Final Minnesota CHP Action Plan

Conserving resources with cost-effective combined heat and power

Minnesota CHP Action Plan Webinar #2
Presenting the Final Action Plan
Oct. 27, 2015

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Disclaimer:

I. Introducing:
Today's Presenters

MINNESOTA DEPARTMENT OF COMMERCE

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Microgrid Institute

Minnesota Department of Commerce's Final CHP Action Plan

- **Unabridged version of Final CHP Action Plan**
  http://mn.gov/commerce-stat/pdfs/CHP%20pdfs/final-unabridged-chp-action-plan-2015.pdf
- **Abridged version of Final CHP Action Plan**
  http://mn.gov/commerce-stat/pdfs/CHP%20pdfs/abridged-final-chp-action-plan-2015.pdf

MINNESOTA DEPARTMENT OF COMMERCE

Agenda

Introductions + Review of CHP Stakeholder Engagement Process

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

Next Steps

Online Resources

Q&A: During the live webinar, please submit general and process-related questions via the GotoWebinar "Questions" feature.

Commerce will review questions submitted during the webinar and send a written response to stakeholders via email.

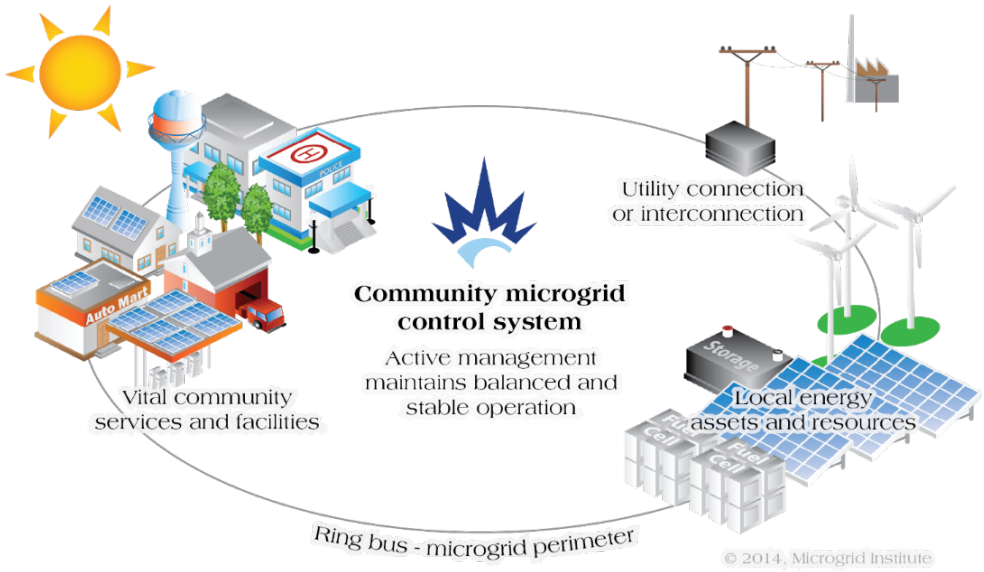
Introducing:

Microgrid Institute

Microgrid Institute is a collaborative organization that focuses on key factors affecting microgrids and distributed energy.

Our efforts address markets, regulation, financing, and project development.

- Multidisciplinary collaboration with industry leaders
- Independent, objective thought leadership
- Studies, workshops, media, and development support



Microgrid Institute

Charting pathways for sustainable resilience.

Introducing:

