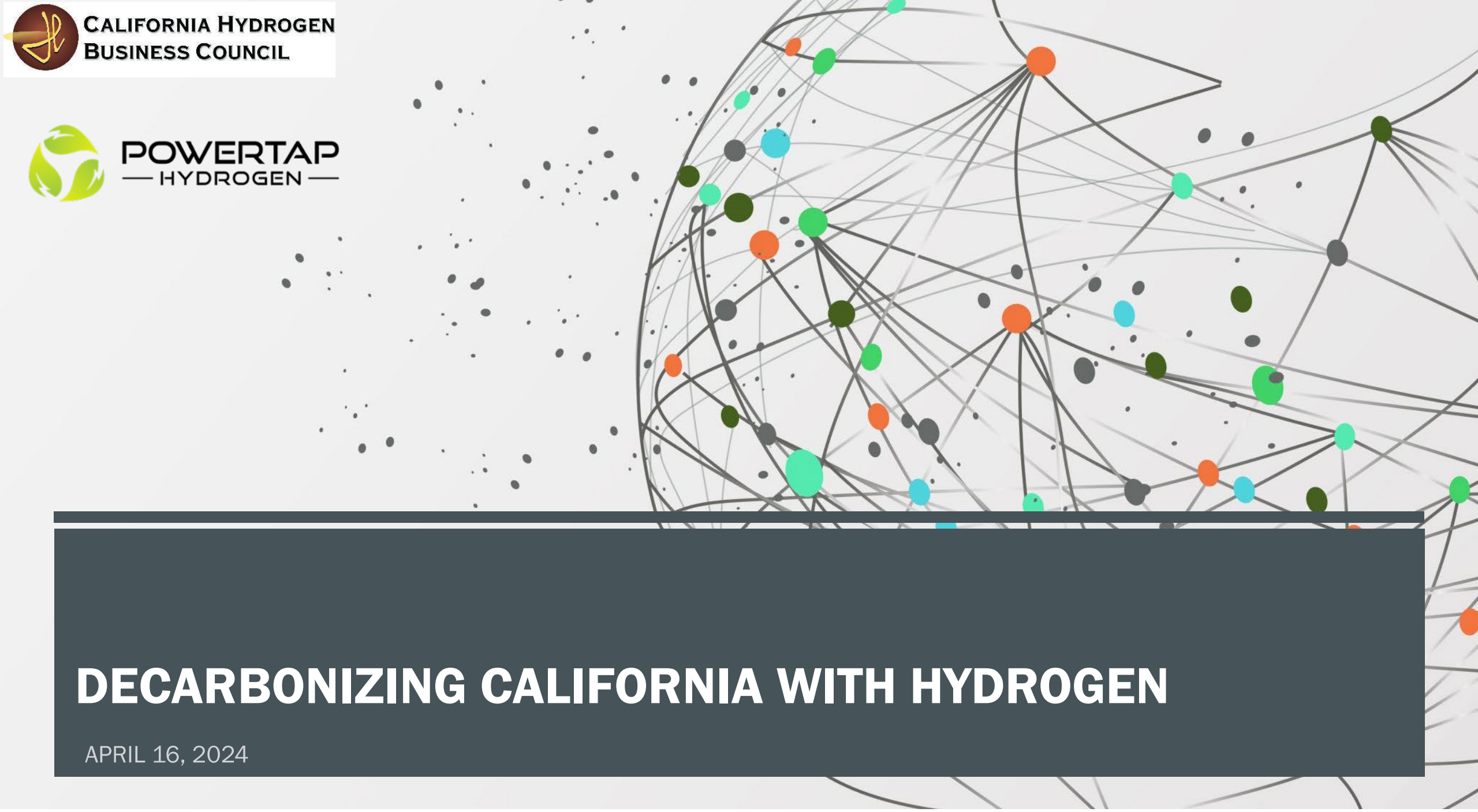
CALIFORNIA HYDROGEN BUSINESS COUNCIL

POWERTAP HYDROGEN



DECARBONIZING CALIFORNIA WITH HYDROGEN

APRIL 16, 2024

CALIFORNIA HYDROGEN BUSINESS COUNCIL

POWERTAP HYDROGEN

ADVOCACY

GOODS MOVEMENT, HEAVY-DUTY TRANSPORT, AND CLEAN PORTS

PUBLIC TRANSPORTATION

RENEWABLE HYDROGEN, ENERGY STORAGE, AND POWER GENERATION

We are the California Hydrogen Business Council (CHBC)

