

NYSE: WTRG

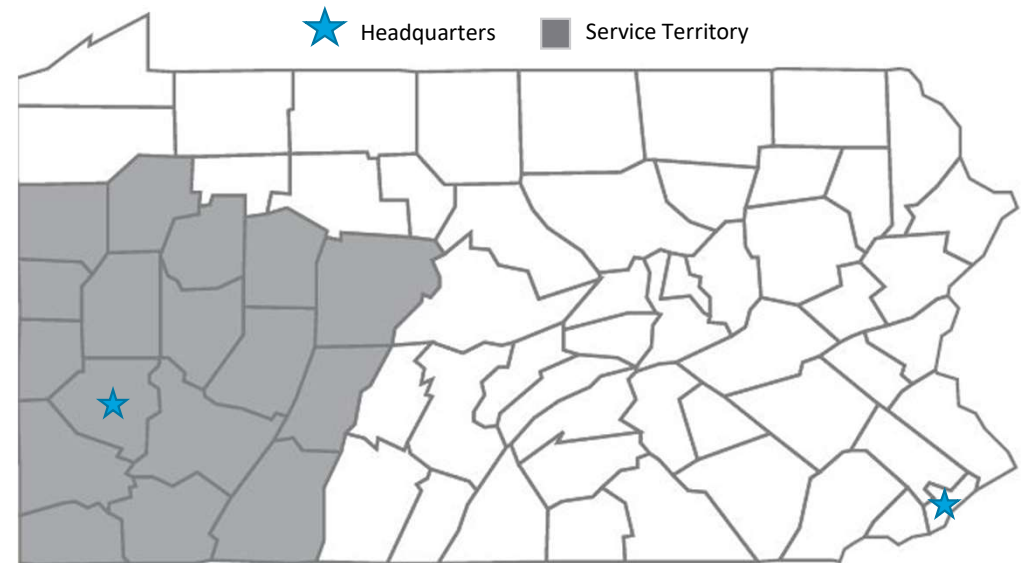
Confidential

Peoples Natural Gas Hydrogen Initiatives

Peoples Natural Gas – Who are We?



- Subsidiary of Essential Utilities, Inc.
 - Headquarters in Bryn Mawr, PA
 - Peoples Natural Gas
 - Aqua America
- Headquarters in Pittsburgh, PA
- Serving Western PA for over 130 years
- Largest Natural Gas Distribution Company in the State of Pennsylvania
 - Serving Approx. 740,000 Customers
 - Operating in 17 Counties Throughout Western PA
 - 15,000 Miles of Pipeline

