

# KEEPING THE POWER ON

*The Business Case for Emerging  
Energy Storage Technologies*



**July 14**

8 am - 12 pm EDT



# Welcome and Workshop Overview



# Daniel Morris

Clean Energy Lead, Climate Investment  
Funds



# Update on Global Energy Storage Program

*Keeping the Power On: The Business Case for Emerging Energy Storage Technologies*

July 14, 2021

# Status of GESP since May 2021

- **Progress on the pipeline:**

- Five approved projects worth USD 70.78 m in South Africa, Ukraine, Honduras, Haiti, and LAC Region

- **Expected Results**

- 100 million MTCO<sub>2</sub>e lifetime emissions reduction
- 1.8 gigawatts installed storage capacity
- USD 1.6 billion in economic value
- \$3 billion in co-financing



# Key Technology Questions from First Learning Platform Event

- What energy storage technologies are most relevant for developing countries?
- How do we make energy storage technology cheaper for developing countries?
- What are the costs of energy storage solutions and commercial viability?
- How can you evaluate the value of storage?



# Stephen Hendrickson

Program Manager, Office of Technology  
Transitions, US Department of Energy

The seal of the United States Department of Energy, featuring an eagle with wings spread, perched atop a shield. The shield contains symbols for various energy sources: a sun, an atom, a lightning bolt, a wind turbine, and a hydroelectric dam. The seal is surrounded by the text "DEPARTMENT OF ENERGY" at the top and "UNITED STATES OF AMERICA" at the bottom.

# Technology Commercialization and the Energy Storage Grand Challenge

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July 14, 2021



# Office of Technology Transitions' Mission

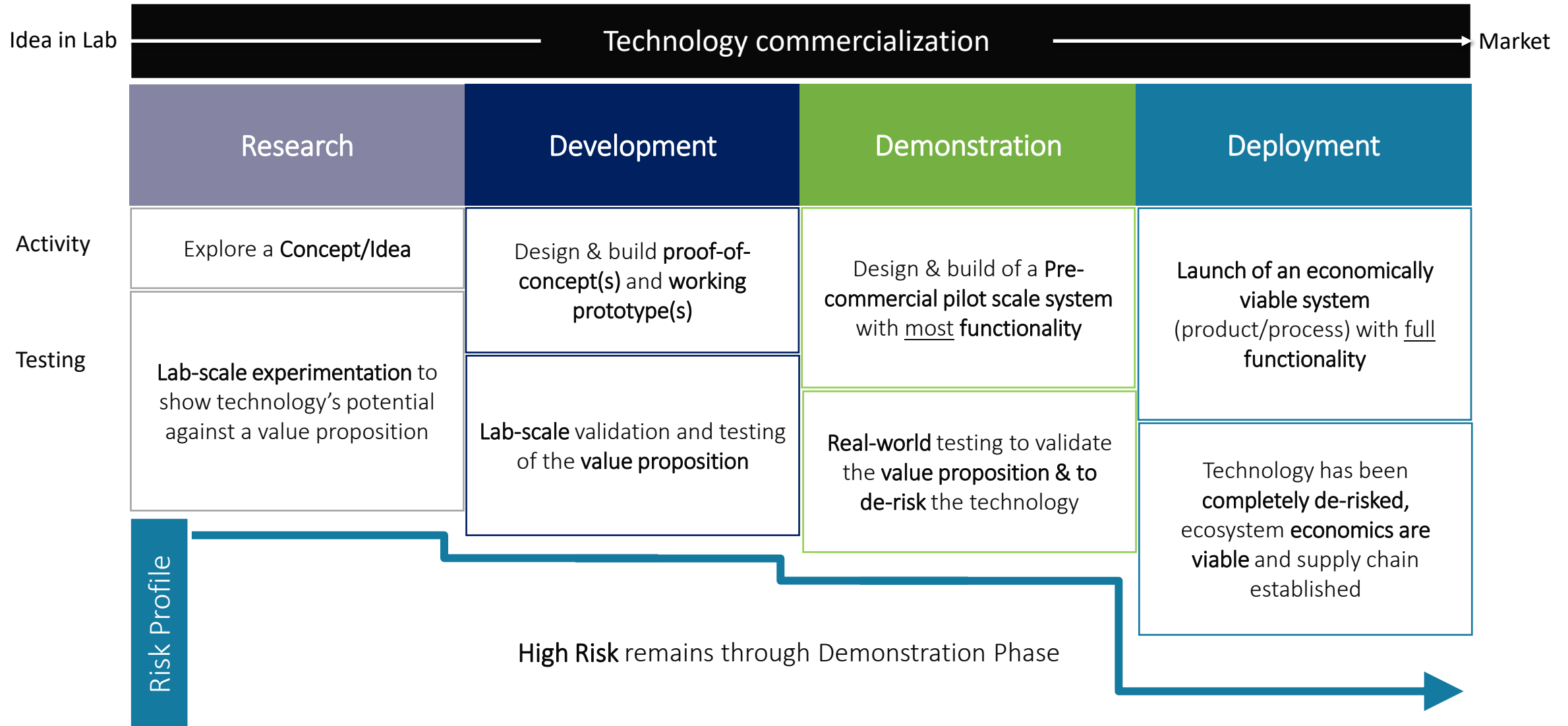
**Our statutory (Energy Act 2020) mission is “to expand the commercial impact of the research investments of the Department.”**

We “oversee delivery of the DOE **strategic goals for technology commercialization** and streamlining access to DOE’s national labs to **foster partnerships with the private sector to move solutions to market.**”

(We also have congressional mandate to report out on tech transfer activities across DOE.)

