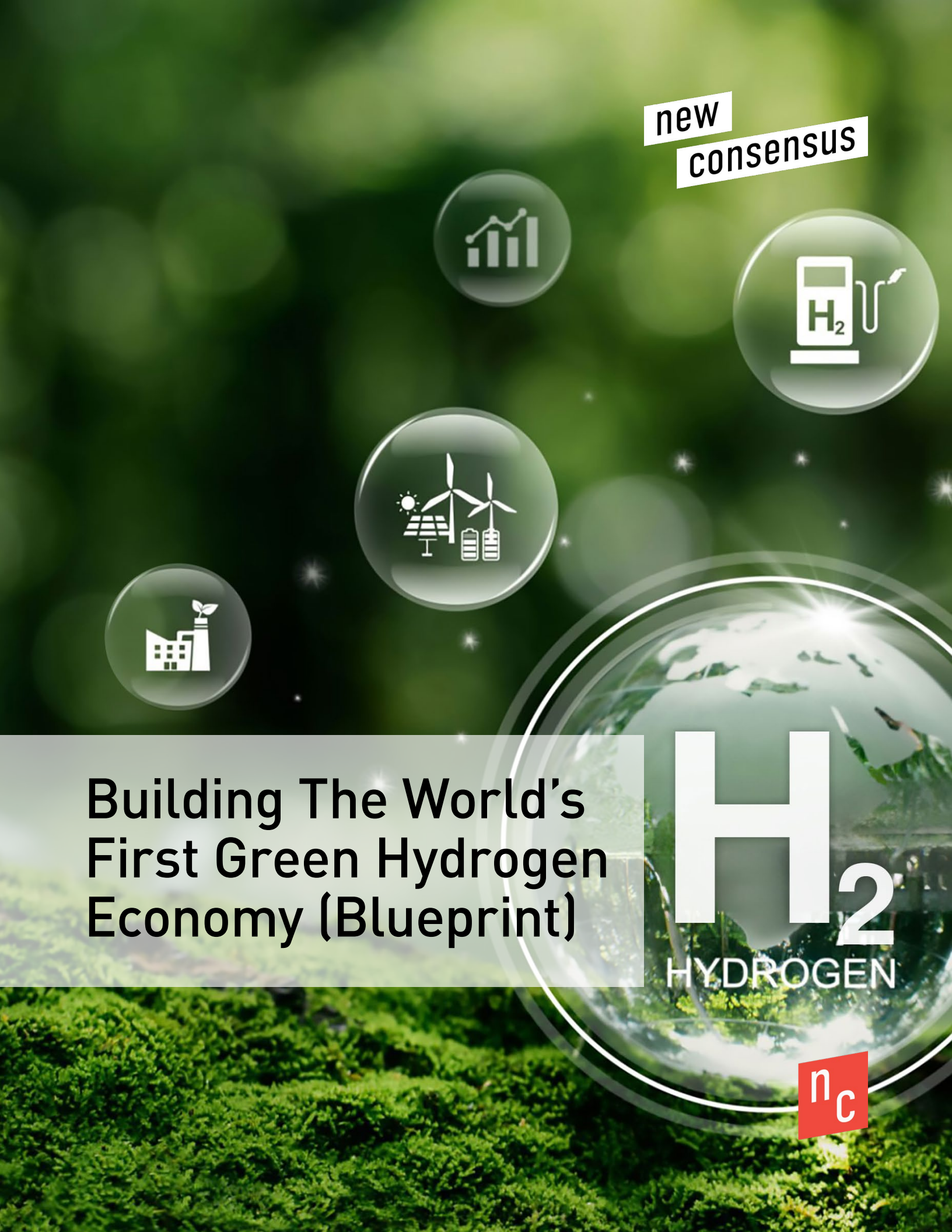

Building The World's First Green Hydrogen Economy (Blueprint)

This national mission for Green Hydrogen is one of more than a dozen that comprise the New Consensus Mission for America. These missions are designed to work together to form a comprehensive solution for getting to net-zero emissions while building a more prosperous economy for all. They are designed to be ambitious but realistic, given one condition: that America elects federal leaders who are committed to renewing the U.S. economy while getting to net-zero greenhouse gas emissions as soon as possible.

Credits:

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Contents

Introduction

This document provides a blueprint for the National Mission for Hydrogen, outlining the key policies, programs, and actions needed to build an American green hydrogen industry. Unlike the full report, which details industry context, challenges, and implementation, this blueprint focuses on the actionable framework for success.

These mission blueprints are intended for industry experts, policymakers, and other readers who need a clear, accessible way to absorb the key elements of each plan. They do not include the background information, industry context, or in-depth analysis found in the full-length national mission chapters. While we encourage all readers — especially policymakers — to explore the complete reports for a deeper understanding of the industries and solutions involved, we recognize that many professionals may not have the time to do so. These summaries are designed to offer a more digestible version of each mission's core goals and strategies.

Each blueprint begins with three brief overview sections introducing the Mission for America, the role of the president, and the Reconstruction Finance Corporation. These topics are explored in much greater detail in the Mission for America introduction. Readers who have already reviewed that material — either in the introduction or in another mission summary — may wish to skip directly to the section titled **The National Mission for Hydrogen**.

The Mission for America

The Mission for America is a comprehensive 10-year plan to deliver economic prosperity for all by taking on the enormous project of building a clean economy. The Mission for America includes more than a dozen component "national missions," each targeting a specific economic sector or purpose. Every national mission is a set of actions that will drive innovation, increase investment, and replace fossil-fuel burning and other dirty technologies.

The Mission for America calls for a national mobilization on a scale not seen in the United States since World War II. We call this way of moving "mission mode." When a nation operates in mission mode, previously impossible or difficult challenges become possible or even easy. The goals of the Mission for America are ambitious but achievable in this context. A longer discussion of mission mode can be found in the Mission for America Introduction.

Each national mission relies on a shared set of tools to achieve its goals. Some tools already exist, such as tax credits or public loans, but must be expanded. Others, such as the Reconstruction Finance Corporation (RFC), were dismantled after World War II and must be rebuilt. The tools are bigger than public policy levers. Personal leadership and determination by the president and other leaders, such as the CEO of the RFC, will be as important as legislation. A longer explanation of the tools used in every national mission can be found in the *Guide to the Tools of the Mission for America*. A brief introduction to some of the tools follows below.

This outline provides a brief but comprehensive overview of one national mission, including a short description of all of the specific policies, programs, and actions of the mission. It is intended for policy experts as a quick way to absorb the specific details of the plan. A longer chapter is available that goes into more depth and detail regarding the rationale for these policies. Readers seeking a deeper understanding are encouraged to explore the complete mission chapters.

The Reconstruction Finance Corporation (RFC)

The RFC was an independent agency created in 1932 to rebuild the American economy during the Great Depression. The RFC operated as a publicly-owned corporation, led by private-sector experts but directed and funded by the federal government. After the election of Franklin Roosevelt, the agency's power grew considerably. The agency would become the president's primary tool for getting big projects financed and built.

The RFC was tasked with any job too complicated or resource-intensive for private industry. This included everything from lending to private industry, capitalizing infrastructure projects, financing household appliance purchases, building factories, and creating new industries. After the onset of World War II, the RFC took a leading role in the wartime mobilization and established the United States as the "Arsenal of Democracy."

