It's the End of the Road for the Merrimack Station and Dirty Coal Plants in New England

George Harvey

In all of the six New England states and New York, there is only one coal-burning power plant left. It sits on the Merrimack Station, in Bow, New Hampshire. The first of its two coal-burning units came online in 1960, generating 114 megawatts (MW). The second began operating in 1968, producing 346 MW. Sometime in the next few years, these generating units will probably be switched off for good.

There have been long and loud protests against the plant, based on a number of issues. Because of the very fine particulates produced when coal is burned, thousands of Americans die sooner than they otherwise would every year. The Merrimack Station burns bituminous coal, which is dirty. Another problem is that all fossil fuel burning adds to climate change, and coal is worse than many other fuels.

Merrimack Station in Bow, NH, the last coal plant in New England and New York. (Flickr/Jim Richmond)

A final problem with the Merrimack Station came up recently, and it may be enough to close the plant for good. That problem is that running it is too expensive. Some people might find this hard to believe, because they have been accustomed to the idea that coal provides the least expensive electricity, but that idea is a bit out of date.

Coal did provide the least expensive electricity at one time, but it does not any more. It is expensive compared to natural gas, and even more expensive compared to solar or wind with battery backup. Coal generating of electricity hit a peak in 2007 and has been in decline ever since, primarily because of cost. Where it accounted for most of our electricity at one time, it now produces less than 20%.

In regard to economics, the Merrimack Station is especially bad. Like nearly all coal-burning plants, it was designed to deliver base-load power. Base-load power is attractive because of its low cost, which comes because the plant is designed to run at 100% of capacity 100% of the time. But clearly, base-load plants are not built to follow changes in demand, and this means that it would be more expensive to run for this purpose.

Recently, the Merrimack Station has not been supplying base-load power as it was designed. It is, instead, being run as a peaking plant, which only produces power when demand is very high, but which produces the highest cost electricity around.

The Merrimack Station is contractually obliged to be ready to provide electricity as needed. To do that, it must be kept hot enough to start quickly, even when it is not producing power. And this means that even though it might not be generating, it needs cooling. A few months ago, a lawsuit was brought by the Sierra Club and the Conservation Law Foundation to force the plant to stop putting the amount of heat it produces into the Merrimack River.

In the auction last year, the Merrimack Station was awarded $785,000 per month to be ready to provide power as needed during the 2025 to 2026 year. That money, $9.42 million for the year, is paid whether the plant is generating or not.

For this year's auction, covering the period of 2026 to 2027, Merrimack Station failed to qualify. That being the case, it will probably have no source of revenue and will have to close.

There are some very interesting options for what to do with old fossil-burning power plants when they close. The one that seems to be most often pursued is to install a battery with a power capacity close to what the old plant had. Such a system can store energy generated by renewable facilities that are relatively near. One example of such a replacement is the Ravenwood Development on the East River in Queens, NY. The battery will have a capacity of 316 MW of power and 2,528 MWh of energy. The electricity that charges it will come from offshore wind turbines sited off the shore of Long Island. It will replace two gas-powered peaker plants with far less expensive energy, taking advantage of the transmission lines that are already in place. The same thing could be done at Merrimack Station, possibly even providing an opportunity for community energy storage analogous to community solar systems. ♻

How to Wean the Vermont Grid Off Fossil Fuels

Jonathan Dowds

Electrification is the central pillar of Vermont's climate strategy, and rightfully so. Electric vehicles, heat pumps, and other electric appliances are more efficient than their fossil fuel counterparts and generally offer a better user experience as well. While their superior efficiency means that going electric offers climate benefits now, these benefits are greatly enhanced when they are powered by 100% renewable energy.

So how close are we to 100% renewable energy and what do we have to do to get there? The bad news is that we've got a ways to go. The good news is we have all the tools we need to make it happen.

Is Vermont close to 100% renewable energy? (Roa.cedia.edu.ec)

If we look at the power that Vermont utilities purchased in 2021, more than a third came from either New England's dirty "system mix" (17%) or nuclear power (18%). In New England, system mix is dominated by natural gas generation and, during intense cold snaps, it gets even dirtier as oil and even coal plants come online. For example, when temperatures dropped this past December 24th and demand for natural gas for home heating rose, the share of electricity coming from oil jumped to an astounding 29% of the mix. Even the most efficient heat pump is going to struggle to provide the emissions savings that we need when the grid looks like that. Absent a strong push for more renewable power, the growing demand for electricity risks increasing the use of these dirty fossil fuel plants.

To get to 100% renewable power, we need to build enough new renewable generating capacity to squeeze the existing system mix and nuclear power out of the picture while also meeting the growing demand for electricity to heat our homes and power our vehicles. From a technical perspective, getting to a 100% renewable future is actually pretty simple: we need more solar, more wind, more energy storage, and a more sophisticated process for balancing supply and demand. All of this is completely feasible with the technology we have today. As Stanford Professor Mark Jacobson recently wrote in the Guardian, we don't need a miracle to get to 100% renewables, we just need to "focus on what we have and deploy as fast as possible... The number one barrier is that most people are not aware that it's possible."

The most straightforward way to get 100% renewable energy from "it's possible" to "it's reality" is to reform our Renewable Energy Standard (RES). Earlier this year, the Vermont House introduced a groundbreaking proposal to do just that. The bill, H.320 sponsored by Rep. Caleb Elder, would prioritize the development of new renewable resources and truly reduce greenhouse gas emissions across the region. It would require Vermont utilities to get 100% of their power from renewables by 2030, including 60% from new renewables built in Vermont and New England. It is this requirement for new renewables that gives the bill its climate teeth, because this is the power that can wean us off of fossil fuels.

Vitally, while addressing the climate crisis, H.320 also addresses another deep environmental injustice in Vermont's current energy system: our current practice of exporting the impact of our own electricity consumption. In 2020, Vermont ranked 49th in the country in terms of the share of the electricity that it used that it generated within its own borders. Vermont does not have a single coal, oil, or natural gas-fired power plant that contributes significantly to our energy needs. So when Vermonters don't rely on in-state renewables, we are asking our neighbors in Quebec, New York, and throughout New England to bear the environmental consequences of our need for electricity- land flooded for hydropower, the impacts of living next to a nuclear power plant, and the health-related impacts of air pollution from coal, oil, and natural gas-fired power plants. By requiring that Vermont utilities purchase 20% of their power from in-state sources by 2030 and 30% by 2035, the bill helps limit the environmental harms that we impose on our neighbors.

Luckily, the Inflation Reduction Act (IRA) signed by President Biden this past summer has given Vermont – and the rest of the country – a once-in-a-generation chance to get hundreds of millions of dollars in federal money to make the transition to renewables even more affordable and help us kick our addiction to electricity made from burning fossil fuels. This means that we have the technical solutions, the policy solutions, and the financial resources to wean off of fossil fuels and get to 100% clean energy in this decade.

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