

**STATE OF VERMONT
PUBLIC UTILITY COMMISSION**

Case No. 24-2797-PET

Petition of Vermont Renewable Gas, LLC for a certificate of public good, pursuant to 30 V.S.A. § 248, to construct and operate a 2.2 MW electric generation facility in Lyndon, Vermont

**PUBLIC COMMENT CONCERNING THE ABSENCE OF ANY
IDENTIFIED OPERATING REFERENCE FACILITY FOR THE
PROPOSED HTAP PYROLYSIS TECHNOLOGY, WITH
PARTICULAR ATTENTION TO EUROPE**

Submitted August 24, 2026

NOTICE: ARTIFICIAL-INTELLIGENCE-ASSISTED RESEARCH

The factual search reported in this comment was performed on August 24, 2026 with the assistance of an artificial intelligence research assistant (Claude, developed by Anthropic). The commenter framed the question, directed the inquiry, and reviewed the output; the source searching, retrieval, and initial synthesis were performed by the AI tool.

The commenter offers this disclosure so that the Commission and the parties may weigh the material accordingly. AI research tools can overlook sources, misread them, or express a negative result with more confidence than the underlying record supports. For that reason, every source relied upon is identified by name and URL in Part VI below so that it may be independently verified; the findings are stated as an *absence of publicly available evidence* rather than as an affirmative finding that no such facility exists anywhere; and no representation is made regarding non-public, non-indexed, or non-English-language materials beyond the limitations described in Part V.C.

This comment is offered not as a substitute for evidence on technology maturity, but as a reason for the Commission to require the Petitioner to produce reference-facility documentation that lies uniquely within the Petitioner's own knowledge.

I. QUESTION PRESENTED

Whether any biomass-fueled electric generating facility in Europe employs the "HTAP" (high temperature ablative pyrolysis) reactor technology that Vermont Renewable Gas, LLC

("VRG" or "Petitioner") proposes to deploy at the Lyndon facility.

II. SUMMARY OF FINDINGS

No such facility was identified. Across the European institutional inventories, sectoral bodies, trade press, patent data, vendor materials, and project filings described in Part V, the search located no biomass electric generating facility in Europe — operating, under construction, or permitted — that uses an HTAP reactor. It further located no operating HTAP reference installation of any kind, in Europe or elsewhere.

The specific findings supporting that conclusion are as follows.

1. **HTAP is a proprietary, single-vendor reactor, not a general process class.** An October 2020 joint announcement describes the "high temperature ablative pyrolysis reactor" as the technology of ENEX, and CETY's corporate website states that HTAP was "invented and developed by Enex LLC" and subsequently "acquired by CETY as the core system for CETY waste recovery and renewables projects." Enex's own website lists a Moscow business address (Zemlyanoy Val 59, bldg. 2, office 505, 109004 Moscow). The 2020 announcement contemplated establishing a facility *in Russia* and identified no existing installations anywhere. Consequently, the question "is HTAP used in Europe" is not a question about a widely licensed technology family; it is a question about the deployment history of one vendor's reactor.
2. **Neither the technology's originator nor its licensee publishes any operating reference plant.** Enex's HTAP pages describe the system's capabilities but list no completed projects, reference installations, or operating facilities in any country. CETY's public materials likewise identify no operating HTAP unit. To the contrary, CETY's March 30, 2026 announcement of a non-binding letter of intent with Hoppy Power for a unit at Westlock, Alberta describes "a potential first deployment," a step toward "initial commercialization," and "an initial demonstration of a scalable deployment model" — language that is difficult to reconcile with an existing operating fleet in Europe or anywhere else.
3. **Neither HTAP nor Enex appears in the principal European inventory of pyrolysis facilities.** The IEA Bioenergy Task 34 (Direct Thermochemical Liquefaction) report *Commercial Status of Direct Thermochemical Liquefaction Technologies* identifies the European fast pyrolysis facilities then in operation:

- *Green Fuel Nordic Oy* (Finland) — BTG-BTL rotating cone reactor, approx. 20 ML/yr, operating since 2020;
- *Empyro* (Hengelo, the Netherlands) — BTG-BTL rotating cone reactor, approx. 20 ML/yr, operating since 2015;
- *Pyrocell* (Sweden) — BTG-BTL / TechnipFMC technology, approx. 21 ML/yr, operating since 2021;
- *TCR* (Germany) — intermediate pyrolysis with integrated reforming, demonstration scale, operating since July 2021.

