

# CANADIAN GAS ASSOCIATION

Comments on the Draft Outline for the  
Proposed Joint U.S.-Canadian Electric Grid  
Strategy

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ASSOCIATION CANADIENNE DU GAZ

## Canadian Gas Association Comments on the Draft Outline for the Proposed Joint U.S.-Canadian Electric Grid Strategy

### Background

On March 10, 2016, President Obama and Prime Minister Trudeau issued the U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership. Included in the statement was a commitment to “[d]evelop a joint U.S.-Canadian strategy for strengthening the security and resilience of the North American electricity grid [and] work together to strengthen the security and resilience of the electric grid, including against the growing threat from cyber-attacks and climate change impacts.” On July 20, 2016, the Department of Energy issued a notice seeking comments on the Draft Outline for the Proposed Joint U.S.-Canadian Electric Grid Strategy (“Draft Outline”). DOE is seeking comment on: “(1) Suggestions for how best to describe the cyber and physical risks to electric grid systems, as well as ways to address and mitigate those risks; (2) suggestions for ensuring that the outlined strategic goals and objectives are at the appropriate level for a joint U.S.-Canadian strategy; (3) suggestions for actions under the proposed joint strategy that Federal departments and agencies should take to make the grid more secure and resilient; (4) suggestions for new ways to secure the future grid across North America, as outlined in the final section; and (5) suggestions for timelines to use when considering future planning and investment opportunities.”

The release of the Draft Outline for the Proposed Joint U.S.-Canadian Electric Grid Strategy, and the U.S. Canada Joint Statement on which it was based, follows the issuance of a number of important agreements between the U.S. and Canada on energy cooperation and security. On September 18, 2014, Natural Resources Canada and the U.S. Department of Energy (“DOE”) signed a Memorandum of Understanding on Energy Cooperation. The cooperative activities planned included “sharing knowledge and exploring options to enhance reliability and security of North American energy infrastructure.” This five-year agreement will allow “Canada and the U.S. to participate in cooperative activities such as sharing knowledge, technology and research, facilitating training and sharing best practices.” Canada and the U.S., along with Mexico, also entered into a Memorandum of Understanding on December 15, 2014, that formalized cooperation in, among strategic areas, the following: “Modern, resilient energy infrastructure for North America in all aspects – physical infrastructure as well as institutional infrastructure such as policies, regulations, workforce, innovation, practices to promote energy-efficient goods and services, and sustainable technologies.”

In DOE’s first iteration of its Quadrennial Energy Review (“QER”), DOE recognized that the energy relationship between the US and Canada is highly intertwined, and noted opportunities to collaborate on initiatives to promote clean energy and environmental responsibility. DOE explained that the development of the QER provided an opportunity to engage Canada “in a deeper dialogue on the integrated nature of North American energy systems – including transmission, storage, and distribution infrastructure.” Among the recommendations included in the QER to further enhance North American energy integration was integration of energy data between the U.S. and Canada, undertaking comparative and joint energy system modeling, planning and forecasting between the US and Canada, and establishing collaborative programs to harmonize regulations across the border.

The Canadian Gas Association<sup>1</sup> (CGA) and the Canadian natural gas distribution industry understand the important role that governments can play in the enhancement and strengthening of our North American energy delivery systems. Highly interconnected and interdependent, both Canada and the United States reap the benefits from our various energy systems. The North American electricity grid is one such system, and it is critical for both the U.S. and Canada. The Canadian Gas Association (CGA) agrees that it must be protected and strengthened. But strengthening and securing the North American electricity grid requires looking beyond a narrow focus on the electricity sector. As explained below, this narrow focus neglects a very key element of energy delivery: natural gas and the infrastructure that delivers it. In so doing, governments miss the opportunity to trigger more comprehensive and efficient energy delivery. In the following comments, CGA describes the value of natural gas and natural gas delivery systems and provides some specific examples of how a more comprehensive perspective could improve the North American electricity grid and through it energy delivery as a whole.

