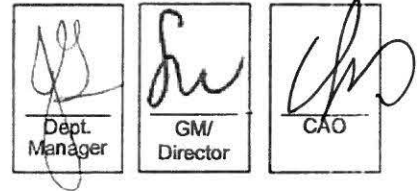


AGENDA INFORMATION	
☒ Regular Meeting	Date: <u>July 10, 2023</u>
☐ Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

June 14, 2023
File: 08.3060.20/014.23

AUTHOR: Genevieve Lanz, Deputy Municipal Clerk

SUBJECT: Bylaw 8626: Rezoning for a Hydrogen Liquefaction Facility at 100 Forester Street (Bylaw 8626)

RECOMMENDATION:

THAT "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)" is given SECOND and THIRD Readings;

AND THAT "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)" is ADOPTED.

BACKGROUND:

Bylaw 8626 received First Reading on May 15th, 2023 and a Public Hearing was held and closed on June 13th, 2023.

The bylaw is now ready to be considered for Second and Third Readings, and Adoption by Council.

Options:

1. Give the Bylaw Second and Third Readings and Adopt the Bylaw;
2. Give no further Readings and abandon the Bylaw at First Reading; or,
3. Debate possible amendments to the Bylaw at Second Reading and return Bylaw 8626 to a new Public Hearing if required.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Genevieve Lanz'.

Genevieve Lanz
Deputy Municipal Clerk

Bylaw 8626: Rezoning for a Hydrogen Liquefaction Facility at 100 Forester Street (Bylaw 8626)

June 14, 2023

Page 2

Attachments:

1. Bylaw 8626
2. Public Meeting Report dated June 13th, 2023
3. Staff report dated April 28th, 2023
4. Staff report dated May 9th, 2023

REVIEWED WITH:					
☐ Community Planning	_____	☐ Clerk's Office	_____	External Agencies:	
☐ Development Planning	_____	☐ Communications	_____	☐ Library Board	_____
☐ Development Engineering	_____	☐ Finance	_____	☐ NS Health	_____
☐ Utilities	_____	☐ Fire Services	_____	☐ RCMP	_____
☐ Engineering Operations	_____	☐ ITS	_____	☐ NVRC	_____
☐ Parks	_____	☐ Solicitor	_____	☐ Museum & Arch.	_____
☐ Environment	_____	☐ GIS	_____	☐ Other:	_____
☐ Facilities	_____	☐ Real Estate	_____		
☐ Human Resources	_____	☐ Bylaw Services	_____		
☐ Review and Compliance	_____	☐ Planning	_____		
☐ Climate and Biodiversity	_____				

The Corporation of the District of North Vancouver

Bylaw 8626

A bylaw to amend District of North Vancouver Bylaw 3210, 1965

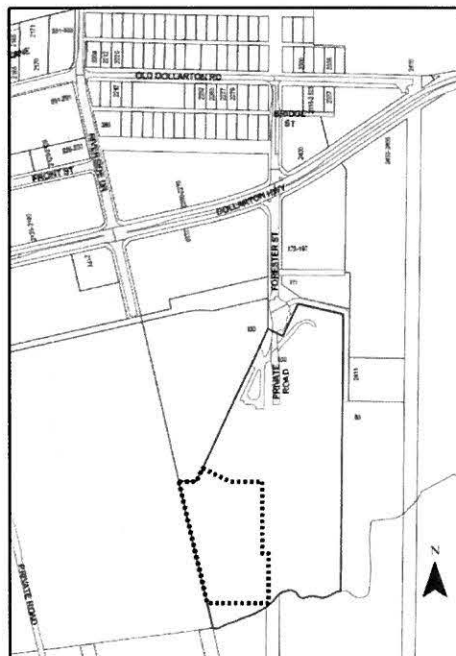
The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)".

Amendments

2. District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:
 - a) Section 403A Uses Prohibited in All Zones, (1) (f) the manufacture of hazardous materials is amended as follows:
 - (f) the manufacture of hazardous substances except:
 - i) for the manufacturing, liquefaction and storage of hydrogen, on that portion of the lands highlighted with the black dashed line below and located on a portion of 100 Forester Street, with a maximum on site storage capacity of 180,000 US gallons of hydrogen.



READ a first time May 15th, 2023

PUBLIC HEARING held June 13th, 2023

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

**DISTRICT OF NORTH VANCOUVER
PUBLIC HEARING**

**100 Forester Street
Zoning Bylaw Amendments**

REPORT of the Public Hearing held on Tuesday, June 13, 2023 commencing at 7:00 p.m. in the Council Chamber of the District Hall, 355 West Queens Road, North Vancouver, British Columbia.

Present: Mayor Mike Little
Councillor Jordan Back (via Zoom)
Councillor Betty Forbes
Councillor Jim Hanson
Councillor Herman Mah
Councillor Lisa Muri
Councillor Catherine Pope

Staff: Dan Milburn, General Manager – Planning, Properties and Permits
Jennifer Paton, Assistant General Manager – Planning
Neonila Lilova, Manager – Business and Economic Development
Yan Zeng, Manager – Development Planning
Genevieve Lanz, Deputy Municipal Clerk
Tamsin Guppy, Development Planner
Kevin Zhang, Development Planner
Cheryl Archer, Confidential Council Clerk
Hedvig Pellerud, Committee Clerk

Also in

Attendance: Colin Armstrong, President and Chief Executive Officer, HTEC (applicant)
Sabina Russell, Vice-President of Clean Fuels, HTEC (applicant)
Melissa McKinnon, Director of Liquefaction Assets, Hydrogen Technology and Energy Corporation (HTEC) (applicant)

1. OPENING BY THE MAYOR

Mayor Little welcomed everyone and advised that the purpose of the Public Hearing was to receive input from the community and staff on the proposed bylaw as outlined in the Notice of Public Hearing.

He further noted that this Public Hearing is being convened pursuant to Section 464 of the *Local Government Act*.

Mayor Little stated that:

- Council will use the established speakers list. At the end of the speakers list, the Chair may call on speakers from the audience;
- Each speaker will have five minutes to address Council for a first time and should begin remarks to Council by stating their name;
- After everyone who wishes to speak has spoken once, speakers will then be allowed one additional five minute presentation;



- Any additional presentations will only be allowed at the discretion of the Chair;
- Please do not repeat information from your previous presentations and ensure your comments remain focused on the bylaw under consideration this evening;
- If a written submission has been provided, there is no need to read it as it will have already been seen by Council. It can be summarized, ensuring that the comments are pertaining to the bylaw under consideration at this hearing;
- All members of the audience are asked to be respectful of one another as diverse opinions are expressed. Council wishes to hear everyone's views in an open and impartial forum;
- Council is here to listen to the public, not to debate the merits of the bylaw;
- Council may ask clarifying questions;
- The Municipal Clerk has a binder containing documents and submissions related to the bylaw, which Council has received and which members of the public are welcome to review, available on the table next to the door of the Council Chamber and online at DNV.org/agenda;
- Everyone at the hearing will be provided an opportunity to speak. If necessary, the hearing will continue on a second night;
- At the conclusion of the public input Council may request further information from staff, which may or may not require an extension of the hearing, or Council may close the hearing, after which Council should not receive further new information from the public;
- The Public Hearing is being streamed live over the internet and recorded in accordance with the *Freedom of Information and Protection of Privacy Act*; and,
- Members of Council, staff, and the public are participating in person and via Zoom.

2. INTRODUCTION OF BYLAW BY CLERK

Ms. Genevieve Lanz, Deputy Municipal Clerk, introduced the proposed bylaw, stating that Bylaw 8626 proposed to amend the Zoning Bylaw to create an exception to Section 403A "Uses Prohibited in All Zones", Subsection (1)(f) "the manufacture of hazardous materials" to allow the manufacturing, liquefaction and storage of hydrogen with a maximum storage capacity of 180,000 US gallons on a portion of 100 Forester Street.

3. PRESENTATION BY STAFF

Tamsin Guppy, Development Planner, provided an overview of the proposal elaborating on the introduction by the Deputy Municipal Clerk. Ms. Guppy advised that:

- The proposal is a text amendment to the Zoning Bylaw to allow the applicant to capture the hydrogen by-product generated at the existing ERCO sodium chlorate plant at 100 Forester Street and liquify and store up to 180,000 US gallons of the liquefied hydrogen on a portion of the site;
- 100 Forester Street is 19 acres in area and located in the Maplewood Heavy Industrial Area, a five acre portion in the southwest corner of the property approximately 400 metres from Dollarton Highway is subject of the proposed bylaw;
- The site is designated Industrial in the Official Community Plan (OCP);
- The proposal is aligned with the OCP goals to support economic development, job creation, intensification of industrial lands, and climate action;
- The site is zoned Employment Zone Industrial (EZI), which permits manufacturing and processing;

- The site is located in Development Permit Areas for Form and Character, Energy and Water Conservation and Greenhouse Gas (GHG) Emission Reduction, and Flood Hazard;
- Compliance with Provincial regulatory requirements is required in addition to the Zoning Bylaw amendment application, including the meeting the requirements of the *Safety Standard Act* which relates to equipment design and plant operating permits;
- The Zoning Bylaw section 403A(f) lists the manufacture of *hazardous substances* under Uses Prohibited in All Zones;
- The definition of *hazardous substances* in the Zoning Bylaw includes compressed and liquified gasses;
- A review of the HTEC proposal was conducted by Doug McCutcheon, a qualified expert in the field, which concluded the proposal meets the standards for risk according to the guidelines established by the Canadian Society for Chemical Engineering – Process Safety Management Division (Major Industrial Accidents Council of Canada (MIACC));
- The District hired SLR Consulting to conduct a peer review of Mr. McCutcheon's assessment, including methodology and findings, consideration of additional risk factors and cumulative impacts, and confirmation of the risk criteria and standards;
- SLR Consulting's review concluded the work is "reasonable, defensible, and can be relied on by the District of North Vancouver," and meets Canadian guidelines;
- Recognized that the proposal meets the Canadian Safety Standards;
- The text amendment is specific to the proposal and limits the type of gas, the location of the facility and the storage capacity; and;
- Should the Zoning Bylaw amendment be adopted, a Development Permit application would be submitted by the applicant later in 2023.

4. PRESENTATION BY APPLICANT

4.1. **Colin Armstrong, President and Chief Executive Officer, Sabina Russell, Vice-President of Clean Fuels, and Melissa McKinnon, Director of Liquefaction Assets, Hydrogen Technology and Energy Corporation (HTEC):**

- Noted that HTEC was founded on the North Shore and is locally owned;
- Advised that HTEC's goal is to decarbonize transportation;
- Noted that the company designs, builds, owns and operates hydrogen fuelling stations;
- Noted that the Federal Government has prioritized hydrogen fuels to address climate change;
- Advised that demand for hydrogen fuel currently exceeds supply;
- Stated that the proposal would support zero-emission vehicle deployment, which is not currently possible as there is insufficient supply of hydrogen;
- Commented on the company's safety record and the safety record of other companies in the field worldwide;
- Advised that HTEC has an integrated safety management system;
- Noted that transportation accounts for 24 percent of greenhouse gas emissions (GHGs) in Canada;
- Stated that net zero and zero-emission standards cannot be met without hydrogen fuel;
- Noted that hydrogen vehicles can be fueled quickly and have a longer range than electric battery vehicles;
- Advised that many types of vehicles use hydrogen fuel, including trucks, marine vessels, busses and passenger rail;

- Advised that there are various methods to make hydrogen and that capturing waste hydrogen is economical and environmentally friendly;
- Advised that sodium chlorate production at the ERCO facility produces hydrogen as a waste by-product that is currently released into the atmosphere;
- Noted that the ERCO plant produces approximately 15,000 kilograms of hydrogen each day, which could support 30,000 fuel cell passenger vehicles or up to 500 heavy-duty vehicles;
- Advised that HTEC entered into an agreement with ERCO Worldwide in November 2022 to purchase the property at 100 Forester Street, with land to be leased back to ERCO on a long-term basis;
- Stated that the proposed timeline is to have the Zoning Bylaw amendment process and land acquisition completed by Fall 2023, complete the design and submit the Building Permit application in 2024, construct the facility in 2025 be in operation early in 2026;
- Advised that an agreement to purchase the property at 100 Forester Street from ERCO Worldwide was reached in November 2022 with the intent to lease the property to ERCO on a long-term basis;
- Advised that a five-acre portion at the south end of the site is the subject of the proposed Zoning Bylaw amendment to allow the capture, liquefaction and storage of hydrogen;
- Noted that HTEC has completed community engagement regarding the proposal;
- Advised that the project is subject to a referral process with First Nations;
- Stated that the project will support local employment with the creation of 50 new jobs;
- Noted the proposal would generate tax revenues at the municipal and provincial levels;
- Commented on the proposal's alignment with the District's OCP, the BC Hydrogen Strategy, and addressing climate change;
- Noted that there have been hydrogen liquefaction plants in operation since the early 1960s in Canada and the United States.

4.2. Doug McCutcheon, Author, Quantitative Risk Assessment:

- Advised that he was engaged by the applicant to conduct a risk assessment of the proposed project;
- Provided information on his professional background and subject matter expertise, noting that he was involved in the creation of MIACC best practices;
- Advised that the proposal meets and exceeds the MIACC criteria for safety;
- Advised that his risk assessment was reviewed by an independent third party;
- Noted that a risk management program must be implemented in order to maintain the risk level;
- Provided an overview of the calculation of risk, noting that the factors in the equation are probability and consequence, which may also be stated as the likelihood of occurrence and severity of an incident;
- Noted that risk is present in all human activity and that a certain amount of risk is generally accepted, such as air, road and rail travel and transport;
- Advised that best practice has been determined by industry, government and academic sources;
- Reviewed the risk acceptability criteria in Canada, noting that the highest acceptable risk is one in 10,000 at the property line; and,

- Advised that hazard scenarios considered in the assessment include hydrogen vapour cloud explosion from a liquid hydrogen storage tank release or tank truck hose release, boiling liquid expanding vapour explosion (BLEVE), jet fire from the ignition of a liquid hydrogen release, and liquid nitrogen asphyxiation risk.

5. REPRESENTATIONS FROM THE PUBLIC

5.1. **Ivette Vera-Perez:**

- Spoke in support of the proposal;
- Advised that she is President and Chief Executive Officer of the Canadian Hydrogen and Fuel Cell Association;
- Commented on the innovative approach and employment opportunities of the proposal;
- Commented on hydrogen as a clean energy source and its role in reducing carbon emissions in the future;
- Advised that 30 percent of energy in Canada could be provided by hydrogen;
- Commented on the Canadian Hydrogen Strategy, noting that it includes hydrogen liquefaction;
- Noted that additional hydrogen liquefaction would allow more hydrogen-fuelled vehicles to be produced as it would help address the current supply issue;
- Commented on the conversion of waste hydrogen to fuel; and,
- Noted that the OCP calls for a reduction in GHG emissions.

