OUR CLEAN ENERGY FUTURE STARTS NOW: A CALL TO ACTION

NATIONAL CAPITAL HYDROGEN CENTER
powered by CONNECTED DMV

Climate change is an urgent issue. And, left unchecked, its impact on Greater Washington will be **devastating.**

According to a Climate Ready DC Report, heat emergency days in DC are projected to increase from 18-20 in this decade to 30-45 by the 2050s. This can lead to costly power failures which threaten the health of older residents and those unable to bear the cost of higher energy bills.

Over the last 90 years nuisance flooding along our riverfront has increased by more than 300%, according to NOAA. This flooding leads to increased property insurance premiums and higher costs to maintain and repair public services such as Metro rail, electricity infrastructure, and the sewage system.

It has been reported that "...the federal government's most recent National Climate Assessment, shows worst-case sea level rise in the Washington, D.C. region could raise the rivers 11 feet by 2100."

"People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts... action to significantly cut greenhouse gas emissions can substantially reduce climate-related risks and increase opportunities for these populations in the longer term."

– Fourth National Climate Assessment, Summary Findings

TO CREATE A GREATER WASHINGTON WHERE EVERYONE CAN THRIVE, WE MUST ACCELERATE THE CLEAN ENERGY ECONOMY NOW.

It is imperative that the DMV region develop and adopt additional clean energy solutions to help meet climate change reduction goals and create a more prosperous and equitable future for all who live and work in the DMV. Europe and Asia are much further along than the United States in the development cycle for a hydrogen economy - we cannot afford to lose this race.

In the regional clean energy ecosystem, hydrogen is our next great solution.

Why HYDROGEN?

Hydrogen can deliver carbon-free energy with water as the only emission. It is easy to store and transport, providing flexibility for many applications, including transportation, manufacturing, power generation and storage. By 2050, hydrogen has the ability to:

THE CHALLENGES ARE REAL, BUT THE SOLUTIONS ARE IN FRONT OF US.

While hydrogen is a simple element, much work must be done to overcome barriers to its widespread adoption. To be successful, we must bring together cross-sector leadership to drive policy, technology development, and implementation of hydrogen-based solutions at scale. We must formulate a comprehensive federal and state policy framework to support and advance the hydrogen economy. And, we need massive financial investments to accelerate the transition to widespread hydrogen availability and use. Cost reductions are required in the production and storage segments to make hydrogen cost competitive.

This is where the National Capital Hydrogen Center comes in.

NATIONAL CAPITAL HYDROGEN CENTER

powered by CONNECTED DMV

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.

While the DMV region has made progress in areas like renewable energy and energy efficiency, additional solutions are required to reach the climate change goals established by government, higher education, and commercial entities. We need a clean alternative that can be transported, stored, and utilized in a variety of cases – especially in sectors that are hardest to decarbonize.

THE TIME FOR COLLABORATION & INVESTMENT IS NOW.

DMV HYDROGEN
GREENPRINT
NATIONAL
CAPITAL
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H
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DMV

