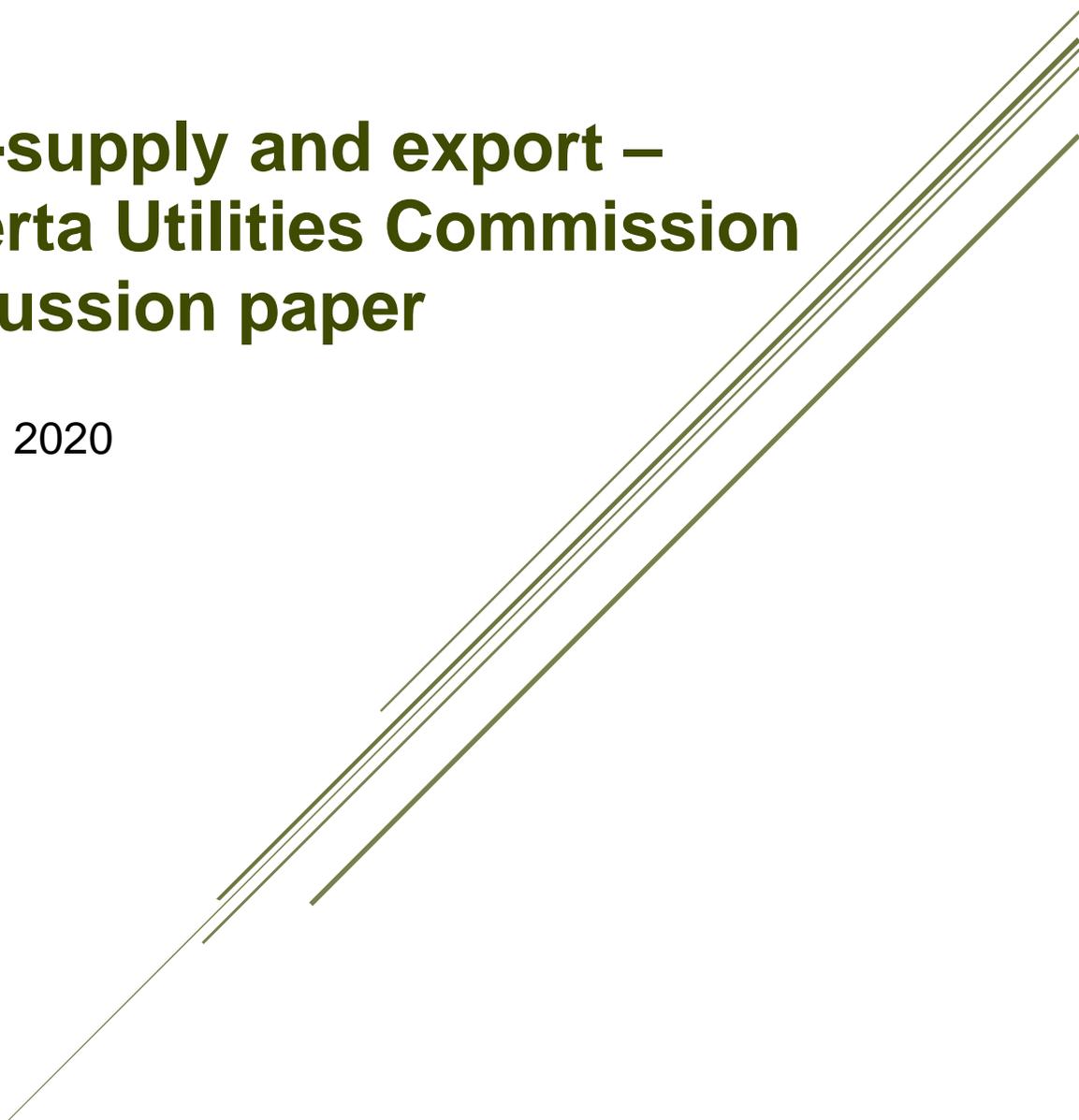




Self-supply and export – Alberta Utilities Commission discussion paper

June 5, 2020



Contents

Executive summary	2
Introduction	3
Overview of existing generation in Alberta	5
Historical overview of self-supply and export in Alberta	6
Introduction.....	6
The self-supply exemption.....	7
Self-generation today	7
The industrial system designation exemption	8
The Department of Energy’s 1997 Industrial Systems Policy Statement	9
The 1998 industrial system designation amendments.....	11
2003 amendments to the Electric Utilities Act	13
Industrial systems today.....	13
The micro-generation exemption.....	14
Policy rationale	14
Micro-generation today.....	15
Municipal own-use exemption.....	15
Policy rationale	16
Municipal own-use plants today	16
Flare Gas Generation Regulation exemption	17
Policy rationale	17
Flare gas generators today.....	18
Self-supply and export plants.....	18
The stakeholder submissions	19
Round one	19
Round two.....	20
Discussion	25
Appendix 1	31

Executive summary

This discussion paper explores the question of whether the opportunity for on-site generators to export excess power to the grid should be extended beyond the current group of generators classified as exempt from the provisions of the *Electric Utilities Act*. The group of currently eligible generators is diverse and includes electricity generated by: (i) industrial operations with an industrial system designation (ISD), (ii) small-scale renewable energy sources (micro-generators), (iii) oil and gas facilities using natural gas that would otherwise be flared, (iv) certain municipally owned generators, and (v) generators that operate “behind the fence” (self-suppliers).

The existing statutory scheme for the generation, transmission and distribution of electric energy in Alberta is complex. The *Electric Utilities Act* came into force in 1995 and has been amended numerous times since then. In addition, a legion of related regulations have also been enacted.

For the purposes of this discussion paper, it is important to understand two basic requirements established by the scheme: (1) electric energy entering or leaving the interconnected system is to be exchanged through the power pool, and (2) persons wishing to receive electric energy must take service from the distribution system (or, in limited circumstances directly from the transmission system).

There are limited exemptions from these requirements. The exemptions are found in the *Electric Utilities Act*, the *Hydro and Electric Energy Act* and related regulations. The exemptions range in clarity; the industrial system and micro-generation exemptions are clear and easy to apply whereas the municipal own-use and flare gas generator exemptions are less straightforward. The self-supply exemption is also controversial in its application; it was the Alberta Utilities Commission’s interpretation of that exemption in a series of recent decisions (the E.L. Smith Decisions), that is the genesis of this discussion paper.

In the E.L. Smith Decisions, the AUC denied applications for connection orders for several generators on the basis that they did not comply with the two requirements above and were not otherwise exempt from those requirements. The applicants in those proceedings wanted to generate and consume electricity on their own site and export the excess to the power pool. A summary of the E.L. Smith Decisions is located in Appendix 1.

On behalf of the Department of Energy, the AUC sought stakeholder feedback on three options to address the self-supply export prohibition: (i) status quo, (ii) limited self-supply and export, (iii) unlimited self-supply and export.

Most stakeholders do not oppose unlimited self-supply and export and generally agree that accommodating unlimited self-supply and export while preserving a fair, efficient and openly competitive market requires appropriate, tariff-based incentives. However, stakeholders disagree on whether existing transmission and distribution tariffs provide the correct incentives to accommodate unlimited self-supply and export. A majority of stakeholders recognized that these issues will be more fully canvassed in the AUC’s distribution system inquiry and the upcoming Alberta Electric System Operator (AESO) tariff proceeding.

Regardless of which option the Government of Alberta decides to choose, it is recommended that the statutory scheme be amended to clarify the circumstances in which self-supply and export is expressly permitted.

Key messages

- **If the Department of Energy favours unlimited self-supply and export, policy direction from the Department of Energy and legislative amendments are recommended to ensure regulatory certainty for stakeholders.**
- The majority of self-supply and export is associated with designated industrial systems; this conduct is lawful and expressly permitted under the existing statutory scheme.
- Industrial system designations (ISDs) incent internal electricity supply where that is the most economic source of electric energy but seek to prevent system cost avoidance by ensuring that users of the Alberta Interconnected Electric System (the interconnected system) pay a just and reasonable share of system costs.
- There are relatively few self-supply export plants of the type described in the E.L. Smith Decisions (some likely qualify as ISDs) and the electric energy exported by these plants to the power pool is limited (i.e., for 2018, these plants exported approximately 515 gigawatt hours to the power pool).
- Most stakeholders do not oppose unlimited self-supply and export.
- Most stakeholders agree that accommodating unlimited self-supply and export while preserving a fair, efficient and openly competitive market requires appropriate, tariff-based incentives.
- Stakeholders disagree on whether existing transmission and distribution tariffs provide the correct incentives but agree that these issues will be more fully canvassed in the distribution system inquiry and the upcoming AESO tariff proceeding.

Introduction

In the E.L. Smith Decisions, the AUC concluded that, in the absence of a statutory exemption, the owner of a generating unit is prohibited from serving on-site load and exporting excess electricity produced on-site for exchange through the power pool.¹ The Commission has identified the following statutory exemptions to this prohibition:

- industrial systems designated under Section 4 of the *Hydro and Electric Energy Act*
- small generators under the *Micro-generation Regulation*
- certain municipally owned generating units pursuant to the *Municipal Own-use Generation Regulation*
- flare gas generators under the *Flare Gas Generation Regulation*

¹ A summary of the E.L. Smith Decisions is found in Appendix 1 of this discussion paper.

The Commission also recognizes that the statutory scheme permits the owner of a generating unit to supply on-site load on its own property (the self-supply exemption).

The Commission acknowledged in the E.L. Smith Decisions that it had previously approved applications that permitted self-supply and export and acknowledged that the E.L. Smith Decisions represented a departure from those earlier approvals. The Commission has also stated that the approval holders for these power plants have been operating their plants based upon a reasonable reliance on the approvals granted to them and confirmed that it does not consider that these approval holders have engaged in any form of intentional misconduct or non-compliance. In this discussion paper, these previously approved projects are referred to as the self-supply and export plants. For all intents and purposes, the AUC has treated these plants as being grandfathered, i.e., they continue to self-supply and export as they did prior to the E.L. Smith Decisions.

The E.L. Smith Decisions are controversial. Some market participants have expressed concern that these decisions represent a material shift in policy that will have significant implications for Alberta's electricity market. Other market participants have expressed support for the Commission's statutory interpretation but have suggested that the prohibition against self-supply and export should be reconsidered given changes in technology and the market landscape since the statutory framework was developed.

In the fall of 2019, the Department of Energy requested that the AUC conduct stakeholder engagement on the self-supply and export issue. In the first round of engagement, the Commission sought stakeholder feedback on the policy itself, and identified three options for the future of self-supply and export. In the second round of engagement, the Commission asked stakeholders to provide comments on the market and tariff implications of unlimited self-supply and export.

The AUC has prepared this discussion paper on power plant self-supply and export in support of the Department of Energy's stakeholder consultation.

