

# Affordable Heat Act

## The Case Against Including Renewable Natural Gas and Green Hydrogen

### What can we learn from the existing track record on RNG in Vermont?

- The PUC has approved a few RNG contracts in the past few years but only one since passage of the GWSA, that being for gas from the Seneca Meadows landfill in Waterloo, NY.
- The only in-state RNG, produced in Salisbury accounts for just 1% of VGS's supply.
- In every case, VGS and the PUC acknowledge that no out-of-state renewable gas is actually delivered to Vermont, only renewable "attributes".
- The AHA would allow clean heat credits for Seneca Meadows RNG through 2050, even though fossil gas will not be replaced. More on that below.

### What did the PUC affirm in approving the Seneca Meadows RNG contract?

- A 14.5 year contract with the option to extend another 5 years – until 2042.
- The option to increase volumes each year to [more than 13% of total VGS supply by 2030](#) and about 1% each year after.
- Acknowledgement that [the Department of Public Service determined](#) the RNG "is one of the most expensive means for VGS to reduce emissions."
- To reduce rate shock, the option to sell some of the RNG into the transportation market in states like California, where the price is higher than what VGS is allowed to charge its Vermont customers.

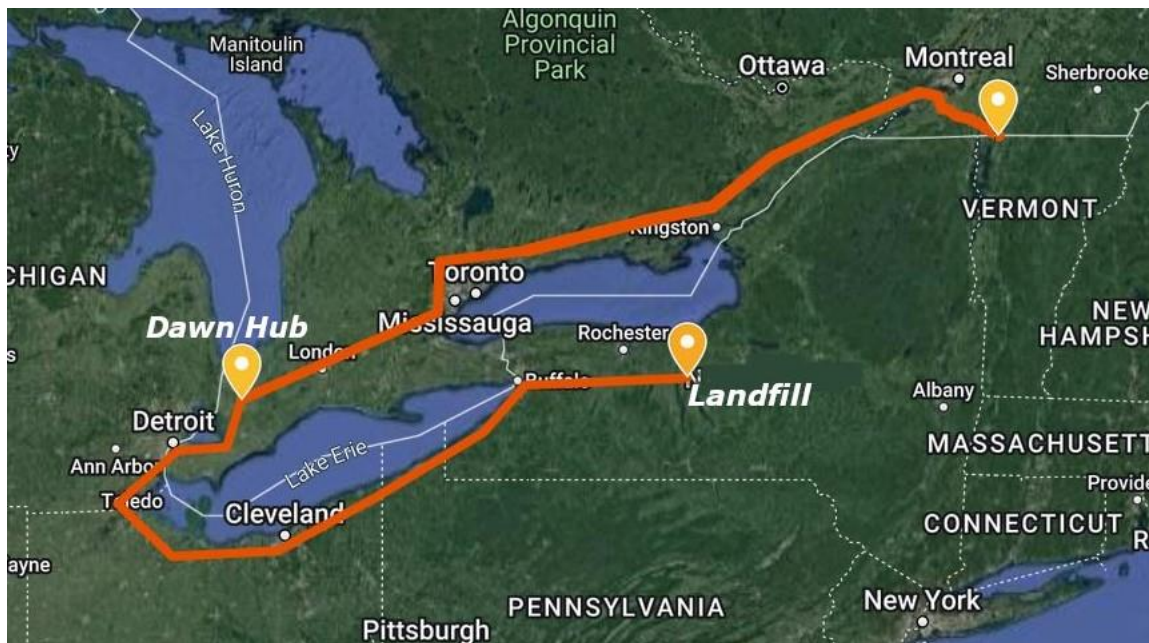
### Does RNG from a landfill reduce emissions?

- VGS and the PUC say yes.
  - [They say](#) that RNG from Seneca Meadows has a carbon intensity of 45 g/MJ compared to 79 g/MJ for fossil gas. (Units are mass, in grams, of CO<sub>2</sub> equivalent per unit of energy, in mega joules.)
- Cornell Prof. Robert Howarth [testified to Senate Natural Resources](#) that the answer is no.
  - The carbon intensity value for RNG accepted by the PUC is wrong, "based on old, out-of-date science."
  - It is "wrong that there is any greenhouse-gas benefit from using RNG, and in fact the use of RNG may lead to greenhouse gas emissions that exceed those from using fossil natural gas."
- Per federal regulations, biogas from landfills must be captured, not released into the air.
- Energy with the lowest emissions for that gas is from **burning on-site**, e.g. for electricity.
  - Note that the supplier of Seneca Meadows RNG [proposes to shut down biogas-fired electric generators at the landfill](#) and divert the biogas into pipeline RNG production
- Processing it into nearly pure methane takes energy.
- Compressing the methane and transporting it in a leaky pipeline **increases emissions**.

## How does AHA treat RNG from out-of-state sources?

“For pipeline renewable natural gas and other renewably generated natural gas substitutes to be eligible, ***an obligated party shall*** purchase renewable natural gas and its associated renewable attributes and ***demonstrate that it has secured a contractual pathway for the physical delivery of the gas from the point of injection into the pipeline to the obligated party’s delivery system.***”

Here’s how the contract for Seneca Meadows RNG, approved by the PUC, handled that. Gas and attributes are produced at the landfill in NY. The RNG is injected into a pipeline carrying fossil gas westward. The contractual “point of injection” is a massive storage and transfer depot, the Dawn Hub hundreds of miles away in southern Ontario, where almost all deliveries are fossil gas. From the Dawn Hub, VGS has “a contractual pathway for the physical delivery of the gas” via the TransCanada pipeline to VGS’s “delivery system” at the Quebec border.



