

Description

This working group will facilitate discussion among partners in small groups to accomplish the following:

- ▶ Gain insight into new and innovative low-emission alternative technologies (such as energy efficiency, electrification, low carbon fuels, and carbon capture) to decarbonize industrial thermal loads; these insights will include strategies used by the manufacturers, lessons learned and cost-benefit trade-offs
- ▶ Discuss challenges and barriers with the emerging low-emission alternatives and identify implementation strategies and opportunities that could accelerate improvements beyond current technologies
- ▶ Identify Research, Development & Demonstration (RD&D) pathways to low-emission alternatives with the highest potential for impact and adoption
- ▶ Capture new market information that would allow for opportunities for implementation of transformational low-emission alternatives to industrial thermal loads

DOE experts will support the working group participants with technical assistance on key issues, then summarize the discussion outcomes. The working group will be divided into cohorts as needed, including the cohorts focused on energy efficiency; electrification; low carbon fuels, energy sources and feedstocks; and carbon capture utilization and storage (CCUS).

Schedule

The working group cohorts will meet every 6 weeks for approximately eight months in a series of 60-minute facilitated calls starting in August 2023.

Working Group Format

- ▶ Short introduction to different technology pillars and low-emission pathways
- ▶ Roundtable discussion and sharing of specific examples, lessons learned, and cost-benefit trade-offs
- ▶ Working group may discuss other relevant topics like policy and regulations; financing and investment; barriers to adoption

Example Subtopics

- ▶ Explore different **process optimization and energy efficiency** strategies, such as thermal process intensification, heat recovery, and process control optimization.
- ▶ The feasibility of **electrifying different thermal processes**, the challenges, and potential solutions
- ▶ **Fuel switching** from high-carbon fuels to low-carbon fuels, such as green hydrogen, biogas, and biomass
- ▶ Explore different **CCUS technologies**, their feasibility, and the challenges associated with their implementation
- ▶ Integration of **renewable energy sources**, such as solar and wind, into industrial thermal processes
- ▶ Explore different **advanced materials and manufacturing techniques**, such as high-temperature materials for harsh environment waste heat recovery, additive manufacturing, thermo-chemical processes, etc.
- ▶ Explore different **digital technologies** (e.g., artificial intelligence, machine learning, and the internet of things) and their potential applications in decarbonizing industrial thermal processes

Outcomes

- ▶ DOE will summarize discussions on low emission technology pathways, challenges, and barriers by sector and share the outcomes in the form of a working group report
- ▶ DOE will receive ideas on tools and resources to support BCC's GHG Emission Reduction Assessments
- ▶ Partners will learn from each other and develop connections to tackle process heating challenges
- ▶ Working group members will be recognized for their contributions

Expectations for partners participating

- ▶ Attendance at a majority of working group meetings
- ▶ Contribution of insights, experiences, barriers, case studies, and lessons learned in low-emission alternatives to industrial thermal loads
- ▶ Many working group members may already be in the process of exploring low-emission alternatives; however, partners that are in the early stages are welcome to participate in the working group as well