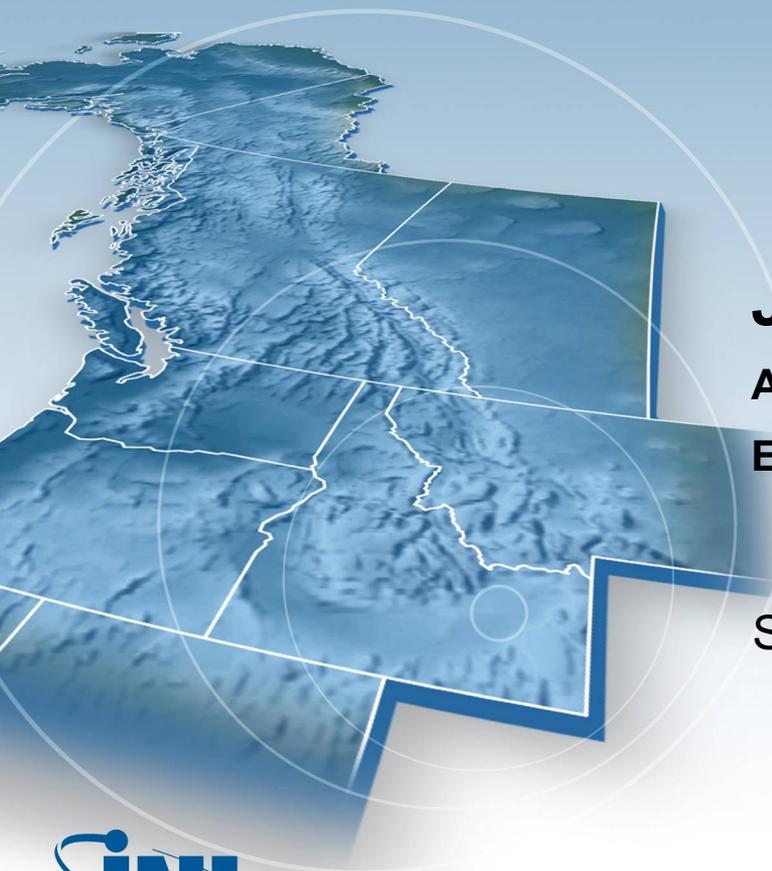


Transforming Transportation and Our Regional Opportunity



J.W. Rogers, Jr.

Associate Laboratory Director

Energy and Environment Science & Technology

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Western Inland Energy Corridor

- world-class conventional and unconventional **fossil energy reserves**
- significant **renewable resources**
- energy **infrastructure** offering opportunities for integration
- people and R&D institutions



Selected World Class Energy Corridor Resources

Alberta Oil Sands

- 174 Billion Barrels (proven)
- Bitumen production = >1 million barrels/day

Coal basins

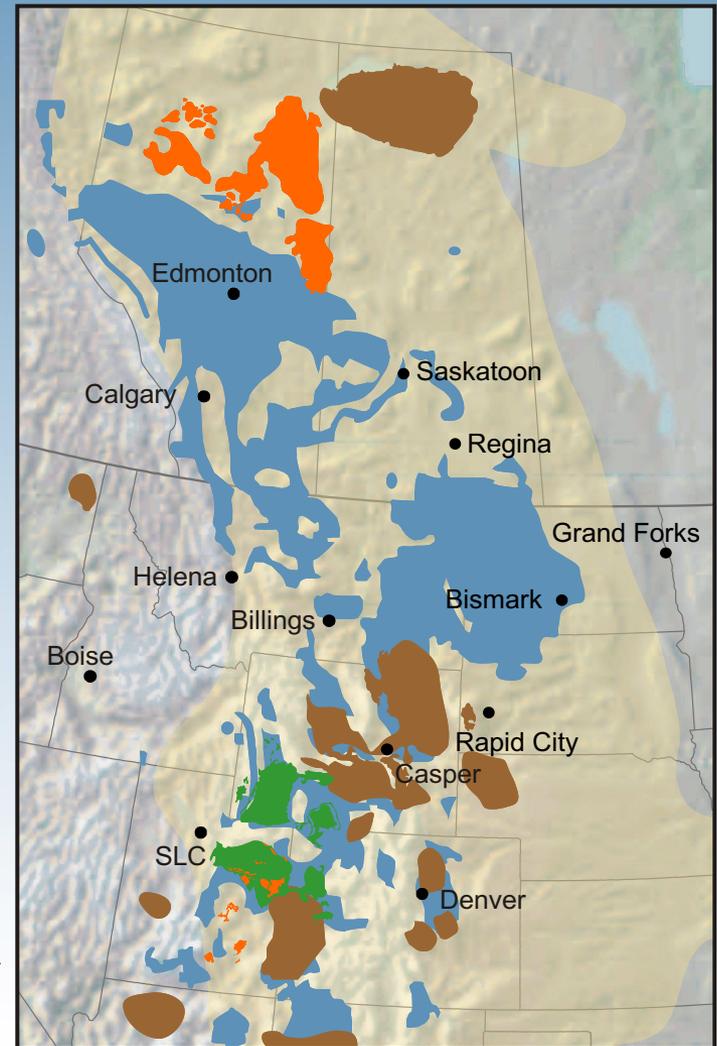
- The assessed coal in the Northern Rockies and Great Plains represents a total of about 660,000 million short tons