Today, the United States faces a dual crisis: accelerating climate change and deepening economic decline. Addressing these challenges will require an industrial mobilization on the scale of World War II. The Mission for America calls for reviving the RFC as the central engine of that mobilization. The newly revived RFC will be a powerful public institution tasked with investing in industries, encouraging innovation, and coordinating national efforts to rebuild and decarbonize the economy.

The RFC's tools will support every national mission under the Mission for America. These tools are used across every national mission in the Mission for America. The rest of this section will provide a high-level overview of the RFC's tools. A comprehensive explanation of the tools of the RFC can be found in both the *Guide to the Tools of the Mission for America* and the *Reconstruction Finance Corporation* chapters of the Mission for America.

The RFC has many financial investment tools it will use to mobilize private capital. The RFC's goal is to make bold investments that private capital cannot or will not fund. The primary investment tools of the RFC are loans, loan guarantees, equity investments, advanced market commitments, Government-Owned-Contractor-Operated (GOCO) factories, and launching spin-off corporations. The RFC will use these tools for everything from helping an existing company build a new factory, helping launch new start-ups, and even creating entirely new industries.

The second component of the RFC's tools comes from the personal leadership exercised by the RFC CEO and team leaders. The president will appoint an RFC CEO to execute the RFC's mission. The RFC CEO will also recruit industry experts to lead teams within the RFC that correspond to each national mission. The RFC CEO and team leaders are responsible for crafting investment deals and ensuring those investments become a reality. If the RFC or a particular team is not meeting their goals, they will be fired and replaced with new leadership. This active involvement and sense of accountability is essential to the success of the RFC.

The President and the Mission for America

The president is the only person who can initiate and lead the Mission for America. Throughout history, national mobilizations — both in the United States and abroad — have depended on leaders such as presidents, prime ministers, or monarchs to rally their nations through personal leadership. These leaders have used extraordinary tools to unify private industry, legislatures, labor organizations, and the general public around a common purpose. In the United States, the president is the only individual with the authority and capacity to wield these tools effectively.

This vision of presidential leadership may seem strange or unrealistic to many Americans. Today, most associate the president not with unity or leadership but with division. The Mission for America seeks to revive a style of presidential leadership that unites the nation in pursuit of shared objectives. It calls for a return to the presidential leadership style that beat fascism and dragged America out of the great depression — the style of leadership that made America great. In this section, we briefly summarize how the president can leverage both their authority and personal leadership to drive this transformative mission forward.

The president will leverage the full extent of their legal authority to shape policy and achieve the goals of the Mission for America. The Constitution grants the president broad powers, including the ability to set foreign policy, levy tariffs, manage federal agencies, and command the military. These tools will be critical to the success of many missions. Some of the actions we recommend — such as adjusting tariffs to support domestic manufacturing — are powers frequently used by modern presidents. However, some proposals are less conventional. For instance, we suggest that the president, in rare cases, use their authority as Commander in Chief to direct the military to build factories or critical infrastructure. These extraordinary measures reflect the scale and urgency of the challenges we face.

Beyond their legal authority, the president's personal leadership is central to the success of the Mission for America. In public, the president will be the Mission for America's chief advocate — calling attention to its successes and taking the fight to those who oppose it. Behind the scenes, the president is the conductor of Mission for America — coordinating efforts among key actors such as the RFC, private industry, and executive agencies. When a bottleneck threatens a national mission — e.g., an investment deal falls through, or an infrastructure project gets stuck in regulatory purgatory — the president will work to resolve it. In every national mission, we outline ways a president may use their personal power to handle potential challenges. These examples illustrate the type of leadership the president will need to exercise, even if the specific circumstances they find themselves in may differ.

The National Mission for Hydrogen

The National Mission for Hydrogen

In his 1874 novel Mysterious Island, Jules Verne foresaw a bright future for hydrogen made from water, writing: "I believe that water will one day be used as a fuel, that hydrogen and oxygen, which constitute it, used singly or together, will furnish an inexhaustible source of heat and light." Hydrogen enthusiasts have touted the promise of hydrogen ever since. This national mission contains a plan to build the world Verne envisioned — a world where hydrogen plays a key role in powering the economy.

In the 150 years since the publication of "Mysterious Island," the promise of hydrogen has remained unfulfilled. Many industries have flirted with the idea of using hydrogen to reduce emissions or pioneer new technologies but to little success. In the early 2000s, transportation enthusiasts hailed hydrogen vehicles as the future of transportation. Fast forward twenty years and hydrogen vehicles are still a niche market. In 2022, President Joe Biden signed generous hydrogen subsidies into law and kick-started a new wave of enthusiasm around hydrogen. Yet in the three years the credits were in place, they yielded little investment in new hydrogen projects. One could be forgiven for returning to the old joke that hydrogen is the fuel of the future — and always will be.

In spite of the hydrogen industry's rocky past, there is reason to believe the world is on the verge of a hydrogen revolution. As the climate crisis intensifies, policymakers are confronting the reality that hydrogen is one of the few viable pathways to reducing emissions in hard-to-abate industries such as steel, heavy industry, and shipping. Governments have responded by launching major national efforts to build their own hydrogen industries. China, the European Union, South Korea, Saudi Arabia, and others have invested tens of billions of dollars into developing hydrogen infrastructure. These investments have already yielded significant cost-reductions and technological leaps that could make a hydrogen future possible.

The emerging hydrogen economy is quickly becoming the next frontier of global energy and industrial competition. The first countries to build a clean hydrogen industry will not only cut their own emissions but also dominate the industries that will rely on hydrogen. The United States has only a small window of opportunity to position itself as a leader in this industry before its competitors build a competitive advantage.

Before the U.S. joins the hydrogen race, it is important to identify where hydrogen can meaningfully reduce emissions, and where it may be a false solution. In some applications, hydrogen is technically viable but inefficient, impractical, or even unsafe compared to alternatives. Policymakers must clearly understand hydrogen's most effective uses to make smart investments and policy choices. Figure 1 outlines commonly proposed applications for hydrogen, detailing its potential role in reducing emissions and the extent to which it is likely to contribute to decarbonization efforts.