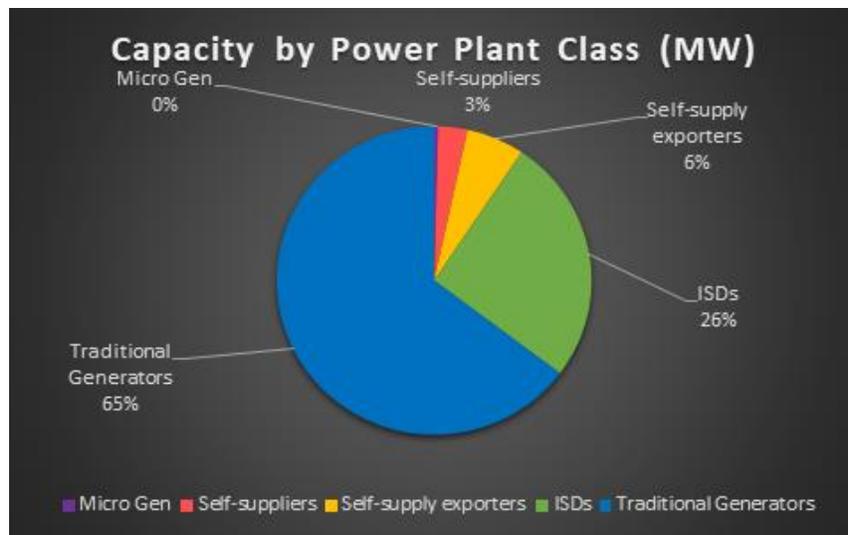
This discussion paper is organized as follows:

- (i) an overview of existing generation capacity in Alberta
- (ii) a historical overview of self-supply and export in Alberta before and after deregulation
- (iii) a summary of the stakeholder submissions on the issue of self-supply and export
- (iv) a discussion on future options for self-supply and export

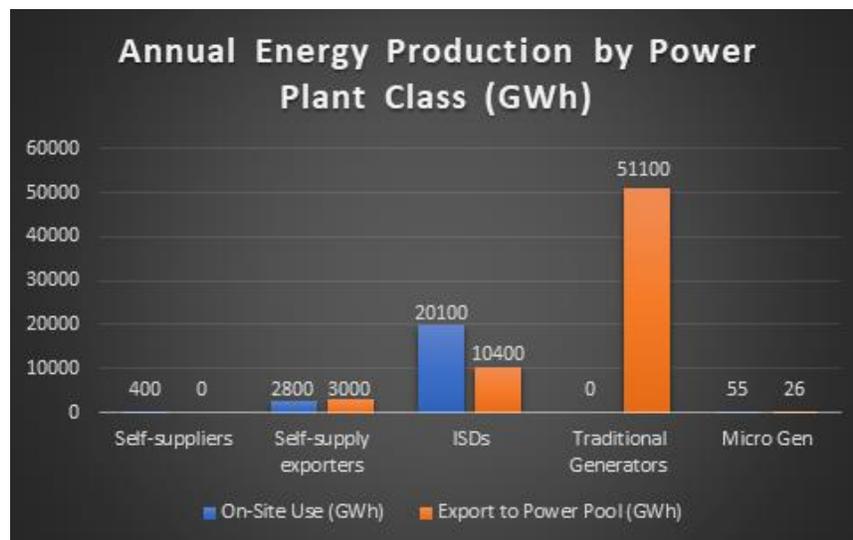
Overview of existing generation in Alberta

A brief overview of existing generation capacity in Alberta is useful to provide some context for considering the self-supply and export issue. This information was provided by Alberta generators to the AUC at the end of April 2020 and relates to electric energy generated in 2019. The information was filed on a confidential basis and is subject to further verification. In all three charts, the phrase “traditional generators” refers to those generators that are not engaged in self-supply and includes coal- and gas-fired thermal production, wind and solar.

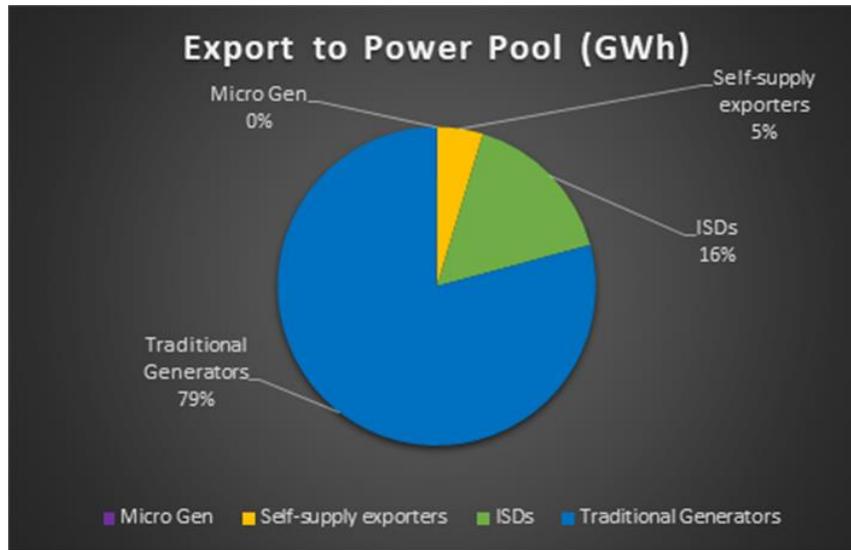
This first pie chart breaks down the capacity of Alberta generators by type and shows that traditional generators represent approximately 65 per cent of generating capacity while self-suppliers represent the remaining 35 per cent. Of that 35 per cent, approximately 26 per cent is provided by ISDs, six per cent by self-supply exporters and three per cent by self-suppliers.



This bar chart shows the amount of electricity (in gigawatt hours) consumed on-site and exported to the power pool by the different generator types.



Finally, this last pie chart provides a breakdown of exports to the power pool by generation type and shows that approximately five per cent of energy exported in the power pool was generated by self-supply exporters that are not ISDs.



Historical overview of self-supply and export in Alberta

Introduction

Historically, Alberta's electricity needs were primarily served by three vertically integrated utilities: TransAlta Utilities Corporation (formerly Calgary Power Company Ltd.), ATCO Ltd. (formerly Alberta Power Ltd.) and EPCOR Utilities Inc. (formerly Edmonton Power Corporation). Those utilities each planned, owned and operated the necessary infrastructure to generate, transmit and distribute electricity within a defined service territory.

Prior to deregulation, utility-owned generation accounted for approximately 90 per cent of Alberta's generation. However, industrial operations with on-site generation provided approximately 10 per cent of the province's generation capacity and sold their excess capacity to the vertically integrated utilities.² The price paid to the industrial operators for this electricity was generally based on the utilities' avoided generation costs. If a price for the electricity could not be negotiated, the Alberta Energy and Utilities Board (EUB) or its predecessors could set the price.

Since the 1980s, there has been a growing interest in non-utility generation. That growth was fuelled by several factors, including favourable economics of cogeneration, environmental concerns and concerns about utility planning and costs. Notwithstanding the economic, environmental and other perceived benefits, the amount of installed non-utility generation in Alberta was modest.

² *Moving to Competition: a guide to Alberta's new electric industry structure*, January 1, 1996, page 1. <https://open.alberta.ca/dataset/b578d0b0-39c2-453d-be79-c545b95715fa/resource/fe0da3cb-68a3-4a0c-a1c3-097e68adc293/download/17579761996moving-to-competition-a-guide-to-albertas-new-electric-industry-structure.pdf>.

The Government of Alberta began to restructure Alberta’s electricity market in 1995. The Alberta legislature passed the *Electric Utilities Act* and made a number of changes to the regulatory regime. A defining feature of the new statutory scheme was the use of competitive market forces to set the commodity price of electricity while maintaining fully regulated transmission and distribution services.

The self-supply exemption

The statutory scheme in Alberta has expressly recognized and authorized the operation of “behind the fence” generation and transmission for more than 50 years. Section 7(1) of the *Hydro and Electric Energy Act*, which was enacted in 1971, stated that a person seeking to construct and operate a power plant required an approval from the Energy Resources Conservation Board (ERCB). However, Section 7(5) stated: “[t]his section does not apply to a person generating or proposing to generate electric energy solely for his own use, unless the Board otherwise directs.” The *Hydro and Electric Energy Act* had similar provisions exempting on-site transmission (Section 12) and distribution (Section 19) that does not cross a public highway.

The self-supply exemption continued under deregulation. Section 2(b) of the new *Electric Utilities Act*. that act specified that the act did not apply to “electric energy produced on property of which a person is the owner or a tenant, for use solely by that person and solely on that property.”

While the wording of on-site generation, transmission and distribution exemptions set out in the *Hydro and Electric Energy Act* has evolved slightly since 1971, the effect of the provisions remain the same. A person that intends to generate, transmit or distribute electric energy on the person’s own property for the person’s own use does not require AUC approval.

Self-generation today

It is difficult to quantify the number of self-generators and the capacity of self-generation because such facilities are exempt from the application requirements under the *Hydro and Electric Energy Act* and from the provisions of the *Electric Utilities Act*. However, since 2002, the AUC and its predecessors have required self-generators to file “exemption” applications, which allow it to track capacity, location etc.³ Based on a review of such applications and other information, the AUC has identified 197 self-generator units in Alberta with an overall capacity of 516 megawatts (MW).⁴ A number of these self-generating power plants serve oil and gas facilities including many grid-connected gas processing plants that do not export to the grid. These power plants are true “self-suppliers.”

³ The AUC relaxed these requirements in 2012 so that owners of power plants under one megawatt in capacity, where a person is generating or proposing to generate electric energy solely for the person’s own use, are no longer required to file an application subject to certain conditions. In 2016, the AUC extended this exemption to power plants less than 10 megawatts. As a result, there are likely a number of generators that the AUC is unaware of.

⁴ Many of these power plants pre-date the AUC’s revised requirement and are for small backup or temporary generators. The AUC estimates that only about half of these units are used to actively generate electricity.

The industrial system designation exemption

A second type of “behind the fence” generation was recognized by the statutory scheme in 1977 when the *Hydro and Electric Energy Act* was amended to include the following definition of “industrial system:”

“industrial system” means the whole or any part of an electric system primarily intended to serve one or more industrial operations of which the system forms a part and designated by the Board as an industrial system;

At the same time, the ERCB was authorized by Section 3 of the *Hydro and Electric Energy Act* to make regulations designating the whole or any part of an electric system as an industrial system. However, it appears that no such regulation was enacted by the ERCB and no industrial system was designated under the *Hydro and Electric Energy Act* prior to 1998.⁵ In fact, the concept of an exempt industrial system appears to have lain dormant until deregulation commenced and the *Hydro and Electric Energy Act* was amended to better address ISDs.

Section 6 of the new *Electric Utilities Act* set out its purposes. An overarching theme reflected in the purpose section was the development of efficient market for electricity based on fair and open competition. The new act established the power pool as a wholesale market clearing entity and required that all wholesale electrical energy in Alberta must be exchanged through it, subject to a limited number of exemptions. Section 2 of the new act listed exemptions to its application and stated that it did not apply to self-generation (Section 2(b), as described above) and, amongst other things, electric energy exempted by the EUB pursuant to Section 73(4) of the new act.

Section 73(4)(b) of the *Electric Utilities Act* allowed the EUB to make rules exempting the electric energy produced from an industrial system (as defined in the *Hydro and Electric Energy Act*) from the operation of the act. It appears that the EUB made no rules pursuant to this authority.

