Draft Minnesota CHP Action Plan

Conserving resources with cost-effective combined heat and power

Minnesota CHP Action Plan Webinar #1
Reviewing the Draft Action Plan
April 28, 2015

Under contract to
Minnesota Department of Commerce,
Division of Energy resources.
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Acknowledgement

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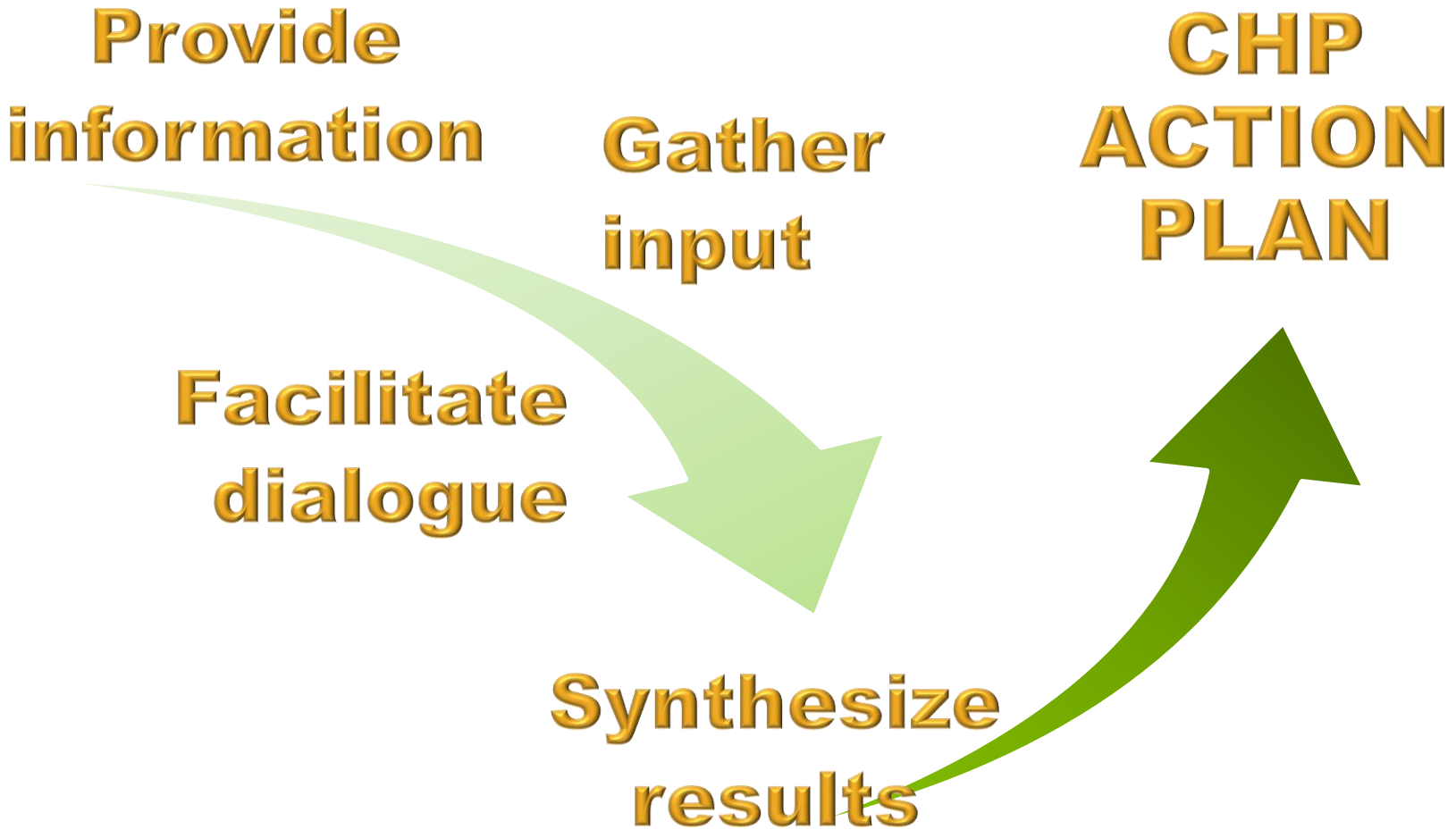
Disclaimer:

