# Feedback Form

## Gas Phase-Out Impact Assessment – May 27, 2021

### Feedback Provided by:

Name: Tonja Leach

Title: Executive Director

Organization: QUEST – Quality Urban Energy Systems of Tomorrow

Email: [redacted]

Date: June 17, 2021

To promote transparency, feedback submitted will be posted on the Gas Phase-Out Impact Assessment webpage unless otherwise requested by the sender.

Please provide feedback by June 17, 2021 to engagement@ieso.ca. Please use subject:

Feedback - Gas Phase-Out Impact Assessment

## Questions

| Topic | Feedback |
|---|---|
| Are there additional considerations the IESO has not identified in defining the scope of the assessment to examine the reliability, operability, timing, cost and wholesale market implications of reduced emissions on the electricity system? | |

## General Comments/Feedback

Thank you for considering this submission to the IESO with comments on Ontario's gas phase out impact assessment. The comments are being submitted by QUEST – Quality Urban Energy Systems of Tomorrow. QUEST is a national non-government organization that works to accelerate the adoption of efficient and integrated community-scale energy systems in Canada by informing, inspiring, and connecting decision-makers. The organization commissions research, communicates best practices, convenes government, utility, and private-sector leaders, and works directly with local authorities to implement on-the-ground solutions. QUEST recognizes communities that have embraced these principles by referring to them as Smart Energy Communities.

The feedback below has been developed by QUEST, in consultation with members of its working group - the Ontario Combined Heat and Power (CHP) Consortium - made up primarily of CHP customers, developers and service providers.

We are submitting the following comments in response to the question posed by the IESO "Are there additional considerations the IESO has not identified in defining the scope of the assessment to examine the reliability, operability, timing, cost and wholesale market implications of reduced emissions on the electricity system? "

QUEST is encouraging the IESO and Ministry of Energy to consider energy system integration more holistically to better leverage the energy system assets that Ontarians have already invested in and that we already have at our disposal.

This approach is being embraced in other jurisdictions such as Quebec where Energir and Hydro Quebec have a joint submission to their regulator - Regis de l'energie - for a blended rate that will help support end-use energy system integration.

It is critical that Ontario's energy system maintains balance between 4 equally important priorities - affordability, resiliency, reliability and emissions reductions - as we forge through our energy transition, otherwise we will be derailed in our goal of integrating distributed energy resources, leveraging clean and sustainable solutions and ultimately in reducing emissions.

System integration ensures resilience and reliability, it helps to keep costs down and reduce emissions, and is also much more efficient to implement. There are many solutions that enable system integration such as hybrid heating technologies, district energy systems, power-to-gas, advanced heat recovery and combined heat and power systems. To provide some context, below is the Combined Heat and Power (CHP) example. CHP has a particular role to play in regions with electrical capacity needs that overlap with local thermal loads.

This overlaying of electrical and thermal loads could lead to a more cost-effective energy system through heat capture and more competitive businesses and communities. All future utility resource planning should be fully integrated between the gas and electricity networks rather than done as separate activities. Furthermore, the scope of the assessment should acknowledge and support the role that municipalities can play in achieving energy system goals and targets through community energy planning.

Many of Ontario's communities leading the fight against climate change, including Guelph, Hamilton, London, Markham, Toronto, Waterloo and others, have developed Community Energy Plans (CEPs) that include CHP as one of their primary actions to achieve GHG emissions reductions.

CHP is one of the key technologies that can provide both firm capacity and low carbon energy to facilitate the transition away from centralized gas-fired generation. Specifically:

1. CHP can help reduce province wide GHG emissions by reducing the run time of central gas plants

In an analysis and case study by Power Advisory, MEFs were used for 6 CHP sizes and configurations ranging from 24 kW to 175 kW and the analysis confirmed that CHP reduced net GHG emissions in each scenario as compared to emissions from displaced grid electricity and an on-site boiler.

