Implementation Model: Minnesota

Minnesota's Combined Heat and Power (CHP) Action Plan

Minnesota's Department of Commerce (COM) created a Combined Heat and Power (CHP) Action Plan that has the potential to double the state's CHP capacity, help the state achieve its target of 1.5% annual energy savings, and improve the resilience of the distribution grid. A total of 1.1 gigawatts (GW) of CHP generating capacity is currently installed in 56 locations throughout the state,[1] but nearly another full GW of new CHP is possible at industrial, institutional, and commercial facilities across Minnesota. COM's CHP Action Plan, developed under a competitive award from the Department of Energy's (DOE) State Energy Program, charts a path to unlocking the savings and other benefits of this more efficient energy technology.

If realized, CHP would play a major role in achieving Minnesota's energy savings target with an estimated economic payback of less than 10 years. With the capacity to provide power in the event of supply disruptions, CHP improves grid resilience while also offering multiple additional benefits for end users. The key will be to implement policies that specifically support the increased use of CHP, as outlined in the action plan developed by an engaged network of stakeholders.

Goal

Expand the use of CHP systems for commercial and industrial applications in Minnesota.

Barrier

Existing energy efficiency policies and regulations do not explicitly support CHP.

Solution

COM created a comprehensive CHP Action Plan that identified changes to existing Minnesota energy efficiency policies and regulations to encourage more CHP deployment, including more equitable standby rates and modifications to energy conservation rules. The CHP Action Plan included six action items:

1. Establish a CHP energy savings designation for use in its Conservation Improvement Program
2. Map CHP opportunities at wastewater treatment facilities and other infrastructure
3. Expand CHP education and training
4. Leverage existing financing programs
5. Find ways to count CHP as infrastructure investment
6. Look at ways to improve standby rates

Outcome

Policy guidance issued by Minnesota in late 2018 allow utilities to claim energy savings from new supply-side energy savings projects (e.g., investments that reduce energy use during power distribution and transmission), including CHP. As a result, COM has also seen an increase in CHP inquiries by utilities from a few annually to a dozen since the Action Plan was finalized in 2017. In addition, a 22.8 MW CHP system was installed on the University of Minnesota's campus.

[1] U.S. DOE Combined Heat and Power Installation Database, installations as of November 30, 2019, https://energy.gov/chp-installs

[2] In 2017, the Department of Commerce proposed new guidance for review based on section 216B.241 subdivision 1c (d), stating that energy savings will be based on the utility's Conservation Improvement Program plans, not the results of those plans. More information here: http://mn.gov/commerce-stat/pdfs/final-fryer-d-cip-17-856.pdf

Policies

The following foundational energy policy and regulatory programs provide the opportunity for CHP in Minnesota:

- In 2007, Minnesota became a leader in energy efficiency by the passing of the Next Generation Energy Act, which required utilities to reduce energy consumption by 1.5% per year. The Act also established the Conservation Applied Research and Development Program, which awards research grants on energy efficiency technologies like CHP that might be used by utilities to meet their energy savings goals.
- The Conservation Improvement Program (CIP) ensures that utilities use ratepayer dollars effectively in achieving their 1.5% annual energy savings goal. The Conservation Improvement Program allows utilities to claim credit for CHP and other infrastructure investments that improve energy efficiency.

While these policies paved the way for CHP implementation across Minnesota, interest in CHP projects lagged. The CHP Action Plan clearly identified changes to Minnesota energy efficiency policies and regulations to encourage more CHP deployment.

St. Paul, MN's District Energy System designed for Combined Heat and Power.

Process

Program Design

To support the stakeholder process and subsequent Action Plan development, COM established a five-person project team. The project team was comprised of two nationally-recognized experts in CHP policy and financing barriers (both of whom also had expertise in facilitating technically-oriented stakeholder dialogues), a consultant with experience developing business models for CHP, and two engineers from the Department of Energy's CHP Technical Assistance Program. Two COM staffers designed the project and oversaw the project team.

COM sought to develop an Action Plan that represented input from all key stakeholders, and therefore designed a five-step stakeholder process to solicit input on the Action Plan priorities in an open and transparent manner.

Implementation

The five-step stakeholder process allowed for maximum stakeholder input in order to shape an effective Action Plan.

