NORTHERN MINNESOTA MEETING MATERIALS

Integrated Resource Plan Stakeholder Engagement Kick Off

Julie Pierce, Minnesota Power Vice President of Strategy and Planning
Jennifer Peterson, Minnesota Power Manager of Regulatory Strategy and Policy

Welcome and Introductions

Integrated Resource Plan & Baseload Retirement Study Process Overview

The Year Ahead With MPUC

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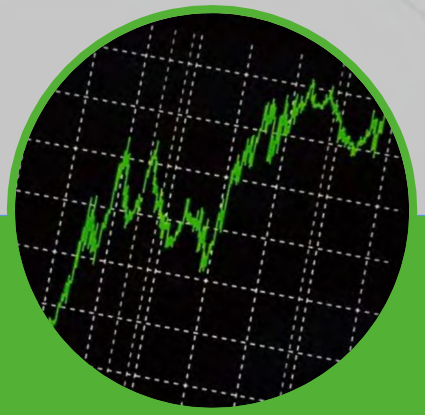
Integrated Resource Plan

- Evaluate 15-year outlook
- Identify how MP will serve customers
- Determine size, type and timing

Baseload Study

Thoroughly evaluates and includes a plan for the early retirement of Boswell 3 and 4, individually and in combination



Securitization Plan

Could be used to mitigate potential ratepayer impacts associated with an early retirement of Boswell 3 and 4

October 1, 2020

What is the IRP?

- One of the most important planning tools and road maps for each electric utility in Minnesota
- Reasonable plan to ensure utilities can meet customers' needs in a reliable and low cost manner
- Plans include forecasts, evaluation of current assets and long range power system planning
- Filed periodically with the Minnesota Public Utilities Commission
- Broad public process with opportunities for stakeholder input

2020 Integrated Resource Plan

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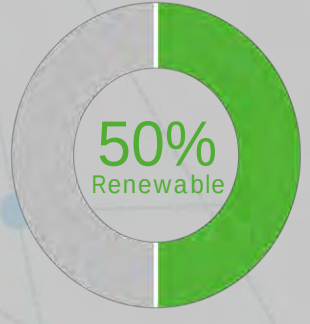
Customer Load

Power Supply Alternatives

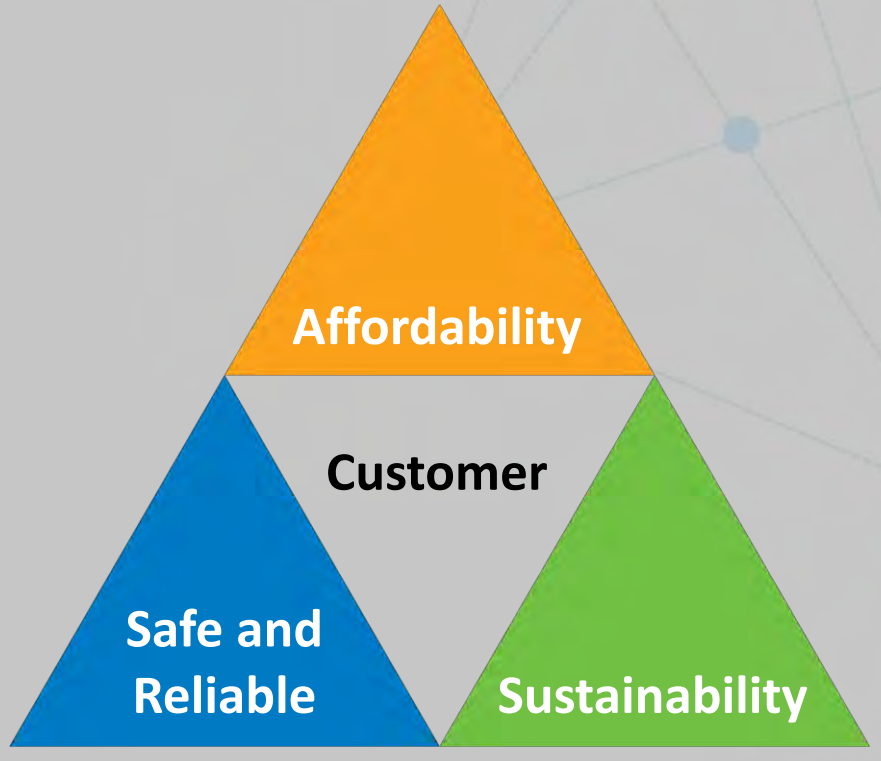


Today

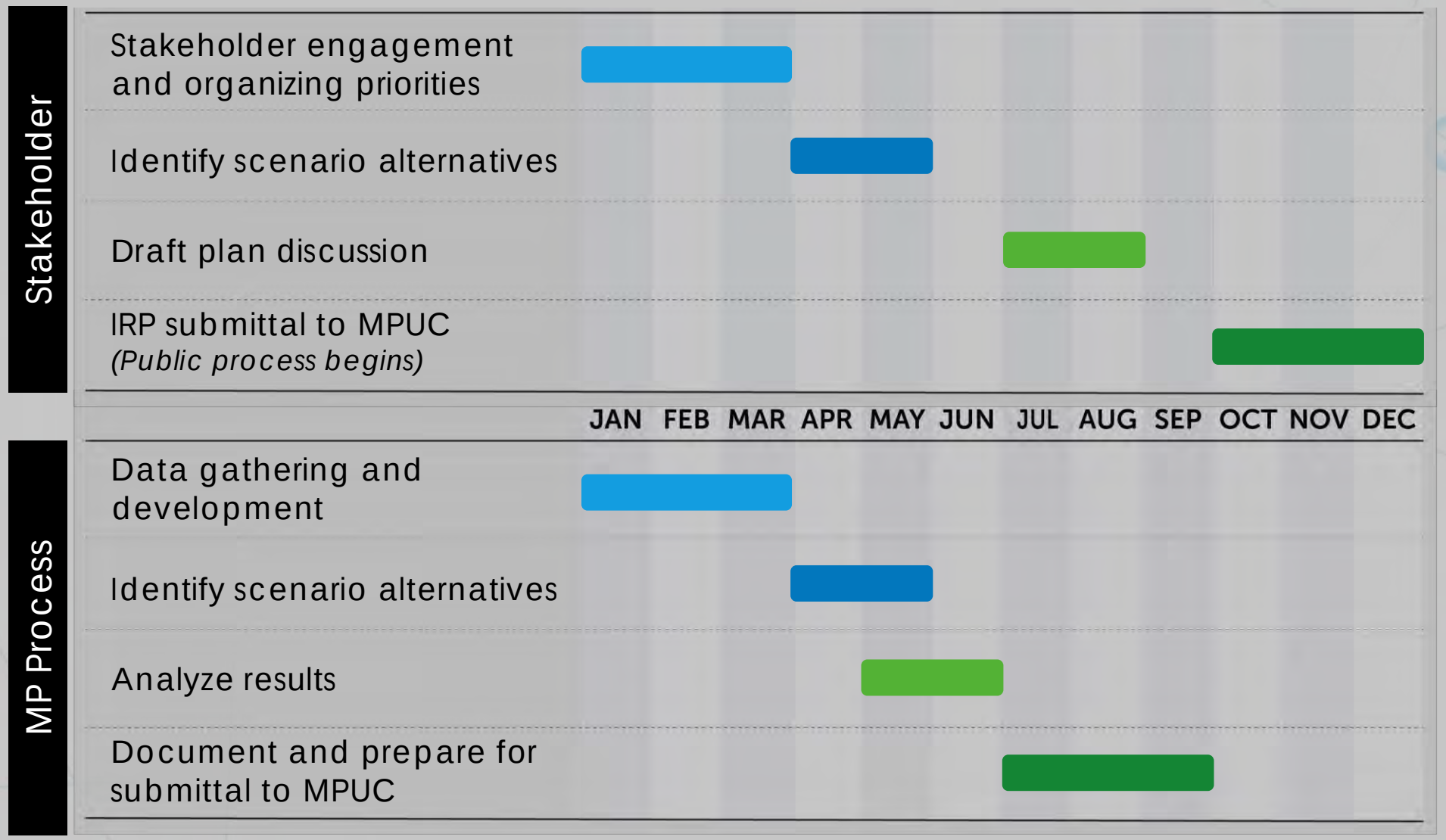
Many Options

?

2035



What is the IRP Timeline?



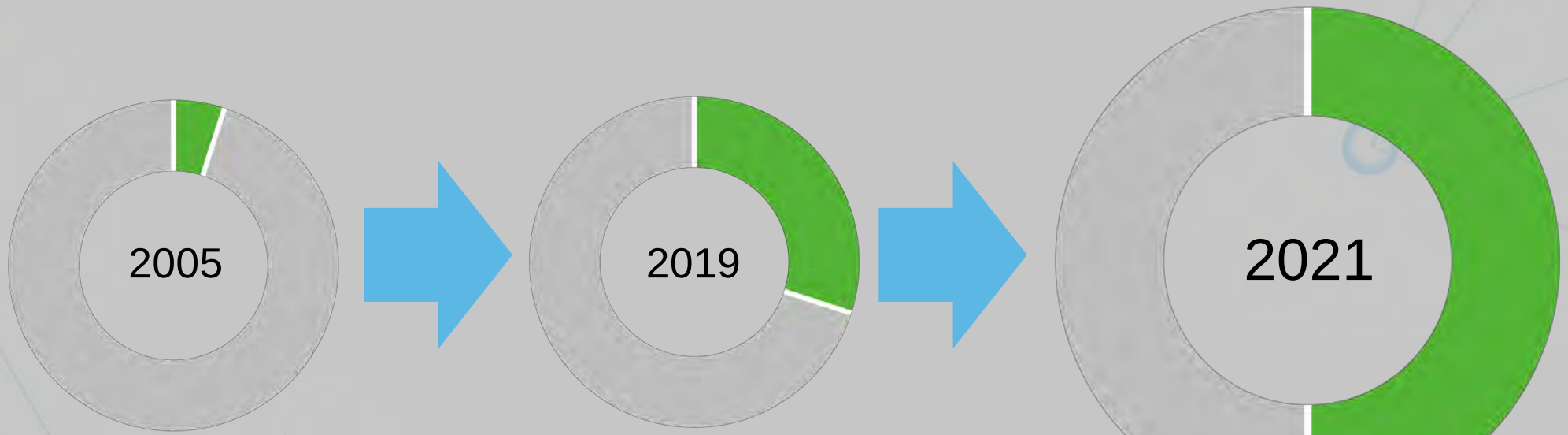
Minnesota Power Overview

WE ARE UNIQUE

Duluth, MN	Headquarters
26,000	Square-miles
146,000	Customers
13%	Residential sales
74%	Industrial sales
15	Municipalities
13th lowest	Electric rates*
$1.1 million	Donated in 2018

*Source: Edison Electric Institute

Leading Minnesota in Renewables



5%
Renewable

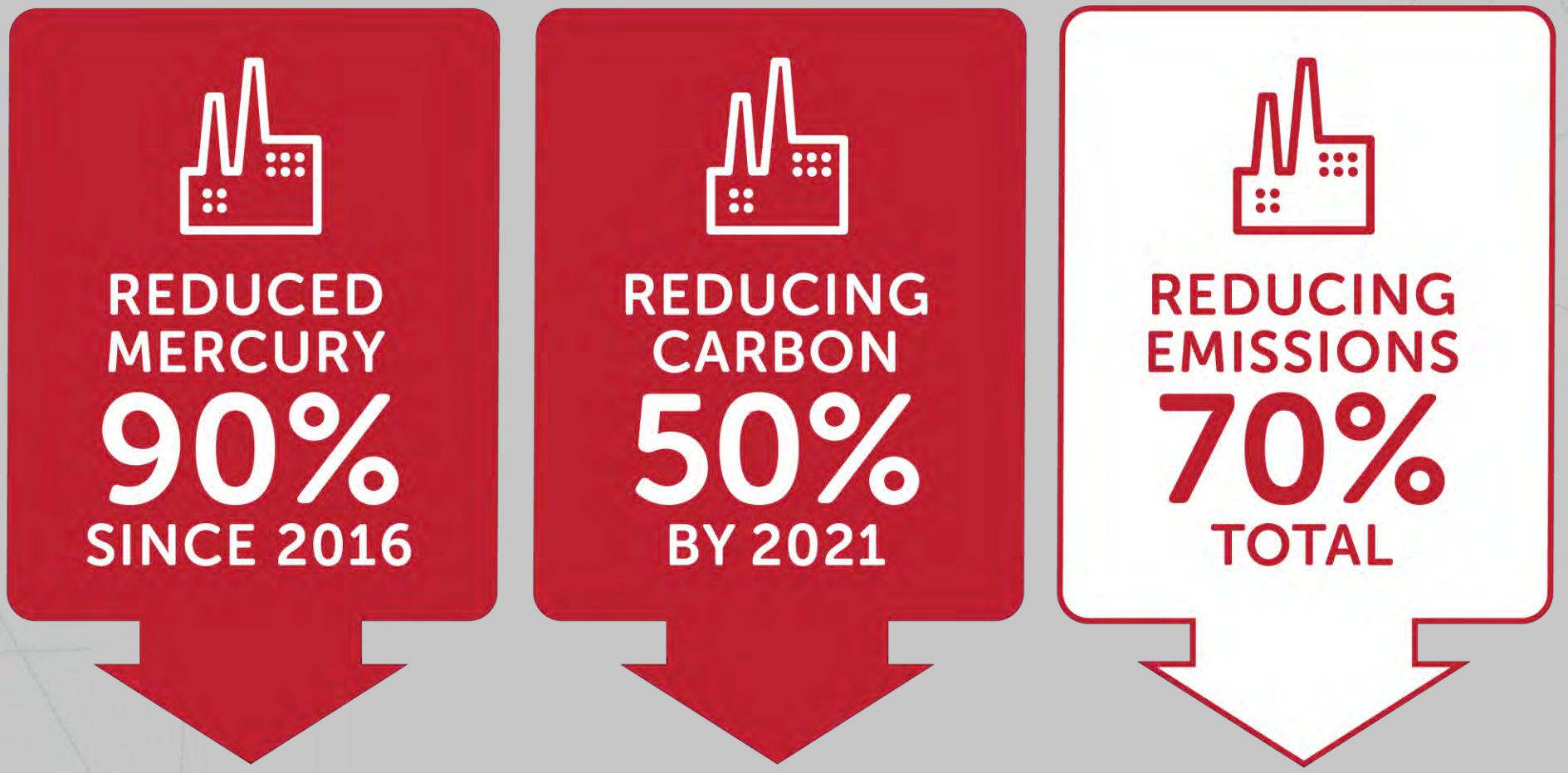
30%
Renewable

No. 1 in Minnesota
No. 2 in the Midwest*

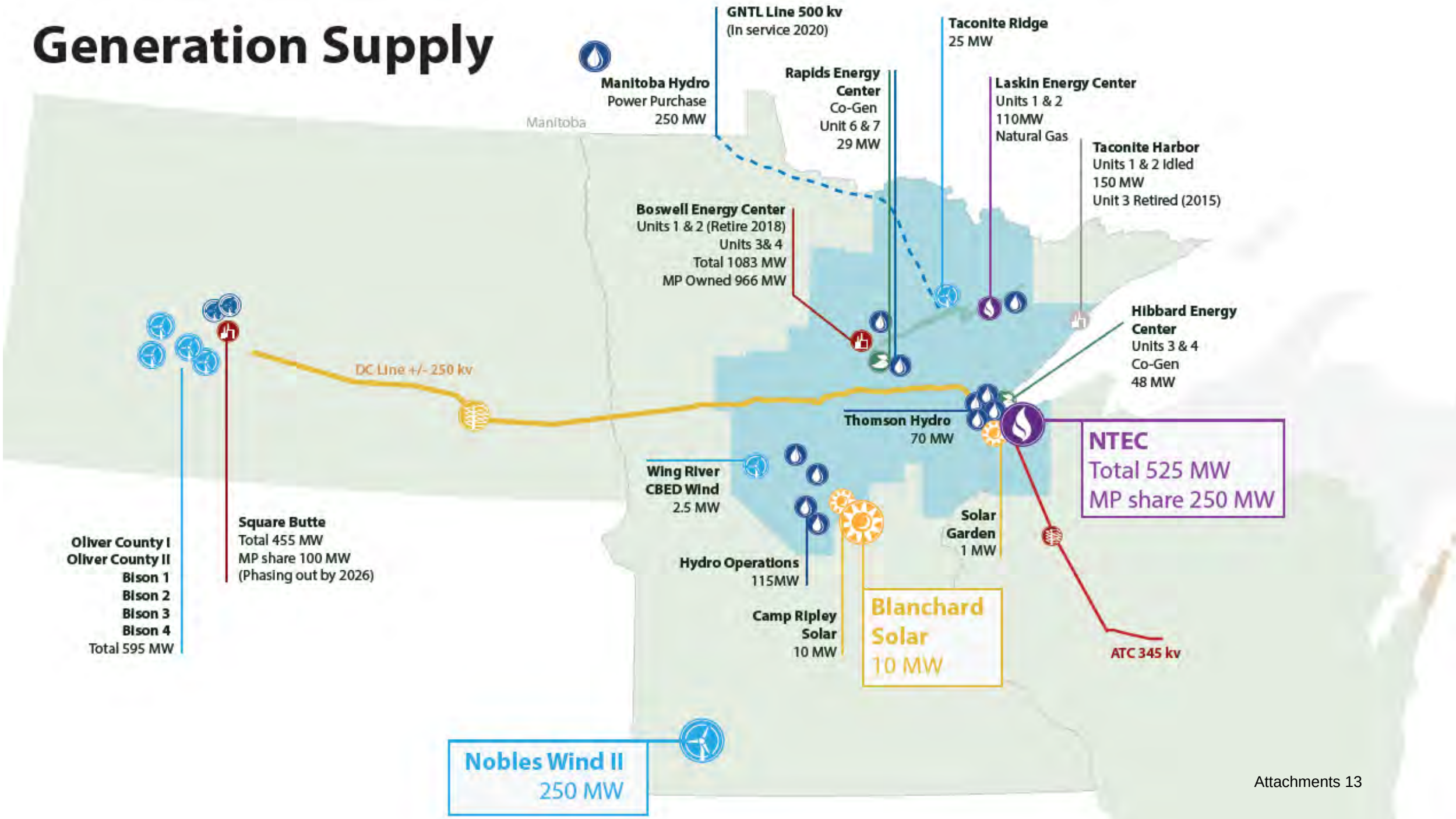
50%
Renewable

*Source: Navigant Consulting

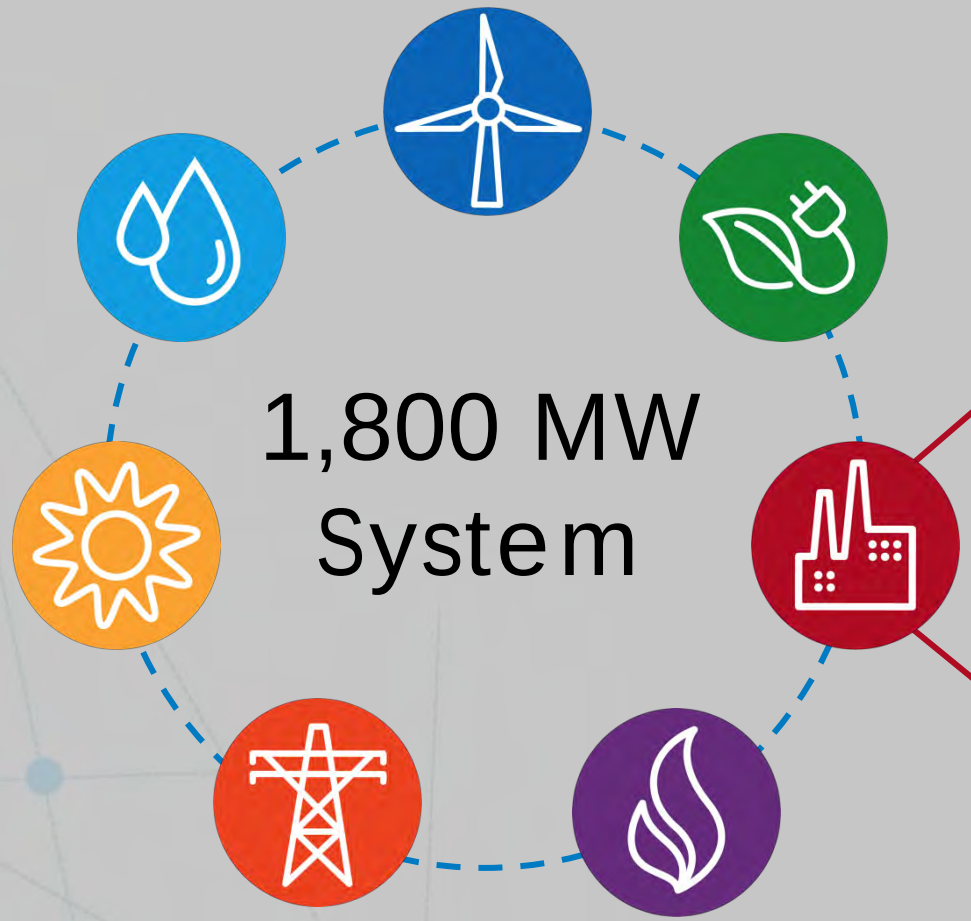
Reducing Emissions



Generation Supply



MP Baseload Focus



Boswell Energy Center

935	megawatts (Units 3 and 4)
$300+	million invested (Unit 4 emission-control)
90%	mercury reduction (since 2016)
70%	emission reduction (Boswell total)
2 units	retired in 2018 (Units 1 and 2)

SAFE. RELIABLE. AFFORDABLE.

Renewables

- Community Solar Garden
- Renewable Source

Resiliency

- Great Northern Transmission Line

Customer

- MyAccount
- Mobile App
- CARE program

Conservation

- Energy Analysis
- Rebates and Savings

Minnesota Energy Policy Trends

Today:

- **Renewable Energy:** 25% Renewable by 2025; 1.5% Solar by 2020 (10% solar goal by 2030)
- **Energy Efficiency**: Conserve 1.5% of annual sales each year
- **Greenhouse Gas Reduction:** Goal to reduce GHG 30% by 2025, 80% by 2050
- **Competitive Rates:** Ensure competitive electric rates for energy-intensive trade-exposed customers
- **Energy Affordability:** Programs to ensure affordable, continuous service to low-income customers

Tomorrow:

- **Clean Energy**

StarTribune

Walz aims for 100 percent clean energy in Minnesota by 2050

Utilities, critics say clean sources not reliable and costs would soar.

By Jessie Van Berkel Star Tribune | MARCH 4, 2019 — 8:45PM

Attachments 16

Discussion

Next Steps

Thank You

ITASCAP

REGULAR MONTHLY MEETING

Date:	**November 26, 2019 | Tuesday**	
Time:	**11:15 A.M.** Buffet Lunch	**11:30 A.M – 1:30 P.M.** Business Meeting
Location:	Timberlake Lodge | Grand Rapids	

MEETING OBJECTIVE

At this month's ItasCAP meeting our agenda will focus on MP's 2020 – 2035 Integrated Resource Planning (IRP) and the Baseload Retirement Study (BLRT) as ordered by the Minnesota Public Utilities Commission (MPUC). As you may know, the MPUC has directed MP to undertake a more expansive customer and public outreach engagement process. This is the first of such meetings and is an important role for ItasCAP to be a key part of. Joining us will be Julie Pierce, Vice President of Strategy and Planning, MP. Julie and Jennifer Peterson, Manager of Regulatory Strategy and Policy are leading an internal team responsible for service area outreach and plan and study development. Julie and I will lead this upcoming conversation and opportunity to provide more direction to MP as it moves ahead with developing its long-range plans, more immediate actions, and recommendations to the MPUC.

Please think in advance about topics and interests that you feel "must be" or "would be nice" to be considered as MP looks at service area needs and scenario's to be evaluated. Energy transformation has been underway for several years with significant changes in small coal facilities, advancing of renewables, and other steps that benefit conservation, transmission and new technology applications. The work is just beginning and will evolve over the next eleven months with the IRP and BLRT Study to be submitted by October 1st, 2020.

