# Sector Coupling: Electrified Transportation

**Bhaskar Mitra, Seemita Pal,**

**Michael Kintner-Meyer, and Hayden Reeve**

Pacific Northwest National Lab

**OE Sponsor: Chris Irwin**

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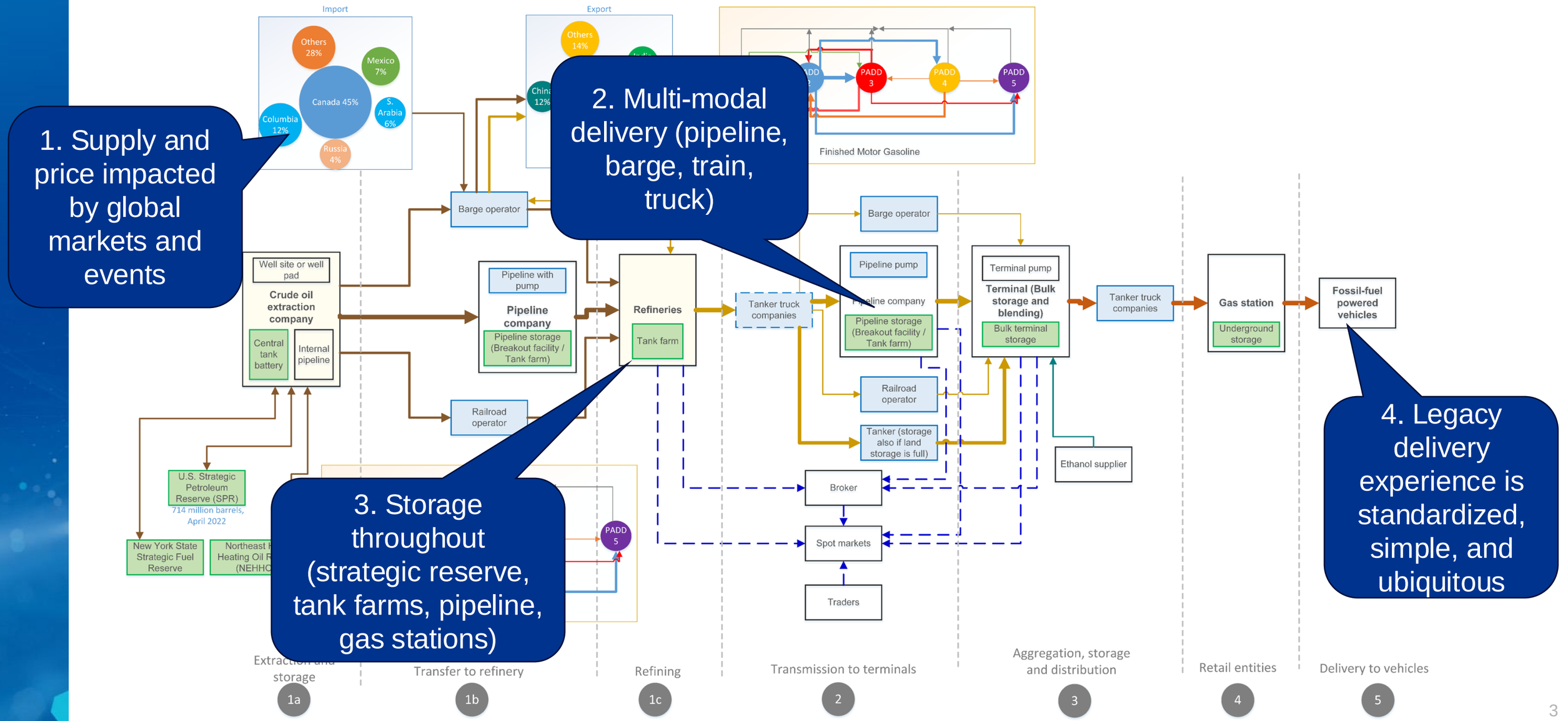
# Motivation and Objective

- The transportation system is rapidly electrifying, displacing the functions of the present-day fossil fuel sector

