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Admitted in: MA, ME, NH

May 24, 2019

James R. Beyer
Maine Dept. of Environmental Protection
28 Tyson Drive
Augusta, ME 04333

RE: NECEC – Comments of Central Maine Power Company

Dear Jim:

On behalf of CMP, I am enclosing the Response of CMP to the Group 4 May 9, 2019 Comments Regarding Greenhouse Gas Emissions Reductions.

Sincerely,

Matthew D. Manahan

Enclosures
cc: Service Lists

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY	)
NEW ENGLAND CLEAN ENERGY CONNECT	)
#L-27625-26-A-N/#L-27625-TG-B-N/	)
#L-27625-2C-C-N/#L-27625-VP-D-N/	)
#L-27625-IW-E-N	)

RESPONSE OF CENTRAL MAINE POWER COMPANY TO THE GROUP 4 MAY 9, 2019 COMMENTS REGARDING GREENHOUSE GAS EMISSIONS REDUCTIONS

On May 9, 2019, Intervenor Group 4 (Natural Resources Council of Maine (NRCM)) submitted comments arguing that the Maine Department of Environmental Protection (DEP) should consider the impacts of the New England Clean Energy Connect (NECEC) on regional greenhouse gas (GHG) emissions as part of its permitting decision (NRCM's Comments). NRCM's Comments also reiterated NRCM's earlier allegations that the NECEC will not reduce regional GHG emissions and argued that CMP's assertions that the NECEC will result in regional GHG reduction benefits are unsubstantiated, misleading, or false.[1]

As discussed in CMP's January 29, 2019 letter to Presiding Officer Miller and as summarized below, GHG emissions are not directly relevant to DEP's approval criteria and should not be considered in the DEP's decision regarding CMP's September 2017 Site Location of Development Act (Site Law) application and Natural Resources Protection Act (NRPA) application (collectively, applications). Nevertheless, to the extent DEP determines

[1] May 9, 2019 Group 4 Comments on NECEC at 1-2. On May 13, 2019, the Presiding Officers ruled that the Parties to this proceeding may file a response to the Group 4 submittal pertaining to GHG emissions, by May 24, 2019.

that GHG benefits should be considered in determining the reasonableness of the Project's impact (if any) on certain resources, the DEP should give great weight to the May 3, 2019 Order of the Maine Public Utilities Commission (MPUC Order), which approved a certificate of public convenience and necessity (CPCN) for the NECEC. In issuing the MPUC Order, the MPUC considered substantial evidence from three different experts on whether the NECEC would result in regional GHG reduction benefits, as well as many of the same arguments presented in NRCM's Comments, and concluded that the Project will reduce regional GHG emissions. NRCM's failure in NRCM's Comments to mention the existence of the MPUC's Order, much less the MPUC's findings regarding many of the issues that NRCM raised in the Comments, is a critical omission.

I. The NECEC's GHG emissions reduction impacts are not within the DEP's review criteria.

The Project's GHG emissions reduction benefits, while substantiated, are not relevant to the DEP's review criteria. Yet NRCM continues to stretch – beyond their clear intent – the DEP's regulations in an attempt to vest in the DEP with a "broad authority" to review such benefits that is found nowhere in statute or DEP rule. In so doing, NRCM relies exclusively on Chapter 375, Section 2(B), which provides that the DEP shall consider all relevant evidence "in determining whether the proposed development will cause an unreasonable alteration of climate." However, regulations are not to be read in a vacuum, and NRCM's failure to mention, let alone consider, the statutory standard that engendered this provision and that clearly delineates its scope, is telling.

The Chapter 375 regulations "describe the scope of review of the Department in determining a developer's compliance with the 'no adverse effect on the natural

environment' standard of the Site Location Law (38 M.R.S.A. Section 484(3))."[2] That statutory standard provides that DEP "shall approve a development proposal whenever it finds [that the] developer has made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities."[3]

Because the statute undoubtedly is aimed at potential nearby climate impacts ("in the municipality or in neighboring municipalities"), and not global GHG emissions reductions, it is no surprise that the DEP's Chapter 375 regulations are similarly limited in scope. Specifically, Section 2, which addresses "alteration of climate," considers "large-scale, heavy industrial facilities, such as power generating plants," and those facilities' potential "to affect the climate in the vicinity of their location by causing changes in climatic characteristics such as rainfall, fog, and relative humidity patterns." At the September 7, 2018 prehearing conference, Assistant Attorney General Bensinger noted that these provisions are limited to consideration of impacts from the specific development being proposed, and whether it would have climate impacts "in the vicinity of" the development's location. In other words, the rule limits consideration of climate impacts to any such impacts that result from the development itself, in its location – not from distant benefits or impacts attributable to a product that will pass through the development (such as electricity or goods sold at a store).

[2] *See* Chapter 375 Summary.

[3] 38 M.R.S. § 484(3) (emphasis added).

Even if Chapter 375, Section 2(B) were to apply to the Project's impacts beyond its localized effects, this language still does not require the DEP to review whether the Project will reduce GHG emissions. Rather, this wording speaks to a project causing an "unreasonable alteration of climate," not potentially reducing an impact on climate by providing additional renewable energy. NRCM does not and cannot allege that the Project will actually cause climate alteration, which is the undeniable purpose of the Chapter 375 regulations.

For the foregoing reasons, the Presiding Officer has twice rejected NRCM's attempt to include GHG emissions as a hearing topic.[4] Nevertheless, and because NRCM has continued to argue that the NECEC will not produce GHG emissions reduction benefits, CMP responds to NRCM's Comments as follows.

II. NRCM's failure to reference the findings and conclusions of the MPUC Order in NRCM's Comments is misleading.

CMP filed its petition for a CPCN with the MPUC pursuant to 35-A M.R.S. § 3132 on September 27, 2017. Over the last year and a half, CMP and numerous parties, including NRCM, have actively participated in the CPCN proceeding at the MPUC, during which the MPUC heard extensive testimony and evidence on the issue of whether the NECEC would result in regional GHG emissions reductions. Three different experts, including CMP's expert Daymark Energy Advisors, the Generator Intervenors'[5] expert, Energyzt Advisors, LLC (Energyzt), and the MPUC's independent expert, London Economics International

[4] The Presiding Officer rejected NRCM's arguments at the September 7, 2018 prehearing conference, and again in the October 5, 2018 procedural order. The Maine Land Use Planning Commission determined that the Project's impact on greenhouse gas levels "does not relate to the Commission's role or review criteria." LUPC Third Procedural Order ¶ II.B.

