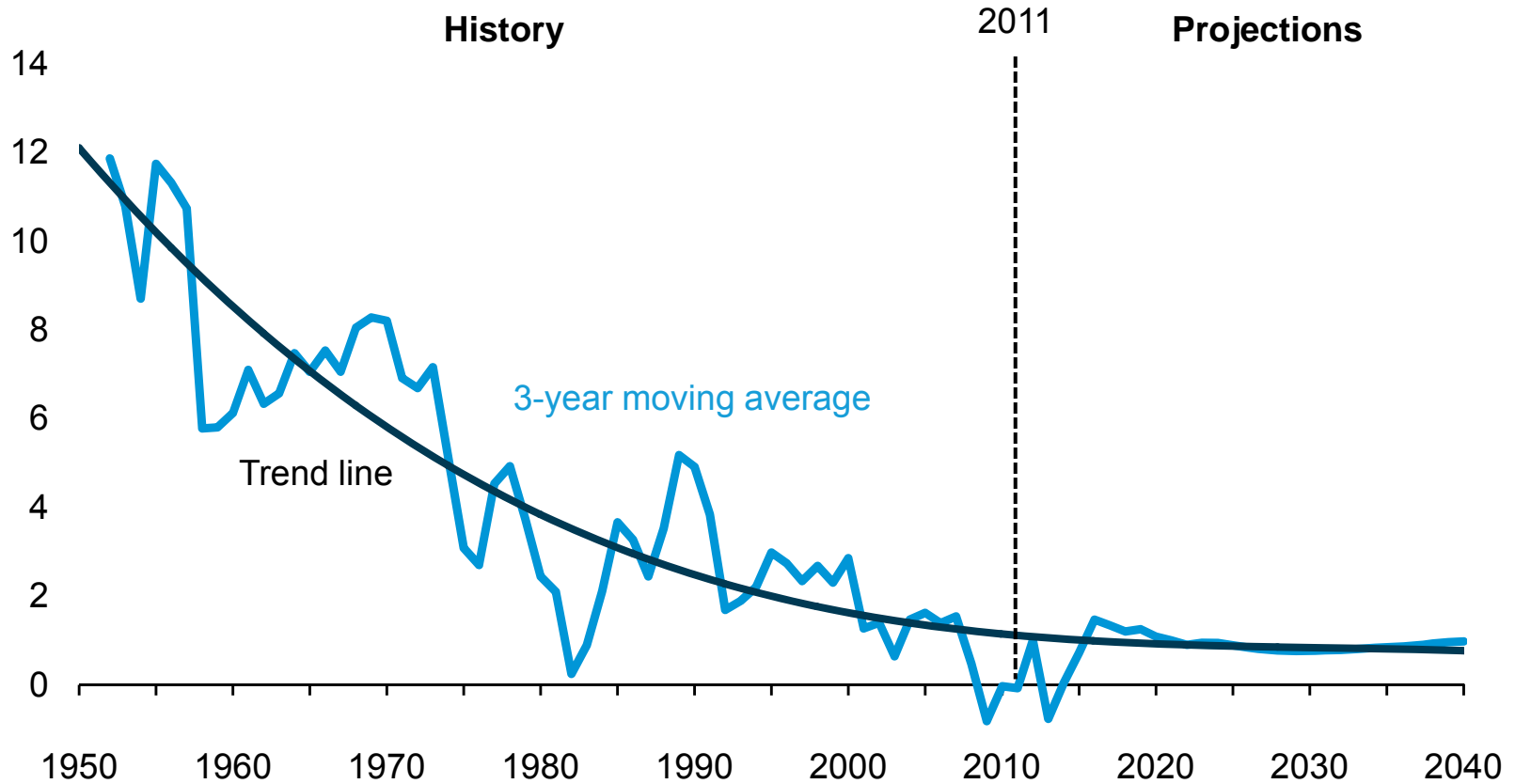


Source: U.S. Energy Information Administration, Electric Power Monthly

Note: Data for 2012 are preliminary. Other renewable sources include wood, black liquor, other wood waste, biogenic municipal solid waste, landfill gas, sludge waste, agriculture byproducts, other biomass, geothermal, solar thermal, photovoltaic energy, and wind.

