

Hydrocarbons and Geothermal Energy Office

sCO₂ Power Cycles Symposium
March 4, 2026



U.S. DEPARTMENT
of **ENERGY**

Hydrocarbons and
Geothermal Energy Office



About HGEO



The mission of the Hydrocarbons and Geothermal Energy Office (HGEO) is to unleash the full potential of America's hydrocarbon and geothermal resources to provide affordable, reliable, and secure energy.

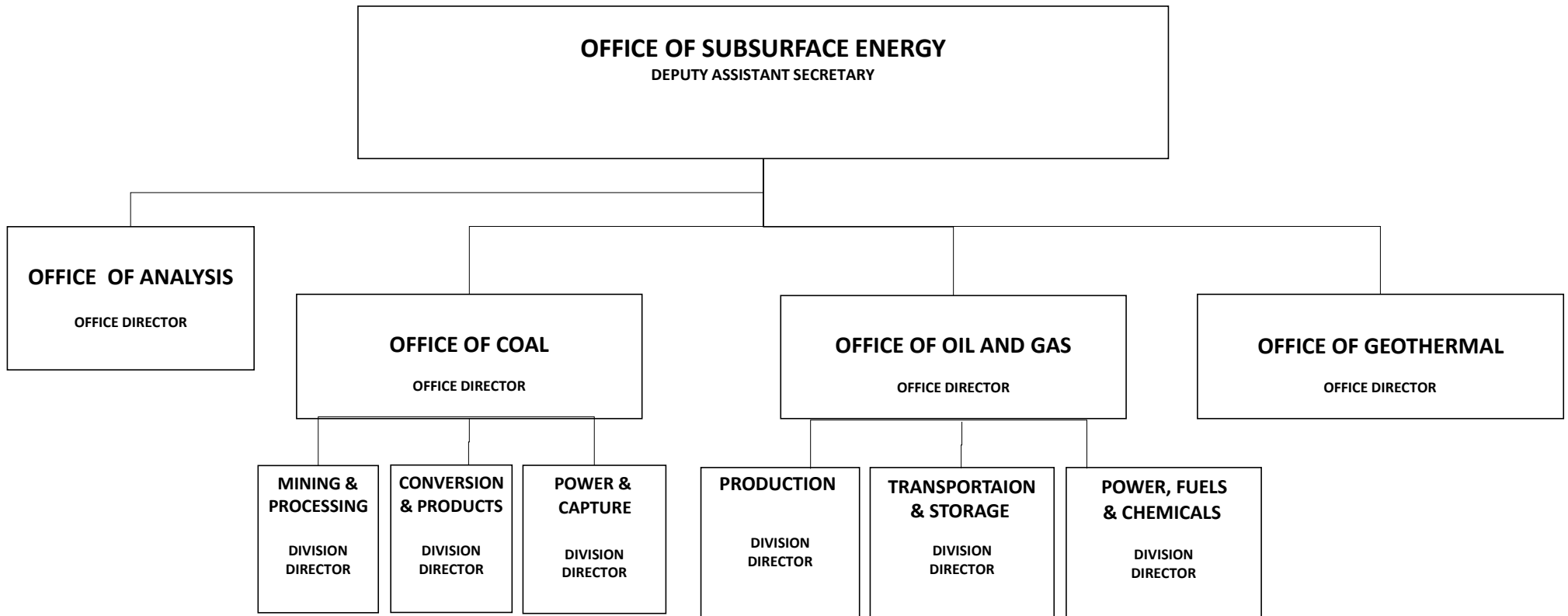
Through applied innovation and U.S. energy leadership, HGEO develops and advances breakthrough technologies that lower costs and power American prosperity, freedom, and human flourishing.



By leveraging America's hydrocarbon and geothermal resources, HGEO works to enhance reliable baseload power, strengthen grid reliability, and improve long-term energy security for communities nationwide.

These activities are pursued in partnership with the [National Energy Technology Laboratory \(NETL\)](#), DOE's only government-owned, government-operated National Laboratory focused on advancing the nation's energy future.

HGEO R&D Offices after Reorganization



Priority Areas



Accelerating

the deployment of new technologies to ensure U.S. energy abundance and strengthen national energy dominance.



Advancing

domestic energy production and reducing reliance on foreign sources.



Ensuring

coal remains a reliable, secure, and competitive energy source through continuous innovation and strategic deployment.



Strengthening

the resilience, reliability, and performance of U.S. oil and natural gas systems.



