

MRN Modeling in Remaining Futures

The NEEM model represents the electric sector. The MRN portion of the MRN-NEEM model solves for feedbacks between the electric sector and the rest of the economy when a new policy is implemented, such as carbon control. From a NEEM electric sector perspective, the key feedback items received from MRN are changes to electricity demand and natural gas prices resulting from the policy change.

As a general matter, MRN is run for the Base Case of each Future, with subsequent sensitivities run in NEEM using the MRN-derived electricity demand and natural gas prices from the Base Case.

Completed Futures:

Future 1: MRN was set-up to equilibrate to AEO 2011 (early release) for the non-electric sectors of the economy as the starting baseline.

Future 2: MRN was equilibrated with NEEM to solve for the carbon prices that met the 2030 and 2050 U.S. economy-wide CO₂ emission reductions specified by the SSC. The resulting equilibrium carbon prices yielded changes in natural gas prices and electricity demands in NEEM.

Future 3: The Future 2 carbon prices, natural gas prices and electricity demands from the Future 2 MRN run were used in Future 3, to allow for a more direct comparison between Future 2 and Future 3 cases (rather than try to evaluate case differences that also include the impact of changes in carbon prices, electricity demand and natural gas prices between these regional and national Futures).

Future 4: Future 4, with aggressive energy efficiency, has an assumed significant decline in electricity demand growth from the BAU. The MRN model would see this decline as necessitating a decline in GDP. After technical discussions with the MWG, it was recommended that the BAU MRN inputs be used in the modeling of the Future 4 cases to mitigate this concern.

Future 5: MRN was equilibrated with NEEM for F5B (national RPS), and yields a decrease in gas prices and a small decrease in electricity demands from the BAU.

Remaining Futures:

Future 6: Like Futures 2 and 3 above, to allow a more direct comparison between Future 5 (national) and Future 6 (regional) cases, the Future 5 gas prices and electricity demands from the Future 5 MRN run are used in Future 6.

Future 7: MRN is being equilibrated with NEEM for F7B to yield revised gas prices and electricity demands in NEEM (minor changes expected).

Future 8: MRN is being equilibrated with NEEM for F8B yield revised gas prices and electricity demands in NEEM (per the SSC, Future 2 carbon prices are used in Future 8).