**OTT stewards commercialization programs across the Department and labs.**

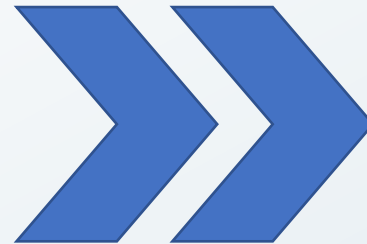
# In the DOE context, that means moving across the RDD&D continuum



# ESGC Overview

## ESGC Roadmap

- **Mission:** To be a global leader in energy storage innovation, manufacturing, and utilization.
- **Vision:** Energy storage technologies increasingly contribute to a U.S. and global energy system that is resilient, flexible, affordable, and secure.
- **Goal:** To develop and domestically manufacture energy storage technologies that can meet all marketplace demands by 2030.



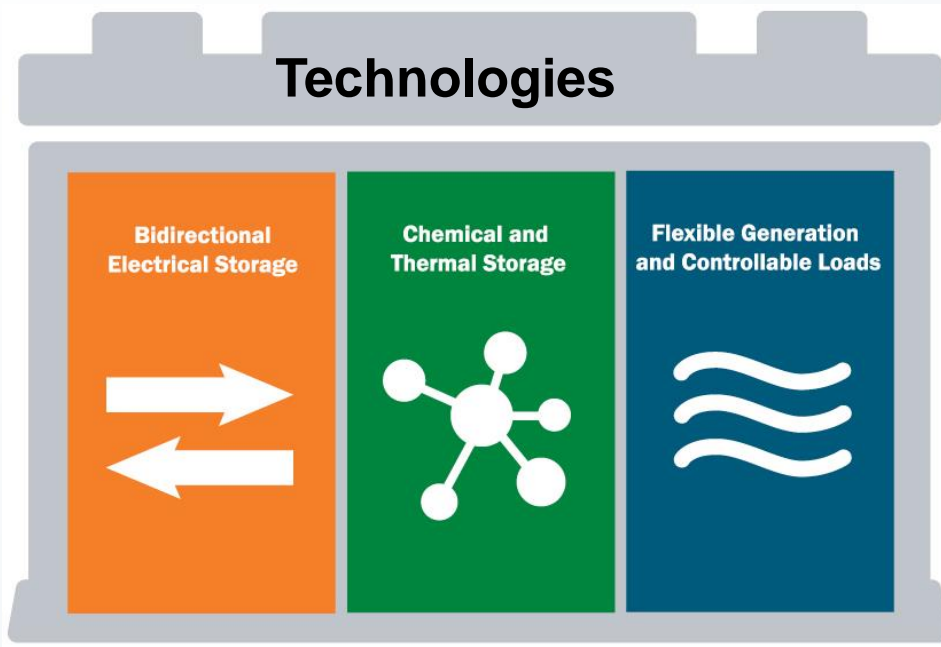
## Decarbonization Goals

- Decarbonizing electricity
- Decarbonizing transportation across all modes
- Decarbonizing energy-intensive and high GHG-emitting industries
- Reducing the carbon footprint of buildings
- Enabling a net-zero agricultural sector

*Achieving the ESGC mission is a key enabler of decarbonization goals*

# ESGC Coordination

## Unifying efforts across technologies and functions



### Offices

- Office of Electricity
- Energy Efficiency and Renewable Energy
- Office of Science
- Office of Technology Transitions
- Nuclear Energy
- Fossil Energy
- Office of Policy
- ARPA-E
- Loan Programs Office

### Functions



# Use Cases Quantify Diverse Storage Beneficiaries

The Use Cases form a technology neutral framework to ensure that storage technologies can cost effectively meet real needs.



## Facilitating Grid Decarbonization

Ensure grid flexibility and the continued reliability, resilience, and security in a decarbonized electric power system.

\$0.03-\$0.05/kWh Levelized Cost of Storage



## Serving Remote Communities

Support communities not connected to the bulk power and may be subject to high energy costs, supply disruption, and disaster events.

\$65/MWh Delivered Energy Cost



## Electrified Mobility

Support electrification of the transportation sector by minimizing charging impacts to the grid and promoting low-cost, high performance EVs.

\$60/kWh manufactured battery cell cost



## Independent Network Infrastructure

Infrastructure that is interdependent with the electric grid and requires reliable electricity delivery to maintain effective operations.

