Integrated Resource Planning

Fall 2023 Regional Update Webinar



Southeast Region November 27, 2023

Megan:

Thanks to everyone who has joined today's call. We are looking forward to sharing more information about IRP with you as well as the needs and potential projects that have been identified in your region.

My name is Megan Robinson – Senior Advisor, Community Engagement IRP. Also, on the call presenting today are:

•Chris Ripley

oManager Integrated Resource Planning

Kurtis Lubbers

Supervisor Distribution Optimization Engineering

David Moffat

Advisor Integrated Resource Planning



Megan:

Before we move on to the agenda, it is practice at Enbridge to begin each meeting with a safety moment. Today's will review 7 vehicle tips that can help with winter weather driving:

- 1) Installing winter tires driving with all-season tires in winter conditions doesn't offer the maximum performance that you may need throughout the winter months.
- Keeping your washer fluid full a large amount of fluid can be used during a single storm so its best to keep it full
- 3) Packing a winter safety kit a kit could include matches, first aid kit, flares, flashlight & batteries, ice scraper, warm clothing, extra antifreeze, jumper cables, a small shovel, non-perishable food and water.
- 4) Maintaining proper tire pressure- a general recommendation is 30-35 PSI in winter temperatures.
- 5) Keeping the gas tank at least half full if you find yourself stranded, it can keep your engine running until help arrives.
- 6) Cleaning all debris from your vehicle by not doing this you can obstruct your vision or that of another drivers.
- 7) Keeping your rear-window defroster in working order unsafe driving conditions occur when you can't see what is behind you.

Agenda

- Engagement process and webinar objectives
- Energy transition
- Integrated Resource Planning (IRP)
- Regional update
- Regional project discussion



Megan: Today's agenda consists of:

- the engagement process and webinar objectives
- Energy Transition
- Integrated Resource Planning
- A regional update, and
- Regional project discussion
- You can participate in this webinar by asking questions in the chat function by clicking on the Q&A tab at the top right of your screen.

The moderator will address questions at the end of the presentation.

We will also be posting all questions and responses on the regional planning website.

Engagement process and objectives



IRP engagement process:

- An open and public engagement process
- Ongoing sessions
- · We welcome comments on how to improve the process

Objectives:

- Discuss Integrated Resource Planning
- Provide an update on planning underway
- · Provide an update on the projects
- Seek feedback

Megan:

This webinar is part of an ongoing series of IRP engagement sessions that are intended to promote dialogue with attendees to help inform regional planning.

The IRP engagement process includes:

- An open and public engagement process where participation and feedback is encouraged.
- Ongoing engagement sessions.
- And, comments on how to improve the process. Feedback can be shared with IRP team members or through the 'Have Your Say' online feedback form.

The objectives of this webinar are to:

- Discuss Enbridge Gas' Integrated Resource Planning (IRP) Initiatives
- Provide an update on natural gas planning underway within the region
- Provide an update on the Pilot Project and other potential projects, and
- Seek feedback on the demand forecast for the region to confirm current customer growth information

As a reminder

- We are not here to debate government, environmental or regulatory policy.
- We will not be seeking feedback on regulatory proceedings or facility projects that are already in flight or part of an ongoing Leave to Construct ("LTC") proceeding.
- We are not opening additional lanes of inquiry for projects that have filed their LTC or are in LTC proceedings.

Enbridge Gas is committed to supporting the achievement of federal and provincial emissions targets and today Chris Ripley will talk about integrated resource planning and the role it plays in supporting the energy transition. Chris.





Natural gas is a critical component of Ontario's current energy supply. Approximately 75% of Ontario homes rely on natural gas for home and hot water heating. Overall, 30% of Ontario's energy, almost double that of electricity, is served by natural gas at less than 1/3 of the cost.

Ontario has a reliable electricity supply today because of natural gas-fired generation. Electricity can't be efficiently stored, and renewable power requires a backup that can ramp up quickly to meet Ontario's energy needs when the wind doesn't blow, the sun doesn't shine, or above-ground infrastructure is impacted by climate events like ice or high winds.

