

# Utica & Appalachian Basin Outlook



# What's Coming to Midstream

- HYDROGEN – Why Now?
  - The Green Energy – considerable funding
  - The Federal Government, Environmentalists, Wall Street (ESG's) and Big Oil coalescing around it
  - Major firms want pure green energy –Long Ridge Energy Terminal – Hannibal, OH
  - Ohio NatGas powered plants
- Transporting Hydrogen – Pipeline Challenges



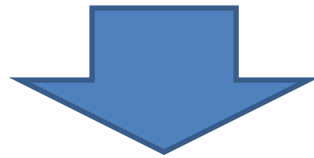
# ExxonMobil

- Investor day 3/3/21 CEO leads webcast
- Carbon Capture \$2T market by 2040
  - 35% annual growth rate
  - #1 Capture, #2 Pipelines, #2 Storage
  - Government policy support
  - CCS is most cost effective carbon reduction method
- Hydrogen \$1T market by 2040
  - 30% annual growth rate
- Chevron – Toyota Strategic Hydrogen Initiative



# Common Themes

- Leverage legacy oil & gas infrastructure
- Multiple, phased projects, ambitious vision
- Integrated public and private investment



- Reduce risk, costs, start now, gain experience
- Hydrogen and Carbon Capture ubiquitous
- *Pragmatic acceptance of oil & gas*



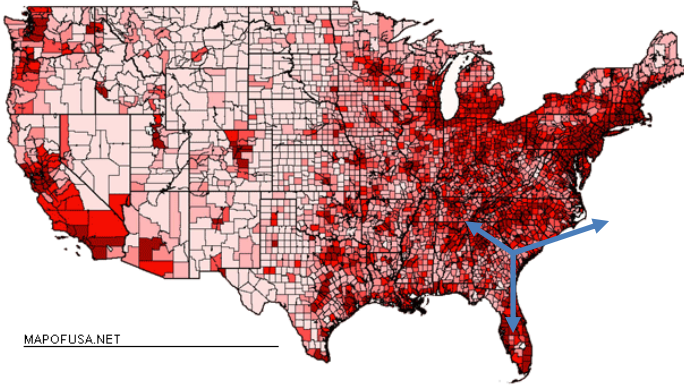
# Economics

- Hydrogen is more expensive than natural gas or direct solar wind renewables
- Hydrogen is among lowest cost for large volume longer term storage for renewables energy
- Niche consumers willing to pay higher price
  - Marketing ESG goals consumer visible brands
  - Specific uses where hydrogen is clearly superior
  - Consumers who want to be green
- Government subsidies, tax credits, mandates

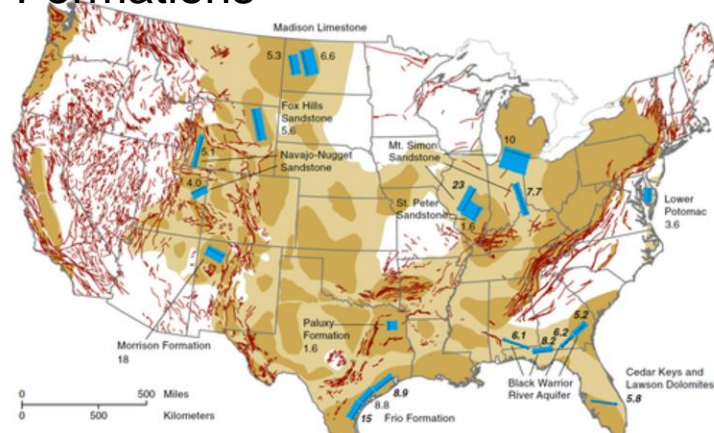


# Appalachian Basin: Location

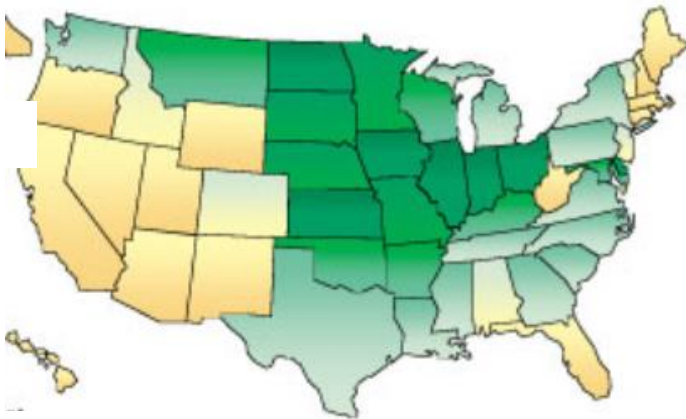
H2 Demand CO2 Production



CO2 Sequestration Formations

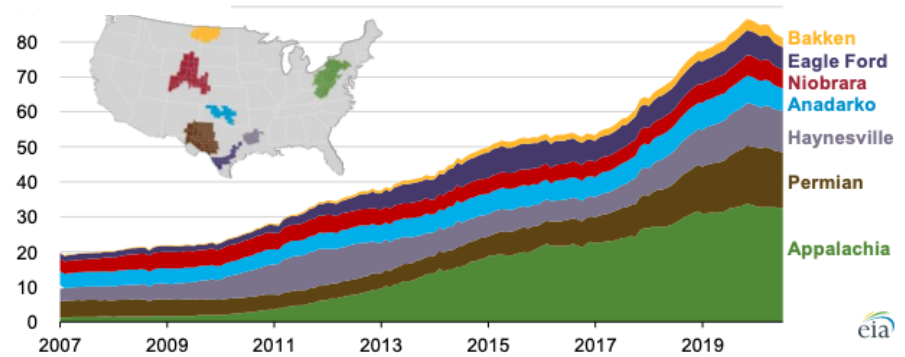


Fertilizer Demand



Natural Gas Production

as production in selected regions (2007–2019)



# Appalachian Basin: Location

- Proximity to major markets
  - Hydrogen consumption
  - Fertilizer consumption
  - Carbon Dioxide production
- Ample sites for
  - Hydrogen storage
  - Carbon Dioxide sequestration
- Low cost abundant natural gas supply
- World class expertise
- *Need to act like a region that wants the prize*

