



U.S. DEPARTMENT OF
ENERGY

Hydrogen Production and Delivery Program Element

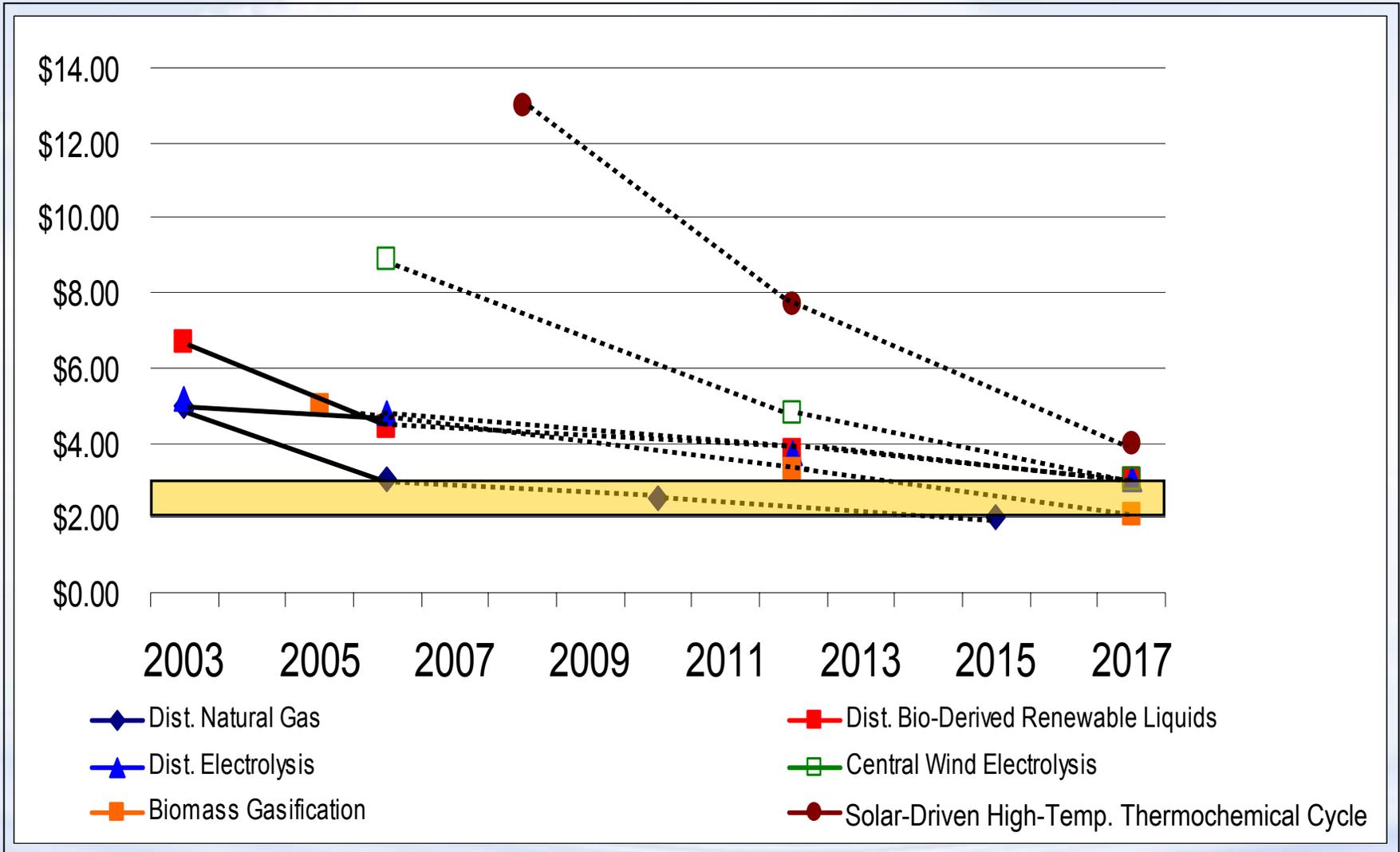
Roxanne Garland

**2007 DOE Hydrogen Program
Merit Review and Peer Evaluation Meeting**

May 15, 2007



Production Pathways & Targets (EERE)





