



## DO YOU THINK IT IS GOING TO RAIN? Green Ammonia is not Green Play Ammonia™. Less is always More.

By Guy J Swanson, For Green Players primarily. And key suppliers.

Green Play Ammonia™ calculations indicate the cost to move Hydrogen as Ammonia starts at 20 cents per Kilo of H2 at the first 100 miles and not \$2.00 per Kilo H2. CleanTechnica reports that it costs 14 to 15 times more to move hydrogen in a DOT truck.

- In other words it does not cost \$10,000 to move 22 tons of Ammonia or 3,526 kilos of Hydrogen a distance of 100 miles or 2 hours of transport time.
- There is no such thing as a Hydrogen Pipeline. The US has about 1,200 miles in less than 1 inch diameter special metallurgy pipes in refineries.
- There are ammonia pipelines world-wide.
- The best way to move hydrogen is not H2 but as low pressure NH3. As Ammonia is presently moved around the world.
- Marine engines are targeted to ammonia fueling in 2025. Gas Turbines are also being developed for Ammonia fueling.
- The Binary Twins are H2 and NH3. One must have the other in a marriage of transportation, storage and Ammonium fueling.
- If it costs \$1.50 to transport 1 Kilo of H2 half way around the world there are no buyers. The cost to build is projected at \$1.60 per Kilo with Green Play ammonia.
- Recommended reading is available at the Ammonia Energy Association. A seminar in Phoenix, AZ is listed for November 14, 2022. The second USA sited and held for world-wide participation.
- Globalization of ammonia could cause major wars and failures of economies...similar to Putin's war. It is best built locally. Oligarchs outrun all countries and logic. Oligarchs are the problem.

We consider the CleanTechnica article data questionable with regards to trucks and ammonia pipelines and cracking costs.

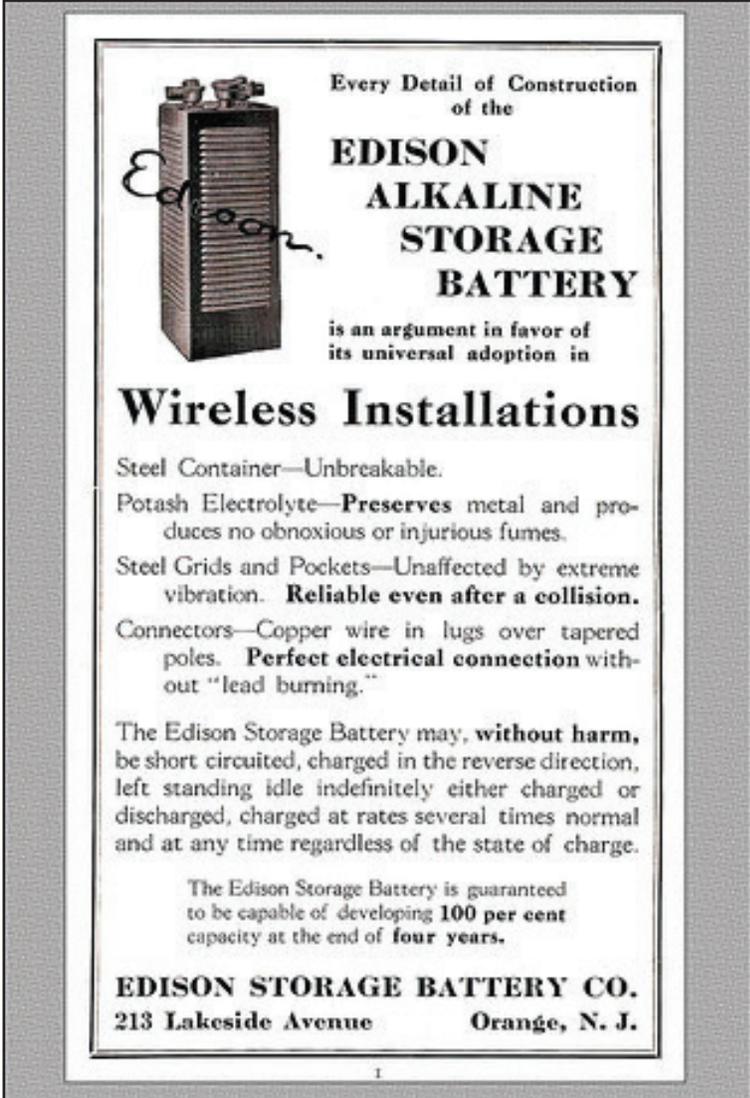
- Remember H2 is seldom successful in the commercial, industrialized world.
- Hydrogen is never used in commercial rocket ships.
- NASA has not figured hydrogen out. After several launch failures and 60 years of testing. They have no answer.
- The devilish Hydrogen has a Binary Twin that is not so dangerous, non-explosive and always gives ample warning, and that is Zero Carbon, locally built NH3...the secret of making the devil Hydrogen go to work is NH3.
- Crackers work well and now at a 2.5% energy loss in development and scale up.

