APRIL 12, 2022

Parry Sound/Muskoka
Integrated Regional Resource Plan (IRRP) Engagement Webinar #3

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Agenda

- 1. IRRP Status Update
- 2. Demand Forecast and Transmission System Needs
- 3. Options Analysis and Draft Recommendations
- 4. Engagement and Next Steps

Objectives of Today's Engagement Webinar

- To provide an update on the electricity planning underway in the Parry Sound/Muskoka sub-region
- To provide an overview of the options analysis and seek input on draft recommendations
- To outline next steps

Seeking Input

As you listen today, please consider the following questions to guide your feedback on the draft recommended plan for the Parry Sound/Muskoka sub-region:

- What information needs to be considered in these recommendations?
- Is there community feedback to the proposed recommendations?
- How can the Parry Sound/Muskoka Technical Working Group continue to engage with communities as these recommendations are implemented, or to help prepare for the next planning cycle?

Please submit your written comments by email to engagement@ieso.ca by May 3

Long-term Electricity Plan Status Update

Parry Sound/Muskoka IRRP Status Update

- IRRP study work began in Q4 2020, and is on track for completion in Q2 2022
  - Electricity demand forecast and needs have been determined, potential options identified and evaluated, and draft recommendations developed
  - The next step is to focus on finalizing recommendations

Recap: Engagement Activities to Date

- Engagement launched on South Georgian Bay-Muskoka Scoping Assessment – May 2020
  - Draft Scoping Assessment posted for public comment – October 8, 2020
  - Webinar held – October 14, 2020
  - Final report posted with IESO responses to comments received – November 30, 2020
- IRRP engagement launched – December 1, 2020
  - Meeting with Town of Parry Sound _ November 16, 2020
- Public webinar #1 to seek input on draft electricity demand forecast – September 8, 2021
- Public webinar #2 To seek feedback on the defined electricity needs for the region and potential options – December 8, 2021

Re-Cap of Parry Sound/Muskoka Needs

Summary of Parry Sound/Muskoka Needs

No.	Location	Type of Need	Approximate Timing	Description
1	Minden TS	Station Capacity	2038	Minden TS is approaching its summer 10-day LTR
2	Waubaushene TS	Station Capacity	2027	Waubaushene TS to be over its summer 10-day LTR
3	M6E/M7E (Minden TS x Cooper Fls JCT)	System Capacity	2034	Thermal capacity need on MxE circuit on loss of another MxE circuit
4	D1M/D2M	End-of-Life	2028	To refurbish 62 Km of 230 kV transmission circuit from Minden TS to Otter Creek JCT
5	M6E/M7E (MxE) Orillia to Cooper	End-of-Life	2024	To refurbish 25 Km of 230 kV transmission circuit from Orillia TS to Cooper Fls JCT

