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Regional Cooperation in Electricity Exchanges in Atlantic Canada:
Steps Toward the Creation of an Atlantic Power Pool

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An Atlantic Power Pool

The principal purposes of a regional power pool in Atlantic Canada would be (1) to increase reliability of the power system at the least cost and (2) to provide to customers the benefit of the lowest cost energy mix during any hour.

A power pool would include central dispatch of energy generated in each province to supply customers in all provinces, while protecting each utility's ownership and control of its generators.

It would also provide for the gradual introduction of a regional transmission rate that would foster increased exchanges within the region and with neighbouring regions, while maintaining the transmission revenues of system owners.

While it would promote efficiency based on the cost of generation, it would not impose a market on any of the provinces, each of which would continue to control the purchase and sale of power.

The purpose of this paper is to describe the characteristics and operations of a power pool and the steps that should be taken to establish it, based on experience gained from earlier pools. The technical description provided explains how the power pool's purposes can be achieved.

A Regional Opportunity

The four provinces of Atlantic Canada have long considered ways to cooperate in the use of electric generation and transmission. Though their discussions have not yet produced significant, tangible results, conditions now are more

favourable than ever for the development of a regional approach.

In terms of electric systems, the four provinces together serve a relatively small number of customers. This factor alone underlies the need and the opportunity for cooperation.

The following developments suggest that the time is now opportune for action:

1. Two of the provinces – P.E.I. and Nova Scotia – either now or soon will need to rely to a considerable extent on power supply from outside of the province;

2. New Brunswick is ending the service of the N.B. System Operator (NBSO) and substantially reducing its intention to create a competitive provincial market;

3. The development of the Muskrat Falls project with its important transmission links would not only connect Newfoundland and Labrador but would make available a new hydro resource; and

4. The provincial government discussions have moved the provinces closer to concrete measures of cooperation.

At the same time, the provinces have shown themselves to be wary of proposals, which might undermine their current ownership and control of generation and transmission, prevent them from realizing the benefits of ownership, or impose a market system that replaced the traditional bilateral relationship between seller and buyer.

As a result, the concept of an Independent System Operator (ISO), managing a daily market in which utilities are either replaced by or serve as marketers, has gained little support. In fact, consideration of applying some of the complex and costly market mechanisms inherent in markets administered by ISOs in the United States has been an obstacle to progress in developing cooperation in Atlantic Canada.

In attempting to develop a regional approach, the concerns of the provinces and utilities should be recognized. This approach must limit change from the current structure as far as practicable, while ensuring increased opportunities for greater economy and efficiency.

Atlantic Canada Can Benefit from the Experience of Earlier Pools

Atlantic Canada can benefit from experience elsewhere in developing cooperative arrangements. What has evolved in the United States over more than half a century may be helpful.

The need for enhanced reliability and economy led to the creation of power pools. These entities were created in several parts of the country to allow for such improvement either among separate utilities in multiple jurisdictions or a single utility operating across state lines. Generation and transmission remained under the control of each utility, but dispatch of generating resources took place centrally to increase reliability and to promote the use of the lowest cost generation mix.

Some pools provided that all pool members had equal access to the pool's economically and reliably dispatched generation. Those pools allowed members to maintain separate transmission systems, each with their own rates that were applicable for all other transactions. Transmission owners usually reserved their high voltage lines for their own use and excluded use by

others. This policy was especially discriminatory when it blocked access to the pool's neighbouring systems either because it was unavailable due to a lack of capacity or charges were set high for pool members lacking direct tie lines to systems external to the pool system. In short, the main drawback of the power pools was the maintenance of separate transmission systems, each with its own rate, and the tendency of transmission owners to reserve their high voltage lines for their own use to the exclusion of others.

These policies resulted in bilateral transactions passing over multiple systems paying multiple rates and limited opportunity for allowing contractual power from the lowest cost units to reach customers beyond the host system.

The U.S. Energy Policy Act of 1992, required power pools to create a single transmission rate for the entire area and to make their lines available, through "open access", for use by others.