5.2. **Ronan Chester:**

- Spoke in support of the proposal;
- Advised that he is the Director, Climate Action and Sustainability Leadership for the Vancouver Fraser Port Authority, the Federal agency responsible for management of the Port of Vancouver;
- Noted that the Port of Vancouver is the largest port in Canada and the largest port on the West Coast of North America by tonnage;
- Commented on population and business growth and the resulting increase in demands on the port;
- Noted that the Port of Vancouver is party to the North West Ports Clean Air Strategy along with the Ports of Tacoma and Seattle, which commits the ports to zero emissions by the year 2050;
- Advised that the transition of energy sources in heavy industry is part of the strategy, with the opportunity to use hydrogen fuel cell technology as a solution;
- Advised that the Vancouver Fraser Port Authority is involved in projects to test hydrogen fuel cells in heavy duty trucks and with terminal operations;
- Noted that importing hydrogen from the United States for these projects was under consideration due to inadequate supply in Canada; and,
- Noted that other ports throughout the world are also working on energy and climate change solutions.

5.3. **Ged McLean:**

- Spoke in support of the proposal;
- Advised that he is the Executive Director for the BC Centre for Innovation and Clean Energy, with the goal of finding solutions to reach net zero by supporting companies developing commercial technology;

- Addressed comments by members of the public that hydrogen technology is not necessary as electric vehicles fill the need for zero-emission vehicles, noting that many different technologies are needed to reach climate action goals;
- Advised that hydrogen fuels are different from electric vehicle technology, with low-carbon fuels that look like gas and diesel made from captured carbon from atmospheric and biological sources;
- Advised that hydrogen can be used as feedstock for other fuels, which may be used for air travel in the future;
- Stated that the proposal presents an opportunity to be leaders in the use of waste hydrogen that is currently being released into the atmosphere;
- Noted that HTEC has a network of hydrogen refuelling stations;
- Noted that hydrogen fuel cell technology was developed locally;
- Stated that the proposal would help Canada become less reliant on sources outside of the country; and,
- Recommended that Council support the proposal.

Councillor BACK left the meeting at 7:47 p.m. and returned at 7:47 p.m.

5.4. Corrie Kost:

- Stated that he is a long-time District resident and that he has a science background;
- Noted that he had submitted written materials regarding the proposal;
- Opined that the proposal would be an exception to the normal method of producing hydrogen worldwide;
- Stated that most hydrogen production requires the use of fossil fuels;
- Opined that hydrogen is not a path to the future;
- Noted that electrolysis of water is a possible source of hydrogen and that the cost of this type of production and compression of the resulting hydrogen is prohibitive;
- Compared the energy use of running electric vehicles and compressing hydrogen;
- Opined that producing hydrogen fuels is not sustainable unless the electricity cost is lower;
- Advised that his written materials contain additional information regarding safety and climate change;
- Provided a comparison of the potential force of a hydrogen tank rupture explosion to that of trinitrotoluene (TNT);
- Commented on the potentially affected area of such an explosion;
- Acknowledged that the probability of such an incident is extremely low; and,
- Questioned at what severity the possibility of an incident with an extremely low probability is unacceptable; and,
- Expressed concern that there are remaining uncertainties and that the proposal has not accounted for the possibility of seismic events.

5.5. Ed Bechberger:

- Spoke in support of the proposal;
- Advised that he is the President and Chief Executive Officer for ERCO Worldwide;
- Stated that that ERCO Worldwide a Canadian-owned business with 125 years in operation manufacturing salt-based electrolysis products, primarily sodium chlorate;

- Advised that ERCO Worldwide was a founding member of the Responsible Care Initiative of the chemical industry to improve health, safety and environmental performance;
- Advised that the ERCO Worldwide plant in North Vancouver has been operating safely since 1957 and currently has 40 full-time employees;
- Noted that ERCO Worldwide has received a Worksafe BC process safety audit rating of Best in Class;
- Stated that the plant generates up to 5.6 million kilograms of hydrogen as a by-product of the sodium chlorate production process, which could generate energy equivalent to a 40 megawatt water hydrogen electrolysis plant; and,
- Commented on the strategic value of capturing a waste product as a fuel source, noting that it is a by-product of an existing process.

5.6. George McKay:

- Advised that he lives near the subject property and is neither in support nor opposition;
- Stated that he attended the Public Hearing to learn more about the proposal;
- Noted that he would have liked to have had a copy of the consultant's report at the Public Information Meeting;
- Stated that there have been explosions at hydrogen plants in the past and that he hoped the probability of such an event was low;
- Stated that he would like more information on the long-term future of the area; and,
- Commented on the combination of industrial and residential uses in the area.

5.7. Corrie Kost SPEAKING FOR A SECOND TIME:

- Commented on the number of employees required to operate the proposed facility;
- Noted that more than one person may be on site at any given time;
- Questioned the assumptions used in the applicant's Risk Assessment;
- Provided his calculations of risk for an explosion of higher percentages of hydrogen release, up to 100 percent in the worst case scenario;
- Commented on the lethality of greater pressures than those in the applicant's Risk Assessment;
- Commented on airline travel safety;
- Stated that increasing levels of safety are being demanded; and,
- Compared the potential energy and explosive force of the proposed hydrogen storage tanks to the explosions in Beirut in 2020 and in Halifax in 1917.

5.8. Corrie Kost SPEAKING FOR A THIRD TIME:

- Commented on the industry standard of using a ten percent release in risk assessments, noting that only small volumes have been tested;
- Opined that larger volumes would react differently; and,
- Opined that the results from a different consultant's assessment or through reading existing literature may yield a different conclusion.

6. QUESTIONS FROM COUNCIL

In response to a question from Council, the applicant advised that hydrogen is not considered a pollutant or GHG, so is not considered to have a negative environmental impact.

In response to a question from Council, the applicant's consultant advised that a major earthquake is considered such a low probability that it is not considered as part of the risk assessment.

In response to a question from Council, the applicant advised that seismic requirements are very strict in British Columbia and will be adhered to in the application.

In response to a question from Council, the applicant's consultant advised that a tank breach would be contained on site, that hydrogen is in a liquid state at approximately minus 250 degrees Celsius and that a vapour cloud would result upon release from the tank, which would rise quickly into the atmosphere as hydrogen is the lightest of all elements. The consultant noted that a boiling liquid expanding vapour scenario, with a tank failing due to a nearby fire, would also be contained to the site. In the worst case scenario of a tank breach, an area of up to 700 metres from the site could be affected and the probability of such an incident is extremely low.

In response to a question from Council, the applicant's consultant advised that the impact of a tank breach at up to 700 metres would be an shockwave of 1.0 pounds per square inch, which would impact building structures and cause physical injury, and that fatalities would be likely closer to the facility. It was noted that there would be a relatively low number of employees on site and that the people who work on such sites understand their risk and emergency procedures. Fatalities among members of the public would be unlikely.

In response to a question from Council, the applicant's consultant advised that the probability of a catastrophic incident at a gas station in the community is estimated at one in one million or lower and that the community considers the presence of these facilities within the community acceptable.

In response to a question from Council, the applicant advised that the energy required to liquefy one kilogram of hydrogen is ten kilowatt hours and that production, which is not proposed, would require an additional 55 kilowatt hours.

In response to a question from Council, the applicant advised that the proposal would add four percent to the amount of liquid hydrogen currently produced in North America and that liquid hydrogen has been in production in North America for fifty years. It was noted that hydrogen is currently used to power the space shuttle, forklifts in large warehouses, glass production, in large power plants to produce electricity, and in a wide variety of chemical processes. The applicant further advised that much of the hydrogen is delivered in liquid form in tanker trucks through populated areas and on highways and that the tanks are the same as would be used at the proposed facility. It was noted that there is one facility in Quebec that has been in operation for more than twenty years that is in a more rural area and one in Chicago in a more urban area.

In response to a question from Council, the applicant advised that current truck traffic at the site is approximately 80 trucks per day and that the proposal would add three to five trucks per day. It was noted that there are no plans to move the product by rail.

In response to a question from Council, the applicant advised that the energy required for liquefaction of hydrogen is much less than for production. The applicant further advised that they are working with BC Hydro to ensure the capacity for 15 megawatts would be possible for the site.

In response to a question from Council, the applicant's consultant advised that a risk of 1 in 10,000 in the Risk Assessment is the probability of a fatality per year to a person on site 24 hours a day every day.

In response to a question from the public, the applicant's consultant advised that the Risk Assessment uses a ten percent release of hydrogen in calculating risk involved in a tank breach explosion based on industry standards and test as well as professional peer reviewed research papers on the topic. The applicant's consultant further advised that vapour cloud explosions and solid matter explosions behave differently and are not comparable.

In response to a question from Council, the applicant's consultant advised that only a portion of a hydrogen vapour cloud would be involved in an explosion, which would cause mixing of the remaining hydrogen cloud with the surrounding air.

In response to a question from Council, the applicant's consultant advised that it is not possible to provide calculations involving a larger percentage of hydrogen as explosive material within scientifically acceptable standards. The applicant's consultant further advised that scaling up the existing calculation would not provide a scientifically valid result.

7. COUNCIL RESOLUTION

MOVED by Councillor MURI

SECONDED by Councillor HANSON

THAT the June 13, 2023 Public Hearing is closed;

AND THAT "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)" is returned to Council for further consideration.

CARRIED
(8:38 p.m.)

CERTIFIED CORRECT:


Confidential Council Clerk

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AGENDA INFORMATION

☒ Regular Meeting
☐ Other:

Date: May 15, 2023
 Date: _____

YJ
 Dept.
 Manager

DM
 GM/
 Director

fw
 CAO

**The District of North Vancouver
 REPORT TO COUNCIL**

April 28, 2023
 Case: 08.3060.20/014.23
 File: 08.3060.20/014.23

AUTHOR: Tamsin Guppy, Planner

SUBJECT: Text Amendment Rezoning for a Hydrogen Liquefaction Facility
 at 100 Forester Street (Bylaw 8626)

RECOMMENDATION

THAT "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)" is given FIRST reading;

AND THAT "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)" is referred to a Public Hearing.

REASON FOR REPORT

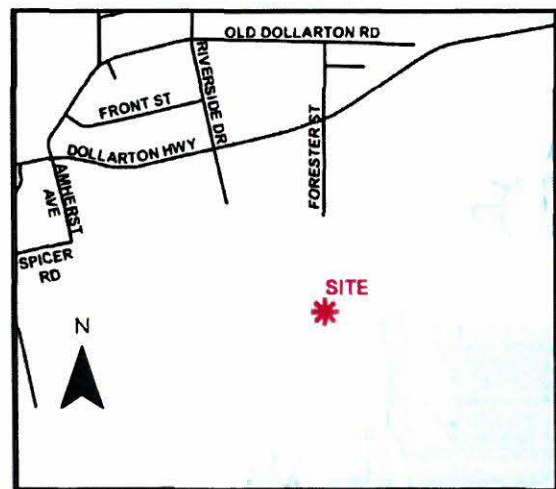
Liquefaction is generally prohibited in the District of North Vancouver. HTEC would like to build a hydrogen liquefaction facility at 100 Forester Street which requires an amendment to the Zoning Bylaw.

SUMMARY

The applicant, Hydrogen Technology and Energy Corporation – HTEC have applied on behalf of the owners of the property, ERCO Worldwide, for a text amendment to the Zoning Bylaw to permit a Hydrogen Liquefaction Facility at 100 Forester Street.

In order for this to occur, a site-specific Zoning Bylaw amendment is required to allow for the manufacturing of a hazardous substance.

A Quantitative Risk Assessment (QRA) was undertaken by Doug McCutcheon, a subject matter expert. The McCutcheon assessment concludes that the risks associated with this proposed industrial use, and more particularly the



risks associated with release of liquid hydrogen from the proposed plant, meet the threshold set by the risk criteria developed by the Canadian Society for Chemical Engineering – Process Safety Management Division (e.g. 1:1,000,000 risk of death annually), subject to satisfaction of a set of conditions. The conditions will be secured in a covenant to be registered on title prior to Council consideration of adoption of the proposed zoning amendment bylaw.

Given the findings of the McCutcheon study, the proposed Zoning Bylaw amendment is supportable.

BACKGROUND

HTEC has been a leader in the production, storage, transportation and use of liquid hydrogen for over 2 decades. Information on HTEC is available on their website: www.htec.ca

In late 2022 HTEC entered into a purchase agreement with ERCO Worldwide to purchase the subject property at 100 Forester Street.

The existing ERCO plant has been producing hydrogen gas as a by-product of its operations since 1957. This hydrogen is primarily vented into the atmosphere. HTEC's proposal is to construct a hydrogen facility to capture, purify and liquefy the hydrogen so that it can be used as an alternative transportation fuel.

Hydrogen liquefaction is not a new technology, with 14 hydrogen liquefaction plants in operation across North America, including several that date back to the 1970s and 1980s.

Hydrogen fuel cell electric vehicles are a useful alternative to battery powered electric vehicles providing greater ranges and faster refuelling times. Hydrogen-powered transportation is particularly well suited to hard-to-electrify transportation modes such as heavy trucking, marine shipping, and aviation where an energy-dense fuel is required.

The use of hydrogen electric fuel cell vehicles is growing with over 56,000 cars currently in use worldwide, of which approximately 12,000 are on the road in California. Sales have been slower in BC in part due to the limited supply of hydrogen fuel and fueling stations. In 2019, HTEC partnered with 7-Eleven/ Esso stations to create locations for hydrogen fueling and in 2020, a hydrogen pump was added at the Westview 7-Eleven/ Esso.

