

Frequently Asked Questions about the PJM Economic Analysis of the EPA Clean Power Plan Proposal

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Q Are the numerical results of the PJM economic analysis a forecast of future prices and costs under the Clean Power Plan?

A No. PJM's analysis should be used to see directional changes in prices, costs and generation outcomes resulting from various state-chosen implementation scenarios under the EPA's proposed rule, rather than specific numerical results. The PJM numerical modeling results depend heavily upon input assumptions regarding fuel costs, levels of energy efficiency and renewable resources, retention of existing nuclear resources and available new entry combined-cycle natural gas. Moreover, the final form of the rule and how states determine to comply both will influence the actual effects of the Clean Power Plan. As PJM evaluated 17 potential future scenarios at three different points during the 10-year compliance period, PJM assessed trends, resulting in a range of possible outcomes from the Clean Power Plan.

Q Can any reliability conclusions be derived from PJM's economic analysis?

A Not at this time. Because it is an economic analysis, no reliability conclusions can be drawn with respect to resource adequacy or the need for transmission upgrades. The economic results look at price and cost impacts using energy market modeling alone. Moreover, assessment of existing fossil-steam generation net revenues was performed to determine the amount of capacity that potentially could be at risk to retire to use as an input into reliability analyses currently underway. The results of this analysis should be available in the spring of 2015. In the interim, any conclusions about reliability are premature.

Q Does this analysis or the reliability analysis that is underway mean that the reliability of service to consumers will be affected?

A No. PJM's mission is to ensure the reliability of the grid. We have a number of tools ranging from our forward capacity market to our ability to order transmission upgrades as well as a host of operational tools to ensure that reliable service can be maintained. To the extent that the proposed EPA rule may make it harder to meet those goals, PJM, working with other grid operators, has proposed to EPA a reliability safety valve to ensure adequate, upfront reliability reviews and tools to seek targeted delays in implementation of state plans if specific reliability violations are identified during plan development or implementation. The reliability safety valve proposal is embodied in the comments filed by the [ISO/RTO Council](#) as well as [PJM](#).

Q Does the report's identification of generating units at risk for retirement mean there is a reliability problem for PJM?

A No. One needs to look at the cumulative impact both of resource additions and generator retirements as well as load levels to make any conclusions. Looking at plant retirements alone is only half of the story. Since 2007, PJM's capacity markets have helped to attract about 35,000 MW of additional generation. Although approximately 26,000 MW of generation will have retired between 2009 and 2016, the PJM Capacity Market has procured sufficient resources to maintain reliability.

Q What analyses currently are being completed to look at the reliability implications resulting from the proposed Clean Power Plan?

A With respect to transmission reliability, PJM is using the Energy Market results from the economic analysis, which determined a range of generation capacity at risk for retirement, to examine the transmission reliability implications using a standard transmission planning analysis approach. The PJM economic analysis is an input into the transmission reliability study; PJM also will look at the projected capacity adequacy when assessing reliability.

Q Does identifying an amount of capacity at risk for retirement mean that the generating units actually will retire?

A No. The PJM economic analysis only examines energy market outcomes and identifies units that may not fully recover their on-going costs in the Energy Market. Individual owners would look at many factors, including expected future market conditions and potential capacity revenues, in making a decision to retire a generator.

Q Does PJM's economic analysis show significant generation retirements and increases in wholesale energy market prices at the beginning of the interim 2020-2029 compliance period?

A The level of capacity at risk for retirement and wholesale price increases in the early part of the initial compliance period depends upon the deployment of energy efficiency and renewable resources and the retention of existing nuclear capacity. The scenarios show a wide range of possible outcomes regarding potential retirements and increase/decreases in wholesale energy prices during the interim period.

Q What are the impacts of (1) renewable resource development that are considerably below renewable portfolio goals in the PJM states, (2) energy efficiency at levels well below those assumed by the EPA in its goal computation and (3) retirements of some portion of the existing nuclear resources?

A The level of capacity at risk for retirement would be at the higher end of PJM modeling results and wholesale energy prices would increase relative to the PJM transmission planning case. Scenarios with the lowest level of zero-emitting sources suggest significant opportunities for new resources.

Q What are the effects of resource retirements that occur between the 2012 baseline year and 2020?

A PJM's analysis shows the mass-based targets in 2020, using the EPA's Nov. 6, 2014, guidance, would be slightly below the 2012 baseline emissions when units in the baseline scheduled for retirement are accounted for. The 2012 baseline emissions, 442 million short tons, falls to 392 million short tons after removing the contribution from the retiring generation, compared to the 2020 mass-target of 387 million tons. The load previously served by resources scheduled to retire will be served by a mixture of resources that are covered by the policy and that are not covered by the policy.

Q What are the assumptions behind the so-called “worst-case” scenario for the 49,000 MW of capacity at risk for retirement?

A The worst-case scenario assumes much lower energy efficiency than the EPA assumptions used in the goal computation, significantly lower renewable resource development than suggested by renewable portfolio standard goals in PJM states, loss of 50 percent of existing PJM nuclear capability, and/or 50 percent higher natural gas prices.

Q What is the lowest level of capacity at risk in PJM modeled scenarios, and what are the assumptions behind this value?

A PJM modeling estimates the low end of capacity at risk for retirement is 6,200 MW based on resources that are categorized as at risk in all PJM modeled scenarios. The 6,200 MW are categorized as at risk for retirement based on the resources' additional revenue requirements relative to the net cost of new entry. These 6,200 MW of resources possibly could be at risk for retirement even in the absence of the Clean Power Plan.

Q In the State-Level Detail analysis accompanying the PJM economic analysis, wholesale energy prices are lower under many of the Clean Power Plan OPSI-requested scenarios than in the PJM transmission planning case. What drives this result?

A PJM analyzed the potential economic impacts of the Clean Power Plan proposal at the request of the Organization of PJM States, Inc., which provided many of the assumptions modeled. This result is driven by the differences in assumed energy efficiency and renewable resources in the OPSI-requested scenarios versus the current PJM transmission case. The PJM transmission planning case has much lower levels of energy efficiency and renewables. Load reductions due to energy efficiency or adding more renewable resources into the Energy Market, effectively at a zero variable energy cost, results in lower wholesale energy prices.

Q Why are wholesale energy prices generally lower under regional compliance compared to state-by-state compliance?

A As some states are more limited by their mass-based carbon dioxide targets, less expensive generation in those states are not dispatched in order to achieve the state-level mass targets, forcing more expensive resources in

PJM to be dispatched. Under regional compliance modeling, a lower-cost set of resources can be dispatched, and states whose emissions are below the state-level mass targets offset emissions from other states in which the state-level mass targets are exceeded.

Q Why is the level of capacity at risk for retirement lower under regional compliance compared to state-by-state compliance?

A Under the state-level compliance modeling approach, coal resources in states that face a price on carbon dioxide emissions are financially worse off with lower output and higher running costs than similar units in states that are not limited by their emission targets and, hence, are more at risk to retire. Under regional compliance modeling, all resources face the same carbon dioxide price, and states under their mass targets help offset those states exceeding their mass targets, allowing coal resources to operate more and at lower cost.

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