These measures by themselves would not have meant the end of power pools. However, Congress and the Federal Energy Regulatory Commission (FERC) decided that these steps should be complemented by the development of regulated electricity markets. The rules and operations of these markets became increasingly complex and served to drive many utilities out of the generation business. While competition increased, it has not been proven that the market produced savings for customers.

At an operational level, power pools made sense. They left much of traditional utility operations in place, while producing greater efficiency and security. Their operation behind closed doors raised concerns, but many of those concerns were removed when the pools put new, regional tariffs in place. The single regional transmission rate, constructed in a manner which assured all transmission owners of full recovery of their cost of service (including return on equity), was a valuable addition to the existing mechanisms.

The government-mandated market overlay, implemented rapidly and based heavily on theoretical expectations, has clearly not brought significant benefits to consumers over the previous market system based on pool economic dispatch and bilateral transactions.

Thus, in considering a path forward and mindful of the provinces' priorities, Atlantic Canada can benefit from the development of cooperation through pooling, while avoiding the more technically and economically complex and invasive market system used in many parts of the United States.

Perhaps the most useful precedents, both positive and negative, can come from the New England Power Pool (NEPOOL), which functioned in a neighbouring region for decades until the new generation markets were mandated.

Power Pool Functions and Operations

The core function of an electric utility is to provide a reliable supply of electricity in an amount that matches the needs of those it serves. (The core function of the regulator is to see that the utility carries out that function and does it at a reasonable price.)

Utilities have performed this function by ensuring the adequacy of both generation and wires. Some of the generation available to the utility must be able to follow instantaneously the changes in the amount of electricity customers need.

The core function may be carried out by a utility operating in isolation from all other utilities or as part of an interconnected group of utilities. Whether composed of one utility or several, the unit that provides the required service has traditionally been known as a Control Area.

The Control Area ensures the adequacy of generation and transmission and provides what is known as reliability. The entity providing this service is now known as the Reliability Coordinator. Such an entity will also ensure that power flows from available resources within or outside the area to customers (the load) to keep supply and demand in balance. This function is called the Balancing Authority.

Any system must include not only the instantaneous generation required to serve load but also unused generation ready to serve load. This unused generation is called Operating Reserve and serves load in the case of unexpected outages. Operating Reserve must be accessible and be either on line ready to increase output or off line and ready to come on line on short notice. It must be of a sufficient size to replace at least the outages of the largest generators. When several systems are interconnected, reliability may be achieved at lower cost by using reserves to meet the needs of the region as a whole rather than each participant providing its own reserves in isolation from others.

In one way or another, all electric utilities must engage in providing service through the use of a Reliability Coordinator and Balancing Authority if their system is interconnected to the North American grid. In Atlantic Canada, Nalcor is not required to provide such services, though in practice, it must do much the same.

A Reliability Coordinator or Balancing Authority serves the function of a Control Area. These activities underpin a power pool, but such an entity provides more functions – cooperative action with connected utilities usually in adjoining jurisdictions.

Central Economic Dispatch

In a power pool, each participating utility is required to provide its own power supply, including the generation it owns, generation it purchases on its own system and whatever purchases it makes from off its own system. The market for the purchase and sale of power is essentially bilateral with the parties negotiating their own contracts without the intervention of a market operator. Each utility continues to function as it has traditionally.

Once its power supply has been arranged, the utility then makes it available to the pool to operate it economically relative to the resources available from other utilities. The pool now becomes a power exchange and operates according to the rules established by the participants. It does not make policy or operate a competitive market.

A pool's power exchange dispatches the lowest cost, available energy from the interconnected grid. This lowers the cost of serving the regional load. Economic dispatch is principally from generation within the region. But by using interconnections with neighbouring pools, the power exchange may be able to obtain lower cost supply that can be used to produce an even lower cost for the region.

Some units within the region may at times not be available to supply energy or to be backed down as the power exchange might require. A participant may designate a unit as "Restricted" or "Must Run", for operational or other reasons.