The Department of Energy published a guide explaining the new electricity structure in January 1996.⁶ That guide noted that, under the new structure, independent power producers, such as industrial customers with their own generation, co-generators (who simultaneously produce power and heat for some other purpose) and owners of renewable energy resources, would compete to build generation in the future.⁷

⁵ Projects that may have met the 1977 definition of “industrial system” were considered and approved by the ERCB during this time period. Examples include the Daishawa Canada Co. Ltd. Peace River pulp mill power project and the Weldwood Power Boiler project. Both projects related to existing power plants used at pulp and paper manufacturing sites which utilized steam to produce electricity and process feedstock (the Weldwood application indicates that the initial power plant was constructed in 1957). In 1990 and 1993 respectively, these companies applied to the ERCB to, amongst other things, connect their existing power plants to the interconnected system so that they could sell their excess electricity to Alberta Power and TransAlta.

⁶ *Moving to Competition: a guide to Alberta's new electric industry structure*, January 1, 1996, <https://open.alberta.ca/dataset/b578d0b0-39c2-453d-be79-c545b95715fa/resource/fe0da3cb-68a3-4a0c-a1c3-097e68adc293/download/17579761996moving-to-competition-a-guide-to-albertas-new-electric-industry-structure.pdf>.

⁷ Ibid, page 10.

The Department of Energy’s 1997 Industrial Systems Policy Statement

In June 1997, the Department of Energy issued a policy statement on industrial systems.⁸ The purpose of the statement was to “clarify the definition of industrial systems, and the policy objectives and implications of exempting such systems from the *Electric Utilities Act* (EUA).”

In the policy statement, the Department of Energy explained that the objectives of the industrial system exemption and the self-generation exemption set out in Section 2(b) of the *Electric Utilities Act* (exempting electric energy produced on property of which a person is the owner or a tenant, for use solely by that person and solely on that property) were similar: “to provide the correct economic signals which enable integrated industrial processes to develop their own internal electricity supply where that is the most economic source of generation.”

The Department of Energy stated that the industrial system generation policy should support:

- development of economic generation to supply the requirements of integrated industrial processes
- efficient exchange, with the interconnected system, of electric energy that is in excess of the industrial system’s own generation or consumption
- generation and load location decisions which improve the efficiency of the interconnected system (e.g., voltage stability, reduction off-line losses and congestion, etc.)

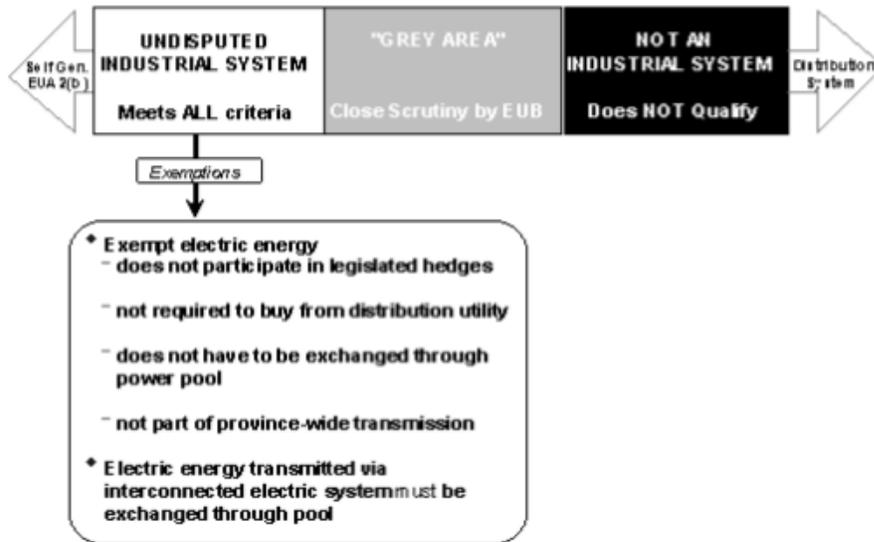
The policy statement also emphasized that the “exemption is not intended to facilitate development of independent electricity systems driven by avoidance of system costs, therefore administration of the industrial system exemption should avoid un-economic system by-pass.”

The Department of Energy listed six criteria to consider when determining whether an industrial operation with on-site generation would qualify as an industrial system:

- Strong industrial process linkages – linkages based only on electric or thermal energy supply were not considered sufficient to define an integrated process which could be served by an industrial system.
- Industrial customer – the integrated operations must process a feedstock, produce a primary product or manufacture a product.
- Common ownership of facilities.
- Dedicated output - each of the operations provides (or uses) inputs to production to (or from) the other facilities or operations that are part of the integrated process.
- Integrated management of the process.
- Proximity of on-site operations.

⁸ Industrial Systems Policy Statement, June 1997; <https://open.alberta.ca/dataset/472de409-6000-4941-a37b-f9a301f5b7a3/resource/71e5c77d-7508-48f3-af2c-15998d360de3/download/industrialsystemspol97.pdf>.

The Department of Energy noted in its policy statement that industrial systems lie on a continuum between “self-generation” and the distribution system, and illustrated this concept in the following figure.



The policy statement discussed the exemptions conferred on industrial systems in detail:

Only electric energy that is generated and consumed by the industrial system is exempt from the EUA [*Electric Utilities Act*]. Exemption from the EUA means that for the exempted electric energy the industrial system does not have to:

1. exchange the exempted electric energy through the Power Pool of Alberta if the electric energy produced by the industrial system is not transmitted via facilities of the interconnected electric system;
2. purchase the exempted electric energy from the owner of the electric distribution system in whose service area the industrial system is located;
3. participate in obligations and entitlements (legislated hedges) for the exempted electric energy; or
4. participate in province-wide transmission tariffs for the exempted electric energy.

The Department of Energy recognized that not all industrial operations with on-site generation⁹ would qualify for the industrial system exemptions.

A range is possible between what is clearly an industrial system, which the EUB could exempt under EUA section 2(d) without close scrutiny, and what is clearly not an industrial system. Between these clearly “white and black” extremes lies a “grey area” which would require close scrutiny by the EUB to determine whether an exemption could be provided under EUA section 2(d).

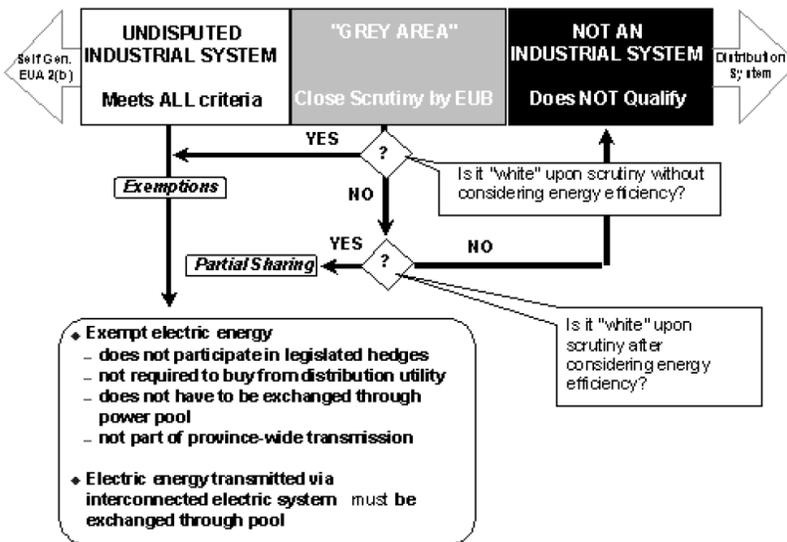
⁹ A defining feature of an industrial system is internal supply of generation. This is reflected in the 1997 policy document and expressly stated in the ISD provisions of the *Hydro and Electric Energy Act*. In Decision 2010-115, the AUC confirmed that generation is a necessary component of an industrial system.

The policy statement described how applications that fell into the “grey area” between what was clearly an integrated industrial system and what was not.

Where an application falls in the “grey” area and the preponderance of evidence suggests an integrated process may exist the EUB may take into account, as a final screening criterion, that a process results in a significant increase in energy efficiency. Energy efficiency is suggestive of an overall integrated process relationship but is not sufficient evidence, by itself, of such a relationship. Since the energy efficiency criterion is for projects on the right-hand side of the grey area, the EUB may approve a partial sharing of system costs (legislated hedges and/or province-wide transmission) when the energy efficiency criterion moves the project into the white area.

The following figure illustrated the EUB’s close scrutiny of “grey area” industrial operations with on-site generation.

Chart 3: EUB Close Scrutiny of "Grey" Area Projects



The 1998 industrial system designation amendments

The *Electric Utilities Act* and *Hydro and Electric Energy Act* were amended in 1998 to introduce further measures in support of deregulation, including changes specifically related to ISDs. These amendments were consistent with the criteria and considerations set out in the Industrial Systems Policy Statement issued the year before.

Dr. West, the Minister of Energy at the time, explained the rationale for these amendments:

I'd like to briefly address amendment B to section 42(a), which helps to ensure that cogeneration projects can proceed under an industrial systems designation. The glossary notes that an industrial system involves the cogeneration of electricity as part of an integrated industrial process; example, Dow Chemical, Syncrude, Suncor, Union Carbide, Nova Corporation in the petrochemical business, Shell, Imperial Oil at Bonnyville, Amoco. We could go on. These systems, the ones that I've just named, will contribute 1,064 megawatts. The applications are before the EUB as I speak. That is new power over and above the utilization today.

...

The industrial system designation allows the EUB to exempt a cogeneration project from certain requirements under the Electric Utilities Act when electricity is produced for an on-site manufacturing process. Easing this red tape helps to foster further development of these energy efficient and environmentally friendly projects ensuring us new development, new power for the future.

When this act, Bill 27, goes forward, it gives the green light not only to our regulator but to many more cogeneration projects to ensure the development of new power in the province of Alberta.¹⁰ [emphasis added]

The amendments to the *Electric Utilities Act* in 1998 were wide ranging but included further direction on the industrial system exemption set out in Section 73(4)(b). Specifically, amendments to that section authorized the EUB to make rules requiring the owner of an ISD to pay a just and reasonable share of the transmission costs associated with the interconnected system.

The 1998 changes to the *Hydro and Electric Energy Act* related almost exclusively to industrial systems. A new Section 2.1 was added to the act which addressed the requirements for ISDs. Those provisions remain in the *Hydro and Electric Energy Act* (renumbered as Section 4) and are essentially unchanged from those introduced in 1998. These new ISD provisions aligned closely with the principles and criteria set out in the Industrial Systems Policy Statement. The other related amendments to the *Hydro and Electric Energy Act* in 1998 clarified the regulatory treatment of transmission facilities associated with ISD projects.

In 1999, the Department of Energy published a new guide related to Alberta's restructured electricity market entitled *Power of Competition: A guide to Alberta's new competitive electricity structure*.¹¹ That guide recognized that a number of companies had announced new cogeneration projects since the amendments to the *Electric Utilities Act* and the *Hydro and Electric Energy Act* came into force in 1998. The Department of Energy explained in that guide that surplus power from industrial systems would be sold through the power pool. The Department of Energy also emphasized the EUB's role when assessing ISD applications was to ensure "that independent electricity systems are not developed simply to avoid paying a fair share of system costs."

