



**OCEd**  
Office of Clean Energy Demonstrations

# THE OFFICE OF CLEAN ENERGY DEMONSTRATIONS



## Data Management for Clean Energy Demonstration Projects at Scale

U.S. Department of Energy  
OCTOBER 22, 2024

# Agenda

**OCED Mission**

**Why does OCED collect and analyze data?**

**How does OCED manage its data?**



# OCED Mission

Deliver clean energy technology **demonstration projects at scale** in partnership with the **private sector** to **accelerate deployment, market adoption**, and the **equitable transition** to a decarbonized energy system.”



# OCED Mandate



## SCALE EQUITABLE, CLEAN ENERGY

Help enable 100% clean electricity by 2035 & net-zero emissions by 2050 through an equitable energy transition



## UNLOCK NEW INVESTMENT

Unlock and scale trillion-dollar clean energy follow on investment from the private sector and other sources of capital



## DE-RISK TECHNOLOGY

Maintain risk-based, balanced, and defensible portfolio of investments



## PROVIDE PROJECT OVERSIGHT

Serve as primary DOE office to deliver full scale clean energy demonstration projects and project management oversight excellence

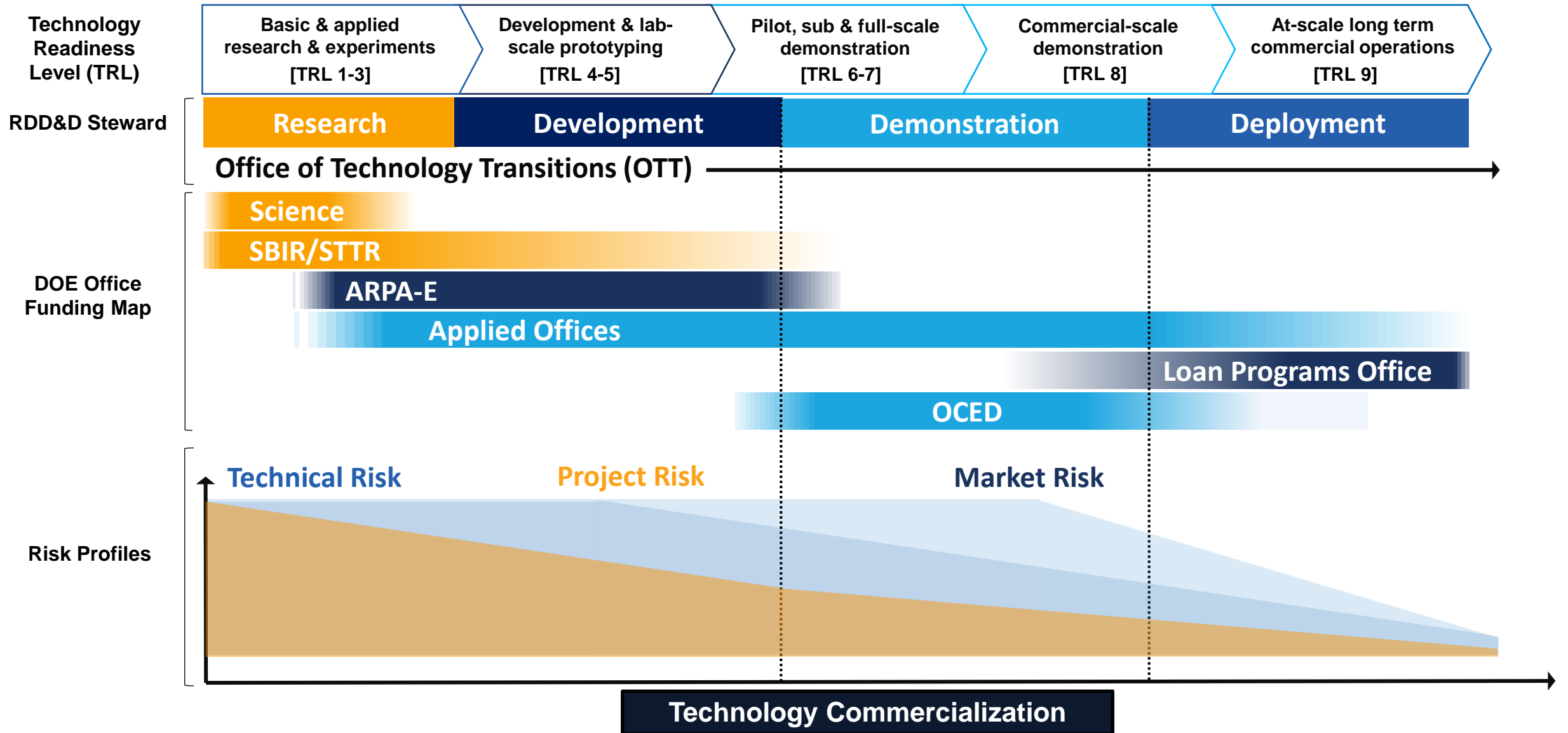


## ENGAGE & COLLABORATE

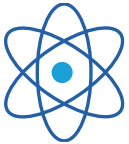
Leverage private sector and broader energy ecosystem to inform OCED and DOE technology commercialization efforts



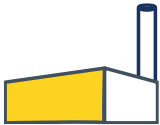
# Role Across Research, Development, Demonstration & Deployment (RDD&D) Continuum



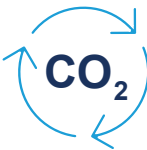
# OCED Scope



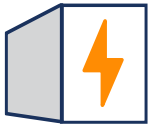
**Advanced Nuclear**  
**(\$3.3 billion)**



**Industrial Demonstrations**  
**(\$6.3 billion)**



**Carbon Management**  
**(\$7 billion)**



**Long-Duration Energy Storage**  
**(\$505 million)**



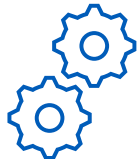
**Clean Energy Demonstrations on Mine Land**  
**(\$500 million)**



**Regional Clean Hydrogen Hubs**  
**(\$8 billion)**



**Distributed Energy Systems Demonstrations**  
**(\$50 million)**



**Liftoff Enabling Programs**  
**(\$133 million)**



**Energy Improvements in Rural or Remote Areas**  
**(\$1 billion)**

# Why does OCED collect and analyze data?

**Data collection and analysis play a foundational role in OCED's mission of accelerating the transition to a decarbonized energy system.**

- This goal can only be achieved in close partnership with award recipients. Safeguarding confidential data is equally mission critical.