Finally, we'll round out our meeting with a monthly update on things happening at Boswell, Rapids Energy and Minnesota Power. Paul Undeland, Manager, Thermal Business Operations, Boswell Energy Center will share these highlights.

We will follow our usual roundtable discussion format to encourage and address questions by our presenters and would encourage you to think about topics and interests to share at the meeting.

PROPOSED AGENDA

11:15 a.m.	**Buffet Lunch**	Members and Guests
11:30 a.m.	**Welcome, Introductions & Business Meeting Call to Order**	Randy Lasky, Facilitator
11: 35 a.m.	**Review Meeting Agenda, Team Agreement and Last Meeting Summary October 22, 2019**	Facilitator

11:40 a.m.	**Monthly Update, Boswell and Rapids Energy Centers**	**Paul Undeland** Manager – Thermal Business Operations Boswell Energy Center Unit 4
11:50 p.m.	**Energy Conversation: MP 2020-2035 Integrated Resources Plan and Baseload Retirement Study Process Overview and Timeline, and Background and Clarification of MP Systems, Policy Trends and Major Topics of Interest (40 minutes)**	**Julie Pierce** Vice President of Strategy and Planning, MP
12:30 p.m.	**Facilitated Brainstorming Process to Share Topics and Interests Important to Individuals, Itasca County and MP Service Area (45 minutes)** • What topics and interests do you feel "must be addressed" as part of this planning work? • What topics and interests do you feel "would be nice to consider" in this work? • Next steps – Refinement and Priorities	Facilitator and Members Input with Support by Great Plains Institute
1:20 p.m.	**Community Updates** • What are some major things happening in the area? • What challenges are on the horizon?	Panel Members
1:25 p.m.	**Next Meeting Agenda Topic – To be Determined**	Facilitator
1:25 p.m.	**Next Meeting Date and Location** **January 26, 2019 at 11:15 a.m. | Timberlake Lodge**	
1:30 p.m.	**Critique and Adjourn** Please fill out your meeting evaluation form and leave it at the table. Thanks!	

CAP GUIDING PRINCIPLES

[redacted]

MEETING PARTICIPANTS

CAP Members

☐	Dale	Adams	City of Grand Rapids	☒	Todd	Jaranson	Lonza
☒	Peter	Birkey	United Way 1000 Lakes	☒	Bart	Johnson	Itasca Community College
☒	Rick	Blake	City of Cohasset	☐	David	Lick	Itasca Water Legacy Partnership
☒	Greg	Chandler	UPM, Blandin Paper	☒	Tamara	Lowney	IEDC
☒	Guy	Clairmont	United Way 1000 Lakes	☒	Sean	Martinson	ISD 318
☒	Ben	DeNucci	Itasca County Commissioner	☐	Tom	Pagel	City of Grand Rapids
☐	Wade	Fauth	Blandin Foundation	☒	Max	Peters	City of Cohasset
☐	Catherine	Fieldseth	Community Representative	☒	Joe	Rokala	MDNR
☒	Chris	Fulton	GR Area Community Fdn	☒	Brett	Skyles	Itasca County
☒	Steve	Giorgi	RAMS	☒	Bud	Stone	Grand Rapids Chamber
☐	Greg	Hagy	City of Cohasset	☐	Davin	Tinquist	Itasca County Board
☐	Nick	Hansen	Itasca County Family YMCA	☐	Brandy	Toft	Leech Lake Band of Ojibwe
☒	Mark	Hawkinson	Hawkinson Construction	☒	Greg	Tuttle	City of Cohasset
☒	Mary	Ives	Timberlake Lodge	☒	Jeff	Walker	Itasca County
				☒	Ed	Zabinski	Community Representative

Guests/Alternates

☒	Mike	Bull	Center for Energy Environment
☒	Carma	Huseby	Leech Lake Band of Ojibwe

Minnesota Power Staff

☒	Amanda	Kluge	MP	☒	Jennifer	Peterson	MP
☒	Arik	Forsman	MP	☒	Luke	Peterson	MP
☒	Randy	Lasky	Lasky Consulting	☒	Jennifer	Pierce	MP
☒	Ann	Vang	MP				
☒	Paul	Undeland	MP				

MN Power 2020 IRP Stakeholder Process

ItasCAP Meeting

November 26, 2019

Facilitated Group Discussion – MN Power 2020 Integrated Resource Plan and Baseload Retirement Study Input

Background

ItasCAP members and guests participated in a facilitated discussion to help frame the scope of work and alternative scenarios to be performed in developing the 2020 Integrated Resource Plan (IRP) and Baseload Retirement Study (BLRT). This engagement is part of a multi-phased public outreach effort initiated by Mn Power, focused on its northern region service area and southern/Twin Cities stakeholders.

The following is a summary of the ItasCAP discussion which followed an introductory presentation by Mn Power which addressed an overview of the process and timeline, background and clarification of MP systems, policy trends, and major topics of interest and requirements of the Mn Public Utilities Commission.

Two questions were posed to guide the group discussion followed by a summary of the next steps in the input process.

Group Discussion and Input

1. **What must be considered, included, and addressed, if possible, in the Integrated Resource Plan and/or the Baseload Retirement Study? It could be a topic, question or concern.**

- Renewables
    - Wind and solar – will the current federal tax subsidy be considered for extension and would adding of other technologies be considered like storage?
    - What's the cost (in terms of electric rates and reliability) of relying more on hydro from Manitoba, compared to producing that electricity locally?
    - Will hydro count toward the renewable standards, both current and future?
    - It's important to look at the data/metrics of what we're trying to achieve and how to get there, rather than labeling energy sources good or evil.
    - What is the wood fiber role in renewables and carbon reduction? How do we insure there is a legislative understanding of this opportunity at both the State and Federal levels?

    - Redundancy, reliability and resiliency are critical in assessing renewables and all energy source alternatives.
- Energy Customer Classes, Rates and Competitive Impacts
    - We have the 13th lowest rate for residential customers, but what about the industrial customers? Energy costs are a top concern for large industrial customers, especially given the need to compete in global markets. Where's the tipping point between adding more renewables and driving up the cost of electricity for large industrials?
    - Taconite production – if electricity rates are not competitive for mining here, taconite demand will continue, but the production will shift elsewhere, possibly to locations with worse environmental regulations. Need to think about those impacts and how that impacts us from a social-economic standpoint.
    - Federal impact – what happens if we're no longer able to produce taconite here, what are the implications from a national defense perspective?
    - Need to consider the carbon impacts of the total life cycle for all energy sources, including wind (e.g., manufacturing wind turbines) etc.
    - Residential rate impacts assessment needs to be done and compared with large power users needs to discern what happens to their competitiveness and potential job losses.
    - More detail needed on all customer class rates and socio-economic impacts.

- Economic Impact Studies
    - Tax base – what will be the tax base impacts of a plant closure in Itasca County?
    - How deep does the socio-economic impacts assessments go? For example, what are the impacts of an energy plant closure on large industrials and those quality jobs?
    - Host Utility Study is currently being completed to look at the impacts on host communities of potential energy plant closures. But the other question is about whether the study looks at the next layer of cascading impacts due to large customers closing their doors.
    - Good jobs and living wage jobs are important – what changes would occur to the power system do to wage level changes?
    - We need to talk about the economic impacts on this region and statewide implications, especially with the St. Paul stakeholder group.
    - Economic impacts are one thing; Return on Investment (ROI) is another. What do we get out of the significant investments we're making?

- Public Relations and Politics
    - Concerned about too simple a message of "clean energy good, coal bad." Need to make clear and package the messaging in a way that the public understands the facts and is more easily digestible.

    - To what extent are people aware of how much cleaner coal is now? Do they know what's actually coming out of the stacks, given pollution reduction investments and other efforts?
    - Important to look at the data/metrics of what we're trying to achieve and how to get there, rather than labeling energy sources good or evil.
    - Youth voice on clean energy is missing from the room, especially youth from this area who may have a more open mind to various energy solutions.

- Future of Boswell and the Site
    - If the plants are decommissioned, has there been consideration (and a plan) around what would happen to the site and infrastructure? There were several considerations looked at around Boswell Units 1 and 2, which MP could draw upon. It will be a part of this conversation.
    - If you shut down Boswell, where will the baseload power come from? What are the options, costs and impacts?
    - Would like to see reinvestment in MP's service area if Boswell goes away. It appears that less than 20% of MP's energy would then be produced within the service area of Minnesota.
    - Important to consider the location of resource alternatives and associated economic impacts.
    - Centralized vs distributive modular alternatives considered.
    - What about maintaining Boswell and borrowing credits to offset emissions?
    - What changes would affect water quality, if suddenly there's no plant there?
    - To what extent are people aware of how much cleaner coal is now? Do they know what's actually coming out of the stacks, given pollution reduction investments and other efforts?

- Nemadji Trails Energy Center - Gas Facility
    - How critical is its existence to Cohasset? Is it a replacement for Boswell?
    - Note: definitely not a replacement. A fraction of the size and MP is only taking half of its output to balance variability of wind, solar, and hydro. Boswell provides something different – baseload power. NTEC is 250MW and Boswell is 935MW. Think of NTEC as a replacement for 7 small scale coal plants that have already been shut down).
- Nuclear
    - We need to look at nuclear as an option in the region. Somebody has to start the conversation, and perhaps MP can help with looking into that alternative.
    - Note: The Nuclear Moratorium on the books in Minnesota prohibits MP from bringing forward an IRP that includes nuclear, but the Governor's plan could include nuclear, so we need to bring policies into agreement.

- Community Outreach and Engagement –

    - Would like to know more about the plan beyond these meetings. How will the general public be able to comprehend the situation and have a voice in decisions being made? It's important to do this to help the case.

- Climate Change
    - Need to consider the differences of opinion around energy vs. climate change.
    - Addressing climate change involves looking at lifestyle and acknowledging that Boswell is a very small piece of a much larger problem.

2. **What should be considered, included, and addressed, if possible, in the Integrated Resource Plan and/or the Baseload Retirement Study?**

   – Did not have time for this second question.

Next Steps:

- MP is looking for representatives from ItasCAP who would be willing to commit and participate in four (4) in-depth Northern Regional Work Group meetings engaging with others from across the service area. Those meetings would begin in January for several months. Two of the four meetings would be joint meetings with the St. Paul based stakeholders to facilitate dialogue between both groups. Those joint meetings would be held in Northern Minnesota.
- There will be additional general public input meetings happening in MP's service area and in the Twin Cities in the spring.
- ItasCAP will still continue to meet on its regular monthly schedule as this process continues.
- A summary of this meeting input dialogue will be emailed to members for additional input, clarification and setting of priorities. That request will be out the first week in December.

community advisory panel

ITASCAP

Regular Monthly Meeting

Date November 26th, 2019 | 11:30 AM
Location Timberlake Lodge, Grand Rapids

Meeting Objective

At this month's ItasCAP meeting our agenda will focus on MP's 2020 – 2035 Integrated Resource Planning (IRP) and the Baseload Retirement Study (BLRT) as ordered by the Minnesota Public Utilities Commission (MPUC). As you may know, the MPUC has directed MP to undertake a more expansive customer and public outreach engagement process. This is the first of such meetings and is an important role for ItasCAP to be a key part of. Joining us will be Julie Pierce, Vice President of Strategy and Planning, MP. Julie and Jennifer Peterson, Manager of Regulatory Strategy and Policy are leading an internal team responsible for service area outreach and plan and study development. Julie and I will lead this upcoming conversation and opportunity to provide more direction to MP as it moves ahead with developing its long-range plans, more immediate actions, and recommendations to the MPUC.

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Finally, we'll round out our meeting with a monthly update on things happening at Boswell, Rapids Energy and Minnesota Power. Paul Undeland, manager of the Thermal Business Operations at Boswell Energy Center will share these highlights. We hope you can join us for all of these timely topics and updates.

We will follow our usual roundtable discussion format to encourage and address questions by our presenters.

Meeting Notes

I. Call to Order and Introductions

Randy Lasky, CAP Facilitator, called the business meeting to order, welcomed everyone and had members and guests introduce themselves. He introduced our presenters from MN Power – Julie Pierce, Vice President of Strategy and Planning and Jennifer Peterson, Manager of Regulatory Strategy and Policy. Guests included Carma Huseby, Leech Lake Band of Ojibwe; Luke Peterson, MP; Ana Vang, Public Policy Advisor, MP; Trevor Drake, Program Manager, Great Plains Institute; and Mike Bull, Director of Policy and External Affairs, Center for Energy Environment. Ana, Trevor and Mike are members of the MP Project Team working on the IRP outreach and engagement process. Trevor will be providing support to the brainstorming discussion later today.

II. Review Meeting Agenda, Team Agreement and Last Meeting Summary

Randy reviewed the meeting agenda and expected outcomes, materials in the agenda packet and provided an opportunity for additions or changes. There were no changes or additions and the agenda was approved.

Members received a written summary of the October 22nd meeting in their agenda packet. Randy briefly went over the highlights and major discussion. At our last meeting we heard an introduction and update on the Prairie River Minerals Project (PRM) and a debrief of the September special conversation with the MN Public Utilities Commission (MPUC). Joining us was Tom Anzelc, Director of Government and Media Relations for PRM and Ed Shaughnessy, Principle Owner with PRM. They shared information on this new scram mining company including an overview of how and why they were created in January 2019, their business plan, status of the project as of this month. And referenced the Northeast MN Freight Rail Study done by Krech and Ojard Engineering and how aggregate material might become an exported commodity to the Twin Cities construction market as part of this project. We also had a round table debrief of the September meeting with the MPUC Board and staff highlighting the table conversations and feedback shared. Finally, Paul Undeland, manager of the Thermal Business Operations at Boswell Energy Center had shared his monthly update on things happening at Boswell and Rapids Energy Centers and MP. There were no changes or additions to the meeting summary. An electronic version will be emailed following this meeting.

III. Monthly Update for the Boswell and Rapids Energy Centers and Mn Power

Randy introduced Paul Undeland, Manager of the Thermal Business Operations at Boswell Energy Center to provide our usual monthly update via a PowerPoint presentation. This month's topics and highlights included:

Safety Performance 2019

Reviewed the Boswell Energy Center OSHA Recordable Injuries summary graph showing previous year to date and current year to date recordable injuries where four injuries, highlighted in 2019 and three in 2018. He went on to explain there were no new recordable injuries since the October report.

Environmental Performance September 2019

Shared multiple graph summaries for key criteria pollutants, highlighting performance for individual Boswell Units 3 & 4 and year-to-date total contributions by pollutant and units. Commented on emission limits and outputs by unit for NOx, SO2, CO2 and mercury, and how and why they are different for these two units. Went on to explain the difference in controls used for SO2 and mercury removal in Units 3 and 4 and reminded members about the new permit requirements and mercury output limits that went into effect on January 1, 2019 for mercury. All units are performing within permit limits for regulated outputs and are all well within compliance requirements.

Production and Outage Plans 2019

Shared actual net vs. budgeted production MWh's for Boswell for January thru December 2019 and the budgeted monthly balances for CY 2019. From January thru September with Unit 4 being offline for seven weeks and Unit 3 being down with a planned, major ten-week outage from March to June, and summer generator issues, production was below budget thru August and now back to normal operations as of September. In October production was well under budget due to several factors including moving the planned outage from September to October, rain and wet coal conditions, and an unplanned tube leak and outage in Unit 3. We expect to be on budget for the two months of the year.

Other Notable Events

Highlighted several staffing items including posting of three maintenance positions and the promotion of Jason Vickerman to a Fuels Supervisor with the new posting of his former maintenance position. There is also a new posting for a Fuels Tech position in which the worker relocated to Oregon. We continue to promote from within and bring back dislocated workers where possible.

Planning is underway for an 8-week planned outage on Unit 4 to complete a turbine overhaul and assessment of 600 feet of piping. That work is starting on April 4th. Also mentioned the engineering and permitting of CCR Compliance projects related to ash and water associated with dry ash affecting both units.

Member questions were addressed related to foam balls floating in the downtown area, number of workers still left on the call back list, and why the significant mercury emission difference between Units 3 and 4.

Randy thanked Paul for his timely update. A copy of the presentation will be sent electronically following the meeting. Any follow-up questions should be directed to Paul.

IV. Energy Conversation: MP 2020-2035 Integrated Resources Plan and Baseload Retirement Study Process Overview and Timeline, and Background and Clarification of MP Systems, Policy Trends and Major Topics of Interest

Randy described the two-part IRP introduction and input process for today's meeting and introduced Julie Pierce, Vice President of Strategy and Planning and Jennifer Peterson, Manager of Regulatory Strategy and Policy for MP. They both shared a brief bio and Julie began by reiterating the purpose of today's first "kickoff" plan, input presentation and the need for questions, feedback and input to the IRP process by CAP members and other stakeholders. This is the first of four meetings with three others planned in December with the East Range CAP and two sessions in Duluth. The team shared a PowerPoint presentation and addressed questions as they presented background and key information on the IRP process, Baseload Retirement Study (BRS) and why this planning is important to MP and the MN Public Utilities Commission (MPUC).

The following are highlights and group questions as a prelude to a facilitated discussion on key plan components that must or should be considered by MP as part of the IRP planning process. The presentation will be distributed electronically after the meeting.

- Began with an overview of the IRP and BRS planning process and explanation of what an IRP is intended to accomplish, the scope, and intent of the BRS and the possible early retirement of Boswell Units 3 & 4, the remaining operating coal fired generation facilities in the MP fleet; and the development of a Securitization Plan used to mitigate rate payer impacts and transition assets and the power grid if and when major changes are made to the generation system.
- Explained the IRP and its intent, 15-year future planning scope from 2020 - 2035, forecasts to be made, alternative scenarios to be developed and the need and plan to engage stakeholders in planning process. All of this work which is now kicking off will lead to a filing along with the BRS with the MPUC in October 2020. Went on to describe how MP will be 50% renewable by 2021 with many options to be considered for the 15-year planning period. Customers are the key need to address balancing affordability, sustainability and safe and reliable power for the future
- Went on to share more details on the MP system and service area and its uniqueness with a major industrial, 24/7 baseload representing 74% of total energy sales. Described the customer base including residential, commercial, municipal and industrial sales and how MP is currently offering the 13th lowest residential electric rates nationally, while being the State of MN leader in renewables and reducing emissions with the transition of small coal facilities over the past several years.
- Went into detail on the Generation Supply system today with changes that have been implemented or are being developed today based on past IRP and Baseload study work. The Energy Forward Plan components and how that effort has evolved in the supply of energy. Addressed a number of questions on the size and contributions of Boswell 3 & 4 to the whole energy production mix; the development of gas at Laskin and the purpose and role of the Nemadji Trails Energy Center (NTEC) Project in Superior, WI; the Great Northern Transmission Line (GNTL) and how it will be used in meeting renewable requirements; the role of wood fiber in renewables and carbon reduction and the need for a better legislative understanding of the resources in Minnesota and our region; will nuclear power be part of the options considered, and hydrogen as a source; and how large industrial power users are subsidizing rates for other customer classes and how that impacts their competitiveness and economic viability in a world marketplace for mining and wood products.
- Described the role of Boswell Units 3 & 4 with its 950 MW production of the total 1800 MW MP system, and how major investments have been made to reduce emissions as well as described the retirement of Units 1 &2 in late 2018.
- Explained the focus on renewables such as solar and wind; resiliency with expanded hydro and the GNTL project completion; adapting and focusing on customer needs and conservation improvements with programs, rebates and assistance to customers.
- Concluded with an overview of Minnesota energy policy and trends we may expect to see evolve. Included specific mandates in play today for renewables, energy efficiency, greenhouse gas reduction, competitive rates for large power trade exposed customers, and energy affordability and continuous service to low income customers. Shared some thoughts on clean energy and Governor Walz's goal of 100% clean energy in Minnesota by 2050 which is expected to be discussed at the legislature.

Randy thanked Julie and Jennifer for their presentation and insightful discussion and questions by members, and Mike Bull and Trevor Drake for their input and thoughts during the presentation and Q & A. This conversation was then extended into a facilitated group brainstorming process to share more

thoughts on topics, questions, and concerns to be considered and guide the IRP and BRS work over the coming months. The PowerPoint presentation will be sent out electronically.

V. Facilitated Brainstorming Process to Share Topics and Interests Important to Individuals, East Range and MP Service Area.

Randy explained that MP was seeking input and feedback that can guide the IRP and BRS planning work. This is the first in a series of "Kick-off" engagement meetings with stakeholders and customers. The East Range CAP will meet on December 12th and two meetings will be held in Duluth on Monday the 9th to round out the Kick-off process up north. In addition, a Southern Stakeholder's Group consisting of a variety of statewide public and private stakeholders and interveners has met and is planning a second meeting for this same purpose. Trevor Drake and Mike Bull are facilitating the work of this group.

He then explained the two questions to be posed and why, and then members and guests participated in a facilitated conversation of what they feel "must be" or "should be" considered, included, and addressed, if possible, in the Integrated Resource Plan and/or the Baseload Retirement Study. Trevor Drake, GPI compiled on screen notes as the discussion occurred, and Mike Bull, CEE and MP staff served as another resource for questions. **Attached is a separate summary of the discussion outcomes and next steps involved in this engagement process.**

Following the discussion, Randy asked members who are interested in a more "deeper dive" engagement role to consider participating on a Northern Outreach Regional Work Group of representatives from northern Minnesota that would participate in four planned meetings. One or two meetings with other northern representatives and two or three joint meetings with the Southern Stakeholder's Group. Those would happen over the next several months and be held in the region. More details to follow.

Randy thanked Trevor for his assistance and everyone for their "Must Have" topics, questions, ideas and comments which will also be shared back to everyone in an online survey. The online survey will provide an opportunity to clarify or share have any additional thoughts or questions and will be used to prioritize the input from today. Great job everyone!

VI. Community Updates - None

VII. Future Meeting Agenda Topics - TBD – Please Share Ideas on the Evaluation Form

VIII. Next Meeting Date and Location

The next meeting of the ItasCAP will be held on Tuesday, January 26th at 11:15 AM at Timberlake Lodge. Please note that since these notes were prepared the January meeting was cancelled due to a space conflict at the facility. We will reconvene on Tuesday, February 25th at 11:15 AM.

Bethany M. Owen
President

November 21, 2019

Dear Community Leader,

We are writing you today to ask for your involvement in an important thought leader opportunity next month we are calling A Conversation on Energy. The conversation is intended to gather important input from yourself and other leaders about the long-term electric energy interests and energy priorities of our community.

Every few years, Minnesota Power develops an Integrated Resource Plan (IRP) which forecasts the energy needs of our region and what resources are necessary to best meet those needs over a 15 year time horizon. We value your insights as we begin to develop our plan, which will be submitted next fall to the Minnesota Public Utilities Commission. Your input and feedback is critical in order to chart a collaborative energy future that best meets the needs of our communities.

We are requesting your participation at either a morning or afternoon session of A Conversation on Energy in Duluth on December 9th, 2019. You will join other thought leaders from the community and have the opportunity to ask questions and share your insights related to Minnesota Power's future plans. The format and engagement opportunity will be the same for each session and we'd ask that you self-select the most convenient time for your schedule.

Morning Session	**Afternoon Session**
Monday, December 9th	Monday, December 9th
10:00 a.m. – 12:00 p.m.	4:00 p.m. – 6:00 p.m.
Inn on Lake Superior	Inn on Lake Superior

Through our EnergyForward strategy, Minnesota Power has made great progress in reducing carbon emissions and adding renewable energy to our power supply, while still maintaining the lowest residential electricity rates in the state. We have closed seven of our nine coal generating units in northern Minnesota and our power supply will be 50% renewable by 2021. Customers and communities will remain our focus as we plan the future of our power system, which is why your voice is critical.

Please join Julie Pierce, Vice President of Strategy and Planning and Jennifer Peterson, Manager, Regulatory Strategy and Policy, as they provide you an overview of this process. Randy Lasky, of Lasky and Associates, will be the facilitator. To reserve your spot at either the morning or afternoon session, please submit your RSVP **at this link**. Feel free to reach out to Jennifer Peterson at 218-355-3202 or jjpeterson@mnpower.com with any questions.

We hope you will join us to help Minnesota Power shape the way we produce and deliver the energy that provides comfort, security and quality of life in our community for the next 15 years.