[5] The Generator Intervenors are Calpine Corporation, Vistra Energy Corporation, and Bucksport Energy LLC.

(LEI), presented reports that modeled the Project's regional GHG emissions impacts.[6] Additionally, NRCM, along with the Maine Renewable Energy Association (MREA), and the Sierra Club, retained the Generator Intervenors' expert, Energyzt, to produce an additional study of the NECEC's GHG impacts.[7] This study came to the same conclusions as the report conducted for the Generator Intervenors, but NRCM never directly submitted the study to the MPUC and has not offered the study to the DEP.[8] Finally, many parties, including NRCM, briefed the issue of whether the NECEC would reduce regional GHG emissions. In those briefs, NRCM, the Generator Intervenors, and NextEra Energy Resources (NextEra) raised many of the same arguments that NRCM included in NRCM's Comments.

On May 3, 2019, almost a week before NRCM filed NRCM's Comments in this proceeding, the MPUC issued a 100-page order approving the CPCN for the NECEC. In that Order, the MPUC found that the CPCN statute required the MPUC to make specific findings with regard to the public need for the proposed transmission line, taking into account certain specific factors including, among others, state renewable energy generation goals.[9] The MPUC also found that Title 38, Chapter 3-A, the climate change statute that establishes

[6] MPUC Order at 70.

[7] MPUC Docket No. 2017-00232 January 8, 2019 Hearing Transcript at 6:11-7:2 (Hearing Testimony of Generator Intervenor Witnesses Tanya Bodell and James Speyer acknowledging that they also worked on and produced the October 2018 GHG Report for NRCM, MREA and the Sierra Club). See the October 2018 Energyzt Report, "Greenwashing and Carbon Emissions: Understanding the True Impacts of New England Clean Energy Connect," produced for NRCM, MREA and the Sierra Club, available in the MPUC case management system (CMS) under Docket No. 2017-00232 at CMS entry 429.

[8] Ms. Carol Howard, a non-party to the MPUC proceeding, who provided public witness testimony at the October 17, 2018 public witness hearing, submitted the Energyzt Report as Exhibit F to her testimony. *See* MPUC Docket No. 2017-00232, CMS entry 429.

[9] Section 3132(6) requires the MPUC, in determining public need, to, at a minimum, take into account economics, reliability, public health and safety, scenic, historic, and recreational values, state renewable energy generation goals, the proximity of the proposed transmission line to inhabited dwellings, and alternatives to construction of the transmission line, including energy conservation, distributed generation, or load management. CPCN Order at 17.

GHG reduction targets, and Chapter 3-B, which authorizes Maine's participation in the Regional Greenhouse Gas Initiative (RGGI), fall within the MPUC's consideration of state renewable energy goals because, when taken together, those statutes address various renewable energy-related goals, including supply diversity and reliability, and GHG emission reductions.[10]

As summarized in more detail below in Section III, after considering all of the evidence submitted in the MPUC proceeding and the arguments presented in testimony and in the briefs, the MPUC found that the NECEC "will result in significant incremental hydroelectric generation from existing and new resources in Québec and, therefore, will result in reductions in overall GHG emissions through corresponding reductions of fossil fuel generation (primarily natural gas) in the region."[11] The MPUC further concluded that because it found that the NECEC will result in incremental hydroelectric generation, it follows that the Project will also provide GHG emissions reduction benefits in the region.[12] Although the MPUC stated that the GHG reductions resulting from the NECEC could not be precisely determined due to the "inherent uncertainty in determining how HQ Production will develop and operate hydroelectric facilities over the next 20 years and beyond," the MPUC noted that the expert analyses provided in the MPUC proceeding indicate that the GHG emission reductions in the region resulting from the NECEC will be in the range of approximately 3.0 to 3.6 million metric tons per year, and included those GHG reduction levels in its summary of the benefits of the Project.[13]

[10] CPCN Order at 23.

[11] Order at 71.

[12] Order at 72.

[13] Order at 7 (Figure I.1), 71-72.

Despite the fact that the MPUC's Order directly addressed many of the points raised in NRCM's Comments, NRCM did not discuss the MPUC's findings and conclusions in NRCM's Comments, nor did NRCM even mention the existence of the MPUC Order. This is surprising because NRCM asserts that selected testimony submitted in the underlying MPUC proceeding demonstrates that the NECEC does not have GHG emissions benefits, yet NRCM does not acknowledge that the MPUC, after considering that evidence and other evidence submitted in the MPUC proceeding, concluded that the NECEC will result in overall GHG emissions reductions in the region.[14] NRCM's failure to mention the MPUC Order in NRCM's Comments is also surprising given that NRCM argues in NRCM's Comments that the DEP should give weight to the New Hampshire Site Evaluation Committee's (NH SEC's) decision in the Northern Pass proceeding -- even though the Northern Pass project is not the same project as the NECEC -- because the NH SEC "faced this same question of whether an HVDC transmission line bringing a similar amount of power from Hydro-Québec in Canada . . . would reduce greenhouse gas emissions."[15] However, NRCM completely ignores the fact that a sister agency in Maine also "faced this same question" with respect to the NECEC, the very same project that the DEP is considering here, the MPUC evaluated the very same testimony and evidence that NRCM cites in NRCM's Comments (as well as additional evidence that NRCM did not discuss), and concluded that the NECEC will result in overall GHG emissions reductions in the region.

[14] NRCM's Comments at 7-9, 12.

[15] NRCM's Comments at 2. CMP notes that despite NRCM's claims that the NH SEC faced the same question, there is no evidence in this record from which the DEP could determine what evidence was before the NH SEC and whether the NH SEC's decision is applicable here.

NRCM has actively participated in the MPUC proceeding for over a year and a half and was well aware of the issuance of the MPUC's order, yet chose to pretend it does not exist even though it is directly relevant to the issues NRCM raised in NRCM's Comments. CMP finds this particularly ironic given that NRCM alleges in the introductory section of NRCM's Comments that CMP's claims are misleading.

III. NRCM's diversion arguments were considered and rejected by the MPUC and are inconsistent with Hydro-Québec's statements and rational economic decision-making.

