

Understanding Ammonia

Project YaREN™ is a proposed low-carbon ammonia production and export facility in Ingleside, Texas, being developed by joint partners Enbridge and Yara.

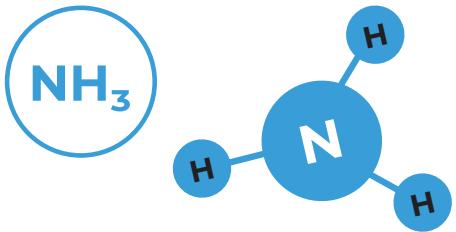
This project prioritizes employee and community safety, invests in the local economy and creates a significant number of jobs in the Ingleside area.

What is ammonia?

Ammonia is a molecule that is naturally present in our environment in different forms. It is found in the air, soil and water, and in plants and animals, including humans. Ammonia is also produced on an industrial scale for various applications that are essential for our everyday life. For example, it helps dye fabrics and color textiles, and it is used in pharmaceuticals to create certain medicines. Today, 80% of the ammonia produced globally is used for crop nutrition to support our global food supply.

Ammonia is a key ingredient in many everyday items, including pain relievers like Tylenol®, antibiotics like amoxicillin, diesel exhaust fluid like AdBlue®, life-saving insulin, vitamins, and beauty products. It is also an important ingredient used to keep items cool in industrial refrigeration.

In its natural state, ammonia is a colorless gas. However, it can transform into a liquid when exposed to cold temperatures.



Did you know?

Today, ammonia is color-coded by the carbon intensity of production methods. Carbon intensity is the amount of carbon, in the form of carbon dioxide, emitted into the atmosphere during production. The lower the carbon intensity, the more environmentally friendly the production method is.

Gray ammonia

Highest carbon intensity and most common. Uses hydrogen made from fossil fuels, mostly natural gas, and releases CO_2 during production.

Blue ammonia

Produces up to 95% fewer carbon emissions than gray. Uses hydrogen made the same way as gray, but blue includes the process of carbon capture and storage (CCS), significantly reducing emissions.

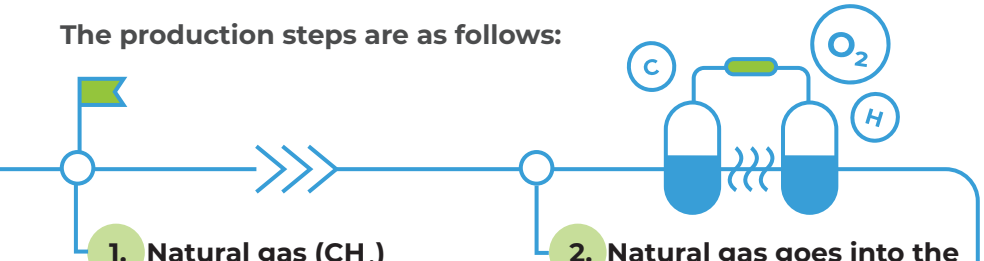
Green ammonia

Net-zero carbon intensity. Uses hydrogen produced by splitting water molecules with renewable electricity. Green is in the initial stages of development.

How will ammonia be produced at Ingleside?

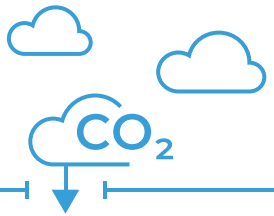
Project YaREN will produce blue ammonia, a low-carbon form of ammonia that emits up to 95% less carbon compared to traditional production methods by including carbon capture and storage.

The production steps are as follows:



1. Natural gas (CH_4) enters the facility by pipeline, is mixed with steam and heated.

2. Natural gas goes into the Auto Thermal Reformer (ATR) where oxygen is added to form hydrogen and carbon dioxide.

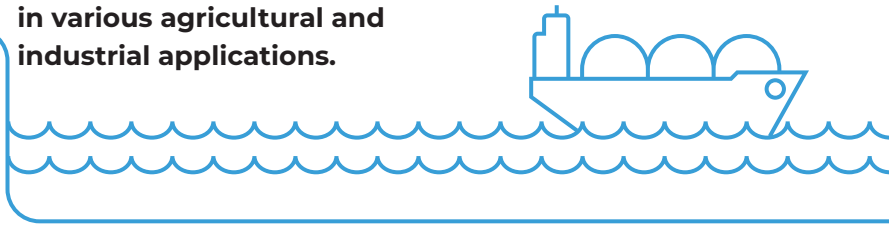


3. Carbon dioxide is captured and transported by pipeline to offsite permanent storage.



4. Hydrogen is combined with nitrogen and sent to the synthesis converter, creating low-carbon ammonia. The ammonia is cooled and stored in its liquid form.

5. Ammonia is loaded onto vessels for export to be used in various agricultural and industrial applications.



Is ammonia production safe?

Ammonia production is one of the safest and most efficient industries in the world. The design of Project YaREN will benefit from Yara's 100 years of experience producing ammonia worldwide with the same basic principle of the Haber-Bosch process. By carefully selecting the latest advancements and inherent safety features available for this technology, Project YaREN will surpass regulatory requirements in many areas.

Enbridge and Yara

Enbridge and Yara's combined complementary strengths will be critical to advancing the project from development to commercial operation. Yara is a global industry leader in ammonia development, production, operations and distribution, while Enbridge has large-scale infrastructure development expertise and world-class deep-water docks and export platform at the Enbridge Ingleside Energy Center.

Strong demand for ammonia, now and in the future

Ammonia is a cleaner fuel, an efficient hydrogen carrier and easy to store and handle. Demand for ammonia is expected to triple by 2050, and plans for increased production are ramping up worldwide. With the U.S. rising to meet this challenge in a carbon-conscious way, we are poised to continue to grow in production, jobs and economic impact.

We are here to answer your questions and listen to your feedback.

Contact us at **361-461-0995** or email **inquiries@projectyaren.com**

projectyaren.com

YaREN

The content developed on this factsheet is related to the project's scope as of June 2024 and is subject to change as the project evolves.