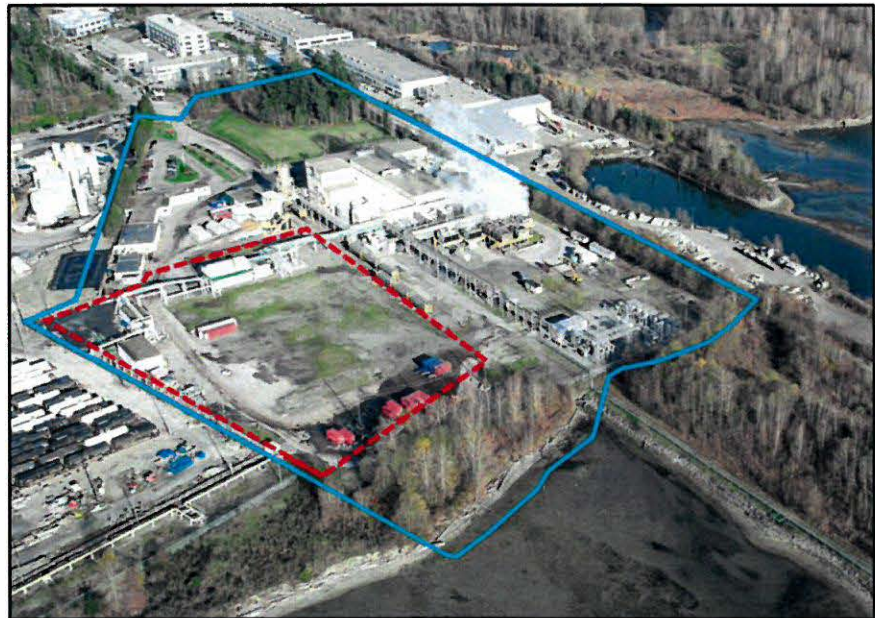
SITE AND SURROUNDING AREA



Looking west across the Maplewood Industrial Area, subject site shown in blue, proposed hydrogen plant shown in red, approximately ½ km south of Dollarton Highway.

The subject property, outlined in blue, is located in the Maplewood industrial area. The immediate neighbours include Chemtrade chlorine plant to the south-west, established in 1957, GFL liquid waste facility to the north, and on the same legal lot, ERCO Worldwide's sodium chlorate plant also established in 1957. Further north are the multi-storey business park and light industrial developments. To the south is a tree covered berm and tidal mudflats. The subject site is located over 500 metres (1/2 km) from the closest residents.

The red dashed line highlights the portion of the site to be used for the hydrogen facility. This area is approximately 2.3-hectare (5.7 acre) of the larger 7.74 hectare (19 acre) property and is located at the south portion of the site.



Looking north-east across the subject property outlined in blue, the red dashed line shows the approximate location of the proposed hydrogen facility.

POLICY ALIGNMENT

Federal Government Direction

In 2020, the Government of Canada released its [Hydrogen Strategy for Canada](#)¹ and announced the development of a low carbon hydrogen economy as a strategic priority to assist Canada in meeting its climate action goal of becoming net-zero by 2050.

Provincial Government Direction

The [BC Hydrogen Strategy](#)² outlines the Province's actions to accelerate the development of BC's hydrogen sector to create economic opportunities, reduce carbon emissions and overcome our reliance on fossil fuels.

The [BC Hydrogen Office](#)³ is a single point of contact for hydrogen projects and coordinates regulatory, permitting and environmental requirements. This office is already aware of this project and will be working with HTEC as their project moves forward.

DNV Land Use

The subject property is designated Industrial in the District's Official Community Plan (OCP). The proposal is consistent with the OCP designation and will not require an OCP amendment.

Left: The Official Community Plan designation for the area is Industrial.



DNV Economic Development

This project is in keeping with the Targeted OCP Action Plan's economy and employment lands goal as the project will:

- Intensify use of industrial lands;
- Generate capital investment of \$140 million;
- Support job creation;
- Support the production of a low carbon energy source; and
- Establish the District as leader in the green economy.

1. https://natural-resources.canada.ca/sites/nrcan/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf
2. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf
3. <https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/renewable-energy/hydrogen-office>

DNV Climate Action

This project is in keeping with District climate action policies including the OCP Priority Action to reduce greenhouse gas emissions. The emissions intensity of hydrogen production differs widely depending on the production method. Hydrogen captured at the subject site is considered *low emissions* hydrogen and thus can considerably reduce emissions by displacing the use of fossil fuels. Hydrogen is expected to play a key role in sectors that require high energy density where electrification is more challenging such as heavy-duty transportation.

The creation of a steady supply of liquid hydrogen will facilitate more vehicles fuel switching thereby reducing carbon emissions. **This facility would have the capacity to reduce green house gas (GHG) emissions by 140,000 tonnes CO₂e / year. This is roughly equivalent to the GHGs generated by 500 heavy duty vehicles or 30,000 light duty vehicles per year.**



Filling up a hydrogen fuel cell electric car at Westview's Hydrogen pump.

ANALYSIS

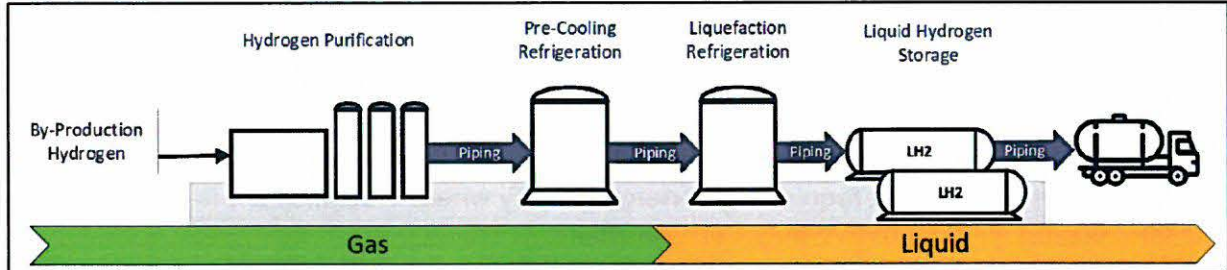


The site is zoned Employment Zone Industrial (EZ-I) which permits manufacturing and processing of materials, including the existing ERCO Worldwide facility which manufactures crystallized sodium chlorate for the pulp and paper industry.

Left: ERCO's sodium chlorate crystals are bagged for shipping.

While manufacturing is a permitted use, under the General Regulations section of the Zoning Bylaw (Section 403A (f)), the manufacture and storage of hazardous materials is prohibited, where the definition of hazardous materials includes compressed or liquefied gases. The intent of this general regulation is to ensure safety and compatibility of permitted uses in the District and allow for a site specific review of each proposal prior to a project being approved.

HTEC's proposal to liquify and store the hydrogen resulting from ERCO's manufacturing process, falls within the definition of "compressed or liquefied gases" and as such is not permitted without a site-specific review and zoning amendment.



Steps in the Processing of Hydrogen - The Zoning Bylaw's definition of hazardous materials is triggered when the hydrogen already on-site is liquefied and stored.

To address the requirement for a site-specific study on the impacts of introducing hydrogen liquefaction and storage to this site, a Quantitative Risk Assessment (QRA) has been conducted by Doug McCutcheon, an expert in this field. The McCutcheon assessment concludes that the risks associated with this proposed industrial use, and more particularly the risks associated with release of liquid hydrogen from the proposed plant, meet the threshold set by the risk criteria developed by the Canadian Society for Chemical Engineering – Process Safety Management Division (Major Industrial Accidents Council of Canada (MIACC)) (e.g. 1:1,000,000 risk of death annually).

The QRA was also peer reviewed by qualified professionals at SLR Consulting, who wrote, "the recommendations of the Consultant are reasonable, defensible and can be relied on by DNV."

Proposed Rezoning Bylaw 1426 (Bylaw 8626) limits the manufacturing and storage of hydrogen to the location and quantities discussed in the McCutcheon report.

In addition to the Quantitative Risk Assessment, HTEC is also meeting Federal and Provincial safety requirements and those established by the Canadian Society for Chemical Engineering. These include a variety of safety-oriented studies and workshops aimed at risk reduction at each stage in the planning, design, construction, commissioning and operation of this proposed facility. Highlights of this list of additional safety work include:

- Hazard and Operability Studies (HAZOP) (repeated as designs progress)
- Hazard Identification workshops (HAZID) (repeated as designs progress)
- Qualitative Risk Assessments (repeated as designs progress)
- Construction Risk and Safety Assessment;
- Emergency Response Planning
- Fire Safety Plan
- Standard Operating Procedure (SOP) development
- Pre-Start Up Safety Review (PSSR)
- Employee and Contractor Training Plan

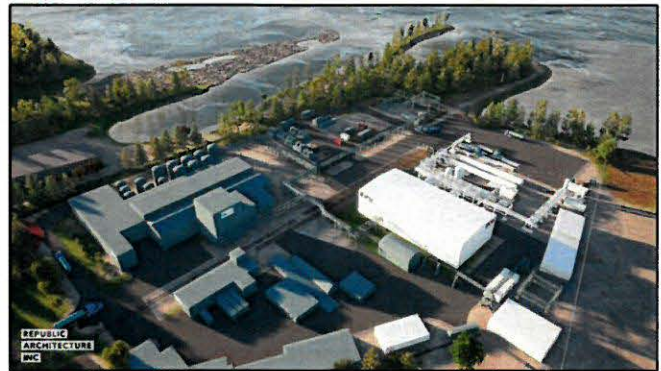
A development covenant will be registered on title prior to Bylaw Adoption limiting hydrogen processing to the levels and locations discussed in the McCutcheon Quantitative Risk Assessment and ensuring any noted conditions are secured.

DEVELOPMENT PERMITS AND DETAILED DESIGN REQUIREMENTS

If this rezoning is supported, the applicant will move forward with detailed design and submit a Development Permit application for industrial construction. Commitment to undertaking all necessary off-site servicing upgrades will be secured prior to Bylaw Adoption.



Left – looking southeast across the site, Right-artist's rendering showing a very early schematic design in white.



CONCURRENCE

The project has been reviewed by staff from the Economic Development, Environment, Building and Permits, Legal, Engineering, Community Planning, North Shore Emergency Management, Fire Department and Climate Action teams.

PUBLIC INPUT

ERCO Worldwide and HTEC have brought this proposal to the attention of their neighbours and stakeholders including:

- Issuing a press release on this proposal on December 5th, 2022, which led to articles in the local media and in industry specific blogs and newsletters as varied as "Sustainable Biz," "Chamber of Shipping" and the "Hydrogen Fuel News," and included:
 - North Shore News Article, December 7, 2022, <https://www.nsnews.com/local-news/hydrogen-north-vancouver-waterfront-6215593>; and
 - Daily Hive article on December 9th, 2022, <https://dailyhive.com/vancouver/htec-hydrogen-production-plant-100-forester-street-north-vancouver>.
- Attending a February session of the Community Advisory Panel, a panel of industry and community representatives in Maplewood, to present the HTEC proposal.

- Forwarding information on the public information meetings to the April Community Advisory Meeting.

With the commencement of the rezoning process, HTEC worked with staff to set up both virtual and in-person Public Information Meetings. Notices for these public meetings have been widely circulated by email, postal drop, and hand delivered to properties in the notification area by a team of 8 HTEC and ERCO employees.

As the public input process is still ongoing at the time of writing this report, the results of the public process will follow in an agenda addenda report that will be provided to Council prior to consideration of Bylaw Introduction.

At this time, the virtual public meeting has been ongoing for 1 week, and the in-person public meeting has been held, resulting in 4 written comments. Comments include the following themes:

- Questions and concerns related to safety and ensuring this project meets industry standards.
- Questions about hydrogen fuel cell vehicles and how they compare to standard electric cars and interest in the hydrogen fuel cell car that was on display at the in-person meeting.
- Support for the proposal.

CONCLUSION

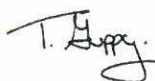
This project assists in implementation of the District's Official Community Plan objectives related to the economy and employment lands and climate action. The site-specific text amendment is now ready for Council's consideration.

OPTIONS

The following options are available for Council's consideration:

1. Introduce Rezoning Bylaw 1426 (Bylaw 8626) and refer to a Public Hearing (staff recommendation);
2. Refer the project back to staff for further consideration; or
3. Defeat the bylaw at First Reading.

Respectfully submitted,



Tamsin Guppy
Planner

ATTACHMENTS

1. Rezoning Bylaw 1426 (Bylaw 8626))[CDNV DISTRICT HALL-#5985928-BYLAW 8626 - Rezoning Bylaw 1426](#)
2. HTEC's information package [CDNV DISTRICT HALL-#5988321-100 FORESTER ST - HTEC Overview of Proposal](#)

REVIEWED WITH:		
☐ Community Planning _____	☐ Clerk's Office _____	External Agencies:
☐ Development Planning _____	☐ Communications _____	☐ Library Board _____
☐ Development Engineering _____	☐ Finance _____	☐ NS Health _____
☐ Utilities _____	☐ Fire Services _____	☐ RCMP _____
☐ Engineering Operations _____	☐ ITS _____	☐ NVRC _____
☐ Parks _____	☐ Solicitor _____	☐ Museum & Arch. _____
☐ Environment _____	☐ GIS _____	☐ Other: _____
☐ Facilities _____	☐ Real Estate _____	
☐ Human Resources _____	☐ Bylaw Services _____	
☐ Review and Compliance _____	☐ Planning _____	

The Corporation of the District of North Vancouver

Bylaw 8626

A bylaw to amend District of North Vancouver Bylaw 3210, 1965

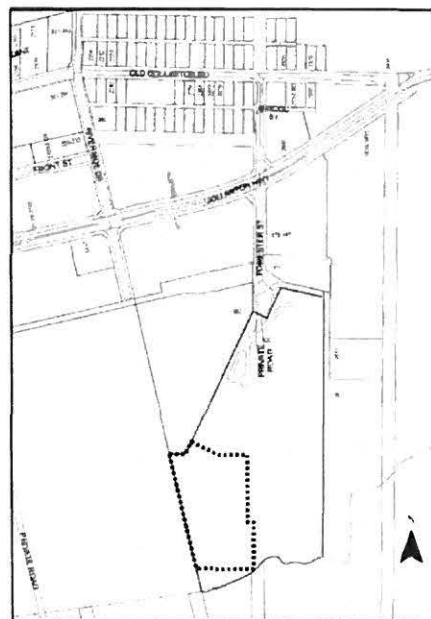
The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "District of North Vancouver Rezoning Bylaw 1426 (Bylaw 8626)".

Amendments

2. District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:
 - a) Section 403A Uses Prohibited in All Zones, (1) (f) the manufacture of hazardous materials is amended as follows:
 - (f) the manufacture of hazardous substances except:
 - i) for the manufacturing, liquefaction and storage of hydrogen, on that portion of the lands highlighted with the black dashed line below and located on a portion of 100 Forester Street, with a maximum on site storage capacity of 180,000 US gallons of hydrogen.