Respectfully,

Bethany M. Owen
President, ALLETE

30 West Superior Street | Duluth, Minnesota 55802-2093 | 218.355.3231 | bowen@allete.com

Minnesota Power
2020 Integrated Resource Plan and Baseload Retirement Study

Duluth Outreach Group - Morning Meeting
Monday, December 9th, 2019. 10:00am-Noon

Inn on Lake Superior, Northern Lights Conference Room
350 Canal Park Drive, Duluth, MN

Meeting Objectives:

1. Build a shared understanding of the 2020 Integrated Resource Plan (IRP) and Baseload Retirement Study (BLRTS) requirements and timeline, as well as the current state of Minnesota Power's system and service territory, and trends and policy considerations.
2. Identify customer and key stakeholders' must-have and nice-to-have considerations/scenarios for Minnesota Power's 2020 IRP filing.

Agenda:

10:00AM **WELCOME, INTRODUCTIONS, PROCESS OVERVIEW**

10:10AM **PRESENTATION AND Q&A WITH MINNESOTA POWER STAFF - JULIE PIERCE, VICE PRESIDENT OF STRATEGY AND PLANNING, AND JENNIFER PETERSON, MANAGER OF REGULATORY STRATEGY AND POLICY**

- Overview of IRP, engagement process, requirements and timing for the 2020 IRP filing
- Minnesota Power system overview (characteristics of customers; balance of residential, commercial, industrial; energy load profile; current resource mix; achievements to date)
- Details and demographics on the customers and communities in Minnesota Power's service territory

11:00AM **FACILITATED GROUP DISCUSSION AND IDENTIFICATION OF MUSTS AND NICE TO HAVES :**

- **Given the information you have today, what are your "must-haves" and "nice-to-haves" for considerations/scenarios in Minnesota Power's next IRP?**
  - Must-haves:
  - Nice-to-haves:

- **What are the next steps – Refinement and Priorities**

NOON **ADJOURN**

Morning Session – 23 attendees

1. Alex Jackson, City of Duluth
2. Ashley McFarland, Dovetail Partners
3. Bret Pence, Minnesota Interfaith Power and Light
4. Brian Hanson, APEX
5. Bruno Zagar, FDL
6. ~~Chad Asgaard, CLEVELAND Cliffs~~
7. Chris Wright, Natural Resources Research Institute
8. ~~Craig Wainio, City of Mountain Iron~~
9. Dan Markham, Kraus Anderson
10. David Carlson, Gloria Dei Lutheran Church
11. Debbie Welle-Powell, Essentia Health
12. Erik Boleman, Barr Engineering Co.
13. Ginga Newton, CCL
14. Greg Carlson, Sappi North America
15. Holly Hansen, CITY OF CLOQUET
16. James Jarvi, US Steel
17. Jeff Hart, Hibbing Public Utilities
18. Jeff Stollenwerk, Duluth Seaway Port Authority
19. Jenna Yeakle, Sierra Club
20. Jessica Stauber, St. Luke's
21. ~~Karen Turnboom, Verso Corporation~~
22. ~~Katya Gordon, Amicus Adventure Sailing~~
23. Marianne Bohren, Western Lake Superior Sanitary District
24. David Ross, Duluth Area Chamber of Commerce
25. Sandy Karnowski, Cleveland Cliffs
26. Tony Mancuso, St. Louis County
27. Wendy Meierhoff, BendTec, Inc.

Minnesota Power
2020 Integrated Resource Plan and Baseload Retirement Study

Duluth Outreach Group - Afternoon Meeting
Monday, December 9th, 2019. 4:00pm-6:00pm

Inn on Lake Superior, Northern Lights Conference Room
350 Canal Park Drive, Duluth, MN

Meeting Objectives:

1. Build a shared understanding of the 2020 Integrated Resource Plan (IRP) and Baseload Retirement Study (BLRTS) requirements and timeline, as well as the current state of Minnesota Power's system and service territory, and trends and policy considerations.
2. Identify customer and key stakeholders' must-have and nice-to-have considerations/scenarios for Minnesota Power's 2020 IRP filing.

Agenda:

4:00PM **WELCOME, INTRODUCTIONS, PROCESS OVERVIEW**

4:10PM **PRESENTATION AND Q&A WITH MINNESOTA POWER STAFF - JULIE PIERCE, VICE PRESIDENT OF STRATEGY AND PLANNING, AND JENNIFER PETERSON, MANAGER OF REGULATORY STRATEGY AND POLICY**

- Overview of IRP, engagement process, requirements and timing for the 2020 IRP filing
- Minnesota Power system overview (characteristics of customers; balance of residential, commercial, industrial; energy load profile; current resource mix; achievements to date)
- Trends and policy considerations

5:00PM **FACILITATED GROUP DISCUSSION AND IDENTIFICATION OF MUSTS AND NICE TO HAVES:**

- **Given the information you have today, what are your "must-haves" and "nice-to-haves" for considerations/scenarios in Minnesota Power's next IRP?**
  - Must-haves:
  - Nice-to-haves:
- **What are the next steps – discussion refinement and priorities and further engagement opportunities**

6:00PM **ADJOURN**

Afternoon Session – 11 attendees

1. Diane Desotelle, Citizens Climate Lobby
2. Jeff Corey, One Roof Community Housing
3. ~~Jodi Slick, Ecolibrium3~~
4. Justin Meller, ME Global, Inc
5. Karl Schuettler, The Northspan Group, Inc.
6. Katherine Gerzina, DSGW
7. Linda Herron
8. Lora Wedge, Ecolibrium3
9. Mindy Granley, University of Minnesota Duluth
10. ~~Nate LaCoursiere, University of Wisconsin - Superior~~
11. Nick Kaneski, Enbridge
12. Pam Kramer, LISC Duluth
13. Shane Henriksen, Enbridge
14. ~~Sheryl Filby Williams, Barr Engineering Co.~~

East Range

community advisory panel

SPECIAL DECEMBER MONTHLY MEETING

DATE: December 12, 2019 | Thursday

TIME: 4:00 PM Call to Order → 5:30 PM Buffet Dinner → 6:15 PM Adjourn

LOCATION: The Ski Chalet at Giants Ridge – South End of Main Chalet

MEETING OBJECTIVE

Our meeting agenda will focus on MP's 2020 – 2035 Integrated Resource Planning (IRP) and the Baseload Retirement Study (BLRT) as ordered by the Minnesota Public Utilities Commission (MPUC). As you may know, the MPUC has directed MP to undertake a more expansive customer, key stakeholders and public outreach engagement process. This will be the third of such meetings and is an important role for East Range CAP to be a key part of. Joining us will be Julie Pierce, Vice President of Strategy and Planning, MP. Julie and Jennifer Peterson, Manager of Regulatory Strategy and Policy, are leading an internal team responsible for service area outreach and plan and study development. Julie and I will lead this upcoming conversation and opportunity to provide more direction to MP as it moves ahead with developing its long-range plans, more immediate actions, and recommendations to the MPUC. Also joining us will be a staff member from the Great Plains Institute (GPI) and/or the Center for Energy and the Environment (CEE) which are assisting MP with convening and facilitating a key stakeholders group in the Twin Cities, and providing administrative support for this broader outreach and engagement process. More of these details will be covered at the meeting.

Please think in advance about topics and interests that you feel "must be" or "would be nice" to be considered as MP looks at service area needs and scenario's to be evaluated. Your voice and assistance will help to frame and guide the focus of this work. Energy transformation has been underway for several years with significant changes in small coal facilities, addition of natural gas peaking, advancing of renewables, and other steps that benefit conservation, transmission and new technology applications. This planning process is designed to look at all of this and more as energy transformation continues to evolve. The work is just beginning and will continue over the next eleven months with the IRP and BLRT Study to be submitted by October 1st, 2020.

Finally, we will have a written update provided by Jodi Piekarski, Manager – Operations Business – Laskin Energy Center and Rapids Energy Center on things happening at Laskin and elsewhere in the company, and a presentation by Bruce Richardson, Vice President Corporate Communications and External Affairs on recent developments at PolyMet. We will conclude out meeting with an ERJPB update by Elissa Hansen, President and CEO, Northspan Group and Consultant for ERJPB and your updates for the area.

We will follow our usual roundtable discussion format to encourage and address questions by our presenters and would encourage you to think about IRP related topics and interests to share at the meeting.

PROPOSED AGENDA

4:00 PM	**Business Meeting Call to Order and Introductions**	Randy Lasky, Facilitator
4:05 PM	**Review Meeting Agenda, Team Agreement and Last Meeting Summary – October 10, 2019**	Facilitator
4:10 PM	**Energy Conversation: MP 2020-2035 Integrated Resources Plan and Baseload Retirement Study Process Overview and Timeline, and Background and Clarification of MP Systems, Policy Trends and Major Topics of Interest (40 minutes)**	**Julie Pierce,** Vice President of Strategy and Planning, MP
4:50 PM	**Facilitated Brainstorming Process to Share Topics and Interests Important to Individuals, Itasca County and MP Service Area (40 minutes)** • What topics and interests do you feel "must be addressed" as part of this planning work? • What topics and interests do you feel "would be nice to consider" in this work? Next steps – Refinement and Priorities	Facilitator and Members Input with Support by Great Plains Institute and Center for Energy and the Environment
5:30 PM	**Break to Grab Buffet Dinner**	
5:45 PM	**PolyMet Update**	**Bruce Richardson** Vice President Corporate Communications and External Affairs, PolyMet
5:55 PM	**East Range Joint Powers Board Staffing and Laskin Energy Park Marketing Team Update**	**Elissa Hansen** President and CEO, Northspan Group and Consultant for ERJPB
6:05 PM	**Community Updates**	Panel Members
6:10 PM	**Next Meeting Agenda Topic – TBD -Ideas?**	Facilitator

6:15 PM	**Next Meeting Date and Location** January 9, 2020 | 4:00 | The Main Ski Chalet at Giants Ridge	Facilitator
6:15 PM	**Critique and Adjourn** **Please fill out your meeting evaluation form and leave it at the table. Thanks!**	

CAP GUIDING PRINCIPLES

Start and end meetings on time

Come prepared to the meetings

RSVP in advance for meetings and events

Reach out to facilitator in advance if bringing a guest

Respect others…talk about issues, not people

Be recognized by the facilitator to speak or when speaking

CAP members agree not to record, take videos or photographs w/o consent from the presenter(s) and corporate sponsors

Ask questions when you do not understand

Don't monopolize conversation

Practice openness and honesty

No hidden agendas

No side conversations

No acronyms/jargon

Attend a minimum of four out of eight meetings per year

Have fun!

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Meeting Participants

CAP Members							
☒	Laura	Ackman	Essentia Health – Aurora Clinic	☒	Becky	Lammi	City of Aurora
☒	Gregg	Allen	Mesabi East School District	☐	Mark	Lorenz	Mesabi Nugget
☒	Curt	Anttila	Community Representative	☐	Ann	Niesen	Superior National Forest
☒	Peter	Clevenstine	MN DNR	☒	Dan	Popp	City of Hoyt Lakes
☒	Steve	Giorgi	RAMS	☒	Jon	Skelton	Town of White
☐	Doug	Gregor	City of Aurora	☐	Mark	Skelton	Citizen Representative
☒	Elissa	Hansen	ERJPB	☒	Matt	Uhan	Bank of Gilbert
☒	Brian	Hiti	IRRR	☒	Chris	Vreeland	City of Hoyt Lakes
☐	Dan	Janisch	Janisch Realty	☐	Jim	Weikum	City of Biwabik
☒	Lance	Johnson	Amptek Contractors	☐	Andrea	Zupancich	City of Babbitt
☒	Linda	Johnson	IRRR				
☒	Jodi	Knaus	Town of White	☒	Mike	Geisdorf	MN Power/Citizen Rep
Alternates/Guests							
☒	Trevor	Drake	Great Plains Institute	☒	Mike	Bull	Center for Energy and Environment
☐	Spencer	Igo	Rep. Stauber's Office	☐	Mark	Phillips	IRRRB
☐	Cherie	Grams	ERJPB	☐	Jim	Plummer	IRRRB
☐	Jerry	Sinner	Stern Companies, Inc. (SCI)	☒	Jason	Mesta	IRRRB
☐	Jeff	Jacobson	City of Biwabik	☐	Ida	Rukavina	Sen. Klobuchar's Office
				☒	Carl	Layman	USDA
PolyMet Staff							
☐	LaTisha	Gietzen	PolyMet Mining	☐	Brad	Moore	PolyMet Mining
☐	Jon	Cherry	PolyMet Mining	☒	Bruce	Richardson	PolyMet Mining
Minnesota Power Staff							
☒	Arik	Forsman	Minnesota Power	☒	Jodi	Piekarski	Minnesota Power
☒	Julie	Pierce	Minnesota Power	☒	Anna	Vang	Minnesota Power
☐	Paul	Helstrom	Minnesota Power	☐			

MN Power 2020 IRP Stakeholder Process

East Range CAP Meeting

December 12, 2019

Facilitated Group Discussion – MN Power 2020 Integrated Resource Plan and Baseload Retirement Study Input

Background

East Range CAP members and guests participated in a facilitated discussion to help frame the scope of work and alternative scenarios to be performed in developing the 2020 Integrated Resource Plan (IRP) and Baseload Retirement Study (BLRT). This engagement is part of a multi-phased public outreach effort initiated by Mn Power, focused on its northern region service area and southern/Twin Cities stakeholders.

The following is a summary of the East Range CAP discussion which followed an introductory presentation by Mn Power which addressed an overview of the process and timeline, background and clarification of MP systems, policy trends, and major topics of interest and requirements of the Mn Public Utilities Commission.

Two questions were posed to guide the group discussion followed by a summary of the next steps in the input process..

Group Discussion and Input

1. **What must be considered, included, and addressed, if possible, in the Integrated Resource Plan and/or the Baseload Retirement Study? It could be a topic, question or concern.**
    - What are the costs and impacts of increasing use of renewables now and in the future?
    - o Renewable energy siting of wind, solar etc. – visual aspect. How does that impact the community?
    - o Opportunities to increase utilization of forest products and support sustainable forest management while reducing carbon. What are the chances of more biomass being on the system/included in that transformation?
    - ▪ Telling the story of how sound forestry practices can help with reducing carbon emissions and improve renewable forest conditions and opportunities.
    - o Drive towards renewable/decarbonized

    - o How do jobs compare between running a power plant versus building and installing renewable energy technologies? What are the socioeconomic impacts, locally?
- Energy Customer Classes, Rates and Competitive Impacts
    - Cost allocation across different customer classes
        - Out of balance now and becoming a real concern for large industrial customers – needs to be part of the equation (e.g., can residents do more conservation?)
    - What are the Mining and Forest Industry impacts as a result of the costs of renewables? Including domestic and global competitiveness.
    - Cascading impacts across industries (e.g., forest and paper)
    - What can we afford? (e.g., if we shift to 100% renewable, can we afford that, and do we still want it if we know the price?)

- Socio-Economic Impacts
    - Impacts on host communities, including risk of losing the tax base that utility assets provide annually.
    - Impacts on state aid for schools as a result of declining population (due to job loss)
    - Attention to what energy we're importing/exporting, and what the local and out of state consequences are of that action (energy and products).
    - What are the opportunities for re-using/repurposing infrastructure from retired utility assets? Can that help the tax base issue?

- Comprehensive Review of Energy Picture
    - Need to look at the whole energy picture – comprehensive review of energy source options and life cycle impacts and costs (e.g., life cycle analysis of materials used in production of renewable energy technologies)
    - Holistic view of resources and environmental impacts (e.g., could we eliminate landfill waste and produce energy by building a waste incinerator and energy recovery plant?)
    - How much will Electric Vehicles add to demand?
    - What about hydrogen? Is small scale hydrogen a potential for homes?

- Nuclear
    - Consideration of new/modern nuclear options (e.g., thorium)
    - Does the state moratorium preclude you from purchasing nuclear elsewhere?

- Conservation
    - Consumer education around energy use and conservation

2. What should be considered, included, and addressed, if possible, in the Integrated Resource Plan and/or the Baseload Retirement Study?

- Telling the story with good information/data in ways that are digestible to youth.

Next Steps:

- MP is looking for representatives from East Range CAP who would be willing to commit and participate in four (4) in-depth Northern Regional Work Group meetings engaging with others from across the service area. Those meetings would begin in January for several months. Two of the four meetings would be joint meetings with the St. Paul based stakeholders to facilitate dialogue between both groups. Those joint meetings would be held in Northern Minnesota.
- There will be additional general public input meetings happening in MP's service area and in the Twin Cities in the spring.
- The East Range CAP will still continue to meet on its regular monthly schedule as this process continues.
- A summary of this meeting input dialogue will be emailed to members for additional input, clarification and setting of priorities. That request will be out in December.

East Range

Regular Monthly Meeting

Date: December 12, 2019 | 4:00 P.M.
Location: The Ski Chalet at Giants Ridge

Meeting Objective

At this month's East Range CAP meeting our agenda will focus on MP's 2020 – 2035 Integrated Resource Planning (IRP) and the Baseload Retirement Study (BLRT) as ordered by the Minnesota Public Utilities Commission (MPUC). As you may know, the MPUC has directed MP to undertake a more expansive customer, key stakeholders and public outreach engagement process. This will be the third of such meetings and is an important role for East Range CAP to be a key part of. Joining us will be Julie Pierce, Vice President of Strategy and Planning at MP. Julie and Jennifer Peterson, Manager of Regulatory Strategy and Policy, are leading an internal team responsible for service area outreach and plan and study development. Julie and I will lead this upcoming conversation and opportunity to provide more direction to MP as it moves ahead with developing its long-range plans, more immediate actions, and recommendations to the MPUC. Also joining us will be a staff member from the Great Plains Institute (GPI), Trevor Drake, Program Manager and the Center for Energy and the Environment (CEE), Mike Bull, Director of Policy and External Affairs. These two organizations are assisting MP with convening and facilitating a key stakeholder's group in the Twin Cities and providing administrative support for this broader outreach and engagement process.

Your voice and assistance will help to frame and guide the focus of this work. Energy transformation has been underway for several years with significant changes in small coal facilities, addition of natural gas peaking, advancing of renewables, and other steps that benefit conservation, transmission and new technology applications. This planning process is designed to look at all of this and more as energy transformation continues to evolve. The work is just beginning and will continue over the next eleven months with the IRP and BLRT Study to be submitted by October 1st, 2020.

Finally, we will have a written update provided by Jodi Piekarski, Manager – Operations Business – Laskin Energy Center and Rapids Energy Center on things happening at Laskin and elsewhere in the company, and a presentation by Bruce Richardson, Vice President Corporate Communications and External Affairs on recent developments at PolyMet. We will conclude out meeting with an ERJPB update by Elissa Hansen, President and CEO, Northspan Group and Consultant for ERJPB and your updates for the area.

We will follow our usual roundtable discussion format to encourage and address questions by our presenters and would encourage you to think about IRP related topics and interests to share at this meeting.

Meeting Notes

I. Call to Order and Introductions

Randy Lasky, CAP Facilitator, called the business meeting to order and then welcomed everyone and had members and guests introduce themselves. He introduced our presenter from MN Power – Julie Pierce, Vice President of Strategy and Planning. Guests included Ana Vang, Public Policy Advisor, MP; Trevor Drake, Program Manager, Great Plains Institute; Mike Bull, Director of Policy and External Affairs, Center for Energy Environment; and Carl Layman, Deputy District Ranger, Aurora District, USFS.

II. Review Meeting Agenda, Team Agreement and Last Meeting Summary

Randy briefly reviewed the meeting agenda and expected outcomes, materials in the agenda packet and provided an opportunity for additions or changes. There were no changes to the agenda.

Members received a written summary of the October 10th meeting in their packet. Randy briefly went over the October meeting which included a presentation by Paul Helstrom and Jon Sullivan, both Customer Programs and Services representatives; MP on the development and evolution of "Electric Vehicles" technology and its future as a growing transportation alternative nationally and globally. We heard a monthly update from Brad Moore, Executive Vice President, Environmental and Governmental Affairs for PolyMet Mining updating the group on more hiring underway, status of litigation activities and an update on the visit by Glencore in September. We also heard a monthly update on MP activities and the Laskin Energy Center from Jodi Piekarski Manager – Operations Business – Laskin Energy Center and Rapids Energy Center, and from Elissa Hansen, President and CEO of the Northspan Group and consultant to the East Range Joint Powers Board (ERJPB) covering the Laskin Energy Park Marketing Team and ERJPB. There were no changes or additions to the meeting summary. An electronic version will be emailed following this meeting.

III. Energy Conversation: MP 2020-2035 Integrated Resources Plan (IRP) and Baseload Retirement Study (BRS) Process Overview and Timeline, and Background and Clarification of MP Systems, Policy Trends and Major Topics of Interest.

Randy introduced Julie Pierce, Vice President of Strategy and Planning for MP and Julie Pierce, shared a brief bio and reiterated the purpose of tonight's kickoff plan input presentation and the need for questions, feedback and input to the IRP process by CAP members and other stakeholders. Julie shared a PowerPoint presentation and addressed questions as she presented background and key information on the IRP process and why this planning is important to MP and the MN Public Utility Commission (MPUC).

The following are highlights and group questions as a prelude to a facilitated discussion on key plan components that must or should be considered by MP as part of the IRP planning process. The presentation will be distributed electronically after the meeting.

- Began with an overview of the IRP and BRS planning process and explanation of what an IRP is intended to accomplish, the scope, and intent of the BRS and the possible early retirement of Boswell Units 3 & 4, the remaining operating coal fired generation facilities in the MP fleet; and the development of a Securitization Plan used to mitigate rate payer impacts and transition assets and the power grid if and when major changes are made to the generation system.
- Explained the IRP and its intent, 15-year future planning scope from 2020 - 2035, forecasts to be made, alternative scenarios to be developed and the need and plan to engage stakeholders in planning process. All of this work which is now kicking off will lead to a filing along with the BRS with the MPUC in October 2020. Went on to describe how MP will be 50% renewable by 2021 with many options to be considered for the 15-year planning period. Customers are the key need to address balancing affordability, sustainability and safe and reliable power for the future
- Went on to share more details on the MP system and service area and its uniqueness with a major industrial, 24/7 baseload representing 74% of total energy sales. Described the customer base including residential, commercial, municipal and industrial sales and how MP is currently offering the 13th lowest residential electric rates nationally, while being the State of MN leader in renewables and reducing emissions with the transition of small coal facilities over the past several years. And, explained the municipal system customers and their important role and contractual relationship with MP.
- Went into detail on the Generation Supply system today with changes that have been implemented or are being developed today based on past IRP and Baseload study work. The Energy Forward Plan components and how that effort has evolved in the supply of energy. Addressed a number of questions on the size and contributions of Boswell 3 & 4 to the whole energy production mix; the development of gas at Laskin and the purpose and role of the Nemadji Trails Energy Center (NTEC) Project in Superior, WI; the Great Northern Transmission Line (GNTL) and how it plans to be used; the chances of more biomass being used in the system and its carbon neutral role and available supply; will nuclear power be part of the options considered, and hydrogen as a source.
- Described the role of Boswell Units 3 & 4 with its 950 MW production of the total 1800 MW MP system, and how major investments have been made to reduce emissions as well as described the retirement of Units 1 &2 in late 2018.
- Explained the focus on renewables such as solar and wind; resiliency with expanded hydro and the GNTL project completion; adapting and focusing on customer needs and conservation improvements with programs, rebates and assistance to customers.
- Concluded with an overview of Minnesota energy policy and trends we may expect to see evolve. Included specific mandates in play today for renewables, energy efficiency, greenhouse gas reduction, competitive rates for large power trade exposed customers, and energy affordability and continuous service to low income customers. Shared some thoughts on clean energy and Governor Walz's goal of 100% clean energy in Minnesota by 2050 which is expected to be discussed at the legislature.

Randy thanked Julie for her presentation and insightful discussion and questions by members, and Mike Bull and Trevor Drake for their input and thoughts during the presentation and Q & A. This conversation was then extended into a facilitated group brainstorming process to share more thoughts on topics, questions, and concerns to be considered and guide the IRP and BRS work over the coming months. The PowerPoint presentation will be sent out electronically.