NRCM's argument that the NECEC will not result in overall reductions of GHG emissions is premised on the assertion that in order to supply the energy to Massachusetts via the NECEC, Hydro-Québec will divert energy exports from existing markets to satisfy its NECEC obligations under the power purchase agreements (PPAs).[16] In support of this diversion argument, NRCM quotes from the testimony of Dean M. Murphy of the Brattle Group, the witness for the Massachusetts Attorney General (MA AG) in the pending NECEC proceeding before the Massachusetts Department of Public Utilities (MA DPU). Mr. Murphy's DPU testimony summarized the diversion argument, stating that if Hydro-Québec satisfied its NECEC obligations by reducing its exports to other regions rather than by increasing clean energy generation overall, then global GHG emissions would not necessarily be reduced because reduced deliveries to other regions may need to be replaced by additional fossil fuel generation in those regions.[17] NRCM also cites to Mr. Murphy's argument that Hydro-Québec could, under the terms of the proposed contracts, meet its contractual obligations to the NECEC by simply shifting electricity away from

[16] NRCM's Comments at 3-5.

[17] NRCM's Comments at 4 (citing Direct Testimony of Dean W. Murphy (Brattle Group), witness for the Massachusetts Attorney General, DPU 18-64 18-65 18-66, p. 15 of 27 (Dec. 21, 2018)).

existing customers, particularly customers in New York and New Brunswick, because Massachusetts would pay more for Hydro-Québec's electricity under the proposed NECEC PPAs.[18] Finally, NRCM cites to the Sierra Club's initial brief to the MA DPU alleging that because the PPAs do not ensure that the underlying generation is incremental to what Hydro-Québec's dams are already producing the contracts fail to guarantee any real world GHG emissions benefits.[19]

These are not new arguments. In fact, the NECEC Project opponents filed testimony and briefs asserting this diversion argument in the MPUC proceeding.[20] In the MPUC's final Order, however, the MPUC declined to credit this argument and instead found the following:

> *The Commission concludes that the NECEC will result in significant incremental hydroelectric generation from existing and new resources in Québec and, therefore, will result in reductions in overall GHG emissions through corresponding reductions of fossil fuel generation (primarily natural gas) in the region.* In making this decision, the Commission recognizes the inherent uncertainty in determining how HQ Production will develop and operate hydroelectric facilities over the next 20 years and beyond; thus, the levels of incremental hydroelectric generation and GHG reductions resulting from the NECEC cannot be precisely determined.
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> In support of this conclusion, the Commission observes the representations made by Hydro-Québec in Kelly-004-001 that it was a lack of transmission

[18] *Id.* at 3.

[19] *Id.* at 5-6.

[20] See MPUC Order at 71 summarizing diversion arguments and testimony from intervenors ("GINT, NextEra, NRCM, and Ms. Kelly argue that the NECEC would not have any meaningful GHG reductions benefits, and, in fact, would increase GHG emissions because HQ Production would divert energy from other regions to serve its obligations under the NECEC. GINT Initial Br. at 71-73; NextEra Initial Br. at 15-19; NRCM Initial Br. at 14-16; Kelly Initial Br. at 9-11. GINT and NextEra support this position by asserting that the PPAs with the MA EDCs do not actually require HQ Production to fulfill its obligations with incremental hydroelectric generation. GINT argues that HQ Production spilled water for reasons other than those stated by Hydro-Québec, arguing that Hydro-Québec has more than enough physical transmission available to export that energy to market. GINT Initial Br. at 70-73. GINT asserts, based on the testimony of Ms. Bodell and Mr. Fowler, that because Hydro-Québec did not do so, that there were other non-transmission constraints that led to the spillage (e.g., reservoir management, multi-year smoothing, opportunity cost). *Id.*").

> that resulted in the spilling of a substantial amount TWh in 2017 and 2018 (4.5 TWh worth of energy in 2017 and 10.4 TWh worth of energy in in 2018). Hydro-Québec represented, further, that, "without additional transmission export capability," a comparable amount of water will be spilled in future years. *Id.* This conclusion is supported by both the Daymark and LEI analyses, as well as through LEI's testimony stating that HQ Production has surplus capacity and the NECEC will provide a means to sell that surplus capacity into New England. CMP Exh. NECEC-5 at 4; LEI Report at 12; Hearing Tr. at 127-128 (October 19, 2018). The Daymark and LEI testimony, thus, corroborate the Hydro-Québec statements in this regard.
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> Furthermore, HQ Production, as a rational economic actor, will seek to maximize profits, and therefore will use whatever water it has available to generate energy for the NECEC rather than using the NECEC to divert energy from existing markets into New England. In addition, the Commission agrees with CMP that HQ Production has systematically increased capacity and storage capability over time in response to market signals for more clean energy. Dickinson, Stinneford, and Escudero Reb. Test. at 30-35 and Figures 4 and 5; CMP Initial Br. at 107. *Thus, the Commission finds that the generation imported into New England over the NECEC is likely to be incremental at least to a large degree, and not, in any significant way, be simply diverted from other markets.*
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> . . .
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> *Therefore, because the Commission finds that the NECEC will result in incremental hydroelectric generation, it follows that the Project will also provide GHG emissions reduction benefits in the region.* As noted above, the expert analyses provided in the record in this proceeding indicates that the GHG emission reductions in the region resulting from the NECEC would be in the range of approximately 3.0 to 3.6 million metric tons per year, which as noted above, is equivalent to removing approximately 700,000 passenger vehicles from the road.[21]

In NRCM's Comments NRCM alleges that because the NECEC will be supplied by existing resources, the operation of the NECEC will cause Hydro-Québec to deliver less exports to existing markets.[22] CMP agrees that the NECEC will be served by existing Hydro-

[21] MPUC Order at 71-72 (emphasis in italics added).

[22] NRCM's Comments at 7-8.

Québec resources.[23] However, this does not lead to the conclusion that Hydro-Québec's exports to other markets will be reduced. As the MPUC observed in its Order, there is credible evidence that Hydro-Québec is currently spilling the equivalent of 10.4 TWh of water from existing resources due to lack of economic transmission, and Hydro-Québec has stated that, "without additional transmission export capability," a comparable amount of water will be spilled in future years.[24] Thus, this evidence shows that if Hydro-Québec ceases to spill that water and feeds it though the turbines, Hydro-Québec's existing resources have additional generation capacity to supply the NECEC without diverting exports from other markets.[25]

Furthermore, it was undisputed in the MPUC proceeding that Hydro-Québec is adding 500 MW of capacity upgrades at existing hydro facilities (such as the replacement of aging turbines with more efficient, new equipment) that are expected to be in service by 2025.[26] These existing resources can be used to supply the NECEC or to maintain and grow

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[23] See Section 4.1. of the PPA stating that "all Deliveries of Energy and associated Environmental Attributes must be produced by the Hydro-Québec Power Resources that are specified in Exhibit A and Delivered in accordance with this Agreement." MPUC Exhibit NECEC-16 at § 4.1 and Exhibit A (Power Purchase Agreement for Firm Qualified Clean Energy from Hydroelectric Generation Between Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid and H.Q. Energy Services (U.S.) Inc. (Jun. 13, 2018)).