Within the next 20 years, energy demand is set to increase by 25 % as forecasted by the International Energy Agency (IEA).

At the same time, we recognize residents of Ontario are concerned about reducing carbon emissions. Under the Paris Agreement, Canada committed to a target to reduce GHG emissions by 30% below 2005 levels by 2030. In April 2021 Prime Minister Trudeau increased Canada's 2030 emissions reduction target to 40-45%.

Some say a simple solution to reduce emissions would be to eliminate fossil fuels and electrify everything. Enbridge believes a focus on achieving net zero via only electrification overlooks market-ready, low and zero-carbon solutions. These can affordably support near-term emissions reductions by leveraging the existing gas and electric infrastructure versus an electric-only option.

In our view, a coordinated approach to energy system planning – between natural gas and electricity - is required for a successful energy transition



We recognize that energy transition is starting to unfold in Ontario and there are aggressive emission reduction goals set by Canada. We also recognize that our natural gas system and the product that we deliver will need to change to support these emission reduction goals – given that approximately 30% of Ontario's emissions are from the use of natural gas.

We are committed to supporting energy transition in Ontario, and we have taken the following steps so far:

- We are actively investing in low-carbon solutions that support cost-effective emission reductions – while continuing to safely and reliably meet Ontario's energy needs
- We have set net-zero targets for emissions from our own operations

Enbridge Gas's distribution, transmission and storage assets are vast and invaluable in providing reliable and resilient energy to Ontario. Our system can support a net-zero future – and the extent to which our system can be utilized in the transition must be further analyzed and understood before any decisions are made with regards to the best pathway forward in Ontario. Enbridge has the scale and experience to support the transition to a net-zero future and is delivering innovative solutions across the sector.

Integrated Resource Planning

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Actions to achieve net zero



"Safe-bet" actions to take today to reach net zero:



Maximize energy efficiency

Reduce energy use.



Optimize energy system planning

Co-ordinate electric and gas system planning.



Invest in low-carbon gases

Transition to increasing amounts of renew able natural gas (RNG) and hydrogen over time.



Utilize carbon capture and storage

Invest in carbon capture and storage (CCS) for heavy industry and blue hydrogen production.

Chris:

Whichever pathway the province takes to achieve net zero, there are some actions that Enbridge Gas believes are safe bets. These actions are considered safe bets because they can deliver near-term GHG reductions, and/or maintain flexibility until the best pathway is chosen.

Safe bet actions include:

- Continuing to focus on delivering energy efficiency programs, with a focus on maintaining alignment with federal, provincial and municipal programs to ensure the costs and impacts are minimized.
- Optimizing and integrating gas and electric systems through coordinated system planning and through physically integrating systems in buildings through hybrid heating.
- Investing in carbon capture, utilization and storage for heavy industry and hydrogen production.

Whichever pathway the province takes to achieve net zero, there are some actions that Enbridge Gas believes are safe bets. These actions are considered safe bets because they can deliver near-term GHG reductions, and/or maintain flexibility until the best pathway is chosen. The safe bet actions include continuing to focus on delivering energy efficiency programs with the focus on maintaining alignment with federal provincial municipal programs to ensure the costs and impacts are minimized. We're also optimizing and integrating the gas electric systems through coordinated system planning and through physically integrating systems in buildings through hybrid heating and investing in carbon capture utilization and storage for heavy industry and hydrogen production.



As the energy landscape continues to evolve, there is a growing interest in low carbon alternatives to meet energy needs and as the largest natural gas distributor in Ontario, Enbridge Gas knows it will play a meaningful and integral role in the province's path towards energy transition.

So what is integrated resource planning? IRP is an enhanced planning strategy and process where we evaluate non-pipeline alternatives that could be used to defer or avoid implementing a traditional pipeline project to meet a system need. Consideration is given to safety, cost-effectiveness, and the ability for alternative solutions to meet customer demands reliably. In other words, it helps us to find alternative ways to meet customer demand for energy without increasing our pipeline infrastructure

Enbridge Gas is committed to supporting the province, municipalities, and Indigenous communities in achieving their clean energy goals. Annual IRP stakeholder activities will support ongoing dialogue between all parties to ensure energy and climate plans are known and factored into Enbridge Gas's system planning.