### **Ongoing Collaboration on Specific Initiatives: Cyber Security, Mutual Assistance, Power-to-Gas, Exchange of Best Operational Practices**

CGA and Canada's natural gas distribution companies have a long history of working collaboratively with the electricity industry in Canada, with government agencies like Natural Resources Canada and Public Safety Canada, and with industry, association, and government counterparts in the U.S., on initiatives to support the strengthening and ongoing resilience of the North American energy system. Specifically, collaborative efforts are underway in the areas of cyber security, information sharing, cross-border mutual assistance to support effective incidence response, Power-to-Gas and the exchange of best operational practices. CGA believes continued Canada-U.S.-Mexico collaboration in these areas is important to strengthen the resiliency and security of the increasingly integrated energy system. CGA recommends that the Draft Outline incorporate such cross-border and cross-industry collaboration.

### **Increasing the Resiliency of an Electricity Grid by Integrating Natural Gas**

The notice of the Draft Outline seeks comments on ways to mitigate the cyber and physical risks to the electric grid and actions the Federal departments and agencies should take to make the grid more secure and resilient. One of the proposed goals in the Draft Outline is: "restoring capabilities through smarter, more efficient, and forward-looking solutions."

CGA believes that greater integration of natural gas and natural gas infrastructure will make the North American electricity grid more resilient. CGA recently submitted comments on DOE's Quadrennial Energy Review Second Installment (QER 1.2). In its comments, which are attached to these comments, CGA explained that a more integrated energy system approach that factors in natural gas and gas

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<sup>1</sup> The Canadian Gas Association (CGA) is the voice of Canada's natural gas distribution industry. With over 450,000 kilometers of transmission and distribution pipeline as well as above ground and underground storage facilities, natural gas is delivered to almost 6.8 million customer locations. Over 20 million Canadians rely and benefit from affordable, clean, safe, and reliable natural gas to heat homes, schools, hospitals and businesses, generate electricity, fuel vehicles, and power appliances. The investment in this infrastructure and commitment to customers has played an important role in helping Canadians achieve the quality of life which we enjoy today.

infrastructure as part of the system can provide appropriate peak load reduction and/or demand response through direct use, the use of dual fuel appliances, or local generation measures, all to help address requests triggered by the events on the electric grid. Smart electric meters provide operational, cost, energy efficiency, and awareness benefits to consumers and utilities. The possible use of smart gas meters in the future alongside smart electric meters could enable a utility to better operate its system and for consumers to better monitor and manage their consumption. Demand management strategies can be employed to flatten demand curves and reduce infrastructure costs. And in areas with electricity constraints, fueling more homes and businesses directly with natural gas could help ease demand on the electricity grid, thereby reducing the threat of electricity outages and avoiding new infrastructure costs.

Natural gas is also an important tool in efforts to incorporate more renewable generation into the North American system and to do so in a reliable manner. By linking natural gas-fired generation with intermittent renewable generation such as wind and solar, the inevitable intermittency of renewable generation can be managed, ensuring reliability for the North American electricity grid. As well, natural gas distribution and transmission pipelines enable the delivery of renewable natural gas (RNG) and hydrogen (via “power-to-gas” technologies<sup>2</sup>) to power generation facilities and other end-use consumers.

Greater integration of natural gas and natural gas infrastructure with the electricity grid would have the added benefit of reducing greenhouse gas (GHG) emissions in both Canada and the U.S. In its comments on DOE’s QER 1.2, CGA explained that the direct and distributed uses of natural gas offer a highly efficient energy delivery system which significantly reduces losses due to the conversion of energy. Delivering natural gas to consumers’ homes and businesses for direct use on-site to produce heat results in an approximately three-to-one energy gain over converting fuels into electricity at a remote location and then transmitting and distributing it to homes and businesses for the purpose of generating heat, given losses in the process of converting natural gas into electricity and incurring the associated lines losses for transmission and distribution.

### **Interdependence with Natural Gas Infrastructure Will Reduce, Rather than Increase, Security Risks and Vulnerabilities**

The Draft Outline notes the potential vulnerabilities from the interdependence with other infrastructures, including natural gas. CGA recognizes that the over-reliance of natural gas as a generation fuel could present challenges, particularly where there are constraints on natural gas pipeline infrastructure. However, natural gas as an end-use fuel would actually help to reduce the risks and vulnerabilities of the electric grid, as well as alleviating constraints on transmission and distribution systems and the need for infrastructure enhancements. In areas with electricity constraints, fueling more homes and businesses directly with natural gas could avoid new infrastructure costs. Moreover, natural gas end-use technologies would allow the grid to be more resilient, help with restoration efforts, and provide for needed alternative energy in the event of an outage. For example, combined heat and power (CHP) units were proven to be extremely useful during the East Coast’s devastating Hurricane Sandy where over 50 per cent of the emergency diesel generators within New York City’s hospital failed

