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Environment and Climate Change Canada  
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Submitted via: [ec.tarificationducarbonatecarbonpricing.ec@canada.ca](mailto:ec.tarificationducarbonatecarbonpricing.ec@canada.ca)

Re: Review of the Federal Carbon Pricing System

To Whom it May Concern:

Thank you for the opportunity to input into Environment and Climate Change Canada's (ECCC's) review of the federal carbon pricing backstop system, in particular the Output-based Pricing System (OBPS). We appreciate your continued openness to dialogue and engagement, and trust that the matters raised herein will be given serious and timely consideration.

Throughout the development of the OBPS we, the undersigned, made the case that district energy should be an included sector, for both electricity-related and thermal-related emissions.

By not including district energy in the OBPS, the government risks incenting short term decisions with long term implications, such as buildings installing carbon intense solutions, with useful lifespans of 20 to 30 years, instead of district energy.

Instead, by fully including district energy, the government will provide a market signal to building owners to connect to, or to stay on, district energy systems which will allow for greater opportunities for integrating technologies at scale, fuel switching and ultimately meeting the government's goals of decarbonization.

While we applaud the government for including district energy under the electricity Output Based Standard (OBS), we firmly believe that now is the time to add thermal energy. The current exclusion of the thermal portion significantly undervalues the contribution that these systems can make towards achieving Canada's climate targets.

As such, we continue to believe that thermal energy distributed by district energy systems should be included under a new output-based standard.

### **The Opportunity**

District energy systems supply hot water or steam and chilled water to customer buildings via underground piping networks to be used for space heating, domestic hot water, air conditioning and

industrial process energy. By aggregating the heating and cooling requirements of dozens or even hundreds of customer buildings, district energy systems leverage economies of scale to produce economic, environmental and reliability benefits to customers and the local economy. Increasingly, the addition of combined heat and power (CHP) enables production of three useful products (electricity, heat and cooling) from a single fuel which can enhance community energy resiliency, relieve strain on the electricity distribution grid, reduce downstream emissions and enable economic recovery and re-use of heat that would otherwise be wasted during electricity generation.

District energy system thermal output typically displaces less efficient single-building boilers, which often operate at part-load and cycle frequently, especially during the shoulder months of March, April, May and September, October and November. The electricity output from district energy CHP systems displaces marginal plants across Canada, which are typically the most carbon intensive, including coal and natural gas. This displacement should be recognized and valued within the carbon pricing regulation design.

District energy systems also enable energy sharing, even without power production, where the surplus heat from a large data center, industrial plant or process user can be captured as primary heat supply for the district energy network and again, avoid multiple smaller sources of combustion.

As a broad societal benefit, district energy systems with thermal storage help relieve stress in the existing energy infrastructure, pave the way for new building construction and directly support the retrofit economy. Widespread use of local and regional district energy systems has been a fundamental and primary contributor to low-carbon built environments in countries like Denmark and Finland. The United Nations Environment Program has identified district energy systems as “vital infrastructure for more sustainable cities and communities” and specifically recognizes those countries, cities and communities for strategic investments in district energy as “a most effective means to de-carbonize urban energy infrastructure.”<sup>1</sup>

Another key advantage of thermal networks compared to individually heated and cooled buildings is that networks make fuel switching more cost-effective. District energy systems create the economies of scale necessary to integrate local, low-carbon/renewable energy sources (e.g. lake water cooling, geo-exchange, solar thermal, sewer heat, biomass, waste heat capture, etc.) in order to achieve large-scale, cost-effective emission reductions that individual homeowners and buildings cannot achieve individually. Even without fuel switching, district energy systems are materially more fuel efficient as compared to heating and cooling individual buildings. In a 2009 report, the International Energy Agency found that in northern Europe and climates similar to Canada, more than 50% of primary energy was used for heating and cooling buildings and domestic hot water.<sup>2</sup> Thermal energy is too often overlooked

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<sup>1</sup> UN Environment Program report: [\*District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy\*](#)

<sup>2</sup> International Energy Agency report: [\*Cogeneration and District Energy\*](#)

in policy assessments and we encourage you to fully consider district energy as a covered source in this framework.

Finally, district energy systems have been shown to boost resilience and energy access through their ability to improve the management of electricity demand, reduce the risk of brownouts and adapt to pressures such as fuel price shocks (for example, through cost-effective decarbonization, centralized fuel-switching and affordable energy services).

It is important to note that the Government of Canada has specifically incorporated strategic investment in district energy into its own Greening Government strategy. Public Works and Government Service Canada has undertaken a project to renew the seven plants that provide heating and cooling to more than 100 buildings in Ottawa's downtown core. The listed benefits of the project include reducing energy costs for the government, increasing the safety and reliability of the plants, and improving the government's environmental performance by reducing greenhouse gasses. The GHG reductions will come from implementing more efficient technologies between now and 2025 to replace old equipment, and by fuel switching to carbon neutral energy thereafter.

The federal government has further recognized the value of district energy by including it in the group of clean energy technologies afforded Accelerated Capital Cost Allowances under 43.1 of the Income tax Regulations.