Microgrid Institute

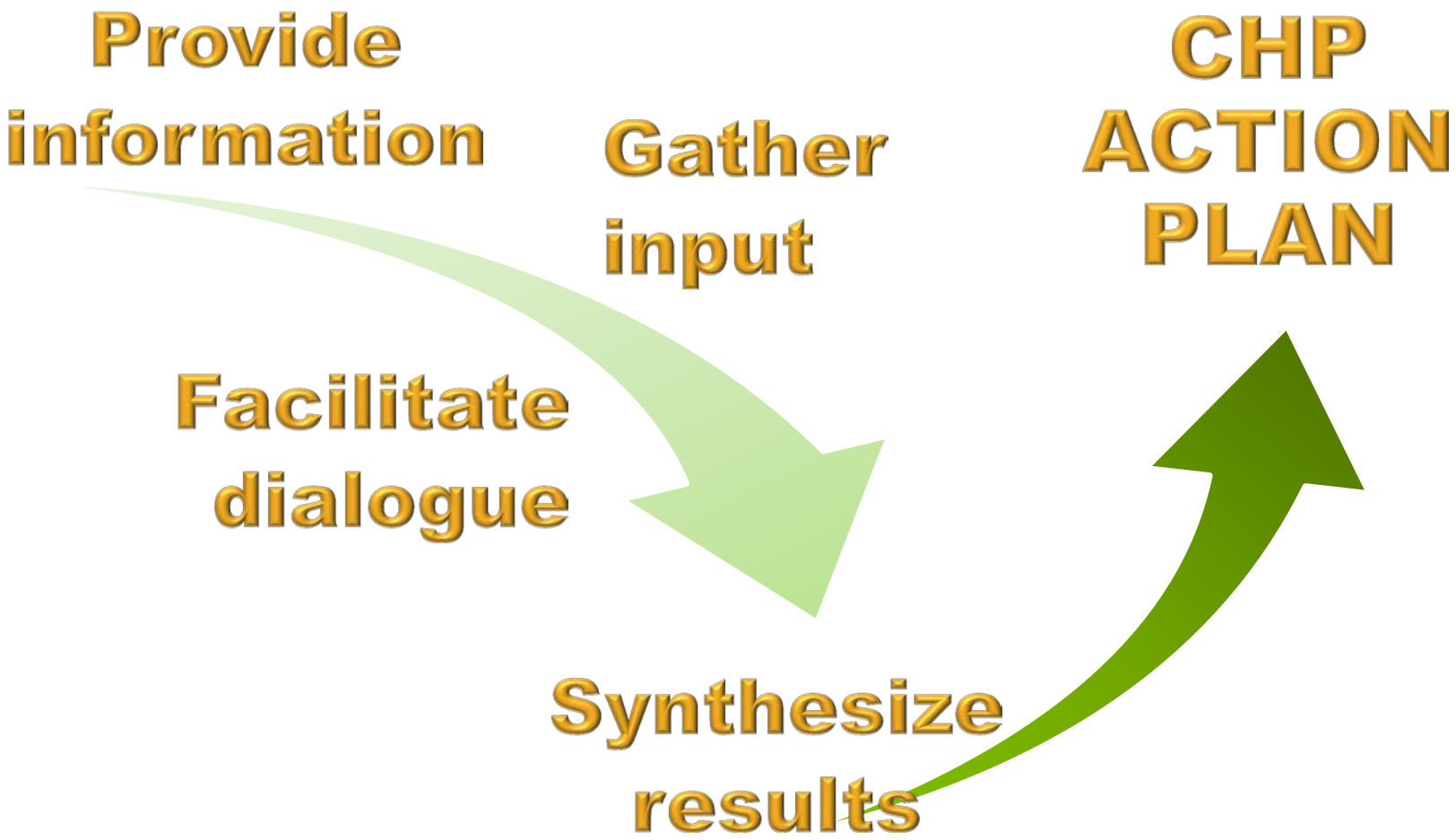
Current and recent engagements

- Minnesota CHP Stakeholder Engagement facilitator
- NY Prize – New Paltz and Warwick Microgrid Projects
- D.C. Department of Energy and Environment Microgrid Assessment
- U.S. DOE Olney (Md.) Town Center Microgrid R&D Project
- Maryland Resiliency through Microgrids Task Force
- New York PSC *Reforming the Energy Vision* project, Microgrid Subgroup
- Minnesota Department of Commerce, Division of Energy Resources *Minnesota Microgrids* study, primary author and contractor

Microgrid Institute

Charting pathways for sustainable resilience.