The benefits of cogeneration and ISDs were discussed in a 2015 article in the Alberta Law Review entitled *The Legal and Regulatory Treatment of Cogeneration in Alberta*. The authors described the economic and environmental benefits of cogeneration as follows:

- Cogeneration is more efficient than traditional forms of generation and has a lower carbon footprint. Cogeneration uses one fuel to produce two outputs allowing the same level of end use demand to be met with less energy input. It reduces energy consumption, greenhouse gas emissions and other pollutants.

¹⁰ Alberta Hansard, March 31, 1998, page 1266.

¹¹ *Power of Competition: A guide to Alberta's new competitive electricity structure*, May 1999, <https://archive.org/details/powerofcompetiti00albe/page/n1/mode/2up>.

- Cogeneration can provide fuel flexibility and enhance energy security.
- Cogeneration enhances on-site reliability and reduces reliance on the transmission and distribution systems.
- Cogeneration may reduce the need for and cost of transmission and distribution. It may avoid or defer investment in new facilities. Cogeneration may also play a role in reducing transmission losses.
- Cogeneration is efficient and may result in cost savings for large projects requiring significant heat and electricity with excess electricity being sold to the power pool.¹²

2003 amendments to the Electric Utilities Act

Further amendments were made to the *Electric Utilities Act* in 2003. Amongst the changes made was an amendment to Section 73 (renumbered as Section 117 in the 2003 version). That section, which remains in force today, was amended to read as follows:

117(1) The Commission may make rules

(b) exempting from all or any provision of this Act and the regulations the electric energy produced from and consumed by an industrial system, and may impose terms and conditions on the exemption.

(2) If the Commission designates the whole or any part of an electric system as an industrial system under section 4(5) of the *Hydro and Electric Energy Act* and is considering making a rule under subsection (1)(b) in relation to that industrial system, the Commission may impose the condition that the owner of the industrial system be responsible for paying a just and reasonable share of the costs associated with the interconnected electric system. (emphasis added)

Neither the EUB nor the AUC have enacted a rule pursuant to Section 117(2) of the *Electric Utilities Act*. Rather each have exempted qualifying industrial systems from the provisions of the *Electric Utilities Act* as a condition of the approvals issued. Further, neither the EUB nor the AUC has ever directed the owner of an industrial system to pay a just and reasonable share of costs associated with the interconnected system.

The *Transmission Regulation* was enacted in 2004. Section 47 of the regulation addresses the ISO [AESO] tariff and appears to mirror Section 117(2). Section 47 requires the Commission to ensure that the just and reasonable costs of the transmission system are wholly charged to distribution facility owners, customers who are industrial systems and persons who have made an arrangement under Section 101(2) of the act to the extent required by the ISO tariff. This section remains in force today but, has never been applied to the owner of a designated industrial system.

Industrial systems today

The EUB and later, the AUC, have designated approximately 25 industrial systems since the 1998 amendments were made. These ISDs have a combined capacity of approximately

¹² The Legal and Regulatory Treatment of Cogeneration in Alberta, *Alberta Law Review* (2015) 53:2, pages 386 to 387.

5,400 MW with approximately 4,200 MW currently in service. In addition, the AESO identifies an additional 737 MW of cogeneration that is not directly associated with an ISD. Some of this generation likely includes facilities that may qualify as ISDs but have never applied such as the pulp and paper operations discussed below in the self-supply export section.

Existing ISDs primarily relate to oil and gas (bitumen) production and refining. However, the AUC recently approved an ISD for a pulp and paper processing plant with cogeneration facilities. Other ISDs relate to chemical manufacturing plants.

The AUC has recently experienced an increase in ISD applications relating to industrial operations that have not previously sought ISD treatment. For example, one application by a greenhouse operation that intends to use both electricity and carbon dioxide produced by an on-site generator. Other recent examples include two applications for sour gas processing plants. These decisions are currently before the Commission so their relative merits cannot be discussed. However, they do appear to represent an expanding perspective of what may constitute an ISD.

The micro-generation exemption

The *Electric Utilities Act* was amended again in 2008 to allow the Minister of Energy to make regulations respecting micro-generation generating units, including regulations specifying which provisions of the act and the regulations do not apply to micro-generation generating units.

The first *Micro-generation Regulation* came into force in 2008. The regulation allowed customers to construct, operate and connect small, primarily renewable, generation for on-site use. The regulation required customers to size the generating unit to meet their own needs. It also exempted electric energy produced by a micro-generation generating unit from the provisions of the *Electric Utilities Act* that require all electricity entering or leaving the interconnected system to be exchanged through the power pool. Owners of these units receive credits for the excess energy they export. Those credits can be calculated based on monthly retail rates or based on the hourly wholesale market.

Originally, the regulation set a capacity limit of one MW for micro-generation generating units. In 2015, the Legislative Assembly passed a motion urging the government to amend the regulations so as to encourage greater capacity for micro-generation.¹³ The regulation was amended in 2016 to increase the allowable capacity to five MW. Another relevant change made was the ability for a micro-generating unit to serve aggregated sites (two or more sites located on property owned or leased by the same customer).

Policy rationale

The *Micro-Generation Regulation* allows customers to meet their own electricity needs by generating electricity from renewable or alternative energy sources, and to obtain credits in return for any excess electricity generated and made available to the interconnected system. In addition to the requirement that micro-generation exclusively use renewable or alternative sources of energy, micro-generation systems are subject to stringent greenhouse gas emissions restrictions. This approach aligned with the Government of Alberta's 2008 Provincial Energy

¹³ Alberta, Legislative Assembly, Alberta Hansard, 29th Legislature, First Session, November 30, 2015, page 686.

Strategy, which identified clean energy development as a central policy goal, and characterized the periodic review of the province’s micro-generation policy as a means to facilitate energy efficiency and conservation.¹⁴

As well as furthering the uptake of renewable sources of electricity, adoption of micro-generation has the potential to benefit distribution systems by shifting peak loads, and avoiding or reducing the need for infrastructure upgrades. The micro-generation exemption allows for the export of surplus electricity, which offsets customer costs and incentivizes ownership of micro-generation units by individual customers whose own load requirements may not directly correlate with the intermittent nature of certain renewable energy sources.

Micro-generation today

As of February 2020, there are approximately 5,200 micro-generation sites in Alberta with an installed capacity of approximately 68 MW, comprised mostly (64 MW) of solar projects.¹⁵

Municipal own-use exemption

The initial adoption of the *Electric Utilities Act*, and corresponding deregulation of the electricity market, prompted substantial debate in the legislature regarding the impacts of deregulation on existing generators and the potential competitive advantages municipally owned generation would enjoy in a deregulated market.¹⁶ In an effort to design an “even playing field”¹⁷ between private and municipally owned generation, the *Electric Utilities Act* incorporated a prohibition on municipally owned generation, subject to certain exceptions. Of note, existing municipally owned generation was grandfathered into the new regime, and the *Electric Utilities Act* preserved the ability of municipalities to own generation in specific circumstances, including where a majority of the electrical energy produced by the generating unit was used solely on the property on which the generating unit is located.¹⁸ The municipal-ownership prohibition and corresponding exemptions contained within the original *Electric Utilities Act* have undergone several amendments, but have been largely carried through to Section 95 of the current version of the act.

In 2003, the *Electric Utilities Act* was amended to enable the Minister of Energy to make regulations setting out circumstances, in addition to those set out in Section 95, in which a

¹⁴ Alberta, Ministry of Energy, *Launching Alberta’s Energy Future: Provincial Energy Strategy* (December 1, 2008) page 23 and 45.

¹⁵ Microgen & Distributed Generation Report, February 2020, AESO, <https://www.aeso.ca/market/market-and-system-reporting/micro-and-small-distributed-generation-reporting/>.

¹⁶ For example, see: Alberta, Legislative Assembly, Alberta Hansard, 23rd Legislature, Third Session, No 25, (May 2, 1995) pages 1488-1493 (May 3, 1995) pages 1504-1507, 1542; (May 4, 1995) pages 1551-1554; (May 8, 1995) pages 1576, 1594-1600, 1603-1608; (May 9, 1995) pages 1674-1678; (May 11, 1995) pages 1747-1748.

Alberta, Legislative Assembly, Alberta Hansard, 29th Legislature, First Session, No 25, (November 30, 2015) page 686; Alberta, Legislative Assembly, Alberta Hansard, 29th Legislature, First Session, No 25, (November 30, 2015) page 686.

¹⁷ Alberta, Legislative Assembly, Alberta Hansard, 23rd Legislature, Third Session, No 25, (May 3, 1995) page 1507.

¹⁸ *Electric Utilities Act*, SA 1995 c E-5.5, Section 45.

municipality may hold an ownership interest in a generating unit. Pursuant to this power, the *Municipal Own-use Generation Regulation* was enacted in 2009.¹⁹

The *Municipal Own-use Generation Regulation* contemplates a municipally owned generating unit participating in the exchange of electric energy with the interconnected system where an arrangement is in place to ensure that all of the electric energy produced by the unit in each settlement interval is purchased by the municipality, for one or more sites within the boundary of the municipality. Such an arrangement must be detailed in a compliance plan and approved by the Market Surveillance Administrator. Read together with its enabling statute, the *Municipal Own-use Generation Regulation* appears to contemplate the availability of a narrow form of self-supply and export exclusive to municipal generators in limited circumstances and contingent on the approval of the Market Surveillance Administrator.²⁰

Policy rationale

Although there is little direct guidance from legislature regarding policy intent of the *Municipal Own-use Generation Regulation*, it is contained within a broader framework for municipal ownership of generation which aims to strike a balance between permitting efficient electrical generation by municipalities to serve their communities, while preventing municipalities from unfairly capitalizing on any tax advantage, subsidy or financial benefit unavailable to their competitors.

This balance is reflected in the legislative debate preceding the enactment of the *Electric Utilities Act*. With respect to the municipal ownership prohibition, Hon. Patricia Black, the Minister of Energy and Deputy Government House Leader at the time, emphasized the need to ensure “that there is no distortion or disadvantage to privately owned utilities over government-controlled and -owned utilities.”²¹

The *Municipal Own-use Generation Regulation* accommodates a municipality’s practical interest in serving an electrical load dispersed throughout the boundaries of a municipality. The regulation also institutes safeguards to ensure that a municipality’s entitlement to self-supply extends beyond the property upon which its generator is located to other municipally owned sites that require electric energy does not have a material impact on the broader competitive market.

Municipal own-use plants today

There are currently five municipal power plants with nine MW of capacity operating under the compliance plans approved by the Market Surveillance Administrator under the *Municipal Own-use Generation Regulation*.²²

¹⁹ *Municipal Own-use Generation Regulation*, Alta Reg 80/2009.

²⁰ The Market Surveillance Administrator approved a compliance plan for the E.L. Smith project and the AUC approved a connection order for that plant pursuant to the *Municipal Own-use Generation Regulation*.

²¹ Alberta, Legislative Assembly, Alberta Hansard, 23rd Legislature, Third Session, No 25, (May 3, 1995) page 1507.

²² The applicant, EPCOR Water Services Inc., filed a compliance plan with the MSA which was accepted. While the plant is not yet constructed, if the plant is built it can connect to the interconnected system in accordance with this regulation.