Delivery Goals and Objectives

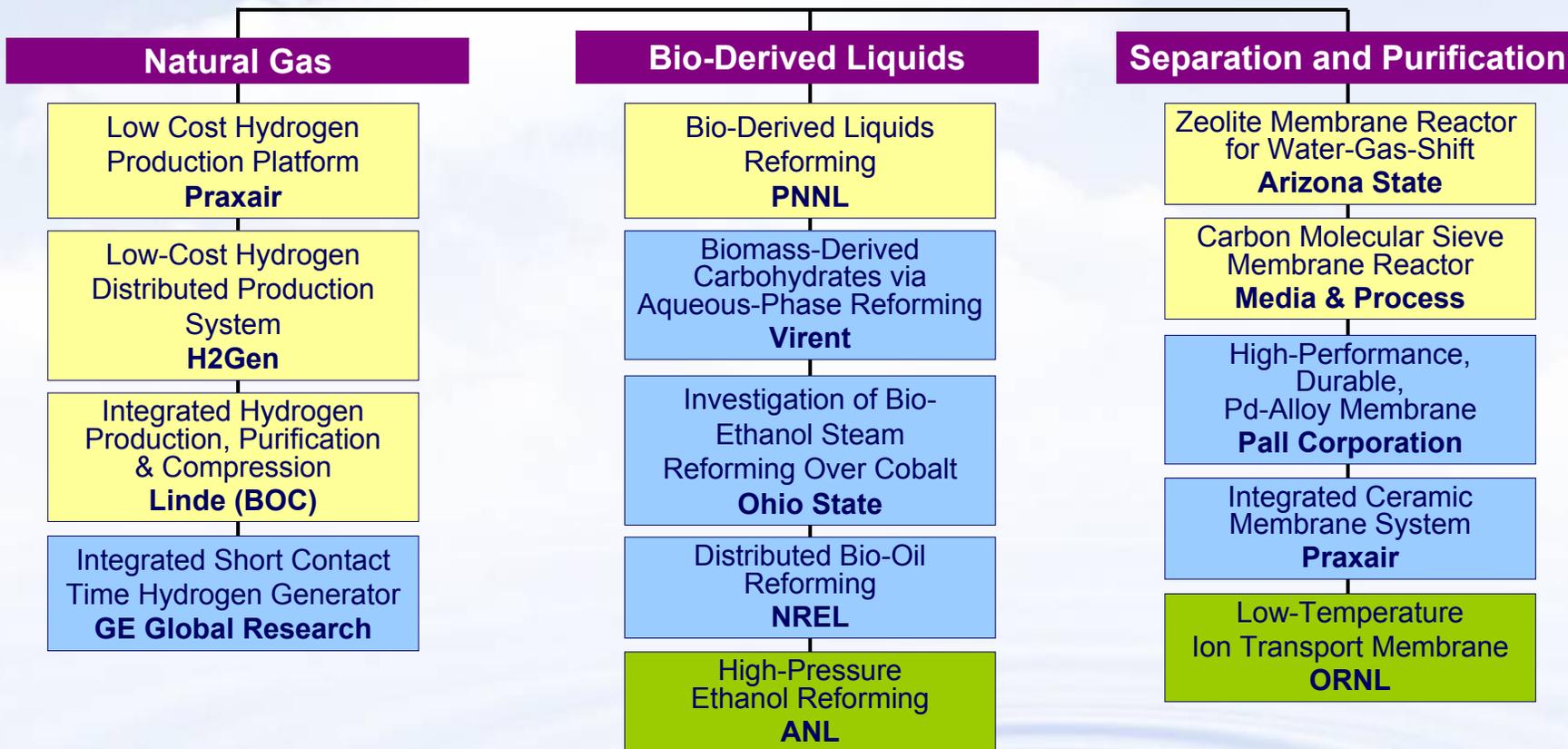
By 2017, develop technologies to reduce the cost of hydrogen delivery from the point of production to the point of use in vehicles or stationary power units to $\\$1.00/\text{kg}$ of hydrogen

- By 2007, define the criteria for a cost-effective and energy-efficient hydrogen delivery infrastructure.
- By 2010, develop technologies to reduce the cost of compression, storage, and dispensing at refueling stations and stationary power sites to $\\$0.80/\text{kg}$ of hydrogen. By 2015, reduce this cost to $\\$0.40/\text{kg}$.
- By 2012, develop technologies to reduce the cost of hydrogen delivery from central and semi-central production facilities to the gate of refueling stations and other end users to $\\$0.90/\text{kg}$ of hydrogen. By 2017, reduce this cost to $\\$0.60/\text{kg}$.

Timing has been delayed by 2 years due to Congressional Earmarks and limited appropriations (except refueling site delivery).

