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Method to Prioritize Coal Unit Dispatch

Introduction:

This method is applicable to the construction of power flow or production cost data sets solely for use in the EIPC project funded by DOE grant Number DE-OE0000343. This project formulated certain scenarios that speculate about future conditions and are the result of the macroeconomic modeling work led by the Stakeholder Steering Committee (SSC) and performed as part of the grant. Some of these study futures may require restrictions to total fossil resource production based on study inputs provided by the SSC. For three futures that are chosen for further analysis in phase II it is necessary to "map" the generation units available in the macroeconomic futures to power flow models. This document outlines procedures that will be used in this exercise.

The following mapping process recognizes the objective and scope of the phase II activities. The objective is to develop conceptual transmission options for a range of possible futures. These futures represent various policy directions by the year 2030. The length of this planning horizon and the inherent high uncertainty levels associated with various input assumptions leads to more focus on higher voltages and interregional analysis. The details of more granular level analysis would very likely become more evident as the inherent uncertainties resolve over time. The following process therefore is consistent with this project's objective and scope.

Information Sources:

MRN-NEEM model results
EIA 411 (for example, PJM data can be found on pjm.com)
EIA 860 (publicly available)
EPA NEEDS database (latest version is 4.10 used in HAP MACT rule analysis)
EPA Clean Air Markets Division database of unit emissions and installed controls

A. To the extent MRN-NEEM results indicate specific large coal unit (200 MW or larger) deactivations: these will be set to inactive in power flow and production cost models.
B. Deactivation of small unit results (below 200 MW for coal as well as other fossil units) will be developed from MRN-NEEM output as aggregate MW in various capacity tranches, by NEEM region. These tranches will be developed in consultation with the MRN-NEEM consultant to be consistent with the priorities outlined in the following sections of this document. The appropriate levels of MRN-NEEM small unit deactivations by NEEM region for each future will be applied to the power flow and production cost models by aggregate scaling of the active and reactive power components as applicable.
C. To the extent MRN-NEEM results do not provide sufficient specific deactivation information to meet the scenario construction needs, as a last resort, the following process will be available:
    1. First Stack of unit deactivations:
        a. Units greater than 40 years old and less than 400 MW deactivated in order of increasing MW capability beginning with the small MW capability first that do not have SCR for NOx, DSI or FGD for SO2 and acid gas control, Fabric Filter (FF) baghouse for particulates;

b. Then take out units that do not have SO2 controls and FF (in order of smaller to larger size)
c. Then take out units that do not have SCR and FF (in order of smaller to larger size)
d. Then take out units that only need one of the three controls (in order of smaller to larger size)

2. Second Stack of unit deactivations: Newer, larger, remaining units ordered by an estimate of the expense to retrofit ($/MW) deactivated in order of decreasing expense to retrofit beginning with the highest retrofit expense per MW
   a. Units with no pollution control retrofits assumed to be most expensive. Units that do not have SCR for NOx, DSI or FGD for SO2 and acid gas control, Fabric Filter (FF) baghouse for particulates. Smaller units in this class are assumed to have least economy of scale. Order the "no control" units from smallest to largest retiring the smallest first.
   b. Units lacking SO2 control and but having one other control such as SCR or FF are assumed next most costly to retrofit. Smaller units in this group are assumed to have least economy of scale. Order the "no SO2 control" units from smallest to largest retiring the smallest first.
   c. Units lacking one of the remaining controls: Units that have SO2 control but lack either SCR or NOx controls. Smaller units in this group are assumed to have least economy of scale. Order the "SO2 controlled" units from smallest to largest retiring the smallest first.
3. Third stack of unit deactivations: Units with all above retrofits. Smaller units in this group assumed to have least economy of scale. Order the units from smallest to largest retiring the smallest first.

D. Exceptions for data issues, or other agreed upon justification, will be addressed case-by-case.