U.S. electricity demand growth, 1950-2040

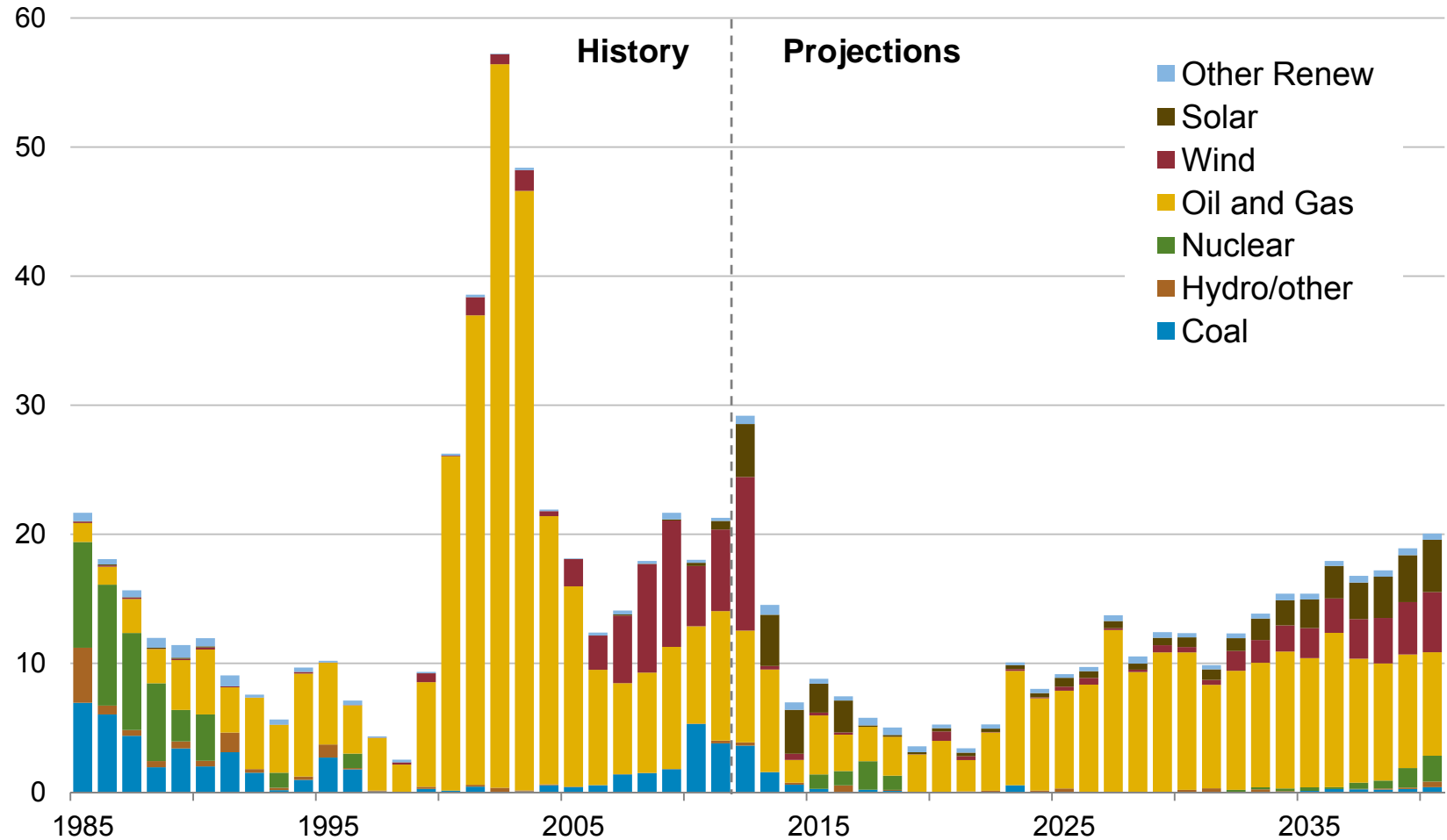
percent, 3-year moving average



Source: EIA, Annual Energy Outlook 2013

Additions to U.S. electricity generation capacity, 1985-2040

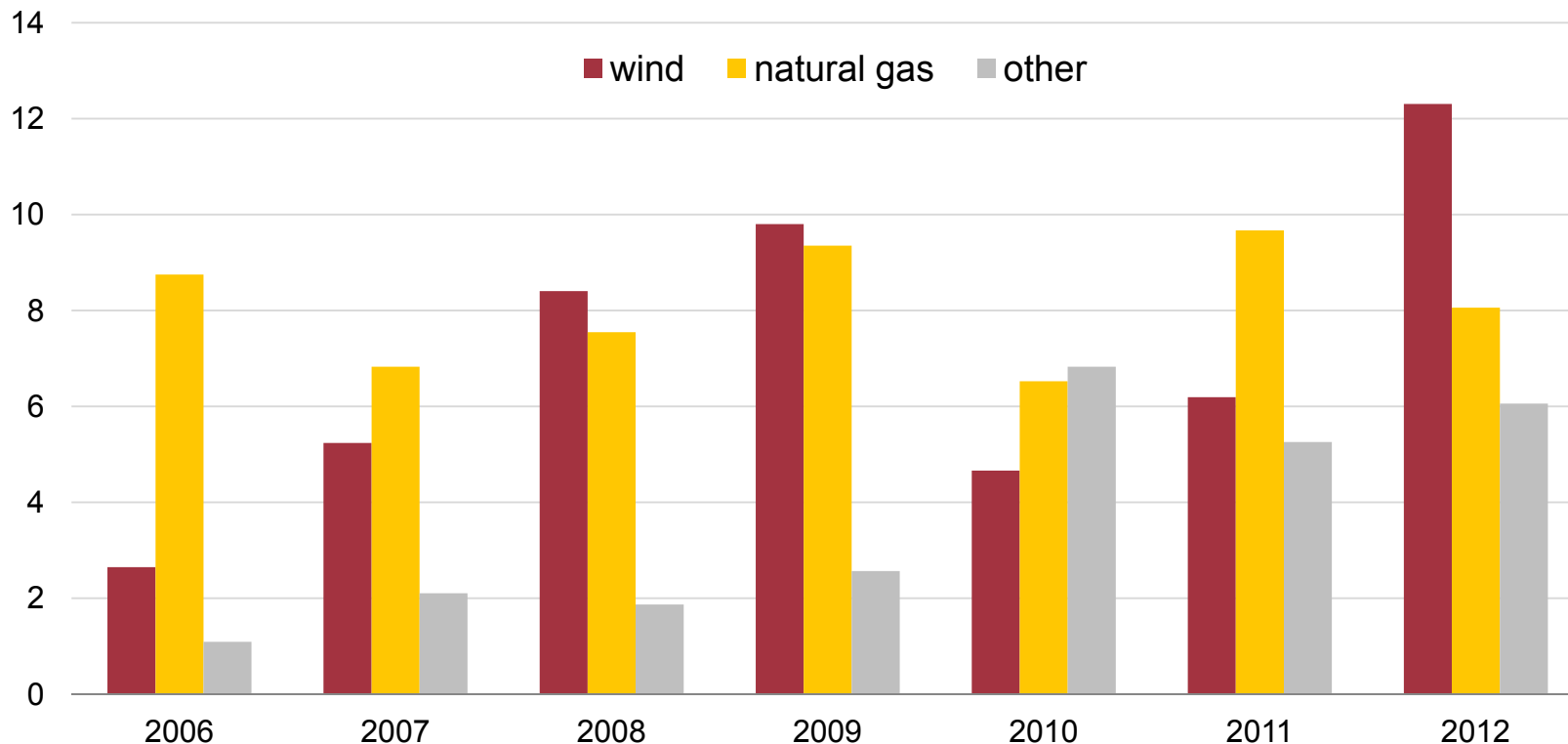