CHP Stakeholder Engagement process >> CHP Action Plan



Agenda

I. Introductions + Review of CHP Stakeholder Engagement Process

II. CHP Stakeholder Outcomes >> CHP Action Recommendations
   a. Standby rates
   b. CHP Evaluation Methodology and Criteria
   c. Mapping CHP Opportunities
   d. CHP Ownership Problems and Solutions
   e. Education and Training Needs and Options
   f. Adapting CIP for Supply-Side Investments

III. Energy Resources Center Presentation

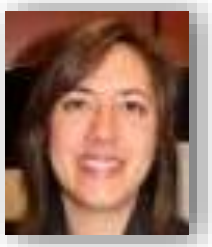
IV. Q&A

V. Next Steps in CHP Action Plan

Microgrid Institute

Charting pathways for sustainable resilience.

I. Introducing:
Today's Presenters



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Microgrid Institute

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ERC
ENERGY RESOURCES CENTER

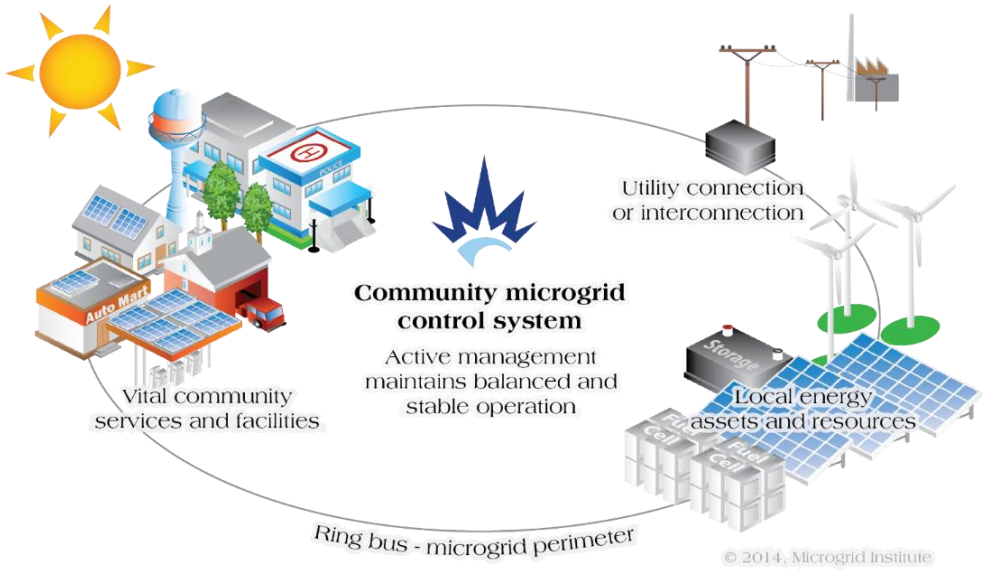
Introducing:

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 feasibility and 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
- Principal investigator, DOE Olney (Md.) Town Center Microgrid R&D Project
- NY Prize Community Grid Competition – Selected prime/principal for three community microgrid feasibility study proposal teams
- New York PSC *Reforming the Energy Vision* project, Microgrid subgroup member
- Minnesota Department of Commerce, Division of Energy Resources *Minnesota Microgrids* study, primary author and contractor
- 2014 *Fortnightly 40* Report on disruptive trends and utility shareholder performance

Microgrid Institute

Charting pathways for sustainable resilience.