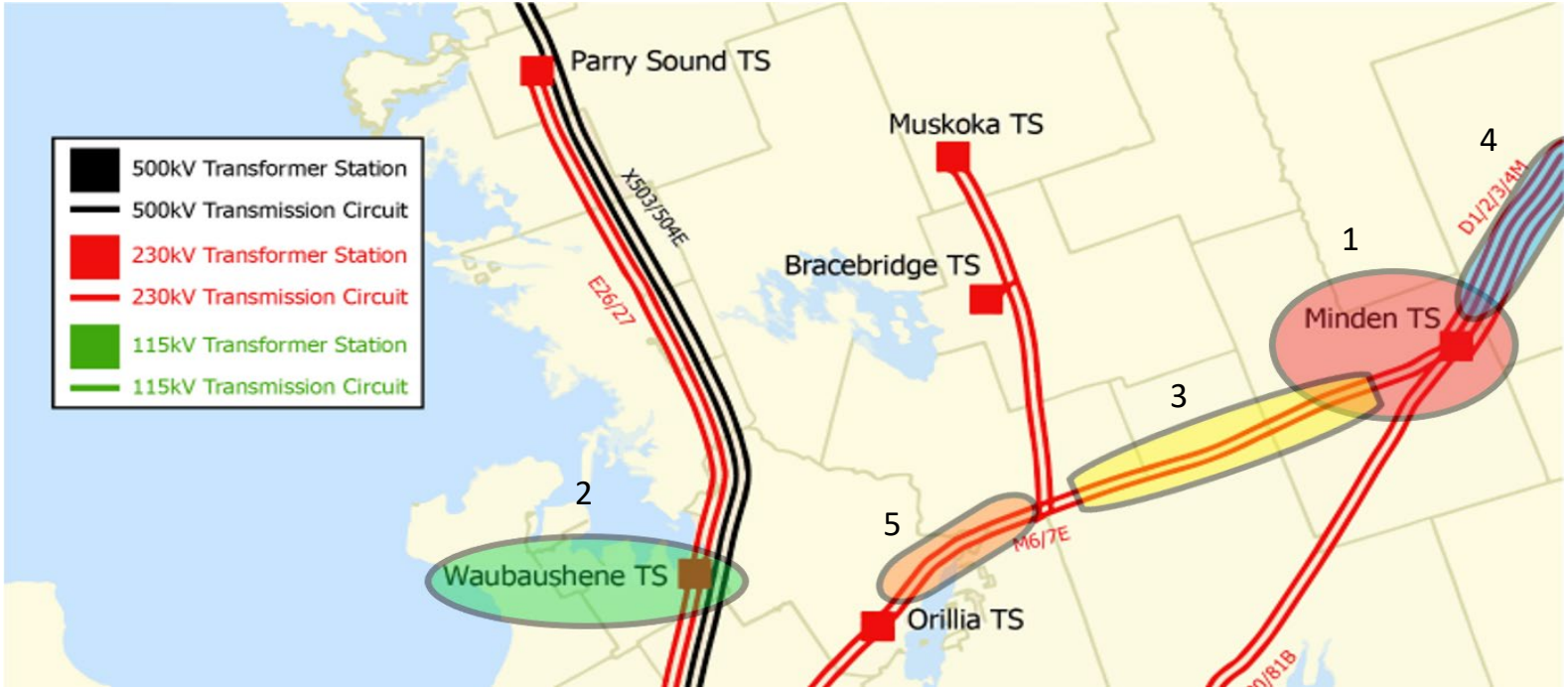
Overall Approach to Addressing Needs

- The Parry Sound/Muskoka IRRP will make firm recommendations for addressing near/mid term timeframe needs
  - Near/mid term needs occur approximately in the first 7-10 years of the planning horizon
  - An options analysis, including non-wires options where feasible, has been conducted for these needs
- The Parry Sound/Muskoka IRRP will describe longer-term needs but will not provide firm recommendations to address them
  - Longer-term needs occur beyond 7-10 years in the planning horizon
  - An options analysis has generally not been conducted for these needs as the options, and performance of these options, could change in the future

Summary of Needs to be Addressed by the IRRP

No.	Location	Type of Need	Approximate Timing	Description
2	Waubaushene TS	Station Capacity	2027	Waubaushene TS to be over its summer 10-day LTR
4	D1M/D2M	End-of-Life	2028	To refurbish 62 Km of 230 kV transmission circuit from Minden TS to Otter Creek JCT
5	M6E/M7E (MxE) Orillia to Cooper	End-of-Life	2024	To refurbish 25 Km of 230 kV transmission circuit from Orillia TS to Cooper Fls JCT

Location of the Needs



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Options Analysis Methodology for Needs to be Addressed by the IRRPs

Option Categories

Generally speaking, the IRRP may recommend "wires" options, "non-wires" options, or a combination of both

Option Type	Description
Wires	Traditional transmission assets such as switching stations, transformer stations, or transmission lines; may also include protection schemes and control and operational actions such as load rejection
Non-wires	Local load modifying solutions such as distributed energy resources (including distributed generation/storage and demand response) or energy efficiency measures - and/or - Large utility-scale generation facilities located to alleviate a local reliability need