Review of Minnesota CHP Stakeholder Engagement Process



CHP in Minnesota

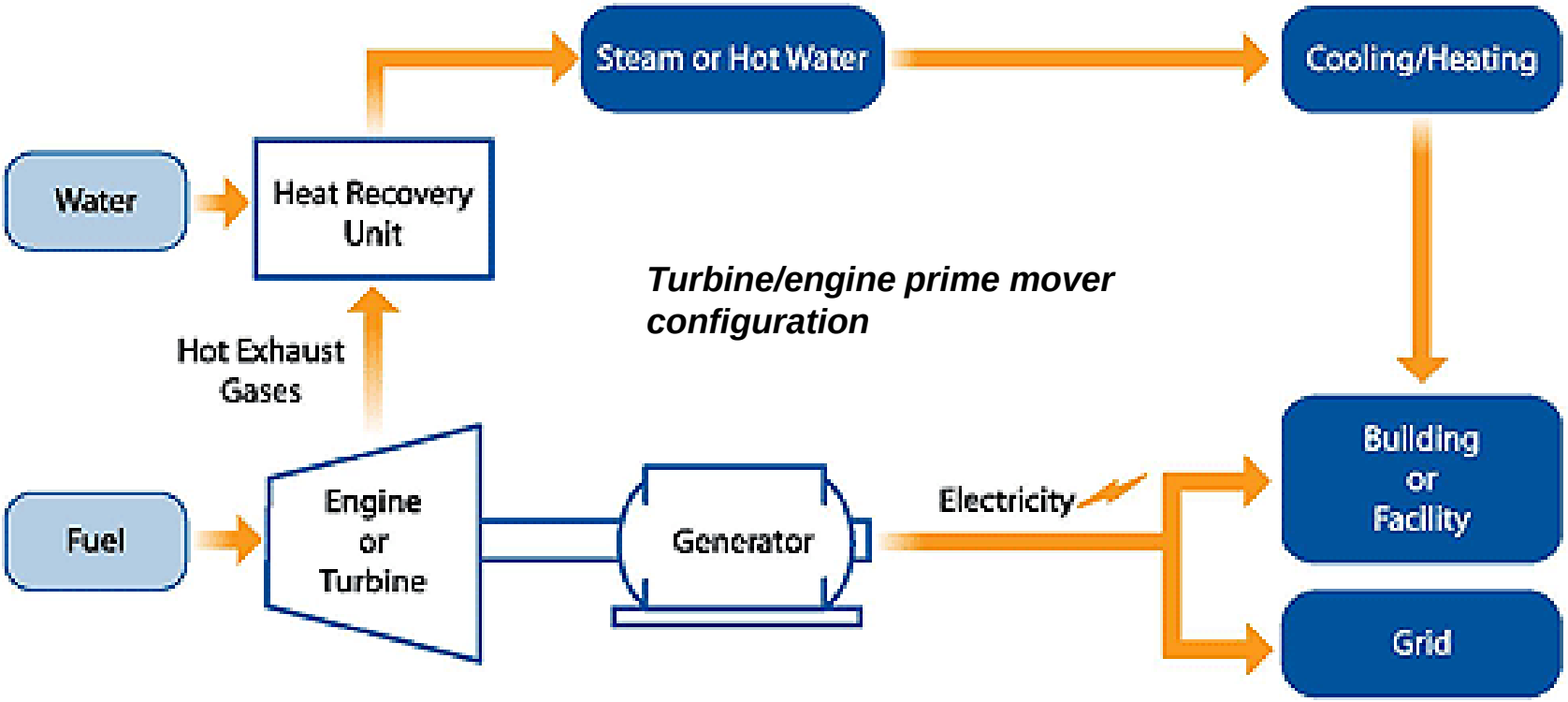
What is CHP?

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.

Top: Bristol Myers Squibb CHP system *(NREL)*; *Left:* District Energy St. Paul; *Bottom:* *B*iomass CHP plant *(Urbas)*