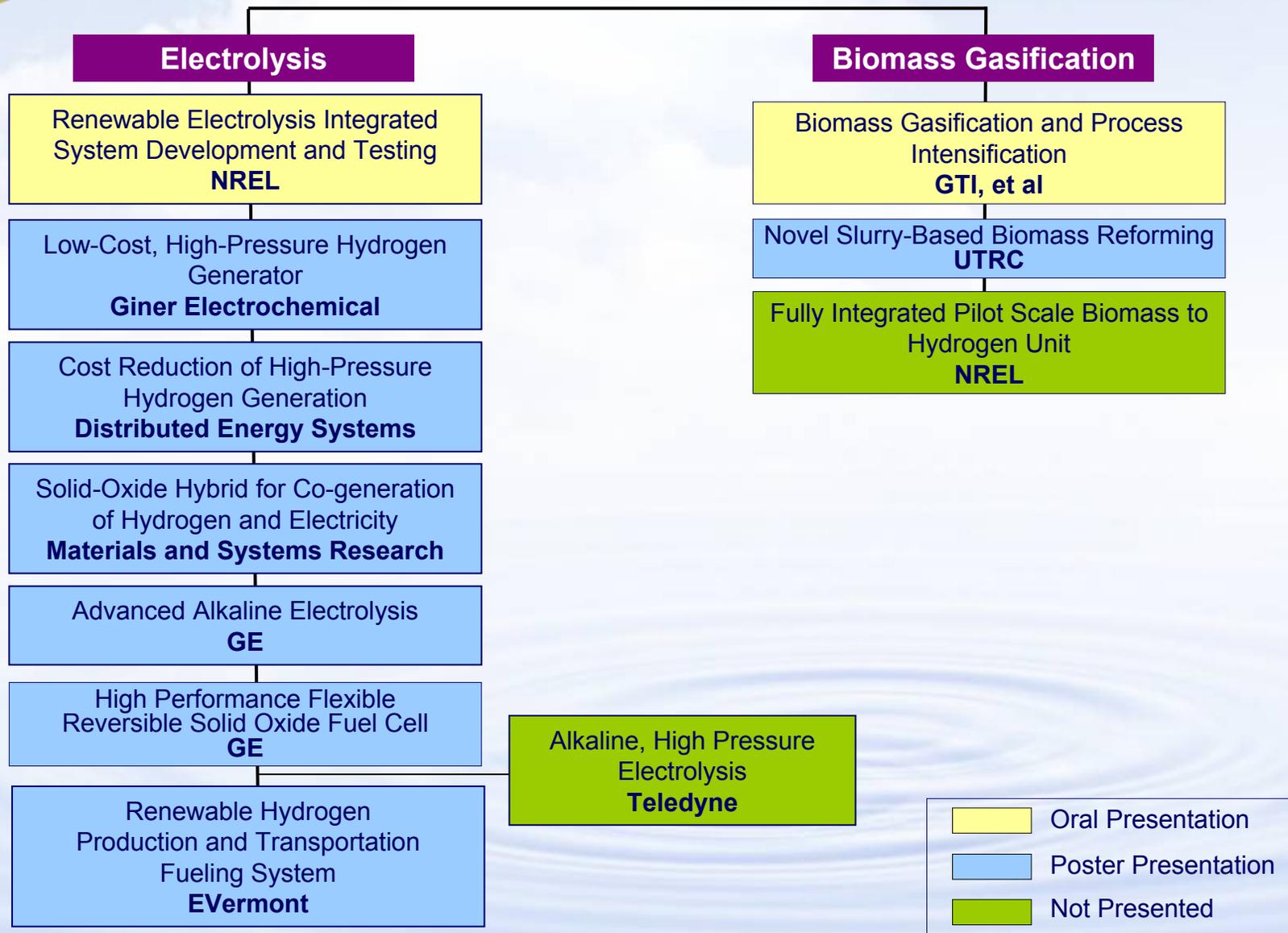


Distributed Reforming Hydrogen Production Pathway Projects





Electrolysis and Biomass Gasification Projects





Longer Term Pathway Projects

Solar Driven HT Thermochemical

Development of Solar-powered Thermochemical Production of Hydrogen from Water
UNLV, et al

Solar-thermal Mn₂O₃/MnO Thermochemical Cycle to Split Water
U of Colorado

Solar Driven HT Thermochemical Water Splitting with Photo Assist
SAIC, FSEC

Biological

Biological Systems for Hydrogen Photoproduction
NREL

Hydrogen from Water in a Novel Recombinant Oxygen Tolerant Cyanobacteria System
Venter Institute