**Key objectives include:**

- Project oversight, portfolio management, and informing continuation decisions
- Developing strategy and informing policy decisions
- Industry-facing publications to accelerate commercial liftoff and de-risk private investment

**These objectives will frequently align with the objectives of recipients of OCED funding by highlighting obstacles to commercial liftoff and enabling their removal.**

**In general, OCED is only looking to collect data which is demonstrably useful to these objectives.**

- OCED will avoid collecting data which does not have a clear use.

# Project Oversight

Project oversight means project success through effective collaboration with recipients, including insights derived from benchmarking. Effective project delivery requires timely technical and economic data to inform OCED decision making, optimize planning, & mitigate risks.

## *Asking For...*

## *Helps OCED...*

Technical specifications, design data, and construction reports	Perform engineering evaluations including safety, compliance, & security
Emissions models and projections	Estimate the overall emissions benefit and impact on communities
FEED studies and operational data	Validate boundaries & system performance relative to a fixed reference case
Financial and economic data and models	Understand the business case including key drivers and risks to viability
Insights into commercial structures	Assess project structure, including capital stack and supply / offtake agreements
Project risk registers	Determine common portfolio-level risks and develop mitigations

## **Objectives include:**

- Develop a comprehensive understanding of project scopes, timing, and objectives
- Analyze project projections through benchmarking to highlight opportunities and concerns
- Understand progress towards demonstration objectives
- Evaluate technical feasibility and compliance with regulations
- Assess and mitigate project risks
- Evaluate and assess project viability
- Review safety and environmental compliance measures
- Perform portfolio risk management, including mitigation development