[24] MPUC Order at 71.

[25] Additionally, CMP submitted testimony in the MPUC proceeding that publicly available information shows that HQ Production currently has excess energy available to supply the NECEC without diverting energy from other markets into New England. Rebuttal Testimony of Thorn Dickinson, Eric Stinneford and Bernardo Escudero, MPUC Docket No. 2017-00232 (July 13, 2018) (Dickinson, Stinneford and Escudero Rebuttal) at 25-35. CMP attached the Dickinson, Stinneford and Escudero Rebuttal as Attachment VII to its March 25, 2019 Comments to the DEP Regarding Greenhouse Gas Emissions Reductions.

[26] MPUC Order at 72 ("In addition, the Commission agrees with CMP that HQ Production has systematically increased capacity and storage capability over time in response to market signals for more clean energy. Dickinson, Stinneford, and Escudero Reb. Test. at 30-35 and Figures 4 and 5; CMP Initial Br. at 107. Thus, the Commission finds that the generation imported into New England over the NECEC is likely to be incremental at least to a large degree, and not, in any significant way, be simply diverted from other markets."). *See also,* Exhibit CLF-14, MPUC Docket No. 2017-00232 (Hydro-Québec listing of pending projects to create additional generation capacity resulting from upgrades to the existing hydroelectric generation facilities); Rebuttal Testimony of Thorn Dickinson, Eric Stinneford and Bernardo Escudero, PUC Docket No. 2017-00232 (Jul. 13, 2018) (Dickinson, Stinneford and Escudero Rebuttal) at 30-31; *see also* Corrected Supplemental Testimony of

Hydro-Québec's exports to other markets. Hydro-Québec is also constructing a new 245 MW hydropower generation facility, the Romaine-4 unit, that is expected to be in service in 2020.[27] Although Romaine-4 is a new unit that is not included in the list of existing resources that will supply the NECEC, the additional energy generation that will be available once the Romaine-4 unit is in service can be exported to other markets, freeing up additional hydroelectric generation from existing Hydro-Québec resources to supply the NECEC without reducing the overall level of exports to those other markets.

Accordingly, the MPUC correctly found that the evidence demonstrated that the generation imported into New England over the NECEC was likely to be incremental at least to a large degree, and not in any significant way simply diverted from other markets.[28] In coming to this conclusion, the MPUC acknowledged that HQ Production, as a rational economic actor, will seek to maximize profits, and therefore will use whatever water it has available to generate energy for the NECEC rather than using the NECEC to divert energy from existing markets into New England.[29]

The MPUC's conclusion that the energy supplied to the NECEC will be incremental is supported by Hydro-Québec's recent statements and its own strategic plan. In a May 20, 2019 letter to Governor Mills and the Leadership of the Maine Legislature, attached hereto as **Attachment I**, Hydro-Québec's President and Chief Executive Officer, Éric Martel,

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(Footnote continued)

William S. Fowler and Tanya L. Bodell, PUC Docket No. 2017-00232 (Dec. 10, 2018) (Fowler and Bodell Supplemental) at 27:1-9 (referencing Romaine-4 coming online in 2020 and Hydro-Québec Production's anticipated upgrades of 500 MW in 2025); Speyer Direct Testimony, Exhibit JMS-3 (Technical Report, Hydro-Québec Exports) at 10, Figure 8 ("Romaine-4 would add another 245 MW of capacity and 1.3 TWh of energy.") (Apr. 2018).

[27] *Id.*

[28] *Id.* at 72.

[29] *Id.*

provided additional information regarding Hydro-Québec's available and projected energy supply. Mr. Martel indicated that over the past 15 years, Hydro-Québec has been substantially expanding its generation capacity by adding approximately 5,000 MW of new hydropower "to be prepared to contribute to the clean energy transition that is now underway in the Northeast."[30] As a result, Mr. Martel stated that:

> We are now in a position to appropriately respond to solicitations such as those initiated in New England in recent years. Our projections show that we have sufficient energy to maintain existing export levels, serve all of the commitments of the Massachusetts contracts – and do more.[31]

Furthermore, Mr. Martel stated that growth is a key component of Hydro-Québec's strategic plan, which includes increasing electricity exports to all of its markets. Mr. Martel indicated that he expects Hydro-Québec's hydropower development and enhancement cycle to continue if its hydropower is valued by external markets, and that Hydro-Québec currently has over 950 MW of projects within existing facilities in its scheduling queue that would increase Hydro-Québec's generation capacity, particularly during the coldest winter months, and give Hydro-Québec more flexibility throughout the year.[32] Mr. Martel stated that Hydro-Québec is also considering the addition of new clean energy generation projects in Québec, including wind farms and another hydropower facility.[33] And, finally, Mr. Martel indicated that the efficiency and demand-side measures that Hydro-Québec's distribution division has implemented in recent years have "freed up close to 9 terawatt hours of

[30] Éric Martel Letter to Governor Mills, Senate President Jackson, House Speaker Gideon, Senate Minority Leader Dow, and House Minority Leader Dillingham at 2 (May 20, 2019).

[31] *Id*.

[32] *Id.*

[33] *Id.*

energy, and there is much more potential for energy savings in the future."[34] Accordingly, there is strong evidence upon which to conclude that Hydro-Québec will have sufficient energy to supply the NECEC Project without diverting exports from existing markets.[35]

Mr. Martel's letter is also consistent with Hydro-Québec's Strategic Plan for 2016-2020, which was submitted as an exhibit in the MPUC proceeding and is attached hereto as **Attachment II.** Specifically, the Strategic Plan indicates that one of Hydro-Québec's key objectives is to "Lay the groundwork to double our revenue over the next 15 years so as to increase profits."[36] In order to achieve its objectives, two of Hydro-Québec's four key growth strategies are to increase exports and to increase the capacity of its generating fleet.[37] In fact, Hydro-Québec's plan to increase exports includes the following action items:

- Ensure a sustained market presence;
- Remain on the lookout for opportunities to sell hydropower profitably, especially in the U.S. Northeast and Ontario;

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[34] *Id.*

[35] This is also supported by other statements Hydro-Québec has made. For example, in a recent newspaper article in the Bangor Daily News addressing the diversion claim, Hydro-Québec stated that "It would be illogical for Hydro-Québec not to maximize its exports . . . . Through our strategic plans over the past 20 years, we have clearly demonstrated our objective of increasing our exports." *No Guarantee $1 Billion CMP Line will Deliver New Energy, Massachusetts AG Warns,* Bangor Daily News (May 16, 2019) (quote from Hydro-Québec Spokesperson Lynn St. Laurent), available at https://bangordailynews.com/2019/05/16/mainefocus/no-guarantee-1-billion-cmp-line-will-deliver-new-energy-massachusetts-ag-warns/.

