Low-Carbon Fuels Perspectives

Sustainable Transportation Summit

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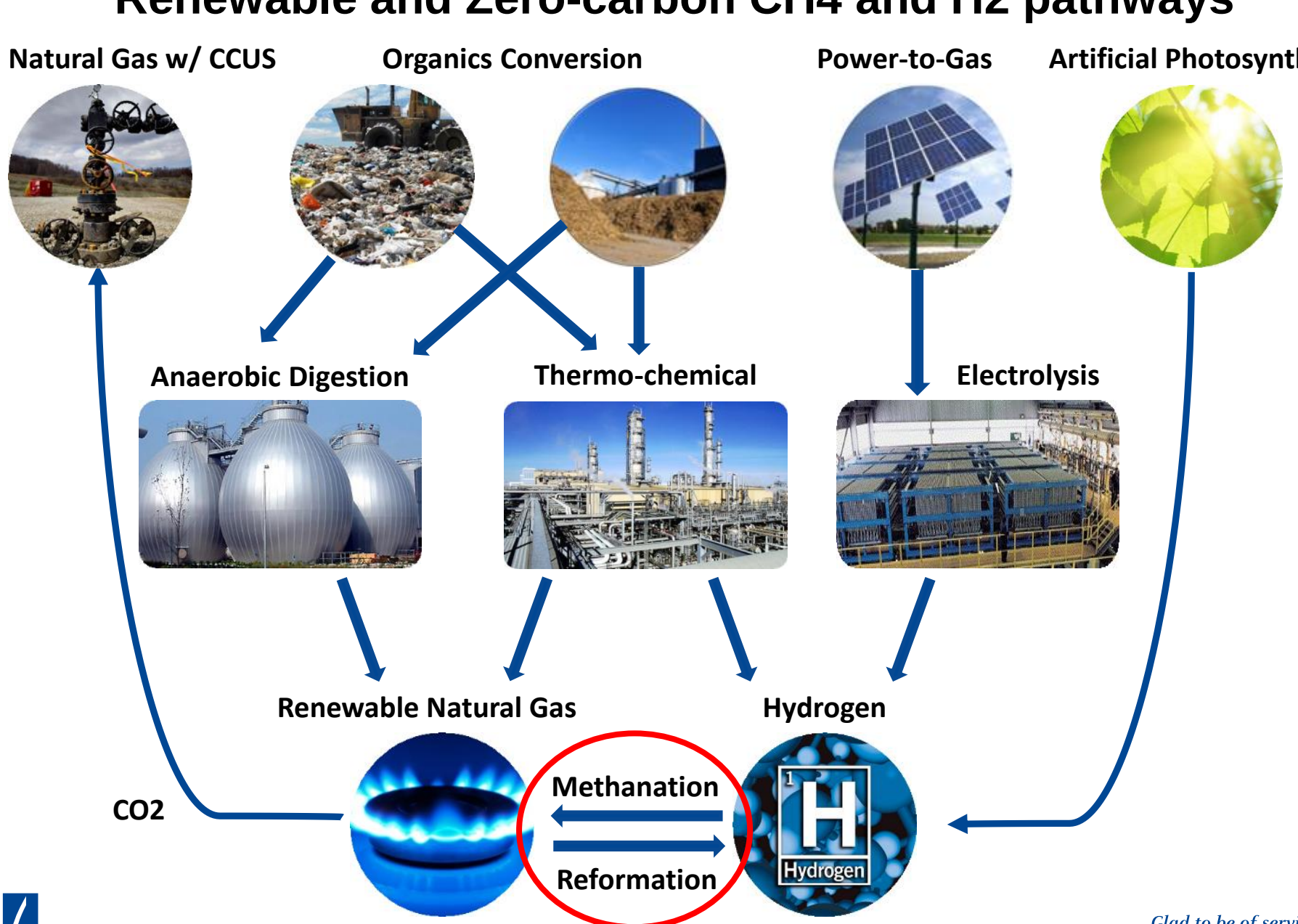
SoCalGas