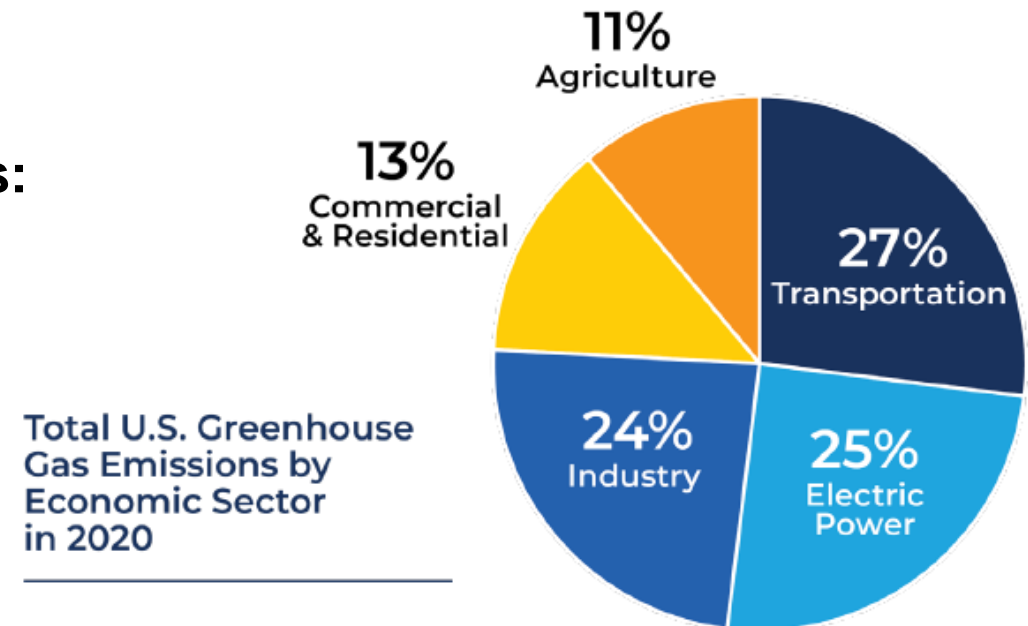
# Strategy Development: Description

There is a clear, continued need for high-impact, timely, large-scale energy demonstration programs to accelerate commercial liftoff, ensure domestic competitiveness, and enable a rapid, effective, and equitable energy transition.

To determine priorities and develop solicitations that are high-impact and effectively support partnerships with private industry, OCED needs **sufficient data** to evaluate the **readiness of the solutions**, our **ability to move the needle**, and the **potential payoff** of any future program.

## OCED is seeking to balance multiple objectives:

1. Decarbonization potential
2. Economic and national competitiveness
3. Energy security
4. Community and environmental benefits



# Industry-Facing Publication: Description

**Accelerate sector commercial liftoff** by providing portfolio-level insights to the market

- Leverage OCED's **unique perspective** as portfolio with first full-scale, real-world deployment of many clean energy technologies.
- **Close information gaps** in the market and **communicate sector viability** by sharing anonymized & aggregated portfolio information back to industry.
- Promote technology and sector solutions: mobilize investors, help developers, and support recipients.

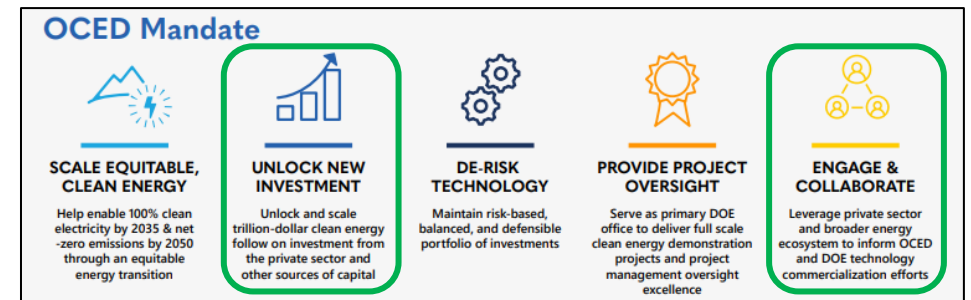
## Potential examples include:

Publishing **observed trends** to give **investors confidence** in participating in a new sector

Distilling **themes from prior** successful and unsuccessful **demonstration projects** to help projects steer towards success

Communicating the **impact of demand** driven by OCED programs on **future costs**

Aligned with OCED's mission to **unlocking follow-on investment** through **engagement and collaboration** with the private sector.