None uses an ablative reactor; none is identified with HTAP or Enex; and each is a liquid bio-oil production facility rather than a grid-connected biomass generating station of the kind proposed in this docket. The words "HTAP" and "Enex" do not appear in that report.

4. **The one ablative-reactor facility identified in that European-convened inventory is not in Europe.** The same report identifies a single ablative pyrolysis installation — the Biogas Energy Project in Sacramento, California — as a demonstration plant in North America.
5. **The European ablative-pyrolysis supply chain that does exist is at demonstration scale, and its output has gone abroad.** Bioenergy Concept GmbH of Melbeck, Germany markets an ablative fast pyrolysis system with a throughput of approximately 500 kg of biomass per hour. Its publicly described first full-scale unit departed Lüneburg for California in 2020. Ablative pyrolysis has also been the subject of long-running academic work in Europe, including at Aston University (Birmingham, United Kingdom) and German research institutes, at laboratory and pilot scale. The commenter identified no European ablative pyrolysis unit operating as an electric generating facility.
6. **A caution regarding installed-base figures.** CETY's corporate website displays summary figures of "209 Installed Projects" across "7 Countries." Those figures appear in the context of the company's Clean Cycle heat-to-power organic Rankine cycle generator product line (Heat Recovery Solutions), which is a distinct product from HTAP. The commenter found no basis for reading those figures as an HTAP installed base, and respectfully suggests that if such figures are relied upon in this proceeding, the Commission confirm which product line they describe.

III. RELEVANCE TO THE COMMISSION'S REVIEW

The commenter takes no position in this comment on the remaining criteria of 30 V.S.A. § 248, on the merits of the Petition as a whole, or on the Petitioner's good faith. The point is narrow and evidentiary.

The Commission is asked to find, among other things, that the proposed facility will promote the general good of the State, and its assessment necessarily rests in part on whether the proposed generating technology will perform as represented — in output, in availability, in emissions, and in cost. Those representations are ordinarily tested against operating experience at comparable installations. Where a project is genuinely first-of-a-kind, the risk profile differs materially from that of a proven technology: performance and emissions estimates rest on design calculations rather than measured operation, capital and operating cost estimates carry wider error bands, and the risk of a partially built or prematurely abandoned facility falls differently on the host community and on ratepayers.

The distinction matters here because it is readily resolved. If an operating HTAP reference fleet exists in Europe or elsewhere, the Petitioner can identify it in a paragraph. If it does not, the record should say so plainly, and the Commission's findings on technological and economic feasibility should be made with that fact in view rather than in its absence.

Accordingly, the commenter respectfully requests that the Commission direct the Petitioner to identify, for every HTAP or Enex-supplied pyrolysis reactor that has operated at commercial or demonstration scale: (a) the facility name, owner, and location; (b) the commissioning date and cumulative operating hours; (c) the feedstock processed and the electrical output, if any; and (d) any third-party performance, availability, or emissions test data. Should the Petitioner state that no such installation exists, that statement itself would materially assist the Commission's review.

IV. EXTENT OF THE SEARCH

The search was conducted on August 24, 2026. It proceeded in four passes: identification of what HTAP is and who controls it; a search of European institutional, sectoral, and trade sources for any HTAP or ablative pyrolysis generating facility; a search of vendor and project primary sources for any claimed reference installation; and a limited Russian-language pass reflecting the technology's origin. The categories of source consulted are described below; complete citations appear in Part VI.