- **130+ members** in the business of hydrogen
- Our *mission* is to support the commercialization of hydrogen in the energy and transportation sectors to aid California in achieving its climate, air quality, and decarbonization goals

Our Objectives:

- *Enhance* market commercialization through effective advocacy and public sector education; the go-to resource on Hydrogen and Fuel Cell technology for policymakers and policy influencers
- *Accelerate* market growth via information exchange for the industry and its customers through our Sector Action Groups
- *Promote* the market by facilitating connections and providing ample networking opportunities for our members through our events

OUR NETWORK

- ✓ HYDROGEN PRODUCERS AND DISTRIBUTORS
- ✓ AUTOMOTIVE COMPANIES
- ✓ UTILITIES
- ✓ PUBLIC TRANSIT SYSTEMS AND SUPPLIERS
- ✓ FUEL CELL, ELECTROLYZER, COMPRESSOR AND STORAGE MANUFACTURERS
- ✓ FUELING STATION DEVELOPERS, ENGINEERS AND CONSULTANTS
- ✓ MUNICIPAL, STATE AND FEDERAL AGENCIES
- ✓ COMPONENT SUPPLIERS

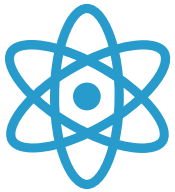
UPDATE

HYDROGEN FUELING INFRASTRUCTURE

Salim Rahemtulla
Chairman, Mobility Initiative Committee
California Hydrogen Business Council

OVERVIEW OF PRESENTATION TOPICS

Hydrogen Use Cases



Hydrogen Infrastructure

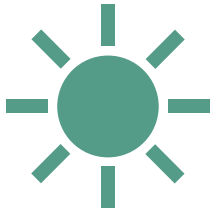
Costs, Financing/Funding and Incentives

Challenges and Solutions

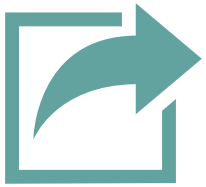
HYDROGEN USE CASES

Hydrogen for Transportation

Industrial Processes (Refining, Ammonia, Metallurgy)

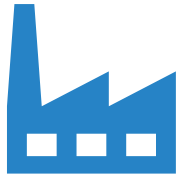


Energy Storage



Potential Future Uses (Power-to-X, Export Commodity)

HYDROGEN PRODUCTION INFRASTRUCTURE - METHODS



Steam Methane Reforming

Current Production Capacity
Carbon Intensity and Emissions

Electrolysis

Advantages and Challenges

Other Methods

Gasification
By-Product Hydrogen

HYDROGEN DISTRIBUTION AND STORAGE

- On-Site Production, Storage, and Dispensing
- Bulk Distribution Modes (Pipelines, Trucks, Rail)
- Storage Methods (Geological, Liquefied, Gaseous, Metal Hydrides)
- Delivery Logistics and Infrastructure
- Safety Considerations

COSTS AND GOVERNMENT INCENTIVES

- Costs
  - CAPEX for Production and Fueling
  - Delivery and Infrastructure
  - Operations and Maintenance
- Incentives
  - LCFS
  - Federal 45V & 45Q Tax Credits

INFRASTRUCTURE CHALLENGES AND SOLUTIONS

- Hydrogen Delivery Modes (Pipelines, Trucks) or On-site
- Building Out Supply Chain and Infrastructure
- Ensuring Resiliency and Redundancy
- Leveraging Hydrogen for Grid Balancing
- Codes, Standards, and Workforce Training
- Building a Skilled Workforce

ROADMAP FOR INFRASTRUCTURE DEPLOYMENT

- Current Projects and Early Adopters
- Summary of Key Points

Points of Contact

Salim Rahemtulla
Chairman, Mobility Initiative Committee
California Hydrogen Business Council
CEO, PowerTap Hydrogen Fueling Corp.
salim@hydrogenfueling.co
(949) 456-5583

Bill O'Banion
SVP, Corporate Development
PowerTap Hydrogen Fueling Corp.
bill@hydrogenfueling.co
(408) 833-3139