IV. **Facilitated Brainstorming Process to Share Topics and Interests Important to Individuals, East Range and MP Service Area.**

Randy explained that MP was seeking input and feedback that can guide the IRP and BRS planning work. This is the fourth in a series of "Kick-off" engagement meetings with stakeholders and customers. ItasCAP met in late November, two meetings were held in Duluth on Monday the 9th and this represents the fourth meeting up north. In addition, a Southern Stakeholder's Group consisting of a variety of statewide public and private stakeholders and interveners has met and is planning a second meeting for this same purpose. Trevor Drake and Mike Bull are facilitating the work of this group.

He then explained the two questions to be posed and why, and then members and guests participated in a facilitated conversation. **Attached is a separate summary of the discussion outcomes and next steps involved in this engagement process.** Following the discussion, Randy asked members who are interested in a more "deeper dive" engagement role to consider participating on a Northern Outreach Regional Work Group of representatives from northern Minnesota that would participate in four planned meetings. Two meetings with other northern representatives and two joint meetings with the Southern Stakeholder's Group. Those would happen over the next several months and be held in the region. More details to follow.

Randy thanked everyone for their "Must Have" topics, questions, ideas and comments which will also be shared back to everyone in an online survey. We want to know if you have any additional thoughts or questions and prioritize the input from tonight. Great job everyone!

V. PolyMet Update

Randy introduced Bruce Richardson, Vice President, Corporate Communications and External Affairs to provide this month's PolyMet update. Bruce shared a PowerPoint presentation that covered in some detail the scope and update of litigation activity in process and recent filings and appeals. January will be an important month with decisions expected on several permits and the transparency question involving the MPCA and EPA. Highlighted several staff retirements and continued hiring and expansion with several new hires recently completed. Explained an outreach effort to meet with property owners downstream of the tailing's basin to share more information with them on risks, modeling outcomes and assumptions made in the analysis process. This was well received by property owners, positive and constructive. He addressed several questions by CAP members on the modeling and assumptions for a breach situation and how many properties would be affected.

Randy thanked Bruce for this timely and informative update. The PowerPoint will not be sent out electronically following the meeting. Direct any follow-up questions to Bruce Richardson or LaTisha Gietzen.

VI. Laskin Energy Center and MP Update

Randy reminded everyone that due to time constraints this month, he asked Jodi Piekarski, Manager – Operations Business – Laskin Energy Center and Rapids Energy Center to provide a written update for the month. That was included in the agenda packet and will be sent out electronically following this meeting. Key points covered included the status of dispatch activity, maintenance scheduled in

November, no safety or environmental incidents in October, and a staffing update and new hiring for a Lab and Environmental Specialist at Laskin.

Randy thanked Jodi for the written update. Any questions should be directed to Jodi.

VII. Laskin Energy Center Marketing Team and ERJPB Update

Randy called again on Elissa Hansen, President of the Northspan Group to provide a brief update on the Marketing Team and other ERJPB activities. Elissa reported on a second and possibly third round of grants for "use of technology to improve the community". These are grants from the Blandin Foundation that were highlighted last month in detail when we went over the status of broadband development efforts. Anyone interested in applying should do so soon. Northspan is available to address questions and assist with this effort. She went on to describe the status of the broadband feasibility study RFP and matching fund-raising efforts for the grant. Over $60,000 has been raised to date to match up to a $75,000 grant on a 1:1 basis. We are in great shape to cover the scope of work we hoped to address. She reported that the draft the Childcare Solutions Action Plan has been completed. Shared that staff have been working with Barr Engineering, ARDC and Iron Range Tourism to determine how to connect area and regional trails with the East Range. Commented on the status of business retention visits with 30 East Range businesses that have been underway. Those results will be shared with the communities and include some policy recommendations as well as be used to support the broadband feasibility study. Concluded by sharing that the Shovel Ready certification is positioned for submittal and approvals.

Learned about a $250,000 IRRR loan to Stearns Company to support its expansion. IRRR Deputy Commissioner, Jason Metsa commented on the good work and that he was happy to see all the parties working together to get these deals done.

Randy thanked Elissa for the update and good work being done. Any follow-up questions should be directed to Elissa or Karl Schuettler at Northspan.

VIII. Community Updates

- Laura Ackman reported that the Essentia Health – Northern Pines Medical Center has been recertified as a Level IV Trauma Center and 16 bed Critical Access Hospital. She received a round of applause for this great work.

IX. Next Meeting Agenda Topic – Proposed we have a Legislative Pre-Session Update and Mesabi East School Renovation Project Update

X. Next Meeting Date and Location

The next meeting of the East Range CAP will be held on Thursday, January 9th, at 4:00pm at the Ski Chalet or other location to be determined at Giants Ridge.

Minnesota Power
2020 Integrated Resource Plan and Baseload Retirement Study

Northern Regional Stakeholders Group - First Meeting
Tuesday, January 28, 2019. 10:00pm-3:00pm

Discovery Center, Taconite Square Conference Room
1005 Discovery Drive, Chisholm, MN

Meeting Objectives:

1. Build a shared understanding of the diversity of stakeholder perspectives, priorities, and concerns with regard to Minnesota Power resource planning, including customer, community, and environmental concerns.

2. Enable collaboration among stakeholders to identify key challenges and potential solutions for Minnesota Power's service territory that relate to resource planning.

3. Inform considerations for the 2020 IRP and review and provide feedback to an early draft of the plan.

Agenda:

10:00 AM **Welcome, Introductions, and Icebreaker Exercise**

10:30 AM **Guiding Principles – How will we work together and bring value to this effort**

10:45 AM **Why We're Here and What We Expect to Accomplish Today and Over three "Deeper Dive" Joint Engagement Meetings with Northern and Southern Stakeholders**

- **Overview of the Input and IRP "Must Have" Priorities of Multiple Northern Kickoff Outreach Meetings**
- **Joint Stakeholders Meetings Process Overview and Focus of First Joint Meeting with Southern Stakeholder Group in February**
- **Joint Meeting Dates and Locations**

12:00 PM **Buffet Lunch**

12:30 PM **MP Deeper Dive Presentation and Q & A: Host Communities in Transition - Economic Impacts of Boswell Energy Center Retirement Under Multiple Scenarios**

- **Direct and indirect economic impacts**
- **Jobs, taxes and other socio-economic implications**

1:10 PM **MP Deeper Dive Presentation and Q & A: Environmental Policy Trends and Implications for Resource Planning**

2:10 PM **Boswell Environmental Retrofits and Investments**

2:30 PM **Break**

2:45 PM **Review Meeting Outcomes, Next Steps and Critique of Session**

3:00 PM **Adjourn**

Thanks for Joining Us Today!

Northern Regional Stakeholders Group

Today's Attendees

Alex Jackson	City of Duluth
Bruno Zagar	Fond du Lac Band of Lake Superior Chippewa
Bud Stone	Grand Rapids Area Chamber of Commerce
Craig Wainio	Mountain Iron
Curt Antilla	East Range Joint Powers Board
Ed Zabinski	Zabinski Consulting
Elissa Hansen	Northspan
Eric Boleman	Barr Engineering
Eric Enberg	Duluth Citizen's Climate Lobby
James Hietala	Western Lake Superior Sanitary District
Jay Brezinka	Department of Military Affairs
Jeff Hart	Hart Electric Inc.
Jeff Stollenwerk	Duluth Seaway Port Authority
Jenna Yeakle	Sierra Club
Lora Wedge	Ecolibrium3
Lori Ruff	Department of Military Affairs
Rick Blake	Grand Rapids City Council/Public Utilities Commission
Rob Mattei	City of Grand Rapids
Ryan Korpela	Cleveland-Cliffs Inc.
Sandy Karnowski	Cleveland-Cliffs Inc.
Steve Giorgi	Range Association of Municipalities and Schools
Stine Myrah	Minnesota Public Interest Research Group
Tamara Lowney	Itasca Economic Development Corporation
Wayne Dupuis	Fond du Lac Band of Lake Superior Chippewa

Randy Lasky	Facilitator
Ana Vang	MP
Jennifer Peterson	MP
Julie Peterson	MP
Audrey Partridge	CEE
Trevor Drake	Facilitator
Rolf Nordstrom	GPI

Integrated Resource Plan Northern Deep Dive

Julie Pierce, Minnesota Power Vice President of Strategy and Planning

Jennifer Peterson, Minnesota Power Manager of Regulatory Strategy and Policy

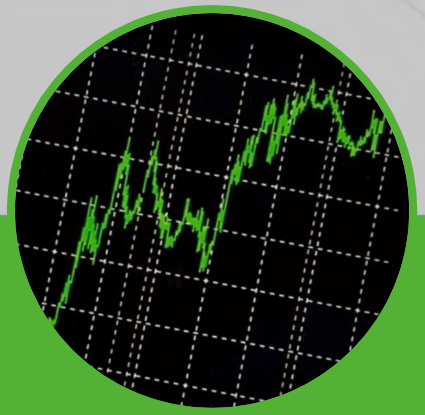
The Year Ahead With MPUC

Integrated Resource Plan

- Evaluate 15-year outlook
- Identify how MP will serve customers
- Determine size, type and timing

Baseload Study

Thoroughly evaluates and includes a plan for the early retirement of Boswell 3 and 4, individually and in combination



Securitization Plan

Could be used to mitigate potential ratepayer impacts associated with an early retirement of Boswell 3 and 4

October 1, 2020

What is the IRP?

- One of the most important planning tools and road maps for each electric utility in Minnesota
- Reasonable plan to ensure utilities can meet customers' needs in a reliable and low cost manner
- Plans include forecasts, evaluation of current assets and long range power system planning
- Filed periodically with the Minnesota Public Utilities Commission
- Broad public process with opportunities for stakeholder input

Host Community Study: Boswell Economic Impacts

Minnesota Power IRP Stakeholder Meeting
1/28/2020

Overview:

- Background
- Current Economic Impacts of Boswell
- Preliminary Economic Study Results
- Key Takeaways

Background on Host Community Study

- Center for Energy and Environment (CEE)
- Analysis of 5 Xcel plants and 1 MP plant
  - Wright County (Monticello Plant)
  - Goodhue County (Prairie Island Plant)
  - Sherburne County (Sherco 3 Plant)
  - Washington County (King Plant)
  - Itasca County (Boswell Plant)
- Study the value of coal units to host communities
  - Qualitative – first-person interviews with community leaders and a review of literature on similar instances where small towns lose a large employer
  - Quantitative – Economic impact analysis to assess current financial and demographic benefits of the plant.

Purpose and Methodology

- Purpose
  - Quantify the benefit of Boswell to the community and state
- Scenarios
  - Baseline – Boswell operates indefinitely
  - Example 1 – Staggered retirement of Units 3 and 4
  - Example 2 – Units 3 and 4 retired roughly at same time
- Economic Impact Methodology
  - Identify direct impacts – Boswell's jobs, taxes, etc.
  - Simulate the economy with direct impacts
  - Calculate induced impacts – Vendors, retailers, etc.

Current Economic Impacts

- Direct benefits
  - Over $28 Million/yr to Itasca County
  - $48 Million/yr to Minnesota

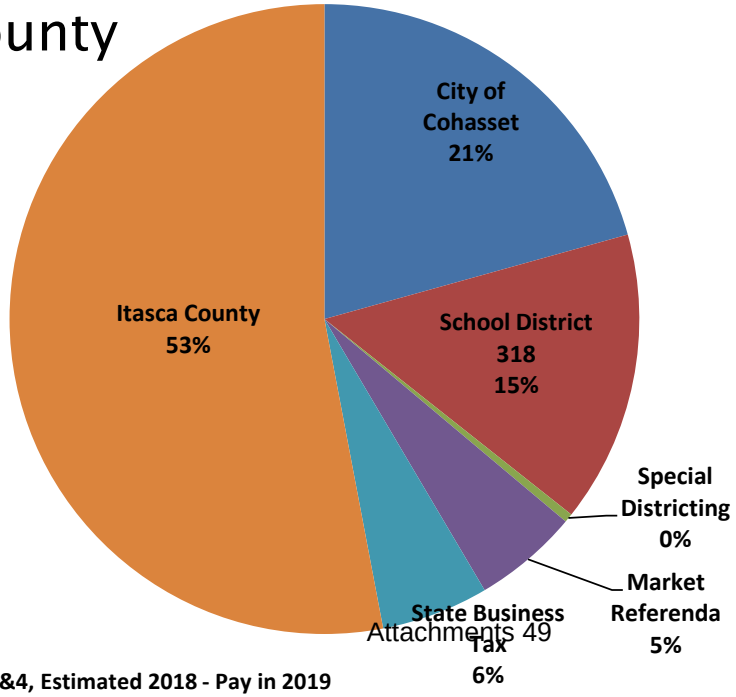
- Employment – Highly skilled/High paid Jobs
  - Boswell employs 167 MN Residents
    - 151 residents of Itasca County
  - Average salary = $88,300 + 40-50% Overhead
    - Labor spending in Itasca = $18.6 Million
    - Labor spending in Minnesota = $20.5 Million

Current Economic Impacts (Cont.)

- Vendor Payments for O&M and Capital:
  - $3.5 Million to vendors just within Itasca County
  - $20 Million paid annually to Minnesota Vendors

- Property Taxes* = $6.8 Million
  - ~94% to local authorities (within Itasca)
  - Over 50% paid directly to Itasca County

Boswell Property Taxes*
~6.8 Million



*Units 3&4, Estimated 2018 - Pay in 2019

Current Economic Impacts – Cohasset

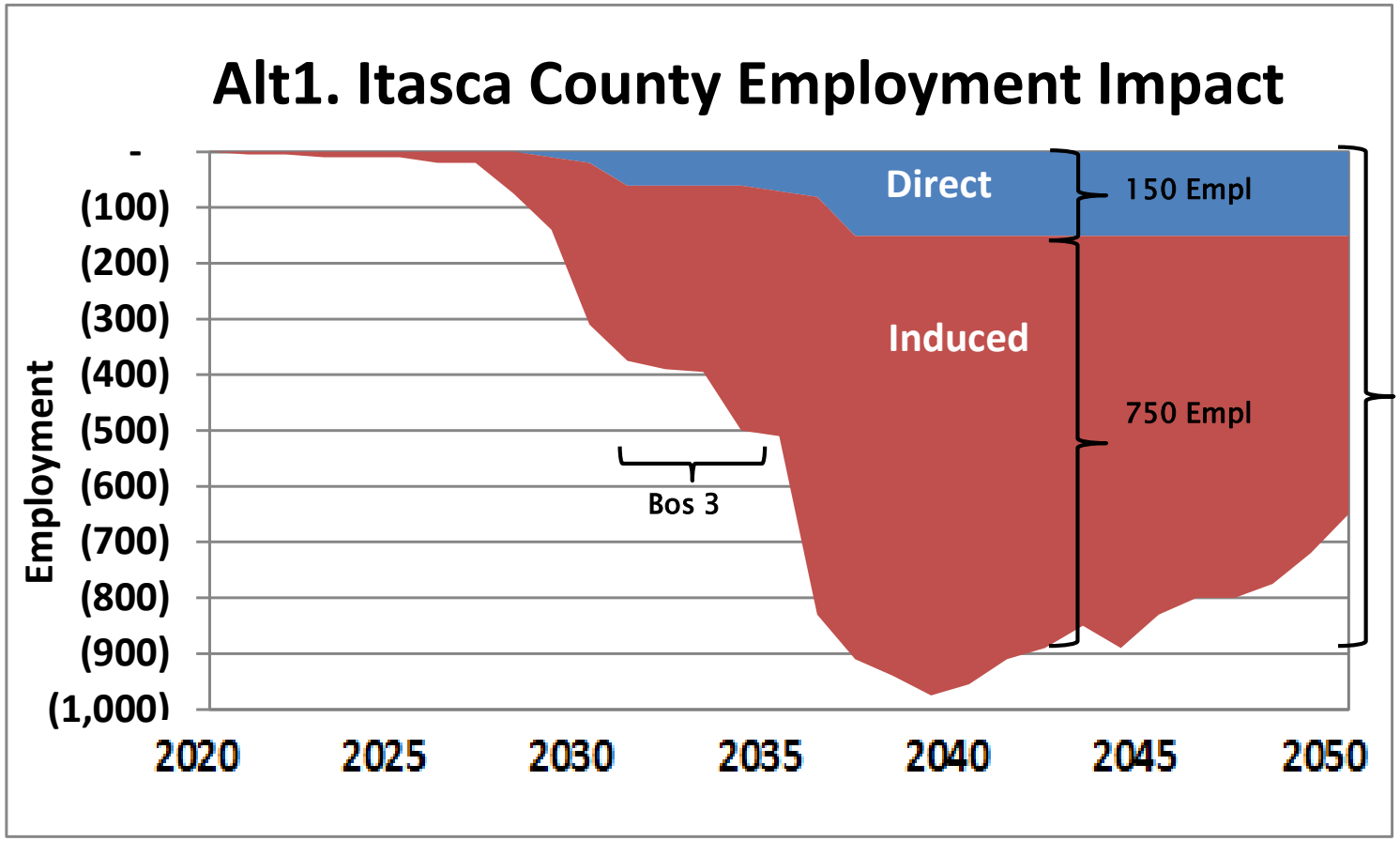
- Population – 2,809
- 2020 Tax Capacity
  - $9.1M city tax base
  - Boswell = 54.4%
- Average Salary
  - Boswell – $88,300
  - Itasca County – $42,500
    - $52,000 median household income

Preliminary Results

Summary of Preliminary Results
Retirement of Boswell Units 3 & 4

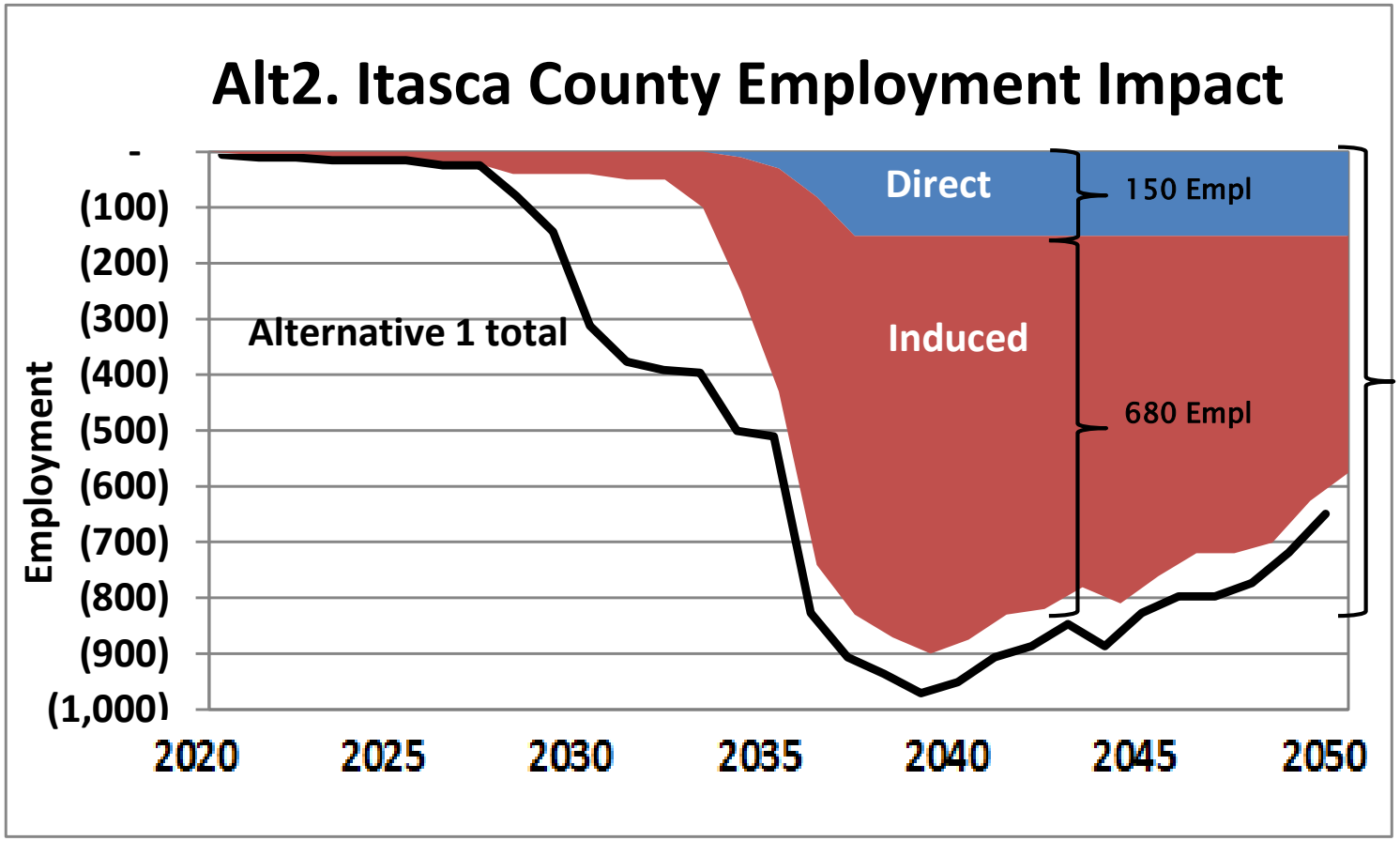
- Itasca County
  - Reduction of about 800-900 jobs (Direct & Indirect)
  - Gross County Product reduced $200-220 Million (6.5%)
- State of MN:
  - Reduction of about 1,500-1,650 jobs (Direct & Indirect)
  - Gross State Product reduced by $350-390 Million (0.1%)

Example 1:
Bos3 retires 2030 and Bos4 in 2036



Itasca Co. Total Employment = 19,000

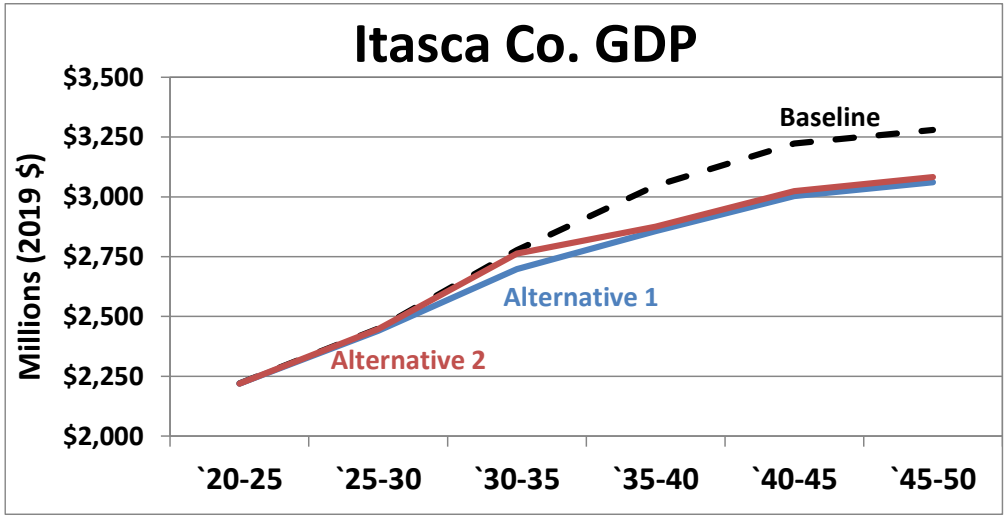
Example 2:
Bos3 retires 2035 and Bos4 in 2036

