

Combined Heat and Power Stakeholder Meeting #3 (of 4)

Convened 10/15/2014

Meeting Summary Report Prepared For:
Minnesota Department of Commerce - Division of Energy Resources

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Background

In late 2013, as part of the Energy Savings Goal Study required by the state legislature, the Minnesota Department of Commerce (“Commerce”) conducted a series of stakeholder meetings on industrial energy efficiency and combined heat and power (CHP) – including two technical work group meetings focused specifically on CHP – and delivered a report on findings and recommendations to the legislature.

In 2014, Commerce funded two CHP research projects that are specific to Minnesota. One study evaluates CHP regulatory issues and policies and develops an up-to-date analysis of CHP technical and economic potential; another study examines the effects of existing standby rates and net metering rules on CHP and waste heat to power projects.

To continue to build on Commerce’s past and current CHP work, and to focus on more specific policy details and recommendations, Commerce was awarded a U.S. Department of Energy grant to carry out a strategic stakeholder engagement process and develop an Action Plan. As part of the project’s scope of work, Commerce is convening a series of stakeholder engagement meetings to provide information and facilitate discussion on CHP issues involving Minnesota’s regulatory framework, technical/economic potential, and education/training needs. These meetings are intended to achieve several primary objectives:

- Inform stakeholders of current efforts underway to increase CHP implementation
- Facilitate discussion regarding the opportunities and barriers to greater CHP deployment
- Solicit ideas for possible solutions to these barriers
- Provide information in the development of an Action Plan, which will act as a roadmap to facilitate greater implementation of CHP projects throughout the state

Meeting Overview

The third CHP Stakeholder Meeting: “Stakeholder Presentation: CHP Market Potential and Policy Options,” convened on Oct. 15, 2014, from 8:30 a.m. to 12:30 p.m., at the Wilder Center (451 Lexington Parkway N., St. Paul, Minnesota). The meeting was attended by 67 people. The primary goals of the meeting were to provide stakeholders from several organizations the opportunity to comment on issues related to CHP market potential and policy options, and to facilitate discussion among participants about the topics presented. The meeting was divided into two panel discussions, with moderated Q&A sessions providing opportunities for feedback and questions (*Appendix A*).

The meeting began with an introduction by Jessica Burdette of the Minnesota Department of Commerce, Division of Energy Resources, who welcomed attendees and

explained the format and objectives of the meeting. Next, Michael Burr of Microgrid Institute presented an overview of discussion topics and outcomes from CHP Stakeholder Meeting #2, which convened on Sept. 24, 2014. Then, Burr provided a summary of submissions received by the Department of Commerce during a CHP Stakeholder Comment Period, September 24 through October 10.¹ Burr's presentation summarized comments submitted on several topic areas: FVB proposed policy options, capital costs and utility investment prospects, economic potential and value proposition, standby rates, and training and education needs.

Burr then introduced the first panel discussion, "CHP Market Potential: Economics, outlook, and financing." Panelists included:

Marianne Bohren, Executive Director of the Western Lake Superior Sanitary District (WLSSD). Bohren's responsibilities include providing wastewater treatment and solid waste management for a 530 square-mile area in northeastern Minnesota. Previously she worked for 17 years in a variety of management positions for Potlatch Corp. Marianne holds a Bachelor of Science degree in Chemistry and a Master's degree in business administration from the University of Minnesota Duluth.

Tim Gallagher, Implementation Supervisor for Minnesota Power's Conservation Improvement Programs (CIP). Gallagher is responsible for the design and implementation of the utility's residential, commercial, and industrial energy conservation programs. Previously, he served as a residential and commercial customer representative with Superior Water Light & Power in Superior, Wisc. He holds a Bachelor of Arts degree in sustainable business practices as well as energy management and production degrees.