READ a first time

PUBLIC HEARING held

READ a second time

READ a third time

ADOPTED

Mayor

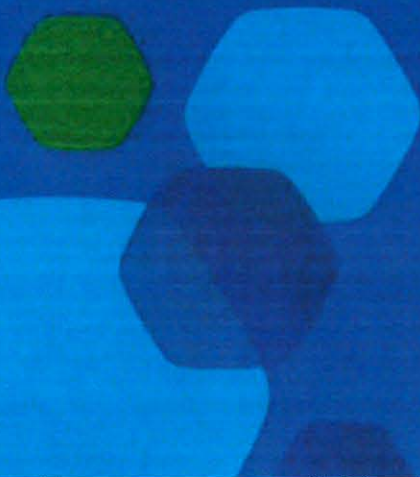
Municipal Clerk

Certified a true copy

Municipal Clerk

HTEC's Proposed BC Hydrogen Liquefier Project – Development Outline

December 2022



Project Overview & Benefits

HTEC has entered into an agreement with ERCO Worldwide (ERCO) to purchase its industrial land at 100 Forester Street in the District of North Vancouver and intends to expand the existing facility to include a 15-tonne per day (TPD) hydrogen liquefier. ERCO will lease back a portion of the land on a long-term basis to continue its sodium chlorate manufacturing operations, which produces low-carbon intensity hydrogen as a by-product. HTEC's hydrogen facility will capture, purify, and liquefy the by-product hydrogen to meet the growing market demand for low-carbon transportation fuels. The proposed project will be the first in Western Canada, providing low-carbon transportation fuel for zero-emission fuel cell electric vehicles. It will demonstrate how 'old' and 'new' industries can work together in B.C. to transform energy production and usage in the Province cost-effectively. In addition, the project supports, the:

- District of North Vancouver's Official Community Plan
- Reduction of GHG emissions up to 141 kilotonnes CO₂e per year, helping BC reach its CleanBC GHG emission reduction targets
- Development of the Province's hydrogen industry in accordance with the *BC Hydrogen Strategy*

On November 25, 2022, HTEC entered into definitive agreements with ERCO to purchase the 100 Forester Street land. ERCO will sell the by-product hydrogen produced from the sodium chlorate process to HTEC. HTEC is currently undergoing a **90-day due diligence period for the closing of the land sale**. ERCO's facility is ideally suited for a hydrogen liquefier, as it:

- Produces by-product hydrogen, which is primarily vented to the atmosphere today
- Is zoned for industrial use
- Has ~20 MW of transmission capacity to support the liquefier power demand
- Is situated in a municipality that officially recognizes the climate emergency
- Is near HTEC's Metro Vancouver hydrogen fueling station network

Preliminary analysis indicates socio-economic benefits of the proposed project will be substantial:

- Create more than 50 jobs in BC, directly related to the build and operation of the liquefaction plant, as well as through growth in supporting businesses
- Generate tax revenue for the District of North Vancouver with operating revenues of over \$40 million per year



Figure 1: 100 Forester Street, North Vancouver

- Supply hydrogen fuel to more than 30,000 fuel cell electric vehicles enabling further deployment of zero-emission vehicles on Canadian roads
- Allow ERCO's current manufacturing operations to continue, retaining the employment of 40 personnel

Furthermore, the liquid hydrogen produced from the proposed facility will fuel HTEC's growing network of stations across BC and provide fuel to third parties in the transportation industry. The development of this facility poses a highly strategic opportunity to expand the hydrogen industry in BC, and decarbonize the transportation industry by capturing and utilizing a stream of by-product hydrogen that already exists today from the ERCO facility.

Liquid Hydrogen

Due to its greater volumetric density, liquid hydrogen provides advantages across the transportation, storage and fueling stages of the value chain when compared to gaseous hydrogen. For example, liquid hydrogen trailers have greater storage capacities when compared to compressed gas tube trailers and carry between 4 to 10 times the mass of hydrogen than that of a gaseous tube trailer. This allows for fewer trucks and trips to supply a network of hydrogen fueling stations, lowering transportation costs across a station network. In some applications, liquid hydrogen is also used for onboard storage, allowing vehicles and equipment to store more fuel in a given volume.

Conversion of gaseous hydrogen to liquid form requires cooling to cryogenic temperatures through a liquefaction process. Although hydrogen exists as a gas under normal temperatures and pressure, it must be cooled to -253 degrees Celsius to exist as a liquid under atmospheric pressure. Cooling hydrogen to this temperature is achieved through a refrigeration cycle utilizing compressors, expanders, and heat exchangers.

Liquid hydrogen has been produced and used commercially for decades. In addition to numerous industrial uses, liquid hydrogen has historically been used as a fuel in the aerospace industry. While this project will be the first in Western Canada, hydrogen liquefaction plants exist across North America. Numerous liquid hydrogen production facilities were built across the United States through the 1980s and are still operating today. As of 2020, liquefaction capacity across Canada and the United States was approximately 51 TPD and 241 TPD, respectively¹.



Figure 2: Liquid Hydrogen Production Capacities as of 2020

Table 1 shows a list of hydrogen liquefaction plants that are in operation across the US and Canada². Hydrogen liquefaction is not a novel process. With the rise of investments in hydrogen production, many hydrogen liquefaction facilities have been announced in recent years. Most notably in Canada, Air Products has announced a 30 TPD liquefaction facility near Edmonton, Alberta, which it plans to have in operation by 2024.

Country	Location	Operated by	Capacity (TPD)	Commissioned	Still in operation
Canada	Sarnia	Air Products	30	1982	Yes
Canada	Becancour	Air	12	1988	Yes
Canada	Magog, Quebec	Messer	12	1988	Yes
USA	Ontario, CA	Linde	20	1962	Yes
USA	New Orleans	Air Products	34	1977	Yes
USA	New Orleans	Air Products	34	1978	Yes
USA	Niagra Falls, NY	Linde	18	1981	Yes
USA	Sacramento	Air Products	6	1986	Yes
USA	Niagra Falls, NY	Linde	18	1989	Yes
USA	Pace	Air Products	30	1994	Yes
USA	McIntosh	Linde	24	1995	Yes
USA	East Chicago	Linde	30	1997	Yes
USA	Las Vegas	Air	30	2022	Yes
USA	La Porte, TX	Linde	27	2021	Yes

Table 1: Operating Hydrogen Plants in North America

¹ L. Decker. Latest Global Trend in Liquid Hydrogen Production

² J. Stang and P. Neska. Development of large-scale hydrogen liquefaction processes from 1898 to 2009.

Plant Overview

HTEC's proposed liquefaction plant will be co-located on the ERCO property adjacent to the sodium chlorate plant. The HTEC team has already initiated a System Impact Study (SIS) with BC Hydro. They have confirmed that the regional transmission system has sufficient capacity to support a 20 MW load at this site. The site exists in Employment Zone Industrial (EZ-I) zoning and neighbours the Chemtrade chlor-alkali plant and other industrial facilities, as shown on the following page.

ERCO produces sodium chlorate in its facility for use in the pulp and paper industry through the electrolysis of brine. Gaseous hydrogen is produced as a by-product and is primarily vented to the atmosphere today. Figure 3 below shows the overall block flow diagrams for the proposed liquefaction facility. The facility would treat the by-product hydrogen, remove water vapour, nitrogen and oxygen impurities, and bring the hydrogen gas to fuel cell specification. The treated hydrogen gas would then be cooled through a series of heat exchangers. It is important to note that ERCO is the manufacturer of the hydrogen gas and has been producing hydrogen on site since 1957. ERCO installed hydrogen compressors to supply a portion of the fuel to the neighbouring Chemtrade facility for heat generation. HTEC's facility will take the by-product stream that would otherwise be emitted, and will clean, dry and liquefy the hydrogen so that it can be moved offsite to hydrogen fueling stations.

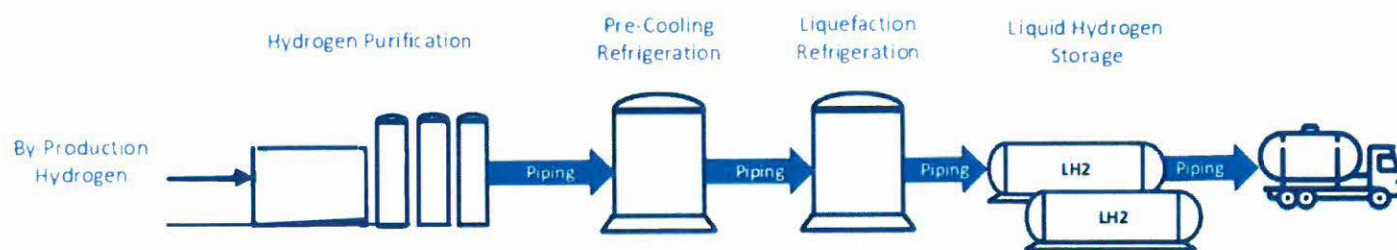
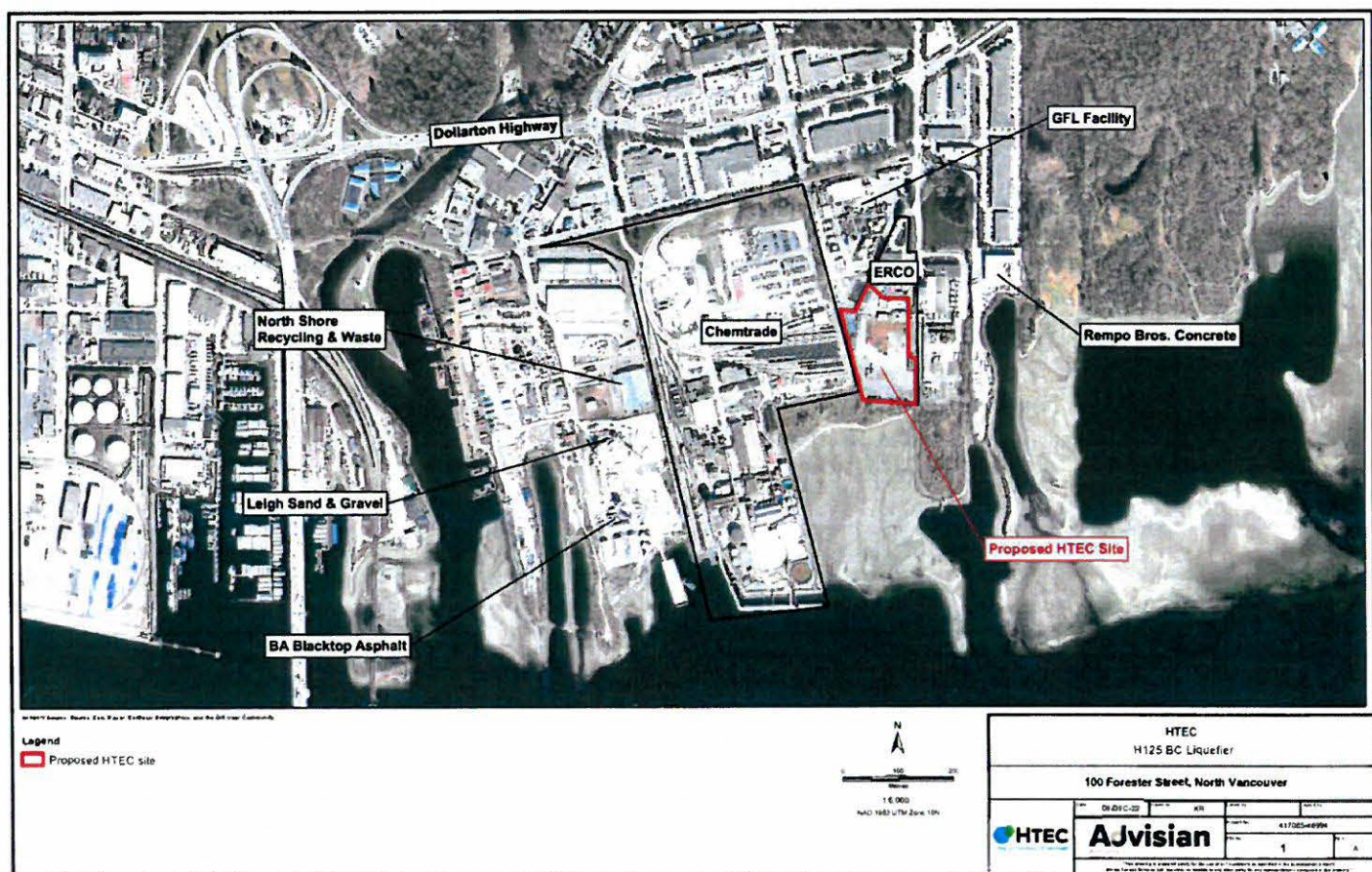


Figure 3: Liquefaction Process Overview



The site layout has been designed to minimize impact on the operation of ERCO's facilities. Figure 4 below shows the original ERCO site and HTEC's proposed layout.