CHP in Minnesota

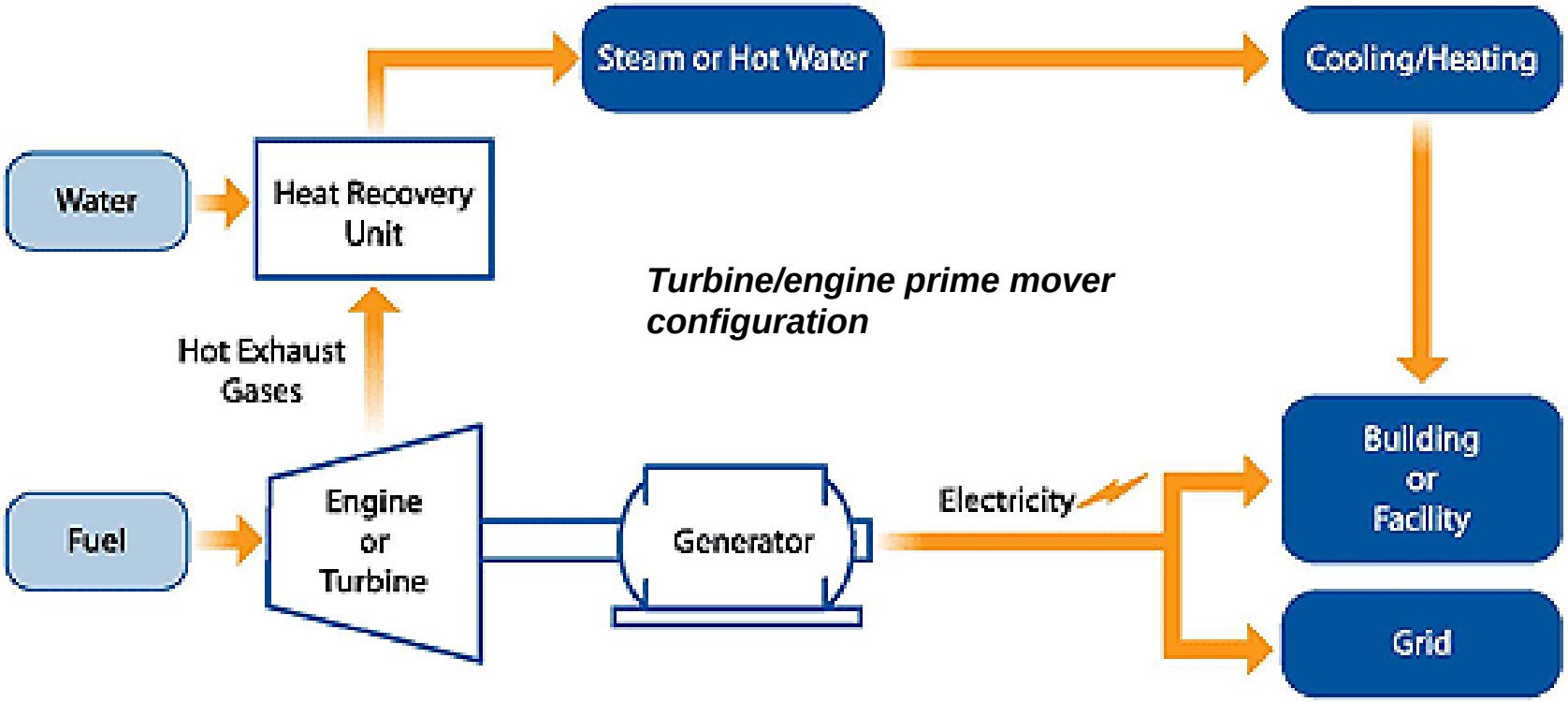
What is CHP?

