

The Results in Context:

**A Peer Review of EEI's "Potential Impacts of Environmental Regulation on the U.S.
Generation Fleet"**

Summary

May 2011

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Summary

In January of 2011, the Edison Electric Institute ("EEI") released a report entitled "Potential Impacts of Environmental Regulation on the U.S. Generation Fleet" ("Report") focusing on possible impacts of federal environmental laws and regulations on the electric power industry. Recently, the Report was cited in testimony before the United States House of Representatives Energy and Commerce Committee, and in a variety of other forums, to support the claim that new environmental regulations will trigger as much as 70-80 GWs of coal plant retirements by 2015¹. This peer review analysis evaluates the Report's findings in light of the actual proposed Utility Air Toxics and cooling water intake regulations which the Environmental Protection Agency ("EPA") released in March 2011, two months after EEI issued the Report. **We conclude that the Report was based upon worst-case assumptions which have not materialized and upon climate change legislation never enacted into law.**

The Report does not adequately distinguish between the non-environmental drivers of changes in the electricity industry and the various EPA rulemakings. There is also inadequate discussion of the non-traditional alternatives available to meet system requirements, or of various initiatives underway to strengthen the resiliency and reliability of the electricity network. The Report's excessively conservative and often misleading assumptions affect EEI's modeling results.

¹ See Subcommittee on Energy and Power, Committee on Energy and Commerce, United States House of Representatives Hearing, April 15, 2011, Thomas A. Fanning, Chairman, President, and Chief Executive Officer, The Southern Company, Transcript at line 2112, p. 104.

There is one reference case and 9 scenario runs in the Report². We reproduce the Report's Table 1³ and annotate it with information on these assumptions.

**Table 1 –
Summary of Scenarios
Modeled by EEI with Estimated Coal Plant Retirements:
Reasonable V. Unreasonable Scenarios**

National Coal Retirements (GW)

GW of Retirements due to market fundamentals, not EPA regulations

GW of Retirements due to EPA regulations

Run	Scenario	Planned Coal Retirements		Unplanned Coal Retirements		Total Coal Retirements		Incremental Coal Retirements	
		2015	2020	2015	2020	2015	2020	2015	2020
1	Reference Case	6	16	19	22	25	0	0	
2	Scenario 1	6	50	50	56	56	30	31	
3	Scenario 1 + Alt Air	6	41	41	46	46	24	21	
4	Scenario 1 + Alt Water	6	49	50	55	55	33	30	
5	Scenario 2	6	73	90	79	95	57	71	
6	Scenario 2 + Alt CO2	6	66	73	71	79	50	54	
7	Scenario 2 + Alt Air	6	64	77	70	82	48	58	
8	Scenario 2 + Alt Ash	6	75	96	81	101	59	76	
9	Scenario 2 + \$1.50 Gas	6	47	56	52	61	31	37	
10	Scenario 2 + \$3.00 Gas	6	33	36	38	41	17	17	

The shaded rows contain unrealistic assumptions, summarized below:

1. That Waxman-Markey climate bill is enacted and goes into effect by 2016 with a \$26/ton carbon price (all Runs except #1, #2, #3, #4)
2. That EPA water regulations impose a "one-size-fits all" requirement that all coal plants over a certain size need a cooling tower (all Runs except #1 and #4)
3. That all coal plants would have to install a scrubber rather than use lower-cost control technologies (all Runs except #1 and #3)

Source of underlying table: Table 1 from the EEI Report, with annotations by authors Tierney & Cicchetti

Although not apparent from the labels used for the different scenarios, all of the facility retirement scenarios contain one or more of the following assumptions that were unreasonable at the time that EEI's consultants conducted their study: (1) that the Waxman-Markey climate change bill passed both houses of Congress, *despite the fact that the legislation failed over ten*

² The Report includes a reference case and 9 alternative scenarios that reflect different combinations of assumptions regarding EPA regulations and natural gas prices. The six scenarios that reflect a carbon price are the Report's Scenarios: "2"; "2+Alt CO2"; "2+Alt Air"; "2+Alt Ash"; "2+\$1.50 gas"; "2+\$3.00 gas."