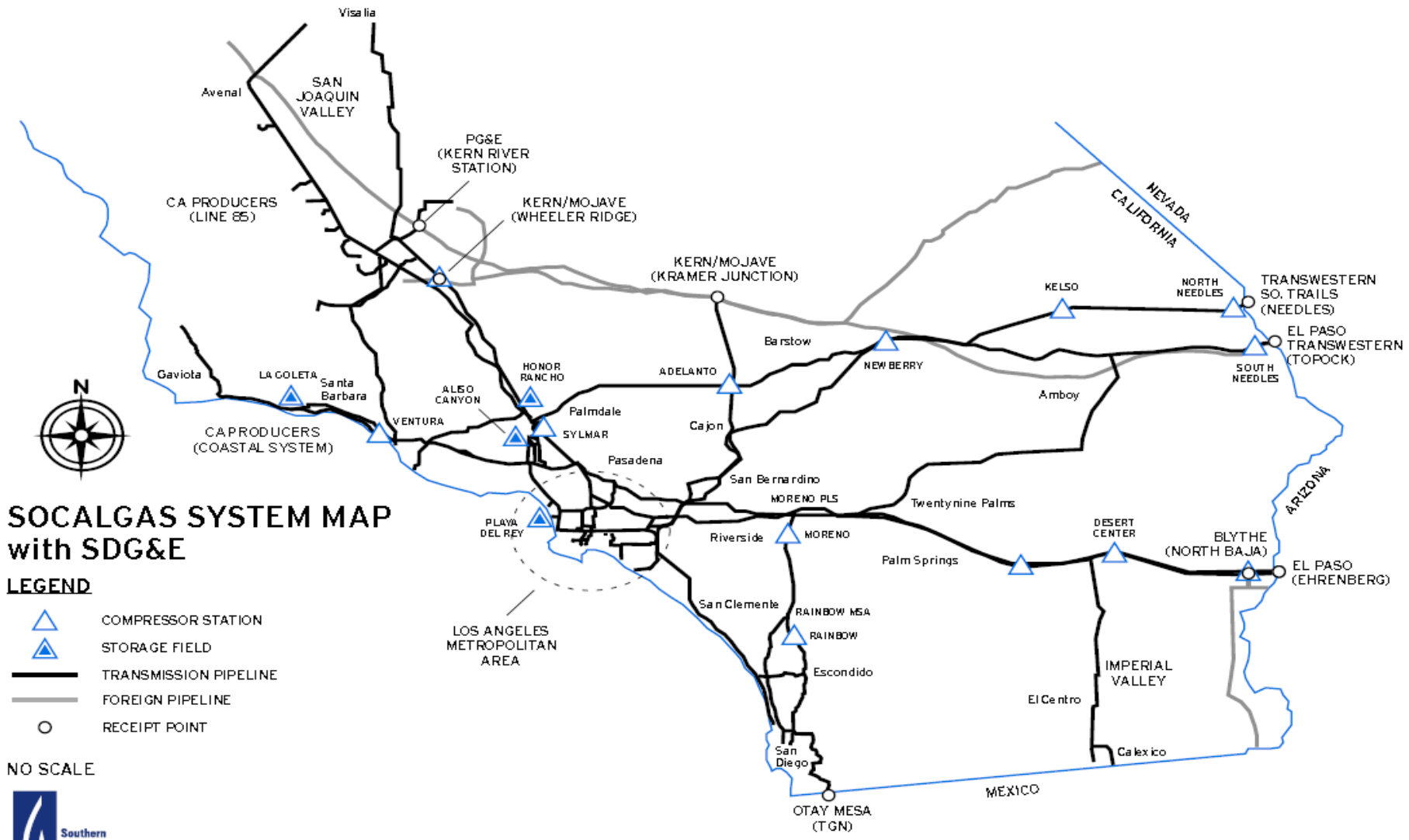
A Sempra Energy utility

Glad to be of service.®

Renewable and Zero-carbon CH4 and H2 pathways



The existing gas system provides nearly universal deliverability and storage capability



