



# Renewable Hydrogen Fueling Station IPRO 304B

Sponsored by Tellabs Foundation

## Objectives

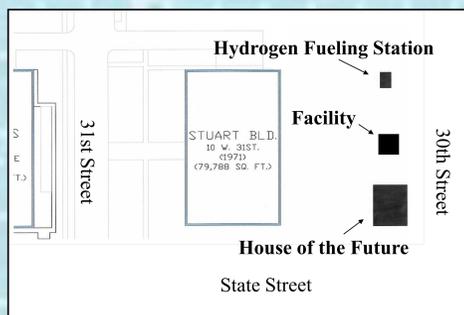
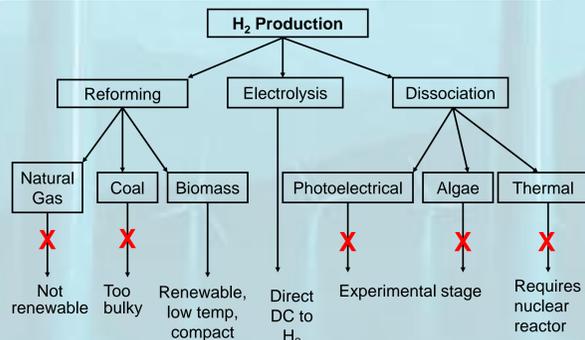
### Provide Electricity for House of the Future

- 3600 sq ft Chicago single family home
- House of the Future assumed to be 40% more efficient than conventional home

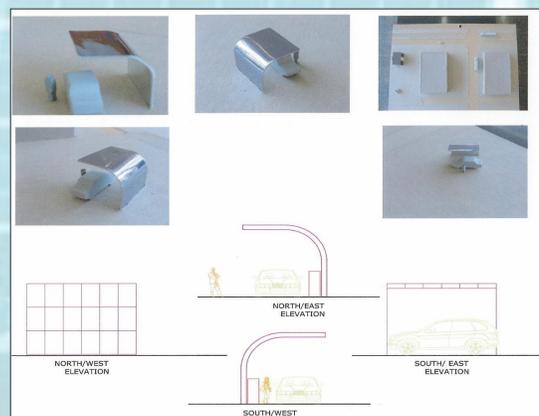
### Provide H<sub>2</sub> to H<sub>2</sub> Fueled Cars

- Fueling schedule for 9 campus vehicles
- 32 kg H<sub>2</sub> per day

## Hydrogen Production Methods Decision Flowchart



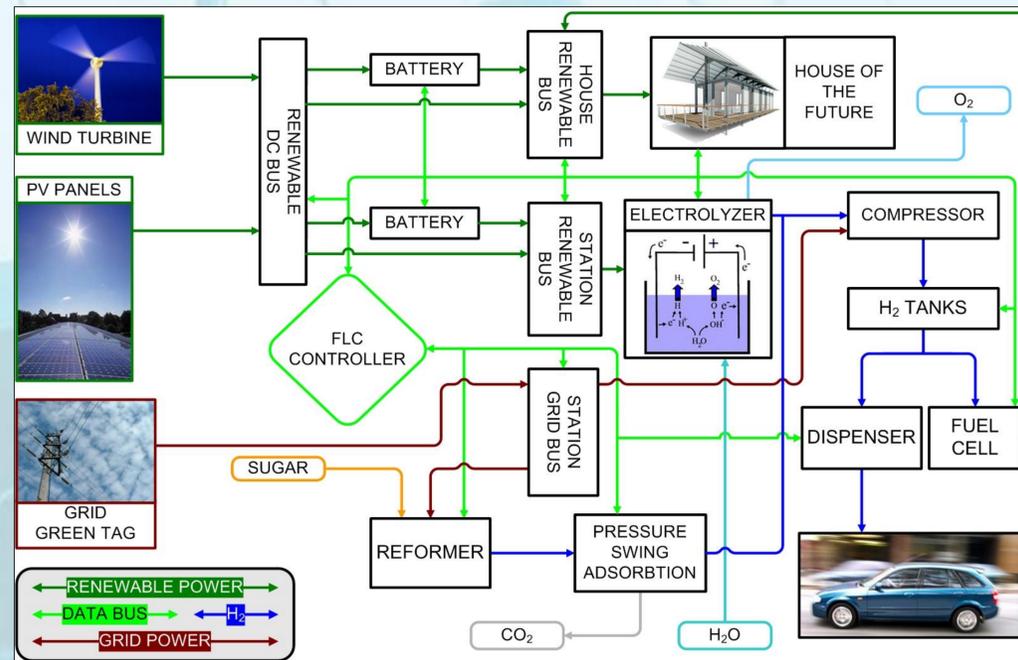
Site Map



Fueling Station

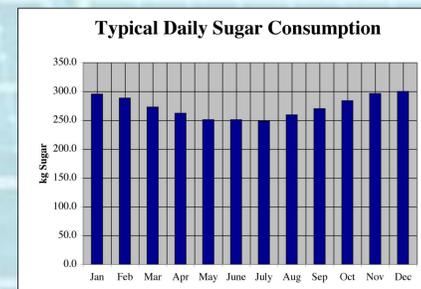
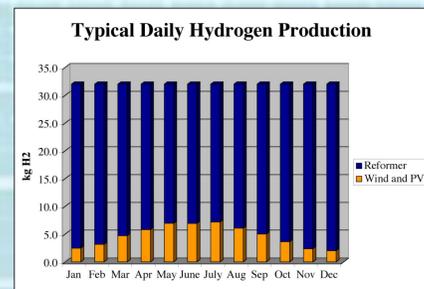
## Accomplishments

### Hydrogen Production Schematic



### System Includes:

- 12 kW turbine with 71 kW PV array
- Electrolyzer and sugar reformer to produce hydrogen
- Stored in tanks as compressed hydrogen

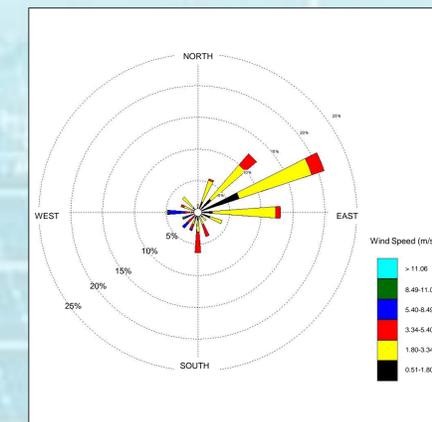


## Applicable Codes

- Municipal Code of Chicago
- ICC International Fuel Gas Code
- ICC International Fire Code

## Future Work

- Continual research for new renewable energy and hydrogen production technologies
- Specify and simulate a fuzzy logic controller for the system
- Cost and size all system machinery
- Project lifetime economic analysis and profitability comparisons
- Hydrogen vehicle selection



### Wind Rose

- Length of wedge indicates percent of time wind is within particular range of speed and from particular direction
- Color indicates wind's range of speed
- Direction of wedge indicates direction from which wind originates

### IPRO 304B Team Members

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