A. European institutional, sectoral, and trade sources

- **IEA Bioenergy Task 34 (Direct Thermochemical Liquefaction)**, the international task body that maintains the standing inventory of pyrolysis facilities, including its report *Commercial Status of Direct Thermochemical Liquefaction Technologies* and its *Biomass Pyrolysis* task booklet. This was the single most probative source consulted, and is discussed at Part II.3–II.4 above.
- **IEA Bioenergy Task 34 Pyrolysis Demoplant Database**, hosted by BEST GmbH (Graz, Austria) at demoplants21.best-research.eu, which categorizes fast pyrolysis facilities worldwide by technology readiness level, technology, and status. The public index page was reviewed; the database interface itself presented an administrative login, and individual entries could not be enumerated. This limitation is noted at Part V.C.
- **PyroWiki / PyroKnown** (pyrowiki.pyroknown.eu), a European pyrolysis knowledge base, including its "Commercial plants" and "Ablative" pages. Both pages surfaced in search results, but direct retrieval was refused by the host's robots.txt directives and their contents were therefore not read. This limitation is noted at Part V.C.
- **CORDIS**, the European Commission's research and innovation project database (cordis.europa.eu), searched for HTAP and for ablative pyrolysis. The results returned EU-funded pyrolysis research projects, none associated with HTAP or Enex.
- **Bioenergy Europe** (bioenergyeurope.org) and **ETIP Bioenergy** (etipbioenergy.eu), the European sector association and the European Technology and Innovation Platform for bioenergy. Neither returned any HTAP or Enex result.
- **The European Biochar Industry Consortium** (biochar-industry.com), searched because the proposed facility is represented as producing approximately 1,500 tons of biochar annually and a European producer of that scale would ordinarily be visible to the sector's own trade body. No HTAP or Enex result was returned.
- **European trade press**: *Bioenergy Insight* (United Kingdom, bioenergy-news.com) and *Bioenergy International* (Sweden, bioenergyinternational.com). *Bioenergy Insight* has covered CETY — including its anaerobic digestion platform launch, an engineering, procurement and construction contract with VRG, and an agreement with Synergy Bioproducts Corp. — but describes no European HTAP installation.

- **A European ablative pyrolysis vendor:** Bioenergy Concept GmbH, Melbeck, Germany, discussed at Part II.5 above.
- **Patent literature:** European Patent Office data (data.epo.org / Espacenet records) and Google Patents, searched for ablative pyrolysis reactor patents associated with Enex. The results returned unrelated ablative thermolysis and pyrolysis patents, including EP 1463788 A1, with no Enex or HTAP connection surfaced.

B. Vendor, corporate, and project primary sources

- **Enex** — the enex.pro website, English and Russian, including the dedicated HTAP page. The site describes the system's capabilities and applications but lists no completed projects or reference installations in any country.
- **waste2energy.pro** ("ENEX HTAP Waste2energy"), which surfaced in search results as an Enex-associated site. Retrieval failed at the host (domain name resolution failure), and its contents were not read. This limitation is noted at Part V.C.
- **Clean Energy Technologies, Inc.** (Nasdaq: CETY) — the cetyinc.com corporate website and press-release archive, together with the same releases as distributed through PR Newswire and GlobeNewswire and as reported by financial news services. The releases reviewed include the CETY–ENEX manufacturing and sales agreement (October 2020); "CETY Launches HTAP Platform for Anaerobic Digestion Facilities" (December 10, 2025); "CETY to Present HTAP Pyrolysis Platform for Renewable Gas, Power and Biochar" (February 12, 2026); "Clean Energy Technologies Advances First Waste-to-Energy Deployment in Alberta Under LOI with Hoppy Power" (March 30, 2026); the announcement of the Vermont air quality permit; and the May 2026 announcements regarding the Lyndon project's regulatory progress.
- **Vermont regulatory sources** — the Vermont Public Utility Commission's public case page for Case No. 24-2797-PET, and the announcement of the Vermont Department of Environmental Conservation Air Quality and Climate Division permit issued June 25, 2024 for the 2.2 MW Lyndonville facility, which describes the technology as a "High Temperature Ablative Fast Pyrolysis (HTAP) Biomass Reactor" and states an expected output in excess of 18,000 MWh of electricity and 1,500 tons of biochar annually.