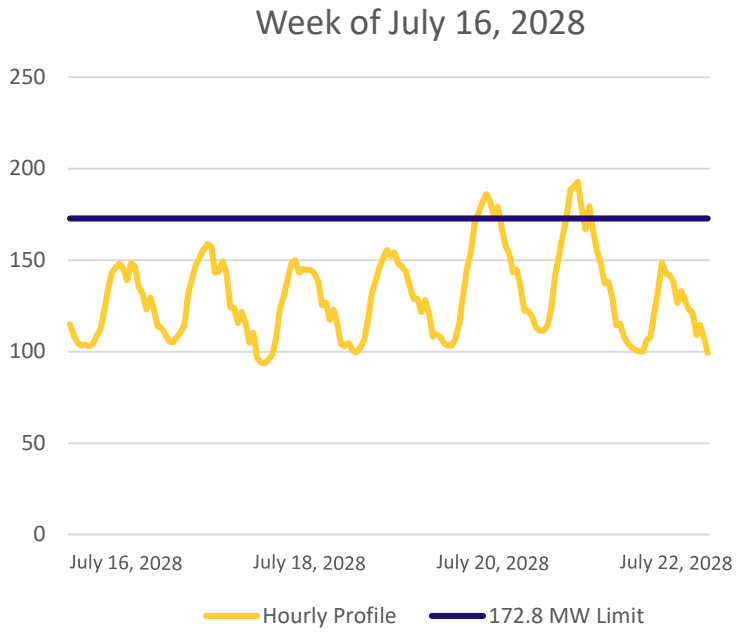
Identifying Wires Options

- Wires options are typically based on forecast annual peak demand beyond the load meeting capability (LMC) of the transmission system in a given local area
- Suitable wires options depends on the:
  - Type of need (capacity, load security/restoration, facilities reaching end-of-life)
  - Limiting phenomenon (thermal, voltage)

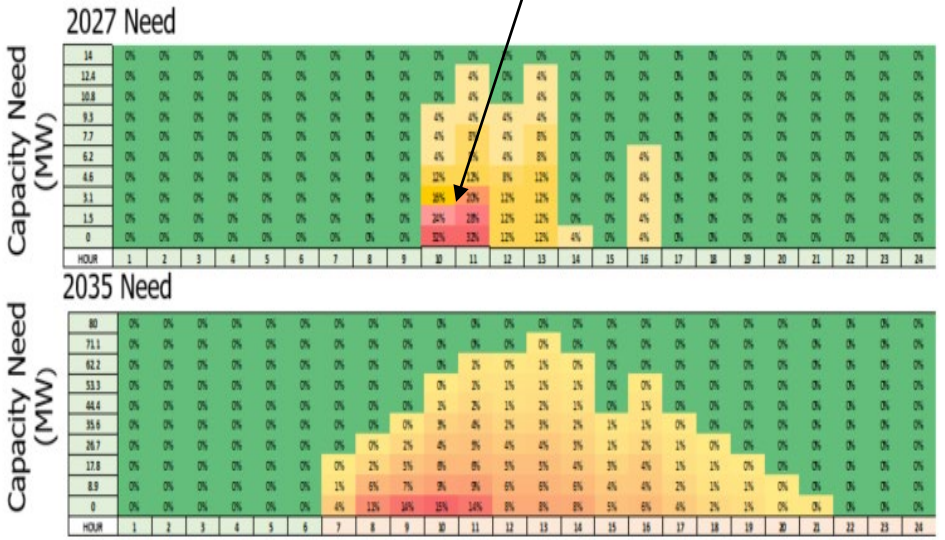
Identifying Non-wires Options

- Identifying non-wires options require a more granular approach to understand the hourly characteristics of the need including magnitude, duration, and frequency
- This is accomplished by simulating hourly demand profiles and examining the hours when demand exceeds the LMC
- Non-wires options are selected and sized according to both the capacity and energy requirements
- This enables development of a high-level cost estimate for non-wires options

Illustrative Example: Load Profiling & Need Visualization



~25% of the total time spent over the limit was at



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Estimating Cost of Non-wires Options

