



Industrial Decarbonization at the U.S. Department of Energy

Dr. Avi Shultz
Director, Industrial Efficiency and Decarbonization Office

May 14, 2024



Industrial Technologies Joint Strategy Team



CHARTERED BY THE SECRETARY &
DEPUTY SECRETARY TO:

- 1) DEVELOP A STRATEGY
- 2) COORDINATE INTERNALLY
- 3) ENGAGE EXTERNALLY

SCOPE

Energy efficiency and decarbonization technologies that reduce emissions and increase competitiveness of the US industrial sector *in a net zero economy.*

INITIAL FOCUS AREAS FOR STRATEGY DEVELOPMENT

END USE SECTORS:

Metals, Chemicals, Cement

CROSS-CUTTING APPROACHES:

Energy Efficiency, Electrification

MOBILIZING
STAFF



ACROSS

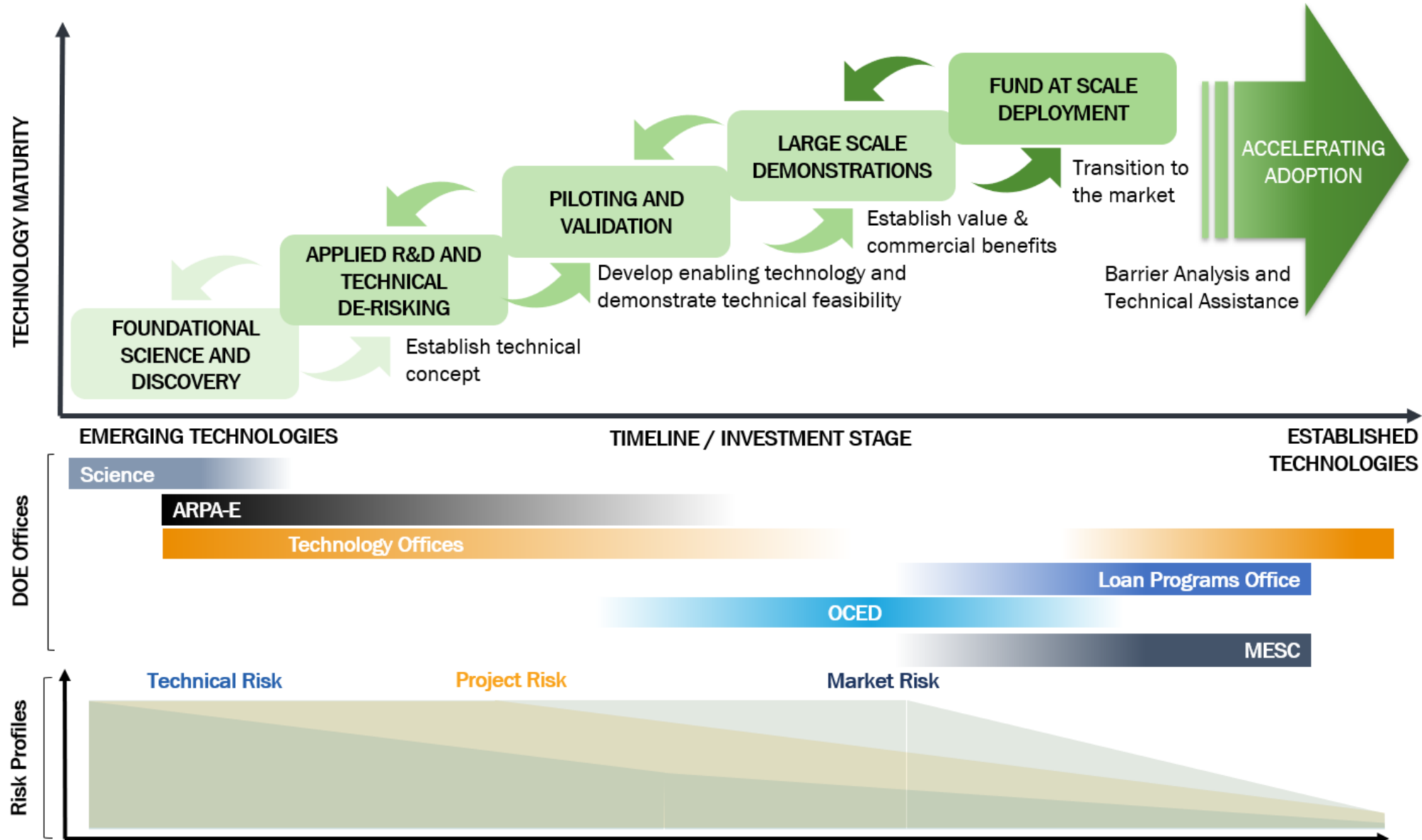
> 10

OFFICES

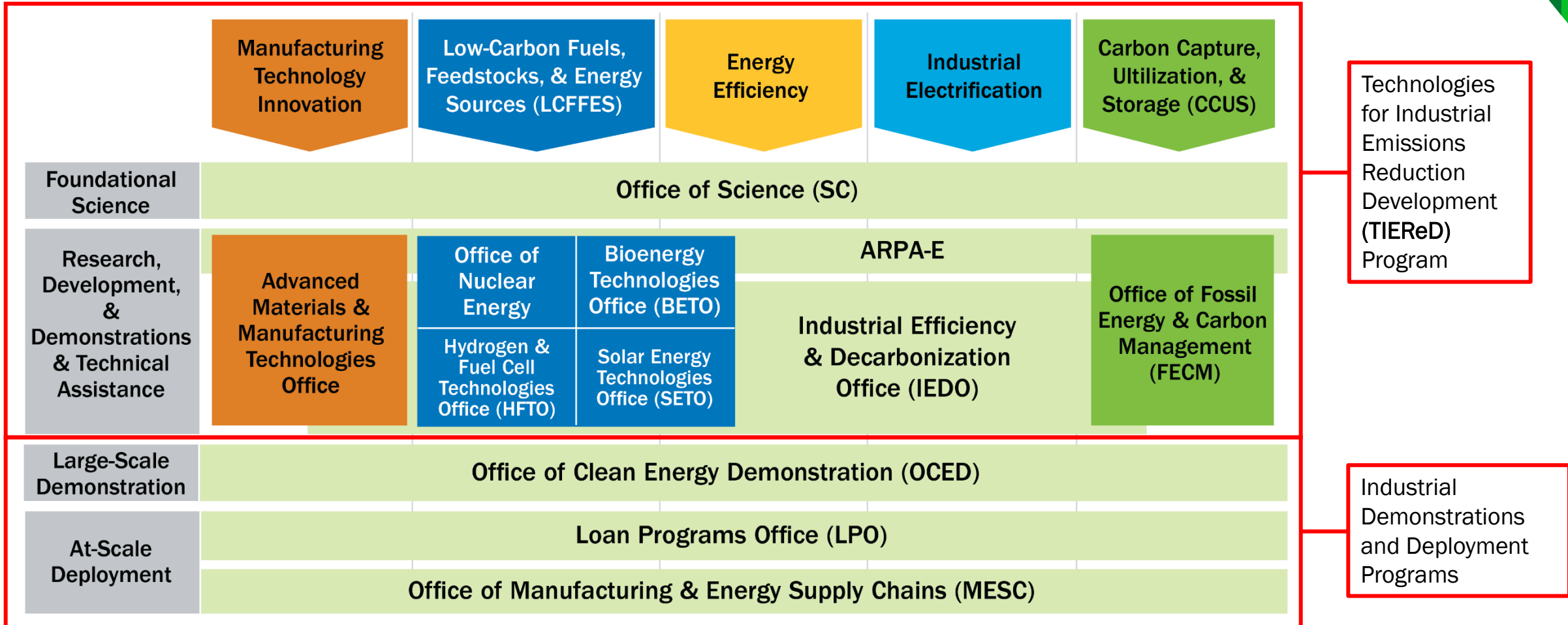
Planning & Execution



DOE Technology Landscape



DOE Offices Share a Common Strategic Framework



www.energy.gov/industrial-technologies

Fundamental Science and R&D Initiatives



Electrification of heating operations

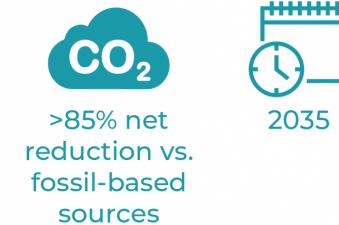
- Heat pumps, microwave heating, resistive heating

Integration of low emissions heat sources

- Solar thermal, geothermal, nuclear, hydrogen

Innovative low-or-no-heat technologies

- Advanced separations, electrolysis, bio-based manufacturing



Mobilize renewable carbon resources

- New feedstocks such as forest residues, agricultural wastes, algae, recycled materials

Carbon-efficient conversion

- Maximize conversion of resources into fuels and chemicals with biomass gasification to SAF, solar fuels, catalytic conversion of CO2

Industrial Demonstration and Deployment Programs

Industrial Demonstrations Program

Selections recently announced for **\$20+ billion total investment** (\$6 billion from DOE) for demonstration of transformational industrial technologies.

33 Projects in **20 states** with collective potential to

- Eliminate **14 MMT of industrial CO2** emissions annually (85% reducing criteria air pollutants)
- Create **thousands of jobs** (19 projects committed to labor unions)

Clean Hydrogen Hubs

Clean Hydrogen Hubs Program includes **\$8 billion DOE investment** to create the foundation of a nation clean hydrogen network to decarbonize the economy, including industrial sector.

7 hydrogen hubs selected last fall with collective potential to...

- Produce **3 MMT** of hydrogen annually, reaching nearly a third of the 2030 U.S. production target and **lowering emissions from hard-to-decarbonize industrial sectors**
- Reduce **25 MMT of CO2 emissions** from end-uses each year