The City of Toronto has similarly concluded that district energy systems are a key opportunity for reducing GHG emissions from buildings and reducing demands on energy infrastructure. As part of its commitment to meeting these objectives, the City seeks to:

- Connect new buildings to district energy where a district energy system is established or under development;
- Design new buildings to be district energy-ready where future district energy system opportunities exist; and,
- Provide opportunities for existing buildings to connect to a district energy system once it is developed.

Toronto's *TOcore Downtown Energy Strategy* concludes that district energy systems "are fundamental to reducing greenhouse gas emissions from buildings because they create the economies of scale to access large, low-carbon energy sources at a lower cost compared to individual buildings."

As of 2016, 2,863 buildings in Canada were served by district energy, resulting in 5.9 million MWh of delivered thermal energy annually. The Canadian Energy and Emissions Data Centre at Simon Fraser University notes that "half of all district energy systems in Canada have been commissioned since 2000, with one-quarter of all facilities constructed in the past five years." 28% of the district energy systems are owned by public institutions, such as academic institutions and healthcare campuses. Common

customer types include government offices, commercial buildings, community centres and industrial facilities.

### **District Energy and the OBPS**

District energy stands to contribute significantly to the built environment outcomes that Minister Wilkinson and his Ministerial colleagues continue to publicly champion, including the priority of promoting the retrofit economy.

While the carbon pricing system design is well-suited to traditional large-scale emitters, it doesn't apply well to district energy because it doesn't price in the full spectrum of benefits of energy system evolution. We believe that district energy is a proven, key technology for decarbonizing the built environment, which currently contributes about 12% of Canada's total GHG emissions each year. District energy's potential will remain largely untapped, however, without positive and proactive policy support.

Specifically, we ask that you commit to developing an OBS for district energy thermal energy production. Additional considerations are as follows:

1. It is our view that district energy should be included under the OBPS in the same fashion that other sectors are being included – with subsidized allowances of 80% of the average emissions intensity for the sector.
2. Facility GHG emission output and intensity should be calculated using a benchmark of tCO<sub>2</sub>e/GJ of heat produced across the entire district energy system rather than on an individual plant basis.
3. The definition of a District Energy Facility should allow for the addition of clean energy components, the energy from which would then be included in the GHG output and intensity calculations. For example, the addition of a geothermal component should be treated as an addition to the district energy facility, not treated as a separate facility.

Beyond these sector-specific considerations we simply ask that district energy facilities get the same treatment as other facilities that use fuels to make useful products. In our case, the products are electricity, steam, hot water and/or chilled water. Electricity is included as a discrete product type; we ask that useful thermal energy to be afforded the same treatment.

Absent district energy's inclusion, we feel strongly that the positive attributes and contributions made by district energy deployment in rapidly de-carbonizing countries like Denmark, Finland, Sweden, Norway and Germany will not only be lost for Canada but will actually be harmed and discouraged. Exclusion of district energy would harm the industry and the many hundreds of government buildings, institutions and communities that have already determined that district energy is critical to their economy and a more sustainable future.

### **Next Steps**

Thank you for your attention to this matter. Energy system transitions face stiff headwinds from incumbent technologies and energy users can be reluctant to embrace change and make sustainable

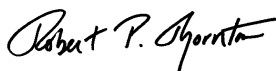
investments without clear policy direction. We, the undersigned, believe that the Federal Carbon Pricing System can be a meaningful and important driver for change and respectfully request that the Canadian district energy industry merits full consideration and participation.

As such, we ask that the Government of Canada include the thermal output of district energy systems as a covered activity within the OBPS.

Other countries and regions are embracing and advancing the deployment of district energy as a means to accelerate de-carbonization of the heating and cooling sector, including the European Union, United Nations Environment, United Kingdom, Germany, France, Denmark, Norway, United Arab Emirates, and multiple US state governments. We think that the Government of Canada should utilize the leverage of the OBPS Regulations to likewise support investment in district energy systems.

We would welcome the opportunity to meet virtually to discuss this matter in greater detail.

Yours sincerely,



Robert P. Thornton  
President & CEO  
IDEA



Tonja Leach  
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QUEST



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Enwave

The **International District Energy Association (IDEA)** is a 501(c) (6) non-profit industry association founded in 1909 with headquarters near Boston, MA, USA. IDEA represents nearly 2,400 members from 26+ countries around the world, with a majority in North America. IDEA members own, operate, design and optimize district energy systems that supply steam, hot water, chilled water and energy services to multiple buildings in cities, communities, campuses, airports, military bases, industry and healthcare. Working with global partners, IDEA specializes in highly reliable and resilient thermal networks, combined heat and power, thermal storage, microgrids and clean energy management to optimize energy efficiency, reduce harmful emissions, and provide sustainable solutions for mission-critical and community-scale markets.

**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 principals by referring to them as Smart Energy Communities.

**Enwave Energy Corporation** is a fully integrated district energy business that provides innovative, sustainable district cooling and heating solutions to over 320 customers across a range of sectors in Canada. Spanning Toronto, London, Windsor and Charlottetown, Enwave's distribution network is well diversified across services and customers. Enwave is focused on providing clean, low-carbon energy.