[36] MPUC Docket No. 2017-00232, Exhibit NECEC-54 (Hydro-Québec, *Strategic Plan 2016-2020 Setting New Sights with Our Clean Energy*) at page 23 of 44 ("Our objectives and strategies at a glance . . . Objectives: - Lay the groundwork to double our revenue over the next 15 years so as to increase profits, - Be a benchmark in customer service, - Contribute to Québec's economic development and energy transition, - Keep rate increases lower than or equal to inflation.").

[37] *Id.* ("Our objectives and strategies at a glance . . . Strategies . . . 4. Develop new growth avenues: - Increase exports, - Acquire assets or stakes outside Québec, - Commercialize our innovations, and – Increase the capacity of our generating fleet"); *see also, id.* at page 18 ("We need to grow in order to contribute more to the prosperity of Québec. . . . We need to find new growth avenues if we're to improve our performance. We'll focus on *seizing new export opportunities*, acquiring assets or stakes outside Québec, and commercializing our innovations.") (emphasis added).

- Promote the attributes of clean, renewable energy to customers as part of the solution to climate change;
- Participate in initiatives that will help develop promising markets, such as transmission projects outside Québec.[38]

Accordingly, Hydro-Québec's own statements and its strategic plan to maximize export opportunities support the MPUC's finding that the NECEC energy will be incremental and not diverted from other markets.

Finally, NRCM's allegation that Hydro-Québec will divert exports from existing markets to supply the NECEC is inconsistent with rational economic decision-making. The Massachusetts EDCs addressed Hydro-Québec's economic market incentives in their MA DPU reply brief, stating:

> It would make little sense from HQUS's point of view to spend large amounts of time and energy to bid for and negotiate the PPA, only to offset profits from sales over NECEC by reducing profits from its baseline sales. It would make even less sense for HQUS to spend significant amounts of its own money building the Canada portion of the transmission line if it merely intended to offset its profits in this way.[39]

There is no dispute that Hydro-Québec is a rational economic actor that has the incentive to get the highest price for the largest volume of energy it can sell.[40] It would not

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[38] *Id.* at 34 of 44 ("Develop new growth avenues: Increase Exports"); *see also, id.* at page 19 of 44 (stating "For us to be able to export more, new transmission facilities are needed. . . . [W]e still have growth opportunities because markets outside Québec want to reduce their GHG emissions" and "[s]ome of these growth opportunities will require the construction of transmission facilities in the U.S. and Québec.").

[39] MA DPU Docket Nos. 18-64, 18-65, 18-66, Joint Reply Brief on Behalf of Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid, NStar Electric Company d/b/a Eversource Energy, and Fitchburg Gas and Electric Light Company d/b/a Unitil at 10 (Apr. 3, 2019).

[40] MPUC Order at 72 ("Furthermore, HQ Production, as a rational economic actor, will seek to maximize profits, and therefore will use whatever water it has available to generate energy for the NECEC rather than using the NECEC to divert energy from existing markets into New England."); MPUC Docket No. 2017-00232 September 19, 2018 Technical Conference Transcript at 62:21-63:7 ("MS. FRAYER [LEI]: . . . So to the extent that there is available energy that doesn't make sense economically to store, Hydro-Québec Production would be selling it in another export market if NECEC wasn't available. MS. BODELL [Generator Intervenor Witness

be economically rational for Hydro-Québec to spend $475 million to construct the transmission lines for the NECEC Project on the Québec side of the border,[41] and to pay for the transmission service over the NECEC for 110 MW in years 1-20 and to pay for the transmission service over the NECEC for 1200 MW in years 21-40, if all Hydro-Québec intends to do is export the same amount of energy that it currently exports, or even more illogically, sell the same amount of energy to Massachusetts that it currently sells in the ISO-NE wholesale energy market.

Accordingly, the substantial evidence submitted in the MPUC proceeding, Hydro-Québec's own statements, and the MPUC's findings in the CPCN Order weigh heavily in favor of the conclusion that the NECEC contract energy will be incremental and that the NECEC will result in overall reductions of GHG emissions in the region.[42]

In light of the MPUC's finding that the energy Hydro-Québec will export to New England via the NECEC will be additional incremental energy and not just exports that are diverted from other markets, the evidence in the record of the MPUC proceeding

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(Footnote continued)

conducting questioning]: Thank you. And that's because Hydro-Québec's motivated to sell whatever energy it can into other markets. Correct? MS. FRAYER: I wouldn't argue with it. I guess the question is what we each mean in our own vocabulary by motivated. I would say if Hydro-Québec Production has surplus generation that it can monetize value of, it would be rationally motivated to sell that energy.); MPUC Docket No. 2017-00232 June 28, 2018 Technical Conference Transcript at 27:11-32:2 (Generator Intervenor witness Mr. Speyer stating that Hydro-Québec, "as a rational actor, they do try to maximize energy . . . ."). MPUC Docket No. 2017-00232 January 11, 2019 Hearing Transcript 46:5-47:2 (NextEra witness Christopher Russo stating that Hydro-Québec is "a crown corporation with their own economic interest."); MPUC Docket No. 2017-00232 NextEra Witness Robert Stoddard Surrebuttal Testimony at 12:21-13:2 (Sept. 15, 2018) ("HQ is an active participant in the regional energy markets . . . [and has] historically been able to make substantial spot or short-term sales to maximize the value of its energy export."); MPUC Docket No. 2017-00232 NextEra Witness Christopher Russo Direct Testimony at 13:7-17 (Apr. 30, 2018) (". . . HQ like every company, makes decisions with its own interests in mind . . .").

[41] *See* MPUC Docket No. 2017-00232, CMP Response to ODR-013-001 Attachment 1 (estimating the cost of the Québec line investment at $475 million) (Aug. 13, 2018); Surrebuttal Testimony of Robert B. Stoddard at Page 12 of 17: 7 – 8 ("Taken on balance, I estimate that the Canadian transmission facilities will cost about half of the U.S. facilities.") (Aug. 15, 2018).