FIGURE 1

INDUSTRY	HOW HYDROGEN IS USED	OUTLOOK FOR FUTURE ADOPTION
Steel	Hydrogen is used to produce low-carbon primary steel — new steel made from raw iron ore — through hydrogen direct reduced iron (DRI). In this process, hydrogen acts as the reducing agent, converting iron ore into sponge iron. The sponge iron is then melted in an electric arc furnace and refined into finished steel.	Hydrogen DRI is the leading pathway to decarbonizing primary steel production. It is already proven at commercial scale, with major companies investing in new capacity. While currently more expensive than traditional coal-based steelmaking, hydrogen DRI is cheaper than other low-carbon alternatives and costs are expected to fall as production scales.
Shipping	Hydrogen can be used in many ways to reduce emissions from shipping. Hydrogen can be used directly as a fuel in modified ship engines or fuel cells, but most proposals focus on using hydrogen as a feedstock to make other fuels. The leading options are ammonia or methanol made from green hydrogen, which can then be used to power ship engines or fuel cells.	Hydrogen-derived fuels are expected to play a major role in decarbonizing shipping. Among them, ammonia produced from green hydrogen is the leading candidate, with multiple demonstration projects already underway. Methanol is also being explored, though it requires additional carbon inputs that must come from sustainable sources to deliver true emissions reductions.
Aviation	Hydrogen can power large, low-emission aircraft in two main ways. It can be stored onboard and converted to electricity in fuel cells, which drive electric motors, or it can be burned directly in modified jet engines to produce thrust. Both approaches require storing hydrogen either as a compressed gas or as a cryogenic liquid in specially designed tanks.	Hydrogen is one of the most promising options for decarbonizing long-distance, large aircraft — a sector where batteries are too heavy to be practical. Major challenges remain, including hydrogen's low volumetric energy density, the need for safe and efficient onboard storage, and aircraft redesign to accommodate new tanks and systems.
Rail	Hydrogen trains use fuel cells to generate electricity, which either powers the train's motors directly or charges onboard batteries that provide extra power during acceleration.	Hydrogen will likely play a complementary role in reducing emissions from rail transportation. Most passenger and freight rail will be electrified, but hydrogen offers a practical alternative for routes where electrification is too expensive or logistically challenging. Early hydrogen train deployments in the United States and Europe show the technology is viable and applicable for niche scenarios.
Freight	Hydrogen-powered semi-trucks use fuel cells to generate electricity, which drives the truck's electric motors. Hydrogen is stored onboard in pressurized tanks and refueled at dedicated hydrogen stations.	Hydrogen may help reduce emissions from long-distance trucking. Hydrogen's higher energy density by weight and faster refueling time make it better suited to time-sensitive, long-distance freight operations. Future breakthroughs in battery technology could narrow — or even eliminate — the usefulness of hydrogen in long-distance trucking.
Light-Duty Vehicles	Light-duty hydrogen vehicles use hydrogen fuel cells to generate electricity, powering the vehicle's electric motor.	Hydrogen is very unlikely to play a major role in decarbonizing passenger cars. Battery electric vehicles (EVs) are already far more popular, efficient, and cost-effective, with a rapidly expanding charging network. As battery costs continue to fall, fuel-cell vehicles are expected to remain a niche solution at best.
Heating	Hydrogen home heating uses hydrogen as a fuel in specially designed boilers. When burned, hydrogen reacts with oxygen to produce heat and water vapor.	Hydrogen is not expected to play a meaningful role in decarbonizing home heating. Direct electric heating solutions such as heat pumps are far more efficient, require no on-site combustion, and are safer for households and communities. Using hydrogen for home heating would waste clean electricity and introduce unnecessary safety risks.

Even in sectors where hydrogen is currently the most promising solution, other technologies may emerge that reduce emissions more effectively. For example, a leap in battery technology could enable even large aircraft to run on electricity. Alternative steel making methods, such as molten oxide electrolysis, may also become more cost-competitive. Since it is impossible to predict which technologies will scale successfully, policymakers should pursue the best pathways available to them. In industries such as steel production, aviation, and shipping, that pathway is currently hydrogen. This national mission may be updated as technology evolves.

Although hydrogen will play a key role in lowering emissions across many industries, the extent of those reductions depends on how the hydrogen is produced. Hydrogen is produced using a range of technologies and energy sources. The hydrogen industry uses a color coding system to differentiate between types of hydrogen production. Figure 2 lists some of the common types of hydrogen production.

FIGURE 2

GREEN HYDROGEN	GRAY HYDROGEN	BLUE HYDROGEN
Green hydrogen is produced via electrolysis, a process that uses electricity to split water (H_2O) into hydrogen (H_2) and oxygen (O_2). To qualify as green hydrogen, the electricity used in this process must come from clean energy sources. Green hydrogen production emits zero kilograms of carbon dioxide equivalents per kilogram of hydrogen — meaning it results in no direct greenhouse gas emissions.	Gray hydrogen is produced through steam methane reforming (SMR), in which natural gas — primarily methane (CH_4) — reacts with steam at high temperatures (700–1,000°C) in the presence of a catalyst. This reaction produces hydrogen (H_2) and carbon dioxide (CO_2). Gray hydrogen production emits approximately 11.6 kilograms of CO_2 equivalents per kilogram of hydrogen.	Blue hydrogen is also produced via steam methane reforming, but incorporates carbon capture technology to reduce emissions. Existing blue hydrogen projects capture between 45% and 70% of the CO_2 produced during SMR. However, this figure excludes upstream methane emissions from natural gas extraction and transportation, which are significant. Even with carbon capture, blue hydrogen typically emits around 6 kilograms of CO_2 equivalents per kilogram of hydrogen.

This national mission aims to build a domestic hydrogen sector that exclusively produces and uses green hydrogen. Green hydrogen is the only form of hydrogen production that does not contribute to the climate crisis and is compatible with the Mission for America's goal of reaching net-zero emissions. Throughout this chapter, we will frequently group non-green forms of hydrogen under the banner of "dirty hydrogen." Policymakers should view all forms of dirty hydrogen with skepticism.

This national mission aims to make the United States the global leader in hydrogen production. The primary goal of this mission is to expand annual green hydrogen production capacity to 50 million tons within ten years. The mission focuses on building hydrogen supply and developing the infrastructure necessary to support widespread future use. It does not include policies to encourage hydrogen adoption in specific industries — those are addressed in sector-specific missions. Instead, this mission is dedicated to scaling production and laying the foundation for a national hydrogen economy. Many smaller goals help contribute to this larger goal.

The specific goals of this national mission are to:

- **Lower** the cost of green hydrogen to $1/per kilogram.
- **Transition** existing grey and blue hydrogen production to green hydrogen.
- **Establish** new regulations for the safe production, transportation, and utilization of hydrogen.
- **Ensure** that the growth of the hydrogen industry does not significantly burden the power grid or inhibit emission reduction in other sectors.
- **Grow** the domestic electrolyzer manufacturing sector to support 50 million tons of green hydrogen production and to begin exporting electrolyzers to other countries.
- **Utilize** salt-cavern hydrogen storage as a seasonal energy storage strategy to help enable a smooth, affordable transition to 100% clean energy.
- **Build** hydrogen-safe pipelines to support short-distance hydrogen transportation.
- **Train** workers, including many ex-fossil fuel workers, for hydrogen-industry jobs.
- **Build** hydrogen infrastructure near seaports and airports to support future use.

This national mission is one of the most ambitious in the Mission for America. The American hydrogen industry produces only ten million metric tons of hydrogen a year, nearly all of which is grey hydrogen that will need to be phased out. The industry produces a negligible amount of green hydrogen and the technologies needed to expand production — such as clean energy and electrolyzers — are in short supply. Furthermore, the cost of green hydrogen remains stubbornly high and keeps demand low. The fundamental challenge of this national mission is constructing a green hydrogen economy functionally from the ground up.

Despite these challenges, the goals of this mission are achievable within the comprehensive framework of the Mission for America. The national mission for clean energy will create an abundant supply of affordable clean energy generation that can be used to produce cheap green hydrogen. The national missions for steel, aviation, shipping, and trucking will all help increase the demand for hydrogen by creating subsidies for green hydrogen-derived products and green hydrogen-powered vehicles. Additionally, coordinated investments in infrastructure, workforce training, and advanced manufacturing will create the industrial ecosystem needed to support large-scale hydrogen production.