C. Russian-language pass

Because the technology originates with a Moscow-based developer, a limited Russian-language search was performed using the terms пиролиз (pyrolysis), установка (installation/unit), завод (plant), проект (project), and Enex. The results returned the Enex Moscow website and a number of unrelated Russian pyrolysis equipment vendors. No HTAP electric generating facility was identified, in Russia or elsewhere.

V. LIMITATIONS

The commenter states the following limitations candidly, and asks that the findings above be read subject to them.

- **This is a negative result.** What the search establishes is that no European HTAP generating facility is discoverable in the public sources listed. It does not and cannot establish that no such facility exists.
- **Three sources could not be retrieved.** The PyroWiki "Commercial plants" and "Ablative" pages were blocked by host robots.txt directives, and waste2energy.pro failed to resolve. The IEA Bioenergy Task 34 demoplant database required credentials the commenter does not hold. Each of these is a source that could, in principle, contain a contrary entry, and the commenter does not represent otherwise.
- **Language coverage was primarily English, with a limited Russian pass.** A facility documented only in Latvian, Estonian, Polish, German, Finnish, or another national-language registry or permit file might not have surfaced.
- **Non-public installations would not appear.** A privately commissioned unit not described in trade press, corporate disclosure, or a public registry would be outside the reach of this search.
- **The search is a snapshot.** It was conducted on a single day, August 24, 2026, and reflects the state of the indexed public record on that date.
- **The research was AI-assisted,** with the qualifications set out in the notice on the first page of this comment.

VI. SOURCES CONSULTED

Source	Locator	What it showed
IEA Bioenergy Task 34, <i>Commercial Status of Direct Thermochemical Liquefaction Technologies</i>	ieabioenergy.com/wp-content/uploads/2023/07/WP3.3-DTL-Final.pdf	Lists European fast pyrolysis plants (Green Fuel Nordic, Empyro, Pyrocell, TCR); the only ablative facility listed is in Sacramento, California. "HTAP" and "Enex" do not appear.
IEA Bioenergy Task 34, <i>Biomass Pyrolysis</i> (task booklet)	ieabioenergy.com/wp-content/uploads/2013/10/Task-34-Booklet.pdf	Background on pyrolysis reactor classes, including ablative configurations.
IEA Bioenergy Task 34 Pyrolysis Demoplant Database (BEST GmbH, Graz)	task34.ieabioenergy.com/publications/pyrolysis-demoplant-database/ ; demoplants21.best-research.eu	Index page reviewed; database entries not enumerable (administrative login required).
PyroWiki / PyroKnown, "Commercial plants" and "Ablative"	pyrowiki.pyroknown.eu	Surfaced in results; retrieval blocked by host robots.txt. Not read.
CORDIS (European Commission)	cordis.europa.eu	EU-funded pyrolysis research projects; no HTAP or Enex association.
Bioenergy Europe; ETIP Bioenergy	bioenergyeurope.org ; etipbioenergy.eu	No HTAP or Enex results.
European Biochar Industry Consortium	biochar-industry.com	No HTAP or Enex results.
<i>Bioenergy Insight</i> (UK)	bioenergy-news.com	Covers CETY's AD platform launch, an EPC contract with VRG, and a Synergy Bioproducts agreement; no European HTAP installation described.
<i>Bioenergy International</i> (Sweden)	bioenergyinternational.com	Coverage of European pyrolysis plants (e.g., Empyro/Twence); no HTAP or Enex.
Bioenergy Concept GmbH (Melbeck, Germany)	bioenergy-concept.com/ablative-fast-pyrolysis/	European ablative fast pyrolysis vendor; ~500 kg/h unit; first full-scale system shipped from Lüneburg to California in 2020; no European operating reference plant listed.
European Patent Office data / Google Patents	data.epo.org ; patents.google.com	Ablative thermolysis and pyrolysis patents (e.g., EP 1463788 A1) unrelated to Enex; no Enex-assigned HTAP patent surfaced.

