NASEO Case Study Presentation
Minnesota’s Combined Heat and Power Action Plan

Adam Zoet, Energy Policy Planner
May 20, 2016
Agenda

1. Minnesota Background
2. Review of Minnesota’s CHP Stakeholder Engagement Process
3. CHP Action Plan Priority Areas and Action Items
   I. CHP Evaluation Methodology and Criteria
   II. Mapping CHP Opportunities
   III. Education and Training Opportunities
   IV. CHP Ownership Problems and Solutions
   V. CIP CHP Supply-Side Investments
   VI. Standby rates
4. Next Steps/Ongoing CHP Work
Minnesota Policy Background

• Energy Saving Goals: 1.5% of gross annual retail sales starting in 2010 for all electric and natural gas utilities.

• Renewable Energy Goals: 25% of electric utilities’ total retail sales in the state be met from renewable energy resources by 2025.

• Greenhouse Gas Emission Goals: 15% reduction by 2015, 30% by 2025, and 80% by 2050.
CHP in Minnesota

What is CHP?

Simultaneous production of electricity and useful thermal energy from a single fuel source.

- Integrated energy system, adaptable to suit the needs of energy end users.

- Thermal output typically used for heating, cooling, and industrial processes.

- Capable of using a variety of fuels, including natural gas, waste, biogas, petroleum, coal, etc.
CHP Baseline in Minnesota

CHP already is important to Minnesota

Minneapolis’s current installed CHP is slightly above the national average, slightly below some other states in Great Lakes region.

Minnesota CHP capacity

• 961.5 MW of operating CHP (6% of total)
• 52 sites
• 83% in large systems (>20 MW)
  -Biggest sites: chemicals and paper processing
CHP Value Proposition

CHP saves energy, emissions, and money

Combining electricity and thermal energy generation into a single process can save up to 35 percent of the energy required to perform these tasks separately.

New CHP potential today
• 3,195 MW of new technical potential
• 984 MW with payback <10 years
Minnesota’s CHP Milestones

Legislature enacts *H.F. 729* (5/13), Calls for Energy Savings Goal (ESG) Study

**Commerce Stakeholder Meetings** (late 2013)
Industrial energy efficiency and CHP discussed

**Commerce ESG Study Report** (4/14)
Recommendations for continued CHP evaluation

**Minn. CHP Research Studies:**
Energy Resource Center analysis of standby rates and net metering policy effects on CHP (4/14); FVB Energy analysis of policy and CHP potential (8/14)

**U.S. DOE CHP Grant** (2014-’15)

- Series of public meetings
- Public comment period
- Pre- and post-engagement surveys
- Process report and recommendations
- Facilitate CHP Action Plan stakeholder webinars and comment period

**Minnesota CHP Action Plan**
- Draft CHP Action Plan (3/15)
- Webinar #1 (4/28/15)
- Public comment period (3/31 – 5/15)
- Final CHP Action Plan (10/07)
- Webinar #2
Minnesota CHP Stakeholder Process

Provide information

Facilitate dialogue

Gather input

Synthesize results

CHP ACTION PLAN
Summary of CHP Stakeholder Process

- 8/04 - 8/15: Pre-Engagement Survey
- 9/03/14: CHP Meeting #1 - CHP Baseline, Value Proposition, and Path Forward
- 9/24/14: CHP Meeting #2 - CHP U.S. Policy Context and Standby Rates
- 9/24-10/10: Comment Period #1
- 10/15/14: CHP Meeting #3 - Stakeholder Panels: CHP Economic Potential and Policy Options
- 11/05/14: CHP Meeting #4 - Discussion and Synthesis of Major Themes

- 12/09/14 - 1/02/15: Post-Engagement Survey
- March 2015: Draft CHP Action Plan
- April 2015: Comment Period #2 and Webinar #1
- October 2015: Final CHP Action Plan
- October 2015: Webinar #2
- October - December 2015: Continued Stakeholder Engagement
Stakeholder Process and Outcomes

The CHP Stakeholder Engagement Process reached a diverse group of about 250 stakeholders. The process yielded the following events, reports, and other outcomes:

- 4 in-person stakeholder meetings with 70 participants each.
- 2 stakeholder surveys with 91 valid completed responses
- 2 public comment periods with 25 written submissions
- 38 reports and presentations produced and disseminated
- 2 webinars to share project results
- Creation of a dedicated CHP stakeholder engagement website
# CHP Action Plan:
## Priority Areas and Action Items