Please note as a double check here is a quote from, October 7th, 2022 Southwest Transport of Hugoton, KS, Quotes the cost to move Ammonia 150 miles or roughly 3 hours out and back to the Green Play Ammonia Plant.

Thus we have some questions about the viability of the Graph. Which we will not question externally....it is good to know that this is very incorrect information that others will absorb.

All energy is way too expensive. Fertilizer is chemical energy, a crop stimulant, and nitrogen must always be available at a reasonable price in times of war or peace.

Another way to compete in a world market is to export grain on a massive scale by producing lower cost fertilizer without carbon and locally built.



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Old Technology becomes current technology.



## Why are there ten plants in a Decagon? Are 20 Decagons possible by 2044?

- The power play. By interlinking ten optimized scale locations together the delivery of Green Play Ammonia is on time with lowest risk at a good and fair price.
- If a Green Play Ammonia plant went down due to poor weather the other nine make up the difference. A nine link golf course with driving range. Linking ten plants to make an 848 mile longitude power play to meet demand on time.
- Any plant can have downtime. Most producers understand weather but when their crop is at risk they will be glad there are nine of ten plants backing up his on farm storage.
- The Green Play Ammonia production must be standalone without intermixing with Blue or Gray Ammonia sourced from fossil fuel.
- The highest risk period is the first three plants going into production. The start is rough while the finish at 20 Decagons is smooth.
- All Green Play Ammonia plants will become dated but flexible over a 20 year period.
- The local facility is designed to accept new developments like more efficient PV cells, electrolyzers, Edison batteries (battolysers), Vanadium batteries, alkaline fuel cell advancements, improved PMR crackers, Ammonium NH4 Engines, and hydrogen safety improvements.
- The technology facility also supplies service technology for on farm storage, Alkaline GenCell Fueling, Ammonium Irrigation Engines and CHP installations.
- In fact the process line is open to change allowing plug-in components to be easily added. The plant has 1.7 acres roofed and ready with bridge cranes and quick change out over deep section concrete pads.
- Optimum scale, rural and local plants designed around the Great Plains renewable assets are much more flexible than a five billion dollar mega plant.



**A quote from the best.....Per Southwest Transport or Martin Trucking of Western Kansas, Hugoton.**

The specific cost of DOT transport delivery is \$33.60 per ton NH<sub>3</sub> plus a 44% fuel charge at 150 miles loaded and return empty.

This is \$48.18 per ton NH<sub>3</sub> at 150 mile radius, in and back with Hazmat Driver of powerful safety operator character.

This is a standard 10,800 gallon transport with a 22 ton payload. The cost is \$1,059 per load.

A ton of Ammonia has 160 Kilograms H<sub>2</sub>.

**The 150 mile DOT transport is moving 22 ton of NH<sub>3</sub> as 3,520 Kilograms of H<sub>2</sub> for \$1,059.**

The cost to move ammonia 150 miles is 30.11 cents per Kilogram H<sub>2</sub>.

The cost to move ammonia 100 miles is 20.05 cents per Kilogram H<sub>2</sub> or \$32.08 per ton of NH<sub>3</sub>.

The Southwestern Transport quote is provided for Green Play Ammonia proposed plants at Burlington, Co, and Pampa, Texas delivering in radius of 150 miles.

The tonnage would include an area of very significant volume for these two plants.....of 3,600 to 4,000 tons annually of Green Play Ammonia.

The first tonnage delivered in November 2024 is 181 truck-loads of Ammonia. The two plants can build enough ammonia annually for 350 to 375 truck-loads.

Total revenue transport delivery is \$191,852 to move 4,000 tons. This is about 50% to 55% of the total plant production of the two plants at Pampa and Burlington.