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

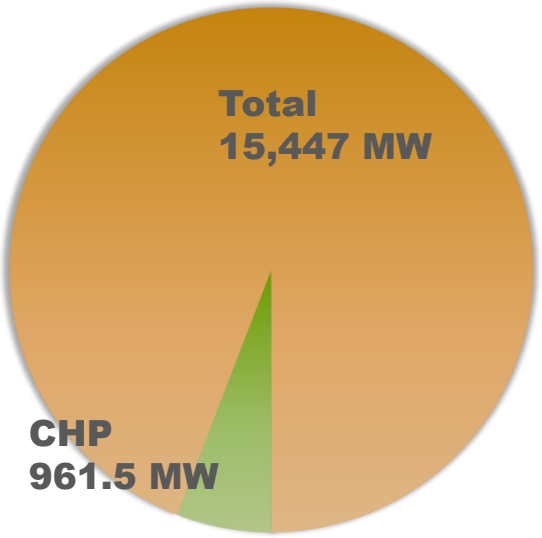
CHP Baseline

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



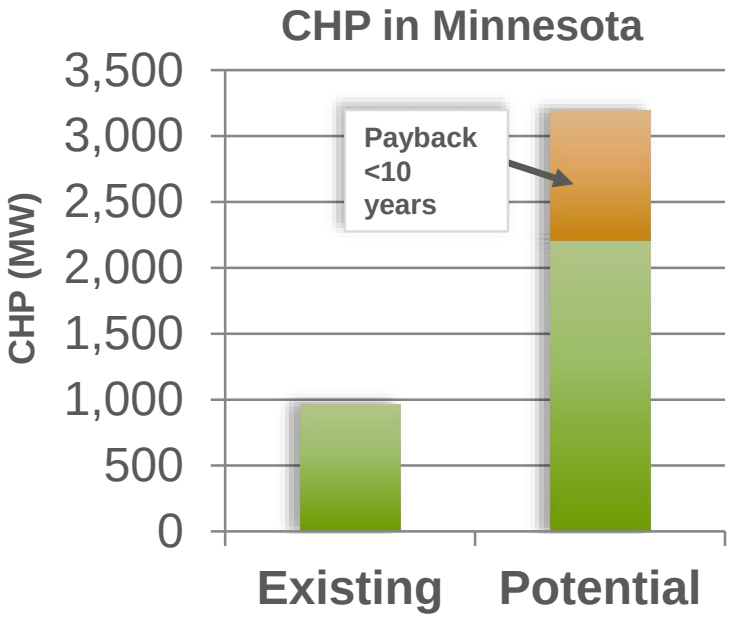
CHP Value Proposition

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 Milestones: Energy Savings & CHP

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

C.A.R.D.* 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 (9-12/15)

