REPORT IN BRIEF | FEBRUARY 2021



Low-Carbon Renewable Thermal Technology Solutions:

Policies to Support Development and Deployment



WHAT IS LOW-CARBON RENEWABLE THERMAL?

This report considers policies that impact low-carbon renewable thermal technologies. Low-carbon renewable thermal technologies use sustainable renewable or waste-derived sources to provide energy.

Low-carbon renewable thermal technologies include biomass, biogas (including landfill gas), renewable natural gas (or biomethane), geothermal, beneficial electrification, green hydrogen, and solar thermal.

Thermal energy, energy used for industrial processes and to heat and cool buildings, is a significant contributor to global energy demand and to greenhouse gas (GHG) emissions. While policy solutions have been implemented for decades to expand the development of and access to renewable electricity, **low-carbon renewable thermal technologies in particular, and low-carbon technologies for industry in general, have not benefitted from such widespread policy support.**

In order to be effective, **any framework to reduce GHG emissions must address thermal energy.** Thermal energy is a key component of energy use in the United States and around the world, particularly in the industrial sector. Worldwide, industrial heat makes up two-thirds of industrial energy demand and almost one-fifth of total energy consumption.* However, renewable energy meets only ten percent of this demand.**

Thus far, **policy has been an underutilized tool to advance lowcarbon renewable thermal technology solutions,** especially when compared to the robust use of policy to expand the development and deployment of renewable electricity. Barriers to low-carbon renewable thermal development and implementation include disaggregated supply, distributed demand, a wide range of specific temperature needs for industrial users, and market barriers. Policy can help to lower these barriers.

This report reviews the leading policies that support the deployment of low-carbon renewable thermal technologies in Europe and at the state and federal levels in the U.S., as well as U.S. federal policies that are proposed, but have not yet been adopted.

BARRIERS TO LOW-CARBON RENEWABLE THERMAL DEVELOPMENT AND IMPLEMENTATION

- Disaggregated supply
- Distributed demand
- Wide range of specific temperature needs for industrial users
- Market barriers

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Key insights from low-carbon renewable thermal energy policy development thus far include:

- Fragmented policies that only apply in certain locations, to certain technologies, or to certain customer classes can lead to uneven support for the deployment of renewable thermal technologies.
- Performance targets, benchmarks, and standards can increase low-carbon renewable thermal energy use in a range of industrial sectors.
- An economy-wide carbon price could incentivize more low-carbon renewable thermal solutions.
- Financial incentives can play a significant role in scaling low-carbon renewable thermal technology deployment.
- Research, development, demonstration, and deployment (RDD&D) and partnerships with the private sector are pivotal to accelerating low-carbon renewable thermal technology development.
- Additional data about low-carbon renewable thermal applications and the effectiveness of low-carbon renewable thermal policies is needed.
- Increased deployment of renewable thermal technologies and the resulting decarbonization of industry can contribute to an equitable and just energy transition.

KEY RECOMMENDATIONS

A full list of recommendations are included in Chapter 4 of the report. **Key recommendations** for actions that policymakers could take to accelerate the development and deployment of low-carbon renewable thermal technologies can be grouped into six main categories.

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RDD&D	TECHNICAL	FINANCIAL	MARKET-BASED	FEDERAL	SUPPORTING
	ASSISTANCE	INCENTIVES	MECHANISMS	PROCUREMENT	IMPACTED

*Elie Bellevrat and Kira West, "Commentary: Clean and efficient heat for industry," International Energy Agency, January 23, 2018, <u>https://bit.ly/2DRrSm5.</u>

** Anselm Eisentraut and Adam Brown, Heating Without Global Warming: Market Developments and Policy Considerations for Renewable Heat (Paris, France: OECD/IEA 2014), 8, <u>https://www.iea.org/reports/heating-without-global-warming.</u>

Learn more by reading the full report, *Low-carbon Renewable Thermal Technology Solutions: Policies to Support Development and Deployment,* at https://www.renewablethermal.org/low-carbon-renewable-thermal-technology-solutions/