



Massena, NY Green Hydrogen Facility

Frequently Asked Questions

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1. Who is Air Products?

Air Products is a world-leading industrial gas company that has been in business for more than 80 years. Air Products is the largest producer of hydrogen in the world and is a first mover in developing and executing low carbon hydrogen megaprojects driving the energy transition. The company develops, engineers, builds, owns, and operates some of the world's largest industrial gas projects, including the largest green hydrogen project.

2. What is Air Products building?

On October 6, 2022, Air Products announced plans to invest approximately \$500 million to build, own and operate a 35 metric ton per day facility to produce green liquid hydrogen using hydroelectric power and electrolysis of water drawn from the St. Lawrence River. The project also includes green hydrogen liquefaction, storage, distribution, and operation of hydrogen refueling stations in the State of New York. The commercial operation of this facility is targeted to begin in early 2027. Depending on market conditions, the potential exists for future development activities that could increase the total capacity of the facility to 70 metric tons per day.

3. Where will the hydrogen plant be located?

The Air Products plant in Massena, NY will be located at a 90-acre site on the east side of Pontoon Bridge Road (also known as outer North Main Street), just past the entrance to the existing Alcoa facility. Massena was chosen as the site for this facility for its skilled workforce, its access to renewable hydroelectric power and its proximity to northeast markets for green hydrogen in heavy-duty transportation and industrial applications.

4. What are the economic benefits of this project?

The project is expected to create around 500,000 hours of construction jobs over a three-year period, while creating roughly 350 jobs during the peak construction period.

Once the facility is operational, it will create 90 full-time green jobs in the Massena, New York

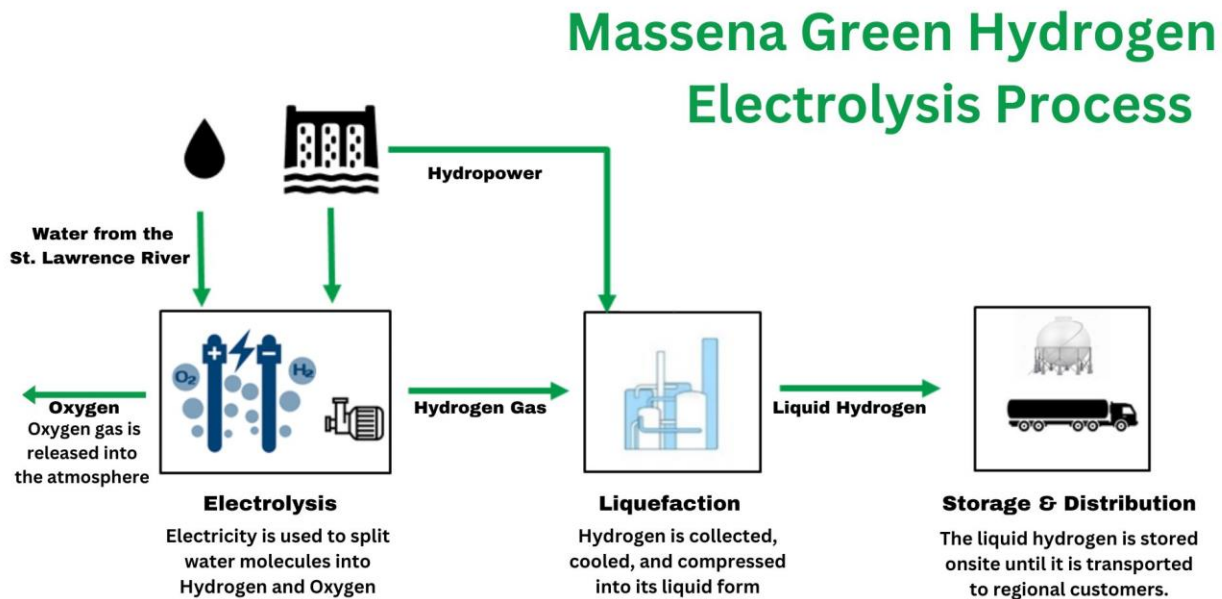
area with an average salary and benefits of around \$100,000 per year.