- Once suitable technologies are chosen and sized according to the characteristics of the need, the capital and operating costs of these options can be estimated based on benchmark costs for a variety of resources
- If applicable, these resources are also "credited" with the capacity value they provide the broader system

Evaluating Options

- Once options for addressing needs have been identified and costed, recommended solutions in the plan are developed and informed by:
  - The technical ability of the option to address the need
  - The cost of the option; preference is generally given to the least cost option that meets the identified need
  - Opportunities to address multiple needs with a single solution
  - Input from community engagement

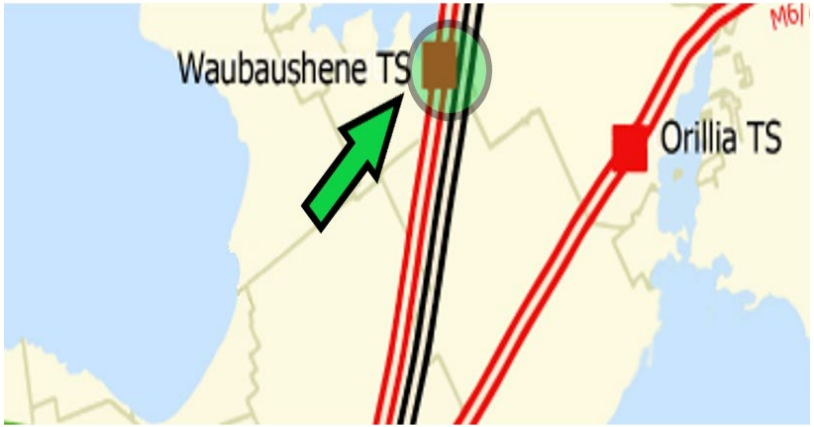
Options Analysis and Draft Recommendations

1. Minden Station Capacity Need

- Minden TS is approaching its summer 10-day LTR by 2038
- Given that the need does not arise until late 2030s, it is prudent to monitor the load growth in the region
- Consider it in the next cycle of regional planning, anticipated to begin in 2025

2. Waubaushene Capacity Need

- Waubaushene TS to be over its summer 10-day LTR in 2027
- The transformers are reaching end-of-life (EOL) in 2030 and will be due for replacement at this time. There is an opportunity to align the station capacity needs with EOL replacement; however, a 2-3 year lead time is required
- Non-wire options analysis indicates that CDM is a good candidate for deferring the station capacity need as there is incremental cost effective CDM in the area served by the station



3. MxE System Capacity Need

- There is a thermal capacity need on one of the M6E/M7E circuits (MxE) for the loss of another MxE circuit for the section Minden TS by Cooper Falls JCT starting in the late 2030s
- While this need is a longer-term need, we did look at potential options so as to inform future plans
- This analysis shows that CDM is potentially a good candidate to defer this need, when considering the need characteristics
- While we do not need to make a firm recommendation on how to address this need now, the plan will recommend that a CDM option continue to be considered in between cycles

MxE System Capacity Need

Key Metrics	2034	2035
Limit (MW)	581	581
Capacity Need (MW)	12.8	23.87
Number of Events	5	8
Maximum Energy Per Event (MWh)	20.5	47.1
Maximum Event Length (Hours)	2	3
Average Event Length (Hours)	1.6	2.1
Total Energy (MWh)	53.9	161.6

MxE System Capacity Need Heat Maps

2034 Need

Capacity Need (MW)

13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11.6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
10.1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
8.7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
7.2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
5.8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
4.3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	25%	0%	0%	0%	0%	0%
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1.4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	25%	0%	0%	0%	0%	0%
0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%	0%	0%	0%	0%
HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

2035 Need

Capacity Need (MW)

