



Testimony by Michael Shellenberger, energy and environmental policy analyst, *Time Magazine* "Hero of the Environment," President of Environmental Progress

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Dear Mr. Chairperson, and members of the committee,

Thank you for accepting my testimony. I am happy to be back in Ohio to present it.

As background, I am a *Time Magazine* "Hero of the Environment," Green Book of the Year winner, and president of Environmental Progress, an independent nonprofit research organization.

I am here today because I am concerned by the threat that potential nuclear plant closures pose to energy security and public health. Without its nuclear plants, the people of Ohio will be more vulnerable to the increases in electricity prices and air pollution that always occur whenever nuclear plant closes, from California and Vermont to Germany and Japan.

Consider the danger of relying almost entirely on natural gas. "'Heavy' reliance on one resource type, such as a resource portfolio composed of 86 percent natural gas-fired resources... raises questions about electric system resilience," the electricity market operator PJM admitted in 2017.¹

Historically, Ohio has suffered the highest number of premature deaths of any state resulting from particulate matter from electricity generation. If Davis-Besse and Perry close, they will be replaced overwhelmingly by coal and other fossil fuels, and particulate matter pollution will increase.²

Electricity is not a market like a grocery store. If you go to the grocery store and there are no apples, you can go next door. But if you are totally dependent on natural gas, and price start going up and up, you can't just go next door and buy a nuclear plant.

As such, to the extent there is a market for electricity, it isn't free. Electricity, like running water and cable television, is a "natural monopoly." We don't want many firms competing to string up copper wire and so we allow monopolies to exist. In exchange, we regulate them to make sure they don't sacrifice long-term supply and price stability for short-term profits.

Few things have more shaped markets more than the massive subsidies given to renewables over the last 20 years. A 2017 analysis by the federal Congressional Budget Office found that renewables received \$10.7 billion more, or 55 times what was given to nuclear, in 2016.³ On a *unit of energy* basis, renewables received 100 times what was given to nuclear.⁴ And the CBO data show no subsidies for nuclear between 1985 and 2000, and comparatively small subsidies between 2000 and 2005.

Federal and state subsidies — the latter mainly in the form of net metering — for solar are seven times more per kilowatt hour than the proposed Ohio subsidy for nuclear.⁵

It turns out that [fracking received](#) federal subsidies, too. [Between 1978 and 2007](#), the Energy Department spent \$24 billion on fossil energy research that led to the fracking revolution — including \$10 billion in tax credit (US Code Section 29) for unconventional oil and gas drilling.⁶

The biggest subsidy Ohio gives to energy companies comes in the form of extremely low taxes on oil and gas production. If producers were taxed at median tax rates — like those imposed in Texas, Oklahoma and North Dakota — Governor Kasich's office estimates \$448 million would be raised over two years.

Nuclear plants have a high "option value." It's much more expensive to build a new one than to simply keep operating the ones you already have. Natural gas has been an economic blessing for Ohio but if the state finds itself entirely dependent on it, it can't quickly build a new nuclear plant.

A recent report by PJM found that actions to keep three nuclear plants on-line in Ohio and Pennsylvania, Davis-Besse, Perry, and Beaver Valley, would reduce electricity costs by \$474 million and would avoid 15 million additional tons of carbon emissions.⁷

PJM analysts created a "base case" for what they imagine conditions will be in 2023. In that case, they assume 20GW of natural gas and 7 GW of renewables would be added and 38GW of nuclear 10 GW of coal lost.

When PJM analysts compared that base case to what would happen if the nuclear plants remained open, they found that electricity prices and carbon emissions were lower.

Unfortunately, PJM analysts have muddled the public explanation of their analysis. This is, unfortunately, not surprising. PJM actively campaigning against the legitimate right of states, including Ohio, to set rules for electricity markets in ways that protect the air quality and energy security of ratepayers. It has become an activist organization in defense of its turf.

Ohio lawmakers need not sit by passively while outside energy, financial and technology interests intervene in your electricity markets in ways that could kill 90 percent of your clean power, and leave ratepayers vulnerable to market manipulators. In the short-term, I encourage you to protect your nuclear assets as clean-air hedges against market power and manipulation.

Long-term, I encourage Ohio to embrace a sensible framework that recognizes the obvious and positive benefits of moving from coal to natural gas, and from both to nuclear.

Ohio ratepayers have benefited from far cheaper electricity rates had there been no shale gas revolution, but cheap natural gas won't last forever. It would be naive to imagine it will, or that electricity markets can respond quickly to higher prices.

Thank you.

¹ PJM Interconnection, "PJM's Evolving Resource Mix and System Reliability," March 30, 2017. <http://www.pjm.com/~media/library/reports-notice/special-reports/20170330-pjms-evolving-resource-mix-and-system-reliability.ashx>

² Caiazzo, F., Ashok, A., Waitz, I. A., Yim, S. H., & Barrett, S. R. 2013. Air pollution and early deaths in the United States. Part I: Quantifying the impact of major sectors in 2005. *Atmospheric Environment*, 79, 198-208.

³ Dinan, Terry. Congressional Budget Office. 2017. Federal support for developing, producing, and using fuels and energy technologies. <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/52521-energytestimony.pdf>

⁴ Which is \$28 million per terawatt hour of generation. This excludes conventional hydroelectric power, which is unlikely to have received significant subsidies.

⁵ Estimated solar subsidies based on a 5kW rooftop solar system in Ohio, with a 20-year lifespan. Included subsidies are Ohio SREC (Solar Renewable Energy Credits), Ohio Sales Tax Credit, Ohio net-metering program, and Federal Investment Tax Credit

⁶ Golden, J.M. and Wiseman, H. 2015. The fracking revolution: shale gas as a case study in innovation policy. <http://law.emory.edu/elj/content/volume-64/issue-4/articles/fracking-revolution-study-innovation-policy.html>

⁷ [PJM](#), "Interconnection Response to the Pennsylvania Public Utility Commission & Ohio Consumers' Counsel Requests to Analyze Certain Impacts of Nuclear Power Plant Retirements," June 5, 2019