IRP regional stakeholder activities are important to better understand the local initiatives and policies that may affect natural gas demand. The learnings from stakeholder sessions are then incorporated into our demand forecasting processes and allows us to plan for the future.



The Ontario Energy Board approved several IRP alternatives including:

Demand side alternatives that focus on lowering peak hour energy use through energy efficiency programs such as Enhanced Targeted Energy Efficiency (ETEE) programs or Demand Response programs. Enbridge will offer a variety of programs to help reduce peak consumption including upgrades to building envelope and more efficient heating equipment.

Demand Response is a program where Enbridge will install smart thermostats in a customer's home and controlling the thermostat during a very cold event by preheating the home's temperature or lowering the temperature by a few degrees. While this may seem small, if enough homes and businesses in an area participate it can lower the peak hour consumption helping to defer or downsize pipeline projects.

The OEB also approved supply side alternatives that focus on bringing more energy to a region through the use of compressed natural gas (CNG) or liquified natural gas, carbon-neutral renewable natural gas or additional supply through other pipelines. These alternatives can be implemented individually or in combination to meet the system need cost-effectively and within the required timeframe.



How we are planning our system today With IRP

- Demand forecast
- System modelling
- Asset management plan
 (AMP)
- IRP and LTC assessment process



Chris:

To plan our system Enbridge follows an annual process that includes reviewing the future natural gas demands, modelling how those demands impact our natural gas system and then determines where new projects are required to meet system demands.

Following the identification of new system needs, Enbridge scopes and documents new facility projects that are required over the next 10 years and include those in a document called the Asset Management Plan. This plan is filed with the Ontario Energy Board every other year and in the intervening years, we file an addendum or an update to that plan and is available publicly.

Following the identification of projects in the AMP Enbridge starts the process of evaluating the projects for IRP alternatives.



The IRP assessment process consists of 4 steps including:

Identification of Constraints in the AMP as noted on the previous slide. There are over 3000 projects in the AMP which would require significant time if Enbridge had to evaluate every single project. Therefore, the OEB approved a set of screening criteria to make sure Enbridge can focus on projects where IRP alternatives can be applied.

Said another way, the screening criteria help us reduce the number of projects from the IRP assessment process. These criteria include emergency projects, customer specific projects where the customer is paying for the entire project and if the projects are below \$2 million.

For all of the projects that pass the screening phase we move to a Two-Stage Evaluation Process

- The Technical Evaluation stage is where Assesses the technical viability of potential IRPAs to reduce peak demand to the degree required to meet the identified system need, using best available information to determine whether an IRP Plan including one or more alternatives would be a viable option.
- Economic Evaluation The three-phase economic test that compares the IRP plan(s) to the pipeline option to determine which alternative is optimal.

Following the assessments, we then conduct Periodic Reviews to evaluate whether future project needs have changed or if the IRP alternatives can meet the system need.

Technical evaluation process	ENBRIDGE By Serving Ontario 175 years
 Review and confirm if the existing scope should be modified prior to the evaluation of a alternative. 	an IRP
2. Determine the feasibility of supply-side alternatives.	
- Considerations for CNG: Location of injection and flow rates required	
 Considerations for market-based supply side options: Availability of additional natural gas capa pressure upstream to impact project scope 	acity or
3. Determine the feasibility of demand-side alternatives.	
 Considerations for ETEE: Demand reduction required, time horizon to achieve reductions, firr demand on the system, theoretical potential ETEE reductions, system-specific constraints 	m contract
4. Determine the overall technical feasibility of IRPA implementation.	
Grow th driven projects have the highest IRP value	
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I am going to dive a little deeper into the technical evaluation process. For each project that passes the technical screening Enbridge will review the project scope, timing and confirm the forecast for that particular area to ensure that the correct project need is being evaluated. Enbridge will meet with municipalities, local electric utilities, and large customers and Indigenous groups to understand the future energy needs for the area, including the review of any community or municipal energy plans that exist for the region.