Such designations may restrict the pool's economic dispatch and may result in a reduction in savings from pool operation.

The power exchange is also responsible for reliability, ensuring that there are adequate resources available at all times to meet the expected load plus additional resources to cover required operating reserves. Instead of each utility operating independently as its own Control Area, participants use the power pool to provide reliability, economic dispatch, and load balancing for the group. The balancing function adjusts the actual power flows to what has been previously scheduled on the pool's interconnections with other pools or systems.

All of these functions illustrate the primary benefit of the power pool for each participant: operation in a more reliable and efficient manner that serves to reduce overall operating costs.

The dispatch of the lowest cost energy to meet the region's load should cost less than if each participant relied on its own generation to meet its system requirements, known as its "Own Load". The power exchange can determine what the sum of the cost of operating all of the participants' systems under Own Load dispatch and can compare it with what it actually cost to serve those systems using central dispatch. Because central dispatch must be less costly or it would not take place, it is known as the pool's "economic dispatch" for "economy energy."

The savings from central economic dispatch go into a common fund, which is distributed to all participants, whether they were net contributors to or net beneficiaries of economic dispatch. The distribution is carried out in accordance with a formula agreed among the participants. It is considered a settlement among the participants.

The accompanying table provides an illustrative example of how central economic dispatch and settlement could work between two utilities. It is important to remember that the table shows only an example, and the rules of each power pool are determined by negotiation among the participants when they establish it.

Table 1. Power Pool Power Exchange and Savings Fund

Stand-alone v. Regional Dispatch

	Participant A			**Participant B**		
Hourly load	100 MWh			200 MWh		
Resources	MWh	Cost		MWh	Cost	
	100	$50	$5,000	100	$40	$4,000
	50	$20	$1,000	100	$30	$3,000
	150			50	$25	$1,250
				250		$8,250
Stand-alone Cost	50	$50	$2,500	50	$25	$1,250
	50	$20	$1,000	100	$30	$3,000
	100		$3,500	50	$40	$2,000
				200		$6,250
Cost for physical operation	50	$20	$1,000	250		$8,250
Regional Dispatch	50 from B			50 to A		
	100			200		
Combined cost A+B Stand-alone Dispatch			$3,500 + $6,250 =	$9,750		
Combined cost A+B Regional Dispatch			$1,000 + $8,250 =	$9,250		
Savings				$500		

Savings Fund operation

	A pays its own cost			B receives its own cost		
	50	$50	$2,500	50	$40	$2,000
				Pool Savings Fund Receives		$500
Pool Savings Fund allocated to participants		A Receives			B Receives	
			$175			$325
Cost			$3,325			$5,925
Savings			5.00%			5.20%
Marginal cost per MWh			$46.50			$33.50
Instead of			$50.00			$40.00

Table adapted from original in Jorgensen, G.E. and Felder, F.A. "New England Power Pool: A Bridge to Competition", *Public Utilities Fortnightly*, 133:13, July 1, 1995, pp. 47-51.

Under central economic dispatch, no utility ends up paying more than it would have under Own Load. It continues to recover capital and operating costs from its own customers. Economic dispatch relates primarily to the cost of fuel and thermal efficiency of the generators, generally merely a pass- through cost for a utility. Units with lower cost fuel and greater efficiency are dispatched before those using higher cost fuels with less efficiency. Traditionally, hydro, which has no fuel cost, is assigned a surrogate cost that is a small decrement from an agreed benchmark resource. Consequently, hydro is often the prime resource, because it is paid its surrogate fuel cost and it is virtually ideal for balancing purposes, because its generation can be easily varied.

The power exchange is the creature of the participants and is not independent except in the application of the agreed rules. In order to prevent any participant that might operate a power pool from gaming it to increase its benefits from the savings fund, a neutral and independent manager of the power exchange is essential.