Positioning

geothermal as a competitive domestic source for reliable baseload electricity generation.



Maintaining

critical infrastructure, including the Strategic Petroleum Reserve, to secure the nation's energy supply.



Providing

oversight of liquefied natural gas (LNG) regulatory matters to ensure U.S. leadership in the global LNG market.



Office of Oil and Natural Gas



Power, Fuels & Chemicals

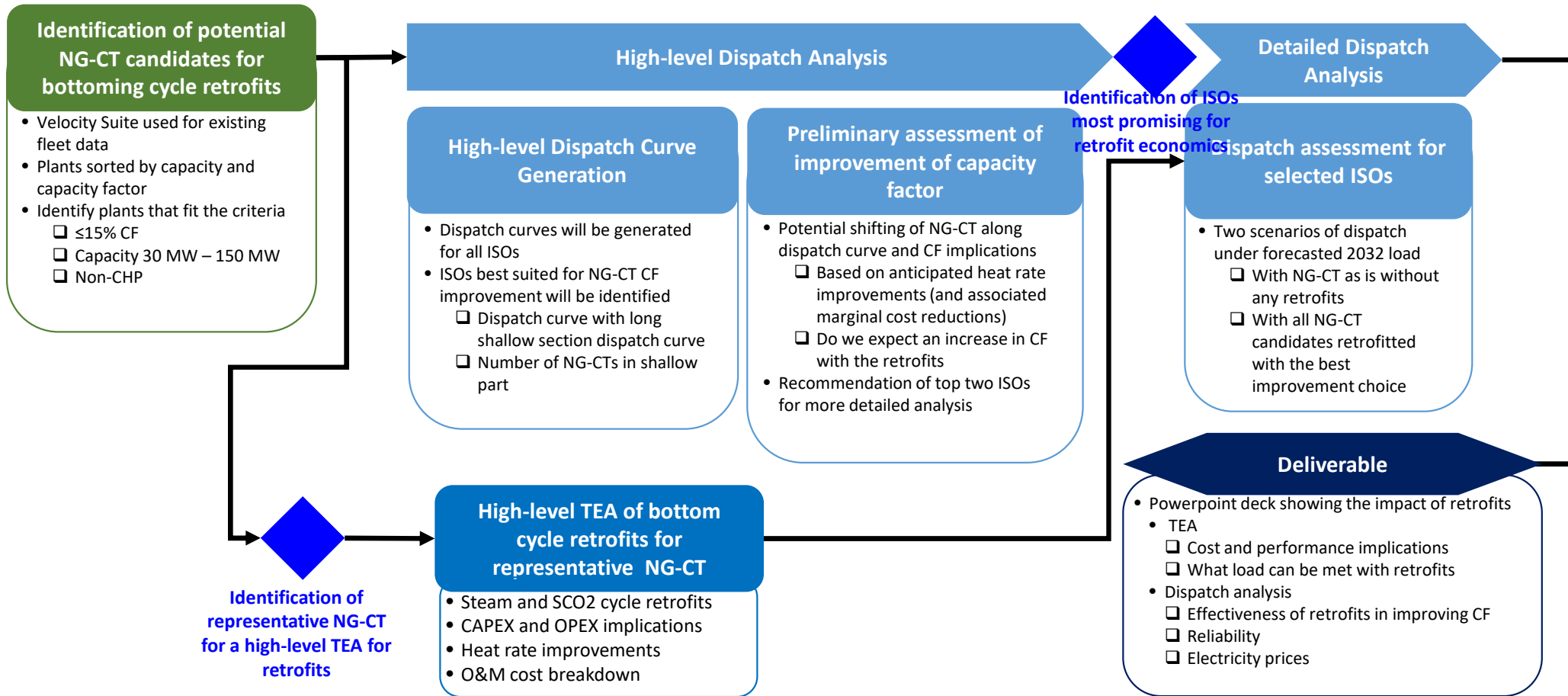
Aligned with HGEO Goal 2.5 “Develop advanced energy systems that provide low-cost baseload power and products.”

