RÉGIE DE L'ÉNERGIE

FILE : **R-3867-2013, Phase 2B**

DEMANDE RELATIVE AU DOSSIER GÉNÉRIQUE PORTANT SUR L'ALLOCATION DES COÛTS ET LA STRUCTURE TARIFAIRE DE GAZ MÉTRO

RESPONSE TO INFORMATION REQUEST N^{O} 1 FROM INDUSTRIAL GAS USERS ASSOCIATION (« IGUA ») TO ELENCHUS

February 22nd, 2021

INFORMATION REQUEST NO 1
FROM INDUSTRIAL GAS USERS ASSOCIATION (« IGUA »)
RELATED TO THE « DEMANDE RELATIVE AU DOSSIER GÉNÉRIQUE PORTANT SUR L'ALLOCATION DES COÛTS ET LA STRUCTURE TARIFAIRE DE GAZ MÉTRO »

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1. References (i): Elenchus, (A-0219), p 42, (Adobe p,53), l 13 à l 16
(ii) : Elenchus, (A-0219), p 42, (Adobe p,53), l 18 à l 22

Preamble:

(i) « *Recognizing the extent to which class variances in demand (sic) from the annual average, which is analogous to the use of the beta factor for investment portfolios, may be worth considering. To the extent that variances are diversified, it is only the transaction costs for diversification that need to be recovered from customers ».*

(ii) *« Using the customers' load factors as the allocator will not recognize this feature of load balancing and operational flexibility requirements fully. LF captures the issue only if it is calculated using average demand /coincident peak demand. A refinement to Énergir's proposed methodology could examine this issue as an option for refining the method in the future ».*

Questions:

1.1 In relation to reference (i), please explain: class variances in demand [departs] from the annual average, which is analogous to the use of the beta factor.

1.2 How could this beta factor be applied and what would be the implications?

1.3 In relation to reference (ii), please confirm IGUA's understanding that the use of clients' load factors as the sole allocation factor could lead to creating a distortion in the calculation of load balancing requirements.

1.4 In relation to reference (ii), please confirm that Énergir's model does not take into account the consumption that occurs outside of the winter period and its impact on general balance of the supply system.

1.5 How could Énergir's methodology be refined to reflect the contribution of consumption during off-heating period?

Response:

1.1 Reference (i) is extracted from a paragraph that is discussing the differences in the impacts that individual customer demands will have on the demand-related causal cost of the class depending on the coincidence of the customer's peak demand with the peak demand of the class. To the extent that the peak demands of customers are non-

coincident, their demands are diversified; hence, the peak demand of the class will be less than the sum of the non-coincident peaks of the customers that make up the class. This observation is analogous to the concept in financial markets that a diversified portfolio is less risky than the sum of the risks associated with the individual assets that make up that portfolio. The analogy is made because the concept of diversifiability has been developed more extensively in the finance literature than it has been in the context of the demand for natural gas (or electricity). The concept applies equally to load balancing costs since diversifiable load balancing requirements will result in lower causal costs than non-diversifiable requirements.

The paragraph from which the quote is extracted observes that the concept of diversifiable demand is analogous to the concept of the beta factor that is used in the financial markets and other analogous applications. In finance, the beta (or beta coefficient) of an asset quantifies the degree of non-diversifiable risk. The risk associated with an investment is determined by the variability in its return, which is analogous to the variability of demand for natural gas. By extension, the beta coefficient of an investment is analogous to the coincidence factor of measured energy demands.

The point being made is that just as a financial asset with a low beta (i.e., risk is diversifiable) will has less impact on portfolio risk as compared to an asset with a higher beta, the demand of a natural gas customer with a low coincidence factor will have less impact on total class demand and hence also on demand-related causal costs as compared to a customer with the same peak demand but a higher coincidence factor. The theoretical implication is that just as an asset, or asset class, with a low beta requires a lower risk premium than another asset or asset class with similar discrete risk but a higher beta (higher portfolio risk), a customer or customer class with a low coincidence factor will have lower demand-related causal costs than a customer with a higher coincidence factor, all other things being equal.

1.2 Conceptually, it would be consistent with the application of the beta factor concept for valuing financial assets to determine customer specific (or sub-class) causal costs that take into account the extent to which customer load factors are diversifiable (i.e., low coincidence factor). Taken to the extreme, the implication would be that every customer would have a rate that reflects its non-diversifiable demand (i.e., coincidence factor). Elenchus notes that this concept is well-understood in the context of natural gas demand, although in practice, I am not aware of any utility that attempts to take customer specific coincidence factors into account to derive customer specific rates. However, the concept implicitly underpins some special rates. For some natural gas utilities have special rates for customers with off-peak demand such as paving companies that use natural gas to heat asphalt outside of the overall system heating seasons.

It would not be practical to implement a more refined approach to recovering customer specific causal costs with existing meter technology. Conceptually, such as approach could be implemented with metering that captures daily (or perhaps hourly) demand with billing quality data in order to develop more precise tracking of coincident demand. It may be noted that in the electricity sector where advanced metering infrastructure (AMI) is now widespread, billing based on coincident peak demand is viewed with caution due to significant implementation and behavioural concerns.

1.3 The central point being made in reference (ii) is that a customer's load factor (LF) is a simplified calculation that approximates the customer's load balancing causal costs. Technically, as clarified in the response to 1.1 above, customer's with identical load factors may have very different causal load balancing cost with the difference determined by the difference in the diversifiability of their demands. For example, a paving company and a heating load customer could have identical load factors although the presence of the paving company's load during the non-heating season may reduce total load balancing costs since it will flatten the total system load profile.

1.4 Énergir's model does not take into account the detailed load profile of customers such as the extent of seasonal load variations that may not be distinguished by the calculated LF. The LF takes into account only the average demand and peak demand; hence, there is an implicit assumption that the seasonal load profiles of customers are similar. In essence, the diversifiability of the loads of different customers are not used to identify customer-specific causal costs and rates. Elenchus notes that this is standard practice for regulated natural gas utilities and is just one dimension of the postage stamp rate approach that is commonly used in setting regulated utility rates.

1.5 Conceptually, the contribution of consumption during the off-heating period could be reflected in rates by developing customer specific load balancing charges based on customer specific causal costs that take into account the coincidence factor of each load (i.e., diversifiability). This approach is constrained by the factors noted in the response to 1.2 above.

It should be noted however, that while the simplifying assumption (see the response to 1.4 above) results in some inter-customer inequities, the presumption is that the effort and expense required to implement customer-specific load balancing charges does not justify a more detailed approach to setting customer-specific load balancing charges. Furthermore, the inequities resulting from the simplified approach are mitigated in Énergir's unbundled environment since it can be presumed that any customer that is seriously disadvantaged by the implicit assumptions underpinning the bundled rates, that customer has the option of choosing unbundled supply services provided on a competitive basis. The customer can contract for unbundled services that reflect the customer's specific load balancing requirements. For example, a customer with 100% LF could contract for transportation without any load balancing.