Larry Shedin, LLS Resources, and expert witness for the Minnesota Chamber of Commerce in Xcel Energy's general rate case in Minnesota, organizing the Standby Rate Reform Group (SRRG.) He now works with the SRRG to effect further changes in standby rates for both CHP and non CHP units. Shedin has taken an active role developing strategic energy plans, and advising industrial, utility, commercial and institutional clients as a technical consultant. His current emphases include wind and other alternative energy development along with negotiation of energy purchase and sales agreements.

Sara Letourneau, Director of Field for the BlueGreen Alliance. Letourneau has successfully led many field campaigns focused on clean energy and directed campaigns throughout the Midwest. Most recently she worked with the Clean Energy Jobs Campaign to pass legislation to set aside funds for energy efficiency. Previously, she had

¹ Submitted comments are examined in greater detail in "CHP Stakeholder Comments: Final Summary Report," Oct. 29, 2014, available via the Minnesota Department of Commerce website: <http://mn.gov/commerce/energy/topics/clean-energy/distributed-generation/2014-workshops/chp-meetings.jsp>

a long career as a health care organizer. Letourneau earned a Bachelor's degree in philosophy from the University of Minnesota and grew up in Buffalo, N.Y.

Each panelist presented brief opening remarks, summarized as follows:

- Bohren described the WLSSD, its plans to install CHP systems fueled in part by biogas produced by the wastewater treatment facility, and its interest in Minnesota policies that support such development. In supplementary comments, Bohren explained factors driving the public water utility's decision to invest in CHP, such as: existing anaerobic digesters onsite with surplus capacity; a steam boiler at the end of its lifespan; and electricity costs that represent a large and growing share of expenses. The proposed investment could serve between 30 and 70 percent of the site's electricity needs, with a 12-year investment payback and access to very low cost debt financing (1 percent).
- Gallagher expressed Minnesota Power's support for CHP development, tempered by caution about cost-benefit characteristics, system effects, and potential ratepayer risks posed by CHP projects. He noted the company's opposition to CHP mandates.
- Schedin related his career experience managing CHP project development, starting in Buffalo, N.Y. He explained how qualifying facility (QF) status under the Public Utility Regulatory Policies Act of 1978 (PURPA) enables CHP facilities to sell electric output to utilities for avoided-cost rates. He discussed including distributed generation (DG) in utilities' integrated resource planning (IRP) processes. And he expressed support for rate-base cost-recovery for utility investments in CHP facilities. In later comments he suggested that policy changes to facilitate CHP deployment should apply in utility territories of all types – investor owned, cooperative, and public/municipal – noting that many agricultural processing facilities with favorable load profiles are located in rural areas served by cooperatives and municipal utilities.
- Letourneau described the BlueGreen Alliance and its mission. She described a prospective revolving loan fund that could be used to finance clean energy investments, and provided an update on its status. She also related the support of the organization's partners for policy changes to clarify CHP's role and support development.

Following the panelists' opening presentations, Burr initiated and moderated an open discussion by facilitating questions and answers among meeting participants. (*See Q&A summary below.*) Then, after a break, Burr re-convened the meeting by introducing the second panel discussion, "CHP Policy Options – Pros, cons, and questions for consideration." Panelists included:

Nick Mark, Manager for Conservation and Renewable Energy Policy at CenterPoint Energy. Mark has regulatory responsibility for the company's Conservation Improvement Program. His activities include setting priorities for the program, ensuring

the program complies with state requirements, and leading the development and submission of program plans and status reports. Mark represents CenterPoint on policy matters related to conservation and renewable energy in Minnesota, and serves on the Board of Directors for the Midwest Energy Efficiency Alliance. He holds a Master's degree in public policy from the Humphrey Institute of Public Affairs at the University of Minnesota and a Bachelor of Arts degree from Carleton College.