gigawatts



Source: EIA, Annual Energy Outlook 2013

Wind electricity generation capacity additions outpaced natural gas in 2012

*U.S. electricity generation capacity additions
gigawatts*

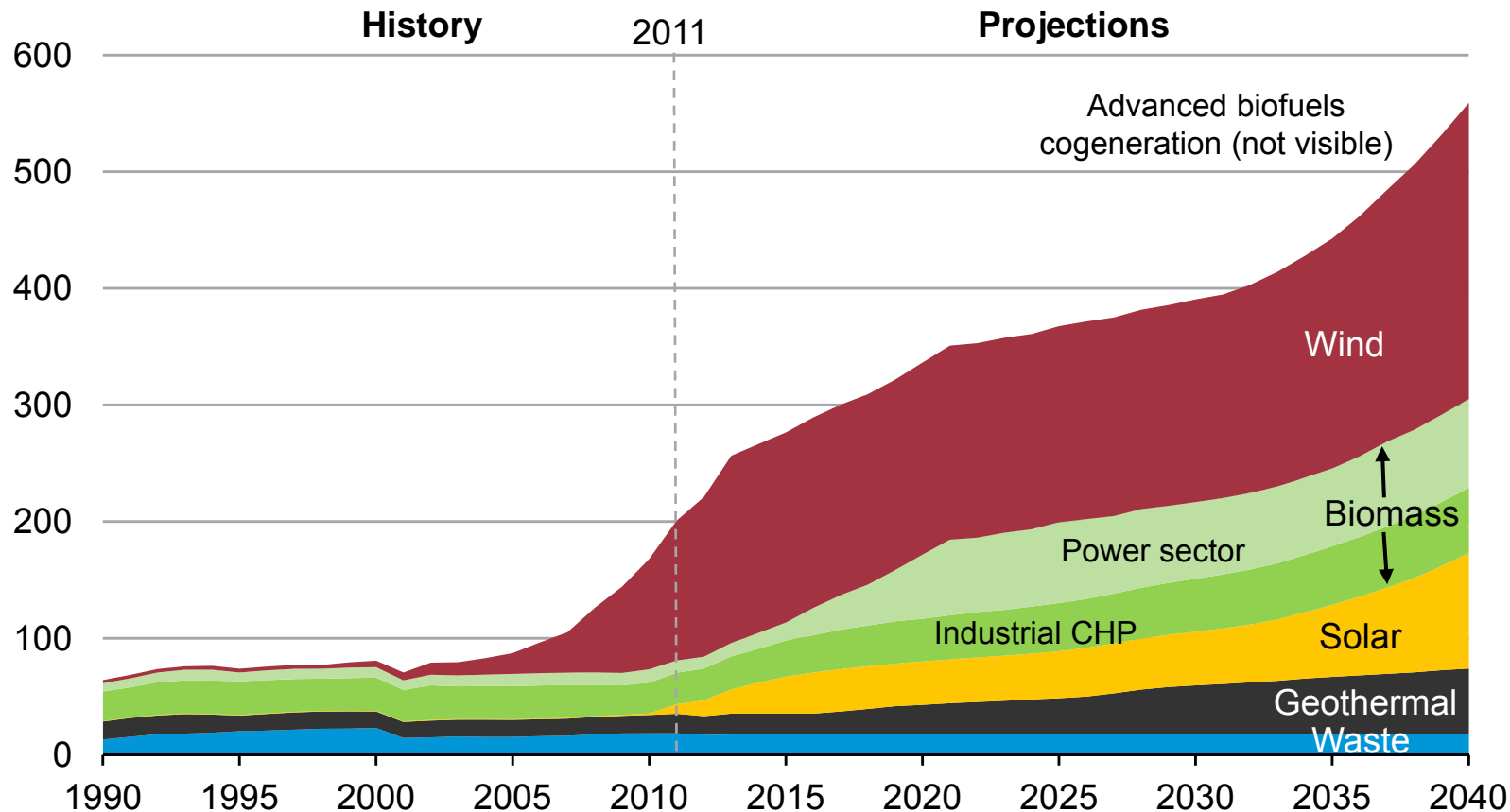


Source: U.S. Energy Information Administration, Annual Electric Generator Report (Form EIA-860) and Monthly Update to the Annual Electric Generator Report (Form EIA-860M)

*Note: The 2006-2011 data are final while the 2012 is preliminary.