Pool Transmission

Not only does each utility continue to determine its own generation mix, it has its own transmission system. It ensures that it has adequate transmission to serve its load, including connections, called "ties" with neighbouring systems.

As electricity passes by contract over neighbouring transmission systems, each charges for the use of its lines. The effect of adding the costs of each system is called "pancaking", and it increases the cost of the power delivered to its final destination. Pancaking inhibits some bilateral purchases and sales between utilities, and it can undermine the operation of the power exchange.

To eliminate pancaking, a single transmission tariff for use of transmission within the power pool is established. As with generation, each transmission owner is guaranteed that it will receive its costs from the single tariff. The power pool becomes the sole purchaser of transmission service from the owners and blends their costs into a single rate, by dividing their sum by the total regional load.

The load pays for its share of the transmission costs collected under the tariff. Because of the blending, some utilities' customers will pay more than they have previously and some will pay less. As a result, the single transmission rate may be phased in over a number of years.

Not all of a utility's transmission has to be included in the regional tariff. By agreement, each participant may maintain a separate tariff for certain lower voltage transmission on its system. If another party uses that transmission, it pays the host utility and the funds remain outside the single tariff calculation.

Transactions that do not serve the region's load or that originate outside of the region must pay the regional tariff rate. The resulting revenues are used to reduce the costs to the allocated to the regional load.

The pool dispatch ensures that participants can have access to economic supply from outside the region and from balancing relationships with neighbouring systems. This may produce better results than having a single utility control access to other systems.

Pre-existing payment arrangements that exist for the use of certain transmission lines may be grandfathered and allowed to run their course outside of the regional tariff. It is possible that

payments to support a transmission line may be derived from a combination of pool use and such special arrangements.

The scope of a power pool is limited by the amount of available transmission among participants. Perhaps the ideal transmission system for a pool is one in which power from any generator on the grid can serve any load on the grid without regard to location. This approach may require the greatest amount of transmission capacity, some of which will not be in use at any given moment.

A power pool can function satisfactorily with limited transmission capacity among participants. At any point in time, the power exchange includes as available an amount of generation equal to the capacity of the lines, known as the "tie transfer capacity". This capacity exists in either direction on a single transmission line or in both directions simultaneously. The power supply behind the transmission lines may include all of the generation on each participant's system. Power exchanges may take place from any generator to any load within the limits of the tie transfer capacity. When there is less than a fully free-flowing transmission availability, the power exchange has a more complex set of responsibilities in managing possible flows.

Major transmission linking participants must be available for the transfer of energy selected by the power exchange. As a result, at least a portion of all transmission will receive support from payments under the regional transmission tariff.

Because of the varying uses of the transmission grid, the mixed nature of support payments, and its use for transactions entering and leaving the region, it is essential to have a single manager of the system. Such a manager or operator will make generally available information on its operations, allowing review by participants.

If the regional transmission system is used for transactions with the U.S. market using its transmission, a Canadian system would have to comply with the open access provisions of American regulations. This requirement underpins non-discrimination among competing transactions, whether originating in Canada or the U.S., and allows for exports from the U.S. to Canada.

In summary, though development of a regional transmission tariff may require extensive negotiations, introducing such a tariff may be less difficult than expected for several reasons.

1. Existing transactions, no matter what their length, may be grandfathered using current transmission payment arrangements.
2. Transmission used for economic dispatch would be supported by load-ratio shares paid by utilities (in NEPOOL, these were called pool transmission facilities or PTF and were the precursor of the single regional tariff).
3. The regional tariff may be phased in over an extended period (in NEPOOL, a 12-year transition was adopted).
4. So-called local network transmission, usually below a certain voltage level, could remain under the control of each utility.
5. New regional transmission lines may be added gradually and subject to a mutually agreed transmission plan.
6. Atlantic Canada can draw on the experience of other regions with multiple

jurisdictions, which can simplify negotiations.

Emergency Operations

Participants should consider assigning to the pool management responsibility for the emergency procedures that are implemented to manage pool-wide power shortages. This responsibility can begin the process of recognizing the authority of the central dispatch before full operational control of the power system is transferred from the member control centers.