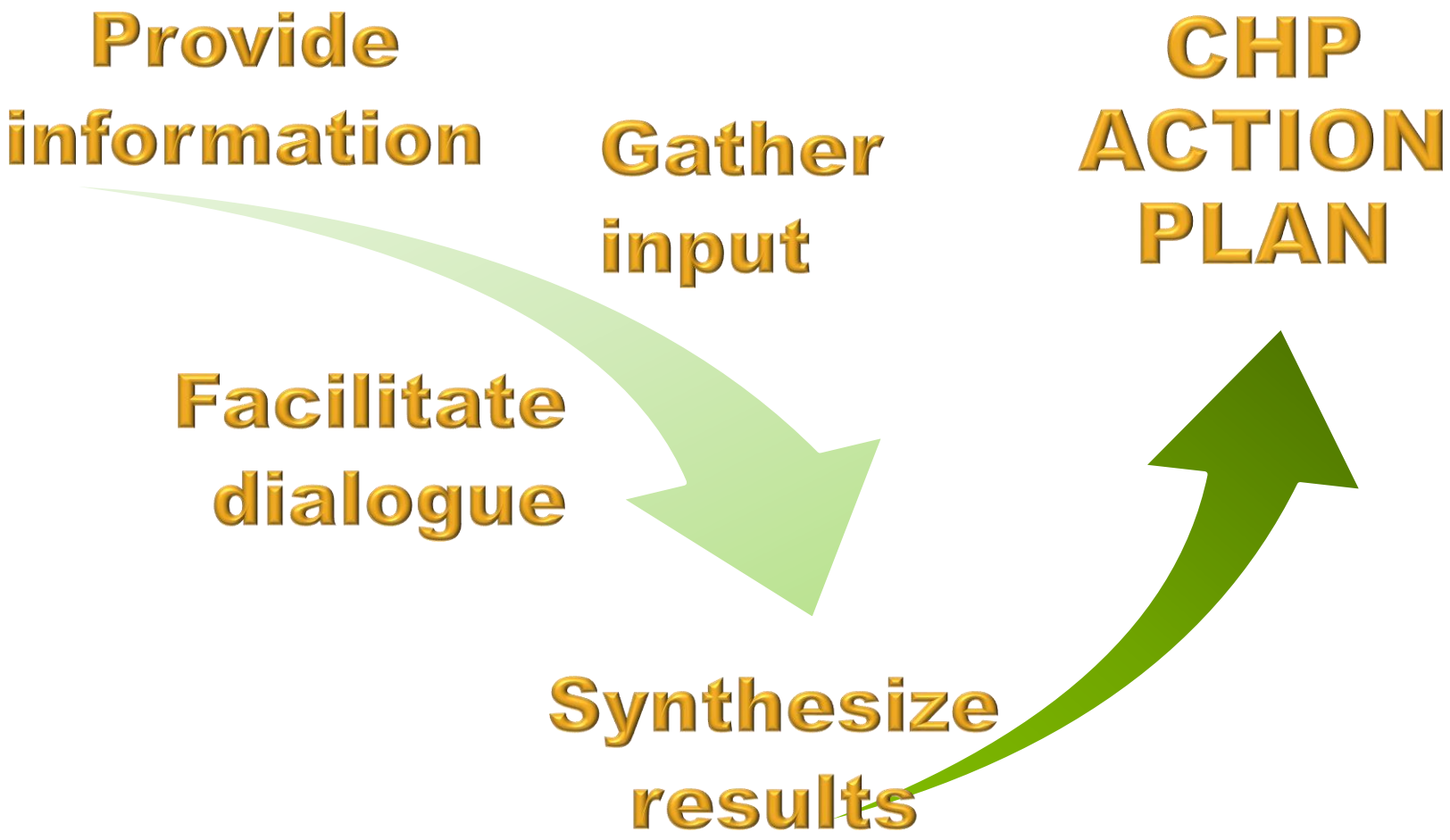
- Series of public meetings
- Public comment period
- Pre- and post-engagement surveys
- Process report and recommendations

Minnesota CHP Action Plan

- Draft CHP Action Plan (3/15)
- Webinar #1 (*today!*)
- Public comment period (3/31 – 5/15)
- Final CHP Action Plan (6/15)
- Webinar #2 (*date TBD*)

**Conservation Applied Research and Development*

Review of Minnesota CHP Stakeholder Engagement Process



CHP Stakeholder Engagement Process

CHP Stakeholder Survey (8/14)
Pre-Engagement Survey

Meeting #1 (9/03/14):
CHP Baseline, Value Proposition, and Path Forward

Meeting #2 (9/24/14):
CHP U.S. Policy Context + Standby Rates

Public Comment Period
9/24 to 10/10/14

Meeting #3: (10/15/14):
Stakeholder Panels:
CHP Economic Potential, Policy Options

Meeting #4: (11/05/14):
Discussion and Synthesis of Major Themes

CHP Stakeholder Survey (12/14)
Post-Engagement Survey

Report and Recommendations (12/14)