Step 1	Step 2	Step 3	Step 4	Step 5
Review of the CHP policy landscape in Minnesota	Conduct an initial survey	Host and facilitate stakeholder meetings	Conduct a follow-up survey	Develop an Action Plan

1. Review of the CHP policy landscape in Minnesota.

In order to better understand CHP deployment potential throughout Minnesota, COM reviewed findings from three research projects on CHP funded through COM's Conservation Applied Research and Development Program. The reports provided a current status of CHP policy in the state, an assessment of standby rates, and quantified the technical and economic potential of new, additional cost-effective CHP deployment.

2. Conduct an initial survey.

COM hired a consultant to develop pre- and post-engagement stakeholder surveys, targeting a group of CHP stakeholders that would contribute input to the Action Plan to assess changes in perceptions about CHP before and after the stakeholder meetings were completed. The surveys included overlapping questions in the following categories:

- CHP Knowledge and Experience
- CHP Policy
- CHP Resources and Technology
- CHP Market Potential
- CHP Finance

3. Host and facilitate stakeholder meetings.

Stakeholders represented utilities, advocacy groups, trade associations, think tanks, consulting firms, legal firms, government agencies, commercial/institutional/industrial users, and independent power producers. Using the pre-engagement survey results, the team convened stakeholders in four meetings over a three month period. The first two meetings focused on collecting a comprehensive set of background information on CHP barriers in Minnesota, and the second set of meetings focused on drafting the Action Plan. To remain a neutral observer and ensure honest feedback from stakeholders, COM relied on its consulting partner to lead the meetings and develop the agendas.[3]

The meeting attendees included those who completed the pre-engagement survey, as well as a select national audience in order to engage a wide-ranging group of CHP experts. In total, over 250 public and private sector stakeholders helped COM identify Minnesota's existing CHP policy barriers and develop realistic solutions.

[3] Meeting topics, discussion points, and participants are included in CHP Action Plan.

4. Conduct a follow-up survey.

After all meetings were completed, COM's consultant administered the post-engagement survey to the participating stakeholders. In additional to identifying perception changes, the post-engagement survey was designed to identify any new topics or ideas that emerged during the stakeholder meetings. These topics included:

- How to ensure that standby rates for CHP systems are applied reasonably, which required revising existing state regulatory efforts by the Minnesota Public Service Commission,
- Options to improve regulatory frameworks to avoid discouraging CHP deployment, and
- Ways to evaluate CHP market opportunities (e.g., improving access to information on existing or untapped markets).

5. Develop an Action Plan.

Survey results and stakeholder input shaped the Action Plan draft, which included near and longer-term actions for COM to support greater CHP deployment. Key recommendations focused on two core areas:

1. Increasing regulatory certainty in areas over which COM has authority
2. Clarifying the role of investor-owned utilities and cooperatives in supporting CHP (e.g. increased deployment of utility-owned CHP systems).

The draft Plan was posted to the COM website in order to solicit feedback. The team received and reviewed over 100 pages of comments from a number of CHP industry stakeholders and the public, and adjusted the Plan accordingly—clarifying language or action steps.

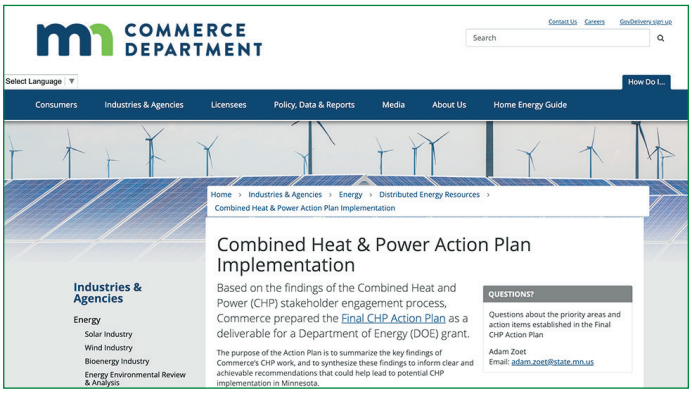
The final Action Plan defines a set of cross-cutting areas to advance CHP deployment in Minnesota. COM created a CHP Action Plan Implementation website to track progress toward Plan implementation and to serve as an entry point for additional stakeholder input or updates.