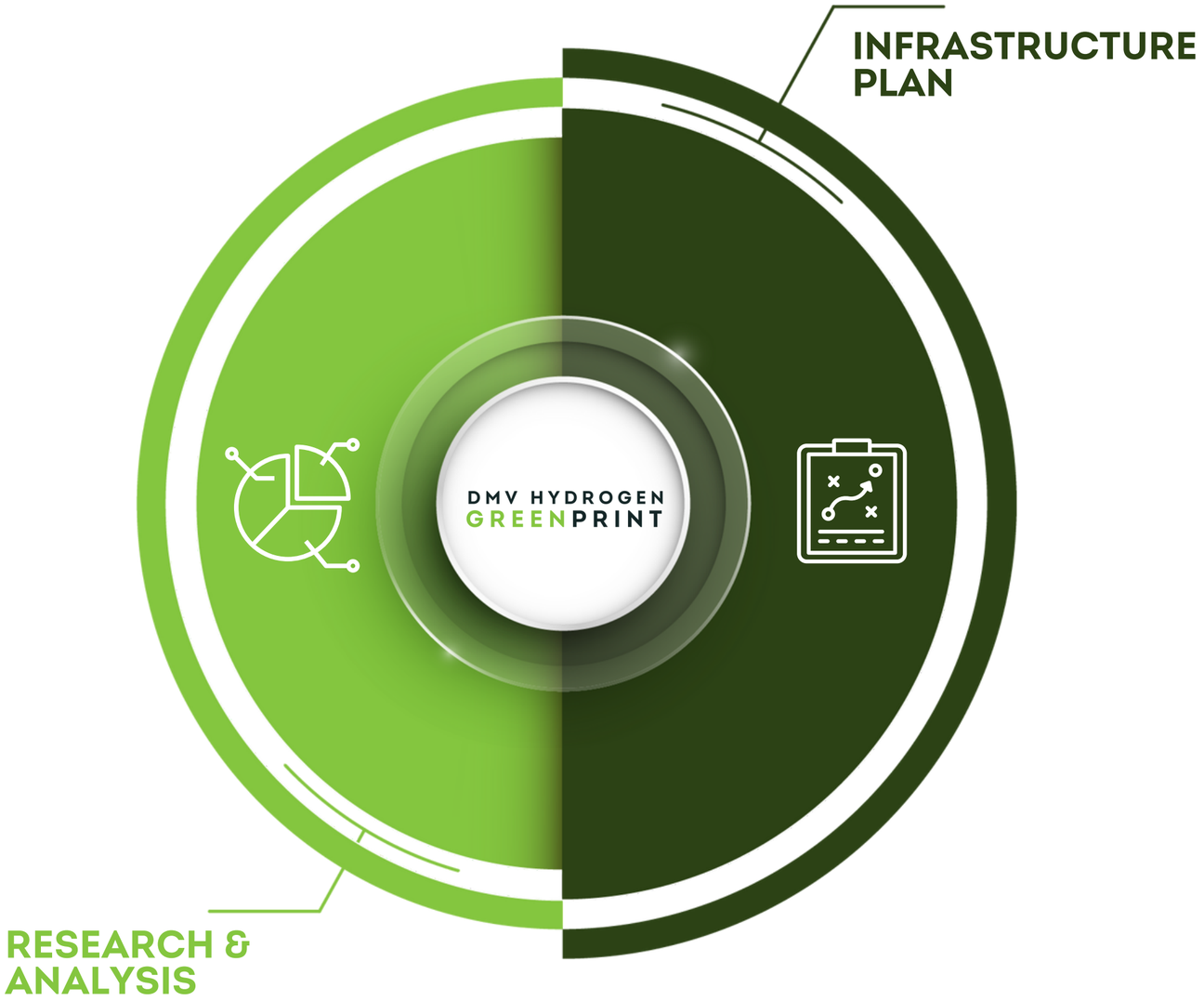
Every good project starts with a blueprint.
Or, in our case, a Greenprint.