Montana Palladium Research Initiative/Biological Production and Separations
Montana State

Maximizing Light Utilization Efficiency & Hydrogen Production in Microalgal Cultures
UC Berkeley

Photoelectrochemical

Photoelectrochemical Water Systems for H₂ Production
NREL

Cost-effective Photoelectrochemical Production of Hydrogen
Midwest Optoelectronics

Water Splitting Catalysts Based on the Oxygen Evolving Complex of Photosystem II
Arizona State

Photoelectrochemical Generation of Hydrogen Using Sonicated Hybrid Titania Nanotube Arrays
UN - Reno

Photoelectrochemical Hydrogen Production: UNLV-SHGR
UNLV, et al

Solar Water Splitting: Photocatalyst Materials Discovery and Systems Development
GE Global Research

- Oral Presentation
- Poster Presentation
- Not Presented



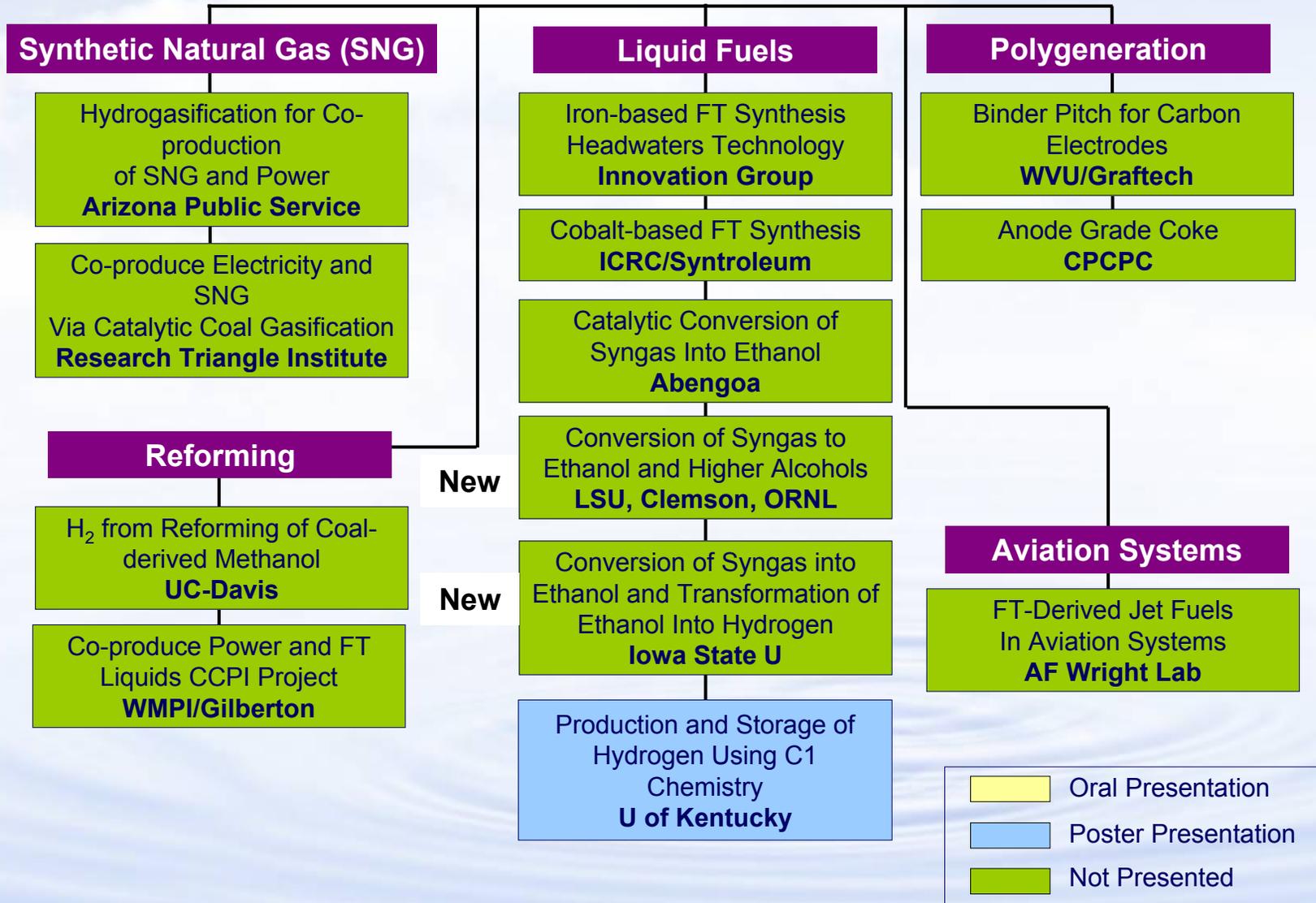
Coal Hydrogen Central Production Pathway Projects