Flare Gas Generation Regulation exemption

The *Flare Gas Generation Regulation* was enacted in 2003 pursuant to the amendments to the *Electric Utilities Act* authorizing the Minister of Energy to make regulations respecting flare gas generating units, “including specifying which provisions of [the *Electric Utilities Act*] and the regulations do not apply to flare gas generating units.”²³

The *Flare Gas Generation Regulation* exempts flare gas generation from sections 17(d) and 18(2) of the *Electric Utilities Act*, which otherwise require the exchange of all electricity entering or leaving the interconnected system through the power pool, and corresponding financial settlement by the AESO.

The enactment of the *Flare Gas Generation Regulation* followed earlier efforts by the legislature and the EUB to reduce emissions from solution gas flaring. In its 1998/1999 annual report, the Ministry of Energy outlined its flaring reduction targets, and emphasized the commitment by industry to devote capital to solution gas conservation projects.²⁴ The EUB released its *Upstream Petroleum Industry Flaring Guide* in 1999, which discussed the emergence of technology capable of generating electricity from waste solution gas, and stated that further deregulation and restructuring of the electrical industry would assist in the adoption of such technology.²⁵

Pursuant to the *Flare Gas Generation Regulation*, electric energy produced by a flare gas generating unit can be transacted outside of the power pool in accordance with certain restrictions. Among other conditions, a flare gas generating unit must be fuelled by solution gas that would otherwise be flared or vented, and the resulting electric energy must be used solely by an eligible oil and gas operator working in the same service area in which the flare gas generating unit is located. The regulation also delineates what information the AESO is entitled to request from flare gas generators regarding the production of electric energy and its sale or provision.

Policy rationale

The *Flare Gas Generation Regulation* supports a legislative regime that provides for the efficient and environmentally friendly development of energy resources, and that mandates solution gas conservation including the recovery of solution gas for use as fuel. It is likely that the impetus of the *Flare Gas Generation Regulation* is to reduce the volume of solution gas flared, incinerated or vented, and that any residual benefits to the interconnected system are incidental. However, the efficiency gains realized through the recovery of solution gas are consistent with the rationale underpinning other self-supply and export exemptions. Notably, flare gas conservation is also considered within the provisions of *Hydro and Electric Energy Act* that outline the eligibility criteria for ISDs, pursuant to which the Commission is authorized to make regulations respecting how the requirement for “significant and sustained increase in efficiency” may be met where a generating unit uses gas that would otherwise be flared.

²³ *Electric Utilities Act*, RSA 2003 cE-5.1, Section 99(b).

²⁴ Alberta, Ministry of Energy, 1998/99 Annual Report, pages 43 and 44.

²⁵ Alberta, Energy and Utilities Board, *Upstream Petroleum Industry Flaring Guide*, page 8 and 15.

Flare gas generators today

The Commission is unaware of any generators operating pursuant to the *Flare Gas Generation Regulation*.²⁶ However, some of the self-supply and export plants, as discussed in the next section, were developed with the intent of using solution gas that would otherwise be flared or vented to produce electricity.

Self-supply and export plants

In the E.L. Smith Decisions, the AUC recognized that there are a number of industrial operations in Alberta with cogeneration facilities, including some similar to International Paper, that are engaged in self-supply and export without an ISD (legacy facilities).

The AUC is responsible for collecting electricity generation statistics from the province's generators. To preserve the confidentiality of individual generators, this information is provided to the AUC on the understanding the data will be made available to the public on an aggregate basis only. Based on the latest data for 2019, the AUC identified 21 legacy facilities that appear to be engaged in self-supply and export without an ISD or the benefit of any other exemption.

The overall capacity of these legacy facilities is 1,025 MW. Some of these facilities use almost all of the energy on-site and export only a small amount, while others export almost all of the energy and use only a small amount on-site. Further, some power plants appear to self-supply and export in some years but not others. Based on the information provided, it appears that annual on-site usage was approximately 2,800 gigawatt hours (GWh) with 3,000 GWh being exported (sold) to the power pool.

Evidence filed in the distribution system inquiry suggests that in 2019, at least 13 power plants engaged in self-supply and export and an additional 13 power plants were capable of engaging in self-supply and export. This information was provided by the AESO, FortisAlberta Inc., ATCO Electric Ltd. and ENMAX Energy Corporation. However, to ensure confidentiality, the identity of these power plants was not shared and the information regarding on-site usage and exports was incomplete and unverifiable.

Approximately two thirds of the legacy facilities (which represent 90 per cent of the overall capacity) are cogeneration units that may be eligible for ISD. The AUC is prepared to work directly with these operators to assess ISD qualification. The AUC anticipates that this will be an efficient process in which the operators will be required to provide primarily pre-existing information about their industrial operations.

²⁶ The regulation includes discretionary reporting requirements to the AESO. The regulation does not include application requirements that would mandate the owner of a flare gas generation plant to identify to the AUC that the plant is operating under that regulation.

The stakeholder submissions

All of the stakeholder round one and round two submissions are available through the AUC’s [Engage](#) webpage.

Round one

In Bulletin 2019-16, the AUC sought feedback from stakeholders on whether changes to the statutory scheme may be necessary to resolve the issues arising from these recent decisions. The AUC asked stakeholders to comment on three options to address the self-supply and export issue.

- Option 1: Status quo – no change to the statutory scheme is required.
- Option 2: Allow limited self-supply and export – this requires a change to the statutory scheme. This exemption could be similar to the micro-generation exemption where operators are required to size their plant to meet internal need on an annual basis, but will be allowed to export excess energy to the grid to a certain percentage of annual production.
- Option 3: Unlimited self-supply and export – this requires a change to the statutory scheme and may require changes to existing transmission and distribution tariff structures.

Options 1 and 2

Only two stakeholders supported Option 1. These stakeholders submitted that the current system supports the fair, efficient and openly competitive development of electricity generation in Alberta. They expressed concern that unlimited self-supply and export would impact price signals in the energy-only market by reducing the amount of available supply and reducing visibility into available supply and load. These stakeholders also expressed concerns about the impacts of unlimited self-supply and export on transmission planning and cost allocation.

Support for Option 2 was also limited. While some stakeholders regarded Option 2 as better than the status quo, they expressed concern about the arbitrary nature of setting export “targets” for power plants and the regulatory burden associated with tracking target adherence, both by the operator and regulators. Another common concern with Option 2 was the difficulty in establishing an export target when many facilities are designed to meet current and anticipated load.

Support for Option 3

The majority of stakeholders supported Option 3. While not all stakeholders agreed with the AUC’s interpretation of the legislation, there was widespread support for statutory amendments to reduce uncertainty and clarify whether self-supply and export is available to all generators. Most stakeholders emphasized the need for regulatory certainty and recognized that this can best be achieved by clear statutory direction.

Supporters of Option 3 cited a number of reasons for that support, including the following:

- Option 3 best aligns with the principles of the *Electric Utilities Act* and will support the development of a fair, efficient and openly competitive electricity market.
- Adoption of Option 3 will result in reduced power costs and greater system reliability.
- The current model creates an un-level playing field where micro-generators and those with an ISD are treated differently from other generators.
- Option 3 will incent investment, growth and innovation in Alberta's economy.

The stakeholders that supported Option 3 were divided on the issue of cost apportionment. Some market participants expressed a need for new or different tariff treatment for self-supply and export facilities, whereas others submitted that current tariff treatment of such facilities requires no amendment.

Legacy facilities

Several stakeholders expressed concern regarding the ongoing operations of existing power plants that are currently engaged in self-supply and export (legacy facilities).

The AUC stated its belief that the approval holders for these power plants have been operating their plants based upon a reasonable reliance on the approvals granted to them. The AUC further stated that it does not consider that these approval holders engaged in any form of intentional misconduct or non-compliance by operating their plants in this manner.

In its response to Bulletin 2019-16, the Market Surveillance Administrator stated that "...the MSA is not currently investigating any market participants in relation to the issues raised in the Bulletin and does not intend to begin any such investigation while the Commission is consulting on these issues."

The AUC also confirmed that it is not investigating any market participants in relation to self-supply and export issues and does not intend to initiate any such investigations while consultation on this issue is ongoing.

Round two

In Bulletin 2020-01, the AUC sought stakeholder feedback on the tariff and market implications of unlimited self-supply and export (Option 3).

Market implications

The Commission asked stakeholders to provide their views on the following market concerns expressed by Capital Power in its Round one submission.

For the proper formation of price signals in real-time and over a longer term, it is necessary that all available supply be required to submit energy offers. Allowing an exemption for some energy reduces the amount of supply competing to be dispatched. Further, an expanded amount of self-supply and export reduces market visibility of both

available supply and load to be served inhibiting price discovery. Exempting supply or some energy from pool participation reduces the effectiveness of and benefits from having a competitive market. ...

The limitations placed on self-supply in the legislation recognize the trade-off between the efficient development of generation in a fair, efficient and openly competitive market, avoiding uneconomic bypass or unnecessary duplication of the transmission system, and facilitating consumer choice.

The majority of stakeholders disagreed that unlimited self-supply and export would reduce market visibility of available supply and load and inhibit price discovery.

The AESO noted that under its rules, it has visibility of self-supply sites that export five MW or more onto the interconnected system through energy market offers. It observed that the majority of pool assets dispatched in the energy market offer their maximum capability based on the capability of the generating unit (i.e., gross offer), even in a self-supply and export configuration.

International Paper explained that it offers generation from its power plant on a gross basis so that other market participants have full visibility and the AESO has visibility into its load. Cenovus similarly noted that “the vast majority of generation bids its gross generation volume into the market each hour minimizing the materiality of the impact of the metering configuration.”

The Cogeneration Working Group²⁷ took a similar position and stated:

Only a small number of self-supply participants offer on a net to grid basis, and the CWG does not believe the choice between gross or net offers impacts the dispatch as the incremental generation in a gross offer used to meet onsite load would be priced at \$0/MWh rather than removed from the net offer. Generators face the same economic decision whether offers are gross or net and the decision to serve onsite load with onsite generation or grid purchases is not impacted.

As such, in the CWG’s view, the existing must-offer must-comply rules are sufficient to ensure all generation is offered to the market, all generation is visible, and the benefits of the competitive market are maximized.²⁸

Similar sentiments were expressed by the Industrial Power Consumers Association of Alberta and Heartland Generation Ltd.

Some stakeholders acknowledged the market concerns expressed by Capital Power regarding unlimited self-supply and export. These stakeholders recognized the changing fundamentals associated with increasing distributed generation and submitted that these issues are likely to be addressed in the AUC’s distribution system inquiry and in the AESO’s 2020 tariff application scheduled to be filed this fall.

²⁷ Cogeneration Working Group Comments on Self-Supply (AUC Bulletin 2020-01), February 14, 2020; The CWG described itself as follows “The Cogeneration Working Group (CWG) is a group of industrial loads with onsite generation in Alberta. The following members of the group are aligned with this submission: Cenovus Energy Inc.; Dow Chemical Canada ULC; Imperial Oil Resources Limited; MEG Energy Corp.; Suncor Energy Inc.; Syncrude Canada Ltd.; and TC Energy Ltd.”

²⁸ Ibid.

In its submission, TransAlta emphasized the policy rationales behind the limited exception to the requirement to offer and exchange all electric energy through the power pool and argued that ISDs, micro-generation and self-generators “achieve a fair balance between the freedom for customers to choose self-supply and the fair, efficient and openly competitive market design, and limit the shifting of transmission costs.”