Bill Black, Government Relations Director for the Minnesota Municipal Utilities Association, which provides education, training and government relations for the state's 125 municipal electric utilities and 32 municipal gas utilities. Among other state and federal initiatives, Black represents MMUA members' shared interests before the Minnesota PUC. He was involved in shaping Minnesota's Next Generation Energy Act in 2006 and 2007. He earned his Bachelor of Arts degree in journalism from the University of Minnesota and his Juris Doctor degree from William Mitchell College of Law.

Paul Lehman, Manager of Compliance for Xcel Energy. Lehman has worked in the utility industry for nearly 40 years, all for Xcel Energy. Over this time, he has worked in a variety of areas for the company including retail electric rate design, transmission regulation and planning, and currently regulatory compliance. He has worked with CHP facilities from a variety of perspectives.

Ken Smith, president and CEO of District Energy St. Paul and its affiliate Ever-Green Energy. Smith previously served as executive vice president and COO of both companies. A recognized leader in community and campus scale energy systems, Smith is engaged in a variety of forums addressing America's energy future. He is a frequent speaker at national and international conferences and regularly briefs local, state, and federal policy makers and regulators. He serves as chair of the International District Energy Association board of directors. He holds a Bachelor's degree in electrical engineering from North Dakota State University and a Master's degree in business administration from the University of St. Thomas in Minneapolis.

Sheldon Strom, President of the Center for Energy and Environment whose programs have served more than 75,000 homes and businesses with energy efficiency programs, provided more than \$200 million in financing, and completed over 100 research projects. Strom has been actively involved in development of energy legislation and utility policies and has a keen grasp of state regulatory procedures. Mr. Strom has a Masters of architecture degree from the University of Wisconsin and a Bachelor's degree in mechanical engineering from the University of Minnesota.

Each panelist presented brief opening remarks, summarized as follows:

- Mark expressed CenterPoint Energy's support for policies to facilitate CHP deployment, and a belief that complexities and uncertainties can be resolved in effective ways. However, he also expressed the company's opposition to

- mandates for CHP deployment, and concern about providing operating incentives for CHP through the state's CIP program. He reasoned that CIP was designed to support investment not operations, and up-front capital as opposed to operating support is identified as a primary need for CHP projects. He also stated that FVB's proposed incentive levels exceed the company's delivery charges for large customers and are therefore too high.
- Black noted the need to evaluate CHP projects in terms of energy resources that they would replace. He expressed concern about load loss by small (municipal and cooperative) utilities as a result of customers installing onsite generation facilities. He noted MMUA's opposition to CHP mandates including adding CHP provisions in Minnesota CIP policies, and expressed support for a proceeding to update and improve the state's standby rate policies. In subsequent remarks, Black asserted that franchised utilities are solely authorized to sell electricity in Minnesota irrespective of the purported exemption for serving less than 25 customers.
 - Lehman noted Xcel Energy's support for CHP projects that deliver value to customers and also the utility system as a whole. He also stated that the company's standby rates are designed to ensure customers with onsite generation have access to standby services and that they pay for the costs the utility incurs as a result. In subsequent remarks, Lehman noted FERC and Minnesota precedent restricting non-utility sales of electricity across public rights of way only.
 - Smith expressed concern about providing CHP provisions in Minnesota CIP policies, suggesting that an alternative portfolio standard (APS) would be more appropriate. He observed that policies in Canada might provide effective models for supporting CHP deployment. He suggested that development would benefit from efforts to study and report detailed information about CHP potential in the state. He also expressed support for planning and development of integrated district energy networks including CHP systems.
 - Strom observed that CHP's efficiency benefits might be less clear today than they were when projects displaced inefficient coal-fired generation. He expressed opposition to including CHP in CIP, observing that past attempts to expand CIP to include investments in measures other than demand-side efficiency have failed. He noted that utility support for CHP is instrumental to its development. He suggested IRP processes could be effective venues for considering how to incorporate CHP, and that CHP could be incentivized along with other energy supply efficiency efforts as part of programs supporting efficiency improvements in electric utility infrastructure.