Planning

The needs of pool participants change over time. In order to ensure the availability of adequate generation and transmission, the power pool must include a planning component.

A coordinated planning process can help maintain a uniform set of planning guidelines and a uniform method for forecasting loads and transmission needs. This will prevent gaps arising because of the use of disparate approaches.

Each participant carries out its own forecasting and planning. A schedule for information exchange and joint review must be established to allow for the necessary resources to be in place in advance of need. The planning process encourages the participants to consider joint action that will promote greater efficiency resulting in economies.

Planning will consider economies of scale, siting of facilities, and timing, among other factors. With all participant plans under review while keeping such considerations in mind, the planning process serves to guide future additions and upgrades to generation and transmission. Perhaps most important, the process will allow the power exchange to maintain reliability as the system develops.

The planning process can be carried out through a participants' committee. The pool should have a small staff to support the effort and to review and report on the development of the separate and joint planning process.

Central Dispatch and Transmission Operations

Several functions of the pool, discussed above, would require a central staff.

The central dispatch agency – the power exchange – would operate the Pool designated resources as a single Control Area. It would be a full time, 24x7, control center that, on a minute-to-minute basis, would automatically and economically, using automatic generation control and economic dispatch computer programs, regulate the pool generation to a scheduled interchange with interconnected systems, in this case Quebec and New England. The center, also on a 24x7 basis, would monitor the transmission systems and interconnections to ensure that all power flows, voltage levels, and other essential elements are within pre-determined limits. Transmission limitations would be managed, if necessary, by dispatching generation out of rate (uneconomically).

Support functions assigned to the control center would ensure that the power system is operated economically and reliably. These support functions would include:

- Operations Planning staff would be a small engineering group with expertise in transmission load flow modeling, stability, voltage control, and overall expertise in transmission operations. This staff would:

- Provide real time operating guidelines,
- Provide temporary operating limits,
- Review transmission line out applications and forward temporary operating reports applicable for the "line out" conditions.

  Operations planning would also produce annual and five year generation and transmission maintenance schedules. These schedules would be developed with extensive input from participants. Generation and transmission maintenance scheduling standards, developed by participants and approved within the pool framework, would aid in assuring equal treatment for Pool participants.

- Load Forecasting and Interchange Scheduling staff would produce a daily power supply plan. That plan would include hourly loads, an hourly economic dispatch of generation, hourly interchange schedules, operating reserve resources, off-line equipment available and unavailable, and any other operating information applicable to the day's real time dispatch. The plan would be revised as conditions warrant, and eventually implemented by the generation and transmission controllers on a real time basis.

- Computer and Communications Support would be responsible for maintaining and keeping ready the real-time communications and computer systems, including hardware and software running in real time.

Governance

As a voluntary and cooperative arrangement and in the absence of federal or regional regulation[1], an Atlantic Power Pool must include governance provisions acceptable to all. They must allow for decisions to be made, but prevent any province or utility being the object of discrimination.

In negotiating the establishment of the Atlantic Power Pool, both provincial governments and Load-Serving Entities (LSEs) must be represented. The LSEs include NB Power, Emera (Nova Scotia Power), Maritime Electric, Nalcor (Newfoundland and Labrador Hydro), and Newfoundland Power.

Other LSEs are the municipal utilities in New Brunswick, Nova Scotia and P.E.I. They might choose to participate in negotiations and governance as a group or by acting within a framework established by each province. If they are all-requirements customers of the major utilities, the municipals may choose to be represented by them. Non-utility LSEs should be permitted to participate if they serve a load equal to the smallest municipal participant.

Initial agreement should require the assent of all governments and major utilities. At some point, decision-making should be turned over to a Management Committee with its voting rules to be determined by the initial negotiations. Appeal from Management Committee decisions would go to a Governing Board on which all four provinces would be represented.