TransAlta characterized the benefits of ISDs and micro-generation as follows:

While these exceptions can result in a shift of transmission cost burden, these exceptions aid in achieving other policy outcomes that are important to and benefit the province. Industrial System Designations (ISDs) support improved energy efficiency in industrial processes, and more efficient resource usage; microgeneration reduces environmental emissions. The sites that qualify receive the benefits of transmission cost benefit but the rate shock from shifting of transmission costs is limited due to the restrictive nature of the exceptions.²⁹

TransAlta submitted that unlimited self-supply and export offers no compelling benefits except for the avoidance of transmission cost for the on-site consuming party. It also stated:

Furthermore, the on-site generation that is developed may in fact be worse than the generation it displaces from an energy efficiency and/or environmental perspective. The high cost of transmission in Alberta is approaching the cost of wholesale electricity. This provides a very strong signal to develop on-site generation even if that generation is higher cost than consuming from the grid. Without a requirement to meet an energy efficiency or renewable criteria as is the case today, there is a high risk that a broad allowance for self-supply and export will harm the market. Our concern is that changes that permit more self-supply and export (including unlimited self-supply and export) will significantly shift transmission costs among consumers and shift the market design away from the centralized wholesale market towards physical bilateral arrangements and reduces transparent price formation, market signals for investment, and competition.

Tariff implications

In its Round one submission, AltaLink Management Ltd. expressed concerns about the tariff treatment of self-supply and export facilities. AltaLink suggested that under the existing tariff structure, demand transmission service (DTS) contracts held by self-supply and export customers may not accurately capture the costs and benefits realized by their connection to the interconnected system, such as reliability, start-up power, voltage quality, efficiency, and the facilitation of energy transactions.

AltaLink submitted that the practice of net-metering self-supplied loads, as contemplated in the ISO tariff, results in material cost shifting and cross-subsidization between those that have self-supply generation capabilities and those that do not. AltaLink identified further potential for cross-subsidization arising from the provision of transmission credits by distribution facility owners to distribution-connected generators, including some self-supply and export facilities.

²⁹ TransAlta Letter to AUC, February 14, 20120, re: Exploring market concerns and tariff issues related to self-supply and export reform (Bulletin 2020-01).

AltaLink submitted that the corresponding reduction in DTS costs payable to the AESO is cross-subsidized by other market participants.

Lastly, AltaLink submitted that the existing 12-coincident peak methodology of recovering bulk system costs provides an economic signal to customers to add generation to their sites, in an effort to reduce metered demand at the time of the monthly coincident peak. In AltaLink's view, this shifts the recovery of transmission costs onto other customers.

In Bulletin 2020-01, the Commission requested stakeholder feedback on AltaLink's submission with specific regard to whether the current tariff design sufficiently ensures that transmission and distribution costs are fairly allocated among users. The Commission asked stakeholders to comment on the impacts of changing the tariff structure to eliminate the mechanisms identified by AltaLink, identify whether other tariff-based solutions should be explored, and provide any rationale in favour of the current tariff structure.

The responses received by the Commission reflect diverging views on whether the current tariff design would properly allocate costs among market participants, were unlimited self-supply and export to be adopted.

A minority of stakeholders expressed the view that material change to the existing tariff design was necessary to establish proper price signals and reduce the potential for cross-subsidization of transmission costs between customers. For example, ATCO expressed agreement with AltaLink that "a comprehensive review of the current tariff design and legislation needs to be completed."³⁰

In addition to the issues identified by AltaLink, TransAlta raised concerns regarding the potential impact of the current tariff design on decisions regarding the development of generation, noting:³¹

Not only does [the current tariff structure] increase the shift of costs away from customers with self-supply generation to other customers, but it can lead to inefficient generation investment and dispatch that does not align with market signals or needs but rather seeks to maximize the avoidance or reduction of a customer's wires costs.

Stakeholders in support of changing the current tariff design expressed particular concern regarding whether the 12-coincident peak methodology would continue to serve its intended purpose in an environment where an increasing number of self-supply customers would benefit from the ability to reduce metered demand during times of peak usage. The AESO described the situation as follows:³²

The 12 CP signal was first approved as part of the AESO tariff in 2005, at a time when transmission costs and technological disruption were less significant. However, the 12 CP signal may no longer be appropriate, insofar as it may be resulting in a disproportionate

³⁰ ATCO Ltd., Response to Alberta Utilities Commission Bulletin 2020-01, February 14, 2020, PDF page 3.

³¹ TransAlta Corporation, Exploring market concerns and tariff issues related to self-supply and export reform (Bulletin 2020-01), February 14, 2020, PDF page 4.

³² Alberta Electric System Operator, Comments of the AESO in response to AUC Bulletin 2020-01, February 14, 2020, PDF page 3.

allocation of costs to loads that are unable to respond as easily to the 12 CP price signal, and thus are paying for an increasing share of primarily fixed transmission costs.

Although these stakeholders considered that material change to the tariff structure was necessary, many pointed towards concurrent processes in which the tariff would be more thoroughly scrutinized. ATCO stated that “the output of the [Distribution System Inquiry] and the conclusion of the 2018 AESO Tariff proceeding will provide an appropriate backdrop on which to build a future tariff-based solution for cost allocation.”³³

The majority of stakeholders expressed support for maintaining the current tariff structure. Certain of these stakeholders refuted AltaLink’s suggestion that self-supply and export facilities avoid responsibility for the costs and benefits of being connected to the grid, arguing that DTS rate contracts sufficiently integrate the value of the services pointed to by AltaLink.

The Canadian Solar Industries Association asserted that the intent of the ISO tariff is for customers to pay for the cost of service on a net metered basis, rather than the “full value” concept advanced by AltaLink.³⁴

Some stakeholders defended the current tariff as appropriate with an emphasis on the collateral benefits accruing to the interconnected system and other customers as a result of the existence of self-supply facilities, including an overall reduction in transmission costs that would otherwise be allocated to all customers.

Among stakeholders in support of the current tariff design, there was a strong sentiment that the 12-coincident peak methodology provides an effective and expedient price signal to reduce dependence on the interconnected system in times of peak load, thereby benefiting the system as a whole. Many parties pointed to the fact that the 12-coincident peak methodology has been repeatedly tested and upheld as being based on sound cost causation principles, both by the Commission in ISO tariff proceedings and by regulators in other electricity markets.

Several stakeholders in support of maintaining the current tariff design voiced concern about transmission costs in Alberta, with the Alberta Direct Connect Consumer Association characterizing AltaLink’s position on tariffs as “an attempt to distract from the real issue which is excessive growth in transmission costs...”³⁵

Suncor’s submission distinguished between net-metering and net-billing, noting that while the E.L. Smith Decisions may require a change to metering practices at self-supply facilities, the decision is silent on billing, and that metered data from self-supply and export facilities should continue to be netted before billing determinants are applied. Suncor submitted that any consideration of gross versus net billing practices should take place in the context of ISO tariff consultations and proceedings.

³³ ATCO Ltd., Response to Alberta Utilities Commission Bulletin 2020-01, February 14, 2020, PDF page 4.

³⁴ Canadian Solar Industries Association, Round Two Consultation Submission, February 14, 2020, PDF page 2.

³⁵ Alberta Direct Connect Consumer Association, Comments on Bulletin 2020-1, February 14, 2020, PDF page 2.

Like Suncor, stakeholders in support of the tariff expressed a generally unified view that consultation on self-supply and export was not the most appropriate forum to discuss changes to tariff design, and that the tariff implications of self-supply and export were more properly canvassed through the upcoming ISO bulk and regional tariff consultation process and corresponding application before the Commission. Several parties also noted that AltaLink's concerns, and in particular the issue of distribution-connected generator credits, would also be examined in the Commission's distribution system inquiry. Consequently, the majority of parties cautioned against implementing any changes to tariff design prior to the conclusion of these separate processes.

Discussion

The era of competition established through the *Electric Utilities Act* and afterwards created new opportunities for co-generators, power plants based on renewable energy, and for distributed generation.

Inherent in the unbundled generation structure is the idea that markets, not governments or regulators determine investment and resource decisions. Commercial risk is allocated to private investors, generation planning decisions, including technology choice, is left to the market.

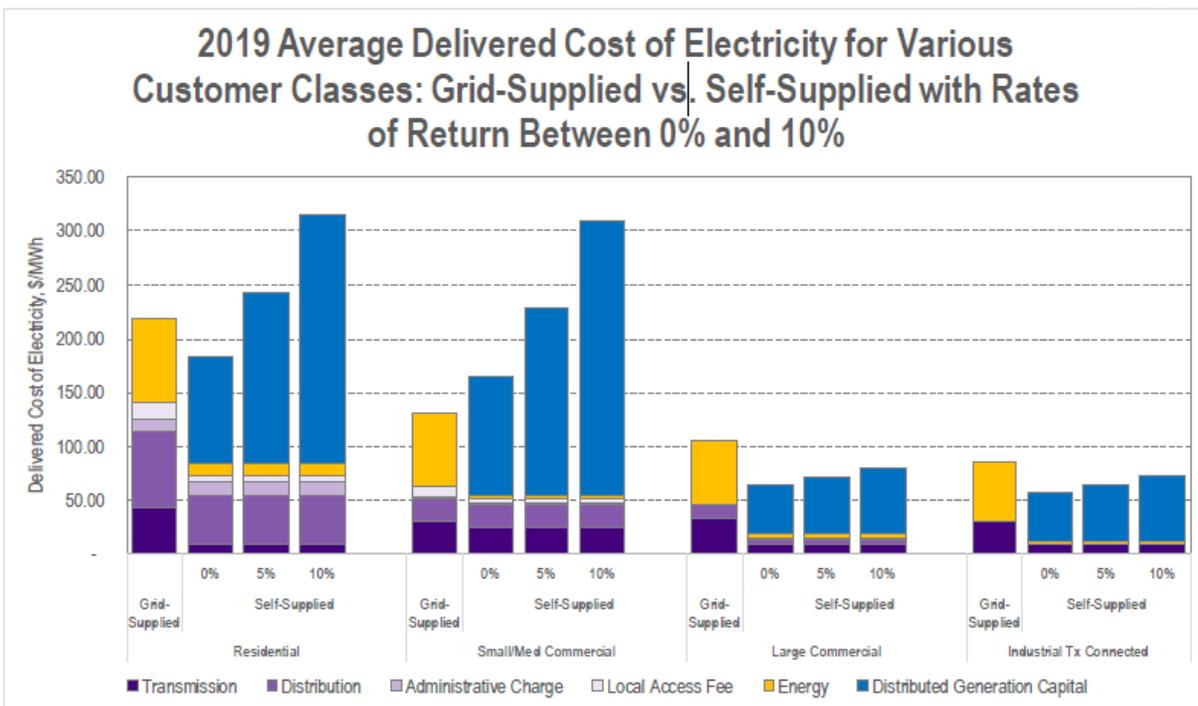
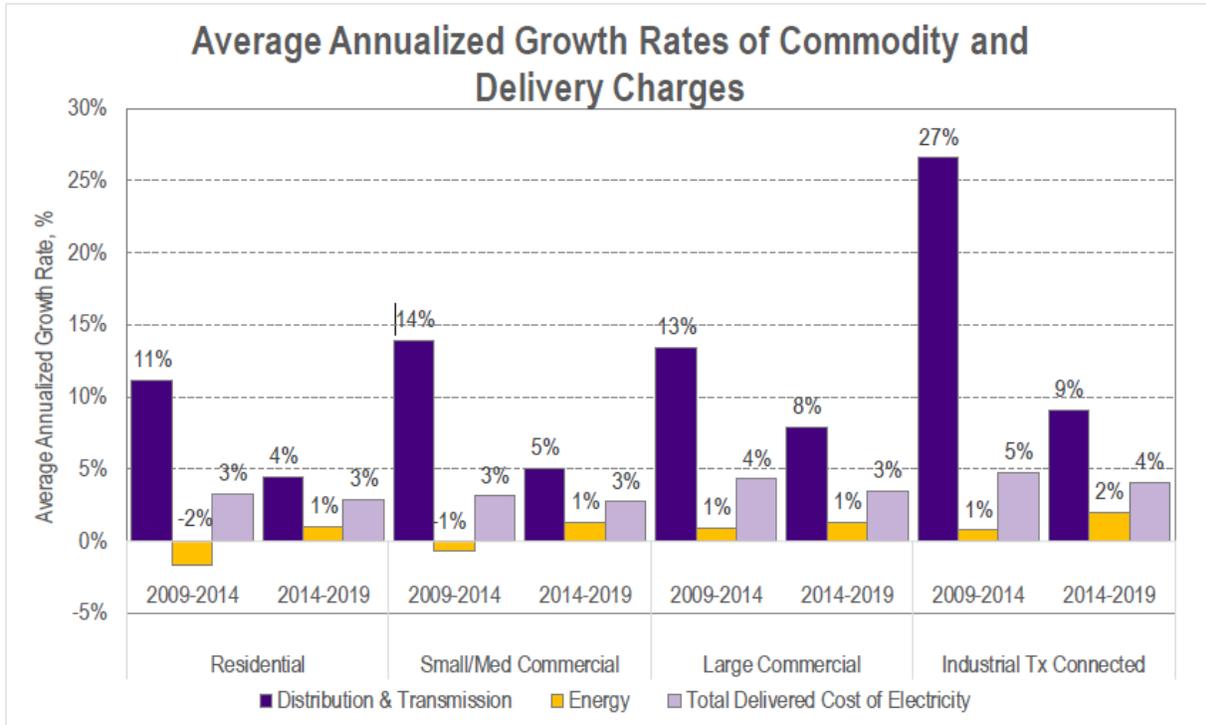
However, efficient market outcomes in the electricity sector (the underlying objective of markets) may be incompatible with other government policy objectives, for example low carbon agendas or distributed energy agendas.

