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National Commission on Innovation & Competitiveness Frontiers

Key Takeaways from 2024 Working Groups

Working Group 2

The Future of Sustainability: Accelerating Innovation in Clean Energy Technology

Session 4: June 4th, 2024

This Working Group session focused on leveraging partnerships to fully utilize national energy assets.

I. KEY THEMES

Working Group discussion identified several key themes during this session:

1) **Deploying emerging partnership models** and connecting new partners to unlock advancements in clean energy.

2) **Prioritizing community engagement** to enable technology adoption, especially amongst technologies with lower levels of public trust.

3) **Partnerships and policy certainty will solve business model challenges** to executing on decarbonization visions.

4) **Innovating on underlying processes** of the clean energy transition should be a major focus for policymakers.

II. PRELIMINARY IDEAS & POTENTIAL RECOMMENDATIONS

Deploying emerging partnership models

- Many other countries are deploying emerging partnership models that allow stakeholders along the technology pipeline to collaborate and find new efficiencies. For example, at a wind hub in Denmark, technology certifiers communicated with manufacturers – two groups that do not typically partner – and were able to provide valuable input on how to improve manufacturing processes. The U.S. should replicate and expand these models of partnership.

- Connecting with international partners is particularly important in emerging and rapidly evolving industries, given research and capability specializations between nations. For example, Japan has a dedicated institute to assess materials for hydrogen capabilities, which could dovetail effectively with capabilities and data from Sandia National Laboratory. However, these institutes do not collaborate, leaving an opportunity for the federal government and nonprofit organizations to open new partnerships.

- Public and private sector representatives can help connect new partners and create effective collaborations. Industry associations can help provide technical and business expertise for policy design; for example, ensuring that new grid access rules allow adoption. Public institutions, such as the National Academies, are also important to bringing together community organizations, businesses, universities, and other relevant stakeholders to create vibrant and holistic innovation ecosystems.

Prioritizing community engagement

- Education and communication with local communities is essential to enabling speedy energy transitions. This outreach is particularly important for technologies that do not have high levels of public trust, such as nuclear energy. This does not imply that companies and government entities should advocate for certain solutions, but instead should help communities better understand energy options and technologies.

- For technologies that do have high levels of public trust, such as solar energy, more local issues (including property values and construction externalities) are more relevant. The barriers to increased clean energy development can often be lessened through dedicated community education efforts.

- Cost uncertainty is a major concern for communities experiencing transition pressures from decarbonization; communities are uninformed and fearful of the potential costs of transition. Energy developers should conduct more community engagement to create cost transparency, lowering barriers to development.

Partnerships and policy will solve business model challenges

- Across many businesses and organizations, there are enthusiastic visions and commitments for decarbonization. However, moving from vision to execution has proved difficult for many organizations that struggle to understand the business case for full-fledged decarbonization efforts. The next major challenge in decarbonization is not proving its importance, but rather solving business model challenges.

- One major business model challenge is better connecting supply and demand signals. Many partnerships, including the WEF's First Movers Coalition, are attempting to drive demand signals through decarbonization commitments and investments. Expanding partnerships between the suppliers and demanders of clean energy will help spur

growth of this market. Ultimately, building a sound economic case for any industry will be the most effective strategy for ensuring its long-term development.

- Government organizations can play a vital role in sending market signals to solve business model challenges, including through pilot project programs. Government funding is limited, and may be best directed at bearing the risk of being the first adopter for nascent technologies such as Small Module Reactors and laser fusion. Government procurement could be another effective avenue for de-risking technologies and solving early adopter challenges.

- Making reliable decarbonization commitments with concrete steps requires certainty for businesses, ideally in the 10+ year timeframe. However, energy policy often "zigzags", including technology subsidies that turn on and off depending on the administration. Increased policy certainty, including through agile strategies that weave together multiple policy and business priorities, will help to provide businesses with the certainty required for longer-term and larger-scale investments.

- Policymakers should consider favoring a gradual transition strategy that is more resilient to political cycles, which may be more economically and politically feasible in the long run. A "phase-in" approach may allow the private sector to most achievably start and grow new industries.

Innovating on underlying processes of the clean energy transition

- While creating technological innovations is essential to accelerating clean energy development and deployment, so too is improving and innovating on the processes that underlie the energy transition. Even if technologies are available, without efficient and effective processes to deploy and commercialize these technologies, our nation will struggle to keep pace in the energy transition.

- Siting and permitting remains a major barrier for all types of infrastructure, from the electrical grid to new energy developments to basic infrastructure. Policymakers should examine promising solutions for accelerating siting and permitting, from one-stop permitting to regional corridor models (i.e., zoning) to strategic environmental assessments that create a pre-clearance process. Policymakers should take lessons from innovative approaches at the state and local levels, and experiment with various solutions to improve the siting and permitting process for all infrastructure.

- Electrification, AI, and the manufacturing revival pose challenges for the grid, from the cost and accessibility of electricity to grid security. While the grid was built over a span of 100+ years, the nation must expand and re-invent the grid in a 25 year timeframe. This challenge will require changes and innovations to approving and executing on grid upgrades and expansions, from permitting to funding processes. Given private sector

demand for a secure and reliable grid, policymakers should work closely with industry to drive accelerated grid improvements.