<table>
<thead>
<tr>
<th>Priority Areas</th>
<th>Action Items</th>
<th>Timing</th>
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</thead>
<tbody>
<tr>
<td><strong>II</strong> Mapping CHP Opportunities</td>
<td>Map CHP Opportunities at Wastewater Treatment Facilities and Public Facilities</td>
<td>Intermediate Term (2016-2017)</td>
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<tr>
<td><strong>III</strong> Education and Training Opportunities</td>
<td>Expand Education and Training Resources on Commerce's Website</td>
<td>Near Term (2015-2016)</td>
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<td><strong>IV</strong> CHP Ownership Problems and Solutions</td>
<td>Leverage Existing Financing Programs Applicable to CHP</td>
<td>Near Term (2015-2016)</td>
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<td><strong>V</strong> CIP CHP Supply Side Investments</td>
<td>Examine Electric Utility Infrastructure Policy</td>
<td>Long Term (2015 Onward)</td>
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<td><strong>VI</strong> Standby Rates</td>
<td>Continue Discussion through PUC’s Generic Proceeding</td>
<td>Long Term (2015 Onward)</td>
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CHP Action Plan Priority I:
CHP Evaluation Methodology and Criteria
CHP Action Plan Priority I: CHP Evaluation Methodology and Criteria

*Priority Issue:* Inconsistent and conflicting ways of establishing benefits and costs of CHP facilities, stifling and delaying development.

*Stakeholder Process Outcomes:* Identified need and examined options for uniform approach and criteria for evaluating CHP projects.

- Standardized methodology should help utilities and developers focus development resources on most favorable projects.
- Approach should objectively address a comprehensive set of attributes and values.
- Transparent and easily understood evaluations will facilitate ongoing support and development.
Final CHP Action Plan Resolution:


CHP Action Plan Priority II: Mapping CHP Opportunities
CHP Action Plan Priority II: Mapping CHP Opportunities

Priority Area: CHP potential is not well understood, resulting in unexploited potential and avoidable emissions.

Stakeholder Process Outcomes: Identified need for clarity about CHP development opportunities and potential project mapping initiative:

- Identify potential CHP sites
- Focus efforts on high-value projects
- Consider resilience, economic development benefits
Final CHP Action Plan Resolution:

Objective: Map CHP opportunities at wastewater treatment and public facilities to identify most viable project opportunities for potential implementation.*

Timing and Plan:
- Public Facilities: TBD based on project funding procurement.

*Funding awarded: DOE 2015 State Energy Program grant focusing on energy efficiency and biogas at municipal wastewater facilities
CHP Action Plan Priority III: Education and Training Needs and Options
CHP Action Plan Priority III: Education and Training Needs and Options

Priority Issue: Lack of knowledge and competencies related to CHP regulation, financing, design, and operation hinder development.

Stakeholder Process Outcomes: Identified gaps in knowledge and competencies affecting CHP project development and operation, and potential options for resolving these gaps:

- Lack of knowledge and expertise in key customer sectors.
- Resource limitations prevent project hosts from studying projects and supporting development.
CHP Action Plan Priority III: Education and Training Needs and Options

Final CHP Action Plan Resolution:

Objective: Continue disseminating information about CHP opportunities, primarily through updates to the Department’s CHP Stakeholder Engagement Webpage.


Plan:
- Post online resources developed through Action Items I and II.
- Post references and guidance re: financing programs and other existing online resources.
CHP Action Plan Priority IV: CHP Ownership Problems and Solutions
**Priority Issue:** Cost-effective CHP can have higher capital costs than conventional technologies, creating barriers to commercial financing.

**Stakeholder Process Outcomes:** Identified and examined challenges and options for ensuring access to cost-effective financing for economical CHP deployment:

- Many existing energy savings programs and incentives omit CHP.
- Simple payback proposition may not support commercial financing.
- State regulation does not clearly support utility ownership of CHP on customer sites.
Final CHP Action Plan Resolution:

Objective: Explore, communicate, and improve awareness of financing programs that could be better leveraged to meet the individual needs of customers for CHP projects.


Plan: Explore ways to improve financing program offerings that could be utilized for CHP projects, such as those summarized (see following slide).
## CHP Action Plan Priority IV: CHP Ownership Problems and Solutions