The exemptions available to certain types of generators (i.e., ISDs, micro-generation units, flare gas units) have tempered the impacts of a pure market model by providing incentives and benefits to those generators that were not available to all generator types. These exemptions have promoted on-site energy efficiency for qualifying generators while contributing to the overall efficiency of the market by allowing excess electricity to be sold through the power pool.

The impacts of these exemptions (and the underlying policies) have been significant. The rise of ISDs in Alberta contributed to the addition of approximately 5,000 MW of generation to the interconnected system. The micro-generation initiative, while more modest, has added approximately 70 MW of generation to the system.

However, the AUC has recently recognized a change in application patterns for power plants and connection orders relating to the issue of self-supply and export. First, the AUC observed an increase in "non-traditional" ISD applications, i.e., smaller scale projects not involving cogeneration. Second, the AUC perceived an increase in self-supply export projects that do not meet the criteria for an ISD.

Based on stakeholder responses in this engagement process, the motivation for this shift appears to be a combination of high transmission costs and lower on-site generation costs. This is reflected in the following two graphs prepared by the AESO for a March 3, 2020 presentation by the AESO.



In both rounds of stakeholder engagement, the majority of stakeholders expressed support for expanding access to self-supply and export beyond ISDs by permitting unlimited self-supply and export subject to appropriate tariffs. To make this change, amendments to the statutory scheme are recommended.

Currently, the statutory scheme distinguishes, or appears to distinguish between three categories of self-supply exporters: (i) “pure ISDs,” where an industrial system satisfies all of the ISD criteria set out in Section 4(3)(a-g) of the *Hydro and Electric Energy Act*, (ii) “grey ISDs,” where an industrial system substantially satisfies the ISD criteria and the Commission concludes that there is a significant and sustained increase in efficiency in a process of the industrial operation or in the production and consumption of electric energy, and (iii) “non-ISD self-supply exporters.”

In accordance with the statutory scheme (as interpreted by the Commission) each of these categories of self-supply exporters would be subject to different treatment for transmission costs. Pure ISDs should pay transmission costs on net imports. Grey ISDs should pay transmission costs on net imports plus an avoidance tariff representing their “just and reasonable share of costs associated with the interconnected system.” Non-ISD self-supply exporters should pay transmission costs on all electricity consumed on-site, including that electricity that is produced on-site.³⁶

The differences in tariff treatments for each category of self-supply exporters, based on the current statutory scheme is summarized in the following table. This table reflects the AUC’s current interpretation based on the E.L. Smith Decisions and distinguishes between the legacy facilities (self-supply and export plants approved and operating before the E.L. Smith Decision) and future self-supply export plants which, based on the interpretation in that decision, are not currently exempt.

³⁶ The Commission interpreted Section 2(b) such that the exemption applies only if all of the energy produced on-site is consumed on that site. If Section 2(b) does not apply, Section 101 does apply, which requires the industrial operation to obtain electric energy from the distribution facility owner (DFO) or transmission facility owner (TFO). The only way for this to occur is for the onsite generator to enter into a power purchase arrangement (PPA) with the on-site load for energy costs but it would still be required to pay transmission costs associated with the load consumed.

Tariff treatments for self-supply exporters

	Consumer only	Producer/consumer	Producer only
Grandfathered self-supplier (exempt)	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Grid-supplied load (net consumption) would attract system charges. 	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Grid-supplied load (net consumption) would attract system charges. Similar to pure generators, exports would not attract system charges. 	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Similar to pure generators, exports would not attract system charges.
Future self-supplier (not exempt)	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Grid-supplied load (net consumption) would attract system charges 	<ul style="list-style-type: none"> Self-supply would not be permitted. All load would be grid-supplied and so would attract system charges. Similar to pure generators, exports would not attract system charges. 	<ul style="list-style-type: none"> Self-supply would not be permitted. All load would be grid-supplied and so would attract system charges. Similar to pure generators, exports would not attract system charges.
Pure ISD	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Grid-supplied load (net consumption) would attract system charges. 	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Grid-supplied load (net consumption) would attract system charges. Similar to pure generators, exports would not attract system charges. 	<ul style="list-style-type: none"> Self-supplied load would not attract system charges. Similar to pure generators, exports would not attract system charges.
Grey ISD	<ul style="list-style-type: none"> (Some) self-supplied load could attract a top-up tariff. Grid-supplied load (net consumption) would attract system charges. 	<ul style="list-style-type: none"> (Some) self-supplied load could attract a top-up tariff. Grid-supplied load (net consumption) would attract system charges. Similar to pure generators, net exports would not attract charges. 	<ul style="list-style-type: none"> (Some) self-supplied load could attract a top-up tariff. Similar to pure generators, net exports would not attract charges.

The AUC understands that the decision to exempt certain types of large industrial consumers from important parts of the statutory scheme (i.e., the requirement to obtain electricity from the system, the requirement to exchange electric energy through the power pool, the prohibition against transmitting and distributing electricity across public highways, etc.) was premised on the system and societal benefits generally attributable to self-supply and more particularly to large-scale, self-supplied industrial operations, primarily in the oilsands sector. Those benefits included:

System benefits

- Increased system reliability by having generation sources spread throughout the system.
- Decreased line losses.
- Excess power exchanged through the power pool to lower energy costs for all consumers.
- Avoided system buildout.

Societal benefits

- Economics – allowing self-supply with export of excess electricity for large oilsands mega-projects contributed to job creation and significant inputs to the economy. It made the oilsands industry more efficient and economic.
- Environment – the use of on-site cogeneration to provide heat and power reduced greenhouse gases as compared to importing coal-fired generation from central Alberta.

However, when the exemption was established, both the legislation and associated policy documents emphasized that ISDs should not facilitate (a) the development of independent electric systems intended to avoid costs associated with the interconnected system and (b) uneconomical bypass of the interconnected system. Presumably, the limited nature of the ISD exemption based on the strict criteria, coupled with the caution against uneconomic bypass, reflected the legislature's desire to preserve, where they are the most efficient solution, the monopolies of the transmission and distribution utilities.

To move forward on this issue, the Department of Energy must balance the competing interests of fair and open competition in the energy market and economic development, which may be enhanced by allowing unlimited self-supply and export, with maintaining or preserving the ongoing viability of the transmission system. These opposing interests were identified and addressed at length in the round two submissions of the parties.

Some stakeholders considered the ISD to be a legitimate mechanism to foster efficient increments of cogeneration that have benefits to all users of the interconnected system. To others, the ISD is a means to reduce power costs for their industrial processes. Still others view the ISD under the current tariff scheme as a form of cross-subsidization from electricity consumers to industrial system operators. This school of thought argues that self-supply and export, by ISDs or otherwise, should be restricted as much as possible.

Importantly, most parties to this debate submitted that, if unlimited self-supply and export was sanctioned by policy and legislation, questions regarding the just and reasonable allocation of transmission costs could most effectively be addressed in two proceedings, the distribution system inquiry and the AESO tariff application.

However, before the Commission can effectively turn its mind to the tariff issue, the Department of Energy must decide, from a policy perspective, whether to allow self-supplying generators that do not qualify as ISDs to self-supply and export. In making this policy decision, the Department of Energy may want to take into account the system and societal benefits associated with such operations.

From the standpoint of system benefits, self-supply and export generating units appear to be capable of providing similar benefits as compared to ISDs. While the scope of these benefits will depend on the size and location of the unit, self-supply and export units can improve system reliability, reduce line losses, avoid system build outs and provide additional low cost energy for exchange in the power pool.

Regarding societal benefits, there have been advancements in renewable and small-scale generation since the ISD exemption was enacted in 1995. Allowing unlimited self-supply and export may promote growth in renewables especially in concert with other activities such as irrigation agriculture. Further, allowing self-supply and export may improve the economics for some resource extraction projects by allowing owners to reduce energy costs by self-generation and exporting excess to the grid.³⁷

If the Department of Energy decides to allow generators that do not qualify as ISDs to self-supply and export, the Department of Energy should also consider whether these types of operations should be required to pay some form of transmission avoidance tariff or fee, similar to that intended for the “grey area ISDs” to ensure that they are paying a just and reasonable share of the costs associated with the interconnected system and if so, whether associating that fee with exporting, would adversely affect fair and open participation in the power pool. The Department of Energy should have similar consideration as to whether the avoidance tariff contemplated in Section 117 of the *Electric Utilities Act* should be either (a) enforced, or (b) removed from the act altogether.

³⁷ In preparing this paper the AUC did not engage in an in-depth analysis of the societal costs or benefits of self-supply and export. Such an exercise is beyond the scope of this paper and would require considerable input from the Department of Energy, the AESO, the Market Surveillance Administrator and stakeholders.