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<sup>2</sup> “power to gas” technologies involve the use of off-peak and surplus electricity to produce hydrogen gas for injection into existing natural gas pipeline systems using utility-scale electrolyser technology.

to operate during the storm. Conversely, there were zero failures at the hospitals with natural gas CHP systems. Thus, effectively integrating natural gas and natural gas infrastructure into the North American electricity grid could actually help to reduce grid security risks and vulnerabilities.

### **Governmental Measures to Promote Future Investment of Natural Gas End-Use Technologies**

The Draft Outline includes the objective: “integrate security and resilience into planning, investment, regulatory- and policy-decision making, and coordinate cross-border grid integration between the United States and Canada.” The Draft Outline also includes the objective: “[a]lign utility and market participant incentives for planning and investment with regulatory processes and tools for prudent cost recovery.” CGA agrees that security and resilience should be integrated into all decisions relating to the North American electricity grid, and such decisions should include support for inclusion of natural gas end-use technologies.

Better integrating energy delivery – making electric and gas grids work together as a single system – requires innovation. The natural gas industry is front and center in driving energy innovation through encouragement for a wide range of integrated technologies and uses that can help to alleviate the burden of infrastructure renewal while achieving progress on reliability, environmental responsibility and affordability. These innovations include the increased introduction of RNG into the supply mix, adoption of more natural gas-fired CHP application, the use of natural gas as a partner for better integration of renewables in the electricity grid, and the better integration of natural gas and electric infrastructure through innovative technologies like “power to gas.”

As new gas end-use technologies present opportunities for increasing the resilience of the North American electricity grid, there is a growing need to explore new collaborative partnerships among utilities, governments and the energy efficiency community to de-risk technology deployment through field testing and other pilot programs. Summarized below are three approaches that could be used for supporting integrating natural gas technologies as part of the North American grid:

**Innovation.** The next generation of natural gas end-use products and services will benefit from innovation funding and support from utilities and governments. An optimal pathway towards funding for innovation is via a nominal (e.g. 50 cents a month or \$6 per year) levy on utility consumers that can be used as a pooled resource for funding next generation technology for the benefit of all consumers across the country. A recommended first step in advancing innovation is a discussion among policy makers, regulators and utilities on an ‘innovation levy’ for utility customers. Revenues generated from natural gas consumers under CO<sub>2</sub> cap and trade and/or tax policies could be a source for such an innovation levy – and a means to partner with state/provincial governments on it.

**Integration.** Natural gas and electric utilities currently offer separate efficiency programs for their consumers, approved by the same regulator. The integration of natural gas and electricity programs is an idea that could open up a number of new and important opportunities such as combined heat and power and other electric-natural gas technology integration ideas. A recommended first step to advance energy efficiency program integration is to identify pilots for program integration between natural gas and electricity utilities.

**Collaboration.** Increasingly, utilities and their stakeholder communities are looking for collaborative financing opportunities for new technologies. One such example is the Sustainable

Development Technology Canada – Canadian Gas Association collaborative SD Natural Gas Fund™ which looks to finance pre-commercial gas end-use technologies that can deliver tangible gains in energy efficiency and reductions in GHG's. A recommended first step to advance collaboration is to establish a dialogue among governments on the opportunities and benefits of government-industry collaboration on funding energy efficiency and research and development into new efficient technology applications.

The Joint U.S.-Canadian Electric Grid Strategy offers the opportunity for enhanced cooperation between the United States and Canada to promote increased innovation and funding in natural gas end-use technologies and electricity/natural gas integration to support a more secure and resilient North American electricity grid. Natural gas end-use technologies should be incorporated into the planning of energy systems to allow for increased grid resiliency. Regulatory incentives should be available to encourage such investments. The relevant U.S. and Canadian authorities could also work together to identify joint research and funding opportunities to promote natural gas end-use technology innovation to benefit the North American electricity grid. Regulatory and policy decision makers on both sides of the border should promote policies that encourage innovation of natural gas technologies and their integration with electricity infrastructure in order to achieve a more secure and resilient North American electricity grid.

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