* For discussion of regulatory approaches, see Weil, G.L., "Freeing the Flow: Proposals for Reform of Canadian Electric Industry Regulation," *AIMS Commentary*, November 2010.

As the Atlantic Power Pool develops, participants may choose to investigate the possibility of a form of regulation by an impartial panel.

Because the Pool would serve a public interest, its decisions and operations should be as open to public view as possible consistent with normal business confidentiality.

The Path to an Atlantic Power Pool

The creation of an Atlantic Power Pool would require a combination of negotiations and technical development. Proceeding from a decision in principle to create a power pool, there must be a continuous series of discussions among the participants supported by development of specific data, plans, and proposals. This process will require many months.

Table 2 illustrates a path that might be followed to create of the Atlantic Power Pool. While it may not include all necessary elements of the process in detail, it provides a good indication of the work to be done. Atlantic Canada has the advantage of being able to benefit from the work done over the years to create and operate power pools.

The process would be entirely cooperative. All provinces should agree on the creation and essential operations of the Pool.

The process would require a significant commitment of time and effort by participants. Because Pool rules would have to be developed through negotiations, talks should be regularly scheduled. In addition, participants should make the greatest possible use of the experience of earlier power pools.

The process would be gradual. The Atlantic Power Pool would be phased in both in terms of the assignment of responsibility to Atlantic Power Exchange (APEX) and the introduction of the regional transmission tariff. However, the participants would have agreed to an implementation schedule that could only be varied by an agreement among all so as to ensure that common goals were achieved.

Above all, the objective of the process should be to create a system that can produce benefits for all participants and their customers while being a simple as possible. An understandable system would contribute to both greater public understanding and support and a reduction in the possibility for disputes.

It is possible that the existence of APEX could lead to bilateral transactions among participants that would reduce the need for economy energy through the Pool. In effect, APEX could serve as an incentive for participants to achieve similar purposes through direct deals. The Pool should allow for such a development, provided it could be assured that participants were not misusing it to gain unjust advantage over others. It is unlikely that complex bilateral arrangements would be undertaken without APEX, because of the many parties that would have to administer all parts of transactions. And, in any case, APEX would play a valuable role to ensure reliability and balancing and to serve as a clearinghouse.

Table 2. The Path to the Atlantic Power Pool

- Appoint Interim Implementation Committee, (IIC) consisting of two (Utility/ Government) members each (and others, as appropriate), to evaluate the options and conclude by signing an Interim Agreement. Select a facilitator to manage agendas and negotiations. The Interim Agreement (IA) would cover (without details) the concept of implementing central use and dispatch of transmission and generation facilities, sharing of Implementation costs (prior to the time pool savings could cover the costs), the need to establish a central dispatch center for operations and settlement, the need for Interconnection Agreements with New England, Quebec, and arrangements/agreements with regional and continental reliability organizations.

- Appoint minimal staff reporting to the IIC, to:

    - Develop budgets
    - Locate the Central Dispatch Center
    - Develop a preliminary profile of the permanent staff required for initial operations.
        - Administrative, operators, computer hardware and software resources, and settlement resources
        - Staff training
    - Develop a preliminary set of tasks and time lines
        - A mutually coordinated emergency operations policy.
        - A coordinated transmission and generation annual maintenance schedule.
        - Begin the process to develop:
            - Rules for the uniform rating of transmission facilities.
            - Rules for the uniform rating of generators. Includes (but not limited to) high limits, low limits, automatic generation control, response rates for load changes.
            - Rules for the development of generator fuel costs upon which the thermal units would be dispatched
            - Rules (standards) for the uniform duration and allocation of annual generator maintenance outages.
            - Identifying transmission facilities under the control of central dispatch (critical flow-through facilities)
            - Policy on adding or subtracting facilities from central dispatch
            - Rules for the settlement process
            - Open Access Transmission Tariff
- Establish governance system
- Develop dispute resolution procedures
- Begin permanent staffing process
- Begin acquisition process for computer resources
- Begin design and vendor process for Center
- Implement training programs.