Building a hydrogen industry will do more than lower emissions — it will drive job growth, increase national wealth, and reaffirm America's position as a global industrial leader. Hundreds of thousands of Americans will move into high-paying jobs producing hydrogen, developing supporting technologies, and constructing the next generation of steel plants, planes, and ships powered by hydrogen. These industries will produce high-value goods for both domestic consumption and export. If America is the first among its economic competitors to build a green hydrogen industry, it will establish itself as the global leader in hydrogen production.

Solutions Overview

The National Mission for Hydrogen addresses key challenges in building a green hydrogen economy with comprehensive, interconnected solutions. Each of the five solutions outlined here target a critical aspect of the mission — transitioning dirty hydrogen production to green hydrogen, creating new regulations for the industry, expanding electrolyzer manufacturing, deploying hydrogen energy storage, and building the infrastructure to transport and use hydrogen. Together, these solutions form a comprehensive strategy to build a 100% green hydrogen economy, create millions of jobs, and enable emission reductions many other industries. This section summarizes each solution section's goals and overall strategy.

Solution 1:

Ensure that all hydrogen produced in the United States is green.

The American hydrogen industry produces around 10 million tons of dirty grey and blue hydrogen every year. The industry's reliance on dirty hydrogen makes it responsible for around 1% of the nation's yearly emissions. Any plan for building a sustainable hydrogen industry must begin by addressing the unsustainable course the industry is currently on. This solution section outlines a plan to transition the industry to producing 100% green hydrogen in ten years. The primary strategies of this solution include:

- **Creating** a clean hydrogen standard that requires hydrogen consumers to use 100% green hydrogen in ten years.
- **Providing** hydrogen producers with generous RFC financing and investment to transition to green hydrogen production.
- **Stimulating** demand for green hydrogen-derived products, such as green ammonia, by coordinating purchase agreements and offering loans to help offset higher costs for early adopters.
- **Reforming** the Hydrogen Production Tax credit so only green hydrogen projects qualify for the credit.
- **Using** the presidential bully pulpit to maintain pressure on hydrogen consumers and producers as they transition to green hydrogen.

Solution 2:

Create new regulations to ensure that hydrogen production is safe and sustainable.

History offers countless examples of how failing to regulate an industry in its early stages leads to entrenched pollution, safety failures, and costly corrections. An under-regulated hydrogen industry presents real risks to workers, neighboring communities, the power grid, and the climate. This solution section introduces a regulatory framework for the growing hydrogen industry to ensure that we get it right from the beginning. The primary strategies of this solution include:

- **Consolidating** hydrogen regulatory authority within the Department of Energy and empowering the agency with the staff and funding necessary to stridently enforce regulations.
- **Requiring** hydrogen producers to follow the "Three Pillars" approach of additionality, time matching, and geographic deliverability until the nation is closer to building a 100% clean energy grid.
- **Ensuring** the safe transportation of hydrogen by banning hydrogen transport by rail and long-distance pipelines.
- **Requiring** hydrogen producers and consumers to monitor their hydrogen leakage and identify parts of the value chain prone to leaks.

Solution 3:

Expand domestic electrolyzer manufacturing.

The electrolyzer industry faces a classic chicken-and-egg problem: manufacturers are hesitant to invest without strong hydrogen demand, but hydrogen producers are delaying investments due to limited electrolyzer supply. To break the bottleneck, this solution proposes an industrial policy strategy to rapidly scale electrolyzer production and support green hydrogen development. While Solution 3 tackles the supply side, Solution 5 addresses the other half of the dilemma by investing in green hydrogen production and infrastructure — ensuring both sides of the market grow in tandem. The primary strategies of this solution include:

- **Creating** new federal subsidies for electrolyzer manufacturing, such as a new production tax credit and expanding the Advanced Energy Project Tax Credit to include electrolyzer factories.
- **Directing** the RFC to provide capital and, if necessary, build Government-Owned-Contractor-Operated (GOCO) factories if private manufacturers cannot meet demand.
- **Expanding** the number of companies manufacturing electrolyzers by investing in start-ups and enticing foreign electrolyzer manufacturers to expand their operations to the United States.
- **Strengthening** the electrolyzer supply chain by identifying and resolving component shortages through targeted investments in companies producing parts like electrolyzer cells and water tanks.

Solution 4:

Explore the use of hydrogen salt cavern energy storage as a long-duration energy storage solution.

The transition to clean energy requires high-capacity storage systems that can provide power over long durations of time. Although battery technology is improving, batteries may never reach the scale or duration needed to support a 100% clean energy grid. Hydrogen salt caverns offer a promising alternative: they can store large volumes of hydrogen for months at a time and convert it back into electricity when needed. This solution introduces policies to deploy hydrogen salt cavern storage systems to support the clean energy transition. The primary strategies of this solution include:

- **Creating** a Strategic Hydrogen Reserve made up of hundreds of hydrogen-storing salt caverns to provide electricity to the grid during emergencies.
- **Expanding** federal subsidies for energy storage to support investment in hydrogen salt cavern storage projects.
- **Introducing** a new long-term capacity tax credit that encourages storage operators to invest in seasonal energy storage projects.
- **Financing** the deployment of salt-cavern energy storage projects through the RFC.

Solution 5:

Build the infrastructure to support green hydrogen production and use.

Large amounts of infrastructure will need to be built to support the widespread production and use of hydrogen. Workers must be trained to safely handle hydrogen, pipelines and storage tanks need to be built to move and store hydrogen, and refueling infrastructure will need to be built at all airports and seaports in the nation. This solution establishes a coordinated industrial policy to accelerate infrastructure deployment, ensuring the hydrogen economy can grow efficiently and reliably. The primary strategies of this solution include:

- **Developing** a national hydrogen infrastructure plan that studies the infrastructure requirements necessary to support widespread hydrogen use.
- **Creating** a new workforce development program financed by the RFC in coordination with major hydrogen companies.
- **Brokering** deals between hydrogen producers and clean energy providers to provide reliable, clean electricity for hydrogen production.
- **Financing** the construction of short-distance, hydrogen-safe pipelines.
- **Investing** in new merchant hydrogen companies that will produce hydrogen for use at seaports and airports.
- **Building** scalable hydrogen infrastructure projects — production facilities, pipelines, storage tanks, and refueling stations — at all major seaports and airports.

Solution Summaries

This section summarizes the specific actions proposed in the complete National Mission for Hydrogen. Each solution is organized by the actor responsible for implementation — Congress, the president, the executive branch, and the Reconstruction Finance Corporation (RFC) — though not every solution involves all four actors.

Solution 1:

1 Replacing Dirty Hydrogen with Clean Hydrogen

Congress

- **Create a Clean Hydrogen Standard (CHS).** Congress must mandate that all hydrogen consumers transition to using 100% green hydrogen in ten years. Hydrogen consumers will be required to meet interim goals for increases in green hydrogen usage over the course of the CHS. The CHS will be phased in slowly over the first few years to allow for green hydrogen production capacity to grow and for consumers to secure procurement contracts. Hydrogen consumers that fail to meet their CHS goals will face escalating fees, and chronic offenders will lose access to federal subsidies or even see their permits revoked. The CHS will be overseen by the Department of Energy (DOE), and the department must be empowered with sufficient resources to enforce compliance and issue penalties.
- **Restore and expand the Hydrogen Production Tax Credit.** The Hydrogen Production Tax Credit (HPTC), introduced in the Inflation Reduction Act, was an essential step towards building a clean hydrogen economy. The HPTC provided a tax credit to hydrogen producers for up to $3 per kilogram of hydrogen produced. However, the Trump administration repealed the credit before it could take full effect within the industry. Congress must restore this credit, increase the payout rate, make the credit direct pay, and extend it to ten years after the launch of this national mission.