Oil shale

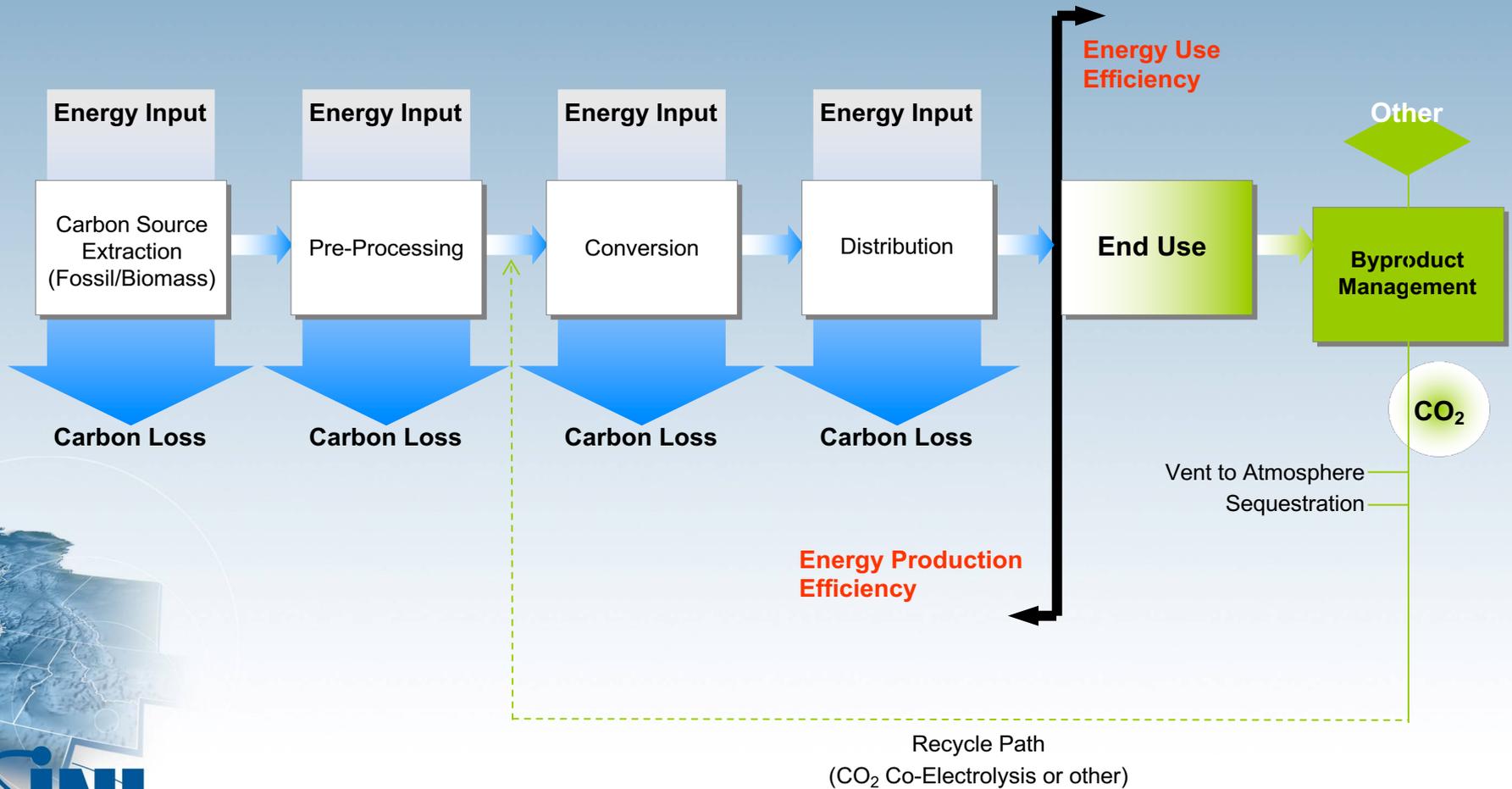
- May contain in place the equivalent of 2 trillion barrels of oil
- Sustained production estimated at 2.5 million barrels per day

Saskatchewan uranium

- World's richest concentration
- 25-30% of world production



Carbon-cycle Management



U.S. Department of Energy and PHEVs

- The Advanced Vehicle Testing Activity (AVTA) conducts vehicle testing to support its goal of reducing the nation's dependency on foreign oil including the testing and demonstration of PHEVs
- Currently 140 vehicles – 160 vehicles by end of year. INL will monitor performance data in >75% of these vehicles
- Key Findings, to date:
 - Vehicles must be charged to maximize mpg
 - Aggressive driving significantly reduces mpg
 - PHEVs will get 100+ mpg for first ~40 miles of driving when charged and driven correctly
- Future Plans
 - Continued testing of conversion vehicles in preparation for testing OEM PHEVs
 - Initiating other PHEV testing such as expanded battery and vehicle to grid testing