In 2019, COM updated the website to outline implementation progress in two areas: a public-private partnership to mitigate CHP standby rates and a separate effort by COM to help utilities claim Conservation Improvement Program credit for infrastructure investments, including CHP. COM will continue to update the website as progress continues.

Outreach

The state team used the following activities to engage stakeholders and the public throughout the CHP Action Plan development process:

- Holding four in-person stakeholder meetings, each averaging 60 participants.
- Administering two stakeholder surveys, reaching about 90 stakeholders.
- Uploading 38 resources to the state website (interim presentations and reports, one-pagers, surveys, and meeting summaries).
- Leading one webinar with key stakeholders to share results of the CHP Action Plan.
- Publishing the Action Plan online. The Plan will be updated over time as state agency efforts progress.
- Creating a state CHP webpage to track implementation progress and serve as a one stop shop for CHP policy and program updates, as well as a place to host state grant opportunities from COM.



Outcomes

Two action items identified by the Minnesota CHP Action Plan to encourage CHP deployment have been completed:

- **Enhanced use of CHP to meet energy goals.** Under new Conservation Improvement Program Policy Guidance issued in late 2018, utilities can claim energy savings from new supply-side energy savings projects (e.g., investments that reduce energy use during power distribution and transmission). Commerce staff are available to help utilities calculate credit for CHP investments that qualify as supply side projects.

- **More Equitable Standby Rates.** In March 2018, after months of negotiations with stakeholders, including utilities, CHP advocates, and state regulators, three Minnesota utilities agreed to restructure their standby tariffs to ensure more equitable treatment of energy saving projects, including CHP. The discussion on standby rates also led to one Minnesota utility issuing a succinct one-page tariff sheet to help clarify rules for stakeholders.

The Minnesota CHP Action Plan identified a total of six action items to encourage CHP deployment:

1. Establishing a CHP energy savings attribution under the Conservation Improvement Program,
2. Mapping CHP opportunities at wastewater treatment facilities and public facilities,
3. Expanding education and training resources on COM's website,
4. Leveraging existing financing programs applicable to CHP,
5. Examining electric utility infrastructure policy to identify how utilities might claim Conservation Improvement Plan credit for CHP projects as infrastructure investments, and
6. Continuing discussion on improving utility standby rates through Minnesota's Public Utilities Commission's generic proceeding.

*As COM continues to make progress on the action items, it will update the **CHP Action Plan Implementation** website to provide the most current recommendations, tools, and information for Minnesotans to learn more about CHP implementation.*

Minnesota's work to expand CHP throughout the state through the Action Plan and the successes stated above has led to an increase in CHP inquiries by utilities from just a few annually to over one dozen in 2017 alone. The Midwest CHP Technical Assistance Partnerships (TAP) have now completed 36 technical assistance requests to help possible host sites explore the viability of CHP systems. The CHP TAPs have conducted CHP feasibility screenings for 14 separate public and private sector entities representing 27 buildings, including a 22.8 MW system at the University of Minnesota.

In addition, the University of Minnesota installed a new CHP system. The University's Main Energy Plan, houses the new CHP system, which provides steam and electricity to the Minneapolis campus. The system reduces the University's dependence on the electric utility grid and has black start capability, so it can be started and operated even if the electric grid is down. The addition of this CHP system has improved the University's steam reliability and better positions it to meet the projected long term load growth. The Action Plan and stakeholder process helped industry, utility, and other stakeholders become more aware of CHP opportunities. The process also led to improvements in state energy efficiency goals and utility regulations, which, taken together are significant actions expected to increase commercial and industrial CHP deployment across Minnesota.

Tools and Resources

Minnesota CHP Action Plan

Final CHP Action Plan Webinar PowerPoint Slides

Final CHP Action Plan Webinar—NASEO 2019

Webinare Questions and Answers

Minnesota CHP Stakeholder Engagement Meetings

Minnesota Standby Rates Proceeding

Minnesota Conservation Improvement Programs (CIP)

Assessment of the Technical and Economic Potential for CHP in Minnesota, FVB Energy Inc. and ICF International, July 2014

Combined Heat and Power Technical Potential in the U.S., March 2016

Minnesota CHP Standby Rate Changes

For more information, visit:
energy.gov/eere/wipo

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