We will then look at all the potential alternatives to determine if one or more in combination can defer or downsize the facility project. Energy efficiency programs for customers take time to develop and implement so there will be projects where Enbridge will need to implement a supply side alternative for a few years to help defer a project, until the energy efficiency programs are implemented and reducing the peak demands on our system.

Following completion of the technical evaluation Enbridge Gas will compare the facility project and IRP alternatives from an economic perspective. The most optimal solution, technically and economically, will be brought forward to the OEB for approval.



Now moving onto EDIMP, which stands for Enhanced Distribution Integrity Management Program (EDIMP).

Enbridge Gas is implementing the EDIMP to target the management of integrity concerns on our higher priority distribution pipelines. This requires Enbridge Gas to conduct integrity related assessments on these higher priority distribution pipelines to improve our understanding of:

- · The condition of the asset
- · Whether the asset is fit for service
- · And if there are any risks associated with operation

The EDIMP-related work may determine that a full replacement of the pipeline is not warranted based on enhanced asset health findings. On the other hand, it could also determine that significant unexpected issues requiring planned capital investments or urgent intervention is required to address the integrity concerns on the pipeline.

If the results of these targeted integrity programs impact the pipeline replacement project scope in the AMP, IRP will subsequently re-evaluate of feasibility of IRP implementation based on the updated scope.



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What we primarily do in DOE is hydraulic modelling of the systems across the franchise to peak hour design conditions, and now this includes supporting IRP analysis and initiatives.

Today I'll be speaking a bit more about the Southeast Region and some of the Technical IRP Evaluations we are performing as one of our accountabilities. The Southeast Region is shown in green on the slide and circled in red. This region covers areas stretching from Simcoe and St Catherines to Brantford, Waterloo and Owen Sound area.

As noted, this region has 61 growth related and 86 non-growth-related investments in the AMP.

We have already reviewed a significant amount of the projects in this region and are aiming to complete the growth projects by year end and the remainder in early 2024.



The Southeast region customer attachment forecast is shown here, and I do want to note these values are based on the 2022 long range planning forecast. This is updated annually.

As you can see, there is a gradual decline in the forecasted rate of customer additions over the years which is critical to our assessments.

This has been accounted for in the IRP assessment process when modelling for the demand reductions required by various IRPAs that Chris talked about. A number of factors are considered when evaluating future customer additions and natural gas demand forecasts including location, zoning, and energy transition factors.

Enbridge Gas is accepting feedback through the form that will be delivered to you following this webinar as well as on our webpage through the "Have Your Say" function.

Key projects: southeast region



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Growth and system expansion related

To provide reliable, secure, and affordable natural gas supply to meet the growth in demand of the respective systems.

Investment name	In service date
SRP Southeast Owen Sound County Rd 40 Reinforcement	2025
Hamilton Reinforcement Project	2025
Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	2027

Kurtis:

Growth and System expansion related projects serve the purpose of providing reliable, secure, and affordable natural gas supply to meet the growth demand. As mentioned earlier, growth projects tend to have higher IRP value vs condition based projects.

- I will discuss more about the Owen Sound and Hamilton projects in the following slides
- The Dawn Parkway expansion project in 2027 will be reviewed in more detail later this year. For large projects like this, the optimal IRPA's considered are supply side contracts.

Key projects: southeast region



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Integrity and condition related

Projects required as part of the integrity management program to mitigate risks of corrosion, vintage steel main, pipeline failure, geohazards and facility condition.

Investment name	In service date
Moulton Replacement	2024
SCRW:Station-Renewal In-Place	2025
NPS 10 Glenridge Avenue, St. Catharines	2025
HAMI: KIRKWALL/DOMINION, Full Rebuild	2026

Kurtis:

Integrity and Condition Related projects are required as part of the Integrity Management Program to mitigate condition based risks.