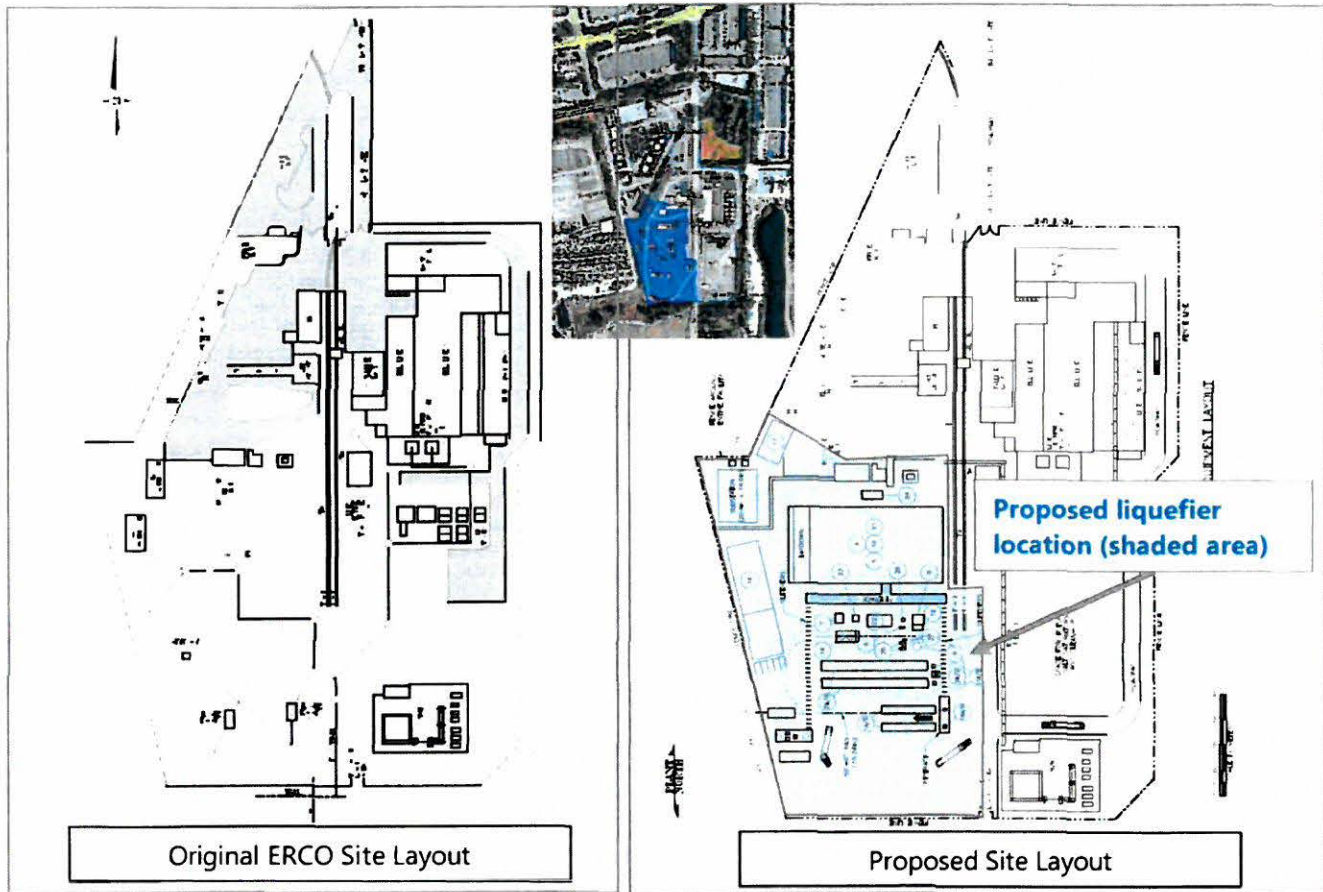


Figure 4: Original and proposed layout of the ERCO and HTEC facilities

Appended with this memo is the preliminary site layout of HTEC's proposed development. The facility will include two double-walled liquid hydrogen tanks (item 2A/B in the attached ERCO-HTEC site layout) with a storage capacity of 90,000 gallons per tank. The liquid hydrogen is stored at -253 degrees Celsius and approximately 1.5 bar. This storage capacity represents about 48,000 kg of liquid hydrogen. On an equivalent energy basis, this would equate to approximately 192,000 litres of gasoline or, *roughly the fuel capacity of one retail gasoline station.*

Safety

HTEC is committed to the highest standards of safety for our employees, contractors, clients, and the public. Safety is paramount to everyone at HTEC, and the company operates on a "Safety First" mentality. HTEC has an integrated program to ensure facilities are designed, built, and operated to manage risks associated with health, safety, and environmental incidents. HTEC's Health, Safety & Environmental (HSE) processes, which include risk management strategies, are comprehensive. HTEC employees treat hydrogen with the utmost respect. We are very proud of our safety record delivering close to 100,000 kg of hydrogen safely over the last ten years.

HTEC also designed its own Life-Saving Rules (LSR), which are an extension of its HSE program. As a progressive industry-leading company, HTEC is one of the first companies in the hydrogen space to develop these 7 Life Saving Rules. In alignment with Energy Safety Canada and practices followed by established oil companies, these rules help guide effective work planning and hazard identification while empowering our workers to pause when faced with high-risk activities and intervene when required.

As outlined in the sections above, liquid hydrogen facilities have been safely operated across Canada and the US since the early 1960s, some in close proximity to urban development. For example, Air Liquide's facilities in Niagara Falls, NY, and East Chicago, IL, are both located near urban communities. As demonstrated in the figure below, Air Liquide's Niagara Falls plant is located approximately 500 m from the nearest residential development.

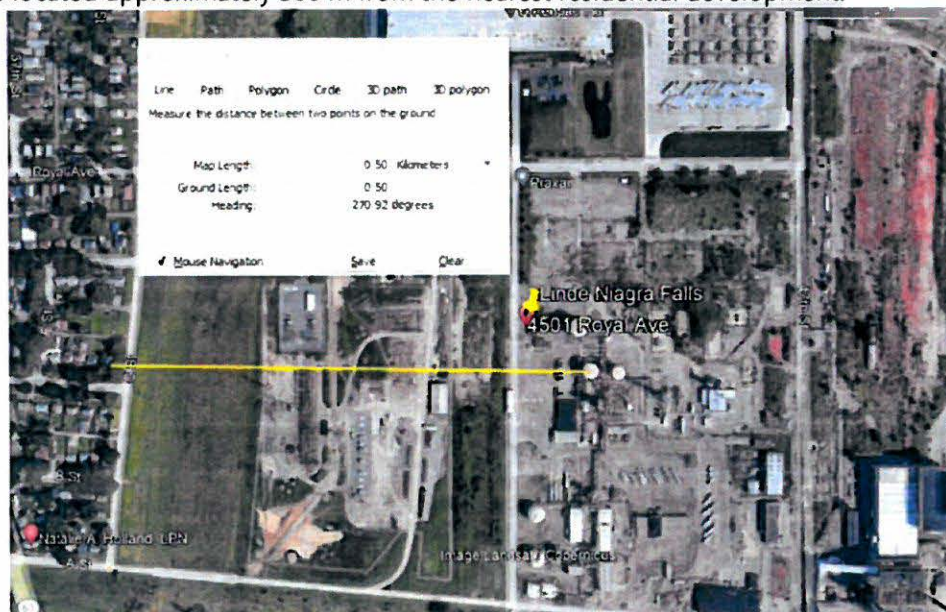


Figure 5: Air Liquide Niagara Falls, NY

HTEC's proposed facility is being engineered according to the most recent and relevant codes and standards. Appendix D outlines the relevant design codes and standards which have been identified as part of the preliminary front end engineering that has been completed for the facility to date.

HTEC has designed and built several public hydrogen fueling stations in dense urban settings in cooperation with and under permit by the provincial safety regulators, Technical Safety British Columbia (TSBC). TSBC is charged with enforcing the BC Safety Standards Act to ensure public safety and compliance under the Canadian Hydrogen Installation Code (CHIC).

Liquid tank trailers engineering and manufactured by Chart Industries will transport liquid hydrogen from the proposed facility to HTEC's fueling stations and customers. The liquid tank trailers will be certified for transportation on roadways under the federal and provincial Transportation of Dangerous Goods regulations. HTEC would ensure the safety of the public through compliance under these regulations.

HTEC has contracted a third-party consultant, Doug McCutcheon, to conduct an independent risk assessment for this project (see Risk section below). **The independent risk assessment concluded that risk contours would not extend beyond the current industrial zoning and would not impact the Maplewood district.**

Impacts to the District of North Vancouver

Plant Operations

HTEC is working towards operationalizing the plant and providing liquid hydrogen to the transportation industry by September 2025. Changes to traffic through the site during normal operations will be minimal, with an increase of 26 additional truck movements per week above ERCO's existing average of 82 truck movements per week. The site would be operated 24/7, with approximately 4 HTEC employees on-site during regular weekday hours and maintenance staff on a recurring basis. Parking on the site would be shared with ERCO and utilize the existing parking lot.

Aside from water treatment chemicals and iron oxide which is utilized as a catalyst in the liquefaction process, HTEC's proposed facility introduces no new substances to the site. Liquid nitrogen, used as a coolant in the liquefaction heat exchangers, is already being delivered to the ERCO site for use in the sodium chlorate process.

The facility is being designed to manage noise control following Occupational Safety and Health Administration (OSHA) and International Organization for Standardization (ISO) standards. Therefore, HTEC does not anticipate any noise impacts outside of this facility's proposed site.

Preliminary engineering has been conducted through collaboration with a third-party engineering firm. Current building schematics and equipment specifications indicate that the tallest structure would be approximately 20 meters tall, no taller than the existing ERCO buildings. Therefore, HTEC does not anticipate any visual impacts to the District outside the proposed site.

Plant Construction

Construction of the facility is anticipated to take place over approximately 20 months. Equipment is expected to be transported to the site via truck trailer and will occur once the necessary civil and foundation work has been completed.

Risk

HTEC contracted a third-party consultant, Doug McCutcheon, to conduct an independent risk assessment. The executive summary of the assessment is included in Appendix C, while the complete study forms part of the full PPA submission. The risk assessment concluded that risk contours would not extend beyond the current industrial zoning and would not impact the Maplewood district. The report states, "The risk of a major release of liquid Hydrogen creating an explosion and fire having an impact outside the company property line is within the risk criteria as developed through the Canadian Society for Chemical Engineering – Process Safety Management division (Major Industrial Accidents Council of Canada) (*CSCHE-PSM (MIACC)*) work." Additionally, HTEC has reviewed the published Maplewood Chemical Hazard Develop Permit Area study and the current zoning applicable to the ERCO site and surrounding area.

Permitting and Zoning

The ERCO site has a Certificate of Compliance (CoC) in place, issued in 2001 following the remediation of metals contamination in soils, groundwater, and sediment. In 2019, a Phase I and a limited Phase II Environmental Site Assessment were conducted of the site. These studies found that no new CSR Schedule 2 Uses had been conducted on the site since 2001, and that similar contaminant levels were encountered as were present following the 2001 remediation. Appendix B contains a memo developed by third-party consultant Active Earth, which justifies the validity of the existing CoC.

The proposed project will be located at 100 Forester Street, which is in an EZ-I Industrial Zone. The project is well-aligned with the stated intent of the Industrial Zone to accommodate port-oriented uses, general manufacturing, and other industrial activities on lands adjacent to the Port and the rail corridor. However, zoning regulation 403A creates a potential challenge to the project as it prohibits the manufacture of hazardous substances in all Zones (Bylaw 5661); the definition of hazardous substances includes 'gases: compressed, deeply refrigerated, liquefied, or dissolved under pressure. Therefore, **this zoning regulation is considered a significant risk to the project. HTEC cannot proceed with the closing of the land sale if certainty around the bylaw and permitting process is not obtained.**

Benefits of the Project

The proposed project will provide significant environmental and economic benefits to the region through the production and distribution of clean hydrogen. Capturing ERCO's low-carbon intensity by-product hydrogen to enable end-use fuel switching in the transportation sector will significantly help reduce greenhouse gas (GHG) emissions. The hydrogen produced from this project could fuel up to 30,000 fuel cell electric vehicles or 500 Class 8 heavy-duty trucks. Taking this number of heavy-duty diesel trucks off the road would result in emissions reductions of up to **141 kilotonnes of CO₂e per year**. This project represents an important step to address the climate emergency that the District has officially recognized.

The project is expected to generate substantial positive economic impacts for the local economy. The total capital investment directly related to the land purchase and construction of the liquefaction facility is estimated at **\$300 million CAD**. The project is anticipated to generate revenues of over **\$40 million CAD per year** in hydrogen sales. It is estimated that the project will create over **50 jobs** in BC directly related to the build and operation of the plant and through growth in supporting businesses. HTEC is currently developing further details around the project's economic impacts and job benefits.

The proposed project is well aligned with **the District of North Vancouver's Official Community Plan**, particularly priority Action 8: Reduce greenhouse gas emissions from buildings, transportation, and waste to address the climate emergency. In addition, HTEC is interested to expand beyond low-carbon fuel supply in the District into growing the network of hydrogen fueling stations that will support the deployment of fuel cell electric vehicles locally.

Alignment with BC Hydrogen Strategy

The project will bolster BC's established Hydrogen Hub in Metro Vancouver. The proposed project is in the heart of Canada's world-leading hydrogen and fuel cell sector, and the increased availability of cost-effective, low-carbon intensity hydrogen will help support pilot projects in innovative new applications such as hydrogen rail pilot projects or those proposed in the BCH2 Ports Project and will support the expanded deployment of commercially mature hydrogen applications.

- ✓ First H₂ liquefaction plant in BC, enabling decarbonization of transportation
- ✓ >140,000 tonnes CO₂ emissions reduction potential per year
- ✓ Positions DNV and HTEC as leaders in the renewable energy transition
- ✓ Protects and creates local jobs
- ✓ Strong project economics and tax revenues
- ✓ Co-location w/ by-product H₂ = lowest cost & fastest path
- ✓ HTEC has established channel to market w/ fueling station network

The project also supports the *British Columbia Hydrogen Strategy*³, aiding the Province in reaching its objectives of reducing GHG emissions 40% below 2007 levels by 2030 and the CleanBC target of net zero by 2050. The *BC Hydrogen Study* estimates that hydrogen has the potential to reduce annual emissions by 11% of the Province's 2018 emissions by 2050. According to the Study, the projected hydrogen demand in BC could reach up to 1.4 Mt/yr in 2050. The BC Hydrogen Strategy outlines several actions and recommendations to scale up production in the Province, including **"support the development of hydrogen liquefaction, distribution and transmission infrastructure"**.

Unlocking hydrogen's potential requires acting with urgency and working together to implement the B.C. Hydrogen Strategy. Accelerating the adoption of renewable and low-carbon hydrogen through policy, partnerships, innovation and infrastructure will help us achieve our CleanBC commitments and build a sustainable economy.

B.C. Hydrogen Strategy

The Province has put their direct support behind the proposed project by entering into a Part 3 Agreement under the Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act with HTEC that will issue 75,000 build capacity credits for the project. These credits offer a secure and important contribution to de-risk project financing. Credits will be issued on a milestone basis. The Province's LCFR program is also an important policy lever to support cost-effective fuel sales at hydrogen fueling stations in BC, which is important to create demand for the fuel produced at this facility.