- **Exempt hydrogen projects from the Carbon Sequestration Tax Credit.** Congress should amend the Carbon Sequestration Tax Credit (also known as the 45Q tax credit) to exclude hydrogen projects from eligibility. The 45Q credit subsidizes companies that sequester carbon from industrial facilities or directly from the atmosphere. Currently, blue hydrogen producers can claim the 45Q credit since they are capturing carbon produced during hydrogen production. Therefore, even if Congress excludes blue hydrogen producers from claiming incentives such as the Hydrogen Production Tax Credit, blue hydrogen producers could use the 45Q credit as a backdoor subsidy. Congress can prevent this backdoor subsidy while preserving the credit for industries like direct air capture or hard-to-abate sectors where carbon capture remains necessary.
- **Repurpose existing programs that support dirty hydrogen production.** Congress must redirect existing programs that subsidize dirty hydrogen, such as blue hydrogen, to exclusively support green hydrogen production. One example of such a program is the Regional Clean Hydrogen Hubs Program. Many hubs selected for funding are focused on blue hydrogen despite the program's branding as a "clean hydrogen" initiative. Congress should condition future funding from the program on hubs committing to switching to 100% green hydrogen production. Projects unwilling or unable to meet this standard should be replaced by those aligned with the updated objective. Congress will provide additional funding to offset any costs incurred by project developers adapting to the program's new focus.

President

- **Limit the Hydrogen Production Tax Credit to green hydrogen production.** When Congress passed the Inflation Reduction Act (IRA) they did not specify what types of hydrogen projects would qualify for the credit. Instead, Congress instructed the Treasury Department to create rules for what types of hydrogen projects would qualify for the credit. As of late 2025 — over two years after the IRA was passed — the government has still not finalized the rules for what projects qualify for the credit. On day one of their administration, the Mission for America president should sign an executive order instructing the Treasury Department to finalize rules that limit the credit to green hydrogen projects.

- **Win commitments from dirty hydrogen producers as soon as they win the election.** The president must begin their term with firm commitments from hydrogen industry leaders to invest in new green hydrogen production. Industry leaders will likely be skeptical of investing in hydrogen production due to the high-costs and current lukewarm demand. Many in the industry may doubt whether the Mission for America platform will be fully implemented, and hesitate to invest. The president must begin their engagement with industry leaders immediately after winning the election to break past this hesitancy. By the time the president takes office, they should already have informal commitments from key dirty hydrogen producers and consumers to transition to green hydrogen.
- **Kick off the national mission by convening leaders from the hydrogen industry and winning their support for this national mission.** Within their first 100 days, the president should convene hydrogen industry leaders at the White House to formally launch the national mission. The event should include leaders from both hydrogen-producing and consuming industries, as well as producers of electrolyzers and other hydrogen technologies. The president should use this meeting to explain to industry leaders the new federal policies to help them transition to green hydrogen. In particular, the president should emphasize that these policies will only support green hydrogen producers and that no federal money will be spent supporting the continued production of dirty hydrogen.
- **Maintain personal engagement with industry leaders.** The president must maintain consistent engagement with industry leaders throughout this national mission. Although there is symbolic importance to a gathering of industry leaders, the follow-up to the initial meeting will make or break the national mission. American presidents frequently gather industry leaders for symbolic meetings but rarely follow through on those meetings with sustained pressure. The president will need to use the connections they developed at this initial meeting to pressure industry leaders to follow through on any commitments they made.
- **Use the bully pulpit to keep pressure on dirty hydrogen producers.** The president should leverage their public platform and consistently advocate for transitioning to green hydrogen. The president must utilize speeches, press conferences, and social media campaigns to rally public support and create a sense of urgency, making it politically and socially untenable for companies to continue investing in dirty hydrogen. The president can use these events to spotlight the companies leading the way in adopting green technologies, in an effort to foster a competitive and cooperative atmosphere within the industry.

RFC

- **Provide financing to dirty hydrogen producers and consumers to transition to green hydrogen.** The RFC can provide financing and investment to help existing hydrogen users transition to green hydrogen. Most hydrogen consumers will continue to produce their own hydrogen and thus need to invest in new green hydrogen production capacity. Building this capacity will require companies to make a series of capital-intensive investments. The RFC will provide financing and investment to help make these capital-intensive transitions achievable within the timelines set by the Clean Hydrogen Standard. Some existing hydrogen users may instead choose to purchase hydrogen from merchant hydrogen producers rather than build new green hydrogen capacity. The RFC should offer these companies generous long-term loans that help alleviate the short-term price difference between dirty hydrogen and green hydrogen. The RFC's financing will be most critical in the early stages of the green hydrogen transition. Once the policies in the national mission take effect, the cost of producing green hydrogen will decline substantially, reducing the need for RFC support over time.

- **Build demand for green hydrogen derived by arranging deals with ammonia consumers.** The RFC must play a key role in supporting the demand for green hydrogen products by arranging purchase agreements between green hydrogen producers and major hydrogen consumers. The ammonia industry, one of the largest domestic uses of hydrogen, is a good place to begin. To begin this effort, the RFC will organize a summit bringing together major ammonia producers and consumers across various industries. The goal of this summit will be to secure commitments from ammonia consumers for long-term purchase agreements of green ammonia. These purchase agreements will help de-risk investments for producers, ensuring that their new green ammonia production capacity will have guaranteed buyers even before the facilities are built. The RFC can facilitate these deals by offering short-term, low-interest loans to ammonia consumers. These loans will help offset the price difference between green and dirty ammonia, making it easier for companies to absorb the higher costs associated with green ammonia during the early years of the transition.

Solution 2:

2 Establishing New Hydrogen Regulations

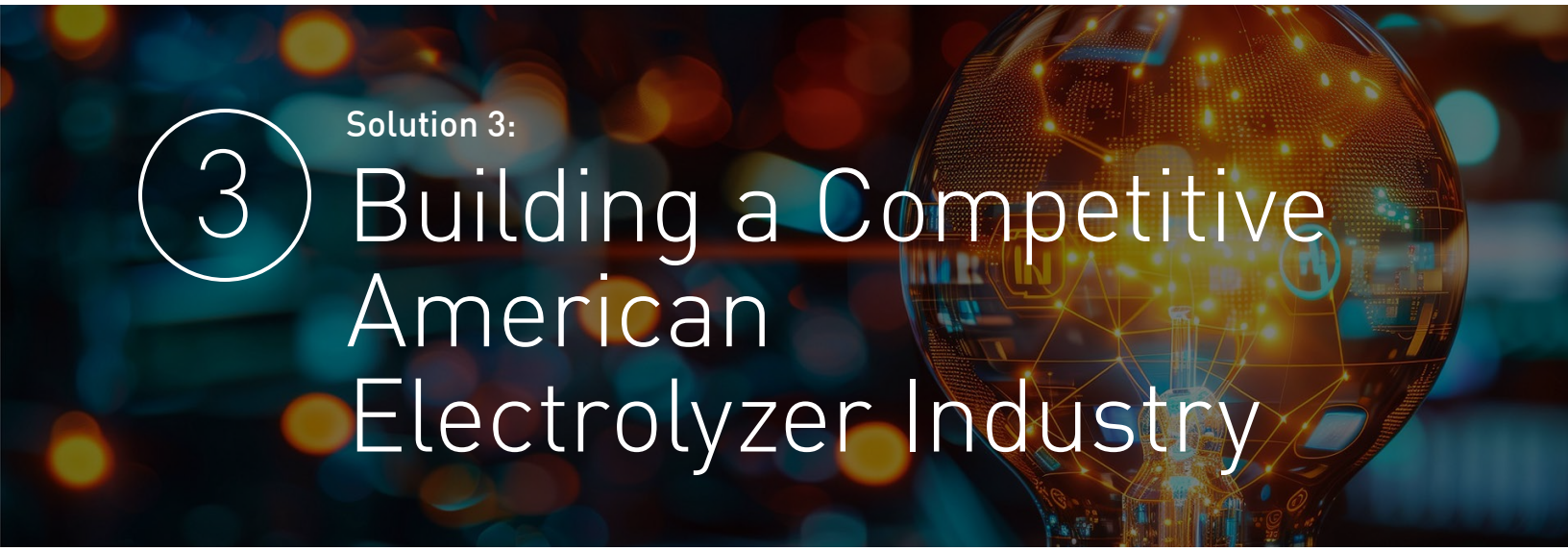
Congress

- **Ban the blending of hydrogen in natural gas pipelines.** Congress should implement new regulations that ban the blending of hydrogen in natural gas pipelines. The safety and climate risks of blending hydrogen into natural gas pipelines is too great to allow. Congress should pass strict regulations banning the practice and mandating that hydrogen transportation uses pipelines specifically made for hydrogen. Congress should task the Pipeline and Hazardous Materials Safety Administration (PHMSA) with creating new standards for hydrogen pipelines that guarantee the safe transportation of hydrogen across the country.
- **Strengthen Department of Energy and Internal Revenue Service enforcement of hydrogen tax credits and regulations.** The Department of Energy (DOE) and Internal Revenue Service (IRS) must have the authority, funding, and staff to enforce compliance with both the clean hydrogen production tax credit rules and the broader regulations introduced in this section. This includes imposing fines large enough to deter violations and reclaiming subsidies from companies fraudulently claiming clean hydrogen production.

- **Require hydrogen producers and consumers to monitor and report their hydrogen leakage as part of the Clean Hydrogen Standard.** All hydrogen producers and consumers must monitor and report hydrogen leakage as part of the Clean Hydrogen Standard, with financial penalties for exceeding emissions standards measured as a percentage of total consumption. To ensure the hydrogen economy benefits the climate, the DOE will establish a regulatory framework for tracking and mitigating leakage throughout the value chain, offering clear guidance on monitoring technologies, deployment methods, and reporting procedures. Integrating these regulations into the Clean Hydrogen Standard will simplify the process for both regulators and hydrogen producers by using existing reporting structures.

President

- **Use presidential power to ensure new hydrogen regulations get implemented quickly.** The president must issue an executive order to prioritize agencies to write new hydrogen regulations and include a firm deadline for publishing final rules. On a practical level, an executive order will empower agencies to redirect their resources towards creating new hydrogen regulations. However, the real benefit of an executive order is that it supplies a sense of urgency and seriousness to the regulatory process. The president needs to make it clear to voters and industry insiders that the federal government prioritizes effective hydrogen regulations.
- **Direct the Office of Information and Regulatory Affairs to prioritize safety.** The president holds the ultimate authority over any final regulations via the Office of Information and Regulatory Affairs (OIRA). Both the president and OIRA have the authority to review draft regulations for significant economic impact or larger policy issues. OIRA's review process is the final stage in the regulatory process and involves private meetings between industry and OIRA to finalize regulations. This is often the process where the industry works to remove proposed regulations that might require the industry to invest in safety. Hydrogen regulations will be the target of oil and gas industry lobbyists and there will be efforts to weaken clean hydrogen standards as well as safety regulations. The president must ensure OIRA acts quickly and resists industry pressure to weaken critical safety and climate standards.



Solution 3:

3 Building a Competitive American Electrolyzer Industry

Congress

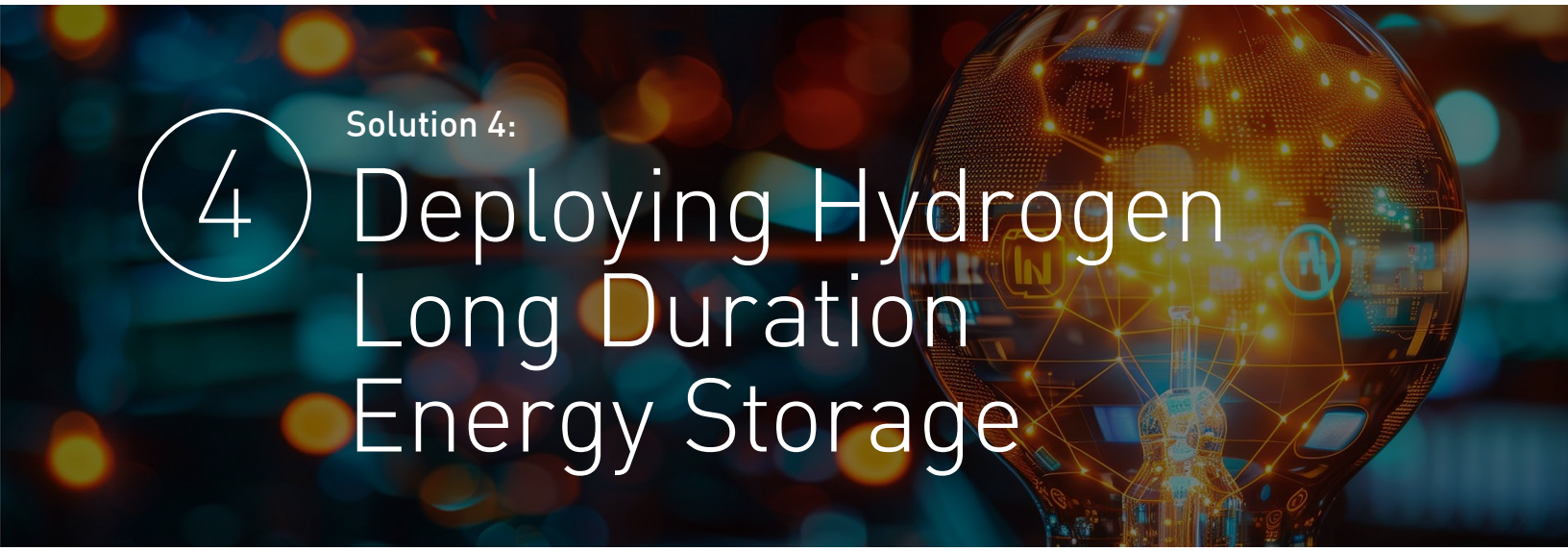
- **Create a production tax credit for electrolyzer manufacturing.** Congress must pass a new production tax credit that provides a sizable credit to electrolyzer manufacturers. At the onset of this credit, the final assembler of the electrolyzer will be the only business eligible to claim the credit. However, as the electrolyzer industry develops there may be a need to expand this credit to other parts of the electrolyzer supply chain, particularly specialized components such as electrolyzer cells, should major supply chain gaps emerge. As with all tax credits in the Mission for America, this credit must be fully refundable and be authorized for ten years.
- **Expand the Advanced Energy Project Tax Credit.** The Advanced Energy Project Tax Credit (AEPTC), often referred to as the 48C Clean Manufacturing Tax Credit, is an investment tax credit for new manufacturing projects that produce a "qualifying energy project." In the context of the hydrogen industry, manufacturing electrolyzers is considered a "qualifying energy project." Congress should expand the credit to be available to all qualifying projects, make the credit direct pay, and extend it for ten years from the start of the national mission.