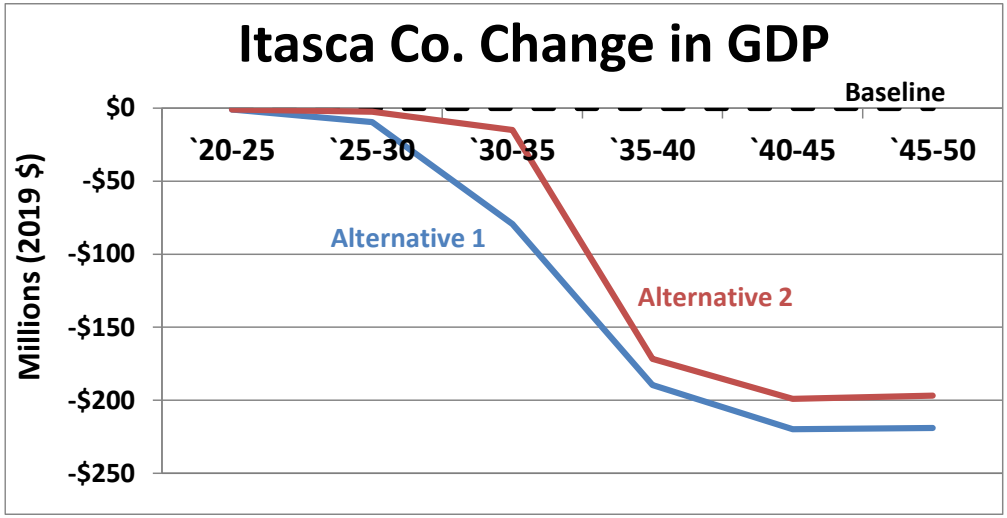


Itasca GDP Impacts

2018 GDP

- Itasca County GDP
  - ~$2.25 Billion
- Direct Boswell spending
  - $0.03 Billion ($30 Mil)
  - 1.3% of Co. GDP
- MP total econ value
  - $0.2 Billion ($200 Mil)
  - 6.5% of Co. GDP



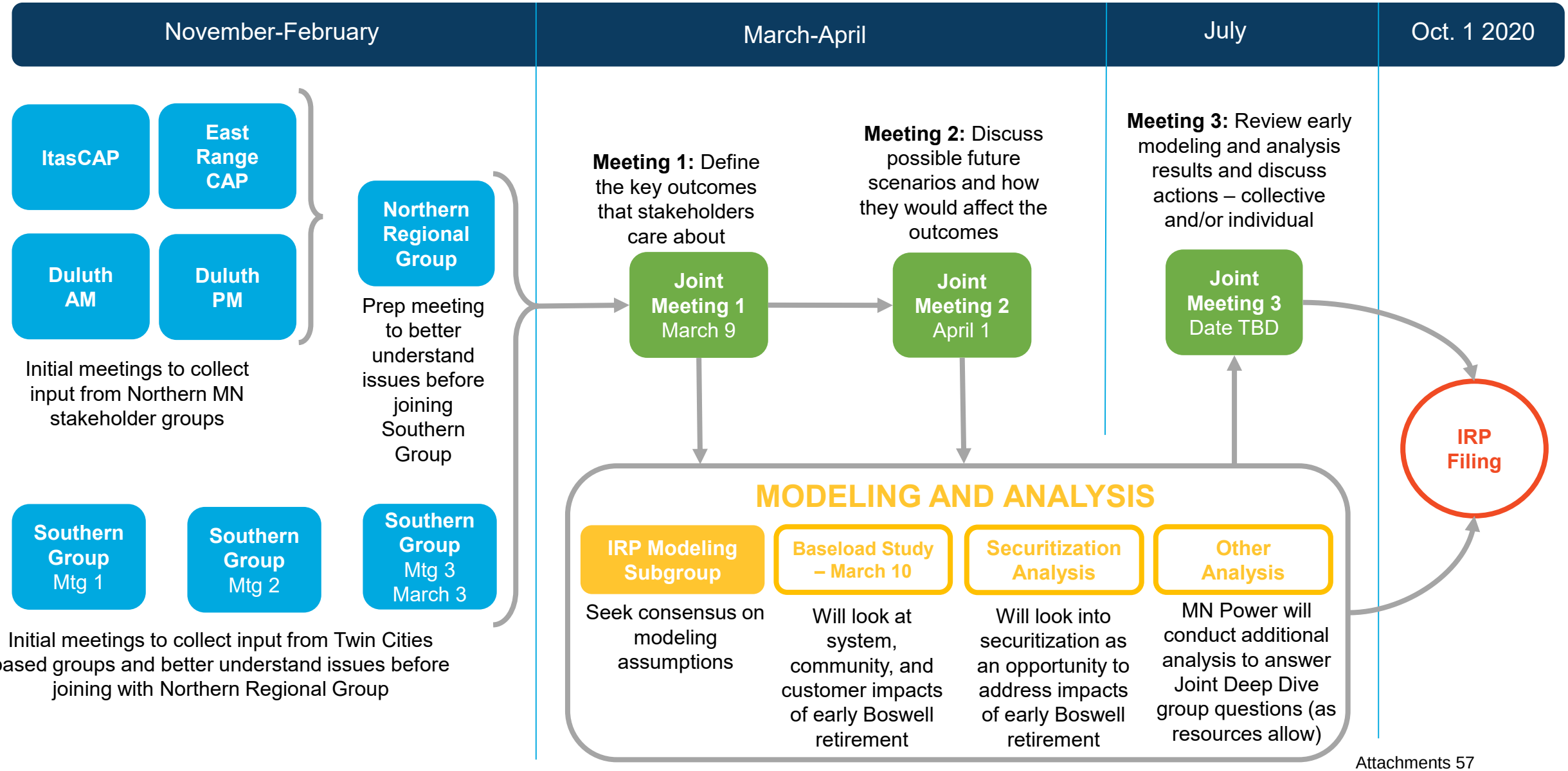


St. Louis, Carlton, Douglas (WI) GDP = ~12 Billion

Key Takeaways

- Boswell is a pillar of Cohasset's economy, and impactful to Itasca County
  - Directly accounts for about 1% of County's employment
  - Indirectly supports another 4%
  - Directly supports 1.3% of County GDP
  - Indirectly supports another 5.2%

MINNESOTA POWER 2020 IRP JOINT STAKEHOLDER MEETING PROCESS



NOTE: Dates and topics are subject to change to meet the needs of the stakeholder group

Minnesota Power 2020 IRP

Presentation Notes – Northern Regional Stakeholder Meeting

JANUARY 28, 2019

These notes capture Q&A during the presentation portion of the meeting. The on-screen notes from the discussion portion are in a separate document.

1. **Boswell Economic Impacts – Julie Pierce**
    a. Can we see a map of the tax base that Boswell provides to communities across the Iron Range?
    b. Role of geography for Cohasset/Boswell versus other plant communities. Compared to other plants communities in MN that are near metro areas, these are very unique jobs for the region, and a higher percentage of workers are in the local community.
    c. COMMENT: A tourism economy will not provide high quality, family sustaining jobs.
    d. Questions:
        i. How much new economic development would be needed to replace Boswell?
        ii. Migration to the metro area is another impact to consider. Could be to find employment or related impacts.
        iii. What would be the impacts on residential property taxes?
            1. Jeff Walker at the County would know the extent that they've looked at this.
        iv. There is currently not legislation that addresses what would happen in Itasca County as a result of plant closure.
        v. What might be the benefits to rates or the community of securitization?
2. **Energy System Trends and Implications – Rolf Nordstrom**
    a. What about the precious metals required for renewable energy products, such as solar panels?
        i. Fair question to be part of this conversation, though acknowledge that what happens with mining globally is outside the scope of this IRP. Perhaps the question, at a high level, is what role can responsible mining play in a clean energy economy?

b. What about the cost of transition for companies switching to renewables, since some of them may be leaving an existing system and contributing to stranded costs for the remaining customers?

    i. Fair question and remember that these slides are from a national perspective, so these trends may not necessarily ring true for MN Power. A good example is the metric of Levelized Cost of Energy, which looks at the cost of producing energy from different sources, but doesn't look at the cost of interconnecting those sources, which can be high for renewables.

Minnesota Power 2020 IRP

On-Screen Notes – Northern Regional Stakeholder Meeting

JANUARY 28, 2019

These notes capture group edits made to summarized feedback from the ItasCAP, East Range CAP, and Duluth stakeholder meetings. Participants had the opportunity to review these statements and questions, which were collected in previous meetings, and edit them to add missing information or restructure them to be more neutral. NOTE: The group did not have enough time to fully review the "Scenario Impacts" session.

Given the information you have today, what are your "must-haves" for considerations/scenarios in Minnesota Power's next IRP?

1. SCENARIO IMPACTS:

A. COMMUNITY/SOCIO-ECONOMIC:

i. **Jobs**

1. Good jobs and living wage jobs are important – what would changes to the power system do to wage levels?
2. How will closure of Boswell 3 and 4 affect jobs?
3. How do jobs compare between running a power plant versus building/installing and operating renewable energy technologies?
4. Training programs for jobs amidst transition.

ii. **Tax base and Infrastructure**

1. What will be the tax base impacts of a plant closure in Itasca County (and other entities/parties that would be impacted)?
2. If the plants are decommissioned, has there been a consideration (and a plan) around what would happen to the site and infrastructure?
3. Fiscal disparities impacts – what happens to different cities or communities on the Iron Range?

iii. **Cascading impacts**

1. What are the impacts of an energy plant closure on large industrials and those quality jobs?
2. What are the socio-economic impacts if electricity rates are not competitive for large industrial customers, causing them to close down?
3. If we lose jobs in the region, what will be the impacts on state aid for schools as a result of declining population?
4. What are the Mining and Forest Industry impacts and opportunities as a result of the costs of renewables?
5. Social output of employees/community members and leadership within the community– e.g., United Way contributions.
6. What would be the job impacts of new energy sources in MN Power territory (depends on location)
7. How does the pace of change affect these impacts?
8. How might Boswell retirement affect the ability to attract/support new or expanding industries?.

9. Shifting burden of tax base from industrial to commercial and residential.

B. CUSTOMERS:

i. **Industrial competitiveness:**

1. What happens to industry if electricity rates are not competitive (including from a global perspective)?
2. How might a changing resource mix (e.g., more renewables) affect the cost of electricity for large industrials?
3. What does the current cost allocation picture look like, and how might the balance of cost allocation between different customer classes be impacted? (e.g., can residents do more conservation? Can energy efficiency help with this?)
4. How is Xcel able to attract industrial customers through its increasing reliance on renewables (example from Colorado), and what could MN Power learn from that?
5. What are the impacts of industry looking elsewhere for power?
6. Additional global steel market and national security impacts to consider.

ii. **Reliability, resiliency, and power quality:**

1. Reliable power is important. How much demand response is involved in planning to keep power from being curtailed? How often are large industries going to get curtailed in the future?
2. Resiliency is important (ex. 2012 major area flooding)
3. Quality of power is important for industrial customers. How might power quality issues change with resource changes, and possibly affect industrial expansion in the region?

iii. **Low income customers:**

1. How might a changing resource mix (e.g., more renewables) positively or negatively impact low income customers?
2. Can we move to renewables and support low income/vulnerable/frontline communities (e.g., not increase the burden on them)?
3. Helping others to save should be prioritized to those in need first and foremost so they are warm in the winter.

iv. **Clean energy access/affordability:**

1. If we shift to 100% renewable, how does that impact affordability, and what action does that lead us to take/do we still want it given the price?
2. Can we get a rate for renewable programs closer to the retail rate? Sometimes old infrastructure can't handle added renewable infrastructure (e.g. solar panels on an old building).
3. How do we make clean energy affordable to all? Are there creative partnership opportunities?
4. Can MP move faster to 100% renewables and still support low income/vulnerable/frontline communities?

v. **Municipal customers**

1. What are impacts of changing rates, such as municipals looking elsewhere? What would that do to MP's load? And cascading impacts.
2. What are the impacts of large municipal facilities to residents/taxpayers?

vi. **Residential Customers**

1. What are the impacts of changing rates? How does MN Power's customer mix and volatility of the industry impact residential rates?

vii. **Commercial Customers**

1. What are the impacts of changing rates? How does MN Power's customer mix and volatility of the industry impact commercial rates?

C. ENVIRONMENTAL:

i. **Carbon/GHG Emissions**

1. What are the environmental impacts if electricity rates are not competitive for large industrial customers (e.g., taconite), causing them to close down and production to shift to other locations with worse environmental regulations? Similarly, what are the impacts/opportunities if electricity rates are more competitive?
2. Need to look at the whole energy picture – a comprehensive review of energy source options and life cycle benefits and costs (e.g., life cycle analysis of materials used in the production of renewable energy technologies).
3. We need to consider the differences of opinion around energy vs. climate change. Addressing climate change involves looking at lifestyle and acknowledging that Boswell is a very small piece of a much larger problem.
4. Drive towards renewable/decarbonized.
5. How can we increase Minnesota Power's market share amidst efforts to decarbonize transportation and building energy use?
6. How does Minnesota Power's plan fit within the state's 2050 climate goal, with regard to carbon/GHG emissions?

ii. **Air Quality**

1. To what extent are people aware of how much cleaner coal is now? Do they know what's actually coming out of the stacks, given pollution reduction investments and other efforts?
2. What are the life cycle health impacts of different resource options (extraction, transportation, usage, etc.)?
3. Knowledge point -- how does air quality and emissions for MN Power compare to other utilities, nationally?

iii. **Water Quality**

1. What changes would affect water quality, if suddenly there's no plant there?

2. SCENARIO CONSIDERATIONS:

A. COMMUNITY/SOCIO-ECONOMIC:

i. Are there ways to bring jobs here as we see more renewable energy being built outside the service territory?

ii. How does Minnesota Power plan to use the retirement of Boswell as an opportunity to invest in job development and infrastructure that builds a clean, healthy energy future for Minnesotans?

iii. An early retirement plan for Boswell 3 & 4 communities is necessary now to prepare for infrastructure and workforce changes.

iv. What are the opportunities for reusing/repurposing infrastructure from retired utility assets? Can that help the tax base issue?

v. What is the probability that the loss of tax base and jobs would be replaced if Boswell closed, and what would it take to replace that?

B. CUSTOMERS:

i. If people are renting, can we make it a standard for the property owners/developers to have to buy in to the renewable energy? We need to strive to have this as a baseline and go up from there.

ii. Low-income customers: Is there an inclusive financing tool you can use where Minnesota Power wouldn't lose money and customer bills would go down?

iii. In the event of an early retirement of Boswell, how do customers recoup the costs of environmental improvements that have been made?

C. ENVIRONMENTAL:

i. A holistic view of resources and environmental impacts (e.g., could we eliminate landfill waste and produce energy by building a waste incinerator and energy recovery plant?)

ii. What about maintaining Boswell and borrowing credits to offset emissions? Cap and trade?

iii. What are the climate effects of different energy sources, and how is that taken into consideration?

iv. What is the effect on the northern boreal forest if GHG emissions are not curtailed? Same for Lake Superior and its watershed.

v. What are the effects of different/changing resource mixes and associated climate impacts on indigenous peoples? (e.g., shifting to more renewables). What is most sustainable? Need to take a longer-term view.

D. TECHNOLOGY

i. Technology – are we on the leading/bleeding edge or in the middle of the pack? What is the philosophical approach? Benefits and costs? Help MP customers understand.

ii. Technology and future technology play a big component.

E. SPECIFIC RESOURCES

i. **Energy efficiency**

1. How do we bridge/incorporate building design with changing technology, state statute, etc.?
2. Capitalize as much as possible on energy efficiency.
3. Provide consumer education around energy use and conservation.
4. Can we have fuel-neutral CIP rebates?

ii. **Demand response**

1. Explore more demand response – primarily industrial, but also commercial and residential.
2. How much demand response is involved in planning to keep power from being curtailed?
3. Work on partnerships for demand response
4. Can MP better message demand response?
5. Can we get smart thermostats with artificial intelligence as a rebate?

iii. **Electrification**

1. How does electrification factor into the IRP?
2. Will we have enough electricity if we electrify everything?
3. Estimate of future energy consumption (including electric vehicles)
4. Is there a market for air source heat pumps? Are they/can they be cost-competitive? How can Minnesota Power create incentives for air source heat pumps as a conservation tool?
5. Can the thermal energy transition to electricity be better incentivized?

iv. **Renewables**

1. What are the costs and benefits of increasing renewable use now and in the future?
2. How can MP help customers move to renewables, while being reliable, affordable, etc.? Redundancy, reliability and resiliency are critical in assessing renewables and all energy source alternatives.
3. Work to reduce barriers, increase participation. Make renewable energy more accessible/affordable to people in poverty. We want to move to 100% renewables without forgetting vulnerable communities in the process. In other words, we don't want access to renewables just for wealthier people...we want it for everyone.
4. Are there ways to bring jobs here as we see more renewable energy being built outside the service territory?
5. Do we know if our renewable % will continue to increase? How open is MP to being 100% renewable? What's next after 2021 for renewables in the mix? What's the goal?
6. Wind and solar – will the current federal tax subsidy be considered for extension and would adding other technologies be considered like storage?
7. Drive towards renewable/decarbonized.
8. Renewable energy siting of wind, solar etc. – visual aspect. How does that impact the community?

v. **Solar**

1. How can we have more opportunities for solar in ways that work for a variety of folks? How do we accelerate that change (that doesn't include cutting forests or filling in wetlands)?
2. Solar energy – Is there interest in partnering with businesses, high users of energy, etc.?
3. Can new construction, solar-ready buildings get rebates?
4. Can MP own things like solar panels on churches?
5. Can we publicize program offerings (e.g. solar)?
6. MN Power investing in solar energy as a reliability source for industry needs.

vi. **Storage**

1. Renewables are inconsistent. Other storage mechanisms are needed. Is MP looking at storage? Paired renewables and storage? What's possible with storage options and technology?
2. Storage – using old mine pits and bladders (pumped hydro). What was the result of this study?

vii. **Nuclear**

1. Remove the moratorium
2. Consider new/modern nuclear options (e.g., modular nuclear, thorium)

viii. **Biomass**

1. Opportunities to increase the utilization of forest products and support sustainable forest management while reducing carbon. What are the chances of more biomass being on the system/included in that transformation? (Telling the story of how sound forestry practices can help with reducing carbon emissions and improve renewable forest conditions and opportunities.)

2. What is the wood fiber role in renewables and carbon reduction? How do we insure there is a legislative understanding of this opportunity at both the State and Federal levels?

ix. **Hydropower:**

1. Will hydro count toward the renewable standards, both current and future?

x. **Nemadji Trail Energy Center (NTEC):**

1. Can we better understand the need for NTEC and possibilities around changing the fuel source? Can you replace NTEC either now or later with renewables?
2. Currently, there is no need for NTEC. It is costly ($350 Million to ratepayers) and does not lead us to the future we have the technology and are gaining on capabilities every day. Let's put our time and money there.
3. Maybe I missed it but there was no clarification if NTEC is intended to replace Boswell production completely, partially, or is it for additional load capacity.

NORTHERN MN EDUCATION & OUTREACH SURVEY RESULTS

The following are the results of surveys issued to participants after each of the Northern MN Initial Education and Outreach Meetings (see the corresponding section of the interim report for more information).

During these meetings, facilitators captured participants' suggestions for what should be considered in Minnesota Power's next IRP. The surveys listed these considerations and asked participants from each meeting to review the comments from the meeting they attended and check whether the consideration listed was a "must have" in their opinion.

These results show, by major categories, the percentage of participants in each meeting who checked that item, the total number of checks, tags for relevant sub-items within that category, and the specific meeting where the comment was raised.

These surveys were provided to participants in the first joint meeting, to consider as they identified the key issues that should be included in the issue map (which will be presents in the final report).

Community Values

#	Survey Choices	Percent	#	Community Tags	Group
Percent Grouping: 75% or greater					
1	How deep does the socio-economic impacts assessments go? For example, what are the impacts of an energy plant closure on large industrials and those quality jobs?	84.62%	11	Jobs Cascading Impacts	ItasCAP
2	Tax base – what will be the tax base impacts of a plant closure in Itasca County?	84.62%	11	Tax base	ItasCAP
3	Taconite production – if electricity rates are not competitive for mining here, taconite demand will continue, but the production will shift elsewhere, possibly to locations with worse environmental regulations. Need to think about those impacts and how that impacts us from a social-economic standpoint.	84.62%	11	Cascading Impacts	ItasCAP
4	Impacts on host communities, including the risk of losing the tax base that utility assets provide annually.	78.57%	11	Tax base	East Range
5	Boswell 3 and 4 – Plan to address those facilities and workforce changes	75.00%	9	Jobs	Duluth AM
Percent Grouping: 51%-74%					
6	Impacts on state aid for schools as a result of the declining population (due to job loss)	71.43%	10	Jobs Cascading Impacts	East Range
7	Attention to what energy we're importing/exporting, and what the local and out of state consequences are of that action (energy and products).	71.43%	10	Cascading Impacts	East Range
8	If the plants are decommissioned, has there been a consideration (and a plan) around what would happen to the site and infrastructure? There were several considerations looked at around Boswell Units 1 and 2, which MP could draw upon. It will be a part of this conversation.	69.23%	9	Infrastructure	ItasCAP
9	What's happened with infrastructure at 7 of the 9 closed coal units?	66.67%	8	Infrastructure	Duluth AM
10	Are there ways to bring jobs here as we see more renewable energy being built outside the service territory?	66.67%	6	Jobs	Duluth PM
11	What are the Mining and Forest Industry impacts as a result of the costs of renewables? Including domestic and global competitiveness.	64.29%	9	Cascading Impacts	East Range

#	Survey Choices	Percent	#	Community Tags	Group
12	How do jobs compare between running a power plant versus building and installing renewable energy technologies? What are the local socio-economic impacts?	64.29%	9	Jobs	East Range
13	Cascading impacts across industries (e.g., forest and paper)	64.29%	9	Cascading Impacts	East Range
14	What are the opportunities for reusing/repurposing infrastructure from retired utility assets? Can that help the tax base issue?	57.14%	8	Infrastructure	East Range
15	Host Utility Study is currently being completed to look at the impacts on host communities of potential energy plant closures. But the other question is about whether the study looks at the next layer of cascading impacts due to large customers closing their doors.	53.85%	7	Cascading Impacts	ItasCAP
16	Residential rate impacts assessment needs to be done and compared with large power users need to discern what happens to their competitiveness and potential job losses.	53.85%	7	Jobs	ItasCAP
Percent Grouping: 50% or less					
17	Good jobs and living wage jobs are important – what changes would occur to the power system do to wage level changes?	46.15%	6	Jobs	ItasCAP
18	Economic impacts are one thing; Return on Investment (ROI) is another. What do we get out of the significant investments we're making?	30.77%	4	Other	ItasCAP
19	Electric costs for industrial processes get passed down to users. Cost changes are felt differently across sectors (ex. health care).	22.22%	2	Cascading Impacts	Duluth PM
Percent Grouping: Comments					
20	How does Minnesota Power plan to use the retirement of Boswell as an opportunity to invest in job development and infrastructure that builds a clean, healthy energy future for Minnesotans?			Jobs Infrastructure	Duluth AM
21	Economic impact should be a leading issue regarding this plan.			Other	ItasCAP
22	An early retirement plan for Boswell 3 & 4 communities is necessary now to prepare for infrastructure and workforce changes.			Infrastructure Jobs	Duluth AM

Customer Values

#	Survey Choices	Percent	#	Customer Tags	Group
Percent Grouping: 75% or greater					
1	Taconite production – if electricity rates are not competitive for mining here, taconite demand will continue, but the production will shift elsewhere, possibly to locations with worse environmental regulations. Need to think about those impacts and how that impacts us from a social-economic standpoint.	84.62%	11	Industrial competitiveness	ItasCAP
2	Reliable power is important. How much demand response is involved in planning to keep power from being curtailed? How often are large industries going to get curtailed in the future?	77.78%	7	Reliability	Duluth PM
Percent Grouping: 51%-74%					
3	What can we afford? (e.g., if we shift to 100% renewable, can we afford that, and do we still want it if we know the price?)	71.43%	10	Clean energy access/affordability	East Range
4	We have the 13th lowest rate for residential customers, but what about the industrial customers? Energy costs are a top concern for large industrial customers, especially given the need to compete in global markets. Where's the tipping point between adding more renewables and driving up the cost of electricity for large industrials?	69.23%	9	Industrial competitiveness	ItasCAP
5	Can we capitalize as much as possible on Energy Efficiency investments? Can we help others save?	66.67%	6	Residential affordability	Duluth PM
6	Explore renewable resource rates closer to what the rate is for power	66.67%	8	Clean energy access/affordability	Duluth AM
7	What are the Mining and Forest Industry impacts as a result of the costs of renewables? Including domestic and global competitiveness.	64.29%	9	Industrial competitiveness	East Range
8	Redundancy, reliability and resiliency are critical in assessing renewables and all energy source alternatives.	61.54%	8	Resiliency Reliability	ItasCAP
9	Can we keep rates stable through innovative partnerships? (Private, government, individual, etc.)	58.33%	7	Industrial competitiveness Residential affordability	Duluth AM
10	Resiliency (ex. 2012 major area flooding)	58.33%	7	Resiliency	Duluth AM