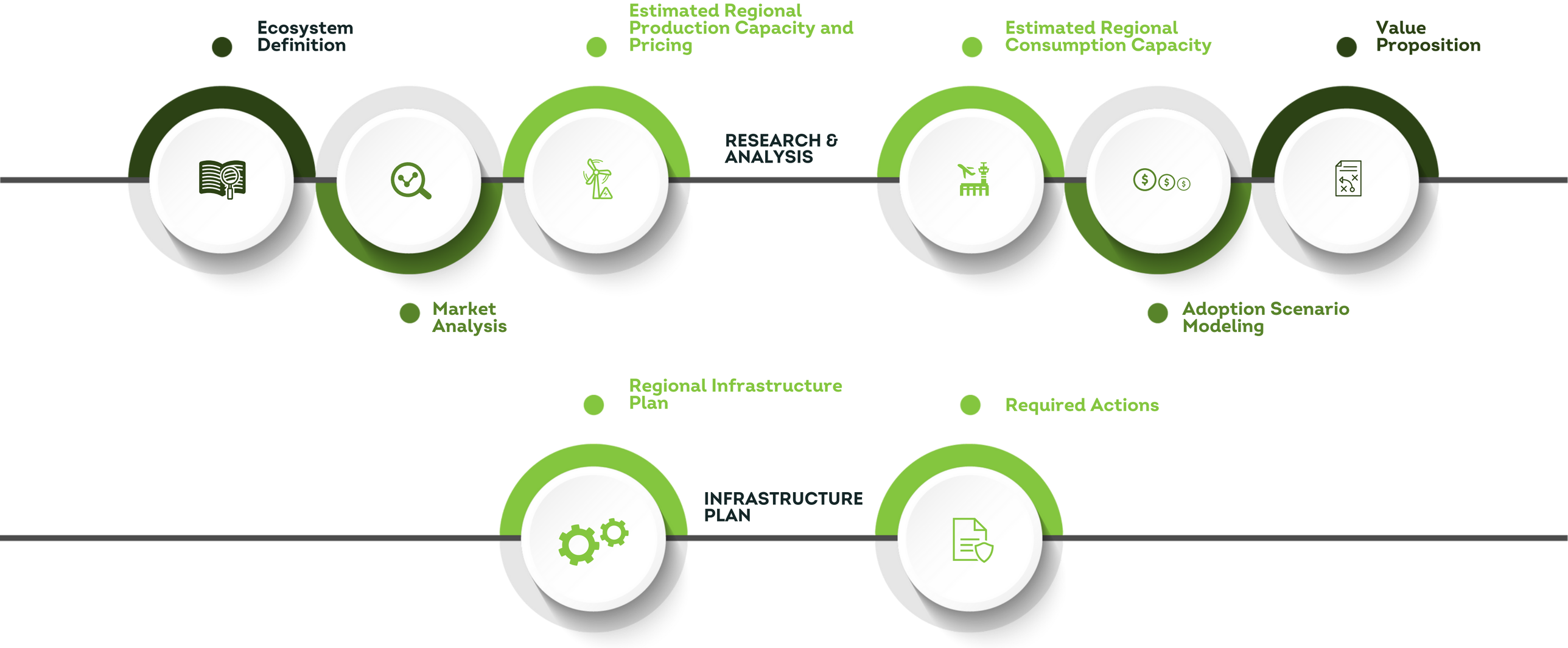
DMV HYDROGEN GREENPRINT

The first key project of the National Capital Hydrogen Center will be the DMV Hydrogen Greenprint, showing how hydrogen can be produced, transported, 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.




Ecosystem Definition
Market Analysis
Estimated Regional Production Capacity and Pricing
RESEARCH & ANALYSIS
Estimated Regional Consumption Capacity
Adoption Scenario Modeling
Value Proposition
Regional Infrastructure Plan
INFRASTRUCTURE PLAN
Required Actions

A financial, operational, and climate justification for investing in hydrogen projections in the DMV

An approach and outcome that engages stakeholders and delivers on social equity and environmental justice principles

A proposed plan for the deployment of hydrogen infrastructure in the DMV

Now, let's turn possibility
into reality.

H
2
DMV

The second key project of the National Capital Hydrogen Center is called H_2DMV, an ambitious 3-5 year end-to-end initiative that includes production, transportation, storage, distribution and use of hydrogen. It will deliver the benefits of integrating hydrogen into the DMV's regional energy mix. H_2DMV will be a project "at scale," rather than a demonstration project for a single technology or use case. It represents the implementation of the opportunities quantified in the Greenprint. While this project will ultimately be informed by the results of the Greenprint, we are starting the conceptual planning concurrently because of the preparation time required. By the time that the Greenprint is complete, we will be ready to incorporate that analysis into our project planning activities.

H_2DMV will incorporate all stages of the hydrogen value chain in order to address the "chicken and the egg" problem of getting both supply and demand to scale concurrently. We are in the information gathering stage of the project, but have identified both significant existing assets and future opportunities in the region, including:

Production from:

- Nuclear
- Wind
- Solar
- Natural gas with carbon capture
- Landfill sources
- Wastewater
- Ethanol
- Organic waste

Storage

- Above-ground central storage
- Above-ground distributed storage
- Below-ground natural formation storage