CHP Action Plan Engagement
Feb. - June 2015

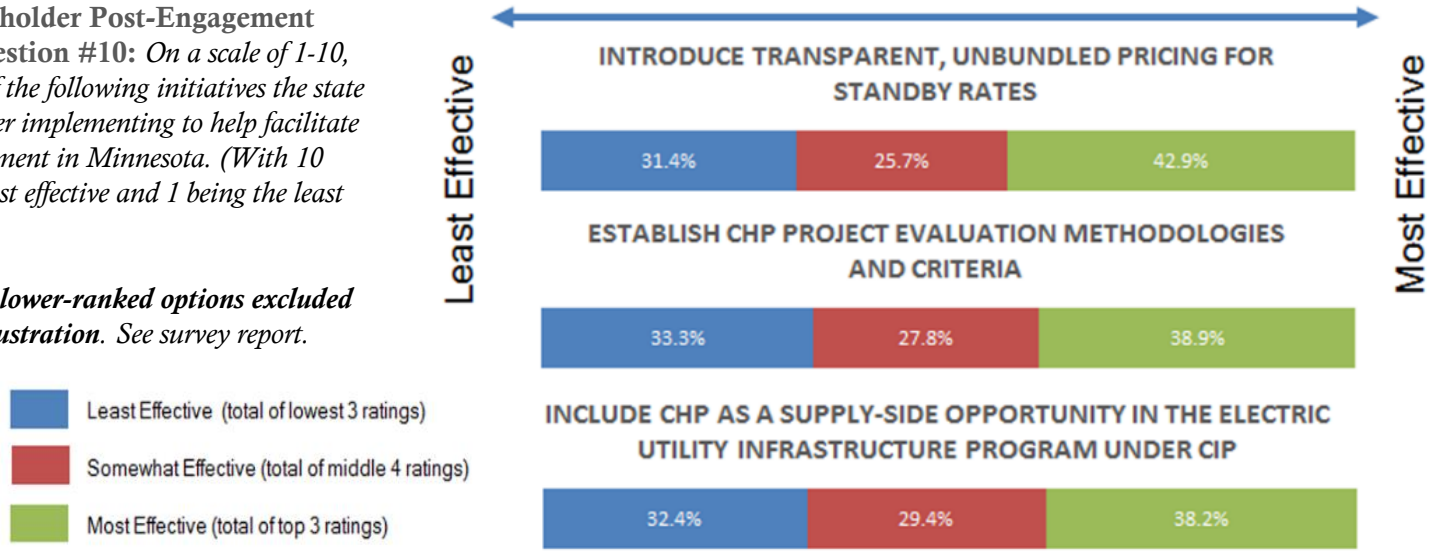
II. Priority Issues and Action Items

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

Stakeholder meetings, surveys, and public comment periods enabled CHP stakeholders to identify priority issues and options.

CHP Stakeholder Post-Engagement Survey Question #10: *On a scale of 1-10, please rate of the following initiatives the state could consider implementing to help facilitate CHP deployment in Minnesota. (With 10 being the most effective and 1 being the least effective)*

Note: Eight lower-ranked options excluded from this illustration*. See survey report.*



Priority Issues and Action Items

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

Priority Issues	Action Items	Timing
1. Standby Rates	Continue stakeholder engagement through MN PUC generic proceeding on standby rates	Near-term (2015-2016)
2. CHP Evaluation Methodology and Criteria	Establish CHP Energy Savings Attribution Model	Near-term (2015-2016)
3. Mapping CHP Opportunities	Map CHP opportunities at wastewater treatment and other public facilities	Intermediate-term (2016-2017)
4. CHP Ownership Problems and Solutions	Leverage existing financing programs applicable to CHP	Near-term (2015-2016)
5. Education and Training Needs and Options	Expand education and training resources	Near-term (2015-2016)
6. Adapting CIP for Supply-Side Investments	Develop and clarify electric utility infrastructure policy	Long-term (2017-onward)

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

1. **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 rate policies, structures, and practices for providing utility standby service for customers with onsite generation. Specifically:

- Policies should ensure standby charges reflect actual costs of required service, and provide customers flexibility to self-dispatch, reduce load, and procure market resources
- Rate structures should be transparent, simple, and allow accurate forecasting of standby service costs
- Delivery charges should factor-in ancillary benefits of onsite CHP