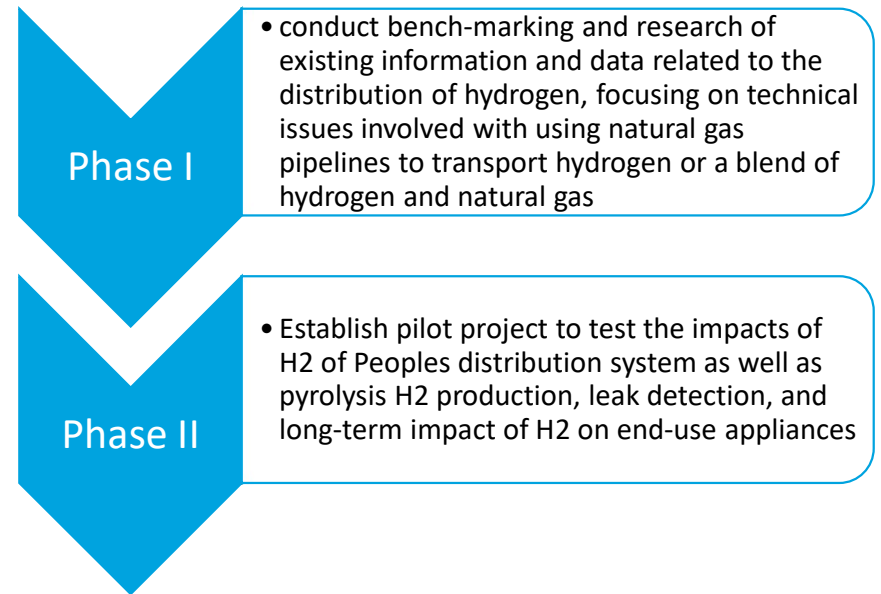


PNG - Pitt Hydrogen Study Partnership



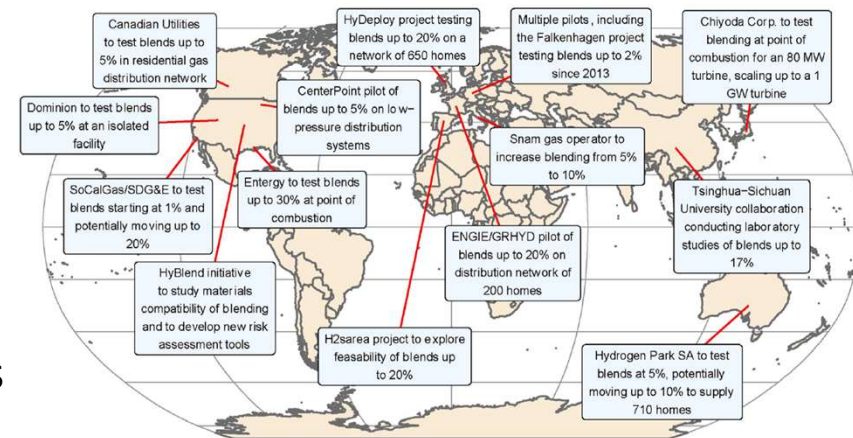
“Peoples Natural Gas and the University of Pittsburgh Swanson School of announced a partnership to study to assess the impact of blending hydrogen into Peoples’ infrastructure as a future energy source”

Partnership Scope of Work



Phase I – What We Have Learned

- Distribution pipes blending
 - 10% for plastic systems
 - 20% for steel systems
- Lower BTU results in an increase in delivered volumes
- Low pressure systems reliability risk at lower blending levels than Medium pressure systems
- Appliance combustibility impact gradual with increasing hydrogen blend
- Components and facilities impacted at lower blend percentages



Phase I – What We Have Learned

SOURCE	% HYDROGEN	Tolerance Level			
		5	10	20	50
NREL	BTU Content	●			
NREL, GTI, NW Natural, SoCal	Appliances	●			
NREL	Confined Space	●			
Modeling	Hydraulics		●		
Modeling	LP Reliability		●		
GTI, NREL	Services		●		
GTI	UFG		●		
GTI, SoCal	Distribution Pipe - Plastic		●		
SoCal	Compression		●		
SoCal	Storage		●		
GTI, SoCal	Distribution Pipe - Steel			●	
SoCal	Regulation			●	
GTI, SoCal	Measurement			●	
SoCal	Odorant			●	
GTI, SoCal	Transmission Pipe				●

The maximum % H₂ that can be added to natural gas is limited by (in order of increasing stringency):

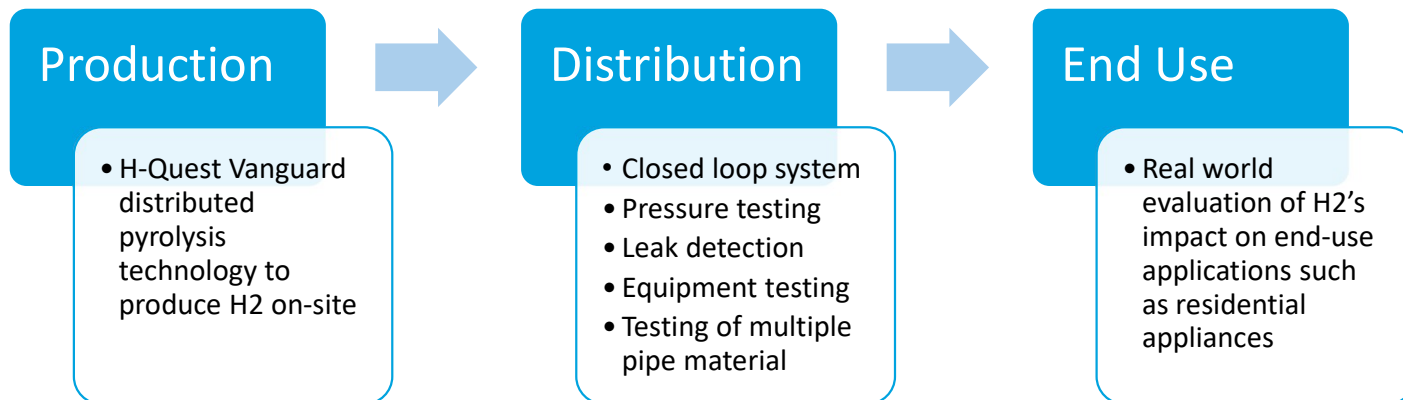


COMMENTS:

