

# Why Everyone Who Cares About the Climate Should be Watching NYS

Matthew Desmarais

By the time this article is published, New York should have approved their annual budget. Tucked within it may be a major change to the building code that would prohibit all fossil fuel heating systems for residential new construction by 2025. Vermont, Massachusetts, and other New England states may not be far behind. For home builders or traditional heating contractors who are used to installing fossil fuels, switching to heat pumps may be an intimidating change. These laws, the All-Electric Building Act and NY Heat Act, both will give a huge advantage to heat pump technology and are a part of a sound climate policy that will slash carbon emissions.

First, let's start with the driving reason that heat pumps are at the center of climate policy: they produce at least 3 times less greenhouse gas emissions than the best fossil fuel sources, and their emissions can be further reduced as more renewable generation is added to the power grid. In the Northeast, geothermal heat pumps have the undisputed highest efficiency of any heating and cooling system, and that is where our focus will be today.

What makes the All-Electric Building Act a great policy? Currently, if a home is added to the natural gas pipeline, the homeowner does not pay any of the upfront costs, which could be in the tens of thousands of dollars. If they did, natural gas certainly would not be considered such a good deal. Instead, that cost is amortized over decades and paid by the collective ratepayers. Since the 2019 passage of New York's climate law, the state's gas utilities have spent \$5 billion on infrastruc-



Heat pumps will help NY achieve the goal of prohibiting all fossil fuel heating systems for residential new construction by 2025. This double hybrid heat pump has a heating efficiency over 400%. (Energy Catalyst)

ture investments and identified \$28 billion in pipeline replacement plans. That is a lot of investment in infrastructure that is already being phased out. The All-Electric Act solves this, starting with new construction and a similar bill, the NY HEAT Act redirects utilities to invest the \$150 billion in neighborhood-scale building electrification over the next 20 years rather than squandering it on gas pipelines that are obsolete before they are even installed.

Here is a surprising fact- heat pumps can actually be better at heating than

fossil fuels. For instance, Energy Catalyst's geothermal Double Hybrid can make heating hot water, domestic hot water and hot air at the same time and has more controllability than a boiler or furnace. This could be used in new construction to provide radiant floors in the bathrooms or basement while still using forced air as the primary heating and cooling. Who is going to argue with warm tile floors? For existing homes with hot water heating, the same heat pump could make hot water heat and air conditioning in the summer, and all at record efficiencies. A geothermal heat pump provides a variety of options that a boiler or furnace alone could never offer.


A question often comes up. What about extremely cold weather? A prop-

erly designed geothermal system will use the stable temperature of the earth and therefore is unaffected by air temperature changes. Earlier this year, there was a 24-hour period of weather that was between -15F to -30°F throughout the Northeast. During this period, all our geothermal customers were warm, every heat pump was still working perfectly.


When building a new home with geothermal, it is easier than most builders think. A geothermal heat pump looks and is installed in a very similar fashion to a furnace. Instead of a single pipe coming through the basement wall to supply natural gas, a heat pump will have two water pipes that come from the outside borehole. A geothermal

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**Watching NYS** – Cont'd from p.27

heat pump will use approximately the same size electric breaker(s) and ductwork as a comparable central air AC unit. The Energy Catalyst heat pumps come as a kit that can be assembled in about an hour and uses the same labeling system for furnace thermostats and zone controls, so traditional contractors can easily adapt to the new system. The hardest part is the geothermal design, which does require special expertise and certifications, but some geothermal companies offer a properly sized geothermal design, boreholes, and heat pump(s) as a package so that a



Above: Horizontal geothermal heat exchanger installation in progress. Energy Catalyst offers design and installation of an accompanying geothermal heat exchanger with their heat pumps.



350 ft vertical geothermal heat exchanger being installed by Energy Catalyst. (Images courtesy of Energy Catalyst)

home builder can have access to geothermal without changing their HVAC contractor.

The new laws may also bring new incentives to homeowners and businesses, which can be coupled with the funding from the implementation of the

**310 MARLBORO ST., KEENE, NH**

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about 21,809 gallons of #2 fuel oil. Wait a minute—that's 2,394 gallons more than the prior year's oil use!

Yes, that is true, but today the building is 90% occupied. In the past it was less than 30% occupied. That means nearly 40,000 square feet of the steam portions of the building were only minimally heated and now they are fully heated to 70°F. With all of these changes considered, it looks like the building will only use 12% more fuel than in the past years.

However, the real cost of heating is a far more significant change—and for the better. Imagine if they had to pay over \$4.50 a gallon for oil this past winter!

233 tons of dried wood chips is the equivalent of 21,810 gallons of oil. At \$4.50 a gallon, that would cost \$98,145.

At \$3.50/gallon, the cost is \$76,335. At \$2.50/gallon, it is \$54,525.

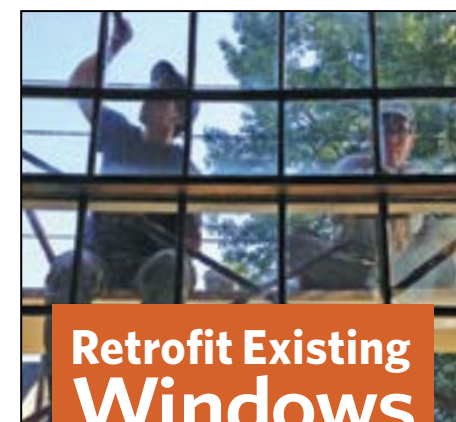
If the prediction of 233 tons of PDC dried wood chips is accurate for a 90% occupied building, they will have a cost of \$33,785. In New Hampshire these will generate at least \$11,185 in NH Class 1 Thermal REC income which results in a net annual cost of heat of \$22,600. That is the same as buying oil at \$1.04/gallon (or \$1.55/gallon in Vermont without T-RECs)!

So far, the remodeling and reuse of the building at 310 Marlboro Street has been a big success. Next, the owners plan to add 57 housing units to the property in new structures which will have their hot water supplied by the dry chip boiler system.

Jim Van Valkenburgh is the Vice President of Marketing at Froling Energy. ♻️

Inflation Reduction Act. In Upstate NY, a household who makes less than \$112,000 may qualify for a \$14,000 IRA incentive, \$10,000 NYS tax credit, \$4,500-\$9,000 heat pump rebate and 30% Federal Investment Tax credit on the remaining cost. If your boiler or furnace barely made it through the last winter, there may not be a better time to switch to geothermal!

Matthew Desmarais is the founder of Energy Catalyst Technologies. ♻️



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