[42] *Id.* at 71-72.

demonstrates that this NECEC energy will result in GHG reductions not only in New England, but also in export markets in the Northeast and in Canada.[43] As Daymark explained in their July 2018 Rebuttal Testimony in the MPUC proceeding,[44] the work papers of the Generator Intervenors' own Energyzt analysis that were submitted during discovery in the MPUC proceeding demonstrate that, if you assume that the NECEC energy is incremental, the NECEC will result in GHG reductions not only in New England, but also in other markets such as the New York ISO, PJM, and Ontario.[45]

As shown in Table 4 to Daymark's Rebuttal, which is reproduced below, in the scenario where the NECEC energy is incremental energy provided to New England, the Generator Intervenors' own expert determined that the NECEC would result in approximately 4.2 million metric tons of GHG reductions across the modeled region, and each of the sub-regions, except for the Midcontinent Independent System Operator (MISO), also experience reductions in CO_2 emissions:

Table 4. GI analysis of regional CO_2 emissions, NECEC as incremental energy

	Carbon Emissions (MT)		Net Carbon Emissions Impact
State/Region	Without NECEC	With NECEC	MT
ISONE	26,808,907	23,287,431	(3,521,476)
NYISO	25,820,742	25,520,246	(300,496)
PJM	396,772,050	396,422,315	(349,735)
MISO	351,004,059	351,049,282	45,223
Ontario	3,600,282	3,553,804	(46,478)
NE+NY+PJM+MISO+IESO	804,006,040	799,833,078	(4,172,962)

[43] Rebuttal Testimony of Daymark Energy Advisors, PUC Docket No. 2017-00232, at 42-43 (Jul. 13, 2018) (Daymark Rebuttal).

[44] Daymark's Rebuttal Testimony was attached as Attachment II to CMP's March 25, 2019 Comments to the DEP Regarding Greenhouse Gas Emissions Reductions.

[45] *Id.* at 42-43.

CMP recognizes that the range of CO_2 emissions reductions resulting from the NECEC found by the three experts in the MPUC proceeding and adopted by the MPUC in its Order is 3.0 to 3.6 million metric tons of CO_2 emissions reductions per year, and CMP's inclusion of this table should not be construed as an assertion of an additional amount of GHG emissions reduction benefits from the Project. Rather, this table shows that using the Opponents' own Energyzt modeling analyses, if the NECEC contract energy is assumed to be incremental, as the MPUC has found, there will be carbon emissions reductions throughout the larger Northeast region, including Ontario. These modeling results come from the same Energyzt consultant that NRCM retained to produce the October 2018 GHG Study which did not include any new or additional Energyzt modeling from that included in the Generator Intervenors' Energyzt study and came to the same conclusions.[46] NRCM, however, never offered the October 2018 Energyzt GHG Study as evidence in the MPUC proceeding, nor did NRCM offer this study to the DEP in this proceeding.

[46] MPUC Docket No. 2017-00232 January 8, 2019 Hearing Transcript at 6:4-7:2; 9:16-10:10 ("MR. DES ROSIERS: And all of the above testimony that I just described was submitted on behalf of the generator interveners parties in this proceeding? MS. BODELL: Yes. MR. DES ROSIERS: And the generator interveners paid for that testimony and the work that went into preparing it? MS. BODELL: Yes. MR. DES ROSIERS: Now separately, Energyzt -- and you both work for a consulting firm called Energyzt. Is that correct? MR. SPEYER: That is correct. MR. DES ROSIERS: And now separately, Energyzt also prepared a report for Natural Resources Council of Maine, Sierra Club, and the Maine Renewable Energy Association dated October 2018? MS. BODELL: Yes. MR. DES ROSIERS: And did both of you work on that report? MR. SPEYER: Yes. MR. DES ROSIERS: Who paid for that report? MS. BODELL: That report was paid for by NRCM and a consortium that included Sierra Club and one other environmental organization. . . . MR. DES ROSIERS: Are the conclusions in this report the same as the conclusions in your testimony and the reports offered by the generator interveners in this proceeding? MR. SPEYER: To my knowledge, yes. MR. DES ROSIERS: But the subsequent report contains more detail than the earlier filings -- or early testimony and reports. Is that correct? MR. SPEYER: There are some more details. MR. DES ROSIERS: Is it based on the same modeling analysis that you prepared and you did for the preparation of your testimony and the reports that were submitted on behalf of the generator interveners? MS. BODELL: So there was no modeling -- no new modeling of diversion or the impact of diversion on potential benefits done as part of the NRCM model -- as part of the NRCM report. That report does, however, reference to analyses that are in the public domain that do perform that analysis, one of which is the ESAI study and the second of which was the Energyzt study.").

Dated this 24th day of May, 2019.

Matthew D. Manahan
Lisa A. Gilbreath

PIERCE ATWOOD LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101
(207) 791-1100

Attorneys for Applicant Central Maine Power Company

Attachments:

Attachment I: Éric Martel Letter to Governor Mills, Senate President Jackson, House Speaker Gideon, Senate Minority Leader Dow, and House Minority Leader Dillingham at 2 (May 20, 2019).

Attachment II: MPUC Docket No. 2017-00232, Exhibit NECEC-54 (Hydro-Québec, *Strategic Plan 2016-2020 Setting New Sights with Our Clean Energy*).

Éric Martel
President and Chief Executive Officer

Édifice Jean-Lesage
20e étage
75, boulevard René-Lévesque Ouest
Montréal (Québec) H2Z 1A4

May 20, 2019

Governor Janet Mills
1 State House Station
Augusta, ME 04333

Senate President Troy Jackson
3 State House Station
Augusta, ME 04333

Speaker of the House Sara Gideon
2 State House Station
Augusta, ME 04333

Senate Minority Leader Dana Dow
2 State House Station
Augusta, ME 04333

House Minority Leader Kathleen Dillingham
2 State House Station
Augusta, ME 04333

Re: Hydro-Québec vision and supply outlook

Dear Governor Mills, President Jackson, Speaker Gideon, Senator Dow, and Representative Dillingham:

I'm writing to provide additional information regarding Hydro-Québec's available and projected energy supply. I thought this information would be useful as discussion about the New England Clean Energy Connect (NECEC) project continues in Maine. Hydro-Québec's buildout of new hydropower capacity and continuous upgrades and efficiency improvements to existing capacity are integral components of its vision for a low carbon future for the Northeast. A strong contribution to lower emissions in our surrounding markets through clean energy exports is fundamental to this vision.