#	Survey Choices	Percent	#	Customer Tags	Group
11	Cost competitiveness matters. How do industrial users stay competitive with rising rates?	55.56%	5	Industrial competitiveness	Duluth PM
12	How can MP help customers move to renewables, while being reliable, affordable, etc?	55.56%	5	Residential affordability Reliability	Duluth PM
13	Can MP move faster to 100% renewables and not burden low income/vulnerable/frontline communities?	55.56%	5	Low income	Duluth PM
14	Low-income customers: Is there an inclusive financing tool you can use where Minnesota Power wouldn't lose money and customer bills would go down?	55.56%	5	Low income	Duluth PM
15	How do we make clean energy affordable to all? Are there creative partnership opportunities?	55.56%	5	Clean energy access/affordability	Duluth PM
16	Can MP move faster to 100% renewables and not burden low income/vulnerable/frontline communities?	55.56%	5	Clean energy access/affordability Low income	Duluth PM
17	Residential rate impacts assessment needs to be done and compared with large power users need to discern what happens to their competitiveness and potential job losses.	53.85%	7	Residential affordability Industrial competitiveness	ItasCAP
Percent Grouping: 50% or less					
18	Predictable cost trends for budgeting	50.00%	6	Residential affordability	Duluth AM
19	Can we get a rate for renewable programs closer to the retail rate? Sometimes old infrastructure can't handle added renewable infrastructure (e.g. solar panels on an old building).	50.00%	6	Clean energy access/affordability	Duluth AM
20	Cost allocation across different customer classes is out of balance now and becoming a real concern for large industrial customers – needs to be part of the equation (e.g., can residents do more conservation?)	50.00%	7	Residential affordability Industrial competitiveness	East Range
21	Consideration to understand decision point: When talking about EITE, what does power cost mean to them globally in the competitive world they operate in? How does that impact their competitiveness? (affordability - EITE looks at the global market, not just the US)	50.00%	6	Industrial competitiveness	Duluth AM
22	Quality of power - bad power breaks things	50.00%	6	Power quality	Duluth AM

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#	Survey Choices	Percent	#	Customer Tags	Group
23	More detail needed on all customer class rates and socio-economic impacts.	46.15%	6	Residential affordability Industrial competitiveness	ItasCAP
24	Renters have less access/urgency to make changes that affect their bills. This is similar to multifamily homes. Natural gas is the lowest heating option right now. How can we affect this?	44.44%	4	Residential affordability	Duluth PM
25	Competitive vs affordable rates. Industrial users are competing in a global market. This includes when companies are looking for investment within a company. Affordability is subjective.	41.67%	5	Industrial competitiveness	Duluth AM
26	Minnesota Power needs to understand the full cost and risk of shutting down industry in emergency situations	41.67%	5	Reliability	Duluth AM
27	Potential safety issues when power isn't reliable	33.33%	4	Reliability	Duluth AM
28	Making renewable energy more accessible/affordable to people in poverty.	33.33%	4	Clean energy access/affordability	Duluth AM
29	Public infrastructure is greatly affected by reliability	33.33%	4	Reliability	Duluth AM
30	Can you serve industry with renewable resources?	33.33%	3	Power quality Reliability Industrial competitiveness	Duluth PM
31	What are the metrics for reliability?	33.33%	4	Reliability	Duluth AM
32	Does MP anticipate a reduction in costs in the future? What is MP doing to lower electricity costs?	33.33%	3	Residential affordability	Duluth PM
33	Difference in rates that industrials are charged from residential rates	33.33%	4	Industrial competitiveness Residential affordability	Duluth AM
34	Electric costs for industrial processes get passed down to users. Cost changes are felt differently across sectors (ex. health care).	22.22%	2	Industrial competitiveness	Duluth PM
35	Why is the average industrial rate nationwide so flat while MP's has gone up?	16.67%	2	Industrial competitiveness	Duluth AM
Percent Grouping: Comments					

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#	Survey Choices	Percent	#	Customer Tags	Group
36	I understand that reliability for renewable energy is quickly rising to meet or surpass old energy reliability standards. I would like to make sure that this is explored.			Reliability	Duluth AM
37	It is my understanding that since retiring some local small generation capacity there have been occasions already with large industrial facilities dealing with power quality issues. Would this not only continue to become worse with this trajectory and discourage industrial expansion in our area?			Power quality	East Range
38	I am not clear on all these options, however, helping others to save should be prioritize to those in need first and foremost so they are warm in the winter. Costs upfront are important investments for cost savings in the future. We need to see this picture more clearly.			Low income Residential affordability	Duluth PM
39	We need to understand the impact on energy costs if these two are retired. Can we replace with same or lower cost not higher?			Residential affordability Industrial competitiveness	Duluth AM
40	I really don't believe consumers such as US Steel should be subsidized by residential customers. Many probably also have this view although it is not a popular view to state publicly.			Residential affordability Industrial competitiveness	East Range
41	If people are renting, can we make it a standard for the property owners/developers to have to buy in to the renewable energy? We need to strive to have this as a baseline and go up from there.			Clean energy access/affordability	Duluth PM
42	Transparency with customers about the rate charge difference between industry and community customers. Transparency about how the closed coal plants are being operated with the community.			Industrial competitiveness Residential affordability	Duluth AM
43	"Affordability" is in the eye of the beholder. What is the real definition of affordability -- does it depend on who's paying for it?			Residential affordability	East Range
44	The costs to who?			Other	East Range
45	Affordability of electric power should be measured at the consumer level. It's easy to say wind is free, solar is free but what is the cost at the consumer level when all necessary components are included in the calculation.			Residential affordability Industrial competitiveness	ItasCAP

#	Survey Choices	Percent	#	Customer Tags	Group
46	MP's race to become the leader in providing renewable energy is proving to be a costly endeavor for its customers with recent rate increases and additional increases if approved by state. Continuing down this path will unnecessarily put industries that must compete world wide at a competitive disadvantage and lower the standard of living in northern Minnesota when they fail. Its time to pause the push on renewable energy and wait for renewable technology to make substantial gains in efficiency and energy production cost reductions.			Industrial competitiveness	Duluth PM
47	The question on MP moving faster to renewables and not burdening vulnerable communities is phrased in a way that could be interpreted as we don't want to move to renewables if it burdens vulnerable communities. That is not what the point is. We want to move to 100% renewables without forgetting vulnerable communities in the process. In other words we don't want access to renewables just for wealthier people...we want it for everyone. The question about the MP customers moving to renewables, while being reliable, affordable, etc. also could be read as it is not worth doing if it is not as affordable or reliable. Sometimes renewables are more affordable and reliable.			Low income Clean energy access/affordability	Duluth PM

Environmental Values

#	Survey Choices	Percent	#	Environment Tags	Group
Percent Grouping: 75% or greater					
1	Need to look at the whole energy picture – a comprehensive review of energy source options and life cycle impacts and costs (e.g., life cycle analysis of materials used in the production of renewable energy technologies)	92.86%	13	Carbon/GHG	East Range
2	Taconite production – if electricity rates are not competitive for mining here, taconite demand will continue, but the production will shift elsewhere, possibly to locations with worse environmental regulations. Need to think about those impacts and how that impacts us from a social-economic standpoint.	84.62%	11	Carbon/GHG	ItasCAP
3	To what extent are people aware of how much cleaner coal is now? Do they know what's actually coming out of the stacks, given pollution reduction investments and other efforts?	76.92%	10	Air Quality Carbon/GHG	ItasCAP
Percent Grouping: 51%-74%					
4	A holistic view of resources and environmental impacts (e.g., could we eliminate landfill waste and produce energy by building a waste incinerator and energy recovery plant?)	71.43%	10	Landfill waste	East Range
5	We need to consider the differences of opinion around energy vs. climate change. Addressing climate change involves looking at lifestyle and acknowledging that Boswell is a very small piece of a much larger problem.	69.23%	9	Carbon/GHG	ItasCAP
6	To what extent are people aware of how much cleaner coal is now? Do they know what's actually coming out of the stacks, given pollution reduction investments and other efforts?	61.54%	8	Air Quality Carbon/GHG	ItasCAP
Percent Grouping: 50% or less					
7	Need to consider the carbon impacts of the total life cycle for all energy sources, including wind (e.g., manufacturing wind turbines), etc.	38.46%	5	Carbon/GHG	ItasCAP
8	What changes would affect water quality, if suddenly there's no plant there?	23.08%	3	Water quality	ItasCAP
9	Drive towards renewable/decarbonized	21.43%	3	Carbon/GHG	East Range
10	What about maintaining Boswell and borrowing credits to offset emissions?	15.38%	2	Carbon/GHG	ItasCAP

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#	Survey Choices	Percent	#	Environment Tags	Group
11	Carbon offsets as a potential way to reduce net emissions. Cap and trade?	8.33%	1	Carbon/GHG	Duluth AM
Percent Grouping: Comments					
12	Why can't we continue to use coal if it can be scrubbed clean?			Other	East Range
13	Lifecycle of goods and services, land/water use, landfill/waste are often overlooked in the equation.			Water quality Landfill waste	East Range
14	Speaking specifically from the architecture industry, we as a focus group are striving for carbon neutral and this 2030 challenge we have been given. Can this tie together with the energy incentives as well as state legislature for making it a standard?			Carbon/GHG	Duluth PM
15	This is critical stuff for us and everyone we know who is aware of the urgent need to reduce--and long before 2050. Shutting coal plants is a clear sign of actually moving to renewables. What we are looking for is how MP will navigate the transition, given that they have shareholders as well as consumers, with interests currently at odds. The customer interest is in shifting to renewables quickly, thus reducing cost (renewables are already cheaper) and reducing the worst effects of climate change. Shareholder interest, I understand, is tied up in the coal/natural gas infrastructure that MP has built up. It would be helpful for MP to be open about this discrepancy, and to share with all how they are managing it.			Carbon/GHG	Duluth AM
16	What is Minnesota Power's statement the climate crisis and commitment to climate action? How does Minnesota Power plan to address climate reparations - environmental and community health - and the damage it has caused as a fossil fuel investor?			Carbon/GHG	Duluth AM

Other Values

#	Survey Choices	Percent	#	Group
Other Tags: Grid				
1	If you shut down Boswell, where will the baseload power come from? What are the options, costs, and impacts?	84.62%	11	ItasCAP
Other Tags: Security/defense				
2	Federal impact – what happens if we're no longer able to produce taconite here, what are the implications from a national defense perspective?	38.46%	5	ItasCAP
Other Tags: Local resources				
3	Important to consider the location of resource alternatives and associated economic impacts.	69.23%	9	ItasCAP
4	Opportunities to increase the utilization of forest products and support sustainable forest management while reducing carbon. What are the chances of more biomass being on the system/included in that transformation? (Telling the story of how sound forestry practices can help with reducing carbon emissions and improve renewable forest conditions and opportunities.)	64.29%	9	East Range
5	What's the cost (in terms of electric rates and reliability) of relying more on hydro from Manitoba, compared to producing that electricity locally?	61.54%	8	ItasCAP
6	What is the wood fiber role in renewables and carbon reduction? How do we insure there is a legislative understanding of this opportunity at both the State and Federal levels?	61.54%	8	ItasCAP
Other Tags: Siting				
7	Renewable energy siting of wind, solar etc. – visual aspect. How does that impact the community?	14.29%	2	East Range

Process Suggestions

#	Survey Choices	Percent	#	Group	Survey Topic
Percent Grouping: 75% or greater					
1	We would like to know more about the plan beyond these meetings. How will the general public be able to comprehend the situation and have a voice in decisions being made? It's important to do this to help the case.	92.31%	12	ItasCAP	Community Outreach and Engagement
2	Can we ensure consistency and a diversity of thoughts in the room?	88.89%	8	Duluth PM	Community Outreach and Engagement
Percent Grouping: 51%-74%					
3	We need to talk about the economic impacts on this region and statewide implications, especially with the St. Paul stakeholder group.	69.23%	9	ItasCAP	Economic Impact Studies
4	Concerned about too simple a message of "clean energy good, coal bad." Need to make clear and package the messaging in a way that the public understands the facts and is more easily digestible.	61.54%	8	ItasCAP	Public Relations and Politics
5	Important to look at the data/metrics of what we're trying to achieve and how to get there, rather than labeling energy sources good or evil.	61.54%	8	ItasCAP	Public Relations and Politics
Percent Grouping: 50% or less					
6	Is there a chance for wider community input on the IRP prior to filing?	44.44%	4	Duluth PM	Community Outreach and Engagement
7	How are things prioritized (reliability vs cost vs others) in models? Looking for planning metrics.	41.67%	5	Duluth AM	Reliability, Quality and Resiliency of Po...
8	Get youth voices involved in the process	41.67%	5	Duluth AM	Potential Partnerships to Explore
9	Youth voice on clean energy is missing from the room, especially youth from this area who may have a more open mind to various energy solutions.	38.46%	5	ItasCAP	Public Relations and Politics
10	Youth voice/education – help educate folks and get into classrooms	33.33%	4	Duluth AM	Potential Partnerships to Explore
Percent Grouping: Comments					

#	Survey Choices	Percent	#	Group	Survey Topic
11	Some of these issues could be woven together but it is important to cover clean energy, industry, environmental, integrated strategies and equity issues. I also think highlighting how MN Power is working to both partner and lead efforts.			Duluth PM	Energy Customer Classes, Affordability, ...
12	Its unfortunate a organization such Sierra Club is allowed more time to push there narrative than a group at the other end of the spectrum.			Duluth PM	Community Outreach and Engagement
13	The question on MP moving faster to renewables and not burdening vulnerable communities is phrased in a way that could be interpreted as we don't want to move to renewables if it burdens vulnerable communities. That is not what the point is. We want to move to 100% renewables without forgetting vulnerable communities in the process. In other words we don't want access to renewables just for wealthier people...we want it for everyone.			Duluth PM	Energy Customer Classes, Affordability, ...
14	Again- perhaps some of these items could be combined and explored.			Duluth PM	Conservation, Efficiencies and Rebate I...
15	Youth should also be educating the energy sector; their futures are at stake and they need to know why corporations are choosing profit over people, profit over planet.			Duluth AM	Potential Partnerships to Explore
16	always good to bring in youth--they don't see the same barriers as us older people do. And they have a huge investment in the future.			Duluth AM	Potential Partnerships to Explore

#	Survey Choices	Percent	#	Group	Survey Topic
17	We are already in conversation with Julie Pierce about doing a presentation on the bill in Congress right now (HR763) which is not a tax but a fee, with all revenues returned to households to pay for the higher energy prices. This is a win-win and we are excited to share the details with MP so you can be truly informed. To talk only about a carbon "tax," with no dividend, is not to be informed about the current debate on cutting emissions. I am excited to see MP's interest in engaging stakeholders in this process. I think MP can surely inform us, but we can also inform MP! Why not use the ingenuity, creativity, and passion of your consumers to come up with solutions and receive the benefits of (cheaper) renewable energy? How can we work out a fair system whereby we can pay for use of your grid (and the reliability factor) while also reaping the benefits of cheaper cleaner energy? It is happening elsewhere and soon it will become the norm. Thank you for your interest in more stakeholder meetings. I cannot commit to four in-depth meetings without knowing some time frames but I will put my name on the list.			Duluth AM	Technology and Carbon

Resource Considerations

#	Survey Choices	Percent	#	Group
Resource Tags: Energy efficiency				
1	How do we bridge/incorporate building design with changing technology, state statute, etc.?	66.67%	6	Duluth PM
2	Can we capitalize as much as possible on Energy Efficiency investments? Can we help others save?	66.67%	6	Duluth PM
3	Consumer education around energy use and conservation	50.00%	7	East Range
4	Can there be fuel neutral Conservation Improvement Program rebates?	33.33%	3	Duluth PM
5	Can we capitalize as much as possible on Energy Efficiency investments? Can we help others save?	33.33%	3	Duluth PM
6	There can never be too much of this. Needs to focus on most important/impactful things.			East Range
Resource Tags: Demand Response				
7	Reliable power is important. How much demand response is involved in planning to keep power from being curtailed? How often are large industries going to get curtailed in the future?	77.78%	7	Duluth PM
8	Work on partnerships for Demand Response	50.00%	6	Duluth AM
9	Can MP better message demand response?	44.44%	4	Duluth PM
10	Explore demand response more. Primarily industrial, but also commercial and residential.	33.33%	4	Duluth AM
11	Can we get smart thermostats with artificial intelligence as a rebate?	33.33%	3	Duluth PM
12	Not only message demand response, but message that this is a community wide effort and small sacrifices go a long way for a better future. The community should not expect everything from MN Power; the community needs to be willing to step up and give a little to make it work for the region.			Duluth PM
Resource Tags: Electrification				
13	How does electrification factor into the IRP?	77.78%	7	Duluth PM
14	Estimate of future energy consumption (including electric vehicles electrification)	41.67%	5	Duluth AM
15	Is there a market for air source heat pumps? Are they/can they be cost-competitive?	33.33%	3	Duluth PM

#	Survey Choices	Percent	#	Group
16	Will we have enough electricity if we electrify everything?	33.33%	3	Duluth PM
17	How much will Electric Vehicles add to demand?	14.29%	2	East Range
18	The questions people raised in this session were not about whether or not MNP was going to deploy AI or if there was a market for heat pumps. The conversation was about moving people into conservation and efficiency and asking MNP to do more to make that happen. I feel like all of these questions, in this section and others, have been rewritten from what people said into Minnesota Power messaging. For example, the market for air source heat pumps question could be rewritten into "How can Minnesota Power create incentives for air source heat pumps as a conservation tool?"			Duluth PM
19	At my organization, we use 6 to 7 times as many BTUs for heating than electricity. How can this met with electric in future to transition away from natural gas. Can thermal energy transition to electricity be better incentivized?			Duluth PM
20	Air source heat pumps can be more than 100% efficient depending on temperature and be a dual fuel heat source..... Why would MP not provide a substantial incentive?			Duluth PM
Resource Tags: Renewables				
21	What are the costs and impacts of increasing renewable use now and in the future?	71.43%	10	East Range
22	Are there ways to bring jobs here as we see more renewable energy being built outside the service territory?	66.67%	6	Duluth PM
23	Redundancy, reliability and resiliency are critical in assessing renewables and all energy source alternatives.	61.54%	8	ItasCAP
24	Do we know if our renewable % will continue to increase?	58.33%	7	Duluth AM
25	How can MP help customers move to renewables, while being reliable, affordable, etc?	55.56%	5	Duluth PM
26	Can MP move faster to 100% renewables and not burden low income/vulnerable/frontline communities?	55.56%	5	Duluth PM
27	How open is MP to being 100% renewable?	50.00%	6	Duluth AM
28	Work to reduce barriers, increase participation.	50.00%	6	Duluth AM
29	What's next after 2021 for renewables in the mix? What's the goal?	44.44%	4	Duluth PM
30	How can we have more opportunities for solar in ways that work for a variety of folks? How do we accelerate that change (that doesn't include cutting forests or filling in wetlands)?	44.44%	4	Duluth PM
31	Making renewable energy more accessible/affordable to people in poverty.	41.67%	5	Duluth AM

#	Survey Choices	Percent	#	Group
32	Get the splits on the current and future renewable mix	41.67%	5	Duluth AM
33	Wind and solar – will the current federal tax subsidy be considered for extension and would adding other technologies be considered like storage?	23.08%	3	ItasCAP
34	Drive towards renewable/decarbonized	21.43%	3	East Range
35	I understand that reliability for renewable energy is quickly rising to meet or surpass old energy reliability standards. I would like to make sure that this is explored.			Duluth AM
36	I understand changes to renewable quickly cost upfront, but we must be able to understand the long term value and future reductions in costs with renewables not only to bills, but to our well being.			Duluth PM
37	MP's race to become the leader in providing renewable energy is proving to be a costly endeavor for its customers with recent rate increases and additional increases if approved by state. Continuing down this path will unnecessarily put industries that must compete world wide at a competitive disadvantage and lower the standard of living in northern Minnesota when they fail. Its time to pause the push on renewable energy and wait for renewable technology to make substantial gains in efficiency and energy production cost reductions.			Duluth PM
38	What is MP's plan for Boswell and what renewable technology is available to replace this significant energy generator in the region?			Duluth AM
39	The question on MP moving faster to renewables and not burdening vulnerable communities is phrased in a way that could be interpreted as we don't want to move to renewables if it burdens vulnerable communities. That is not what the point is. We want to move to 100% renewables without forgetting vulnerable communities in the process. In other words we don't want access to renewables just for wealthier people...we want it for everyone. The question about the MP customers moving to renewables, while being reliable, affordable, etc. also could be read as it is not worth doing if it is not as affordable or reliable. Sometimes renewables are more affordable and reliable.			Duluth PM
Resource Tags: Solar				
40	Solar energy – Is there interest in partnering with businesses, high users of energy, etc.	58.33%	7	Duluth AM
41	Can new construction, solar-ready buildings get rebates?	55.56%	5	Duluth PM
42	Can MP own things like solar panels on churches?	41.67%	5	Duluth AM
43	Can we publicize program offerings (e.g. solar)?	33.33%	3	Duluth PM
44	MN Power investing in solar energy as a reliability source for industry needs			Duluth AM

#	Survey Choices	Percent	#	Group
Resource Tags: Biomass				
45	Opportunities to increase the utilization of forest products and support sustainable forest management while reducing carbon. What are the chances of more biomass being on the system/included in that transformation? (Telling the story of how sound forestry practices can help with reducing carbon emissions and improve renewable forest conditions and opportunities.)	64.29%	9	East Range
46	What is the wood fiber role in renewables and carbon reduction? How do we insure there is a legislative understanding of this opportunity at both the State and Federal levels?	61.54%	8	ItasCAP
Resource Tags: Hydropower				
47	Will hydro count toward the renewable standards, both current and future?	38.46%	5	ItasCAP
Resource Tags: Storage				
48	Battery storage – renewables are inconsistent. Other storage mechanisms are needed. Is MP looking at storage? Paired renewables and storage?	50.00%	6	Duluth AM
49	What's possible with storage options and technology?	44.44%	4	Duluth PM
50	Storage – using old mine pits and bladders (pumped hydro). What was the result of this study?	25.00%	3	Duluth AM
Resource Tags: Hydrogen				
51	Technology – Hydrogen, could we build up our business to build up partnerships and economy.	16.67%	2	Duluth AM
52	What about hydrogen? Is small scale hydrogen a potential for homes?	14.29%	2	East Range
Resource Tags: Nuclear				
53	Consideration of new/modern nuclear options (e.g., thorium)	78.57%	11	East Range
54	We need to look at nuclear as an option in the region. Somebody has to start the conversation, and perhaps MP can help with looking into that alternative. Note: The Nuclear Moratorium on the books in Minnesota prohibits MP from bringing forward an IRP that includes nuclear, but the Governor's plan could include nuclear, so we need to bring policies into the agreement.	76.92%	10	ItasCAP
55	Does the state moratorium preclude you from purchasing nuclear elsewhere?	57.14%	8	East Range
56	Nuclear needs a comeback.			East Range

#	Survey Choices	Percent	#	Group
57	Get rid of the state ban.			East Range
58	Focus efforts on correcting the state moratorium decision			East Range
59	Nuclear fusion is no doubt the future of energy production. The Moratorium in Minnesota must be lifted and our industrial producers need to be incentivized to invest in this life changing technology. Nuclear fusion is the answer to all of our energy needs and demands for our lifetime and well into the future.			ItasCAP
Resource Tags: Holistic evaluation				
60	A holistic view of resources and environmental impacts (e.g., could we eliminate landfill waste and produce energy by building a waste incinerator and energy recovery plant?)	71.43%	10	East Range
Resource Tags: NTEC				
61	Can we better understand the need for NTEC and possibilities around changing the fuel source?	66.67%	6	Duluth PM
62	Can you replace NTEC either now or later with renewables?	44.44%	4	Duluth PM
63	How critical is its existence to Cohasset? Is it a replacement for Boswell? Note: definitely not a replacement. A fraction of the size and MP is only taking half of its output to balance the variability of wind, solar, and hydro. Boswell provides something different – baseload power. NTEC is 250MW and Boswell is 935MW. Think of NTEC as a replacement for 7 small scale coal plants that have already been shut down).	23.08%	3	ItasCAP
64	I believe we also said we don't need NTEC.			Duluth PM
65	Currently, there is no need for NTEC. It is costly and does not lead us to the future we have the technology and are gaining on capabilities everyday. Let's put our time and money there.			Duluth PM
66	Maybe I missed it but there was no clarification if NTEC is intended to replace Bosewell production completely , partially, or is it for additional load capacity. Until the real costs to MP customers are shared and what the future rate structure will be I hope the project does not move forward.			Duluth PM
Resource Tags: Other				
67	Technology – are we on the leading/bleeding edge or in the middle of the pack? What is the philosophical approach? Risk and costs? Help MP customers understand.	83.33%	10	Duluth AM
68	Energy mix – 30 years is a long time in terms of the pace of technology change (price, technology, carbon capture, etc.). We need a mix of things, not just one or two things.	66.67%	8	Duluth AM

Attachments 84

#	Survey Choices	Percent	#	Group
69	How do jobs compare between running a power plant versus building and installing renewable energy technologies? What are the local socio-economic impacts?	64.29%	9	East Range
70	What's the cost (in terms of electric rates and reliability) of relying more on hydro from Manitoba, compared to producing that electricity locally?	61.54%	8	ItasCAP
71	Technology and future technology play a big component	41.67%	5	Duluth AM
72	Centralized vs distributive modular alternatives considered.	15.38%	2	ItasCAP
73	Renewable energy siting of wind, solar etc. – visual aspect. How does that impact the community?	14.29%	2	East Range
74	My opinion is that the actual costs associated with shifting electrical generation to 100% renewable is unknown. As far as I am aware, the power storage capacity needed and the technological means to actually achieve it currently does not exist at scale. Lets say that the actual storage capacity can be accomplished by some combined methodology, what are the real, all-in economic and ecological costs? Do they outweigh any "carbon offsets" achieved? The storage infrastructure alone would generate in incredible amount of carbon and undesirable waste materials by end of life. What is the true cost per kW at a 100% solar, wind, etc. including the storage technology verses a traditional power generation plant.			East Range

TWIN CITIES MEETING MATERIALS

Minnesota Power
2020 Integrated Resource Plan

Twin Cities Stakeholder Meeting 1
Wednesday, December 4th, 2019. 10:00am-3:00pm

Walker Art Center, Crosby Conference Room
725 Vineland Place, Minneapolis, MN 55403

Meeting Objectives:

1. Build a shared understanding of the 2020 IRP requirements and timeline, as well as the current state of Minnesota Power's system and service territory.
2. Identify stakeholders' must-have and nice-to-have considerations/scenarios for Minnesota Power's 2020 IRP filing.
3. Identify questions and discussion items to be addressed in the second meeting, on December 17, 2019.