Southern California Gas Company

A Sempra Energy utility

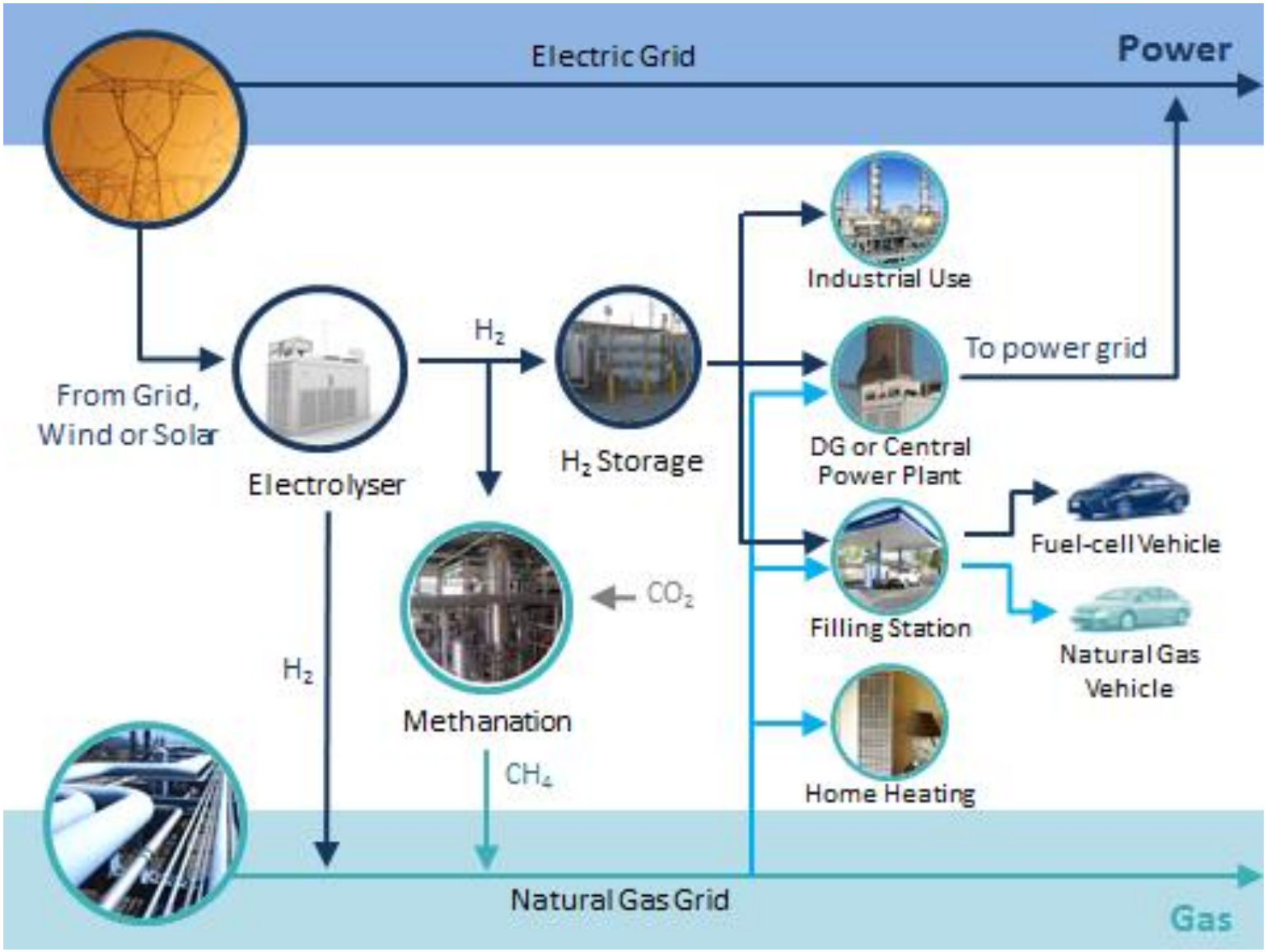
Apr 2013

Organics Conversion





Power-to-Gas Concept



Issues and Challenges

- Cost and performance – need market pull to drive “learning curve” effect and support further R&D
- Policy
  - Lack of framework for resources serving multiple markets (fuels, electricity, grid services)
  - Uneven subsidies (e.g. ITC / PTC)
  - Inability to capture carbon value over the life of a project (LCFS or procurement mandate, TOU rates for surplus renewables)
- Misconceptions
  - Resource potential
  - Technical maturity
  - Cost and performance
  - Carbon Intensity and impact on fugitive methane emissions