Hydro-Québec buildout and preparedness for new clean energy needs

Hydro-Québec has been expanding its generating capacity over the past 15 years. Thirteen powerhouses have been added, providing approximately 5,000 megawatts of new hydropower. This construction phase will be complete in 2021 with the commissioning of the fourth and last unit of the Romaine complex on Québec's North Shore. With these additions, Hydro-Québec's network now consists of over 37,000 MW of hydropower capacity. Development of large hydropower facilities is extremely complex and requires extraordinary advance planning and investment. Accomplishment of a buildout of this magnitude is remarkable.

With a 15 year planning and construction cycle, Hydro-Québec took actions many years ago to be prepared to contribute to the clean energy transition that is now underway in the Northeast. Numerous upgrades and refurbishments of existing facilities, with the objective of increasing equipment performance, and directing efforts and science into pursuing these gains on an ongoing basis, as we have done for decades, is also underway. .

We are now in a position to appropriately respond to solicitations such as those initiated in New England in recent years. Our projections show that we have sufficient energy to maintain existing export levels, serve all of the commitments of the Massachusetts contracts -- and do more. Our team has recently shared this information with members of the Maine Legislature and other Maine stakeholders.

Reservoir levels and new transmission

Québec reservoirs currently stand at exceptional levels. We expect to end 2019 with over 144 terawatt hours of stored energy, surpassing previous records. According to independent research, precipitation in Québec's northern regions, where the majority of our reservoirs are located, is expected to increase 14 percent by 2050 as a result of climate change.

More water in Québec means the possibility of higher exports, and more displacement of fossil fuels in New England and other markets. But more transmission capacity to export markets is necessary to make use of this water resource. In 2017 and 2018, Hydro-Québec was forced to release or "spill" significant quantities of water, effectively wasting clean energy that could otherwise be lowering emissions only because transmission was not available to deliver it to export markets. With NECEC in service, this water will no longer be wasted: it will be delivered as clean energy into New England to reduce emissions.

Maintaining growth and building tomorrow

Growth is a key component of our strategic plan. This includes increasing our electricity exports to all of our markets. We expect our hydropower development and enhancement and energy efficiency cycle will continue if our hydropower is valued by external markets. The addition of new energy generation projects in Québec is currently under evaluation. These could be wind farms – a 2016 study estimates that Québec could accommodate up to 15,500 MW of wind by 2025[1], and there would still be untapped capacity beyond that – or if there is a need for it, another hydropower facility could also be built.

Furthermore, we currently have in our scheduling queue over 950 MW of projects within existing facilities that would increase our generation capacity, particularly during the coldest winter months, and give us more flexibility throughout the year.

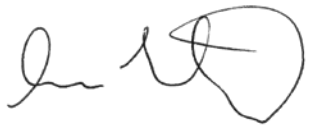
Network expansion is only one element of our strategy. Hydro-Québec's distribution division has been actively working to implement efficiency measures with its customers through a series of programs and incentives, in particular through new automated systems that better control home energy use. In recent years, demand-side efficiency measures have freed up close to 9 terawatt hours of energy, and there is much more potential for energy savings in the future.

[1] Canadian Wind Energy Association, "Pan-Canadian Wind Integration Study". https://canwea.ca/wp-content/uploads/2016/10/pcwis-quebec-summary-web.pdf, consulted on May 16, 2019.

Hydro-Québec's vision is to be part of the solution to the energy transition of the Northeast. As a large-scale energy supplier, and a long-standing partner in the Northeast, Hydro-Québec can provide a direct path to clean, reliable and affordable electricity.

I look forward to working with Maine's elected officials and stakeholders to advance a clean energy future in Maine and the region.

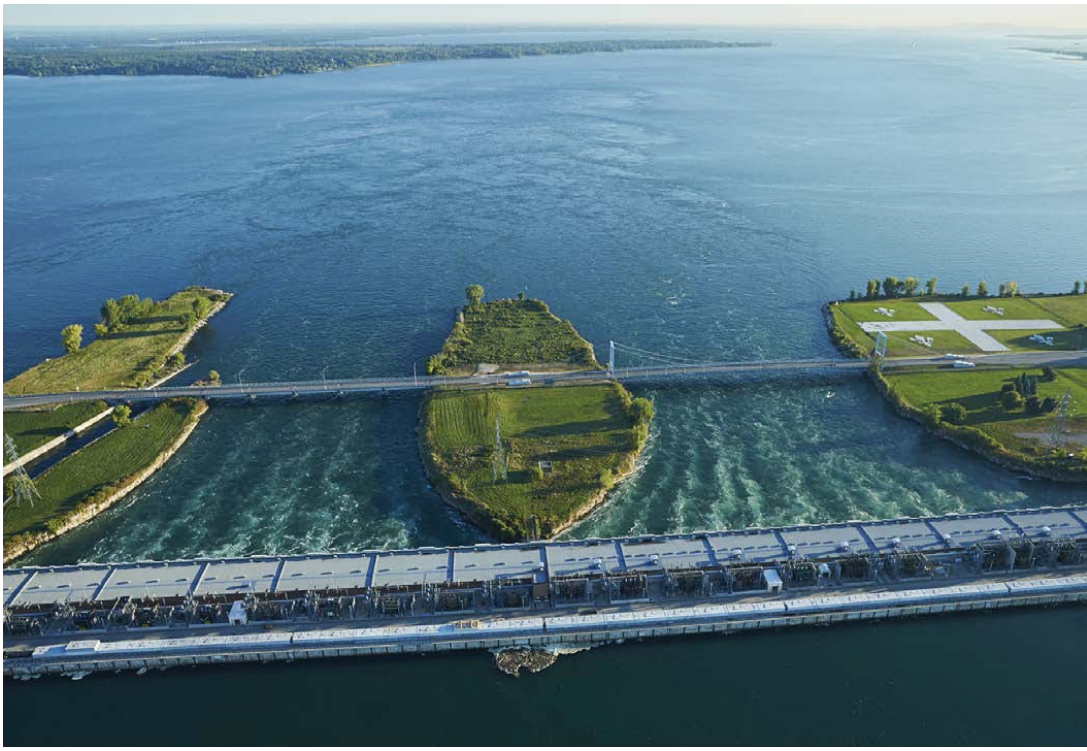
Sincerely yours,



Éric Martel
President and Chief Executive Officer

STRATEGIC PLAN 2016–2020

Setting new sights with our clean energy



Hydro Québec | WORKING BETTER every day

Our vision, mission and values

OUR VISION

Set new sights with our clean energy

OUR MISSION

We deliver reliable electric power and high-quality services. By developing hydraulic resources, we make a strong contribution to collective wealth and play a central role in the emergence of a low-carbon economy. As recognized leaders in hydropower and large transmission systems, we export clean, renewable power and commercialize our expertise and innovations on world markets.