24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21.3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18.7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16.0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13.3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10.7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
8.0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%
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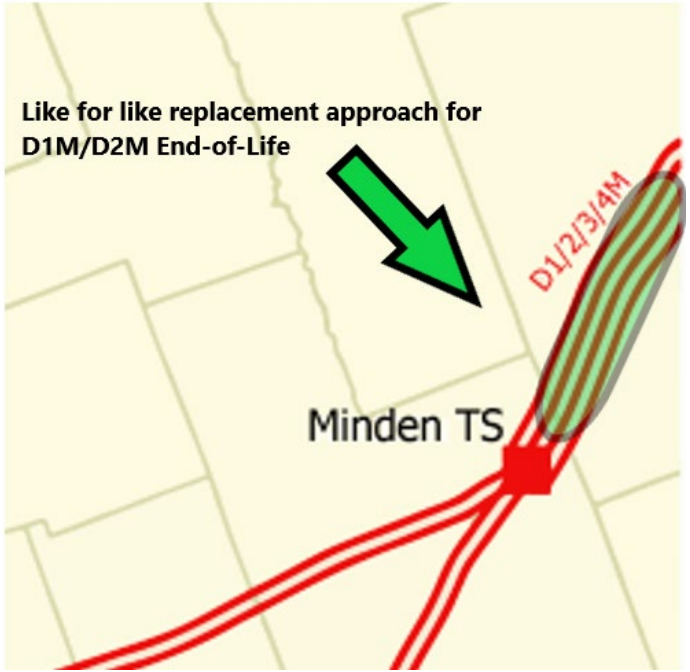
HOUR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

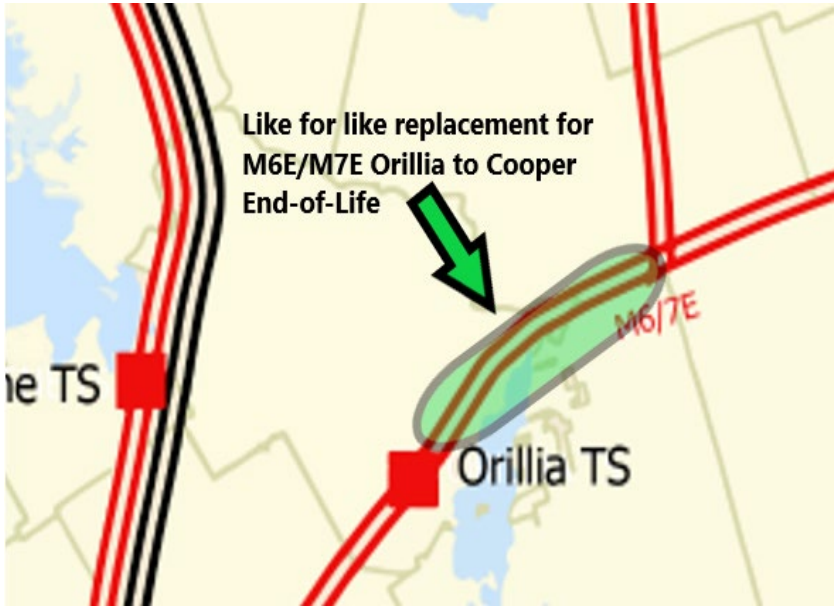
4. D1M/D2M End-of-Life Need

- Minden TS to Otter Creek JCT Sections of D1M/D2M will reach end-of-life in 2028
- No violations were identified in system studies
- Like for like replacement is appropriate

