What Does a Thermal Energy Network Project Look Like?

Developing a Thermal Energy Network (TEN) requires many of the same steps and services required to plan, design, and construct other infrastructure.

The charts below are an introduction to the phases that a core project team or third party will coordinate and oversee. You can use them as:

- An overview to help you visualize a project from conception through completion,
- A tool to help identify members of a core project team or to hire a third party, or
- A guide to initiate planning and anticipate next stages in the development process.

Each of the phases describes steps to an inclusive, efficient process with actions, procurement notes, suggestions for stakeholder engagement, and best practices related to TEN development.

- *For a deeper dive and more detailed steps, please see Project Phases for a Thermal Energy Network.*
- *This chart is also available as a blank worksheet to help you identify and keep track of steps specific to your project: Project Phases Chart.*

This resource was developed by Vermont Community Thermal Networks in consultation with and including valuable contributions from the Thermal Energy Network Team supported by Energy Action Network.

Collect ideas for how a TEN could be built, owned, and operated in your community.

ACTIONS	• Form a working group to develop a project concept. • Identify potential thermal energy resources and customers. • Assess budget and personnel capacity to support a TEN project. • Consider how a TEN fits within existing town and regional plans. • Evaluate local support for a TEN project.
PROCUREMENT	[Note: Procurement for services needed to develop a TEN is done in stages across a project from pre-design through construction. *See Project Phases for more details and best practices.]*
STAKEHOLDER & COMMUNITY ENGAGEMENT	• Identify stakeholders and local champions. • Engage key project partners and needed expertise.
BEST PRACTICES	• Map thermal energy resources within a geographically focused area to understand opportunities. • Site visits: Tour buildings and facilities with an engineer or energy expert to learn how they might function as thermal energy resources and/or customers. • Evaluate potential ownership models for financing implications, cost-effectiveness, and stakeholder impact. • Identify other parties that may be interested in collaborating on TEN development.

To access the full How to Develop a Thermal Energy Network toolkit, please visit vctn.org/toolkit.

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Flesh out ideas and build a business case for the project.

ACTIONS	• Define TEN scope, prioritize potential sites, and create conceptual system design. • Pair viable thermal energy resources with potential customers. • Consult legal expertise re: needed authorization. • Conduct a high-level economic assessment. • Secure seed capital for project development.
PROCUREMENT	• Assemble the core project team or hire a third-party TEN developer. • Consult with environmental permitting and energy modeling experts.
STAKEHOLDER & COMMUNITY ENGAGEMENT	• Engage and educate owners of buildings. • Consider engaging building occupants. • Share project concept with the community.
BEST PRACTICES	• Engage a procurement and contract manager to coordinate and oversee hiring. • Ensure that RFPs and contracts include the Operations phase to guarantee contractor availability as needed. • Clarify how the project concept will provide adequate, timely financial returns and/or fit developer and investor expectations. • Consult state and local permitting laws and assess how permitting will impact the project timeline.

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Confirm that a TEN project can happen—get to a "go" or "no go" decision.

ACTIONS	• Perform a feasibility study. • Confirm the buildings and facilities involved, size the system, and plan construction phases. • Make a "go" or "no go" decision, then pursue project financing. • Engineer preliminary system design. • Review preliminary design with the full project team, stakeholders, and community. • Begin seeking local approval of the project including filing state and local permits. • Incorporate feedback and finalize detailed system design.
PROCUREMENT	• Finalize contracts with core project team members. • Bid contracts for project management, design engineering, project estimators, project permit expeditors, and construction management and contracting.
STAKEHOLDER & COMMUNITY ENGAGEMENT	• Seek stakeholder and community responses to feasibility study results and preliminary design. • Demonstrate how feedback has been incorporated.
BEST PRACTICES	• Conduct feasibility studies only after key TEN participants are on board and seed capital is secured. • Check that designs and plans provide full details so all contractors can follow plans exactly.

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Concept becomes reality. Ensure the project meets design goals.

ACTIONS	• Work with construction management to oversee the project and coordinate subcontractors. • Engage an Environmental Specialist as needed to expedite environmental permits. • Include a commissioning agent or owner's representative to ensure the project achieves its goals. • Schedule construction activities and engage contractors in accordance with permitting timelines.
PROCUREMENT	• Identify and acquire a project or construction manager who can bring in the various trades and contractors needed to build the TEN. • Plan for equipment and materials procurement if these items are not included in the scope of the general contractor or project manager. • Schedule materials purchases in alignment with the start of construction. • Track payments to contractors to ensure smooth project schedules.
STAKEHOLDER & COMMUNITY ENGAGEMENT	• Create on-site opportunities to educate the public. • Share information frequently through various channels.
BEST PRACTICES	• Communicate early and often with project partners. • Keep the community and neighbors aware of potential disruptions caused by construction including street openings and traffic routing. • Provide regular briefings to local officials and stakeholders who can help share information with community members.

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Foster positive customer experience. Track and share project outcomes and data.

ACTIONS	• Shift financing to a sustainable business model. • Implement billing and customer services, including new customer onboarding. • Contract and/or train maintenance and emergency repairs personnel. • Test and validate system performance. • Track data on energy use, costs, and emissions reductions.
PROCUREMENT	• Identify and hire operations and maintenance staff needed to manage a reliable system. • Acquire a meter reading and billing agent to assist with billing for the thermal energy provided by the TEN, unless this function is already provided by an existing participating utility.
STAKEHOLDER & COMMUNITY ENGAGEMENT	• Install permanent signage to highlight the project and its benefits. • Celebrate successes and explore future possibilities with TEN participants and the community.
BEST PRACTICES	• Validate system performance to ensure energy savings continue and equipment is maintained. • Share project data to build knowledge within the community and across the industry.

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