

# MachH2 (Midwest) is one of 7 'selected' H2 hubs



# Linking MachH2 to Off takers

MachH2 will generate abundant amounts of clean H2 in IL, IN and MI

- Clean H2 will be produced in four different production nodes
- H2 will be delivered to off takers in various ways (truck or pipeline) and in different forms (liquid or compressed)
- Clean H2 price point is anticipated to decline (DOE H2 shot goal of \$1 per 1 KG in 1 decade)

Objective: to maximize offtake (usage) of Clean H2 across the region including **urban mobility** in particular city bus fleets

# Obstacles/Challenges for H2 Fuel cell bus at CTA

Chicago CTA ran a first in the nation H2 fuel cell bus pilot over 20 years ago

## Current state:

Adoption of hydrogen fuel cell electric buses presents several challenges:

- **Hydrogen fuel requires substantial safety and fire protection retrofits for CTA's repair and refueling facilities.** This would be a major challenge for CTA's older bus facilities.
- **Hydrogen fuel is currently more costly than electricity.** While the price of hydrogen varies across the United States, hydrogen currently costs substantially more than electricity for an equivalent amount of usable energy.
- **The vehicles are currently more costly than battery electric buses.** While both technologies are currently more expensive than diesel buses, hydrogen fuel cell electric buses are typically at least \$200,000 more expensive than battery electric buses.
- **Greater industry experience with hydrogen fuel cell electric buses is needed** before CTA could make this technology a large part of its plans. Thus far the technology has only been used for pilot projects in relatively few locations, mostly in California.

# Why does this matter?

- Battery electric bus technology may not be feasible for all CTA routes.

Hydrogen fuel cell electric bus technology is a promising technology with particular utility as a range extender that could be a solution for electrifying some of CTA's longest vehicle blocks that require a greater mileage range between charges than may be feasible to achieve with battery electric buses alone. CTA will continue to monitor the development of hydrogen fuel cell electric bus technology, including through site visits to other agencies conducting pilots, and may pilot it at some point.

- Incorporating Hydrogen fuel cell bus technology could be a perfect zero emission complement to the charging forward initiative

# Final Statement

-Regarding Mobility & Clean Transportation, to achieve Greater Chicago's Carbon & Equity goals, a critical obstacle to collectively overcome in 12 months is:

The need to evaluate and plan for implementation of a Hydrogen Fuel Cell bus pilot.

Comprehensive evaluation consisting of :

- Route evaluation
- Facilities upgrade considerations
- Bus procurement considerations
- Exploring Federal Funding opportunities to fund both bus and/or facilities upgrades for H2 Transit