\$77/yr storage capex



## Critical Services

Maintain operations in facilities critical to public health/safety during major outage events

\$77/kW-year storage capex

\$1392/kW-year backup generator offset



## Facility Flexibility, Efficiency, and Value Enhancement

Optimize energy production and/or usage to optimize value and enable flexible, efficient operations for the facility owner

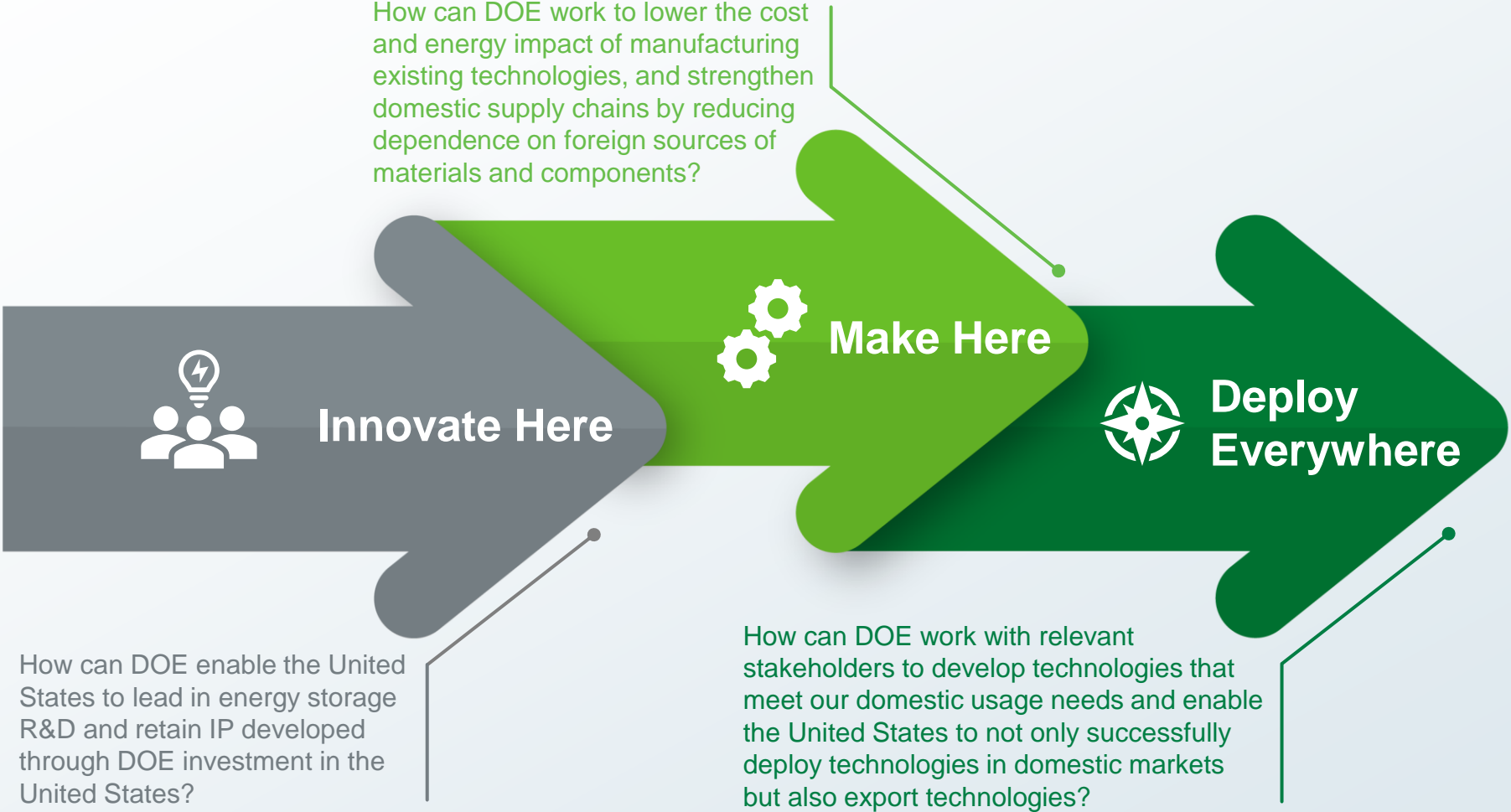
\$52/kW-yr residential & commercial

\$20-\$52/kW-yr large facilities.



## Future Use Cases

# Addressing Key Challenges



# Connecting with the ESGC

<https://www.energy.gov/energy-storage-grand-challenge/>

VIEW ALL



**DOE's Energy Storage Grand Challenge Celebrates Women's History Month**

DOE recognizes the contributions of 23 women to the science of energy storage.


LEARN MORE



**DOE Launches Design & Construction of \$75 Million Grid Energy Storage Research Facility**

The Grid Storage Launchpad at PNNL will boost clean energy adaptation and accelerate the development and deployment of low-cost grid energy storage.

LEARN MORE



**Summary of ESGC Workshop: Manufacturing and Workforce Needs in the Energy Industry**

This report is a summary of the March ESGC workshop.

LEARN MORE

## Subscribe to Energy Storage Grand Challenge Updates

Enter your email to receive the latest news and updates on the Challenge.

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Thank you

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