President

- **Convene industry leaders and convince them of the goals of the mission.** The success of the green hydrogen national mission will depend on the president's ability to engage manufacturers to lead it. The best path forward is clearly to work with those already manufacturing electrolyzers. The president will convene the executives of the electrolyzer industry to explain how the government will set aggressive targets for electrolyzer production and give the industry the tools needed to make that happen. The president will give these leaders a choice: either join the mission and receive the support needed to achieve the president's goals or get ready to compete with new companies who will.

RFC

- **Invest in existing electrolyzer manufacturers to develop new production capacity.** The first step for the RFC is to help existing electrolyzer manufacturers expand their operations. There are only a few electrolyzer manufacturers operating in the United States and they collectively produce a very small number of electrolyzers. Electrolyzer producers tend to fall into two camps. The first camp is made up of small companies still in their growth stages that are not profitable. Companies in this camp tend to focus exclusively on hydrogen or hydrogen-adjacent technologies. These companies have fewer resources but are generally more willing to take risks. The second camp of hydrogen producers are large multinational companies that produce a wide range of products and have a small hydrogen division. These companies tend to be mature, profitable companies that are capable of investing in the hydrogen industry even if they lose money in the short-term. These companies have more resources and capital to invest but may be less willing to take big risks in such an uncertain industry.
- **Develop New Companies.** The RFC will need to help grow the number of U.S. electrolyzer manufacturers by supporting early-stage start-ups and launching new ones. The current industry is too small to meet the demands of a robust green hydrogen economy, even with significant production increases. The RFC will rely heavily on equity investments to provide capital to companies without saddling them with debt. This approach aligns with the RFC's role as the nation's venture capital firm. This approach could also drive the RFC's own growth, as early investments may secure the RFC a major stake in a future industry leader.
- **Help international electrolyzer manufacturers invest in production capacity in the United States.** The RFC can grow the number of electrolyzer companies operating in the United States by recruiting international companies to build productive capacity in the United States. Creating and scaling new electrolyzer manufacturers will be an important part of the solution but poses its own unique challenges. New companies may be more innovative, but often take years to ramp up effective manufacturing. Long-standing companies from Europe and Asia — where most electrolyzer manufacturing occurs — may be more equipped to hit the ground running and begin mass manufacturing. There are electrolyzer manufacturers from a variety of nations that may be interested in building capacity here. Many of the large-scale producers are from allied nations such as Germany, Norway, and India.
- **Identify and resolve any gaps in the electrolyzer supply chain.** The RFC will need to carefully monitor the entire electrolyzer supply chain to ensure that no bottlenecks emerge that could delay the rapid build-out of the industry. Electrolyzer manufacturers assemble the final product but source many components from specialized suppliers. A shortage in an important component such as water tanks, bipolar plates, or electrolysis cells could grind the expansion of the electrolyzer industry to a halt. The RFC must proactively prevent such a crisis by monitoring for potential shortages and working proactively to prevent them.



Solution 4:

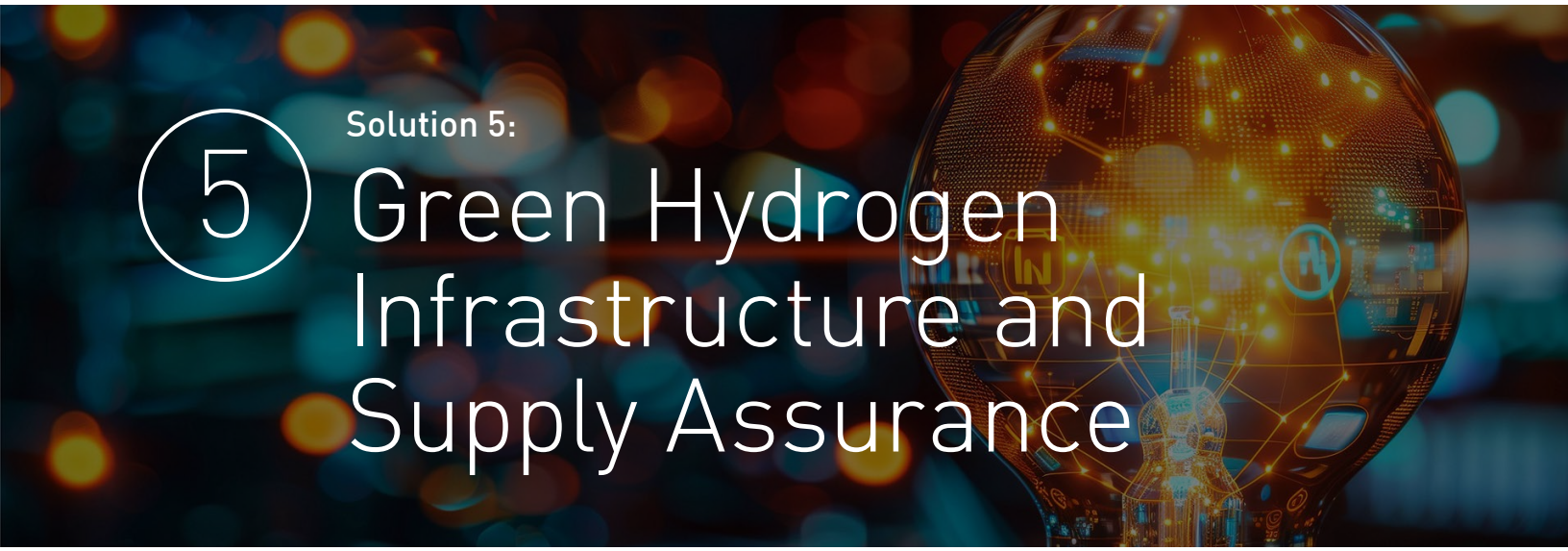
4 Deploying Hydrogen Long Duration Energy Storage

Congress

- **Expand the Storage Investment Tax Credit.** The Storage Investment Tax Credit was passed in the Inflation Reduction Act and has a payout of 30% of the cost of a large-scale energy storage project, and up to 50% with additional incentives. The credit applies to projects of any size or duration. Congress should expand the credit by making the credit direct pay and create an increased payout rate for seasonal storage facilities.
- **Create a Long-Term Capacity Tax Credit for seasonal green hydrogen storage facilities.** Congress should create a Long-Term Capacity Tax Credit for seasonal green hydrogen storage facilities to compensate operators for their storage capacity, even during periods of inactivity. The credit would be based on the average annual kilograms of stored hydrogen, multiplied by a rate set by Congress. The credit would apply only to facilities storing green hydrogen. This incentive, alongside existing capacity payments, would encourage large-scale hydrogen storage development, ensuring that clean energy is available when needed.
- **Create a Strategic Hydrogen Reserve.** Congress should create a Strategic Green Hydrogen Reserve (SHR), modeled after the Strategic Petroleum Reserve, to ensure reliable energy supply during national crises or periods of extreme demand. Managed by the Department of Energy, the SHR would use government-owned salt caverns to store green hydrogen, which can be converted to electricity using fuel cells.