Transportation

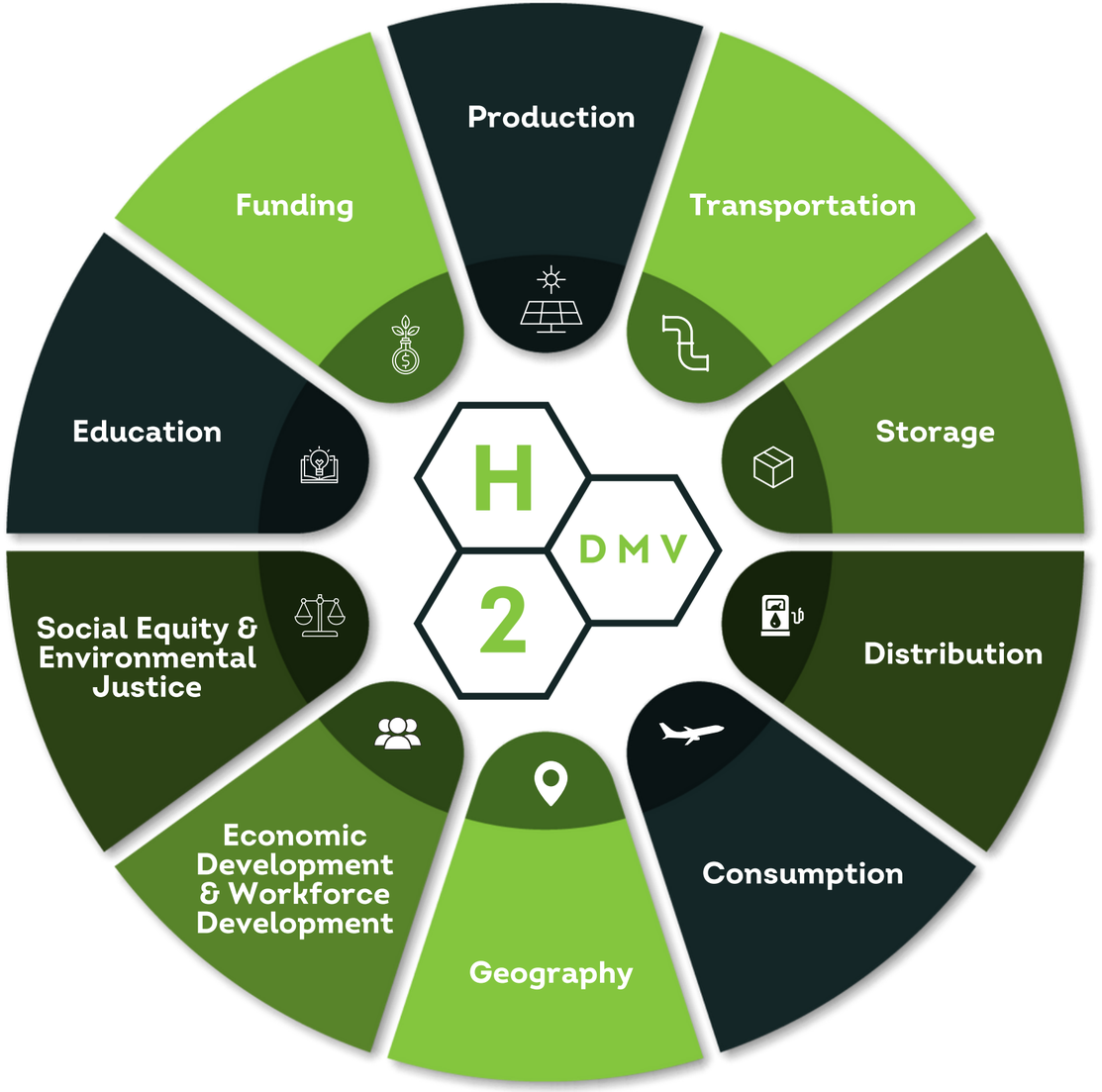
- Above-ground trucking
- Dedicated underground pipeline

Distribution

- Regional hub fueling locations
- On-site fueling equipment

Consumption

- Public Surface Transit – buses and vans
- DCA and IAD Airports (possibly adding BWI) – ground equipment AND aircraft
- Other Aviation (air taxi, drones)
- Maritime (including Port of Baltimore, Port of Virginia, Potomac ferry)
- Rail (including freight, passenger, and Metro)
- Data Centers
- Natural gas distribution system fuel mixing
- Resilient and/or backup power (defense installations, other critical services)
- Manufacturing, Industrial Processing
- Fleets (delivery, utility, warehouse)
- Personal Mobility (personal vehicles, taxi, rideshares, scooters, EV charging)



H_2DMV will explore 10 important components of developing a regional hydrogen economy, from the value chain of the solution to the resulting social equity and environmental justice impacts.

THE CENTER AT A GLANCE

GOVERNANCE

Independent governance via a steering committee comprising leaders across relevant domains. Following the Strategy Phase, a Board of Trustees will be installed. The steering committee and board will comprise public, private, academic, community and philanthropic leaders.

USE OF FUNDS

Costs to deliver the Strategy Phase include nonprofit payroll, professional and legal services, technology, and administrative activities to establish the Center and work the projects.

