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Winter storm Elliott proved fossil fuel plants are an infirm resource

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By Natural Resources Defense Council

The [December storm](#) that brought extreme cold to much of the nation demonstrated—yet again—that fossil fuels fail when electricity is needed most. Coal and natural gas plant outages caused blackouts in North Carolina and Tennessee. We’re now learning that during the same storm, a wave of fossil fuel failures almost caused a much larger disaster for 65 million people in the mid-Atlantic and Midwest.

[PJM Interconnection](#), which maintains the power grid from the Outer Banks to Chicago, thought it was ready. While electricity demand was predicted to be high, PJM entered the storm with a very comfortable 44 percent reserve margin. Having been burned (frozen?) before by inaccurate forecasts during winter weather, PJM operators treated the 126 gigawatt (GW) forecast as uncertain, and scheduled extra generation in case demand was high. For months, PJM had been asking power plant owners to make [extensive preparations](#) for cold weather. All in all, the grid operator started December 23 about as well prepared as we would hope when facing a natural disaster.

Then the bottom fell out.



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As that day and the next wore on, power plant after power plant failed. Many faced equipment failures and dropped offline with little notice to PJM. By Christmas Eve, an astonishing 46 GW of power plants were out of service—enough to power California. What did nearly all these plants have in common? They were powered by fossil fuels, mostly gas. PJM reported failures across the gas system, including low pressure, frozen compressors, and simply no commercially available fuel.

In PJM’s own words, the forced outage rate was “unacceptably high.” Following a meeting to evaluate what went wrong, PJM reported penalties to failing generators that may reach \$2 billion.

What’s really unsettling is that a day that should have been clear sailing turned into a nail-biter; this calls the validity of all our planning into question.

Fossil fuel plants have been representing themselves as reliable, grid planners have been accepting this carte blanche, and fossil plants are getting paid to be available during emergencies. According to [their own press releases](#), gas “defines reliability.” Meanwhile, wind produced more than triple what PJM had planned on during the storm.

Once again, we learned that we can’t rely on gas and coal when extreme weather hits. So, what should PJM and the Federal Energy Regulatory Commission (FERC) do?

- With urgency, [PJM stakeholders](#) should complete reforms that properly consider mass failures like this when calculating how much to rely on any particular power plant. The [techniques here](#) are well developed and are already in use for renewables.
- PJM should split its year-round capacity market into seasons. Its current market was designed to meet demand during the hottest days of the year, and it has done a reasonable, if expensive, job at that. But when power demand rises in the cold, the promised power from these gas and coal plants cannot be counted upon. A seasonal capacity market will let PJM find the most reliable and least costly resources for summer and winter separately.
- PJM and FERC need to take a hard look at the supply side of natural gas. While gas power plants are part of the electricity industry and can be held accountable for reliability, pipelines and the rest of the upstream gas industry aren’t. FERC needs to take a searching look at how the gas industry is preparing for cold weather and find the political will to hold them accountable.
- PJM and FERC need to fix market structures that reward unreliable power plants. PJM plants that failed in December face penalties up to \$60,000 per undelivered megawatt (MW). That sounds like a lot until you realize that many of them have earned \$430,000 or more per MW in capacity payments since the last time they were called on. That’s absurd.

Yet again, system-wide fossil fuel plant failures came close to causing a major disaster. We can’t rely on luck to keep the grid running. It’s long past time for grid operators to acknowledge gas and coal’s shortcomings, realistically account for those risks in planning, and get rid of broken commercial structures that make failure profitable.

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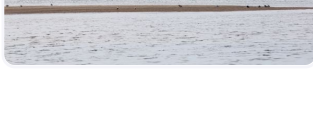
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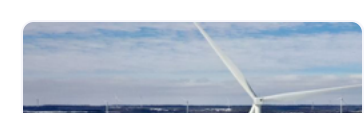


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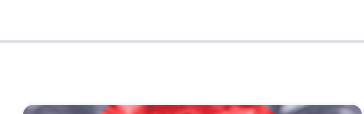
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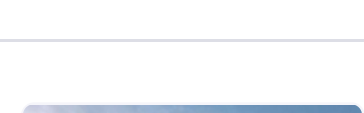
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