DMV HYDROGEN GREENPRINT

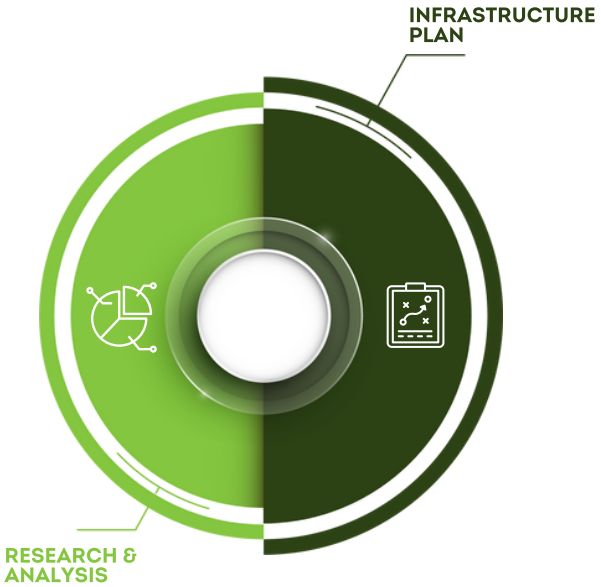
connecteddmv.org/hydrogen

EVERY GOOD PROJECT STARTS WITH A BLUEPRINT. OR, IN OUR CASE, A GREENPRINT.

The first key project of the National Capital Hydrogen Center will be the DMV Hydrogen Greenprint, showing how hydrogen can be produced, transported, stored, distributed and utilized throughout the DMV region. The Greenprint has two main components: an analysis and a plan.

The analysis puts numbers to the opportunity: how much hydrogen could be produced in our region? How much could be consumed? What would be the financial investment required? What would the climate and environmental outcomes be? What would be the social and economic outcomes of undertaking this work, especially among vulnerable communities?

The plan is an engineering design that optimizes the siting of infrastructure, making the best use of assets and locations to benefit the whole region.



CONTENTS OF THE DMV HYDROGEN GREENPRINT

ABOUT THE CENTER

The National Capital Hydrogen Center will accelerate the creation of a hydrogen eco-system in Greater Washington and foster collaboration across organizations in support of the national imperative to add hydrogen solutions to our country's clean energy future. Connected DMV is creating this independent center to utilize the exceptional assets of our regional commercial, governmental, academic, community and philanthropic organizations. The Center will plan the rollout of hydrogen infrastructure to rapidly deliver economically viable hydrogen projects, thereby accelerating scale and cost competitiveness. The full lifecycle of project planning, execution, and benefit delivery will incorporate social equity and environmental justice as foundational principles, consistent with the Connected DMV mission.

NATIONAL CAPITAL HYDROGEN CENTER

powered by CONNECTED DMV

RESEARCH & ANALYSIS

Ecosystem Definition
Definition of terms and concepts related to a hydrogen ecosystem, i.e. Production, Transportation, Storage, Distribution, End Use. Scope of "DMV Region" for both supply and demand

Market Analysis
- How other countries, regions, jurisdictions are undertaking similar initiatives or seeking to deliver on similar mandates
- Major participants in the hydrogen market – Governments, NGOs, Commercial/Industrial, Community and Social, Academia
- Technology trends across value chain (ie transportation/storage via ammonia, or alkaline electrolysis)

Estimated Regional Production Capacity and Pricing
- Nuclear
- Wind
- Solar
- Natural gas with carbon capture
- Landfill sources
- Wastewater treatment
- Ethanol
- Organic waste treatment

Estimated Regional Consumption Capacity
- Public Surface Transit - buses and vans
- DCA and IAD Airports (possibly adding BWI) - ground equipment and aircraft
- Other Aviation - air taxi and drones
- Maritime - Port of Baltimore, Port of Virginia, Potomac Ferry
- Rail - freight, passenger, and Metro
- Data Centers
- Natural Gas Distribution System Fuel Mixing
- Resilient and/or backup power (defense installations, micro-grids, and other critical services)
- Manufacturing & Industrial Processing
- Fleets - delivery, utility, warehouse
- Personal Mobility - personal vehicles, taxi, rideshares, scooters, EV charging

Adoption Scenario Modeling
Scenarios describing % market penetration and/or % of utilized capacity and the related key assumptions (cost of H, cost of carbon, Federal and local policy/incentives)

Value Proposition
By scenario, estimates of
- Investment required (including estimated prices of inputs/outputs)
- Total Direct Returns (Direct Financial, Economic Development, Employment, Tax revenue, etc.)
- Climate Impacts (Emissions, Pollution)
- Social Equity / Environmental Justice Impacts
- Total Indirect Returns (Traffic congestion, Tourism, Resilience, Energy Security)

www.connecteddmv.org/hydrogen

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INFRASTRUCTURE PLAN

Regional Infrastructure Plan
- Infrastructure siting
- Shared vs. dedicated resources
- Timeline for deployment
- Operating model: how would oversight and governance be conducted? Commercial entity-similar to a "network operator", utility, municipally owned and operated, private entities?

Required Actions
- Connected DMV's collaboration approach and operating model
- Investment requirements for scenarios
- Funding sources
- Required market participants
- Policy
  - Incentives
  - Carbon pricing
  - Permitting
  - Rates / Tariffs

OTHER ITEMS

Hydrogen as an Ally
Identify opportunities to coordinate and support other climate activities like electric car charging or renewable natural gas

Connected DMV as an Ally
Identify ways to collaborate with similar efforts across the country to build out an integrated national hydrogen ecosystem

The Process as an Ally
Identify opportunities to involve
- Multiple contributors (i.e., Prime and Sub)
- Volunteers
- Academia / Students
- Environmental Justice / Social Equity Principles

Education and Information
- Glossary and Hydrogen 101
- References to public documentation

DELIVERABLE OUTCOMES

- A financial, operational, and climate business case for investing in hydrogen projects in the DMV
- A plan for the deployment of hydrogen infrastructure in the DMV
- An approach and outcome that engages stakeholders and delivers on social equity and environmental justice principles

THE TIME FOR COLLABORATION & INVESTMENT IS NOW.