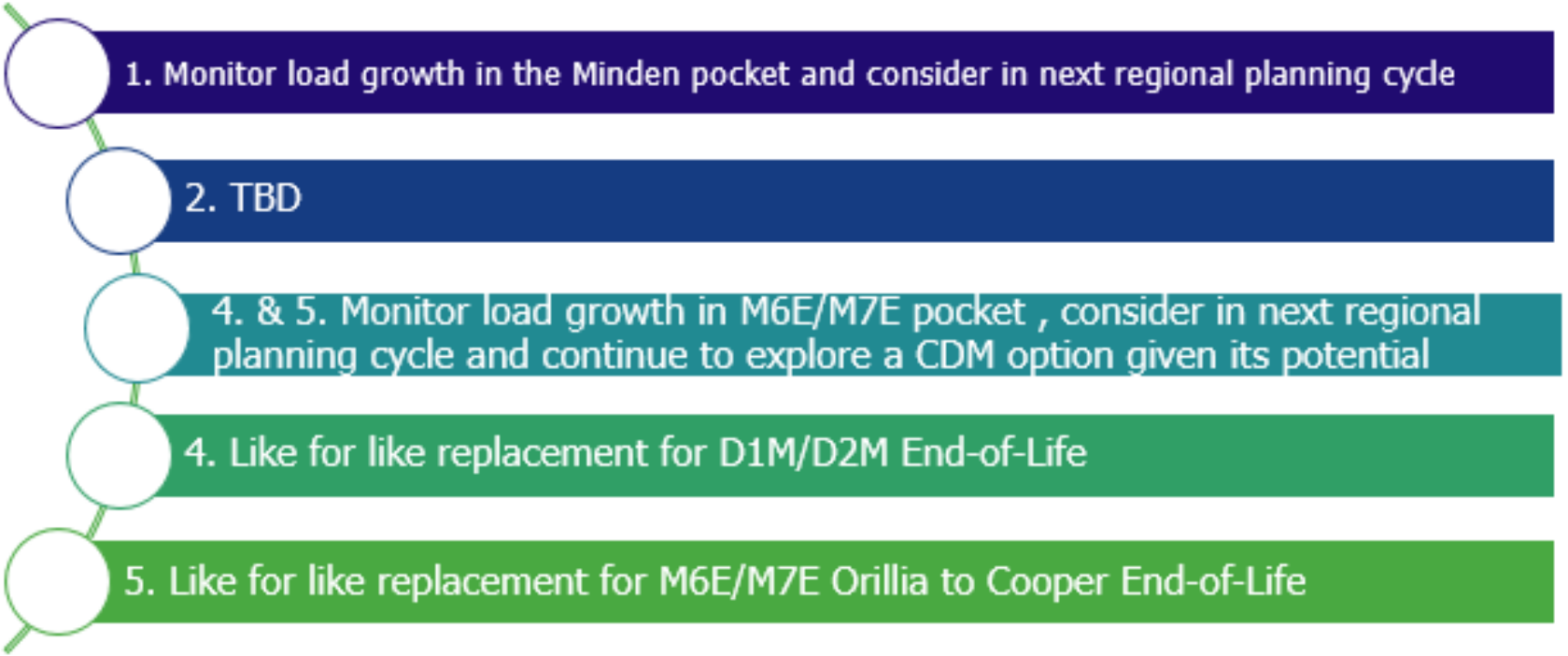


5. M6E/M7E Orillia to Coopers Falls End-of-Life Need

- 25 km of M6E/M7E from Orillia TS to Coopers Falls JCT will reach end-of-life in 2024
- No violations were identified in system studies as this is a different section from thermal need
- Like for like replacement is appropriate



Summary of Recommendations



Next Steps

Your Feedback is Important

As you prepare your feedback, consider the following questions to guide feedback your feedback on the draft recommended plan for the Parry Sound/Muskoka IRRP:

- What information needs to be considered in these recommendations?
- Is there community feedback to the proposed recommendations?
- How can the Working Group continue to engage with communities as these recommendations are implemented, or to help prepare for the next planning cycle?

Please submit your written comments by email to engagement@ieso.ca by May 3

Next Steps for Engagement

- Written feedback due period on options analysis and draft recommendations – May 3
- Final Parry Sound/Muskoka IRRP posted with IESO responses to feedback received – May 26

Keeping in Touch

- **Subscribe** to receive updates on the Barrie/Innisfil regional electricity planning initiatives on the IESO website- select Parry Sound/Muskoka
- **Follow** the Parry Sound/Muskoka regional planning activities on the dedicated engagement webpage
- **Join** the GTA/Central Regional Electricity Network for ongoing dialogue on local developments, priorities and planning initiatives

Seeking Input on the Webinar

- Tell us about today
- Was the material clear? Did it cover what you expected?
- Was there enough opportunity to ask questions?
- Is there any way to improve these gatherings, e.g., speakers, presentations or technology?

Chat section is open for comments

Thank You

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