Typical CHP system



Source: U.S. EPA Combined Heat and Power Partnership

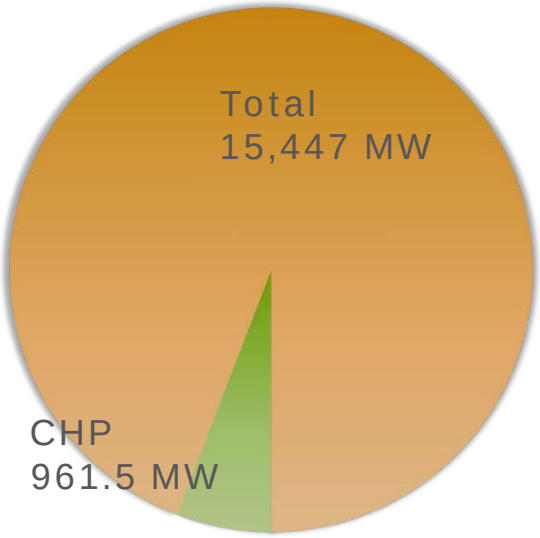
CHP Baseline

CHP already is important to Minnesota

Minnesota'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



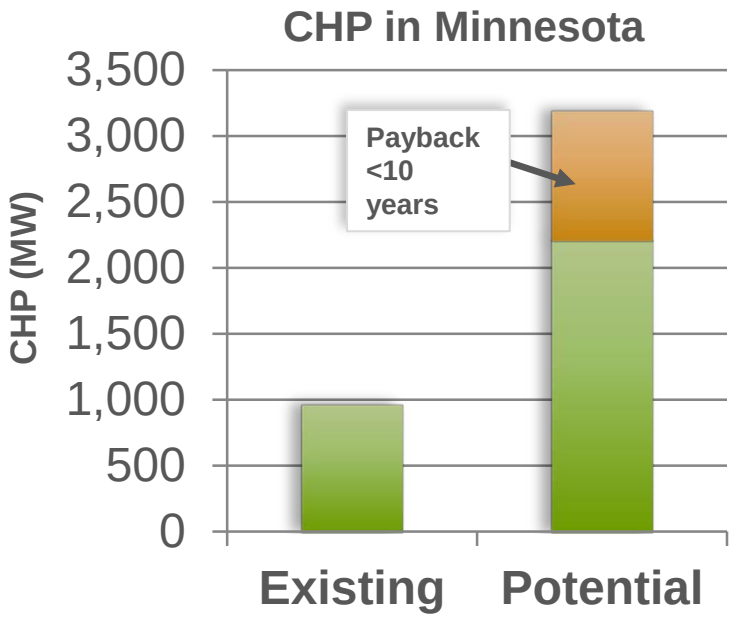
CHP Value Proposition

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 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

CARD* Minn. CHP 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)

Minnesota CHP Stakeholder Engagement Process (Aug. 2014 – Oct. 2015)

- 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 (*today!*)

**Conservation Applied Research and Development*

Stakeholder Comments and Final CHP Action Plan

Draft CHP Action Plan Comment Period:
March 31 through May 15, 2015

Comment Period Feedback:
Commerce received 12 written comment submissions.

Final CHP Action Plan:
October 7, 2015

- **Unabridged version of Final CHP Action Plan**
  http://mn.gov/commerce-stat/pdfs/CHP%20pdfs/final-unabridged-chp-action-plan-2015.pdf
- **Abridged version of Final CHP Action Plan**
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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.

Priority Areas and Action Items

CHP Action Plan Priorities

	Priority Areas	Action Items	Timing
I	CHP Evaluation Methodology and Criteria	Establish CHP Energy Savings Attribution Model and Project Evaluation Criteria	Near Term (2015-2016)
II	Mapping CHP Opportunities	Map CHP Opportunities at Wastewater Treatment Facilities and Public Facilities	Intermediate Term (2016-2017)
III	Education and Training Opportunities	Expand Education and Training Resources on Commerce's Website	Near Term (2015-2016)
IV	CHP Ownership Problems and Solutions	Leverage Existing Financing Programs Applicable to CHP	Near Term (2015-2016)
V	CIP CHP Supply Side Investments	Examine Electric Utility Infrastructure Policy	Long Term (2015 Onward)
VI	Standby Rates	Continue Discussion through PUC's Generic Proceeding	Long Term (2015 Onward)

Statutory Authorization and Statement of Purpose

***Statutory Authorization*:** "…[C]ost-effective energy savings should be procured systematically and aggressively in order to reduce utility costs, improve competitiveness, create jobs, reduce fuel imports, and reduce pollution…"
~MN Statute 2016B.2401, Energy Savings Policy Goal

Statement of Purpose: "The purpose of the Action Plan is to summarize the key findings of Commerce's CHP work, and to synthesize these findings to inform clear and achievable recommendations that could help lead to potential CHP implementation in Minnesota."
~Unabridged Final CHP Action Plan, p.4

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

CHP Action Plan Priority I:
CHP Evaluation Methodology and Criteria

Recommendations based on Draft CHP Action Plan Comments:

- Establish TRMAC* subcommittees to consider supply-side efficiency technologies.

- Review additional CHP model approaches, including from additional other states, and provide info to TRMAC subcommittees.

- Evaluation criteria should result from a careful process of discussion and consensus.

- **Technical Reference Manual Advisory Committee*

CHP Action Plan Priority I:
CHP Evaluation Methodology and Criteria

Final CHP Action Plan:

- Objective: Establish Energy Savings Attribution Model and Project Evaluation Criteria

- Timing: Near term (2015-2016)

- Plan: Establish CHP attribution model and evaluation criteria in collaboration with two CHP subcommittees established by TRM Advisory Committee.