Agenda:

10:00AM **NETWORKING AND COFFEE**

10:30AM **WELCOME, INTRODUCTIONS, PROCESS OVERVIEW**

10:45PM **PRESENTATION AND Q&A WITH MINNESOTA POWER STAFF**

- Requirements and timing for the 2020 IRP filing
- Minnesota Power's system characteristics (# of customers; balance of residential, commercial, industrial; load profile; current resource mix; achievements to date)
- Details and demographics on the customers and communities in Minnesota Power's service territory

12:00PM **LUNCH**

1:00PM **PRESENTATION AND Q&A (CONTINUED)**

1:30PM **FACILITATED STAKEHOLDER DISCUSSION:**

- Given the information you have today, what are your "must-haves" and "nice-to-haves" for considerations/scenarios in Minnesota Power's next IRP?
- What additional questions or discussions should be addressed in the second stakeholder meeting on December 17, 2019?

3:00PM **ADJOURN**

Minnesota Power 2020 IRP Twin Cities Advocates Stakeholder List (Meeting 1)		
First Name	**Last Name**	**Organization**
Ingrid	Bjorklund	Advanced Energy Management Alliance
Mike	Bull	Center for Energy and Environment
Jessica	Burdette	MN Department of Commerce
John	Christensen	Minnesota Power
Riley	Conlin	Large Power Intervenors
Trevor	Drake	Great Plains Institute
Allen	Gleckner	Fresh Energy
Bree	Halverson	Blue Green Alliance
Ray	Higgins	Minnesota Forest Industries
Eric	Hyland	Minnesota Forest Industries
Kelsey	Johnson	Iron Mining Association
Sarah	Johnson Phillips	Large Power Intervenors
Will	Kenworthy	Vote Solar
Kevin	Lee	MN Center for Environmental Advocacy
Annie	Levenson-Falk	Citizens Utility Board
Jessica	Looman	Minnesota State Building and Construction Trades Cou
Peder	Mewis	Clean Grid Alliance
Drew	Moratzka	Large Power Intervenors
Evan	Mulholland	MN Center for Environmental Advocacy
Eric	Palmer	Minnesota Power
Audrey	Partridge	Center for Energy and Environment
Jennifer	Peterson	Minnesota Power
Julie	Pierce	Minnesota Power
Kevin	Pranis	Laborers' International Union of North America
John	Reynolds	MN Chamber of Commerce
Michelle	Rosier	MN Public Utilities Commission
Beth	Soholt	Clean Grid Alliance
Benjamin	Stafford	Clean Energy Economy MN
Jessica	Tritsch	Sierra Club
Thor	Underdahl	Minnesota Power
Ana	Vang	Minnesota Power
Laurie	Williams	Sierra Club
Shane	Zarht	Coalition of Utility Cities

Minnesota Power
2020 Integrated Resource Plan

Twin Cities Stakeholder Meeting 1 Notes
Wednesday, December 4th, 2019. 10:00am-3:00pm

Given the information you have today, what are your "must-haves" and "nice-to-haves" for considerations/scenarios in Minnesota Power's next IRP?

MUST-HAVES:

- The difference between high and low demand scenarios (industrial especially) – how does that impact rates and resource options?
- Confidence bars for forecasts
- Rate impact and bill impact analysis for 5-year action plan
- Renewable scenarios with current grid constraints vs. assumed grid build out in the future with lower gen costs
- Reliable and high-quality electricity
- Competitive energy costs for large industrial businesses – EITE statute compliance
- Scenarios with different commitment statuses for coal plants – self-schedule vs. economic dispatch
- Different retirement dates for Boswell – before 2030; all cost implications (Boswell Rider for environmental retrofits)
    - Full consideration of all costs and benefits
- NTEC – revisit whether it will be a cost-effective resource through end of life (2064)
    - Fuel switching?
- Storage, demand response, and other emerging ways to manage load (resource and shaping)
- Job impacts of retirements and replacement resources
- Local governments – tax base impacts, land use, economic ripple effects of resource changes
- Include in IRP how MN products stack up in terms of environmental attributes.
    - How is that valued in the market?
    - Is there a path to value environmental attributes in the product market?
- Customer sited distributed generation – range of projections (MP currently nets DG from load forecast)
    - Should there be a consideration of MP rebates for DG solar (potential based on high rebates vs. low)
- Range of projections for EE, including industrial/CIP-exempt customers
- What drives high and low forecasts for electrification scenarios, EE, DG, DR?
- A full discussion of demand response, including industrial, non-emergency

- Recognition that the credit to participants must be enough to offset the negative aspects of participating in DR as a large customer

NICE-TO-HAVES:

- As information is provided to the Commission, provide background for why and how assumptions were developed and selected. How approaches differ.
- If stakeholders introduce new concepts into the IRP process, provide information about how the PUC has authority to consider the concepts presented.
- More information about EE from CIP-exempt customers
    - How it's accounted for in the IRP
    - What's the plan for the next 15 years?
- Discussion of cogeneration with large industrials
- Consideration of cost implications for demand charges for large industrials – possible offerings
- Stakeholder process – overview of new MP programs

What additional questions or discussions should be addressed in the second stakeholder meeting on December 17, 2019?

- Reliance on MISO
- Demand response

Minnesota Power
2020 Integrated Resource Plan

Twin Cities Stakeholder Meeting 2
Tuesday, December 17th, 2019. 10:00am-3:00pm

American Swedish Institute
2600 Park Ave, Minneapolis, MN 55407

Meeting Objectives:

1. Build a deeper shared understanding of the local economic benefits of Boswell 3 and 4, and the related potential impacts of retirement.
2. Build a deeper shared understanding of how Minnesota Power incorporates key stakeholder considerations into its load forecasting for the IRP.
3. Refine the "must-have" and "nice-to-have" criteria for the IRP that stakeholders began developing in the first meeting.
4. Identify stakeholders interests for discussion on transmission considerations/impacts in Meeting 3.

Agenda:

10:00AM **WELCOME, INTRODUCTIONS, PROCESS REVIEW**

10:15AM **PRESENTATION AND DISCUSSION – IRP TIMING AND NEXT MEETING**

- Julie Pierce, Minnesota Power, on process timing
- Brief discussion: What do stakeholders want to discuss around transmission impacts/considerations in the IRP, at Meeting 3?

10:45AM **PRESENTATION AND Q&A: BOSWELL ECONOMIC IMPACTS**

- Coalition of Utility Cities on local impacts
- Ben Levine, Minnesota Power, on economic impacts modeling

12:00PM **LUNCH**

12:30PM **PRESENTATION AND Q&A: BOSWELL ECONOMIC IMPACTS (CONTINUED)**

1:00PM **PRESENTATION AND Q&A: ANNUAL FORECAST REPORT**

- Electrification

- Conservation (CIP and CIP-exempt)
- Distributed generation
- Large industrial load variability

2:00PM **FACILITATED STAKEHOLDER DISCUSSION**

- Review must-have and nice-to-have considerations from Meeting 1 and modify as needed:
    - Can anything be better defined/clarified to give more specific guidance to Minnesota Power?
    - Is anything missing from the list?
    - Do any of the items seem complementary (or uncomplementary), such that they could be consolidated into scenarios?
    - How do these items align to timing in the overall process (e.g., at what step will they be addressed)?

3:00PM **ADJOURN**

Minnesota Power 2020 IRP Twin Cities Advocates (Meeting 2)

First Name	Last Name	Organization
Ingrid	Bjorklund	Advanced Energy Management Alliance
Mike	Bull	Center for Energy and Environment
Jessica	Burdette	MN Department of Commerce
Riley	Conlin	Large Power Intervenors
Trevor	Drake	Great Plains Institute
Allen	Gleckner	Fresh Energy
Bree	Halverson	Blue Green Alliance
Ray	Higgins	Minnesota Forest Industries
Eric	Hyland	Minnesota Forest Industries
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Will	Kenworthy	Vote Solar
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Evan	Mulholland	MN Center for Environmental Advocacy
Audrey	Partridge	Center for Energy and Environment
Jennifer	Peterson	Minnesota Power
Julie	Pierce	Minnesota Power
Kevin	Pranis	Laborers' International Union of North America
John	Reynolds	MN Chamber of Commerce
Benjamin	Stafford	Clean Energy Economy MN
Sean	Stalpes	Minnesota Public Utilites Commission
Jessica	Tritsch	Sierra Club
Thor	Underdahl	Minnesota Power
Laurie	Williams	Sierra Club
Shane	Zahrt	Coalition of Utility Cities
Ana	Vang	Minnesota Power
Max	Peters	City of Cohasset
John	Christensen	Minnesota Power
Eric	Palmer	Minnesota Power
Arik	Forsman	Minnesota Power
Ben	Levine	Minnesota Power

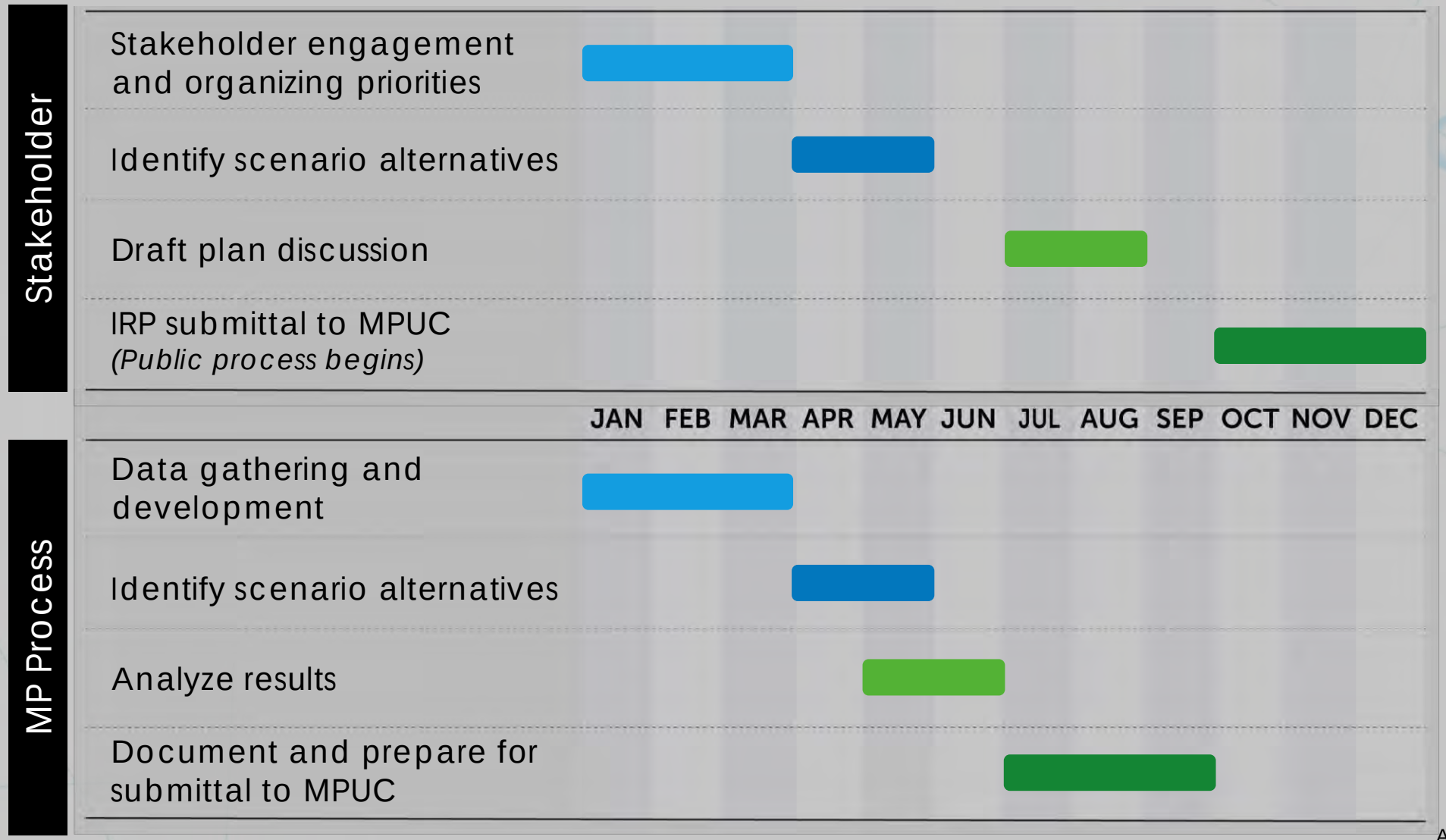
minnesota power

AN ALLETE COMPANY

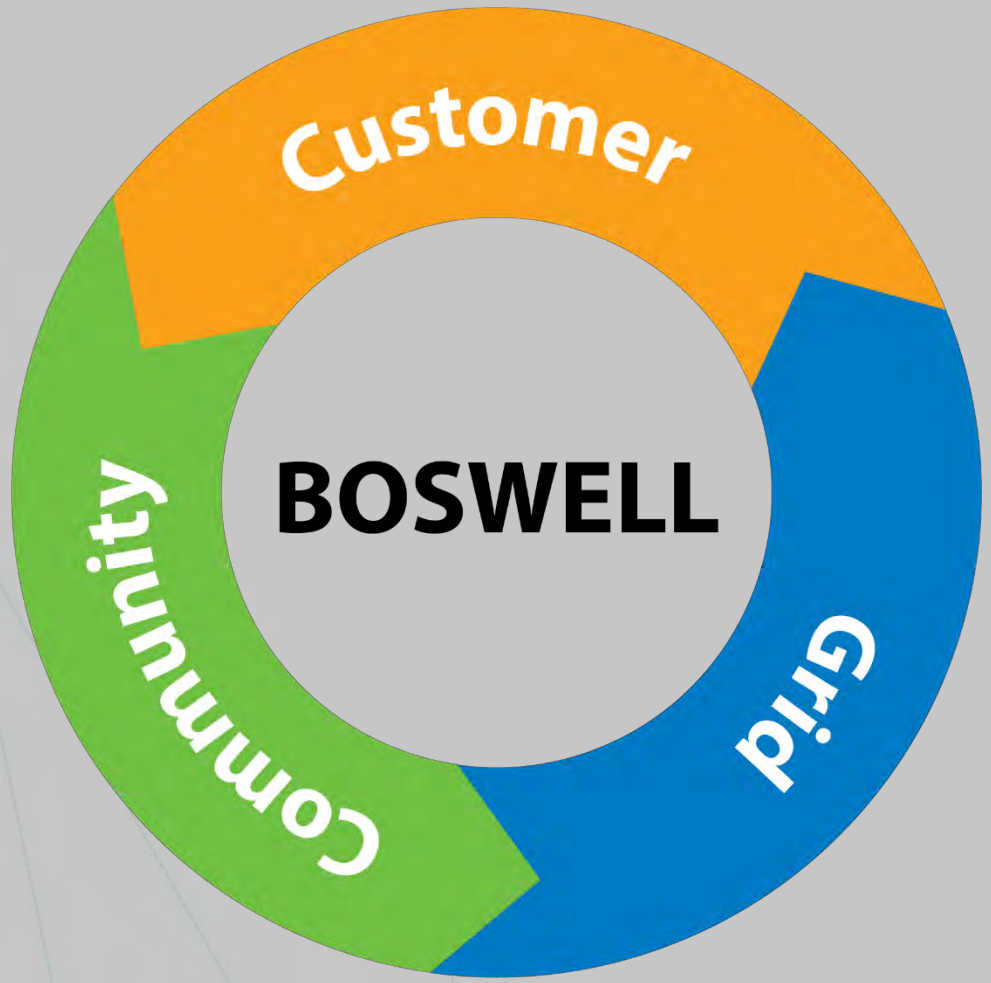
Integrated Resource Plan Stakeholder Engagement Meeting Three Planning

Julie Pierce, Minnesota Power Vice President of Strategy and Planning

Our Timeline



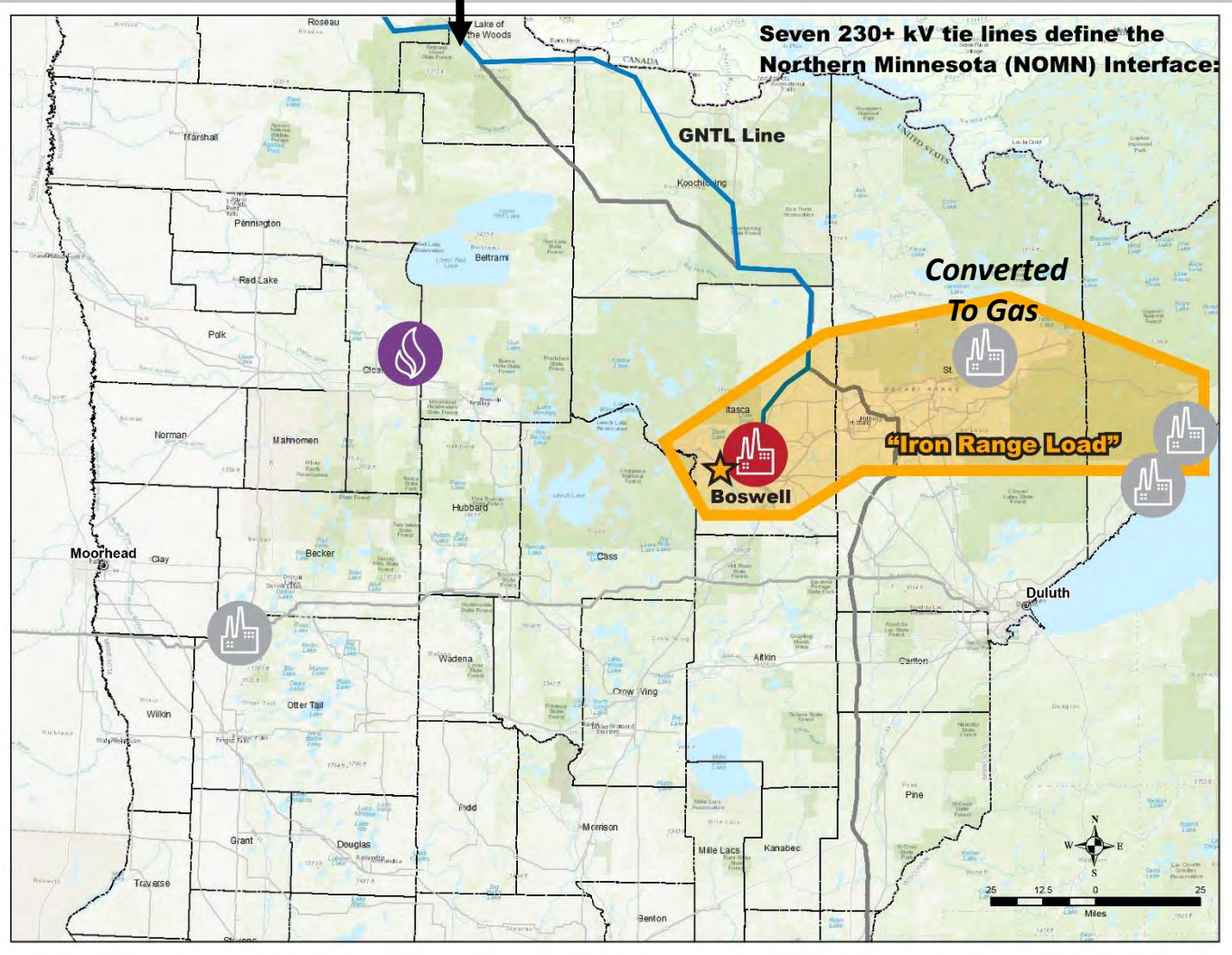
Key Areas of Impact



- Today's Discussion: ***Community***

- Upcoming
  - **Grid**
  - **Customer**

Boswell Facility

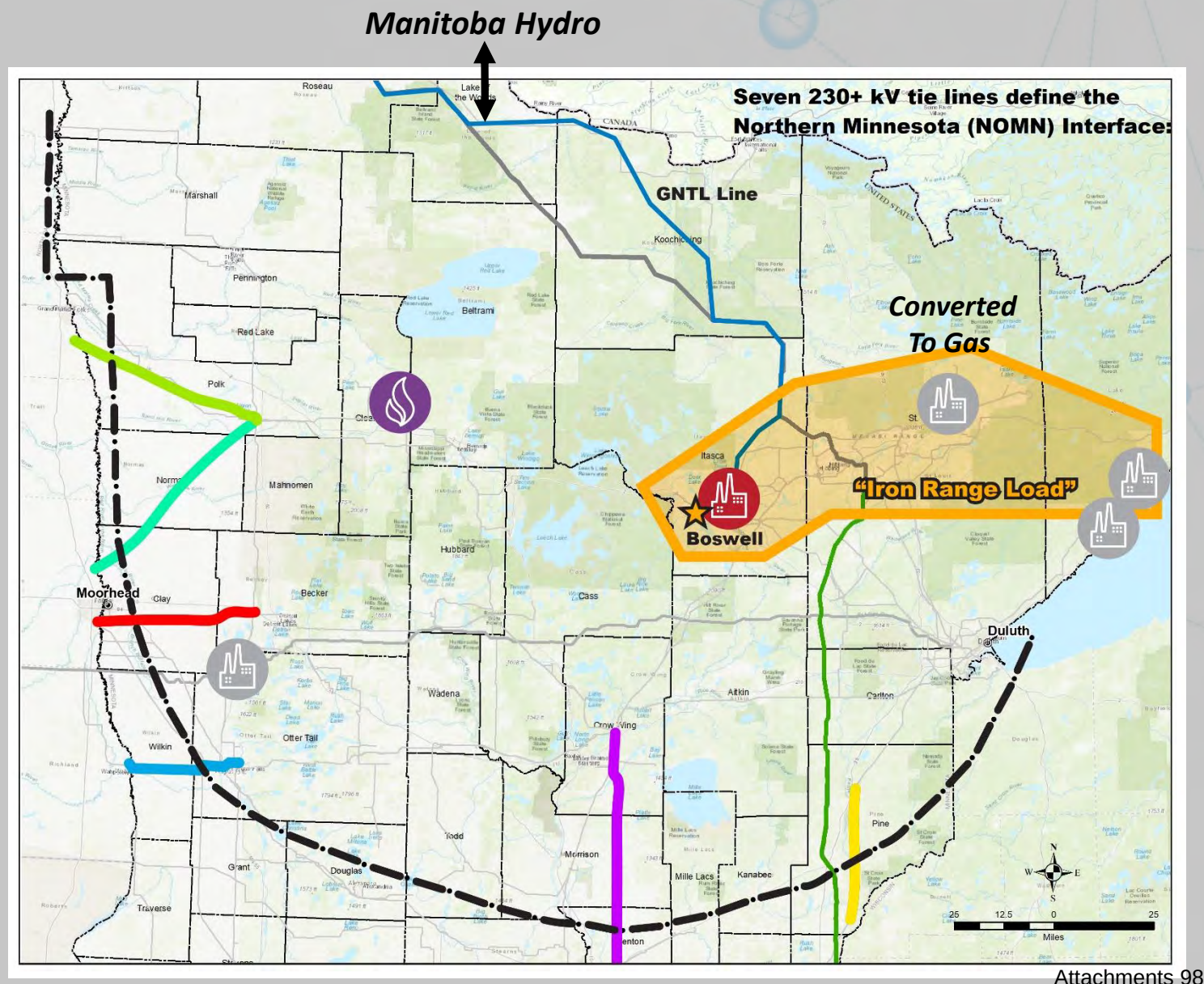


- Large geographical area of impact on the grid
- Last baseload generation center in region
- Supporting interstate and international electricity flow in the region
- Over 900MW of grid support