Yellow box	Oral Presentation
Blue box	Poster Presentation
Green box	Not Presented

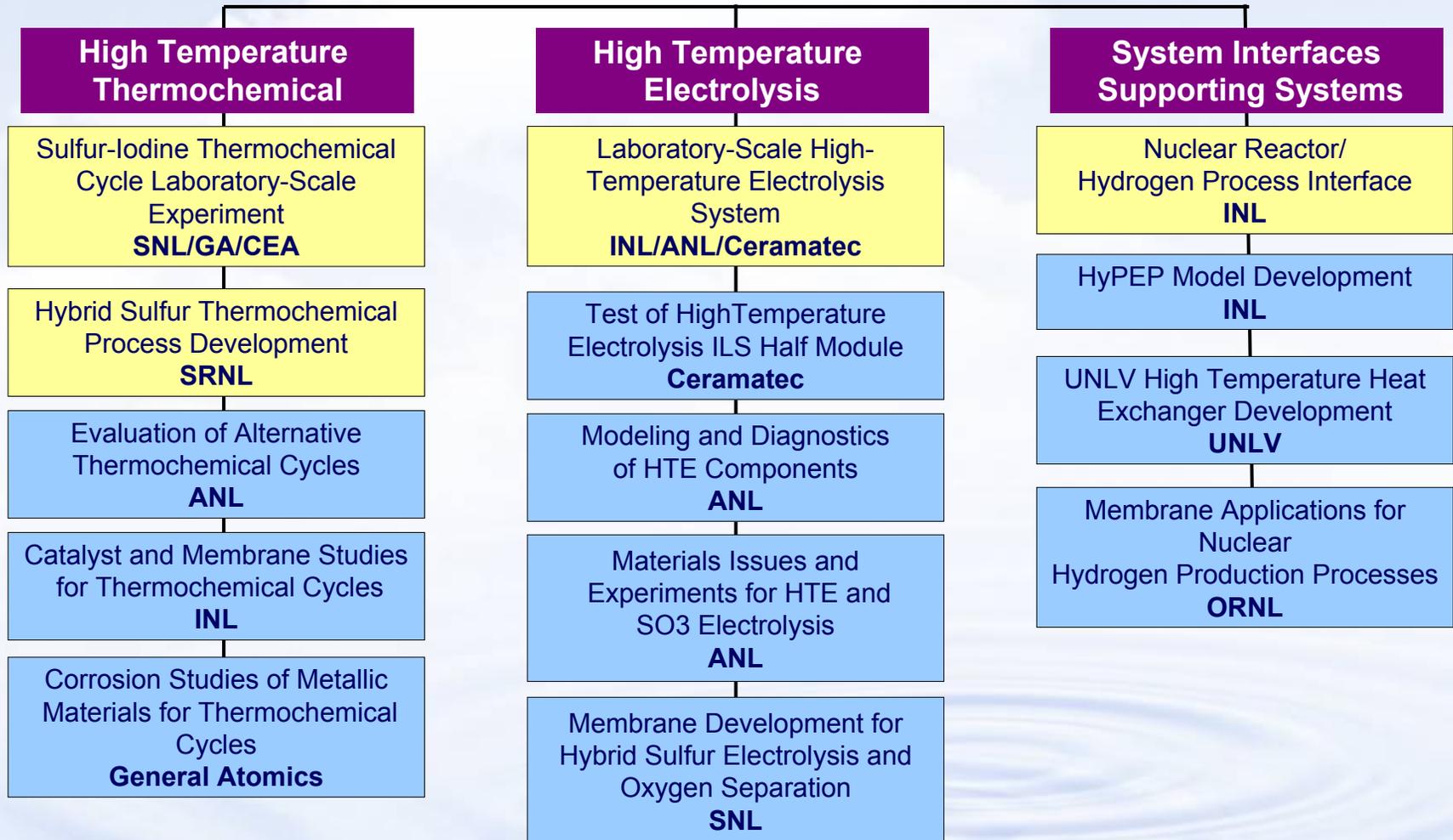


Coal Hydrogen Pathway Related Projects





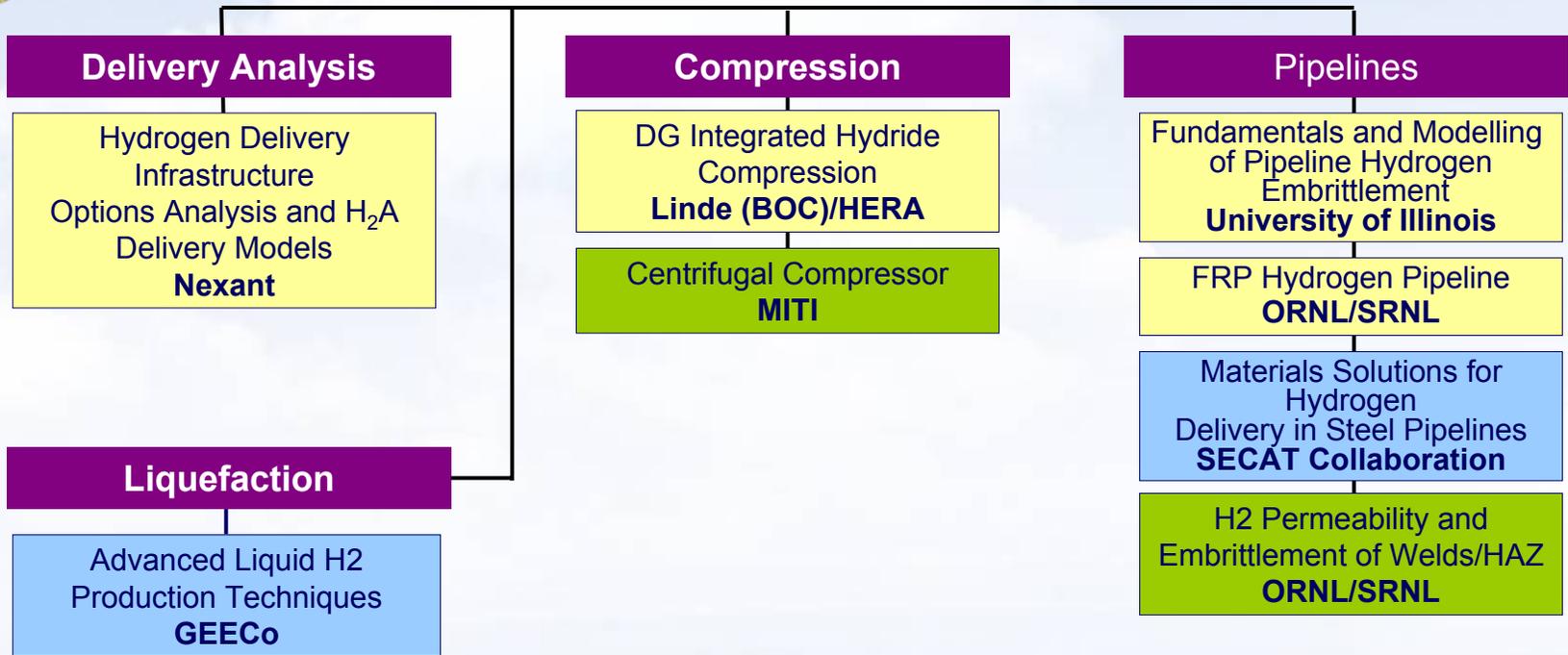
Nuclear Hydrogen Production Pathway Projects



	Oral Presentation
	Poster Presentation
	Not Presented



Hydrogen Delivery Projects



	Oral Presentation
	Poster Presentation
	Not Presented



Hydrogen Delivery Projects





Additional Projects/Crosscutting

- Photobiological Hydrogen Research, FIU
- Developing Improved Materials to Support the Hydrogen Economy, Edison Materials Tech Center
- Production of Hydrogen for Clean and Renewable Sources of Energy for Fuel Cell Vehicles, University of Toledo
- Adapting Planar Solid Oxide Fuel Cells for Distributed Power Generation, Ohio University
- Production, Fuel Cell, and Delivery Research, University of South Florida
- Ohio Distributed Hydrogen Project, Ohio University
- Generation and Solid Oxide Fuel Cell Carbon Source Sequestration in Northwest Indiana, NiSource