CHP Action Plan Priority I:
CHP Evaluation Methodology and Criteria

Planned Action Steps:

- #1: Scoping: Work with TRMAC to finalize work plan and phases
- #2: CHP Subcommittee Meetings: Convene a series of subcommittee meetings to discuss and define attribution model, evaluation criteria.
- #3: Drafting: Propose and finalize CHP attribution model and evaluation criteria.
- #4: Rulemaking: Formalize CHP attribution model and project evaluation criteria through Commissioner's Order.

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

CHP Action Plan Priority II:
Mapping CHP Opportunities

Draft CHP Action Plan Comments:

- Use CHP opportunity mapping to raise awareness among facility owners about CHP options.
- Costs for CHP mapping should not be borne by utility customers.
- Mapping efforts should prioritize high-potential facility types; holistic assessment of benefits and values; prioritize conservation.
- Draft Action Plan based on overly optimistic assessments.

CHP Action Plan Priority II:
Mapping CHP Opportunities

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:
- Wastewater Treatment Facilities: Immediate term (2016-2017)
- 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 II:
Mapping CHP Opportunities

Plan – CHP Potential at Wastewater Treatment Facilities:

Task 1: *Strategic Planning*

Task 2. *Develop Partnerships*

Task 3: *Conduct Energy Efficiency Assessments*

Task 4: *Facilitate site investment*

Task 5. *Identify renewable energy opportunities*

Task 6: *Action Plan/Implementation Model*

Task 7: *Dissemination of Results*

CHP Action Plan Priority II:
Mapping CHP Opportunities

<u>Plan – Other Public Facilities:</u>

Task 1: *Strategic Planning*

Task 2. *Initial Public Facility CHP Market Characterization*

Task 3: *Competitive RFP for Feasibility Assessments Evaluator*

Task 4: *CHP Feasibility Assessment*

Task 5. *Implementation Model*

Task 7: *Dissemination of Results*

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

Draft CHP Action Plan Comments:

- Focus on options and opportunities rather than developing prescriptive skill sets.
- Establish website to provide CHP information and resources.
- Provide training, support, and screening tools.
- Identify expected funding sources for training and education resources and services.

CHP Action Plan Priority III:
Education and Training Needs and Options

CHP Action Item Resolution:

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

Timing: Near-term (2015-2016)

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

CHP Action Plan Priority IV:
CHP Ownership Problems and Solutions

Draft CHP Action Plan Comments:

- Leverage existing financing programs outside of CIP.
- Critique programs and suggest changes for application to CHP.
- Efforts to leverage programs should not preclude new programs.
- Focus on credit enhancement including new market tax credits.
- Draft Action Plan did not address key regulatory questions
- Utility mandate not an effective way to promote CHP deployment.

CHP Action Plan Priority IV:
CHP Ownership Problems and Solutions

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.

Timing: Near term (2015-2016)

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

	Guaranteed Energy Savings Program	Local Energy Efficiency Program	Energy Savings Partnership	Trillion Btu Program	Commercial - Property Assessed Clean Energy Program	Rev It Up Program
Eligibility (recipient)	State Agencies, Higher Ed, Local Governmental Units, K-12	Local Governmental Units, K-12	Local Governmental Units, K-12	Commercial and Industrial Businesses, 501 (c)(3) organizations	Commercial and Industrial Businesses, 501 (c)(3) organizations	Local Governmental Units, Commercial and Industrial Businesses, Small Businesses , Health Care Facilities, MHFA
Type	State Administered Energy Savings Performance Contracting Program	State Assisted Energy Study using Design-Bid-Build for implementation	Municipal Leasing Program (tax – exempt)	Revolving Loan Fund	Special Assessment (against property)	Revenue Bonds (tax-exempt or taxable; project dependent
Project Size	Min. $300k Max. none	Typically between $50k and $350k	Min. $50k Max. none	Min. 10k Max. $1M	Max. 20% of Assessed Property Value	Min. $1M Max. $20M
Term (years)	Up to 25	Up to 15	Up to 15	Up to 5	Up to 20	Up to 25
Interest Rate	Dependent upon financing instrument (eligible for lease purchase financing)	Dependent upon financing instrument (eligible for lease purchase financing)	Dependent upon issuance (~2.5 – 4%)	4.5 – 6%	4 - 6%	Dependent on project security
Administrator	Minnesota Department of Commerce Peter Berger 651-539-1850	Minnesota Department of Commerce Alex Cecchini 651-539-1707	St. Paul Port Authority Peter Klein 651-204-6211	St. Paul Port Authority Peter Klein 651-204-6211	St. Paul Port Authority Peter Klein 651-204-6211	Minnesota Department of Commerce Eric Rehm 651-539-1853