During operations of the Massena production facility, Air Products will be spending at least \$2 million per year locally on maintenance over the life of the project, plus an additional spend during major turnarounds of roughly \$5 million per year. Air Products is also expected to spend over \$30 million per year purchasing power from the New York Power Authority (NYPA) and \$300,000 per year purchasing water from the Village of Massena.

In addition, local government revenues from this site will increase significantly providing millions of dollars of additional revenues to the town, the school district, and the county.

5. What is Green Hydrogen?

Green Hydrogen is hydrogen that is produced with zero carbon emissions. Green hydrogen production requires a supply of renewable power from sources such as hydroelectric, solar, or wind energy plants. For the proposed project, Air Products will use hydroelectric power from the St. Lawrence River. The hydrogen will be produced through a process called water electrolysis, in which electricity is used to split water molecules into separate hydrogen and oxygen molecules. The hydrogen molecules are captured and liquified for distribution, and the oxygen molecules are released into the atmosphere. Oxygen is the only air emission from this process.



6. Has the proposed location for the Air Products facility been the site of any past industrial activities?

The proposed location of the Air Products green hydrogen facility on Pontoon Bridge Road is, to the best of our knowledge, a previously undeveloped site with no history of industrial activity.

7. Does the soil at the site of the Air Products green hydrogen facility contain PCBs or heavy metals?

Atlantic Testing Laboratories (Canton, NY) conducted soil testing on behalf of Air Products at the site of the proposed green hydrogen facility in accordance with the New York State Department of Environmental Conservation (NYSDEC) soil sampling guidelines. No evidence of PCBs was detected in the soil, and no heavy metals were detected above NYSDEC unrestricted use soil cleanup objectives.

In addition, no evidence of PCBs was detected in water samples collected from both the intake and discharge locations.

8. Will this facility have any air emissions?

During the process of producing green hydrogen through water electrolysis, the only emission into the air is oxygen. Electrolysis involves running an electric current through water to produce hydrogen and oxygen. The oxygen is vented to the atmosphere. There are no other air emissions from the green hydrogen production process, and an air permit is not required for this project.

There will be emissions from the emergency generators and the trucks that travel to and from the facility delivering liquid hydrogen to customers. However, our plan over the next several years is to convert our fleet of trucks to hydrogen fuel cell vehicles, which would have no emissions.

9. Why is Air Products getting a wastewater discharge permit?

Air Products will utilize approximately 1 million gallons of water per day from the St. Lawrence River to generate green hydrogen through electrolysis. The incoming water will also be used as a cooling water for the green hydrogen process. Approximately 300,000 gallons per day of process and cooling wastewater will be discharged into the NYPA Power Canal.

The facility will use water and wastewater treatment chemicals to minimize algae and bacteria growth, as well as to treat previously existing contaminants in the water, respectively. No process chemicals will be added for the hydrogen generation process. A State Pollutant Discharge Elimination System (SPDES) permit is required to discharge the treated wastewater into the power canal.

10. What impact will Air Products water withdrawal have on the water levels of the St. Lawrence River?

Air Products will purchase approximately 1 million gallons of water each day from the Village of Massena Water Department. The Village has a permit that allows it to withdraw up to 5 million gallons per day. Even after including Air Products expected volume, the Village will still only withdraw about half its permitted volume each day.

In addition, the Air Products volume of 1 million gallons per day equates to about 11.5 gallons per second. By comparison the flow of the St. Lawrence River near Massena is between 1.6 million and 2.4 million gallons per second.

11. What will the temperature of the wastewater be when it is discharged into the Power Canal?

The temperature of the wastewater discharged into the Power Canal by Air Products will vary based on the seasonal temperature of the intake water purchased from the Village of Massena. The temperature of the discharge water as it leaves Air Product's site will not be more than 25°F higher than the temperature of the intake water during winter months and will not be more than 10°F higher than the intake water temperature during summer months. In other words, the discharge water will be around 60°F in the winter and around 75°F in the summer when it leaves the plant. In addition, the wastewater is expected to cool continuously as it flows through an underground pipe for 3200 feet from the Air Product's site before it is discharged into the Power Canal. The effect of that pipe run will be to move the final discharge water temperature much closer to the seasonal ambient temperature than it was when it first left the Air Product's facility.