Following the panelists' opening presentations, Burr moderated an open discussion among meeting participants. (*See Q&A summary below.*)

Moderated Q&A and Discussion Summary

Participants in CHP Stakeholder Meeting #3 raised a variety of questions for all nine panelists, and they also offered comments and engaged in open discussion on several topics, focusing on CHP market potential, utility investment in CHP, and considerations for facilitating CHP deployment through Minnesota's energy policies.

(Note: The paraphrased questions and answers summarized below are drawn from remarks and discussion among numerous participants at the meeting, and therefore they do not represent direct quotes from participants or official guidance from the Minnesota Department of Commerce.)

Q: Discuss the merit of a revolving loan fund as discussed by panelist Letourneau.

A: The concept sounds good and could work if structured properly, but some experience suggests that customers who can't otherwise arrange financing present substantial credit risks, and in any case they often prefer rebates or other forms of direct capital support rather than low-cost debt financing. Nevertheless the idea has merit and could provide a useful supplement to other forms of financing, including grants.

Q: What criteria and methodologies are needed for evaluating CHP projects?

A: Criteria factors and evaluation approaches are described in multiple public sources.

Some noted criteria factors include:

- project economics and system economics
- risks to all parties including ratepayers
- use of renewable resources
- environmental impact including net CO₂ emissions and reductions
- fuel sustainability and deliverability
- thermal load factor, stability, and diversity
- operating efficiency, availability, and reliability
- transmission and distribution investment deferrals
- replicability

Project evaluation criteria in the current CIP program apply only to demand-side projects and therefore would require amendment to serve CHP project evaluation. However, some general metrics from CIP may be useful, including CIP's established incentive pricing, equating to approximately \$1 per MMBtu of fossil fuel saved.

Multiple stakeholders added that CHP projects are unique, and while standardized criteria are helpful and perhaps necessary, they do not replace detailed feasibility analysis. Moreover, the unique nature of CHP projects means they can pose some unfamiliar risks, despite initially favorable evaluation using standard methodologies. For example, despite a strong economic case for a CHP project, a host organization might withdraw internal support in favor of other projects and investment options.

Q: CIP historically hasn't provided operational support for projects, but only capital-cost incentives. What's the reasoning behind the FVB Energy proposed CIP operational incentives for CHP?

A: This approach would help to apportion incentives evenly over time, rather than in large lump sums that could disrupt CIP program budgets. Additionally, it would provide incentives for projects to continue meeting performance objectives over a long-term period, as opposed to construction incentives for projects that might or might not produce long-term benefits. The fact the CIP program hasn't provided operating incentives shouldn't necessarily prevent consideration for such an approach in the future.

Q: How might CHP projects be used as part of efforts to reduce greenhouse gas emissions, including meeting new U.S. EPA requirements under Section 111(d) of the Clean Air Act, and what does that mean for Minnesota policies facilitating CHP deployment?

A: In addition to including environmental benefits among evaluation criteria, Minnesota policies could provide methodologies to account for emissions reductions achieved by capturing waste heat and thereby reducing fossil fuel consumption. To the degree such methodologies are consistent with state and federal laws, they could in principle be included among efforts to meet regulatory compliance obligations. Such treatment could serve both environmental goals and economic goals by helping to monetize the value of CHP projects' environmental attributes.

Q: With regard to utility rate-base ownership of CHP plants, could some ratepayer risks be avoided by designing modular facilities capable of being relocated in the event of the host site discontinuing thermal load?

A: Such an approach could reduce risks at some small CHP installations, but would be impractical for larger-scale facilities of the type that represent the majority of CHP capacity potential.

Q: Utilities have established expertise in cost-effectively owning and operating large-scale power plants. How would operating CHP facilities at customer sites affect utility costs?