Alignment with Federal Government's Hydrogen Strategy

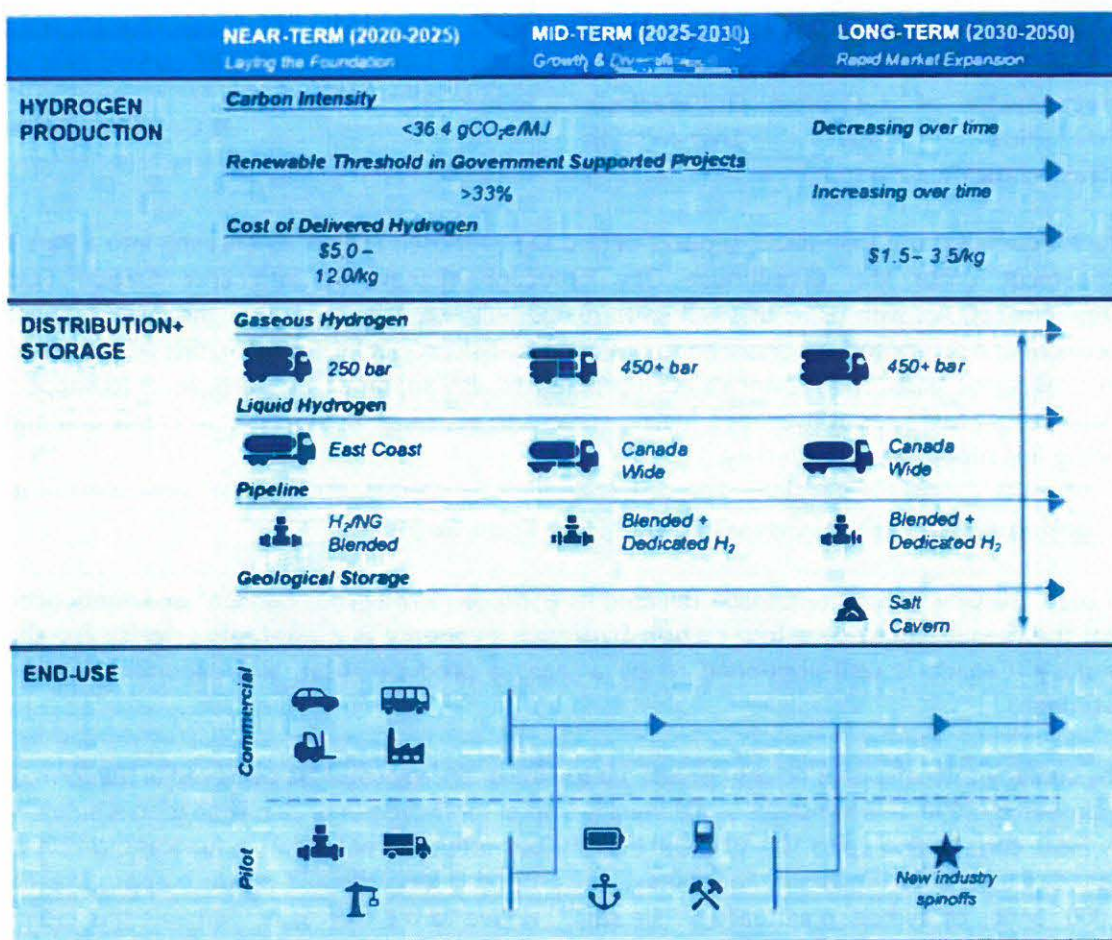
In 2020, the Government of Canada released its *Hydrogen Strategy for Canada*⁴ and announced that the **development of a low-carbon hydrogen economy is a strategic priority for the country**. Canada is well-positioned to be a leading producer, user, and exporter of green hydrogen.

The strategy estimates that across Canada, up to 30% of energy could be delivered in the form of hydrogen by 2050. This translates to a domestic market for hydrogen of 20 million tonnes annually by 2050, contributing up to 190 Mt-CO₂e in emissions reduction potential – equivalent to 25% of Canada's total 2018 emissions. For context, the proposed facility would produce approximately 5,000 tonnes of hydrogen annually. While small relative to the forecasted demand, this facility represents an important first step to establishing at-scale, commercial infrastructure on the West Coast.

³ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf

⁴ https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/environment/hydrogen/NRCan_Hydrogen_Strategy-Canada-na-en-v3.pdf

The Hydrogen Strategy for Canada places a significant focus on developing an at-scale hydrogen production and distribution value chain, and specifically calls out the need to develop strategic liquefaction assets Canada-wide in the 2025-2030 timeframe. This project will be the first liquefier on the West Coast. Hydrogen adoption in Canada is expected to be focused on energy-intensive applications where it offers advantages over alternative low-carbon options, such as heavy-duty transportation and industrial heat generation. These markets align with HTEC's offtake plans for the facility.



In addition to their published strategy, the federal government has shown support for developing the hydrogen economy through regulations and policies such as the Clean Fuel Standard and establishment of Zero-emission Vehicle (ZEV) sales targets. It has also made funding available through incentives such as the Clean Fuels Fund, Strategic Innovation Fund, and the Hydrogen Investment Tax Credit announced during the 2022 fall economic statement. The government intends for the new investment tax credit to be available across a range of clean hydrogen pathways. The proposed tax credit will be refundable, and available for eligible investments made as of the day of Budget 2023. The lowest carbon intensity tier that meets all eligibility requirements is proposed to receive an investment tax credit of at least 40 per cent.

The Government of Canada has demonstrated strong support for HTEC's hydrogen infrastructure development plans directly through HTEC's engagement with government officials, and via strategic grant funding support for production facilities and fueling stations.

This project represents an opportunity for the District of North Vancouver, Government of British Columbia, and Government of Canada to jointly support construction of a low-carbon fuel facility that will result in decarbonization of our energy system while strengthening Canada's recognized innovation leadership in the hydrogen sector.

Appendix A:

Site Layout



REV	DESCRIPTION	DATE
01	Issue for PPA review	12 Dec 2022



PROJECT INFORMATION
H125-Ao.0
12 dec 2022

HTEC HYDROGEN LIQUEFACTION PLANT PPA review

project location
East London
Site description
The site is located in the East London area, near the Port of London. It is a large industrial site with a long history of use. The site is currently owned by the Port of London Authority (PLA) and is being developed for a new hydrogen liquefaction plant. The site is located in the East London area, near the Port of London. It is a large industrial site with a long history of use. The site is currently owned by the Port of London Authority (PLA) and is being developed for a new hydrogen liquefaction plant.



project details
Project name
Hydrogen Liquefaction Plant
Project description
The project is a new hydrogen liquefaction plant. It will be used to produce liquid hydrogen for use in the transport sector. The plant will have a capacity of 10,000 tonnes per year. It will be located in the East London area, near the Port of London. It is a large industrial site with a long history of use. The site is currently owned by the Port of London Authority (PLA) and is being developed for a new hydrogen liquefaction plant.

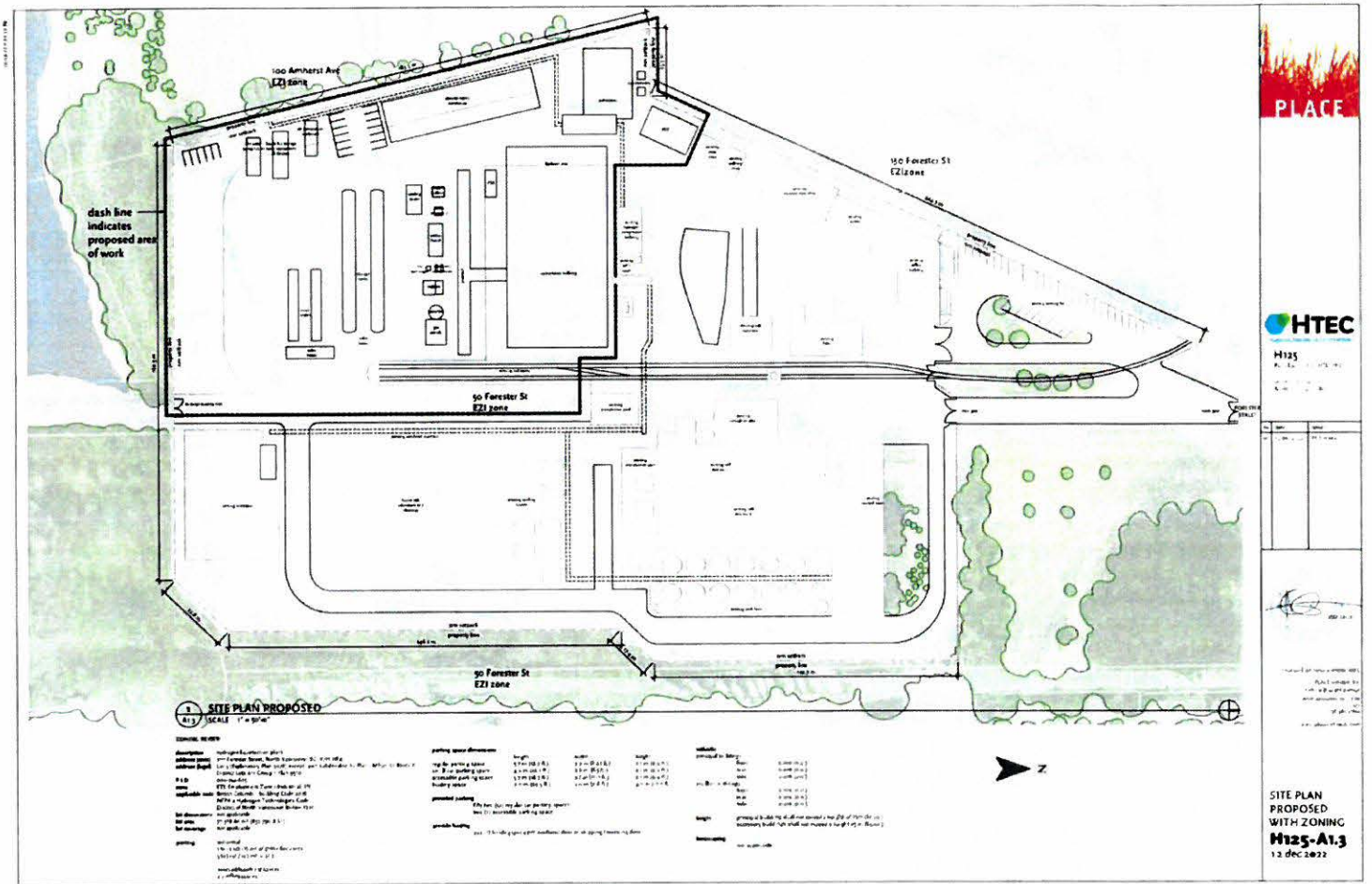
project milestones
M1: Project completion
M2: Start of construction
M3: Start of operation

1 PROJECT INFORMATION
Ao.0

2 LOCATION MAP
Ao.0

3 PROJECT CONTACTS
Ao.0

4 DRAWING INDEX
Ao.0



SITE PLAN PROPOSED
SCALE 1" = 50'

GENERAL NOTES

1. All dimensions are in feet and inches (Ft - In).
2. All dimensions are to the centerline of the building unless otherwise noted.
3. All dimensions are to the centerline of the driveway unless otherwise noted.
4. All dimensions are to the centerline of the sidewalk unless otherwise noted.
5. All dimensions are to the centerline of the road unless otherwise noted.
6. All dimensions are to the centerline of the lot unless otherwise noted.
7. All dimensions are to the centerline of the site unless otherwise noted.
8. All dimensions are to the centerline of the project unless otherwise noted.
9. All dimensions are to the centerline of the development unless otherwise noted.
10. All dimensions are to the centerline of the site plan unless otherwise noted.

PARKING SPACE DIMENSIONS

TYPE	LENGTH	WIDTH	AREA
Standard	18'0"	9'0"	162 sq ft
Handicap	20'0"	9'0"	180 sq ft
Motorcycle	8'0"	4'0"	32 sq ft
Bicycle	4'0"	2'0"	8 sq ft

LANDSCAPING

1. All landscaping is to be installed within the proposed area of work.
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PAVING

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IRRIGATION

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HTEC
H125
12 DEC 2022

SITE PLAN PROPOSED WITH ZONING
H125-A1.3
12 DEC 2022

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AGENDA INFORMATION	
☒ Regular Meeting	Date: <u>May 15, 2023</u>
☐ Other:	Date: _____


Dept.
Manager


GM/
Director


CAO

**The District of North Vancouver
REPORT TO COUNCIL**

May 9, 2023
Case: 08.3060.20/014.23
File: 08.3060.20/014.23

AUTHOR: Tamsin Guppy, Planner

SUBJECT: Public Input Received - 100 Forester Street, Bylaw 8626
Proposed Hydrogen Liquefaction Facility

RECOMMENDATION

That this report supplement item 8.4 on the May 15th Agenda, Bylaw 1426 (Bylaw 8626), a text amendment to permit a Hydrogen Liquefaction facility at 100 Forester Street.

REASON FOR REPORT

To report on the results of the public information meetings.

PUBLIC INPUT

The applicant held a virtual public information meeting that ran from April 20 – May 4th, 2023, and an in-person meeting on April 27, 2023.

280 notices were circulated in accordance with the District's policy on Non-Statutory Public Consultation for Development Applications.

Following the completion of both public information meetings, a summary of public input was prepared and is Attachment 1.



The in-person open house on April 27, 2023

There were 10 members of the public at the in-person open house, and the virtual meeting discussion page received 184 views.

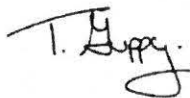
Eight comments were received during the public input process and the topics raised include:

- Questions and concerns related to safety and ensuring this project meets industry standards for risk tolerance.
- A desire to view the professional report on risk tolerance (which will be posted on the District's website).
- Questions about hydrogen fuel cell vehicles and how they compare to standard electric cars and interest in the hydrogen fuel cell car that was on display at the in-person meeting.
- Support for the proposal.
- Interest in the hydrogen industry.
- Questions about the value of the project in terms of Climate Action.
- Questions about the method of hydrogen production.
- Questions on the referral process.

Of the issues raised, the applicant, HTEC, provided information on the hydrogen industry in general, the use of hydrogen as a fuel and why it is a useful complement to electric vehicles, information on the proposed technique for re-using the hydrogen currently being released to the atmosphere, and the comparative merits of this form of low emissions hydrogen production.

The applicant team and staff provided information on the Quantitative Risk Assessment (QRA) and the study's findings that show that the proposal meets the risk tolerance criteria. Risk reduction experts were available to answer questions during the public information meetings. The full QRA will be included in the Public Hearing materials available online and at the District Hall.

Respectfully submitted,



Tamsin Guppy
Planner

Attachment 1: Summary of Public Input

REVIEWED WITH:		
☐ Community Planning _____	☐ Clerk's Office _____	External Agencies:
☐ Development Planning _____	☐ Communications _____	☐ Library Board _____
☐ Development Engineering _____	☐ Finance _____	☐ NS Health _____
☐ Utilities _____	☐ Fire Services _____	☐ RCMP _____
☐ Engineering Operations _____	☐ ITS _____	☐ NVRC _____
☐ Parks _____	☐ Solicitor _____	☐ Museum & Arch. _____
☐ Environment _____	☐ GIS _____	☐ Other: _____
☐ Facilities _____	☐ Real Estate _____	
☐ Human Resources _____	☐ Bylaw Services _____	
☐ Review and Compliance _____	☒ Planning _____	

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100 Forester Street - Proposed Hydrogen Liquefaction Facility

Summary of the Public Input Received

MEETING DATES:

In Person – Open House:

Date: April 27th, 2023

Time: 5:00pm – 6:30 pm

Location: Kenneth Gordon Maplewood School Gymnasium, 420 Seymour River Place

Virtual Public Information Meeting

Discussion open: April 20 – May 4th, 2023.