ECOSYSTEM

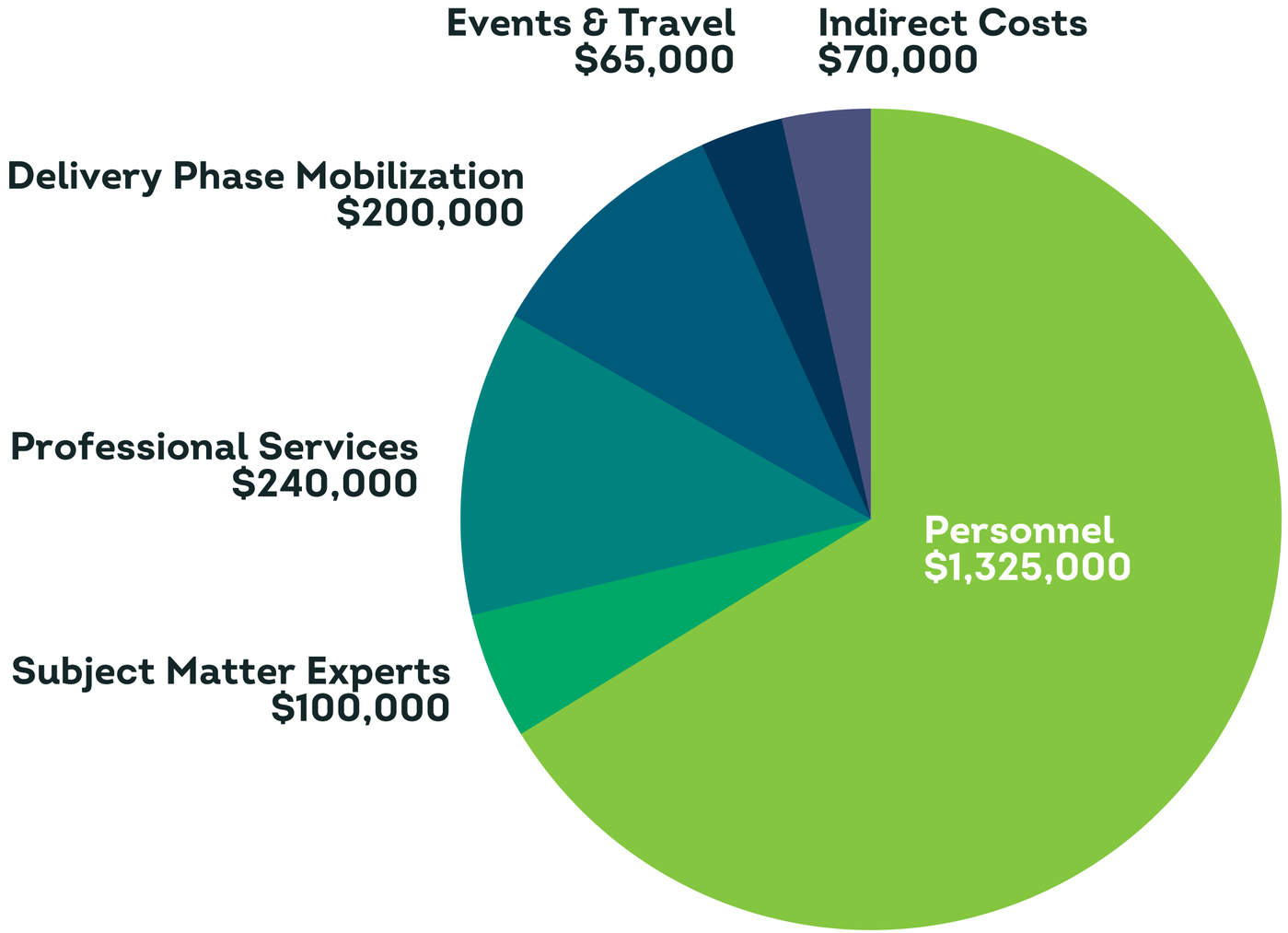
The ecosystem will comprise organizations and institutions from: Federal, State, and Local Governments, Defense and National Security, Nonprofits and NGO's, Academia, and Commercial Enterprises from the Energy, Transportation, Technology, Manufacturing and professional services sectors.

BUSINESS MODEL

501(c)(3) organization with co-equal participation across community, academia, government, industry, community and philanthropy.

FUNDING MODEL & BUDGET

$2.0M to launch the Strategy Phase, including the business plan for the National Capital Hydrogen Center, its lead projects - H_2DMV and the DMV Hydrogen Greenprint to be funded by government, industry, and philanthropy.



FUNDING THE $2M STRATEGY PHASE

BIG SOLUTIONS CALL FOR A BIG (CROSS-SECTOR) TABLE.

Connected DMV
Stu Solomon

Washington Gas
Mallik Angalakudati

Metropolitan Washington Council of Governments
Chuck Bean

The 2030 Group
Bob Buchanan

Exelon
Sunny Elebua

U.S. Department of Transportation, Office of Innovation
Melissa King
(ex-officio)

Bloom Energy
Dan Middleton

Metropolitan Washington Airports Authority
Jack Potter

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy
Dr. Sunita Styapal
(ex-officio)

Pepco
Dave Velazquez

K&L Gates
David Wochner

To get involved in the work to support the National Capital Hydrogen Center, please contact Richard Moore: richardmoore@connecteddmv.org

Now that we've answered all of your questions about the National Capital Hydrogen Center,
we've got just one for you.

www.connecteddmv.org/hydrogen

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