<table>
<thead>
<tr>
<th>Eligibility (recipient)</th>
<th>Guaranteed Energy Savings Program</th>
<th>Local Energy Efficiency Program</th>
<th>Energy Savings Partnership</th>
<th>Trillion Btu Program</th>
<th>Commercial - Property Assessed Clean Energy Program</th>
<th>Rev It Up Program</th>
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<tbody>
<tr>
<td>State Agencies, Higher Ed, Local Governmental Units, K-12</td>
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<td>Commercial and Industrial Businesses, 501 (c)(3) organizations</td>
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<td>Local Governmental Units, Commercial and Industrial Businesses, Small Businesses, Health Care Facilities, MHFA</td>
<td></td>
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<thead>
<tr>
<th>Type</th>
<th>State Administered Energy Savings Performance Contracting Program</th>
<th>State Assisted Energy Study using Design-Bid-Build for implementation</th>
<th>Municipal Leasing Program (tax – exempt)</th>
<th>Revolving Loan Fund Special Assessment (against property)</th>
<th>Revenue Bonds (tax-exempt or taxable; project dependent)</th>
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<tr>
<th>Project Size</th>
<th>Min. $300k</th>
<th>Typically between $50k and $350k</th>
<th>Min. $50k</th>
<th>Min. 10k</th>
<th>Max. 20% of Assessed Property Value</th>
<th>Min. $1M</th>
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<tbody>
<tr>
<td>Max. none</td>
<td>Up to 25</td>
<td>Up to 15</td>
<td>Up to 15</td>
<td>Up to 5</td>
<td>Max. $1M</td>
<td>Max. $20M</td>
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<th>Term (years)</th>
<th>Up to 25</th>
<th>Up to 15</th>
<th>Up to 15</th>
<th>Up to 5</th>
<th>Up to 20</th>
<th>Up to 25</th>
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<tr>
<th>Interest Rate</th>
<th>Dependent upon financing instrument (eligible for lease purchase financing)</th>
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<th>Dependent upon issuance (~2.5 – 4%)</th>
<th>4.5 – 6%</th>
<th>4 - 6%</th>
<th>Dependent on project security</th>
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<tr>
<th>Administrator</th>
<th>Minnesota Department of Commerce</th>
<th>Minnesota Department of Commerce</th>
<th>St. Paul Port Authority</th>
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<tbody>
<tr>
<td>Peter Berger</td>
<td>Alex Cecchini 651-539-1850</td>
<td>Peter Klein 651-204-6211</td>
<td>Peter Klein 651-204-6211</td>
<td>Peter Klein 651-204-6211</td>
<td>Peter Klein 651-204-6211</td>
<td>Eric Rehm 651-539-1853</td>
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CHP Action Plan Priority V: CHP Supply-Side Investments
CHP Action Plan Priority V: CHP Supply-Side Investments

**Priority Issue:** Existing Minnesota utility energy efficiency programs exclude incentives for certain types of CHP projects.

**Stakeholder Process Outcomes:** Examined potential incentives and programs to support CHP development in Minnesota.

- Renewable portfolio standard (RPS) omits non-renewable CHP.
- Alternative portfolio standard (APS) would require legislation to create an all-new program.
- Integrated resource planning process not well suited to CHP projects.
- Existing demand-side incentives omit most generation projects.
CHP Action Plan Priority V: CHP Supply-Side Investments

Final CHP Action Plan Resolution:

Objective: Explore and clarify whether and how CHP could qualify as an eligible supply-side resource as defined under electric utility infrastructure improvement statutory language.

Timing: Long term (2015 Onward)

Note: Near-term exploration can help inform utility CIP plan filings, with long-term changes through utility CIP plan modification process.
CHP Action Plan Priority V: CHP Supply-Side Investments

**Action Steps:**
- Commerce issued RFP and selected consultant (GDS Associates) to develop a set of prescriptive electric utility infrastructure efficiency measures that could be included in Minnesota’s Technical Reference Manual.

- This project will act as a starting point to also explore policy questions regarding whether and how CHP could qualify as an eligible electric utility infrastructure resource.
CHP Action Plan Priority VI: Standby Rates
CHP Action Plan Priority VI: Standby Rates

**Priority Issue:** Utility standby service policies and rates can hinder CHP deployment if they are unfair or unreasonable.

**Stakeholder Process Outcomes:** Identified the need to ensure fair and effective standby rate policies and practices:

- Standby charges should reflect actual costs, and provide flexibility.
- Structures should be transparent, simple, and allow accurate forecasting of costs.
- Delivery charges should account for ancillary benefits.

related note: Standby Rates Docket
Visit mn.gov/puc to view MN PUC Dkt. E999/CI-15-115
# Next Steps/Ongoing Work

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- Ongoing Communications as CHP Action Plan is implemented.

- Updates to be posted at [Commerce’s CHP Stakeholder Engagement Webpage](#).

- Contact [Adam Zoet (Commerce)](#) with any questions about the priority areas and action items established in the Action Plan.
Thank You!

Please contact Adam Zoet (adam.zoet@state.mn.us) with any questions about the priority areas and action items established in the Final CHP Action Plan.

View the Full CHP Action Plan Report