Non-hydro renewable generation more than doubles between 2011 and 2040

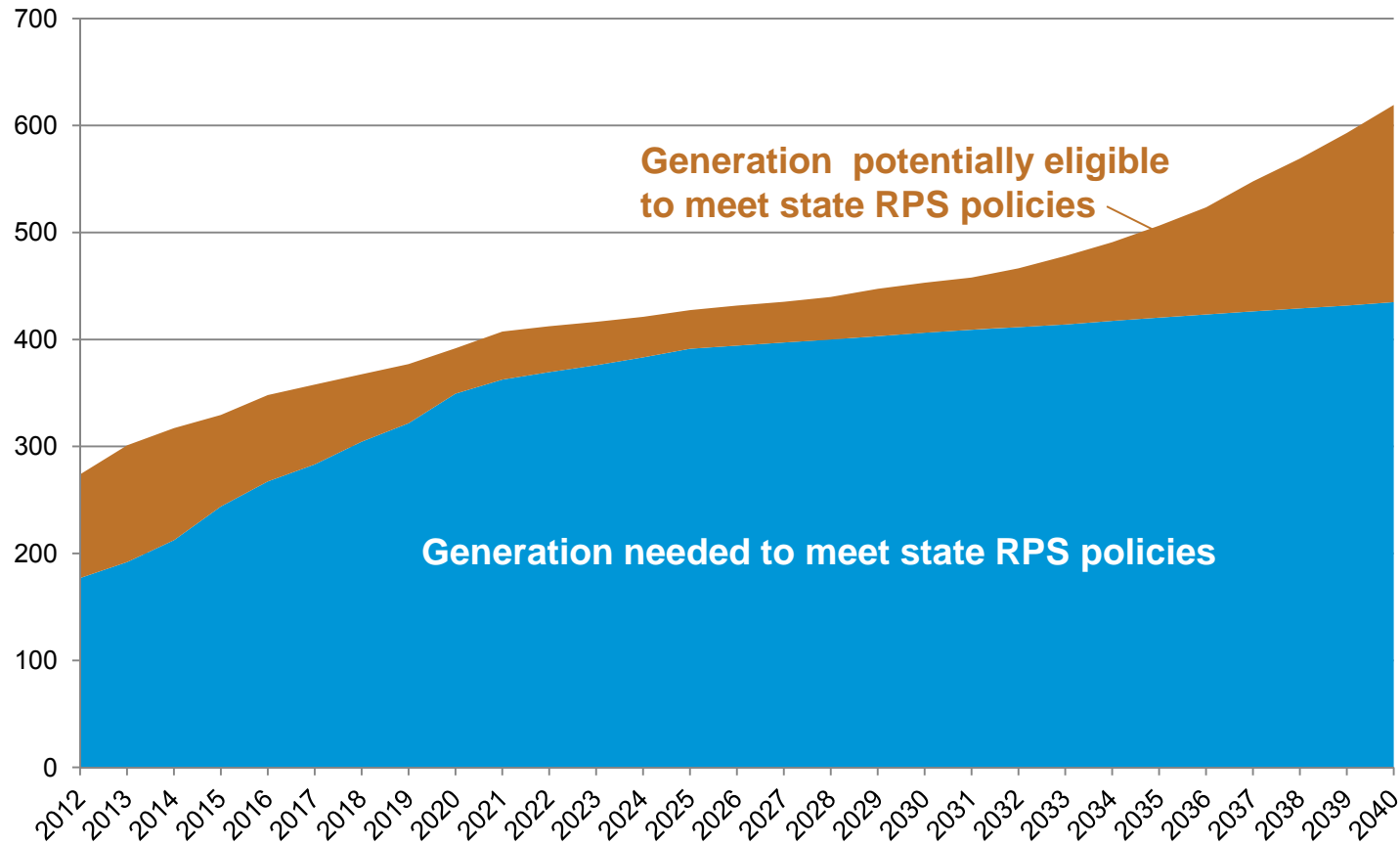
*Non-hydropower renewable generation
billion kilowatthours per year*