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

1. **Standby Rates**

>> *CHP Action Plan Recommendation:* Continue stakeholder 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

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

2. 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 Stakeholder Process Outcomes >> CHP Action Plan Priorities

2. CHP Evaluation Methodology and Criteria

>> CHP Action Plan Recommendations:

- Establish Energy Savings Attribution Model as part of Minnesota Technical Reference Manual

- Consider Illinois CHP TRM as potential model for adaptation (see *Energy Resources Center Presentation*)

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

3. Mapping CHP Opportunities

Priority Issue: CHP potential is inadequately understood by customers, developers, and investors, resulting in unexploited potential and avoidable emissions.

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

- Studies would identify and characterize existing sources of waste heat and high-value sites for CHP deployment.
- Initiative would help utilities, developers, site hosts, and stakeholders to focus on projects with greatest potential value.
- Opportunities include potential for resilience improvements and local economic development.

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

3. Mapping CHP Opportunities

>> *CHP Action Plan Recommendation:* Map CHP opportunities at wastewater treatment and other public facilities

related note: **DOE 2015 State Energy Program grant**
Focusing on energy efficiency and biogas
at municipal wastewater facilities

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

4. 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 Stakeholder Process Outcomes >> CHP Action Plan Priorities

4. CHP Ownership Problems and Solutions

CHP Action Plan Recommendations: Leverage existing financing programs applicable to CHP, including initiatives to:

- Improve awareness and communication of existing financing programs that can be better utilized for CHP projects
- Examine and communicate information about existing programs

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

5. 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 Stakeholder Process Outcomes >> CHP Action Plan Priorities

5. Education and Training Needs and Options

CHP Action Plan Recommendations: Consider expanding Department of Commerce website to provide centralized location for education and training resources, prospectively to include such resources as:

CHP Evaluation Methodology Training and Support

- CHP evaluation resources: Information, tools, and guidance
- Webinars and workshops: Training and support for adoption of Minnesota project evaluation methodologies and criteria

CHP Outreach and Development Support

- CHP information tools and programs
- Legal, regulatory, and finance information
- Project feasibility study methods and models

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

6. Adapting CIP for Supply-Side Investments

Priority Issue: Existing Minnesota programs exclude incentives for most 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 provisions could be adapted and expanded to support CHP deployment.

CHP Stakeholder Process Outcomes >> CHP Action Plan Priorities

6. Adapting CIP for Supply-Side Investments

CHP Action Plan Recommendations:

- Identify and develop EUI measures (including CHP) to be included in Technical Resource Manual (TRM) and Energy Savings Platform Smart Measure Library.
- Collaborate with utilities in TRM-amendment process to define possible CHP eligibility as a EUI resource

related note: **Commerce RFP re: TRM & EUI** (*April 20, 2015*)
http://mn.gov/commerce/businesses/request-for-proposals/
Proposals Due: Monday, June 1, 2015 by 11:59 p.m. CT

III. Energy Resources Center Presentation

Stefano Galaisso
Research Engineer

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ENERGY RESOURCES CENTER

Graeme Miller
Policy Analyst

IV. Q&A?

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

Comments and policy questions should be directed to Commerce
cip.contact@state.mn.us

CHP Action Plan comment period closes May 15, 2015

Microgrid Institute

Charting pathways for sustainable resilience.

V. Next Steps in CHP Action Plan

March 31 - May 15: **Public Comment Period**
- Please submit comments to: cip.contact@state.mn.us

June 2015: **CHP Action Plan Finalized**
- Will be distributed to stakeholders, posted on Commerce website

June 2015: **CHP Action Plan webinar**
- Date TBD

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Online Resources

Minnesota Department of Commerce CHP Materials
(including this presentation)
http://mn.gov/commerce/energy/businesses/clean-energy/distributed-generation/2014-workshops/chp-meetings.jsp

Minnesota Technical Reference Manual – EUI Measures RFP
http://mn.gov/commerce/businesses/request-for-proposals/

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/

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