12. What are the biocides being used to treat the water and what amount of biocides will be discharged with the wastewater back into the Power Canal?

The Massena Green Hydrogen Project under development by Air Products requires ultrapure water to produce green hydrogen. Raw water from the St. Lawrence River will be pumped to a water treatment plant consisting of physical and chemical treatment processes to produce the required ultrapure water. Similar to the process used in municipal water treatment facilities,

our treatment process includes disinfection of raw water using biocide consisting of 12.5% Bleach (Sodium Hypochlorite) to prevent microorganism growth. The wastewater generated from the water treatment plant is expected to contain low levels of residual chlorine ranging from 0.2-0.5 parts per million (ppm). By comparison, the Centers for Disease Control (CDC) has determined that chlorine at or below 4.0 ppm is safe for drinking water. Air Products is currently finalizing the wastewater treatment plan based on the SPDES Permit Discharge Limits proposed by New York State Department of Environmental Conservation (NYSDEC) for the facility's discharge into the Power Canal.

13. What will the Green Hydrogen be used for?

The liquid green hydrogen produced is planned to be used as a carbon-free fuel to support heavy-duty vehicles in the transportation sector, and to decarbonize industrial applications, which will help the State of New York achieve its climate target of 40% renewable energy by 2030 by avoiding more than 250,000 metric tons per year of CO₂. In addition to demand for hydrogen fuel cells in heavy-duty trucks, demand is growing for its use in fleet vehicles, warehouse forklifts and in the electronics industry -- all these uses contribute to reduced carbon emissions.

14. What are the environmental benefits of this facility?

The environmental benefits of this facility include significantly reduced air emissions as hydrogen use grows and offsets the traditional use of greenhouse gas forming fossil fuels. For example, hydrogen produced over the life of this facility for the heavy-duty vehicle market, could avoid the emissions of more than six million tons of CO₂, which is equivalent to emissions from over 600 million gallons of diesel used in heavy-duty vehicles.

15. Will the hydrogen plant be safe?

Safety is Air Products' number one priority. Air Products believes that maintaining a safe workplace is a fundamental and moral responsibility and that the only acceptable goal is zero accidents and incidents.

Air Products' facility is regulated by the Occupational Safety and Health Administration (OSHA) and the United States Environmental Protection Agency (EPA), as well as state regulatory bodies. Air Products' safety standards meet or exceed all regulatory requirements. Our hydrogen production process will be continuously monitored by operators in the control room, and our facility will have onsite security personnel 24 hours a day, 365 days a year.

We will demonstrate our commitment to health, safety, and the environment by designing,

building, and operating a world-class facility using best-available industry technologies, materials, and rigorous personal and process safety policies and procedures.

Our Massena facility will incorporate safety and environmental protection features including, pressure relief devices for overpressure protection, ambient gas monitoring for leak detection, and mechanical integrity inspections to ensure system integrity for the life of the facility.

16. What steps does Air Products take to ensure the safety of the liquid hydrogen storage tanks?

Air Products has been producing hydrogen for 60 years and currently has five operating liquid hydrogen production and storage facilities, as well as additional storage locations.

To prevent over-pressuring of the liquid hydrogen storage tanks, the tanks are designed with automatic pressure control vents and pressure release valves that vent the hydrogen to a safe location. In addition, the tanks have pressure alarms that alert operating staff to abnormal process conditions.

To prevent overfilling of the storage tanks, they are equipped with high level alarms to alert operating staff and hardwired level switches that automatically shut off the filling process into the tank. The mechanical integrity program also requires routine, documented inspections of the storage tanks and associated equipment, including all safety devices.

