The Renewable Thermal Collaborative (RTC) is developing a series of Technology Action Plans (TAPs) to accelerate the deployment of specific renewable thermal technologies and solutions. This Solar Thermal Technology Assessment (TA) is designed to provide the substantive basis for RTC Members to consider developing a full solar thermal TAP.

At present, renewable energy meets only 13 percent of global industrial heat demand. Solar thermal technologies produce less than 1 percent of global industrial heat, despite having a much greater technical potential.

This Technology Assessment (TA) answers four questions:

1. What is the economic and market potential of solar thermal in the near and long terms?
2. What are the major barriers to accelerated industrial deployment of solar thermal technologies?
3. How can we address those barriers?
4. What can large energy users do to accelerate their decarbonization efforts using solar thermal?

<table>
<thead>
<tr>
<th>Technology</th>
<th>Year</th>
<th>Technical or Market Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Concentrated</td>
<td>2030</td>
<td>Technical potential to supply 30-40% of global low-medium temperature process heat demand; 14,000 PJ⁴</td>
</tr>
<tr>
<td>Solar Thermal</td>
<td></td>
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<tr>
<td>Non-Concentrated</td>
<td>2050</td>
<td>Predicted, using combined technical and market potentials, 6.3% of industrial global energy use; 8,000 PJ⁵</td>
</tr>
<tr>
<td>Solar Thermal</td>
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</tr>
<tr>
<td>CSP</td>
<td>2030</td>
<td>Cost is predicted to remain too large a barrier before 2030⁶</td>
</tr>
<tr>
<td>CSP</td>
<td>2050</td>
<td>Predicted, using combined technical and market potentials, 1% of U.S. industrial energy use; 135 GWh⁷</td>
</tr>
</tbody>
</table>

Below is a summary of the Working Group’s findings. The complete list of identified barriers, solutions, and actions can be found in the full report.

The Working Group identified and prioritized nine different barriers to scaling solar thermal. The three leading barriers were:

- **Low natural gas prices**: Particularly in the U.S., the low cost of incumbent natural gas is a challenge to scaling almost all renewable and low-carbon thermal technologies.
- **No easy guide to solar thermal technologies**: Buyers reported difficulty finding an easy-to-use resource that helps them match available solar thermal technologies to process requirements by temperature range and heat output.
- **Solar thermal technologies perceived as “pre-mainstream”**: Many energy users shared that they perceive solar thermal technologies as developing; insufficiently mature or “mainstream” to be trusted.

The Working Group identified and prioritized eleven solutions addressing the complete barrier set. The top three potential solutions based on impact and actionability were:

- **Increase financial incentives such tax credits or subsidies**: Tax credits and subsidies helped launch the renewable electricity market, replicating this political assistance would likely have a similar effect in the renewable thermal market.
- **Support a carbon price or fuel tax**: Placing a price on carbon emissions or implementing a fuel tax for carbon emitting fuels increases the economic competitiveness of low- or zero-carbon fuel options.
- **Create a trusted educational resource for buyers to guide solar thermal technology matching**: Buyers need a resource to help navigate solar thermal technology questions, needs assessment, and deployment options and processes.

The Working Group identified possible actions that large energy buyers such as RTC members could take to work towards these solutions. Based on corporate ability to take steps towards these actions and the potential impact of the actions, the emerging top three were:

- **Support renewable thermal policy**: Companies can actively promote and advocate for state and federal policy that supports renewable thermal technologies.
- **Increase internal value for sustainability**: Companies can place explicit organizational and financial value on sustainability performance and GHG emissions reductions; example strategies could include internal carbon pricing and green revolving funds.
- **Commit to solar thermal pilot projects**: Companies can make proactive commitments to deploy solar thermal technologies, sending an important market signal.

*To download the full Solar Thermal Technology Assessment, please click here.*