One particular area of concern to QUEST and its network is the application of emission factors to evaluate how projects can contribute to achieving emissions reductions objectives. While the IESO has released avoided emission factors as part of the Annual Planning Outlook (APO) tables, there is insufficient description of the methodology and assumptions used in developing these emission factors. Providing full transparency and a public process for determining emission factors is critical to any consideration of central gas phase out, especially as the carbon price will be increasing to $170/tonne by 2030. Clear price signals are needed to drive rational behaviour that will help us achieve emissions reductions in the most cost-effective manner.

2. CHP systems are available to run on biomass, RNG and various blends of Hydrogen reducing GHG emissions substantially

CHP is a technology that can make use of a variety of input fuels. While most CHP systems initially use natural gas, there is a trend towards more mature systems switching to carbon-neutral biomass, as well as biogas, Renewable Natural Gas (RNG), hydrogen and heat recovery. CHP technology can be deployed quickly in a wide range of sizes from < 1 kW ("micro-CHP" sites in single-family homes) to larger systems up to and above 10 MW. CHP can also be integrated with other complementary technologies such as PV and storage within micro-grid systems.

The adoption of biomass, RNG and hydrogen fuels allows for further GHG savings in already efficient applications such as CHP. Incentivizing CHP installations opens the door for the use of clean, zero carbon RNG which will ensure that these fuels go further when they are used in the most efficient manner possible, namely CHP. The Ministry of Environment recently streamlined the approvals process for low-risk CHP systems, including biomass-based systems in recognition of the superior efficiencies of CHP and its role in providing energy to industry and communities.

3. There is an opportunity to install large scale Flexible CHP at industrial host sites to meet peak demand

Members of the Ontario CHP Consortium encourage the IESO to look to work done by the United States Department of Energy in developing a flexible grid concept that provides benefits to customers and grid operators:

"A cost-effective, flexible CHP system that seamlessly connects to the grid and provides needed grid services would offer a win-win solution for manufacturers and grid operators. For manufacturers, revenue from grid services would provide an attractive return on their investment in CHP systems; for grid operators, partnering with industrial sites would provide cost-effective access to dispatchable generating capacity and other essential services, such as frequency regulation."

Several discussion papers have been published detailing this concept: US DOE flexible CHP paper, US DOE's

Study on Flexible CHP on the California Grid, and Navigant studies on the use of Flexible CHP to enhance the grid, and an ICF study on supporting the Grid with flexible CHP systems.

4. CHP improves community resilience to climate change and extreme weather events.

An increased number of decentralized CHP units diversifies and enhances grid resilience and better prepares individual communities for grid outages and emergencies. CHP provides additional resiliency to allow for business continuity, including the protection of property and occupants, during weather-related and other types of utility power interruptions. CHP plant reliability is very high due to both the reliability of the buried natural gas service and the financial requirement for frequent or continuous operation of the CHP plant. Community-based groups such as YMCA and Toronto Community Housing are implementing CHP projects because of their ability to provide reliable and resilient power, creating emergency warming centres that will provide a safe refuge during the next ice storm.

Based on the evidence above for CHP integration alone, QUEST recommends that the IESO and the Ministry of Energy consider energy system integration and integration technologies more holistically as part of the gas phase out impact assessment.

Thank you for your consideration.

Sincerely,

Tonja Leach, Executive Director

QUEST

References:

United States Department of Energy; Office of Energy Efficiency and Renewable Energy. Flexible Combined Heat and Power (CHP) Systems.
https://www.energy.gov/sites/prod/files/2018/01/f47/Flexible%20CHP%20Comms_01.18.18_compliant.pdf
United States Department of Energy. Modeling the Impact of Flexible CHP on California's Future Electric Grid.
Navigant Research. The Future of CHP is More Flexible and Grid-Interactive.
https://www.navigantresearch.com/news-and-views/the-future-of-chp-is-more-flexible-and-grid-interactive
ICF. Supporting Grid Modernization with Flexible CHP Systems. https://www.icf.com/-/media/files/icf/white-paper/2017/icf-supporting-grid-mod-with-flexible-chp-feb-2018.pdf