Web link: www.DNV.org/Public-Meeting

ATTENDANCE AND INPUT RECEIVED:

Attendance:

- In-Person Visits to the Open House: 10 people
- Virtual meeting [landing page](#): 120 unique visits; 154 total views
- Virtual meeting [discussion board](#): 132 unique visits; 184 total views
- YouTube video presentation: 28 total views
- Main project page on DNV.org: 124 unique visits; 240 total views

Number of Comments:

- Virtual Public Meeting chat: 3 people (and responses from Staff and HTEC)
- Emails: 5 members of the public
- Comment sheets: 0
- Phone calls: 0
- In person discussion: approximately 10 members of the public

Comments and Questions Raised:

- Questions and concerns related to safety and ensuring this project meets industry standards for risk tolerance. (The QRA by the qualified professional will be posted on the District's webpage for this application and be part of the Public Hearing materials.)
- Questions about hydrogen fuel cell vehicles and how they compare to standard electric cars and interest in the hydrogen fuel cell car that was on display at the in-person meeting.
- Support for the proposal.
- Interest in the Hydrogen industry.
- Questions about the value of the project in terms of Climate Action.
- Questions about the method of hydrogen production.
- Questions on the referral process.

From the Virtual Public Information Meeting Comment Section:

Username	Comment	Reply
lpatch	Please share the facility siting study that HTEC must conduct to be compliant with CSA Z767 / Environmental Emergency Preparedness Act / and other industry expectations regarding land use planning with respect to facilities handling explosive and flammable materials. What is the blast radius? Has a Quantitative Risk Assessment been performed, following the Chemical Institute of Canada guidelines. The permit shl not be approved until these fundamental risk assessments have be completed.,	District Staff: Thank you for your comment. HTEC provided the District with the Qualitative Risk Assessment completed in accordance with the Canadian Society for Chemical Engineering Process Safety Management Division (MIAOC) guidelines and requirements. The District hired qualified experts in this field to peer review the Qualitative Risk Assessment to ensure the proposal meets industry standards.
DNV		
steambrewed	I've worked in and around hydrogen processing for a large portion of my career.. a blast radius is a guesstimate at best. How can you claim a hydrogen compression facility located directly next to chlorine storage in railway cars is a safe and good idea.. Chemtrade has a ridiculous amount of chlorine sitting right at the fence line of this property.. on the same side of the property that the proposed compression station and tanks are being considered	District Staff: The District relies on reports prepared by qualified professionals to assess hazard. McCutcheon & Associates prepared a report on the proposed Hydrogen facility. SLR Consultants undertook a peer review of the McCutcheon report. Both qualified experts are aware of the adjacent chlorine plant. The McCutcheon report states that the proposed facility meets the required risk tolerance criteria. SLR states that McCutcheon's findings are credible and can be relied on.
DNV		
kost	Are you aware that FCV cost about 10 times more in fuel per kilometer than Electric Vehicles. Am i correct that currently about 27,000kg of hydrogen is used by cars in BC per year. Also, i believe that every kilogram of hydrogen takes about 40 to 70 kWh of energy to produce - enough to drive 100 kilometers. Compare this to a Tesla EV which consumes about 16kWh to drive 100 kilometers. Charging a Tesla EV from home costs about $16 \times 0.15 = \$2.40$ to drive 100 kilometers. Hydrogen costs \$13/kg	Thank you for your comment. To achieve a low-carbon future we will need a suite of options. No single solution will be able to mitigate the impacts of climate change and pollution. Hydrogen is well suited for certain transportation applications where other zero-emission options do not meet the needs, such as medium- and heavy-duty trucks. Hydrogen offers long range, fast fueling time and extreme weather tolerance among other benefits. Ultimately hydrogen FCEVs offer another choice for consumers.
HTEC		
kost	Could the public be provided with the QRA study?	District Staff: Yes, information on the risk analysis will be available.
DNV		

Email Correspondence During the Public Input Period

From: [REDACTED]
Sent: 4/21/2023 12:27:41 PM
To: [REDACTED]
Cc: muril@dnv.org; planning@dnv.org; littlem@dnv.org;
Subject: Re: New Significant Development Applications

Even small amounts of liquid hydrogen can be explosive when combined with air, and only a small amount of energy is required to ignite it. Both its explosiveness and the extremely low temperatures involved make handling it safely a challenge.

This seems like a bad idea so close to forest and residential communities...

Please pass this on to all current councillors and planning staff.

Thanks

[REDACTED]

https://www.nasa.gov/pdf/EXPLOSIVE_LESSONS

From: [REDACTED]
Sent: Sunday, April 30, 2023 10:15 AM
To: Mayor and Council - DNV <council@dnv.org>
Subject: Application at 100 Forester Street

Your Worship & Members of Council,

You are probably aware of the application at 100 Forester Street by HTEC for the production of Hydrogen and it's ultimate distribution to the consumer. I have already commented on this application at

https://dnv.civilspace.io/en/projects/100-forester-street-htec-hydrogen-plant/discussion_topics/35

Through district staff I have requested that since HTEC provided the District with the Qualitative Risk Assessment completed in accordance with the Canadian Society for Chemical Engineering - Process Safety Management Division (MIACC) guidelines and requirements, **that it be made available to the public.** I trust, for transparency of the process, that this QRA will be made public.

When this application comes to the DNV Council for approval you may be interested in the Hydrogen Station Permitting Guidebook for BC (June 2022) - particularly those pages following 36(31) on Zoning.

The particulars for the rezoning are as yet unclear to me, but they may follow in due course.

Yours truly,

[REDACTED]

From: [REDACTED]
Sent: Monday, May 1, 2023 4:44 PM
To: info@htec.ca; Tamsin Guppy <GuppyT@dnv.org>
Subject: HTEC rezoning input

Hello Tamsin and Melissa,

I'm a resident in North Vancouver District and am writing seeking clarification on the impact the proposed rezoning at 100 Forester in our local community, and to the atmosphere. The information provided to the public is very general, while the energy system is obviously very complex.

- 1.) The IPCC and IEA highlight the positive potential for green hydrogen to play a role in global energy decarbonization, particularly for difficult to decarbonize industries, yet HTEC's stated focus for this project on personal vehicles rather than targeting heavy equipment and industry (such as cement/steel). Can you please elaborate on this choice? (graph attached)
- 2.) Hydrogen production is energy intensive, expensive, and ripe for greenwashing given the various feedstock and production methods (ie. green, blue, grey). While this proposal intends to capture hydrogen (a byproduct of sodium chlorate production), it will still require significant energy and resources to capture, purify, process, and transport hydrogen. Will the *lifecycle emissions and lifecycle energy consumption* be shared with the public for this project? How will this project increase DNV community-wide emissions and energy consumption? How far will this product travel from North Vancouver to the end market?
- 3.) As noted in [this article](#), the CEO/President of HTEC is quoted as saying, : "I think we're all firm believers that natural gas and hydrogen and LNG need to work together." As well, [CEO Colin Armstrong spoke](#) at the 2022 Gas and LNG Conference and is scheduled to be a speaker at the 2023 conference. Could you please provide the contents of the 2022 presentation and if, available, the 2023 presentation in May 2023?
- 5.) Does HTEC have any plans to sell hydrogen to FortisBC or any other fossil gas distributor to inject into existing fossil gas infrastructure?
- 6.) Does HTEC participate in any carbon offsetting schemes?
- 7.) Hydrogen is itself an indirect greenhouse gas. Does HTEC agree with the findings of [this report](#) out of the UK which among other findings, indicate that hydrogen has a Global Warming Potential 11 times that of carbon dioxide (over a 100-year time horizon)?
- 9.) Recent evidence demonstrates that hydrogen leakage is a serious and growing concern (due to hydrogen's impact on the atmosphere). "Hydrogen is thought to leak across the entire value chain, including electrolyzers, compressors, liquefiers, storage tanks, geologic storage, pipelines, trucks, trains, ships, and fuelling stations—with the highest rates likely in midstream and downstream sectors (van Ruijven et al., 2011). [Source](#) How does HTEC account for leakage and what measures are in place to mitigate?
- 10.) The DNV classifies all gases as a hazardous substances, yet there is little information in the slide deck addressing safety. are safety studies/analysis publicly available?

11.) What environmental assessments have been conducted on potential impacts to the surrounding environment (including the adjacent wildlife sanctuary), are these publicly available? Noise? Sound? Pollutants?

12.) Have local First Nation's, specifically Tsleil-Waututh and Squamish, been included in this rezoning process consistent with the DNV's commitment to implementing UNDRIP?

13.) Slide deck clarification: "*Reduce GHG emissions up to 141 kilotonnes CO2e per year.*" Please explain this figure.

I look forward to the responses to the above questions, thank you.

Regards

[Redacted signature]

From: [REDACTED]
Sent: Thursday, May 4, 2023 8:43 AM
To: info@htec.ca; Tamsin Guppy <GuppyT@dnv.org>
Subject: Re: HTEC rezoning input

Dear Melissa and Tamsin,

Just following up on when I receive a response to these questions? I understand input is being accepted through May 4 (today).

When do you expect this rezoning application to go before council?

I understand that a public hearing is not a legislated requirement for this text amendment, but can staff please clarify why the choice was made to hold a public meeting rather than a public hearing for this rezoning?

Thanks,
[REDACTED]

From: [REDACTED]
Sent: Monday, May 8, 2023 1:13 PM
To: Tamsin Guppy <GuppyT@dnv.org>
Subject: Re: Civil Space Comments - 100 Forester

Hi Tamsin,

I had hoped that links would be published.

I highly recommend viewing the 20 minute YouTube video on the Hydrogen issue by Sabine Hossenfelder - a physicist at CERN, titled

Hydrogen Will Not Save Us. Here's Why.

found at

<https://www.youtube.com/watch?v=Zklo4Z1SgkE&pp=ygUPaHlkcm9nZW4gc2FiaW5l>

or in short

<https://youtu.be/Zklo4Z1SgkE>

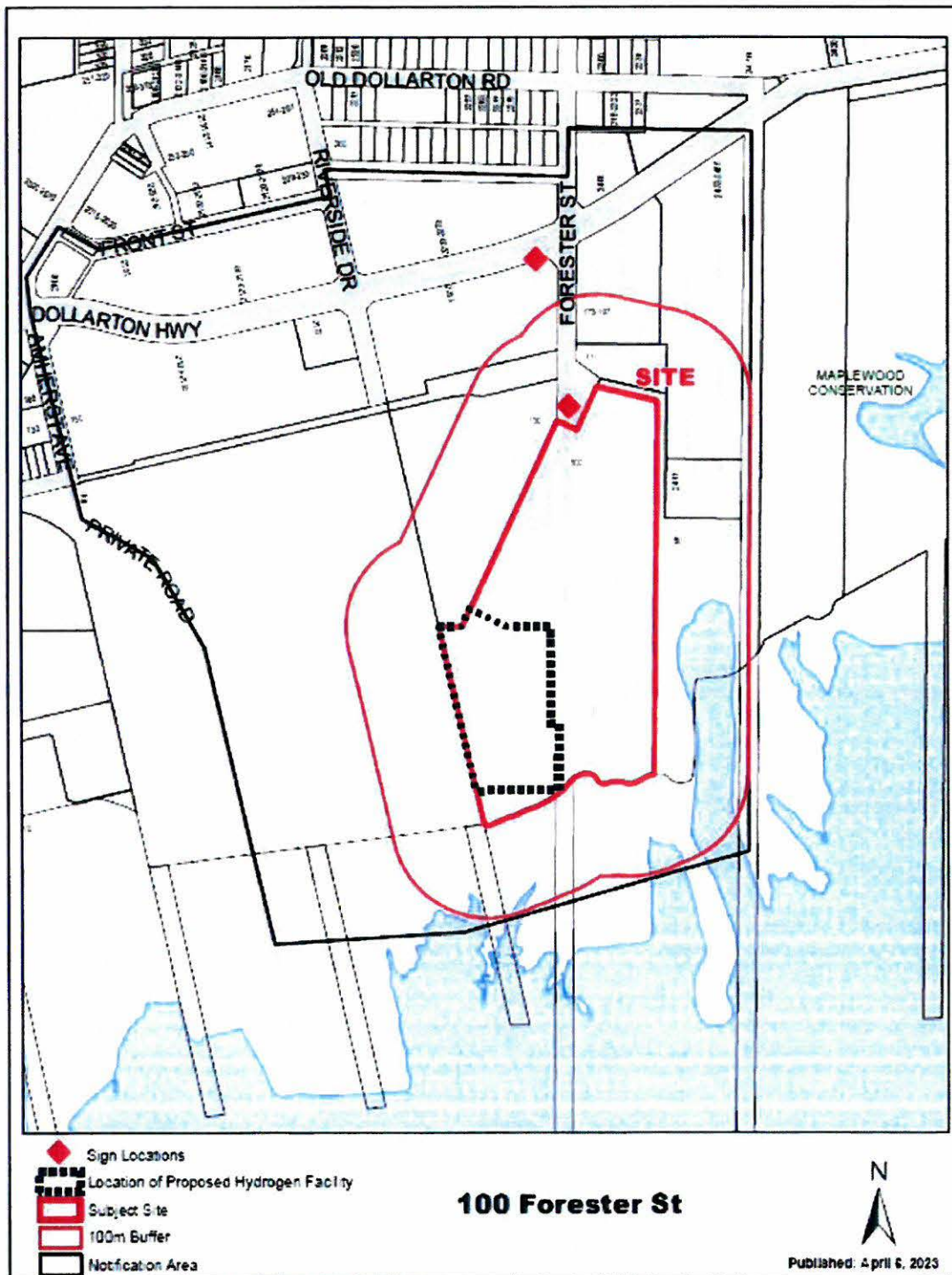
Hopefully you don't screen out hyperlinks!

Yours truly,

[REDACTED]

Notification Area (black line) and Sign Locations (red diamonds):

- 280 addresses in the notification area.



Newspaper Ads:

April 18, 2023

A18 | WEDNESDAY, APRIL 19, 2023

north shore news FRASER VALLEY



MAKE EARTH DAY EVERY DAY.

Let us do our part to protect ecosystems and biodiversity. Every effort counts.



