

House Energy and Natural Resources Committee  
Chairman Nino Vitale  
Opponent Testimony on Substitute House Bill 6  
Testimony of David Carpenter  
**Citizen of Ohio**

May 8, 2019

Chairman Vitale, Ranking Member Denson, and members of the House Energy and Natural Resources Committee. My name is David Carpenter. I am an AEP customer, I live in the City of Delaware, Ohio, and I have a background in physics. I am here today to speak in opposition to Ohio Substitute House Bill 6.

**First Energy is a victim of its own mismanagement.** I am an AEP customer. **Why should I be expected to bail them out?** How is that good for anyone or for the market? **First Energy has a long history of dragging its feet on energy modernization.** It has fought against initiatives for energy efficiency and renewables, and has subjected its own customers to a generation mix that relies too heavily on coal and nuclear. **HB6 is essentially a tax** on everyone in the state, paid on our electric bills, **to bail out First Energy.** This certainly will not be popular.

It is often been stated by opponents that this is a bailout for the two nuclear plants. Proponents say it is not exclusive to nuclear. But **when the rules set criteria so that only certain sizes or types of generators can access the fund, anyone who looks can see what is being subsidized here.** **Why do the bill's proponents choose to remove incentive funding for cleaner, more economic and emerging technologies that will boost our state economy to subsidize risky and obsolete technologies?** How does that make any sense at all?

As a physicist listening to testimony in the subcommittee last week, I became highly concerned. An opponent of the bill was giving testimony, and oversimplifying the risks of nuclear power. A committee member responded oversimplifying and misrepresenting the dangers of nuclear power. **One of the consequences of term limits is that the legislature cedes its institutional memory to the lobbyists.** Please listen to experts instead.

In general, I consider myself to be nuclear neutral. If done safely, I would prefer to keep our nation's current nuclear plants operating while we transition to renewables. Unfortunately, it is highly questionable whether First Energy's nuclear plants can continue to operate safely and economically. **It is true that the safe operation of nuclear plants poses very little risk to the environment or to the population. However, the danger of nuclear accidents and the risks posed by nuclear waste disposal should never be underestimated, and certainly never ridiculed.**

Anyone who claims that radioactivity isn't a threat to our health is as foolish as the one who exaggerates the danger. **The reality is that the danger of a radioactive source depends upon what type it is, where it is, and how long it will last.** There is some nuclear waste that is practically safe to bury in your own back yard (as long as it is an alpha emitter with a very short half-life that doesn't get disturbed before it is all gone). There is some that isn't totally safe anywhere, but the total volume of high-level waste generated by all the reactors in the world would only fill a single football field to a depth of a few feet. Diluting this high-level waste into a

glass slurry and burying it deep in an underground repository such as Yucca Mountain isn't perfect, but it is far better than keeping it at the surface near population at Davis-Besse or Perry.

**The danger of radiation must also be distinguished from the danger of the radioactive sources.** Radiation, like sunlight, passes through or interacts in an instant. Then it poses no future threat. Radioactive sources, however, can persist for long periods of times (some for billions of years) and can even be inhaled or ingested. Some sources can be handled relatively safely and used for medical purposes, but many can not.

**I am also deeply concerned about the elimination of the energy efficiency and renewable energy standards. Voluntary compliance to anything punishes responsible people to the benefit of the irresponsible.** This is unethical at best. Ohio and Ohioans should be better than this.

**There is nothing in this bill that encourages the use of distributed power.** In fact, it does the opposite.

**Distributed power**, such as privately-owned wind and **rooftop solar**:

- **Is more reliable and it enables smart microgrids.**
- **Doesn't repurpose land use.**
- **Is less vulnerable to terrorism or to natural disasters.**
- **Requires reduced transmission infrastructure.**
- **Has large-scale predictability.**
- **Empowers the consumer.**

**The intermittent nature of wind and solar can be mitigated by transmission, storage and overproduction.** The National Renewable Energy Lab reports estimates that **wind and solar could provide 70% of our national energy with our current technology and grid structure<sup>1</sup>**, and that nearly **40% could be provided by rooftop solar<sup>2</sup>**. **Nationally, wind and solar combine to be the majority of all new generation, not just because it is climate crisis mitigating technology, but also because it is the cheapest<sup>3</sup>.** Ohio is holding back its participation in the emerging new energy business with obstructive policy such as ridiculous wind setback rules and yes, HB6.

