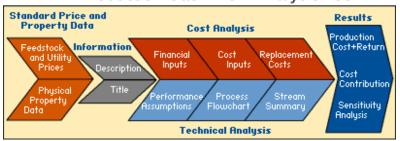
# Hydrogen Analysis (H2A) Production Component Model

(National Renewable Energy Laboratory)

### **Objectives**

Improve the transparency and consistency of analyses, improve the understanding of the differences among analyses, and seek better validation of analysis by industry. Use a standard discounted cash flow rate of return analysis methodology to determine the hydrogen selling cost given a specified after-tax internal rate of return.

## H2A Production Cash Flow Analysis Tool



#### **Models and Tools** MA3T MSM STREET ADOPT (NREL) **GPAT** (NREL) MA3T HYTRANS **NEMS UCDavis** EIN STREET SERA Financial Cash (NREL) ANL and Employment Flow **UCDavis JOBS** MA3T SERA ADOPT STREET **UCDavis** Market Assessment (ORNL) MSM VISION STREET **Environmental and Life Cycle** (NREL) MA3T ADOPT Vehicle Penetration VISION **HYTRANS** H2A FC Power ADOPT AUTONOMIE Component, Infrastructure and (NREL) HDSAM мѕм Vehicle Assessment HyPRO

### **Key Attributes & Strengths**

Part of suite of H2A Models (*Production*, *Delivery Components*, *Delivery Scenario*). Allows users to change input assumptions for sensitivity analyses. *Production* model evaluates cost of hydrogen production from any primary energy source for central and forecourt production. All assumptions and calculations are transparent with key components and cost drivers easily identified.

#### **INPUTS**

- Feedstock and energy consumption from the Hydrogen Analysis Resource Center.
  - hydrogen.pnl.gov/cocoon/morf/hydrogen
- Financial parameters
- Performance input.
- Replacement capital.

#### **ASSUMPTIONS & DATA**

- Depreciation, labor rates and land requirements based on industry input and experience.
- Process information based on industry and ASPEN process model information.
- · Cost of energy data from U.S. EIA.

### **OUTPUTS**

- Required selling price of hydrogen based upon a specified after-tax internal rate of return and profit margin.
- Areas of cost contribution.
- Yearly cash flow summary.
- Tornado sensitivity plot.