Source: EIA, Annual Energy Outlook 2013

Renewable generation is added beyond that required to meet state RPS policies

RPS qualified generation
billion kilowatthours per year

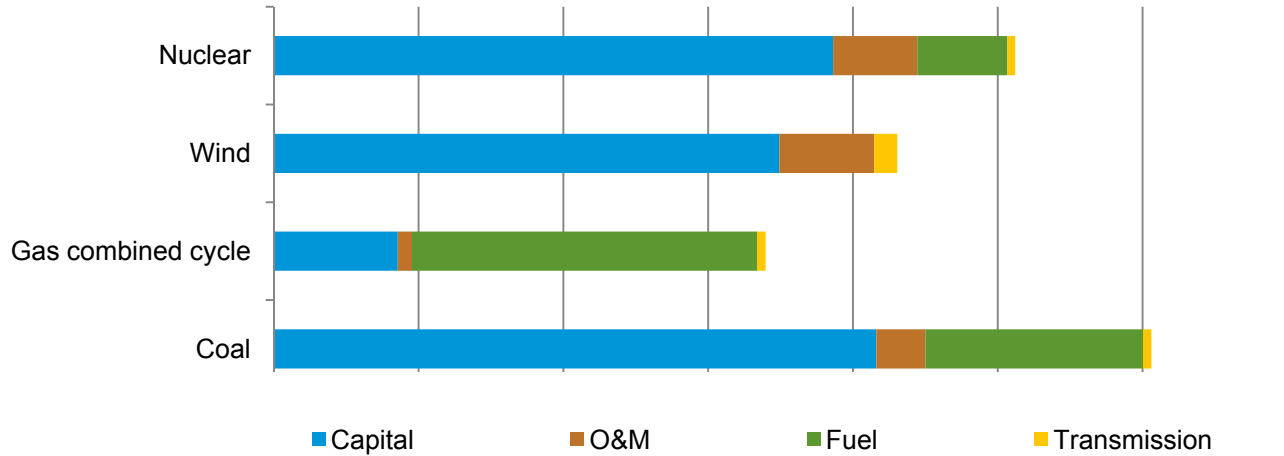


Source: EIA Annual Energy Outlook 2013

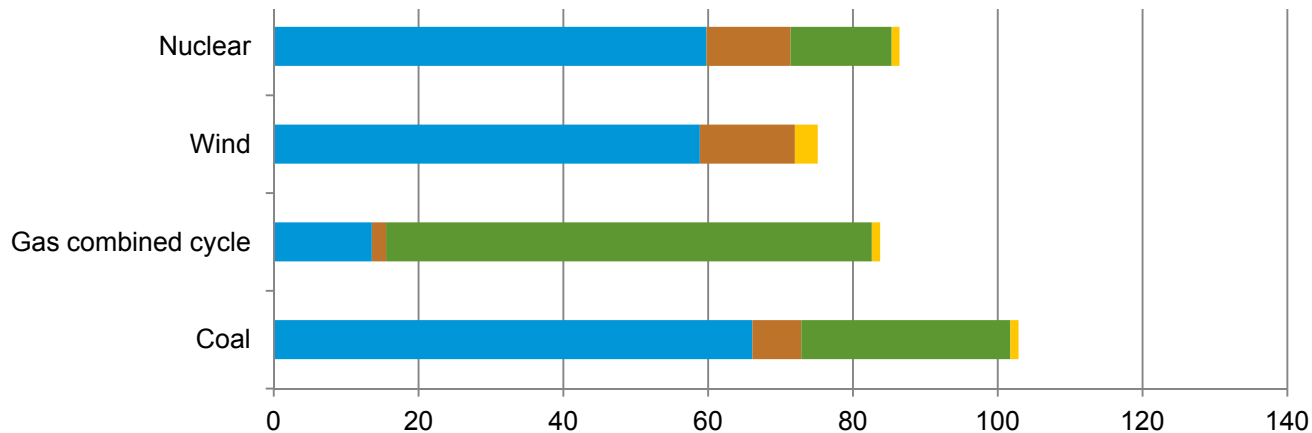
Levelized electricity costs for new power plants, excluding subsidies, 2020 and 2040

costs for new U.S. electricity power plants
2011 dollars per Megawatthour

2020



2040



Source: EIA, Annual Energy Outlook 2013

EIA renewable & storage capacity data collection

EIA-860 – Respondents own/operate/represent an electric generator/power plant

Total facility capacity $\geq 1\text{MW}$ or greater (facility, not individual generating units). Detailed data on individual generators collected. Facility is grid connected (can take energy from or deliver energy to the grid, but does not normally have to do either one to be a respondent).

EIA-861 – Respondents are utility/distco/EDC who report behind-the-meter/distributed/small generators (3 distinct buckets)

Net metering bucket – If there is a net metering arrangement in place, report all net-metered generators as long as the facility is 2MW or smaller, with these breakouts: state location, sector breakdown (residential, commercial, industrial, transportation), and technology type (photovoltaic, wind and other).

Distributed generation bucket – For commercial and industrial facilities $< 1\text{MW}$, if there is a generator interconnection agreement, capacity and # of installations reported in aggregate with these breakouts: state location, sector breakdown, and technology type (internal combustion/reciprocating engines, combustion turbines, steam turbines, hydroelectric, wind turbines, photovoltaic, storage, other), and whether the generator is used for backup only

Dispersed generation bucket - Similar to distributed generation, but with no generator interconnection agreement.

New bucket: Facilities 1MW or greater, but not grid-connected. We do not collect data on this situation on any survey, but this instance is probably very unlikely.

For more information

U.S. Energy Information Administration home page / www.eia.gov

Short-Term Energy Outlook / www.eia.gov/steo

Annual Energy Outlook / www.eia.gov/aeo

International Energy Outlook / www.eia.gov/ieo

Monthly Energy Review / www.eia.gov/mer

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