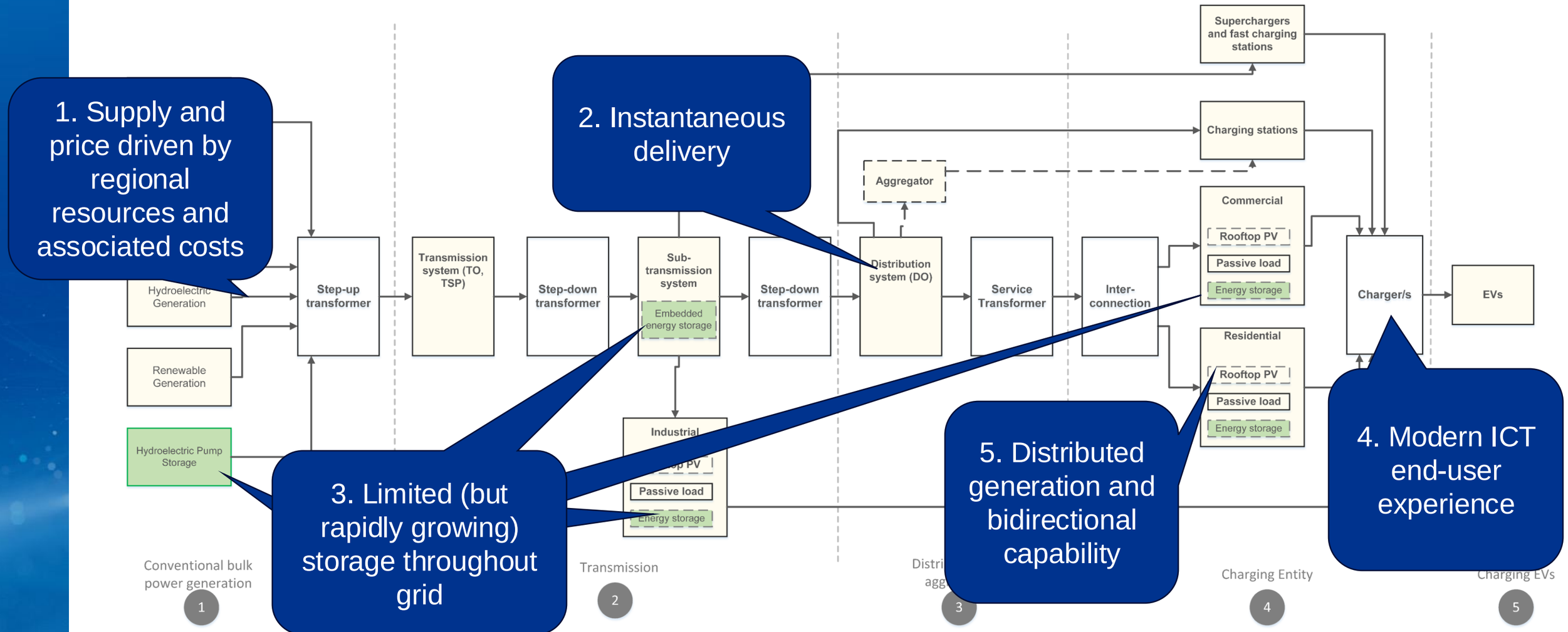
- Ensuring this rapid transition is smooth necessitates understanding the functional requirements of the emerging electrified transportation system and the understanding structure and performance of the current fossil fuel delivery system, which is less well understood and documented

- Sector Coupling is an emerging discipline to ensure the underlying structures, couplings, and attributes of these systems are identified, strengths leveraged, and weaknesses addressed

# Fuel Supply Chain: Key Attributes



# Electricity Supply Chain: Key Attributes



# Ensuring Supply During Extreme Events


Demand surges can create shortages prior to extreme events

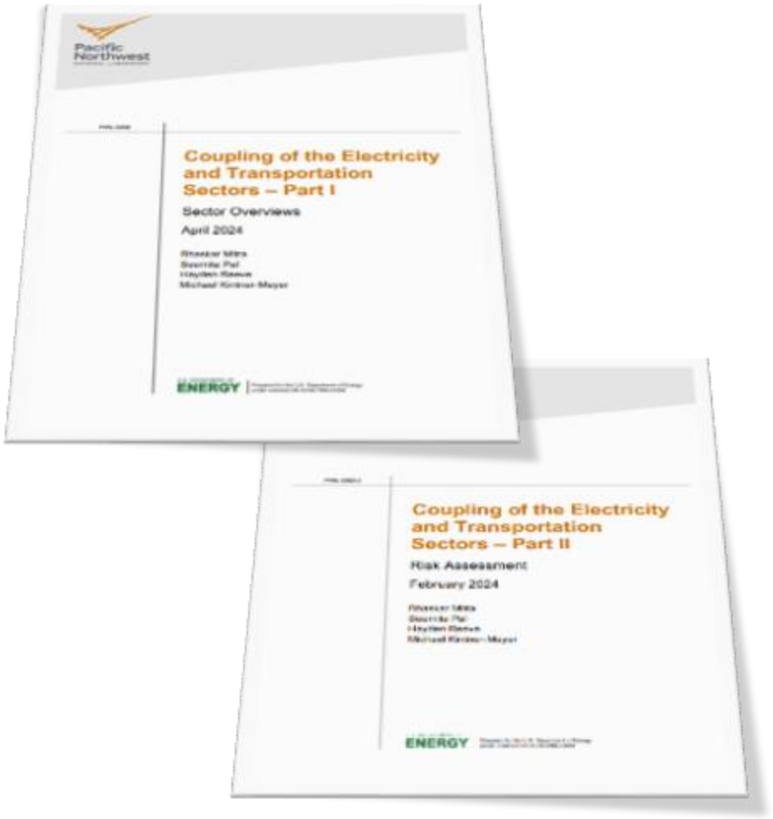

Disparities in restoration and replenishment time between sectors


Disparities in robustness of end-use experience

Distributed and bidirectional power generation

# Summary

- Understanding and leveraging system structures and attributes to meet requirements will be critical to a smooth transition
- Sector Coupling plays a key role of illuminating these features in complex coupled systems
- Current focus on sector communication structure coupling & coordination frameworks at grid interfaces
- Currently supporting Oregon (through CESER funding) under their State Energy Security Plan
- Reports: PNNL-35826
  - Coupling of the Electricity and Transportation Sectors - Part I: Sector Overviews
  - Coupling of the Electricity and Transportation Sectors - Part II: Risk Assessment



# Thank you

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