JONATHAN WILKINSON
Member of Parliament, North Vancouver
@JonathanWNV

MILITARY HISTORY

UXO team finds two explosives in Blair Rifle Range sweep

BRENT RICHTER
for northshorenews.com

Department of National Defence contractors and Canadian Forces members found and detonated two explosives in their latest sweep of North Vancouver's Blair Rifle Range Lands.

Today, the land off Mount Seymour Parkway is lined with recreational trails but from the 1930s until the 1960s, it was a military training site.

Over February and March, unexploded ordnance (UXO) experts were scouring a two-hectare swath of the lands with metal detectors, which turned up an unexploded three-inch mortar shell and a fuse used to detonate mortars.

In both cases, the UXO team called in Canadian Forces explosives experts to come to the site, plant charges on the items and detonate them safely, with the public kept away. Based on the explosion the detonation produced, project manager Debbie Nicholls said the mortar shell would have been filled with high explosives.

The Department of National Defence has been working to clear all of its legacy sites in Canada, prioritizing those that pose the highest risk to the public first. When they were last at the Blair Rifle Range Lands in 2018, they found about 200 kilograms of mortar shells, practice rounds and grenade components.

"In 2018, the immediate dangers to the public were addressed when we cleared UXO from the open areas and the trails that are used by the public," Nicholls said. "Because of that, the site no longer poses a high risk or immediate urgency to the public."

The UXO team will be sent elsewhere for the summer but return this fall for a more substantial search, attempting to clear another seven hectares over five to seven months, Nicholls said.

The likelihood of UXO detonating on its own is extremely unlikely, but it is possible if one is disturbed, so Nicholls said it is imperative that no one dig holes or light fires within the Blair Rifle Range Lands. If a three-inch shell were to go off, it would have been filled with high explosives.

Continued on page 19

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(Next to Tim Horton's)

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Development Proposal

PUBLIC INFO MEETING

Thursday, Apr. 27,
5:00 - 6:30pm
Kenneth Gordon
Maplewood School Gym,
420 Seymour River Place.
Participate virtually:
Apr. 20 - May 4 at
[DNV.org/public-meeting](https://dnv.org/public-meeting)

PROPOSAL

100 Forester Street



HTEC is proposing to co-locate a hydrogen facility at the existing ERCO Worldwide plant to turn waste hydrogen into clean fuel for electric vehicles.

WE ARE HERE

PUBLIC INFO MEETING

PUBLIC HEARING



Contact:
Melissa McKinnon, HTEC
info@htec.ca

All three North Shore resorts now closed for skiing

Continued from page 21
not be accessing the CRA for skiing and snowboarding when the resorts are closed.

Mr. Seymour asks that backcountry users stay on backcountry trails. Whitehead said, "as we have unmarked hazards and machinery on hill preparing for next winter."

Cypress did not provide comment on accessing its recreation areas until the end of the permit period.

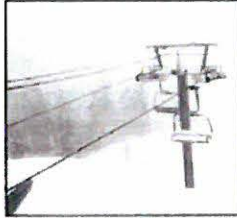
Grouse pays an annual lease fee to operate its tram and parking lot, which are adjacent to Metro Vancouver park land, but the resort itself is on privately held land.

Mountain resorts 'need to have all seasons represented'

Shutting down operations while there's snow on the mountains is a bad use of resources, says Chase Wright, who lives in Vancouver but commutes to work on the North Shore and to snowboard at Cypress.

"If you're going to have a mountain like that, you should probably have it open whenever there's snow, right?" he said.

Eventually there might be a few bad



The snow-covered Eagle Chair sits idle above mounds of untracked powder at Cypress Mountain Resort on Friday, April 21. (COURTESY: CYPRESS MOUNTAIN RESORT)

winter seasons due to climate change, Wright said. "Then do we have local mountains anymore? Or do they shut down?"

"If you want to create a consistent and sustainable mountain culture, you need to have all seasons represented," he continued, pointing to Whistler's transition to downhill hiking in the warmer months. Grouse continues to lift guests up the mountain throughout the year — hosting activities like zip lining, birds of prey demonstrations and

a tree canopy rope course — but bikes aren't allowed on the trail.

"There's no one on the North Shore that's doing gondola cycling in the summer," Wright said. "They should be able to adapt to switching sooner to hiking or switching later for skiing."

Drawing on his travel experiences, Wright referenced mountain cultures in Europe that have developed to accommodate dual seasons. One shining example is the town of Grindelwald, nestled in a valley in Switzerland's Bernese Alps. The region hosts world-class skiing in the winter, and hiking in the warmer months. Much of the area is interconnected by trains and gondolas.

Wright said there's a big fear that we could over-develop, and lose too much of the pristine wilderness on the North Shore, which is a valid concern.

But there's room to strike a balance, he said.

"If you go up there on a busy day it's just a zoo," Wright said. "There's not enough outdoor space for everyone going up there... I think there's a real desire for people to have more fun outdoor spaces that are respectfully and environmentally developed."

Outdoor Safety & Emergency Preparedness Open House

Saturday, May 13, 2023
11 am - 2 pm | Argyle Secondary School

- exhibition and demos
- workshops
- emergency vehicles
- rescue equipment
- food trucks
- bike valet

Visit our website for more information

Free to attend

North Vancouver School District
the natural place to learn

Development Proposal

PUBLIC INFO MEETING

Thursday, Apr. 27, 8:00 - 8:30pm
Kenneth Gordon
Maplewood School Gym,
420 Seymour River Place.

Participate virtually:
Apr. 20 - May 4 at
[DNV.org/public-meeting](https://dnv.org/public-meeting)

PROPOSAL

100 Forester Street

HTEC is proposing to co-locate a hydrogen facility at the existing ERCO Worldwide plant to turn waste hydrogen into clean fuel for electric vehicles.

WE ARE HERE

PUBLIC INFO MEETING

→

PUBLIC HEARING

→

HTEC
Pursuing the Future of Hydrogen

Contact:
Melissa McKinnon, HTEC
info@htec.ca

Public Information Meeting Flyer

Virtual Public Information Meeting Details:

Website: www.dnv.org/Public-Meeting

Date: April 20 to May 4, 2023

Public Information Meeting Time & Location:

Thursday, April 27, 2023

Doors Open: 5:00 PM

Open House Discussion: 5:00 to 6:30 PM

Kenneth Gordon Maplewood School Gymnasium
420 Seymour River Place

A HYDROGEN FUEL CELL ELECTRIC VEHICLE WILL BE ON DISPLAY AT THE EVENT

For further information, please contact:

HTEC

Project Inquiries

Meissa McKinnon

E-mail: mmckinnon@htec.ca

General Inquiries

Audrey Marande

E-mail: amarande@htec.ca

District of North Vancouver

Planning Department

Tamlin Guppy

E-mail: guppyt@dnv.org

Notice of Public Information Meetings in Your Neighbourhood

HTEC is hosting Virtual and In-Person Public Information Meetings to present the rezoning proposal for a Clean Hydrogen Production Facility at 100 Forester St, North Vancouver, BC V7H 2M9.

This information package is being distributed to the owners and occupants within 100 metres of the proposed development site in accordance with District of North Vancouver policy.

HTEC
HYDROGEN TECHNOLOGY FOR ENERGY

The Proposal: Recycling waste hydrogen at an existing electrolysis plant in North Vancouver to help us meet our climate goals.

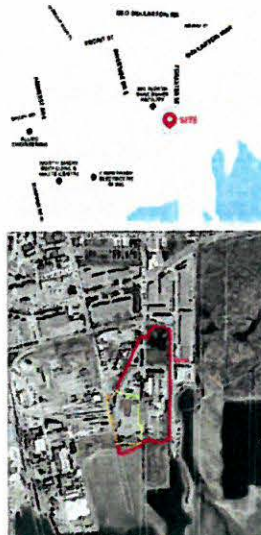
HTEC, a Vancouver-based leading clean hydrogen solutions company, is proposing to co-locate a clean hydrogen production facility at an existing ERCO Worldwide (ERCO) sodium chlorate plant, located at 100 Forester Street, North Vancouver.

HTEC will capture, purify, and process the vented hydrogen from this electrolysis plant to produce 15 tonnes per day of clean hydrogen. The rezoning proposal is to intensify the industrial use of existing manufacturing land.

The proposed facility will be located on a portion of the 5 acres of land that HTEC will occupy at the existing ERCO property. The plant will be located immediately southwest of the ERCO plant on a portion of the site not currently used.

Changes to traffic through the site during normal operations will be minimal, with an increase of 26 additional truck movements per week above ERCO's existing average of 82 truck movements per week. Parking on the site will be shared with ERCO and utilize the existing parking lot. Access will continue to be from the main driveway serving ERCO.

HTEC plans for the facility to be operational in early 2026.



Signs:

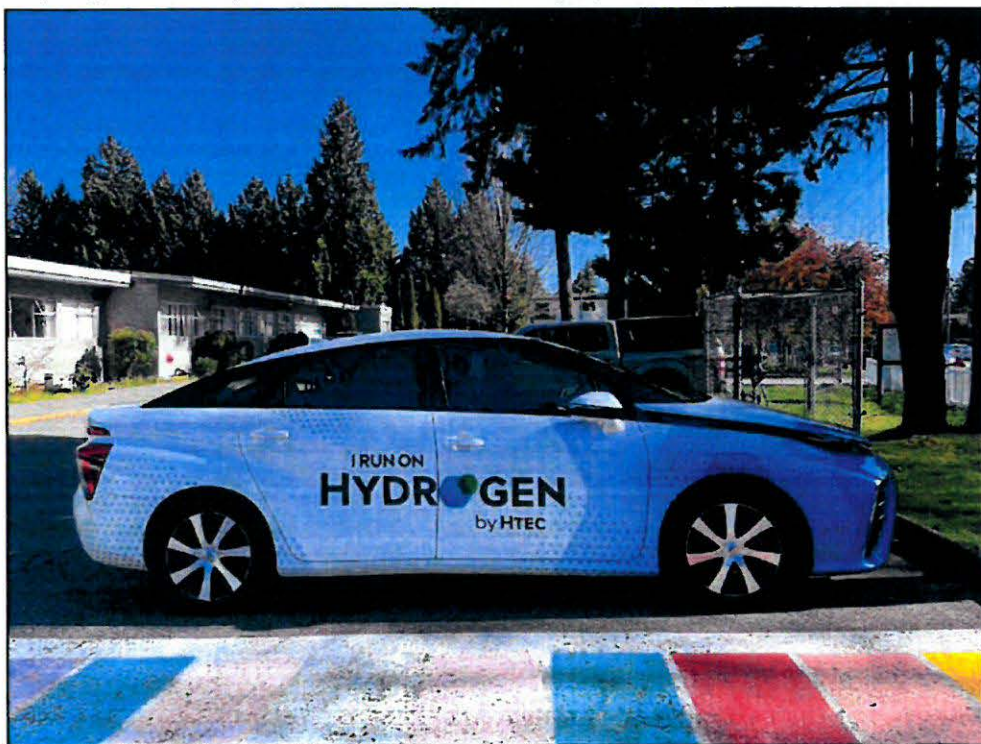


In-Person Public Information Meeting Set Up (photos as doors opened)

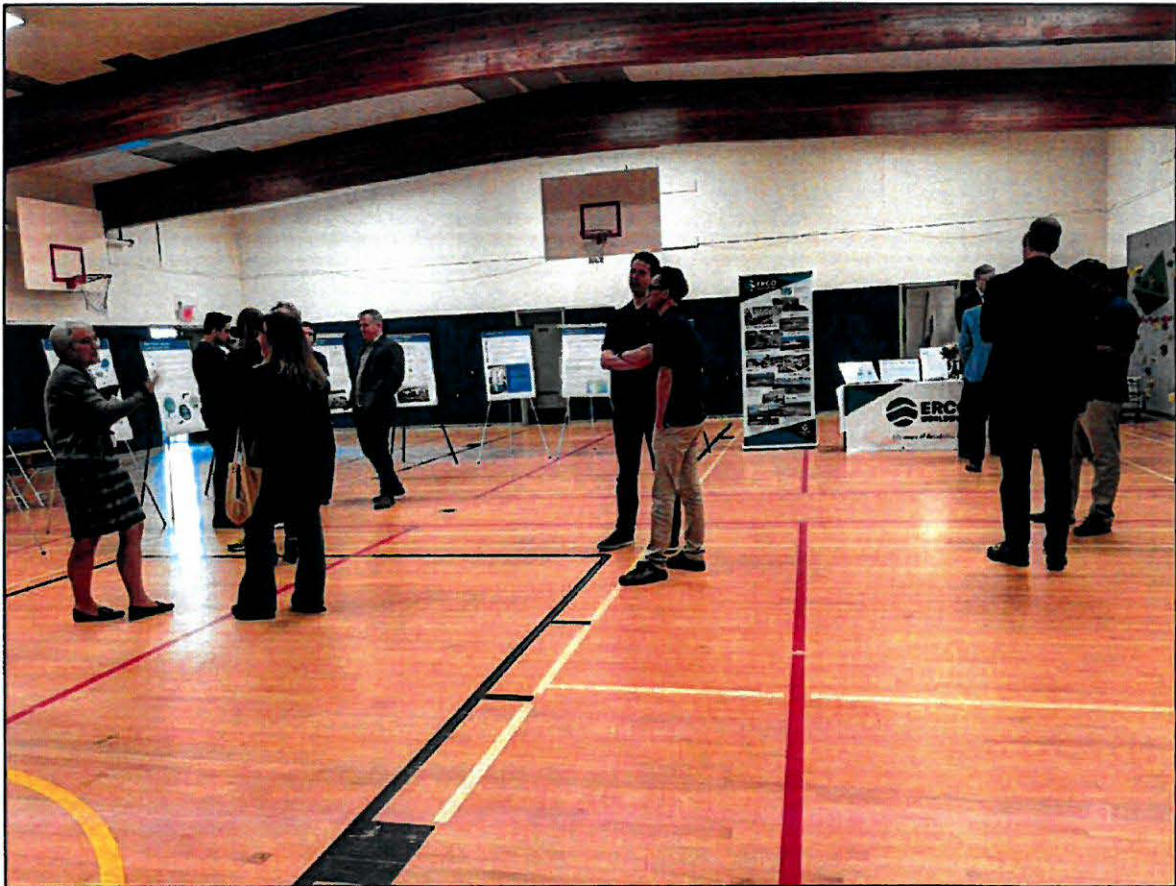




A hydrogen fuel cell powered car was also on display at the open house.



In-Person Meeting as it was Underway



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