

# National Commission on Innovation & Competitiveness Frontiers

## Key Takeaways from Phase 2 Working Groups



*Working Group 2*

### The Future of Sustainability: Accelerating Innovation in Clean Energy Technology

#### Session 2: October 17<sup>th</sup>, 2023

*This second Working Group session focused on securing critical supply chains.*

#### I. KEY THEMES

*Working Group discussion identified several key themes during the second session:*

- 1) **Addressing cross-sectoral supply chain vulnerabilities** as a first order priority to prevent widespread impacts.
- 2) **Focusing on enabling factors for clean energy**, recognizing that funding is no longer the primary barrier to clean energy acceleration after recent federal investments.
- 3) **Emphasizing national and energy security implications** of strengthening critical supply chains and deploying clean energy.
- 4) **Developing a robust and durable workforce** to secure supply chains and accelerate clean energy, with a focus on federal partnerships.

#### II. PRELIMINARY IDEAS & POTENTIAL RECOMMENDATIONS

##### Addressing cross-sectoral supply chain vulnerabilities

- Prioritize cross-sectoral vulnerabilities when scoping efforts to secure the supply chain. These sorts of cross-cutting dependencies could have large scale impacts on multiple industries and operations if compromised; critical minerals are a prime example.
- Secure the necessary materials, technologies, and labor to support various forms of energy storage. Energy storage, including batteries and pumped hydroelectric, is one of

the most fundamental sets of technologies for energy resilience and electrification, but faces many challenges such as minerals shortages and workforce gaps.

- Invest in cybersecurity measures across the energy system, with a particular focus on the electrical grid. Cybersecurity issues cut across all sectors, and are strengthened by collaborative and multi-sectoral approaches.
- Increase focus on advanced manufacturing capabilities that underpin supply chains across multiple sectors and technologies. Failing to gain advanced manufacturing capabilities in the present will have cascading effects on our ability to cost-effectively manufacture in the future.

### **Focusing on enabling factors for clean energy**

- Remove regulatory impediments to the speedy deployment of clean energy, including accelerating permitting timelines and reducing administrative burden.
- Publicize examples of regulatory challenges that have blocked or impeded clean energy projects. These stories, focusing on acute regulatory barriers, can serve as a compelling call to action for the public and policymakers alike.
- Consider creating clean energy exemptions and waivers to accelerate typical regulatory and bureaucratic processes such as permitting. Similar waivers were extended to semiconductor projects due to national security interests – clean energy projects could receive parallel treatment given energy security implications.
- Build out supporting infrastructure for the clean energy transition, in particular expanded and upgraded transmission grid capacity; invest in and deploy grid-scale energy storage.
- Take a lifecycle approach when deploying clean energy, include end-of-life and decommissioning considerations; for example, what to do with decommissioned wind turbine materials.
- Reward enterprise-zone approaches to economic development that consider the regulatory and policy environment and integrate upstream and downstream into planning.
- Create standardized agreements on machine-to-machine communications to enable smart grid deployment and upgrades. The sooner the federal government can create these standards, the easier and faster the workforce can learn and implement them.

### **Emphasizing national and energy security implications**

- Strengthen national narratives around the importance of securing critical supply chains for national security and energy security; for example, an unreliable supply of uranium is halting development of advanced nuclear reactors and the nuclear innovation system, posing threats to both national security and the stability of our energy supply.
- Reduce reliance on non-U.S. citizen labor in national security contexts. As certain technologies (e.g., nuclear) reach a certain level of maturity, more stringent security clearances are required; lacking a robust citizen workforce to fill these roles stymies cutting-edge research and technology development.
- Fill workforce gaps in critical technology areas to retain institutional knowledge. As workforces in areas like nuclear and manufacturing age out of the workforce, we risk losing historical experience without younger workers to absorb that knowledge. This creates severe security implications and makes future workforce development harder.
- Affordability is a key component of energy security and is a necessary precursor to maintaining a reliable and accessible energy system, and should be integrated into planning efforts to increase energy security.

### **Developing a robust and durable workforce**

- Engage and develop workforces across all areas of the clean energy technology pipeline. In addition to researchers and scientific staff, we need people to operate technologies and perform ancillary processes; consider the unique role of community colleges in helping to fill these gaps.
- Improve linkages between workforce development funds (e.g., WIOA grants) and high-skill technology occupations; target high school students and build pathways for them to enter these technologically demanding fields.
- Update federal processes, particularly at the Department of Energy (DOE), to encourage greater collaboration and staff integration between federal agencies and institutions; transform the agency culture from the top-down to encourage more collaborative activities.
- Consider reforms, including a reshaping of federal agency tech transfer office incentives, to facilitate knowledge transfer and increase collaboration with national laboratories; incentivize, rather than punish, individuals who seek to work across laboratory and agency settings.
- Utilize and build on public-private partnerships to bolster workforces in critical technology areas. For example, the IRS brought in talent from Boeing to improve their IT infrastructure, and ended up transforming the department; the DOE can employ similar partnership models to attract top tier talent.

- Recognize the opportunity to significantly increase the diversity of backgrounds, perspectives, and experiences through workforce development programs; a new wave of workers can serve as a diversifying force for fields that historically lack diversity.