- 20% Hydrogen blend can require up to 15% higher flow rates
- Assumes no steel grade >X46 in distribution system. CI, DOI, WI, Copper no concern
- Hydrogen has a 3X leakage rate
- Hydrogen 21-26X more likely to permeate rubber seals
- Hydrogen 4-5X permeation rate through plastic
- Appliance combustion varies significantly; slow to increase; long transition time frame
- Hydrogen molecules wider explosive range 4-75% in confined space
- Additional compression horsepower
- Increased leak surveillance

Peoples Hydrogen Pilot Program

Peoples in collaboration with University of Pittsburgh and H-Quest to conduct a H2 pilot program at the McKeesport, PA training facility in late summer 2023 that will explore the full H2 lifecycle



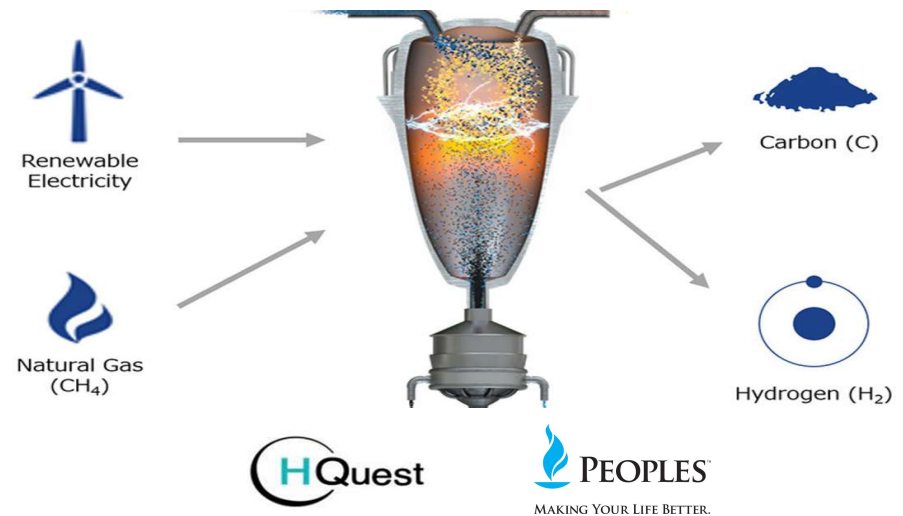
Pyrolysis – The Solution?

Problem

- Hydrogen is expensive
- PUC Regulations require the procurement of least cost fuel

Solution?

- Turquoise hydrogen is made using a process called pyrolysis to produce hydrogen and carbon black
- Carbon black can be monetized as a commodity, allowing hydrogen to be purchased at an index rate



Colour	Technique	Raw material	Energy	CO ₂
Green	Electrolysis	Water	Mixed from network (electricity)	Medium-Very low
Turquoise	Pyrolysis	(Bio)/Methane		
Black	Gasification	Coal + water	Fossil fuels	Very high
Brown		Brown coal (lignite) + water		
Grey	Reforming	Coal/methane + water		
Blue	Reforming/CO ₂ capture		High medium	

Carbon Offset Program

LET'S TALK ABOUT [CARBON OFFSETS]

While many businesses and consumers are thinking of creative ways to reduce their carbon footprint, completely eliminating greenhouse emissions from our way of life is not yet possible. In order to bridge the gap between our modern lifestyles and a sustainable future requires more than just cutting back. That is why carbon offsets are necessary.

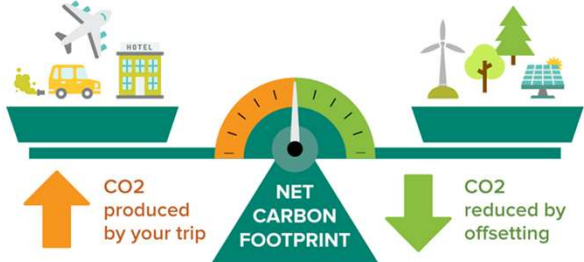
Carbon offsets are not as complicated as it may sound. Put simply, carbon offsets allow you to balance out your emissions and become carbon neutral by funding green projects that either prevent carbon from being released or remove carbon already released into the atmosphere. Each carbon offset certifies the reduction of one metric ton (2,205 lbs) of carbon dioxide (or equivalent) emissions. You can help fund these green projects via monthly contributions by participating in Peoples Net-Zero Climate Action program (NZCA).

The projects that fall under this initiative include reforestation.

According to the EPA, over 80% of emissions linked to gas utilities are released at the site of the customer. By opting into Peoples Climate Action Program, you will be able to confidently heat your home and utilize your gas appliances knowing those emissions are being offset elsewhere.



CARBON OFFSETS ALLOW YOU TO BALANCE OUT YOUR EMISSIONS



Questions?