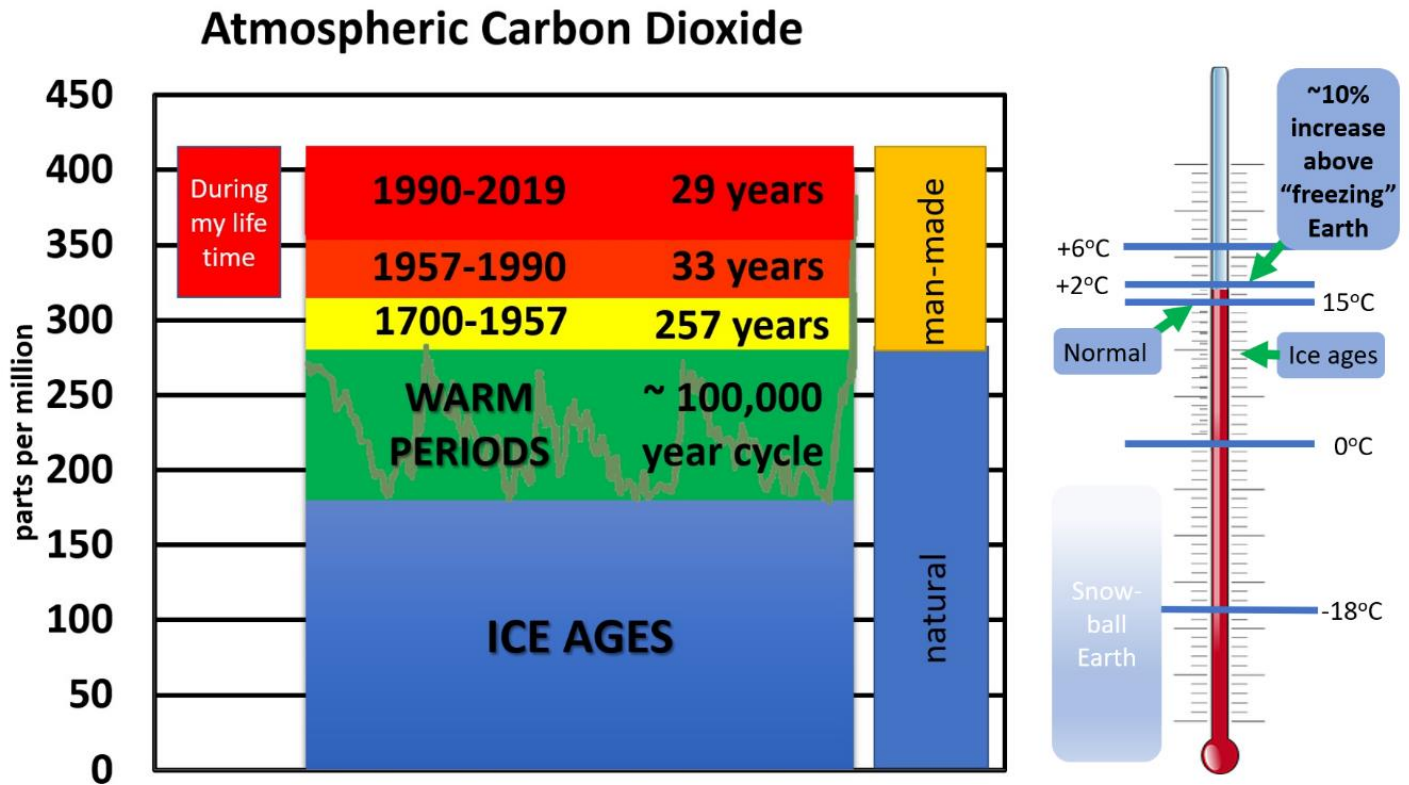
It has been stated by committee members here that the 3% of Ohio's current generation mix that is wind and solar is too small to affect climate change. But that small portion of our mix is the result of Ohio government policy. **Too be blunt, it's your own fault.**

**We must move aggressively forward with renewable energy** in Ohio if we are to achieve 20% carbon emission reductions by 2030 that are **necessary to avert a climate crisis**. Averting this crisis is what motivates me to submit this testimony. **The attached chart shows how this situation has changed during my lifetime.**

The **blue** on the atmospheric carbon dioxide chart represents the amount of carbon dioxide in our atmosphere **during a normal ice age**. The **green** represents the additional carbon dioxide present **during the interglacial warm periods**, such as that which began 10,000 years ago. This is the result of the Milankovitch cycles of Earth's motion around the sun, causing increases and decreases in carbon and temperature roughly every one hundred thousand years. The **yellow is the amount added by burning fossil fuels** from the beginning of the industrial era (roughly 1700) **until the year I was born**. The **orange is the amount added during my lifetime before I had children**, the **red** the amount added after I had children.

Note how much more quickly we have increased the amount of carbon dioxide in the atmosphere since my oldest child was born (1990) compared to each prior and longer time period, and that we have added more CO<sub>2</sub> to the atmosphere during my lifetime than during the natural changes during ice age cycles.

We have already increased Earth's average temperature by one degree Celsius and at least another is guaranteed by the end of the century. This isn't two degrees of weather. This is two degrees of climate. **This is a full 10% of the temperature difference that separates a normal interglacial period from a lifeless and frozen planet.** Ignoring the dangers of this is irresponsible and suicidal.



Source: David Carpenter 2019

In summary: **It is unfair to tax the entire state to bail out First Energy's mistakes. Nuclear reactors are expensive, and continuous effort is required to safeguard the public. Distributed energy is our best hope for the future. HB6 slows our efforts to avert the climate crisis; It must not be approved.**

I appreciate your time and consideration today. I would be pleased to answer any questions you may have.

References:

- <https://www.nrel.gov/docs/fy12osti/54688.pdf> The Effect of Large Scale Transmission Limitations on Renewable Energy Load Matching for the Western U.S. V. Diakov, W. Short, and B. Gilchrist. 2012
- <https://www.nrel.gov/docs/fy16osti/65298.pdf> Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. Pieter Gagnon, Robert Margolis, Jennifer Melius, Caleb Phillips, and Ryan Elmore National Renewable Energy Laboratory. Technical Report NREL/TP-6A20-65298 January 2016
- <https://pv-magazine-usa.com/2018/11/09/lazards-lazards-lcoe-whos-the-cheapest-energy/> John Weaver. "Lazard, Lazard, LCOE – what's the cheapest energy?" PV Magazine November 9, 2018.

# Levelized Cost of Energy Comparison—Unsubsidized Analysis

Certain Alternative Energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances<sup>(1)</sup>



Approximate “behind-the-meter adjustment” (red) added by David Carpenter. See source reference for explanation.