Appendix 1

The E.L. Smith Decisions

Between February 2019 and January 2020, the AUC issued seven decisions (the E.L. Smith Decisions) in which it determined that, subject to limited exceptions, the owner of a power plant cannot supply on-site operations with the electricity generated by the power plant and export any excess electricity to the grid (self-supply and export).³⁸

In the E.L. Smith Decisions, the AUC had to interpret Section 2(b) of the *Electric Utilities Act*, which states that the act does not apply to “electric energy produced on property of which a person is the owner or a tenant, and consumed solely by that person and solely on that property.” Two competing interpretations emerged:

- The exemption applies only if all of the energy produced on the property is consumed on the property.
- The exemption applies to electric energy produced and consumed on the property, but does not apply to electric energy produced on the property but consumed off the property (exported to the interconnected system).

The Commission adopted the former interpretation, based on its reading of sections 101, 18 and 2 of the *Electric Utilities Act* and Section 2(g) of the *Fair, Efficient and Open Competition Regulation*.³⁹

Section 101(1) of the *Electric Utilities Act* provides direction to persons on how they must obtain electricity in Alberta. It states that a person wishing to obtain electricity for use on a property must make arrangements for the purchase of electric distribution service from the owner of the electric distribution system in whose service area the property is located.

Section 18(2) of the *Electric Utilities Act* and Subsection 2(g)(i) of the *Fair, Efficient and Open Competition Regulation* provide direction on how electricity generated in Alberta can be exported through the interconnected system and the Power Pool of Alberta. Section 18(2) states that all electric energy entering or leaving the interconnected system must be exchanged through the Power Pool of Alberta unless regulations made under sections 41,⁴⁰ 99,⁴¹ or 142⁴² provide otherwise.

³⁸ Decision 23418-2019 (the E.L. Smith decision); Decision 23756-D01-2019 (the first Advantage decision); Decision 24393-D01-2019 (the International Paper decision); Decision 24519-D01-2019 (the Genalta decision); Decision 24126-D01-2019 (the Keyera decision); Decision 24674-D01-2019 (the Advantage R & V Decision).

³⁹ This was previously 2(f) of the *Fair, Efficient and Open Competition Regulation*. It became 2(g) when the regulation was amended in 2019.

⁴⁰ Section 41(1)(a) allows the Minister to make regulations respecting exemptions from the requirement set out in sections 17(d) or 18(2).

⁴¹ Section 99 allows the Minister to make regulations exempting flare gas generating units and micro-generation generating units from provisions of the *Electric Utilities Act*.

⁴² Section 142(2)(b) allows the Lieutenant Governor in Council to make regulations exempting any person or class of persons from any provision of this Act or the regulations and prescribing conditions or restrictions on the exemption.

Section 2(g) of the *Fair, Efficient and Open Competition Regulation* complements and supports Section 18(2). It provides that, subject to certain exceptions, not offering to the power pool all electric energy from a generating unit that is capable of operating is conduct that does not support the fair, efficient and openly competitive operation of the electricity market. One of the exceptions to Section 2(g) is electric energy used on property for the market participant's own use.

Based on the above provisions, the Commission found that a person proposing to use generating units located on a site that it owns to both: (a) obtain electricity for its own use (self-supply), and (b) export electricity to the interconnected system, must demonstrate that the person is exempt from the requirements set out in sections 101 and 18(2) of the *Electric Utilities Act* and Subsection 2(g)(i) of the *Fair, Efficient and Open Competition Regulation*. The proponents in several of the E.L. Smith Decisions asserted that Section 2(b) of the *Electric Utilities Act* provided such an exemption.

The Commission found that based on its plain and ordinary meaning, Subsection 2(1)(b) establishes three pre-conditions for the self-supply exemption:

- The electric energy must be produced on the person's property.
- The electric energy must be consumed solely by the person.
- The electric energy must be consumed solely on the person's property.

The Commission concluded that none of the E.L. Smith proponents satisfied the three conditions for the self-supply exemption because they did not intend to be the sole consumers of the electric energy and did not intend to consume all of the energy produced on their respective properties. Rather, all of the E.L. Smith proponents intended to partially consume some of the electric energy and export the excess for consumption off of their properties.

The Commission also considered other provisions of the statutory scheme to determine if its interpretation of Section 2(b) was consistent with the broader purpose and intent of the scheme. The Commission observed that Section 2(b) was one of a number of provisions that address on-site generation for the purposes of self-supply. It noted that Section 13 of the *Hydro and Electric Energy Act*, Section 6 of the *Isolated Generating Units and Customer Choice Regulation* and Subsection 2(g)(i) of the *Fair, Efficient and Open Competition Regulation* each create exemptions for on-site generation produced for an owner's on-site consumption.

The Commission stated that both the ISD provisions of the *Electric Utilities Act*, the *Hydro and Electric Energy Act* and the *Micro-generation Regulation* provide exemptions from the application of the *Electric Utilities Act* to some or all of the electricity produced by an ISD or micro-generation generating unit.

The Commission found that the statutory scheme expressly authorizes the owners of industrial systems and micro-generators to self-supply and export any electric energy that is in excess of their own use through the interconnected electric system. However, it found that the statutory scheme included no authorization, by exemption or otherwise, for a party that relies upon the exemption in Subsection 2(1)(b) to export electric energy that is in excess of the person's own

use on the property. Because such express authorization exists for the other two self-supply mechanisms, the Commission concluded that the omission of a similar authorization for Subsection 2(1)(b) operations was intentional and reflective of the legislature’s intent to require that all the electricity produced on-site be consumed on-site.

In two of the E.L. Smith Decisions (the Keyera decision and the Advantage R&V decision), the proponents asserted that excess on-site electricity could be exported based on an exemption arising from:

- Subsection 2(f)(iii) of the *Fair, Efficient and Open Competition Regulation* (now 2(g)(iii)).
- Subsection 3(2)(a) of the Independent System Operator (ISO) rules, Section 203.1: Offers and Bids for Energy, (ISO Rule 203.1).
- Section 2 of AESO Information Document: Energy Offers and Bids – ID #2012-008R (AESO Information Document).

Those provisions respectively state as follows:

2 Conduct by an electricity market participant that does not support the fair, efficient and openly competitive operation of the electricity market includes the following:

(f) not offering to the power pool all electric energy from a generating unit that is capable of operating, except where ...

(iii) the *Electric Utilities Act*, its regulations or the ISO does not require the electric energy to be offered;

3(1) A pool participant must, for each settlement interval, submit an offer for each of its source assets with a maximum capability of five (5) MW or greater.

(2) A pool participant must not, notwithstanding subsection 3(1), submit an offer for:

(a) any of its source assets with a maximum capability of less than five (5) MW; and

(b) capacity that is committed under a contract for long term adequacy.

2 Net-to-Grid Offer Requirements

Subsection 3 of Section 203.1 sets out the obligation for all source assets five (5) MW or greater to submit offers. Pool participants with on-site load may choose to offer their energy net-to-grid rather than offering their gross generation. They may do so by entering the source asset’s maximum capability as only the energy that they expect to export to the grid rather than the entire generating capacity of the source asset. The AESO then deems the source asset’s size to be equivalent to such maximum capability. If a pool participant expects to export energy net-to-grid of more than five (5) MW (i.e. their maximum capability is greater than five (5) MW), the pool participant is obligated to submit offers.

The Commission disagreed that the above provisions, when read together, established an exemption and found that the wording of ISO Rule 203.1 alone does not support this interpretation; rather, the interpretation was dependent upon the information contained in the AESO Information Document, which is intended for information only and over which the legislative scheme takes precedence. The Commission determined that the AESO Information Document is only applicable in circumstances, such as an ISD, where an exemption to self-supply has been granted. The Commission concluded that the proponents had failed to establish that the exemption contemplated by Subsection 2(g)(iii) of the *Fair, Efficient and Open Competition Regulation* applies in these circumstances.

The seven E.L. Smith Decisions

- [Decision 23418-D01-2019](#) (the E.L. Smith decision) February 20, 2019
In that decision, the AUC denied a connection order for a proposed 12-MW solar plant on the basis that the proponent (EPCOR Water) intended to use the plant to self-supply electricity to its water treatment plant and export excess electricity to the interconnected system. A connection order was later granted to EPCOR Water when it demonstrated that it qualified for an exemption that is available only to municipalities.
- [Decision 23756-D01-2019](#) (the first Advantage decision) April 26, 2019
Advantage Oil and Gas Ltd. applied to interconnect its existing power plant prior to the issuance of the E.L. Smith decision. The AUC provided Advantage with an opportunity to review and distinguish the E.L. Smith decision prior to deciding Advantage's application. Advantage simply asserted that the statutory scheme allowed self-supply and export and relied on some of the reasons asserted by EPCOR Water (rejected by the Commission in the E.L. Smith decision) in support.
- [Decision 24393-D01-2019](#) (the International Paper decision) June 6, 2019
International Paper applied for a permanent connection order for its existing 48-MW power plant. International Paper confirmed that while the plant is primarily used for self-supply, it has occasionally exported excess electricity to the market. The application was filed after the E.L. Smith decision. The Commission denied the application based on the principles laid out in the E.L. Smith decision. However, the AUC approved the alternative relief requested by International Paper, an extension to its temporary connection order to allow it to file an ISD application.
- [Decision 24519-D01-2019](#) (the Genalta decision) June 19, 2019
WCSB Power Generation GP Inc. filed seven applications to transfer seven power plant approvals and associated connection orders in response to a corporate re-organization. The Commission approved six of the seven applications but placed the seventh application, related to the Judy Creek Power Plant, in abeyance. The Commission placed the Judy Creek application in abeyance because that power plant is engaged in self-supply and export.

- [Decision 24126-D01-2019](#) (the Keyera decision) June 25, 2019

Keyera Energy Ltd. proposed to construct, operate and interconnect (through the transmission system) a 12.9-MW power plant at an existing sour gas plant. Keyera proposed to self-supply the sour gas plant and export excess electricity to the grid. Keyera filed its application in December 2018, prior to the issuance of the E.L. Smith decision. Keyera asserted that it could rely on a previously unidentified exemption to the prohibition against self-supply and export based on its reading of ISO Rule 203.1 and the AESO Information Document. The Commission disagreed with Keyera’s assertion of a new exemption.

- [Decision 24674-D01-2019](#) (the Advantage R&V decision) October 17, 2019

Advantage asked the Commission to review and vary its denial of the connection order based on alleged errors of law and fact. The error of fact alleged was that the original panel stated that Advantage intended to interconnect the entire plant (12.1 MW) whereas Advantage sought only to interconnect two of its generators (4.9 MW) to the system. The error of law alleged was premised upon arguments substantially similar to those brought forward (and rejected) in the Keyera decision.

- [Decision 24979-D01-2020](#) (the International Paper ISD decision) January 10, 2020

After the Commission denied International Paper’s application for a permanent connection order on the basis of self-supply and export issues, it filed an ISD application. The Commission approved the application and concluded that the International Paper’s operations substantially met the ISD criteria in Section 4 of the *Hydro and Electric Energy Act* and had demonstrated that its operations demonstrate significant and sustained increased efficiency.