The PUC has previously interpreted contract language that’s nearly identical to the bill’s by [declaring](#) that “the out-of-state RNG need not and may never enter the VGS pipeline. The out-of-state RNG will enter a pipeline system to be used by others with VGS being credited for the RNG attributes.”

According to the AHA’s schedule of reductions, the carbon intensity value of 45, which the PUC accepted in its approval of the Seneca Meadows contract, would qualify for clean heat credits at least until 2050.

## What has Richard Cowart said about RNG in the AHA?

In a [webinar presentation](#) on Clean Heat Standards in January to a mainly Massachusetts audience he explained his understanding of the intent of the Vermont legislation:

*"Certainly, this argument has come up in Vermont and the Vermont legislation has a provision in it that requires any RNG to be qualified only if it can be proven that that methane would otherwise have been vented and wouldn't have been reduced to some other existing regulatory framework. So, it's very limited."*

Click [here](#) to listen to this 30 second segment.



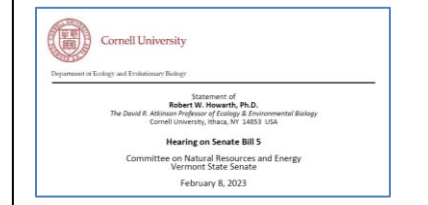
- The AHA does not explicitly include that limitation. It leaves to an appointed body the interpretation whether, for example, Seneca Meadows landfill gas will qualify. The ambiguity almost guarantees litigation that could take years to resolve at a time when we can't afford it. That ambiguity could be easily resolved to reflect Richard Cowart's intent. See recommended amendment below.

## What do literally all independent experts say about green hydrogen for heating buildings?

Prof. Robert Howarth said this in his testimony to the Senate Natural Resources Committee:

*"... reasons against hydrogen include safety concerns, greenhouse gas emissions, inefficiencies, and high costs to consumers. With regard to safety, there is widespread recognition that most current pipelines designed and built to deliver fossil natural gas are simply not suitable for carrying hydrogen except at very low blends with the fossil gas."*

Click [here](#) to read Howarth's full testimony to SNRE.



*"With regard to inefficiencies, green hydrogen should be viewed as a precious and expensive resource made from renewable electricity, and using the electricity directly to heat homes with high-efficiency heat pumps generates 6 to 10 times more heat than does the green hydrogen can produce."*

*"Of note, all independent studies have argued against using hydrogen for home heating, including peer-reviewed papers as well as reports from the International Energy Agency and the UN's Intergovernmental Panel on Climate Change."<sup>1</sup>*

<sup>1</sup> Here, Howarth cites a paper by Richard Cowart's Regulatory Assistance Project colleague, Jan Rosenow: *Is heating hydrogen with homes all but a pipe dream? An evidence review.* Joule. doi :10.1016/j.joule.2022.08.015).

Richard Cowart and Jan Rosenow coauthored a report published by Regulatory Assistance Project, which makes the same arguments and reaches the same conclusion regarding green hydrogen’s lack of suitability for heating buildings.

Click [here](#) to read the RAP report.



In his January webinar presentation on Clean Heat Standards, Richard Cowart elaborated:

*“Truly green hydrogen is a limited, scarce resource and should be used only for those applications for which there is no other reasonable option, which basically means don’t waste it by putting it in pipelines.”*

Click [here](#) to listen to this 54 second segment.



## Conclusions and Recommendations

Neither RNG nor green hydrogen should be included as qualified clean heat measures. On the second point there is no doubt regarding the consensus of independent experts.

Green hydrogen should be removed from the list of qualified clean heat measures.

As for RNG, the very minimum should be an amendment to remove ambiguity and align the text of the bill with the intent as described by Richard Cowart, one of the architects of the Clean Heat Standard.

**Add this sentence to the section on renewable natural gas**

*“Renewable natural gas shall not qualify unless that particular gas (a) would otherwise have been vented, and (b) no other regulation presently in force would require the biogas from which it was derived to be reduced, captured, or flared.”*

## And one more request

Please invite Cornell Prof. Robert Howarth to testify to the House Committee on Environment and Energy.

### A sampling of Prof. Howarth's credentials

- Earth systems scientist with a Ph.D. from MIT and the Woods Hole Oceanographic Institution.
- Tenured faculty member at Cornell University in Ithaca, NY since 1985
- Endowed professor at Cornell since 1993 (*the David R. Atkinson Professor of Ecology & Environmental Biology*).
- Served as Adjunct Senior Scientist in the Ecosystems Center of the Marine Biological Lab in Woods Hole, MA for the past 23 years.
- Decades of work on the consequences of global climate change, on emissions of methane from the oil & gas industry as a driver of climate change, on the production and use of hydrogen, and on alternative energy policies.
- Published over 200 peer-reviewed papers, which have been cited more than 79,000 times in other peer-reviewed literature, making him one of the most highly cited environmental scientists in the world.
- Given briefings and testimony at the White House, at the U.S. Congress and to committees of the US Senate, to the Canadian Senate, to the European Parliament, to the Irish Parliament, to the Senate and Assembly of the State of New York, and in New York courts.
- Served on many committees of the US National Academy of Sciences and the International Council of Science, having chaired several of these.
- Currently, one of 22 members of the New York State Climate Action Council, which is the body charged by law with the development of the implementation blueprint ("Scoping Plan") for New York's progressive climate law, the Climate Leadership & Community Protection Act of 2019.