The Benefits of an Atlantic Power Pool to Participating Provinces

An Atlantic Power Pool can only be useful and viable if it produces benefits for its participants and through them to the consuming public.

As described, the Pool and especially APEX can be valuable to each of the four provinces, while not requiring any of them or the LSEs to concede to it any of the essential elements of ownership and control of its assets.

New Brunswick

The province has decided to end the NBSO and with it much of the market mechanism that had been created. It thus would restore more traditional utility operations with transmission continuing to be managed separately from generation.

As it saw fit, the province could continue to maintain its current generation assets, while the Pool could increase its access to potentially lower cost energy. It could choose to keep the Lepreau nuclear station as a Must-Run unit, not subject to Regional Dispatch or to be backed down.

In planning its long-term electric power future, the province could find that the availability of the Pool and APEX could provide a valuable element of flexibility and as a means to access reasonably cost energy.

With a power pool, NB Power would forego its role as gatekeeper for the region in its transactions with New England and beyond. By being assured, through a regional tariff, of cost recovery for its transmission system, the impact of this change should be minimized.

Like all other participating provinces, by sharing operating reserves through the Pool, economies could be achieved through a reduced burden in meeting its own needs.

Prince Edward Island

With little on-Island generation, P.E.I. is essentially a consumer. It relies heavily on supply from neighbouring provinces. To the degree that APEX can produce savings to suppliers, P.E.I. should realize a benefit in lower purchased power costs.

With access to hydropower, which can strengthen the availability of wind generation, P.E.I. like other provinces with wind generation potential can benefit from the increased access to hydro that may be facilitated by the Pool.

Nova Scotia

With the end of production from coal-fired generating units, Nova Scotia would not be able to meet its own power supply needs. As it turns to the supply from outside the province, it can benefit from a dispatch system that reduces the cost of energy.

At the same time, given its location, the development of an Atlantic Power Pool puts Nova Scotia at its center. Over time, its location could create the opportunity to add transmission facilities, adding to the utility's revenues as it loses capital base with the retirement of generators.

As with other provinces, the power situation is now changing in Nova Scotia, and the Pool could provide answers to some supply challenges and offer new opportunities.

Newfoundland and Labrador

With the development of Lower Churchill and its interconnection with both Nova Scotia and Hydro Quebec, the province could realize substantial benefit from the Pool and especially APEX.

Its vast hydro resource is ideal for supplying energy through APEX in terms of cost, balancing and reliability. The province can realize revenues from any of its hydropower that is not otherwise committed. Given the scope of the power supply, the possibility of storage and the inherent characteristics of hydropower, the Pool could make the province into the key player in the Atlantic Canada region without forcing any other province to relinquish its own goals and resources.

Revenues derived from hydropower sales through the Pool could offset some of the costs of developing Lower Churchill.

Though Newfoundland and Labrador would not be connected to the grid at the outset, the province should fully participate in all aspects of the creation, development, and operations of the Pool.

Note on Northern Maine

Four northern Maine utilities – one owned by Emera and three consumer-owned utilities – are connected only to the continental grid through New Brunswick. They are subject to Maine and FERC regulation. They operate a minimal market and have used New Brunswick for reliability and balancing. The relationship of northern Maine, with a load comparable to P.E.I.'s, might be considered in the initial negotiations to explore its inclusion in the Pool and the nature of its participation.

The Atlantic Power Pool and the Future of Interprovincial Relationships

The proposed Pool is intentionally limited to provide a valuable means of cooperation without change to current provincial authority. It can be an effective tool to draw benefit from the interconnected regional power grid.

More importantly, an Atlantic Power Pool could create the opportunity for greater efficiency, savings and reliability for regional utilities with benefits for both customers and economic development in each province. It can serve as a path to closer regional cooperation.

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The authors of this report have worked independently and are solely responsible for the views presented here. The opinions are not necessarily those of the Atlantic Institute for Market Studies, its Directors, or Supporters.

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