These key projects are some of the larger replacement and rebuild projects in the region, but unfortunately tend to have low IRP value. Examples that Fail are the Crowland Compressor Station Renewal in 2025, as well as the Kirkwall/Dominion Rebuild in 2026 – IRPA's are not applicable for project like these.

After a more detailed assessment, the Moulton Replacement project has been significantly reduced in scope and IRPA's do not apply any more.

The Glenridge Ave replacement project in St Catherines is currently being evaluated by the EDIMP team to confirm need & scope.

This large project will be Technically Evaluated from an IRP perspective in 2024 once that EDIMP evaluation is complete.



This system is forecasted to require a large reinforcement in the coming years. The current facility project is nearly 12km of NPS 12 pipe and the associated valve sites and other facilities necessary for inspection.

Enbridge is currently evaluating several IRPA's for this project and has been in contact with local municipalities and utilities regarding growth projections and electrical capacity.

We are aiming to defer this project with CNG injection, and considering ETEE in the northern area of the system.

Stay tuned for more on this project, Enbridge Gas is planning to file an IRP plan for this project in 2024.



As noted, the preferred facility project route consists of 14 km of NPS 12 pipe, and associated new stations and modifications.

Due to some demand changes, the project timing and scope are being evaluated to determine the optimal project and in-service date.

We have been evaluating all IRPAs alternatives for this project such as CNG injection at the system constraint points and ETEE to defer and/or reduce project.

We've also conducted a reverse open season and requests to convert to interruptible demand for large volume contract customers on the entire Hamilton system and surrounding area.

Lastly as indicated, Enbridge has explored several supply-side alternatives from external third parties for this project.

Look for more to come on this project throughout 2024 and 2025.

Kirkwall/dominion station	Proudly Servin
 This project is part of the Distribution Station Portfolio Scope Kirkwall/Dominion Station [16W-606] Rebuild 2026 timing and estimated to cost \$8.0 million Full rebuild of this station due to several condition related issues This project fails the technical evaluation as it is primarily condition related, IRPAs are not applicable. CNG is not considered for station rebuilds driven by condition ETEE and Supply Side Alternatives will have minimal benefit to this scope and rebuild 	Kirkwall/Dominion Station

I wanted to highlight a large station rebuild here in the Southeast Region – this station is Kirkwall Dominion located near Ancaster.

This projects is part the Distribution Station Portfolio which is generally rebuilds or modifications due to condition at Stations.

This station has varying needs including aging or obsolete equipment driving maintenance challenges, and other issues such as noise complaints. Improvements to aging and old equipment is needed including odourization equipment, telemetry and electrical improvements and flow control valve improvements.

Since IRPA's do not support deferring condition based projects, unfortunately this project Fails the IRP Technical Review.

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David:

Feedback is an important part of informing our IRP activities and is a driving force behind these sessions.

We're always looking for feedback on:

- Information that could affect natural gas demand that we might not have considered for this area or that you believe we should be aware of, such as:
- New residential or commercial developments
- Industrial developments
- New Municipal or Community Energy Plans, and
- Municipal energy policy, etc.

We would also like to hear feedback on the specific area's discussed today including potential IRPA opportunities.

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David:

The best way to stay involved is to visit our Regional Planning webpage to:

- Sign-up for email updates to receive information on upcoming stakeholder events and webinars
- Register for events and webinars
- Review regional pages that include all IRP projects in your community
- · Submit feedback through the 'Have your Say' form on our webpage, and
- Search for other IRP information as required

If you need to contact us directly reach out to irp@enbridge.com



David:

At time we'd like to open the floor to the audience for any questions related to the content we've covered today or IRP in general.

- **Q**: Are we able to get a copy of the presentation?
- A: Presentations will be posted to the website in the coming weeks.

We're always looking to improve our presentation materials so we would really appreciate it if you could complete the short survey linked in the chat below and send us your feedback.

So, check your inbox and stay tuned for the latest information. If you need to contact us directly reach out to irp@enbridge.com



David:

Thank you all for joining us today and a special thank you to all of our presenters, remember to check your inbox for news and updates about everything IRP.