CHP Action Plan Priority V:
CIP CHP Supply-Side Investments

Priority Issue: Existing Minnesota CIP 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.
- CIP Electric Utility Infrastructure (EUI) provisions potentially could be adapted and expanded to support CHP deployment.

CHP Action Plan Priority V:
CIP CHP Supply-Side Investments

Draft CHP Action Plan Comments:

- Coordinate with TRM and Smart Measure Library timelines.
- CHP can produce both demand- and supply-side efficiency improvements.
- CIP can/can't accommodate CHP.
- Targeted fuel switching is prohibited.
- Concerns about modifying EUI and applying CIP for CHP.
- Seek legislative direction before initiating policy actions.

CHP Action Plan Priority V:
CIP CHP Supply-Side Investments

CHP Action Plan Resolution:

Objective:

Explore and clarify whether and how CHP could qualify as an eligible supply-side resource as defined under EUI statutory language.

Timing: Long term (2015 Onward)

Note: Near-term exploration can help inform CIP Triennial Plan filings, with long-term changes through CIP modification process.

CHP Action Plan Priority V:
CIP CHP Supply-Side Investments

Action Steps:

- Commerce issued RFP and selected consultant (GDS Associates) to develop a set of EUI measures that could be included in Minnesota's TRM.

- This project will act as a starting point to also explore policy questions regarding whether and how CHP could qualify as an eligible EUI resource.

CHP Action Plan Priority V:
CIP CHP Supply-Side Investments

Project Tasks:

1. Identify and recommend EUI measures for inclusion in TRM.
2. Develop method to quantify energy and demand savings.
3. Develop default incremental cost estimates for each EUI measure.
4. Develop ESP Smart Measure reflecting TRM revisions.
5. Document all EUI measures.
6. Present utility outcomes in technical meetings.
7. Recommend ongoing schedule for future updates to EUI measures.

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

CHP Action Plan Priority VI:
Standby Rates

Draft CHP Action Plan Comments:

- Policy processes should consider cost causation, market diversity and reliability, coincident peak/non-peak rates, planned outages, CHP/DG attributes and appropriate capacity crediting, and practices such as standby charge ratchets; should consider existing statute.
- Standby rates should be as simple and transparent as possible, and should send price signals to encourage efficiency.
- Standby services produce real costs; standby rates are not arbitrary market barriers.

CHP Action Plan Priority VI:
Standby Rates

Final CHP Action Plan Resolution: Continue engagement through MN PUC generic proceeding on standby rates.

related note: **Standby Rates Docket**
Visit **mn.gov/puc** to view MN PUC Dkt. E999/CI-15-115

Next Steps

	Priority Areas	Timing
I	CHP Evaluation Methodology and Criteria	Near Term (2015-2016)
II	Mapping CHP Opportunities	Intermediate Term (2016-2017)
III	Education and Training Opportunities	Near Term (2015-2016)
IV	CHP Ownership Problems and Solutions	Near Term (2015-2016)
V	CIP CHP Supply Side Investments	Long Term (2015 Onward)
VI	Standby Rates	Long Term (2015 Onward)

- 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.

Online Resources

Minnesota Department of Commerce CHP Materials
(including this presentation)
http://mn.gov/commerce/industries/energy/distributed-energy/combined-heat-power.jsp

-**Final CHP Action Plan** (*Unabridged*)
http://mn.gov/commerce-stat/pdfs/CHP%20pdfs/final-unabridged-chp-action-plan-2015.pdf
-**Abridged version of Final CHP Action Plan**
http://mn.gov/commerce-stat/pdfs/CHP%20pdfs/abridged-final-chp-action-plan-2015.pdf

Microgrid Institute Resources website
http://www.microgridinstitute.org/resources.html

University of Illinois at Chicago – Energy Resources Center
http://www.erc.uic.edu/

U.S. Department of Energy – Midwest CHP Technical Assistance Partnership
http://www.midwestchptap.org/

Contact us

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.

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