RFC

- **Finance new hydrogen energy storage projects.** Building new hydrogen storage projects will likely be a capital intensive process, as investors will be required to make a series of costly investments: the land for the salt caverns will need to be purchased, distributed energy resources will likely need to be built on-site or nearby, electrolyzers must be built, and the site will need to be hooked up to the grid. The capital intensive nature of this project will cause many investors to hesitate and they may need some coaxing from the RFC leaders before jumping into a project of this scale. Three types of organizations will likely build hydrogen salt cavern storage systems: utilities, independent power providers, and hydrogen-using industries. Utilities and independent power providers will use their hydrogen reserves for power generation, whereas industrial-users will use salt caverns to store hydrogen to hedge against supply chain shocks. The RFC will mainly focus on hydrogen producers who intend to use salt cavern storage as a form of energy storage for use on the grid.



Solution 5:

5 Green Hydrogen Infrastructure and Supply Assurance

Congress

- **Instruct the Department of Energy to conduct a Hydrogen Needs Assessment.** Congress must direct the DOE to conduct a new study to analyze the hydrogen requirements of a net-zero economy. The study will review potential hydrogen demand across many different scenarios and attempt to estimate the geographic dispersion of hydrogen demand. Once the national needs assessment is complete it will be necessary to plan for the development of infrastructure and to ensure that the U.S. has the industrial supply chain capacity to provide the materials to build the infrastructure. The plan will estimate the materials required to meet future hydrogen demand — including electrolyzers, clean energy, pipelines, and other key components. The national hydrogen infrastructure plan is not a legally binding plan, and is only meant to provide a framework for the RFC and private industry to work from. The DOE should regularly update the national hydrogen infrastructure plan to stay up to date with industry and technology developments.

RFC

- **Work with captive hydrogen producers to deploy hydrogen production capacity.** Captive hydrogen consumers are companies that produce hydrogen for their own use, typically to manufacture another end product. The RFC will likely rely heavily on loans and loan guarantees that supply companies with the capital to purchase clean energy generation, electrolyzers, hydrogen storage tanks, and all other associated equipment for hydrogen production. The RFC should include these loans as part of a broader investment plan that helps transition these companies to producing low- or zero-emission alternatives to their existing products. Many industries that will be captive hydrogen users, such as steel, are examined in greater detail in their own national missions.

- **Help launch a new workforce development program for the hydrogen industry.** Scaling the hydrogen industry in the short period of time we propose will require creating a new, highly-trained workforce very quickly. The RFC has a few options for how to help cultivate this workforce. The simplest option would be to provide capital to companies so they can develop their own workforce development programs. In this option, the money for a workforce development program would likely come as part of a broader investment or loan deal made with a hydrogen company. Another option is for the RFC to help launch a new company dedicated to training workers for jobs in the hydrogen sector. In this option, the RFC could provide either a loan or start-up capital in exchange for equity in the new company. Ideally, this new company would be a joint venture between the RFC and major hydrogen companies. The new workforce training company could provide classes and apprenticeship programs in strategic locations for workers who want to join the hydrogen industry. The benefits to this option are that the new company could scale quickly, would not detract resources from hydrogen companies, could easily coordinate with the federal government to identify what the in-demand hydrogen are, and could operate on a long-term outlook that is focused on the good of the entire hydrogen industry.
- **Aggressively invest in the development of new merchant hydrogen companies.** The RFC will need to invest in the growth of many new merchant hydrogen companies across the United States. As the demand for green hydrogen increases, especially in sectors such as shipping and heavy industry, merchant hydrogen suppliers will be essential for hydrogen users that can't produce their own hydrogen near where it is used. The RFC should cast a wide net and invest in many different companies to create a diverse network of suppliers. Without federal intervention, the market risks being dominated by a few large players, potentially stifling innovation and creating barriers to entry for smaller, more agile companies. By promoting and supporting the growth of new merchant hydrogen companies, the government can help create a competitive and diverse marketplace, driving down costs and accelerating the transition to a green hydrogen economy.
- **Broker deals between hydrogen producers and next-generation energy providers.** The RFC will play an important role in helping hydrogen producers secure clean electricity. Many hydrogen providers will need consistent, round-the-clock clean energy to meet production goals. The RFC can help hydrogen producers meet this need by investing in next-generation clean energy technologies, such as enhanced geothermal or small modular nuclear reactors, co-located with major hydrogen production sites. The RFC has multiple options for how to pursue this. One option is for the RFC to include financing for building new generation or procuring energy as part of an investment package with a hydrogen producer. Alternatively, the RFC could serve as a "dealmaker" between two companies it has pre-existing relationships with. If the RFC clean power team is struggling to get a new energy project off the ground, they could work with the RFC hydrogen team to identify hydrogen producers that could be suitable customers for the new energy project.

- **Help finance the production of hydrogen pipelines.** Many miles of new hydrogen-safe pipelines must be built to support a national hydrogen industry. In this area, the RFC will probably rely heavily on loans and loan guarantees. Pipelines are predominantly owned and operated by private corporations that range from large, integrated oil and gas companies like ExxonMobil to independent pipeline operators like Kinder Morgan. It is plausible that the hydrogen industry will follow a similar model, with a mix of merchant hydrogen producers and dedicated pipeline companies managing the nation's hydrogen pipelines. Since most pipeline companies are well-established companies, they will have the resources and expertise to begin building new pipelines. All these companies should need to start executing this mission is an injection of cheap capital and leadership committed to the goals of this mission.

- **Prioritize Building Small but Scalable Hydrogen Infrastructure Projects for Seaports and Airports.** The RFC must lead the development of early hydrogen infrastructure at seaports and airports, including pipelines, electrolyzer facilities, and storage tanks. This state-led approach is essential to overcoming the "chicken-or-egg" dilemma where industries are hesitant to adopt new fuels without existing infrastructure, and infrastructure is slow to develop without guaranteed demand. Private investors are unlikely to take on the high costs and risks of unproven hydrogen systems — especially in complex sectors like shipping and aviation. By funding and managing the first wave of projects, the RFC will reduce market uncertainty, accelerate the learning curve for building hydrogen and ammonia infrastructure, and create a foundation for future private investment. These projects will also provide demand assurance for electrolyzer manufacturers, fostering growth in domestic production and reinforcing the broader hydrogen economy. Importantly, the RFC's projects should be designed to be small but scalable, enabling rapid replication and adaptation as the market matures.

- **If necessary, create a National Green Hydrogen Corporation and find partners to build and operate hydrogen production facilities and infrastructure.** In national economic crises, public corporations have often filled a gap in the economy to achieve great tasks that the private sector is either unwilling or unable to take on. In the economic mobilization around World War II, for example, many public corporations were created to fill gaps in supply chains that were too unprofitable, too difficult, or both, for the private sector. To ensure that adequate hydrogen facilities will be built at every airport, port, and everywhere else they are needed, it may require creating a National Green Hydrogen Corporation. The NGHC would build and own Government-Owned Contractor-Operated (GOCO) facilities that would then be leased to another company. It will be critical for the RFC to find qualified partners to operate the hydrogen production, transportation and storage facilities.