Summary of NEEDS rev: 01-04-2024

The National Electric Energy Data System (NEEDS) database contains the generation unit records used to construct the "model" plants that represent existing and planned/committed units in EPA modeling applications of IPM. NEEDS includes basic geographic, operating and air emissions related parameters, and other data on these generating units. This document highlights the changes made, where information was gathered, and a detailed summary comparing the previous version, namely NEEDS rev 08-07-2023, and the latest version, namely NEEDS rev 01-04-2024.

NEEDS rev 01-04-2024 is a new bottom-up update of the generating unit inventory. Major updates have been summarized below.

Creating the NEEDS rev 01-04-2024 Inventory

The NEEDS inventory is based on the 2021 EIA Form 860 Annual and the January 2023 EIA Form 860 Monthly. The capacity of nuclear units was based on AEO 2023.

The retirements and coal-to-gas conversions were retained from the previous version of NEEDS with additional updates based on public comments and EPA/ICF research. Updates reflected in the NEEDS Comment Tracker and Change Log versions from February 2023 and August 2023 were also incorporated.

Committed new units for solar PV, onshore wind, energy storage, combined cycles, and combustion turbines were included based on the August 2023 EIA Form 860M, public comments, and ICF/EPA research. Committed units for all other technologies were included based on the January 2023 EIA Form 860M, public comments, and ICF/EPA research. Planned battery, solar, and wind units with the following project status flags from August 2023 EIA Form 860 were included:

Status	Plant Types Included
(L) Regulatory approvals pending. Not under construction	Solar, wind, and battery
(P) Planned for installation, but regulatory approvals not initiated	Solar, wind, and battery
(T) Regulatory approvals received. Not under construction	Solar, wind, and battery

Updates to Modeled Fuels

Units capable of using hydrogen were identified and had hydrogen added as a modeled fuel.

Updates to Emissions and Environmental Controls

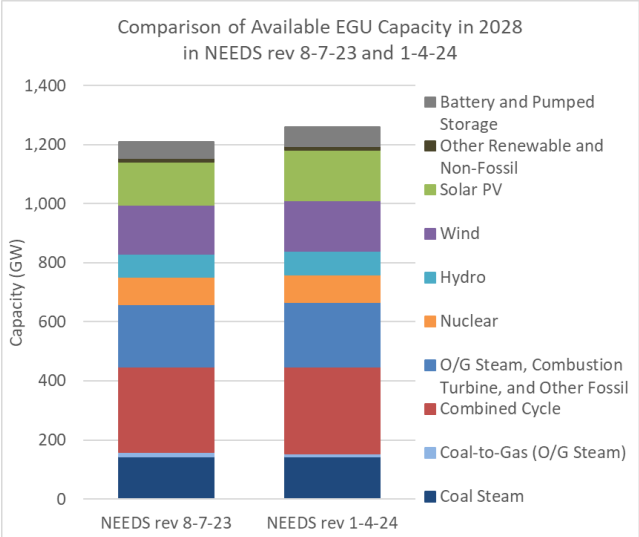
The FGD, SCR, SNCR, PM, and ACI controls were updated based on the 2022 Emission Tracking System (ETS, or Clean Air Markets Program Data, CAMPD) were incorporated.

Updating Unit NO_X Rates to Reflect State Environmental Regulations

Unit NO_X rates were adjusted, as appropriate, to reflect the requirements from the Connecticut, New York, and Pennsylvania RACT rules. Additional unit NOX rate adjustments were made to reflect state NO_X regulations in Alabama, California, Delaware, Kansas, Massachusetts, Maryland, Rhode Island, and Utah.

Net Capacity Changes

Figure 1 (left) shows the available capacity by plant type in 2028 for NEEDS rev 08-07-2023 and rev 01-04-2024. Figure 2 (right) shows the change in capacity by plant type between those two versions of NEEDS. In total, there were 52 GW of net capacity additions to NEEDS hardwired in the latest version of NEEDS incremental to the previous version.



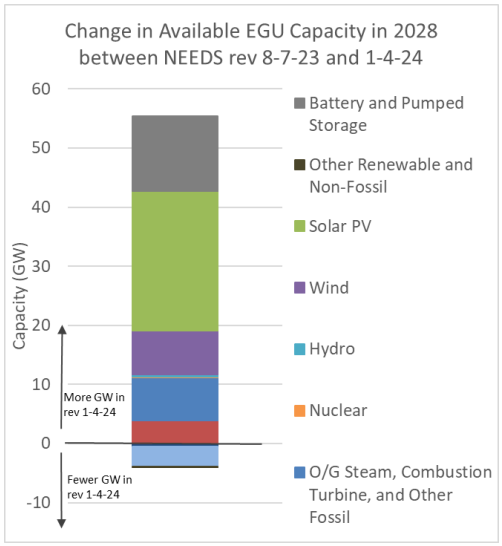


Figure 1 (left) and Figure 2 (right).

Figure 3 shows the capacity of the active coal fleet in NEEDS for each year starting in 2028, broken out by age (under or over 50 years old, with shifting categories as they reach 50 years old) and coal-fired capacity converted to gas (including only conversions that are set to occur in 2024 or later. Units converted to gas prior to 2024 were not included in this graph. Units that have a future decision to either convert to gas or retire were assumed to convert to gas). This figure is not a projection of future coal capacity but rather a representation of the coal capacity based on known retirements and gas conversions.

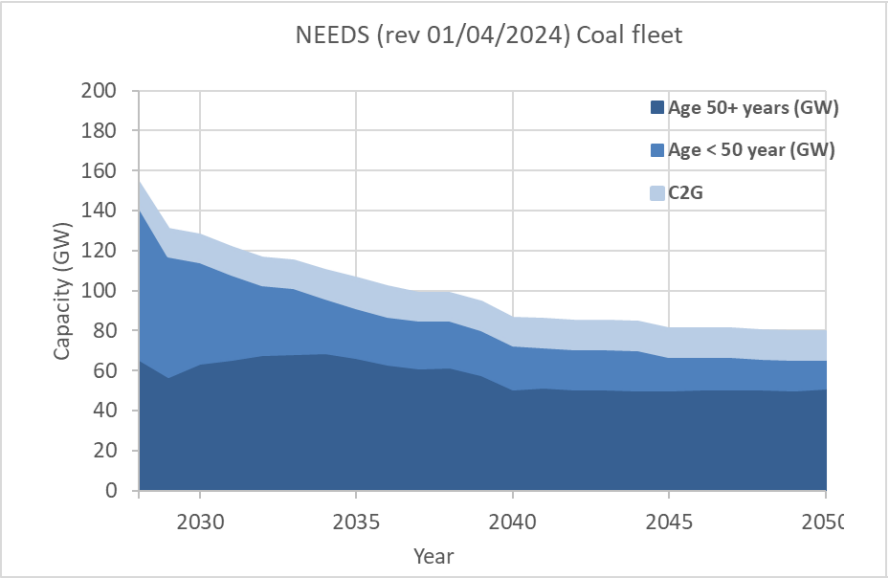


Figure 3. Coal fleet capacity over time based on retirements and gas conversions included in NEEDS rev 01-04-2024.