**How to outcompete the Mega Plants....by keeping Ammonia a locally built product and always available at a fair price.**

- **The National security and timing of ammonia use is resolved.**
- **The Renewable NH<sub>3</sub> is not connected to the Grid.**
- **Oligarch pricing is stopped since the pricing is fair and based on cost of production and not market to bear pricing.**
- **Marginal dryland production areas get better returns if they can use Ammonia profitably and less is required with Exactrix Technology.**
- **Areas like Hugoton, Kansas, Garden City, KS or Pampa, Texas must have reasonable fertilizer cost and always available at their dryland and irrigated farms.**

**A Green Play Ammonia conclusion, A key point of 10 points....Build 2,000 optimized scale plants with a delivery area radius maximum of 30 minutes or 30 miles from the Green Play Ammonia Plant. A delivered cost of \$250 to \$333 per 22 ton.**



**Always Available and Competitive**

Local Built Ammonia, A total cost savings of \$726 per load with each plant producing 163 delivered, 22 ton loads. A total annual cost savings and competitive advantage of \$118,799 per plant. A total cash value at 5% annualized plant value of \$2,375 million over 20 years per single plant. Further down the line with 2,000 plants running 4 .75 billion dollars over 20 years.

**A November 2024 start** of the first Decagon of 10 plants on the Great Plains....and about 2.5 hours apart or \$1,000 apart at maximum between plants or \$48 per ton DOT transports.

This is very acceptable but not as competitive since we are raising farm gate landed cost about 20% based on transport into plants in the interlinking of plants. By 2044 The transport cost could easily drop to 5% or less over the Cost of the Ammonia FOB plant with plants separated by 60 miles.

A Green Play Ammonia pricing is very competitive at \$247 per ton to \$300 per ton at the Plant....and about \$48.00 per ton to deliver at Hugoton or Garden City, KS.

A Green Ammonia competitor would try to supply from a Mega Plant from Australia with a similar cost of production. That will not happen with a Great Plains, Green Play Ammonia Plant about 30 to 60 miles apart.

**The Best Fruit of the Tree Is Available To Crop Producers....Through Knowledge and Management.**

**Green Play Ammonia is not exportable. How can this factor alone increase land values?**

**Green Play Ammonia will be the key workhorse of American agriculture and is breed to work locally to build land values and keep the hedge fund managers away.**

**Stranded Inland Green Play Ammonia™ will be built locally with the Air, Water and Wind and Solar assets of the Great American Dessert.** Green Play NH3 is guaranteed Green and Fungible with Zero Carbon build.



Green Play Ammonia plants are inland and at least 715 to miles to any Texas coast line port and about 923 miles to the **Mississippi River, Donaldsonville, LA.**

The Free Market Green Ammonia with a Fungible Certificate would have a delivered incoming world market price of estimated \$247 per ton plus \$229.37 freight above world market price at North American seaports.

Delivery from Australia would require a blue water Navy to protect our National Security. Delivery from Australia is just not feasible to provide low cost hydrogen to the Inland areas of North America.

Delivery from Australia might work for Japan if the US Navy can protect the transport ships.

**Perfectly Clear**..... Green Play Ammonia is highly competitive because it is locally built by local people. Green Play Ammonia is stored on farm locally. “Come Hell or High Water”, It is made locally 24/7 and always timely available to pay down land debt. “A Mortgage Lifter”.

The Tulsa, OK, Port of Catoosa area is considered a far western penetration point for barge traffic at 367 miles to Hugoton or about 2.44 times \$1,059 or \$117 per ton.

Catoosa, OK, a seaport to Donaldsonville, LA via the Mississippi and Arkansas River is 700 miles. Barges move Ammonia very effectively at about ½ the cost or \$112 per ton. So the total cost to move ammonia inland is \$229 per ton to Hugoton, KS.

Rail delivery of Ammonia is now very expensive in the US and it is only available on certain international high quality rail lines such as the Spokane International, CP/UP. A return to local delivery of Ammonia by rail would require a complete upgrade of trackage. The USA Rail Car fleet has been retired at the end of 40 years of service of 30,000 gallon rail cars.

- Today we need a heavy investment into railroads and timed delivery which is not a happening event.
- This is why dams and rivers are now the safest and best way to move ammonia inland from world markets...but this comes to an end quickly due to costs to transport, store and make the NH3 as timely as possible.

The Missouri River navigation interruptions and poor levee quality is troublesome to Nebraska, South Dakota, North Dakota, and Kansas markets.

- Navigation of the Mississippi River is not possible in the month of October due to drought conditions.
- Heavy barges must run partial loads at 9.5 feet of draft in western droughts that occur more often. The last 800 miles of the Mississippi is an intermittent transportation system currently.
- Barge companies can no longer deliver on time and have implemented Force Majeure. The Mississippi River has been closed since October 4th at Stack Island south of Memphis until further notice.