KEY FUNCTIONS

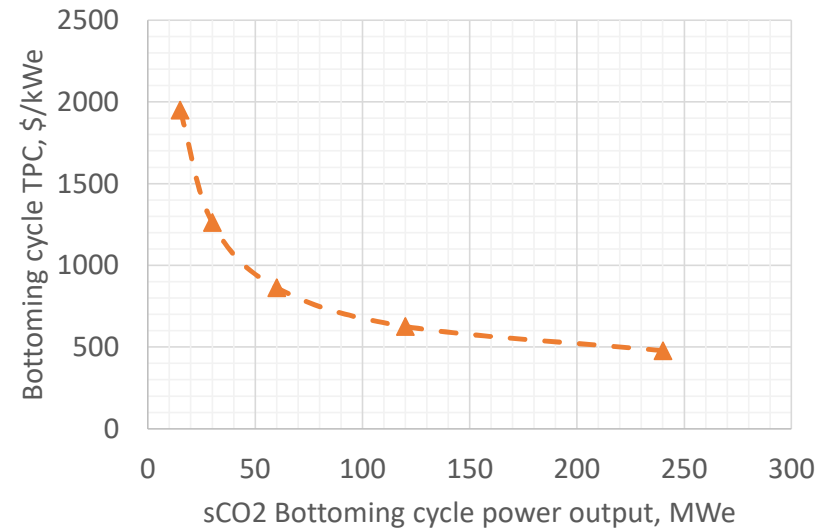
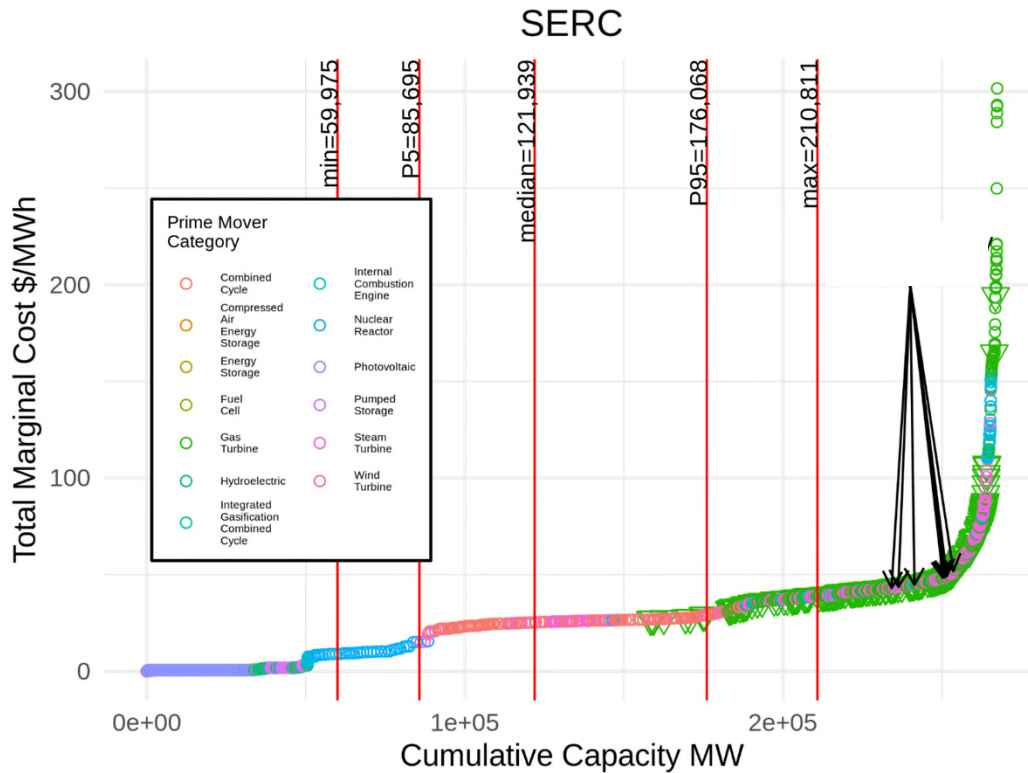
- Advanced Gas Turbines
 - Goal 1: Ensuring a reliable and affordable energy supply for all Americans.
 - Goal 2: Advancing technological solutions that enhance energy production while managing environmental impact.
 - Goal 3: Leveraging domestic resources, including fossil fuels and geothermal heat, with advanced conversion technologies.
 - Goal 4: Maintaining U.S. leadership in high-efficiency power generation technology.
- Advanced Energy Materials
 - Materials to enable higher temperature, higher efficiency turbine designs
- Advanced Refining Capabilities
 - First task is engagement with API on materials challenges for advanced refining



Simple Cycle Retrofit Study using sCO2 Bottoming Cycle



Dispatch Curves: Southeastern Electric Reliability Council



Represents candidate non-CHP Gas turbines which match the proposed criteria (CF ≤ 15%, Capacity 30 MW – 150 MW)



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Questions?

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