Feedback Form

Regional Electricity Planning in Ottawa Area Subregion – December 12, 2024

Feedback Provided by:

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Following the Ottawa Area Subregion electricity planning engagement webinar held on December 12, 2024, the Independent Electricity System Operator (IESO) is seeking feedback on the potential wire options and Local Achievable Potential Study as outlined during the presentation. A copy of the presentation as well as the recorded webinar can be accessed from the engagement webpage.

Local considerations and feedback are a critical component to the development of an Integrated Regional Resource Plan (IRRP). As the options phase of the IRRP continues to identify how to best meet the area's electricity needs, the IESO wants to hear from you.

Please submit your feedback to engagement@ieso.ca by **January 2, 2025.**

Regional Planning

Topic	Feedback
What perspectives do you have on the potential wire options?	Much of the policy advocates electrification of building heating using air source heat pumps. As a heating expert, the peak load from ASHPs is severely underestimated and will drive up installed generation and distribution system capacity requirements. Also, the utilization of the incremental load served by ASHP will only be about 10% (compared to current electricity system utilization of about 67%, Accordingly, this will drive up electricity rates (Boltzmann Institute and the OSPE are modelling this.) Electricity should not be used for heating and cooling, iif centralized could make great use of thermal energy storage to minimize summer peaks.
What information should be considered in the evaluation of non-wire options?	The peak load for natural gas building heating is about 70 GWth (efficiency adjusted) compared to an Ontario electricity peak of about 23 GWe. The electricity system cannot electrify this (at peak COPs for ASHPs is about 1) as the additional peak could be about 70 GWe. Heat is cheaper to produce and has many diverse sources and heat can be stored at a fraction of the cost of electricity – about 1%. Therefore, heat should NEVER be served by electricity other than upgrading warm waste heat to put into thermal networks. Near proof of concept is borehole thermal energy storage below underground parking lots. Massive seasonal storage potential is possible to use abundant summer heat sources (including solar thermal) to store for winter use. Thermal networks may cost about 50% of the cost of electricity system expansion to meet building heating loads. The use of nuclear CHP has a massive impact, wither small scale local MMR/SMR CHP units or large scale CANDU/AP1000/Monark units. A refurbished Pickering NGS could, with thermal energy storage, heat all of the Greater Toronto Areas. All of this is using proven technology used in Europe, Korea and China but is not even seriously considered in Canada.

Topic	Feedback
Are there any additional information that should be provided in future engagements to help understand municipal perspectives and insights?	The Boltzmann Insititute is just completing a 2 Pathways Study for ECCC to compare thermal networks and thermal storage using waste or rejected heat and renewable energy with electrification using ASHPS. It will be final in march 2025, but we have the basic technical/economic work now that we can use for consultation. With CAN advisors and McMaster Institute for Energy Studies, we (Boltzman have produced a position paper on nuclear CHP and thermal networks. A high level conference is being arranged for June on Nuclear CHP. Thermal networks and storage. Public Works and Government Services would be pleased to develop supplies (including biomass or MMR CHP) that has minimal electricity load, may provide electricity into critical parts of the Ottawa grid and that could be expanded to reduce electricity use in the down town (and expanded later) to reduce electricity use. CEO Conrad's fear of "historic investments in the electricity system to meet soaring electricity demand" could be resolved by coupling of electricity and thermal sectors within their service area. All we need is electricity and thermal experts to talk to each other and policy people to act on evidence.

Local Achievable Potential Study

Topic	Feedback
Is there any feedback on the scope, methodology and potential uses of the Local Achievable Potential Study that the IESO should consider?	From discussions, it seems that it has been focused on electricity as the key decarbonization tool and has not adequately acknowledged non-wires/thermal options. Such options are all well demonstrated globally but cheap gas an affordable electricity have shielded Canadians from the need for integrated thinking. The challenge of decarbonization changes everything. Many of the existing or proposed uses of electricity could be displaced by thermal systems and seasonal energy storage the greatly improve the Local Achievable Potential. For example, a large biomass CHP plant in the West end would create local supply and reduce transmission requirements. Similarly, and energy from waste plant supplying both heat and power. A small nuclear CHP plant in, say Tunney's Pasture, could provide electricity to offset load growth and supply thermal loads for the city. With thermal networks, heat from cooing could be sued or stored rather than discharged to the environment. Downtown building owners could remove heating and cooling equipment (and related electricity service) and lower their operating costs. There is only benefit to the Achievable Potential through electricity load reduction and substitution (and storage).
Are there additional data sources or regional policies/trends that should be considered in the Local Achievable Potential Study?	I cannot pull them together now but there are extensive reports on the possibilities mentioned. Where information is not in public report form yet, The Boltzmann Institute can assemble it for you. Also, some very recent developments in thermal energy storage are under development but key information (including costs) can be provided. OSPE (Ontario Society of Professional Engineers) Energy Task Force has adopted thermal networks as a priority topic for this coming year and NRCan is more seriously working on thermal networks, thermal energy storage and nuclear policy that, I believe, will include SMR/MMR CHP. Please call if you need any of the above in your near term considerations and the Boltzmann Institute will be pleased to assist.

General Comments/Feedback

I really appreciated the openness and detail by the participants in the IESO regional workshop and saw a willingness to acknowledge the non-wire technologies and practices that could mitigate rate

escalation and even reduce electricity prices. While some options may have difficulty competing with todays natural gas and electricity prices, we should recognize that gas is not a long term option and increasingly people, particularly CEO Bryce Conrad, recognize that electricity prices will escalate sharply in an electrification scenario. So we need to agree that we must move beyond today's prices and see how to avoid tomorrows prices escalating. The integration of thermal and electricity networks (planning, design and operation) need to be coupled to achieve a more adaptable, resilient and sustainable (and affordable) energy system option for the public.