A: Depending on how projects are treated, operating costs could be billed directly to host customers, or they could be included in the utility rate base along with costs for operating other utility generation plants. Alternatively, third parties could provide operations and maintenance services with costs borne either directly by host customers, or by the utility as part of an operating contract arrangement.

Q: What are appropriate roles for third parties in CHP development, ownership, and operation in Minnesota?

A: Already third parties are working with host customers to evaluate and promote CHP project opportunities, and third parties can own and operate onsite generation under

various arrangements. Some utilities express opposition to third-party sales of electricity, especially to the degree it could reduce customer loads necessary to support cost recovery. Additionally, the involvement of a third party in a project can introduce an additional set of interests and thereby complicate project evaluation.

Q: Are CHP projects becoming more common at water and wastewater treatment facilities, like the one described by WLSSD? Through what venues do water facility executives exchange information about such opportunities?

A: Yes, such projects are becoming more common at water and wastewater facilities, as well as solid waste management facilities. One of the most active organizations in this area is the National Council for Air and Stream Improvements.

Q: Could new CHP projects create jobs in the state of Minnesota, and if so has that potential been studied and quantified?

A: Such potential wasn't thoroughly studied in the recent CHP reports prepared by FVB Energy. Anecdotes suggest that policies favorable to CHP can help to support commercial, institutional, and industrial development and thereby create jobs directly and indirectly; for example, CHP capacity at a coal-fired power facility in North Dakota is attributed with attracting multiple large industrial employers. CHP's clean energy and resilience benefits can serve local communities' infrastructure modernization and economic development objectives. Finally, several CHP-related equipment manufacturers and other companies provide employment opportunities in Minnesota.

Conclusion: Areas for Further Discussion

Discussion among participants during CHP Stakeholder Meeting #3 yielded several key issues for future consideration and clarification. These issues are expected to be discussed further during Meeting #4 in the Minnesota CHP Stakeholder Engagement, scheduled for Nov. 5, 2014, at the Wilder Center in St. Paul. Focus topics include:

1. **CHP Evaluation Criteria:** Considerations and approaches for fair, accurate, and comprehensive assessment and valuation of CHP attributes.
2. **Mapping CHP Opportunities:** Empirical study and granular analysis of opportunities for topping-cycle and bottoming-cycle CHP projects.
3. **CHP Ownership Problems and Solutions:** Issues and options involving utility resource planning, ratepayer risks, market power, and behind-the-meter operations.
4. **Adapting CIP for Supply-Side Investments:** Establishing and clarifying CHP provisions in Minnesota's Conservation Improvement Program (CIP).
5. **Education and Training Needs and Options:** Prioritizing knowledge gaps and defining options for CHP education and training.

Summary reports and other materials related to the CHP Stakeholder Engagement process are publicly accessible [at the DER website](#).

Appendix A:

Agenda

Minnesota CHP Stakeholder Meeting #3 (10/15/2014)

- I. 8:15 – 8:30 Registration
- II. 8:30 – 9:00 Introduction (Minnesota Department of Commerce)
- III. 9:00 – 9:30 CHP Stakeholder Comments Summary Report (Microgrid Institute)

Panel #1: CHP Market Potential – Economics, outlook, and financing

Minnesota Power

Western Lake Superior Sanitary District

BlueGreen Alliance

LLS Resources

- IV. 9:30 – 10:00 Panel #1: Opening Remarks
- V. 10:00 – 10:45 Panel #1: Moderated Panel Discussion and Q&A
- VI. 10:45– 11:00 Break

Panel #2: CHP Policy Options – Pros, cons, and questions for consideration

Xcel Energy

Minnesota Municipal Utilities Association

Center for Energy and Environment

CenterPoint Energy

Ever-Green Energy

- VII. 11:00 – 11:30 Panel #2: Opening Remarks
- VIII. 11:30 – 12:15 Panel #2: Moderated Panel Discussion and Q&A
- IX. 12:15 – 12:30 Next Steps (Microgrid Institute)