# OCED Data Ecosystem

## Sources of Data

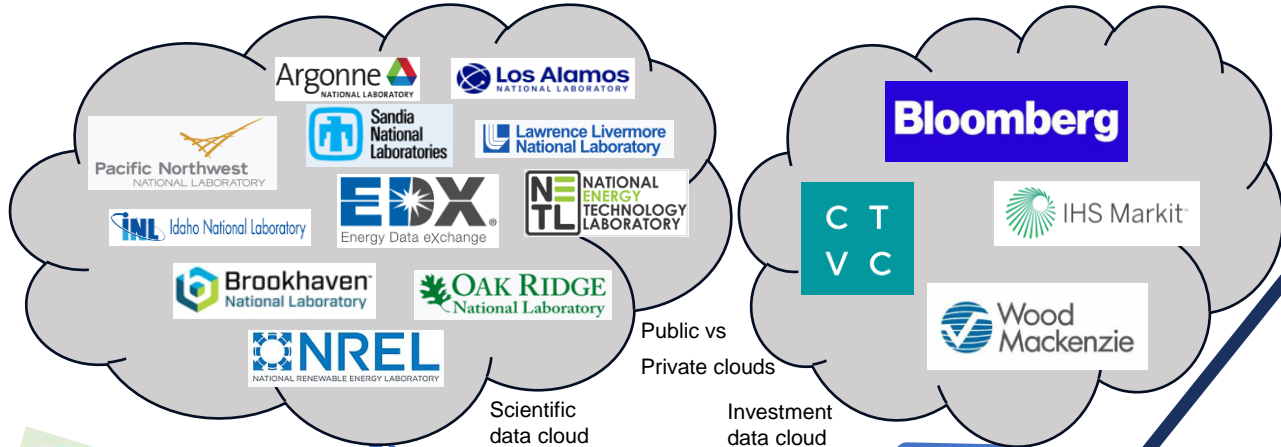
- Project Management Data
- Application Data
- Recipient Performance Data

OCED Awards Management Portal (AMP)

salesforce

Financial and Procurement Data

STARS STRIPES IDW



## Uses of Data

Data Visualization

+tableau

Power BI

- Liffort Reports
- Key Liffort Indicator Portal (KLIP)
- S3 Dashboard
- Data sharing with role-based permissions

Repeatable Analytics

python R

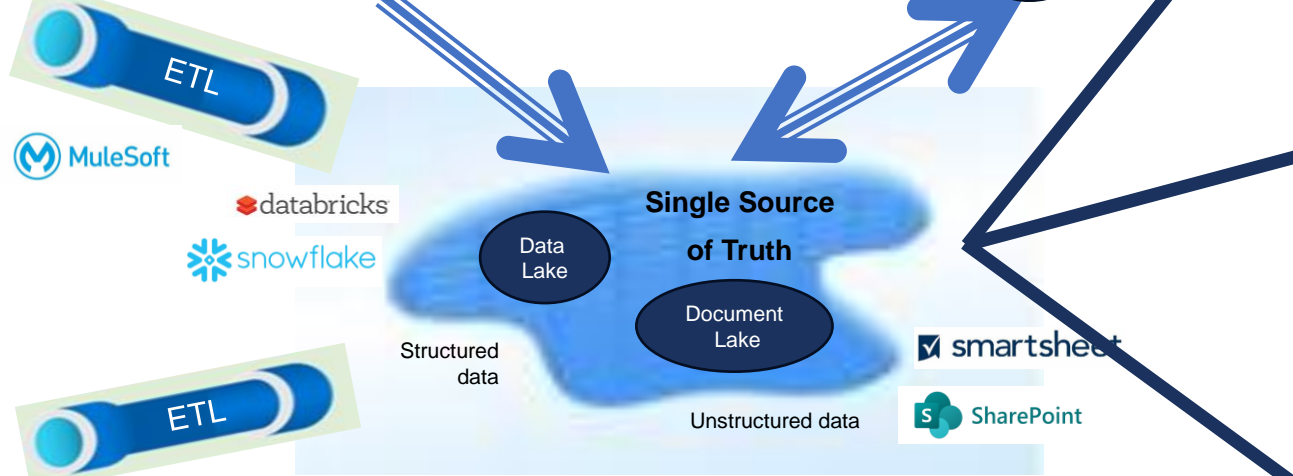
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- Project Risk
- Portfolio Risk
- Financial Analysis (IRR)
- Technoeconomic Analysis (TEA)
- Lifecycle Analysis (LCA)

Extract Insights

TensorFlow

- Regularly updated products
- Sensitivities and scenarios
- Data driven recommendations
- Knowledge management
- Natural language processing
- Data Science models



Gov Cloud Platform

amazon web services Microsoft Azure Google Cloud

Workflow Management and Audits

Power Automate JIRA

Data Governance and Lineage

# OCED Awards Management Portal (AMP)