INL provides independent assessments and guidance to government decision makers; and provides innovation and risk reduction assistance to industry to accelerate commercial deployment of energy options



Regional Focusing:

Washington State and the Northwest

- Testing will be expanded to include at least 28 vehicles in Washington:

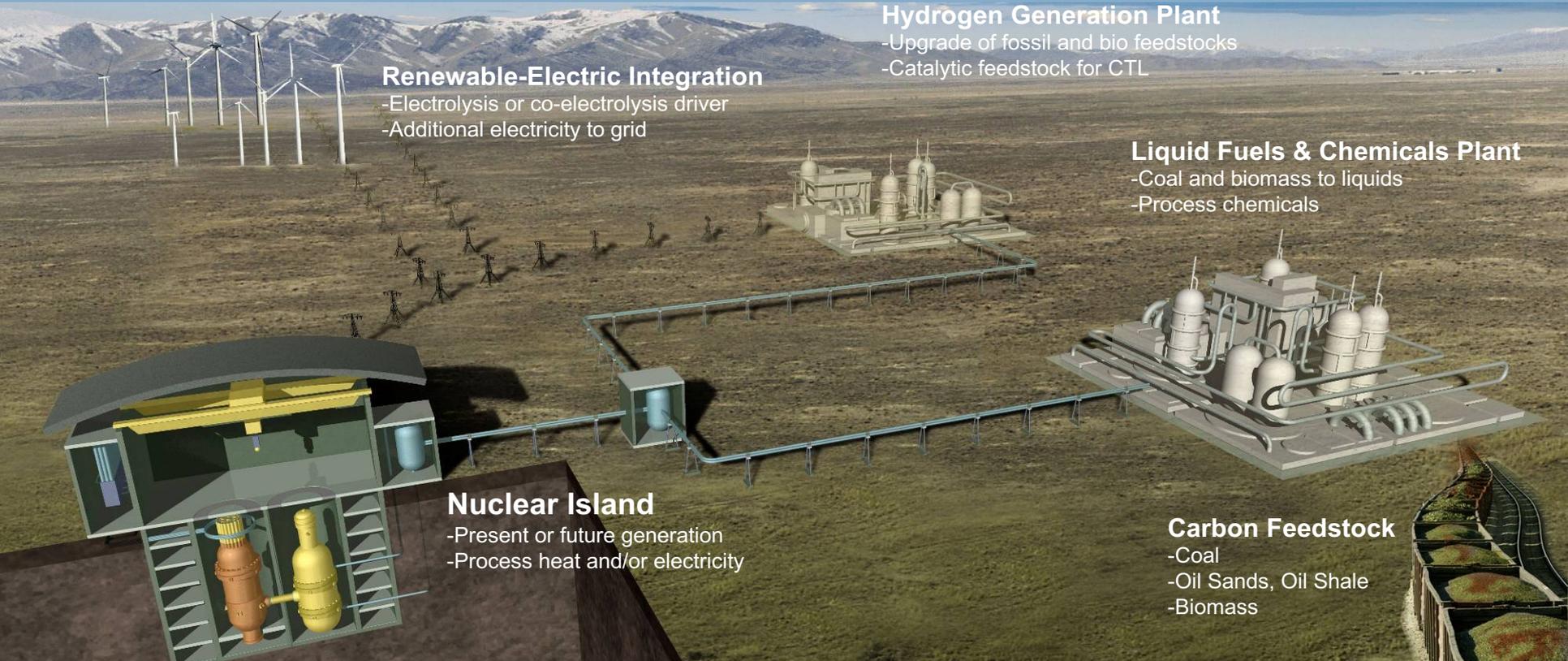
- State of Washington CTED
- Port of Chelan County
- City of Wenatchee
- Green IT Alliance
- Benton County PUD
- Douglas County PUD
- Chelan County Public Works
- University of Washington
- Walla Walla Comm. College
- Wenatchee Valley College
- State of Washington
- Energy Northwest



For a period of time, Washington State will host the largest concentration of PHEVs in North America

- Eight HICE's in BC being monitored
- Data loggers to be added to selected PHEVs deployed in Oregon

Our Vision: Hybrid Energy Systems: a Bridge to Energy Security



Renewable-Electric Integration
-Electrolysis or co-electrolysis driver
-Additional electricity to grid

Hydrogen Generation Plant
-Upgrade of fossil and bio feedstocks
-Catalytic feedstock for CTL

Liquid Fuels & Chemicals Plant
-Coal and biomass to liquids
-Process chemicals

Nuclear Island
-Present or future generation
-Process heat and/or electricity

Carbon Feedstock
-Coal
-Oil Sands, Oil Shale
-Biomass

Diverse Carbon Resource → Nuclear Hybrid Energy Systems → Strategic Energy Parks = Resilient & Secure Energy

Context:

A Balanced Energy Portfolio that Requires Transportation Innovation

Right Energy, Right Place, Right Time