It is clear...A trucker needs to sleep in his own bed at night. You will get the highest quality driver if he can be with his family.

**A Green Play Ammonia™ scenario that meets human family needs up to 5 hours out from the main plant...and 5 hours back. This is about 250 miles or 500 miles per day.**

This means any sort of Ammonia river barge delivery will require drivers that go 250 miles or an \$80 per ton adder on top of the NH3 barge costs....and the question is...will the highly reliable supplier have Green Ammonia in the Barge?

Mega Plant designs eventually play into the hands of Hedge Fund Managers. Ammonia Energy Association

**Green Play Ammonia solves the question of “ Fungible Certification of Green NH3, Zero Carbon Built”.....is it really Green Ammonia and Guaranteed Analysis 82.42%? Is it built local at a fair competitive price? Does the plant meet the needs of the grid and National Security?**

## The Green Hydrogen Pipeline & Shipping Question

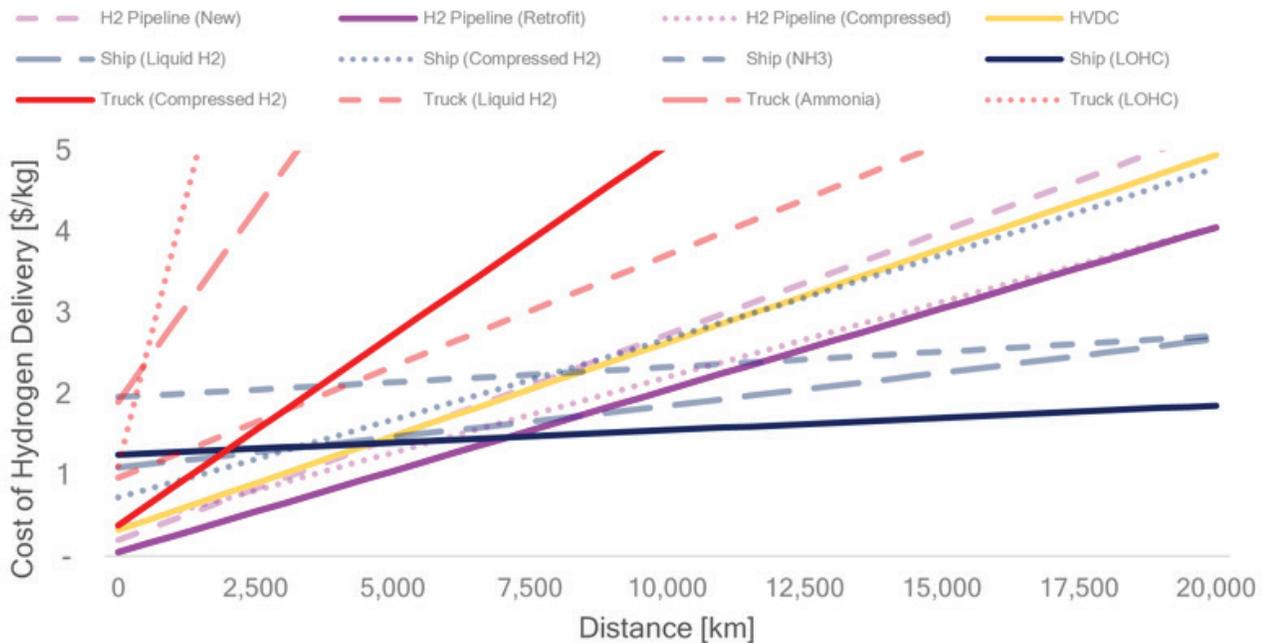
By David Waterworth

October 04, 2022

The Green Hydrogen Pipeline & Shipping Question - CleanTechnica

<https://cleantechnica.com/2022/10/04/the-green-hydrogen-pipeline-shipping-question/>

### Cost of Hydrogen Delivery by Distribution Method



“This graph needs a lot of work by those that know”. GJ Swanson

Ammonia Pipelines are not shown. They are common with 50 plus years of service over 2,880 Kilometers.

DOT Transport Ammonia starts moving H2 100 miles at 20 cents per Kilo H2.

Costing comments about cracking of Ammonia to hydrogen are now questionable based on Colorado School of Mines and others developments.

Not too far away, Crackers can make Hydrogen very cheap locally with a 2.5% energy loss from NH3.

PMR crackers will allow Ammonium NH4 Engines by 2025.

Hydrogen Pipelines are not going to happen with current technologies.

“ At least a 50% reduction in delivery cost.

Can you imagine how the cost of delivery will drop with an ammonium NH4 engine fuel design? “

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