³ See EEI, ICF "Potential Impacts of Environmental Regulation on the U.S. Generation Fleet", January 2011, ("Report") Table 3.1, "National Coal Retirements (GW)", p.11.

*months ago;*⁴ (2) that EPA would impose a one-size-fits-all cooling tower requirement on U.S. power plants over the course of the next decade, *despite the fact that EPA Administrator Jackson confirmed in an December 16, 2010 letter to Congress that EPA rejected a one-size-fits-all approach (a position that now can be seen in the new regulations proposed in March 2011);*⁵ or (3) that industry could not use less costly, alternative technologies and resource options to reduce air toxics emissions *despite the fact that many coal plants already do use these technologies and many utilities now use different options to meet customers' reliability requirements.*

Reliance on so many fundamentally unrealistic assumptions undermines the usefulness of the Report's overall results, since these unreasonable assumptions overstate the impact of environmental regulations. As such, the results could lead policymakers to an unreasonable and unsupported conclusion that Americans must chose between improving the nation's health and affordable, reliable electricity.

Moreover, contrary to some testimony before the House Energy and Commerce Committee, the Report does not support the proposition that new EPA regulations will drive 70-80 GWs of retirements by 2015. Only two scenarios – "Scenario 2" (Run 5 in Table 1) and "Scenario 2 + Alt Ash" (Run 8 in Table 1) – showed more than 70 GWs of incremental retirements by 2020, not by 2015. These scenarios contained all three of the erroneous assumptions described above.

We agree with EEI that competitive pressures from natural gas-fired plants fueled by

⁴ This assumption is in the Report's Scenarios: "2"; "2+Alt CO2"; "2+Alt Air"; "2+Alt Ash"; "2+\$1.50 gas"; "2+\$3.00 gas."

⁵ Report Scenarios: "1"; "1+Alt Water"; "2"; "2+Alt CO2"; "2+Alt Ash"; "2+\$1.50 gas"; "2+\$3.00 gas".

relatively inexpensive shale gas are forcing some inefficient, older coal plants out of business.⁶ This is shown in the Reference Case, estimating that 22 GW of coal plants will retire by 2015 based on current fuel price and other economic assumptions as well as all policies currently on the books (e.g., state mercury regulation, state-based renewable standards, the Clean Air Interstate Rule).

The most reasonable scenario of the 9 modeled in the Report is the "Scenario 1 + Alt Air" (Run No. 3), which predicts 24 GWs of incremental coal retirements beyond the Reference Case. Market forces alone will cause approximately one-half of the retirements (22 GW) under this scenario without any new EPA regulations. To put the incremental 24 GWs into perspective, the U.S. currently enjoys over 100 GWs of excess capacity and has a demonstrated track record of building new capacity⁷ when needed. In just three years between, between 2001 and 2003, electric generators in the U.S. added 160 GWs of new gas-fired generation.⁸ Likewise, the electric industry has a proven track record of timely installing mandated environmental controls. Well over half of the industry already is in compliance and control technology experts have reported that the remaining plants can install controls within the compliance timeline.

To conclude, the Report's scenario assumptions have turned out to be overly aggressive compared to EPA's actual proposed rules, and as a consequence, the Report overstates cost and retirement impacts related to the EPA rules. Nothing in the Report alters our conclusion that the industry is well positioned to comply with the actual regulations on the proposed schedule.

⁶ These retirements are shown in the Reference Case results.

⁷ North American Electric Reliability Corporation ("NERC"), 2009 Long-Term Reliability Assessment: 2009-2018, October 2009.

⁸ Energy Information Administration ("EIA") Annual Electric Generation Report: Form EIA-860, 2008.