Determining Initial Grid Impact

Northern MN Voltage Stability

- **Direct impact spans the northern half of state and Manitoba**
- **Seven 230+ kV lines are impacted as flows change**
- **Stability of the geographic region impacted , more than just Minnesota Power**
- **Northern MN will lean more heavily on tie lines to regional generation**



Accounting for Energy Efficiency in MP's Energy Sales Forecast

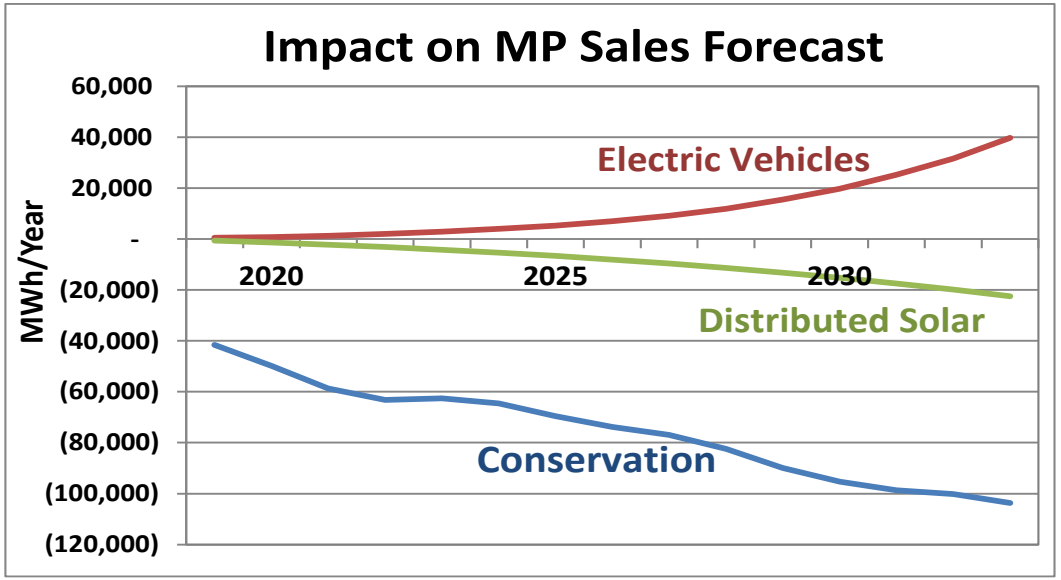
IRP Stakeholder Meeting 12/17/2019

Overview

- Impacts of Conservation, DG Solar & Evs
- Conservation Forecasting Options
- Advantages of “EE as a RHS Variable” (our selected methodology) & why it works
- DG Solar & Electric Vehicle Forecasting methods

Conservation, DG Solar & EVs

- Conservation:
  - Forecast assumptions are consistent with recent historical CIP savings
  - Accounting for residential, commercial and resale conservation via regression modeling
  - Industrial savings are assumed to be inherent in forecast
- Electric Vehicles:
  - Only modeled residential adoption
  - Currently serving 165 vehicles (0.2% penetration)
  - Forecasting about 8,000 vehicles (7% penetration) by 2030
- Distributed Solar:
  - Modeled residential & commercial
  - Currently about 4.5 MW of installed DG solar capacity
  - Projecting 15 MW of new capacity (~20MW total) by 2030
  - New installs will displace about 15,000 MWh (0.6%) of MP sales to residential & commercial classes



Conservation Forecasting Options

*Methodology	Known Local Use by:	Advantages	Disadvantages
Already Embedded – No Adjustment Needed	MP's Past Method	Easy to implement	Only useful with limited/stable DSM, Can't account for increased intensity of DSM
Already Embedded – Adjust for Incremental DSM	Otter Tail's Method	Easy to implement, Can partially account for increased intensity of DSM	Amount of Endogenous DSM savings is unknown. Total DSM assumption is unknown
Reconstructed Sales – As if No DSM (Gross/Net)	Xcel's Method	Can account for considerable changes in historical DSM	Forecast accuracy depends on quality of DSM savings data Assumes utility-driven CIP is the only conservation affecting sales (doesn't account for consumer-driven conservation)
DSM as a RHS Variable	MP's Proposed Method	**No need to estimate Exogenous DSM Savings**	**Model results can be distorted, and inappropriate inference draw.**
Hybrid Model (SAE)	GRE's Method	Capture both naturally occurring efficiency trends and DSM impacts	Need software, trained personnel, and accurate appliance saturation data for the utility's customers.
Combination of Approaches Above		Can reap the benefit of multiple approaches	Costly, most effective combination is unknown.

MP doesn't have limited/stable DSM

Quantifying the DSM assumption is critical

Savings data are estimates & Customers are perusing conservation

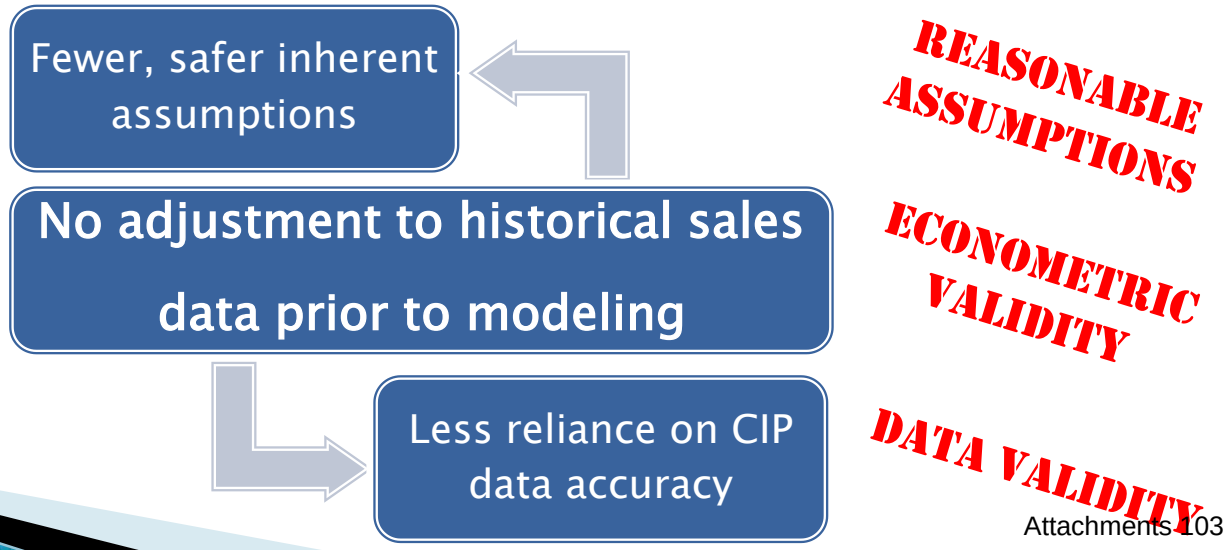
MP customers' characteristics differ from Census region

Attachments 102

*Ahmad Faruqui, Ph.D. Zhen Wang, Ph.D. September 14, 2017

Recommendation: DSM as a Right-Hand-Side (RHS) Variable

- Use claimed CIP savings as an predictor (RHS) variable in the regression model
- Conservation variable is an indicator of total savings
  - Savings achieved by MP, and
  - Organic savings, customer-driven conservation

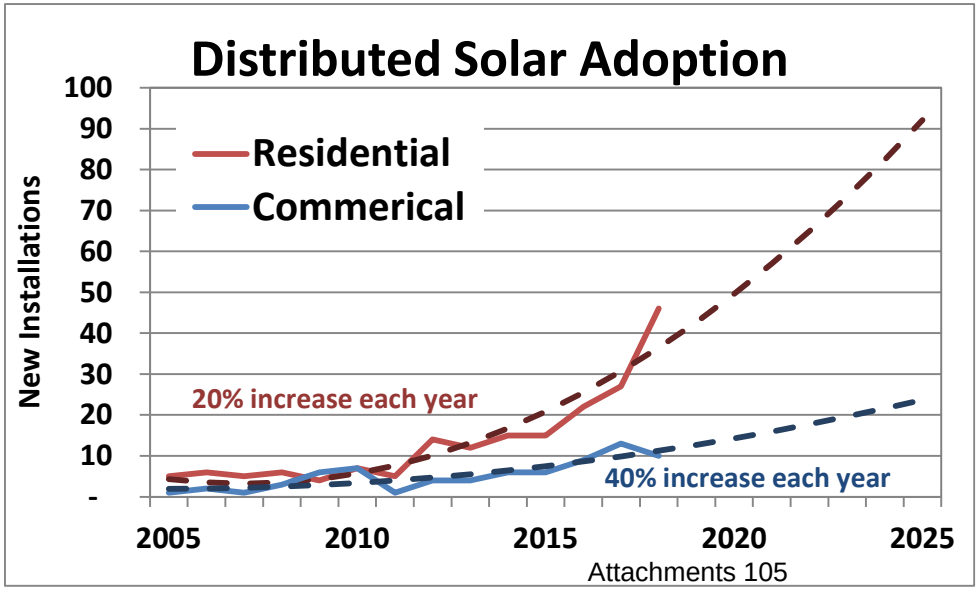


Advantages of "EE as a RHS Variable"

- **Avoids double-counting** energy efficiency impacts in the forecast timeframe.
- **Accounts for** historical and projected conservation resulting from both **Company programs and organic, customer-driven** efforts.
- **Leverages raw sales data** in regression modeling: sales data are not adjusted for conservation impacts prior to modeling.
- **Doesn't require after-the-fact adjustments** to econometric outputs: the energy sales forecasts already contain the effects of energy efficiency.

DG Solar Adoption Forecasting

- Model historical adoptions per year by class
  - Typical technology adoption curve
  - Exponential function describes accelerating adoption
- Apply the average installation's size to installation count forecast
- Energy impact calc
  - Cumulate installed capacity
  - Assume 11.2% capacity factor



MP Electric Vehicle Forecasting

- MP's current EV saturation is about 4 years behind national average (Bloomberg)
- Assumption: MP saturation continues to trail the nation by 4 years
- Saturation forecast

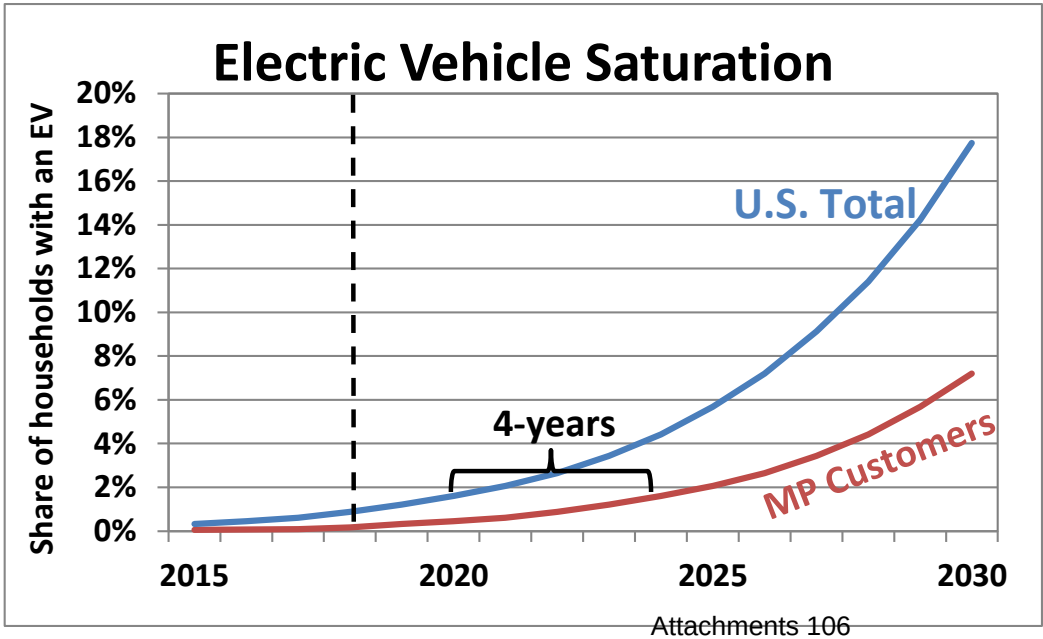
x

MP Customer count

=

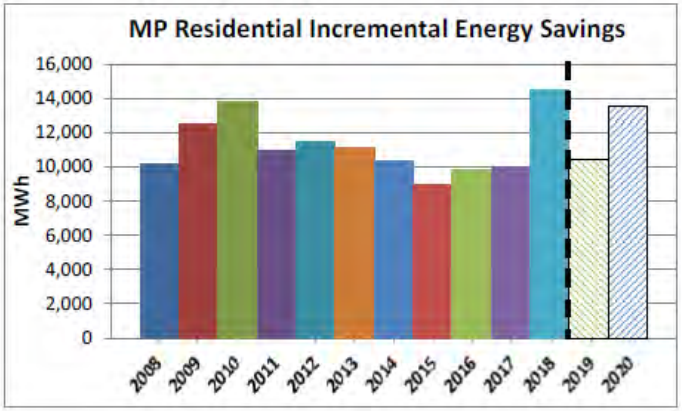
EV count forecast

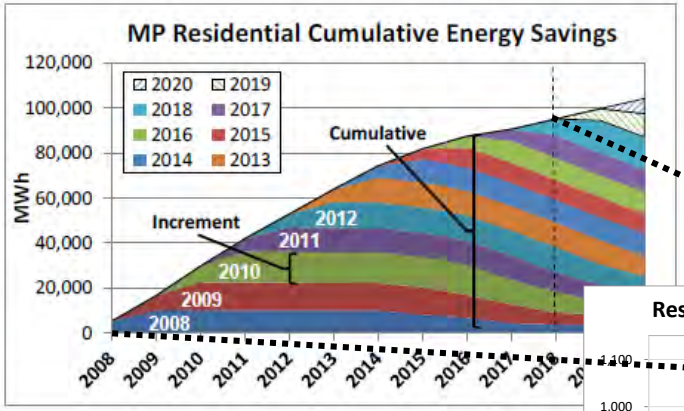
- Assume each EV uses about 2,520 KWh per year

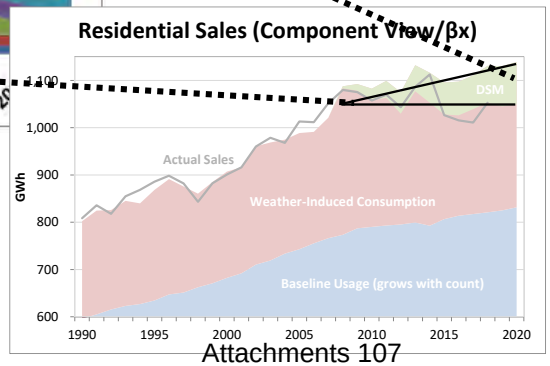


Appendix:
EE as RHS Var, why it works

- A cumulative savings metric represents the lasting impacts of all past conservation measures on a given year. It accumulates, so it has a slope.
- From an econometric modeling perspective, this is indicative of a **change in growth rate/trajectory of annual sales.**







Host Communities in Transition

Max Peters, City of Cohasset
Shane Zahrt, Flaherty & Hood, P.A.

What is a "Utility City"

- The Coalition of Utility Cities is a group of 8 cities that host large, baseload power plants owned by Investor-owned utilities

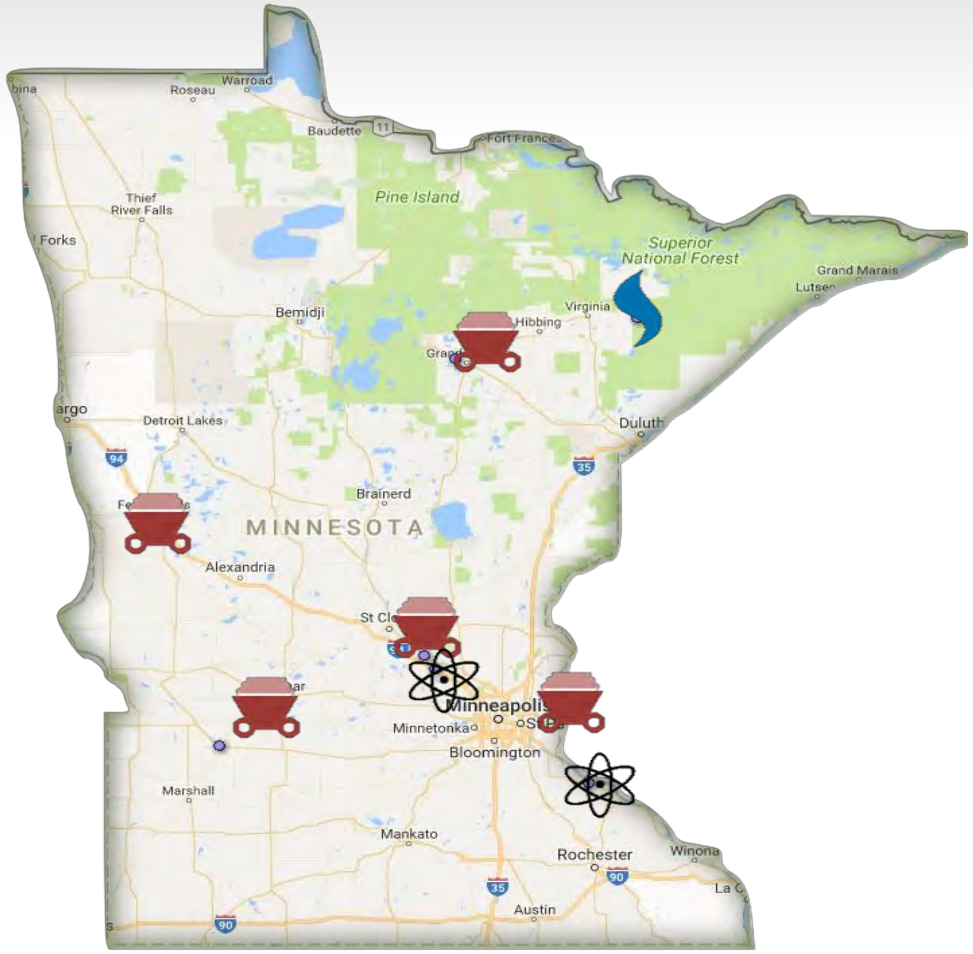
- 2 Minnesota Power; 5 Xcel; 1 Ottertail Power

- 5 host coal plants; 2 nuclear; 1 natural gas

COALITION OF UTILITY CITIES

CUC Members

- Becker
- *Cohasset
- Fergus Falls
- Granite Falls
- *Hoyt Lakes
- Monticello
- Oak Park Heights
- Red Wing



COALITION OF UTILITY CITIES

About CUC

- Formed in 1997
- Cities formed the Coalition to have their interests represented at the legislature
- Historically focused on taxation
- Cities collectively represent over 60,000 residents

COALITION OF UTILITY CITIES

Hosting plants have major local impacts

- Infrastructure
- Safety & preparedness
- Land use implications
- Economic development challenges

Plants are integral to their host communities

- Largest property taxpayers
- Major employers
- Utility & plant employees tied into every aspect of civic life

Host communities role in transition

- Protecting local taxpayers and residents
- Working to re-shape our communities for post-plant life
- Maximizing existing assets to develop for the future

Host communities role in transition

- It's the unknowns that keep community leaders up at night
  - Replacing economic impact of plants
  - Impact on local housing markets
  - Impact on local philanthropy community
  - Impact on school systems

- Socio-economic impact study underway with CEE
  - Hope that participation in this study can start to answer some questions and identify others

COALITION OF UTILITY CITIES

COALITION OF UTILITY CITIES

Laskin Energy Center & City of Hoyt Lakes

City of Hoyt Lakes – Laskin Energy Center

City of Hoyt Lakes – Laskin Energy Center

- Population: 1,975 (2018)
- Tax Impact of Plant
  - Around 40% of City's budget
- Jobs
  - 12 Full Time
  - Down from 45 prior to gas conversion

COALITION OF UTILITY CITIES

Boswell Energy Center & City of Cohasset

Max Peters, City of Cohasset

City of Cohasset – Clay Boswell Energy Center

- Population: 2,809
- Tax Capacity:
  - 2020
    - $9.1M city tax base
    - Boswell = 54.4%
  - 2019
    - $11.3M city tax base
    - Boswell = 69.3%
- Jobs
  - 185 full-time employees

COALITION OF UTILITY CITIES

City of Cohasset – Clay Boswell Energy Center

- 185 full-time employees
- $10.0M total tax contribution (2019)
- $17.0M Annual Payroll

COALITION OF UTILITY CITIES

Impossible to replace

- 185 employees at Boswell 3 & 4
- 90% of Boswell employees live within Itasca County
- Average Boswell salary = $88,317/year
  - Compared to rest of Itasca County:
    - Median Household Income: $52,050
    - Median earnings for full-time year-round worker: $42,536

COALITION OF UTILITY CITIES

Lake Country Service Center Project

- Largest economic development project in recent memory
- Opened October 2019
- $12.8 million investment
- 65 full-time jobs

COALITION OF UTILITY CITIES

City of Cohasset

Boswell Tax Capacity =

What happens after Boswell?

- Without support and careful planning, closure of Boswell will lead to:
  - Massive property tax shifts onto local residents/businesses
  - Significant reduction in city services
  - Cascading impacts through housing markets

- Impacts will ripple throughout the region and the state
  - Top contributor to Range Fiscal Disparities program

What do communities need?

- Time

- State aid
  - Accommodations within existing programs (Local Government Aid; Fiscal Disparities)
  - Additional funds to protect local taxpayers

- Access to Economic Development Opportunities
  - State grant programs
  - Partnership with utilities

What do communities need?

- A seat at the table
  - Discussions about climate change/clean energy transitions must include communities and workers

- <u>Specifics</u>
  - Clear communication on timelines
  - Commitments from utilities on:
    - Economic development support
    - Plans for plant site/facilities, including clean up

COALITION OF UTILITY CITIES

Thank you

Questions?

Host Community Study: Boswell Economic Impacts

Minnesota Power IRP Stakeholder Meeting
12/17/2019