Source	Locator	What it showed
Enex (Moscow) — corporate site and HTAP page	enex.pro ; enex.pro/htap?lang=en	Moscow address; describes the HTAP system; no completed projects or reference installations listed.
waste2energy.pro ("ENEX HTAP Waste2energy")	waste2energy.pro	Retrieval failed (host did not resolve). Not read.
CETY–ENEX manufacturing and sales agreement (Oct. 2020)	prnewswire.com/news-releases/cety-and-enex-enter-into-a-manufacturing-and-sales-agreement-...-301144099.html	Defines HTAP as a "high temperature ablative pyrolysis reactor"; contemplates a facility in Russia; names no existing installations.
Clean Energy Technologies, Inc. corporate site	cetyinc.com	States HTAP was "invented and developed by Enex LLC" and acquired by CETY; displays "209 Installed Projects" / "7 Countries" in the context of the Clean Cycle ORC heat-recovery product line.
"CETY Launches HTAP Platform for Anaerobic Digestion Facilities" (Dec. 10, 2025)	globenewswire.com/news-release/2025/12/10/3203011/0/en/	Platform launch; no operating installation identified.
"CETY to Present HTAP Pyrolysis Platform ... Nashville" (Feb. 12, 2026)	globenewswire.com/news-release/2026/02/12/3237291/0/en/	Describes HTAP outputs (renewable gas, syngas, electricity, biochar); names only the Vermont Renewable Gas affiliate project.
"Clean Energy Technologies Advances First Waste-to-Energy Deployment in Alberta Under LOI with Hoppy Power" (Mar. 30, 2026)	cetyinc.com/news/press-release/clean-energy-technologies-advances-first-waste-to-energy-deployment-in-alberta-under-loi-with-hoppy-power-targeting-scalable-rollout/	Non-binding LOI for a ~2 MW unit at Westlock, Alberta; described as "a potential first deployment" and "initial commercialization"; no prior operating installation mentioned.
"Affiliate Receives Air Quality Permit from the Vermont Department of Environmental Conservation"	cetyinc.com/news/press-release/affiliate-receives-air-quality-permit-from-the-vermont-department-of-environmental-conservation/	Lyndonville, Vermont; "High Temperature Ablative Fast Pyrolysis (HTAP) Biomass Reactor"; 2.2 MW; permit issued June 25, 2024; in excess of 18,000 MWh and 1,500 tons of biochar annually; no reference plants cited.
CETY / VRG regulatory milestone announcements (May 6 and May 21, 2026)	cetyinc.com/news/press-release/ ; globenewswire.com/news-release/2026/05/21/3299334/0/en/	Report progress in Vermont regulatory review; no reference plants cited.

Source	Locator	What it showed
Vermont Public Utility Commission, Case No. 24-2797-PET	<code>puc.vermont.gov/event/puc-case-no-24-2797-pet-scheduling-conference-petition-vermont-renewable-gas-llc-certification</code>	Case caption and § 248 posture.

VII. CONCLUSION

Based on the search described above, the commenter has identified no biomass electric generating facility in Europe that uses HTAP pyrolysis, and no operating HTAP installation anywhere. The commenter respectfully requests that the Commission require the Petitioner to place the operating history of the proposed reactor technology — including any European installations — squarely on the record, and that the Commission's findings under 30 V.S.A. § 248 reflect what that record does and does not contain.

The commenter thanks the Commission for its consideration.

Respectfully submitted,

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Dated: August 24, 2026