The storage area will be equipped with sensors, including UV detection and combustible gas analyzers, used for detecting a release and initiating automatic closure of critical valves to restore containment. In addition, the control rooms, storage areas and loading stations are all designed with emergency stops, which quickly shut down process equipment during abnormal conditions and establish fail safe conditions for the loading and storage areas.

The storage tanks and piping systems are designed to greatly reduce the likelihood of impact damage. This is achieved by intentionally placing the tanks away from site vehicle traffic, protecting with concrete barriers, placing away from public access, and designing equipment that is sufficiently robust to withstand unintended impacts.

Siting of the facility, and siting of the storage tanks within the facility are both carefully analyzed for various release scenarios. For Massena, a detailed risk analysis for the most realistic release scenarios shows there would be no offsite impact. Further, by intentionally siting the occupied buildings away from critical process points, the impact potential to employees is significantly reduced. Structural enhancements to occupied buildings, as well as fireproofing of key structural components are both used to limit the consequences of a release.

17. How safe is it to transport liquid hydrogen by trucks on the roads?

Air Products has been transporting liquid hydrogen by trucks for 60 years. During that time, we have never had a release of liquid hydrogen because of an accident on the roads. That notable safety record is due to the advanced design of our liquid hydrogen trailers and the training and skill of our drivers.

All our liquid hydrogen trailers have pneumatically operated fire control valve systems in place, to ensure that while in transit the critical liquid valves remain closed. The critical valves on the trailers are intentionally located in an area designed to minimize the risk of an unplanned release of hydrogen.

Liquid hydrogen trailers, by Air Products design and US Department of Transportation (DOT) requirements, have very robust safety standards for accident/impact protection, enabling them to contain the liquid hydrogen in the event of a traffic accident. A liquid hydrogen truck and trailer weigh about 79,000 pounds when full. Of that weight, only about 8,000 – 10,000 pounds is the hydrogen itself. The truck and empty trailer weigh about 70,000 pounds, and that is due to structural integrity and containment design.

Finally, all these trailers have routine preventative maintenance inspections performed every 60 days at a minimum.

18. What will be the traffic and other impacts during construction?

Air Products is committed to constructing the project in a manner that is safe and respectful of area residents and motorists. Air Products will coordinate all construction activities with local officials to minimize any impact on the area.

19. How many trucks of liquid hydrogen will leave the Massena facility each day?

Approximately 10 truckloads of liquid hydrogen per day will depart from the Air Products green hydrogen facility in Massena. The trucks will all take Route 131 around Massena, and no trucks will travel through the Village of Massena to or from the Air Products facility.

20. Was an archeological survey conducted on the property?

Yes, Air Products had an archaeological survey conducted on the property and the report was submitted to the New York State Historic Preservation Office (SHPO), which determined that no historic properties, including archaeological and/or historic resources, will be affected by this project. The report and the SHPO findings were shared with the St. Regis Mohawk Tribe

Historic Preservation Office, which concurred with the findings that the project will have no effect on cultural properties of concern to the Tribe.

21. Is an environmental impact statement required for this project?

No. The Massena Planning Board, acting as lead agency under the NY State Environmental Quality Review Act process, reviewed the Massena Green Hydrogen project for any potential environmental impacts. The Planning Board determined that there will be no significant adverse environmental impacts. Therefore, an environmental impact statement is not required.

22. Would an incident at the Massena Green Hydrogen facility pose a danger to the community?

Our modeling of the most realistic release scenarios shows that the effects of any such events would be contained within the fence line of our facility. In addition, for the safety of our workforce our site design intentionally locates the administration and process control building – where our operators and other personnel will spend most of their time – outside the potential impact radius of such scenarios.

23. Will you have an emergency response plan in place at this facility?

We will develop emergency response plans that conform to federal standards, address any potential specific risks to the public, and meet the needs of our facility. Emergency notification systems, safety equipment, training on various scenarios for onsite emergency responders, and emergency response training for all staff and contract workers are some of the elements that will be incorporated into the plan. We are partnering closely with all local first responders in the development of our response plans.