OUR VALUES

- Achievement of targeted results
- Respect for our customers, employees and partners
- Authenticity
- Teamwork
- Integrity

Our objectives

Lay the groundwork to double our revenue over the next 15 years so as to increase profits	Be a benchmark in customer service	Contribute to Québec's economic development and energy transition	Keep rate increases lower than or equal to inflation

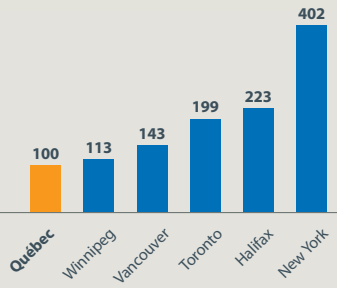
OUR REALITY

Every day, we provide you with renewable, affordable power.

ELECTRICITY: A KEY PART OF EVERYONE'S QUALITY OF LIFE

Our power output, over **99%** of which is from clean, renewable sources, is an essential component in the fight against climate change undertaken by the Québec government. It's the cornerstone of a greener, stronger economy.

Our residential rates are the lowest in North America. They're half the rates people pay in Toronto and a fourth of what people pay in New York.



Index representing the monthly bill (before taxes) for residential consumption of 1,000 kWh at the rates in effect on April 1, 2015.

We make a major contribution to the Québec economy and will continue to do so.




$3.8 billion

in capital investment[a]

$2.9 billion

in purchases of goods and services in Québec[a]

39,000

direct and indirect jobs sustained in Québec by our activities in 2015
(person-years)

$3.0 billion

paid to the Québec government[a]
(dividends, taxes, water-power royalties and guarantee fees)

a) Annual average over the 2009–2015 period.

To meet electricity needs, we must have enough energy and capacity available.

It's possible to have enough energy on an annual basis, but to need additional capacity during demand peaks. The purchases made on the markets at those times can be very expensive.

Energy

The quantity of electricity supplied or consumed over a given period of time. It is expressed in watthours (Wh).

Capacity

The quantity of electricity that can be supplied or consumed at a given point in time. It is expressed in watts (W).

Demand peaks

The times when electricity needs are greatest. In Québec, peaks occur on very cold winter days, because most people heat their homes with electricity.

QUÉBEC NEEDS IN 2015

- Energy: 184 TWh
- Peak power demand (capacity requirements): 38,743 MW

We have sufficient energy to power Québec.

The energy available to us is more than the quantity required to meet Québec's electricity needs. We plan to make good use of this energy.

To this end, we recently launched the Economic Development Rate. It initially offers a reduction of 20% off the applicable rate for energy-intensive capital projects in high-growth sectors such as data hosting.

We don't want to use up all the energy available to meet Québec needs before making new purchases.

By turning to the markets when the energy available dips below the threshold of 2.5% of Québec's total needs or 5 TWh, we'll maintain a sufficient margin of flexibility to meet demand growth and complete new calls for tenders.

Over the Plan period, however, we anticipate that the energy available will remain above this threshold.

FOLLOW-UP ON WIND ENERGY DEVELOPMENT

Contracts signed since 2003

Number	38
Contractual capacity (MW)	3,710
Contribution during winter peaks (MW)	1,484
Annual energy output (TWh)	11.4
Average cost, including integration service (¢/kWh)	10

Integration service provided by Hydro-Québec

Balancing service and firming capacity to ensure power system stability

Modernization of practices for more accurate wind energy forecasts

However, we need more capacity during peak periods.

Québec's capacity needs will increase over the next 15 years, driven mainly by growth in residential demand.

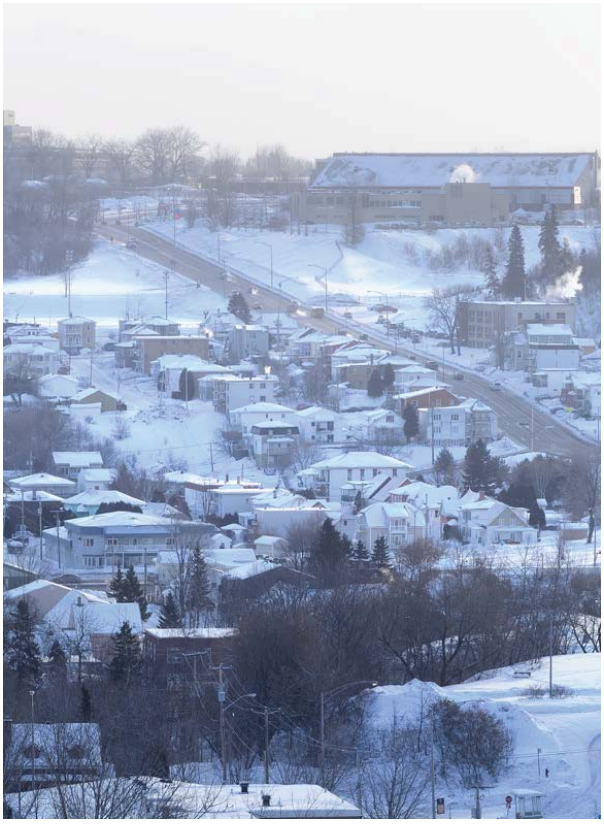
That's why we want to reduce our costly imports by having the TransCanada Énergie generating station in Bécancour converted to liquefied natural gas and using it as a peaking plant.

Through new energy efficiency programs and initiatives, we can also shave up to 1,000 MW from the peak capacity needs forecast for 2020.

The additional capacity requirements will be met through calls for tenders.

Whether to meet the needs of the Québec market or to seize export opportunities, we intend to

- bring into service the last two Romaine generating stations (640 MW by 2020) and the related transmission facilities,
- undertake new projects to increase the capacity of some of our hydroelectric generating facilities (about 500 MW by 2025), and
- determine, by 2020, what our next major hydropower project will be after the Romaine complex.



New energy efficiency initiatives will help us reduce capacity needs.

By participating in the initiatives launched under our Energy Efficiency Plan, you helped us surpass our energy savings target. Now you can help us meet the challenge of reducing capacity needs.

Our programs and new initiatives will provide financial incentives to reduce your power usage during peak periods, without sacrificing comfort.

Residential Load Curtailment Program

For example, you could allow us to interrupt power to your electric water heater for short periods of time, a few times a year. Since the water in the tank will stay hot for quite a while, this will not affect your daily routine in any way.

- Target: 300-MW reduction in capacity needs by 2020

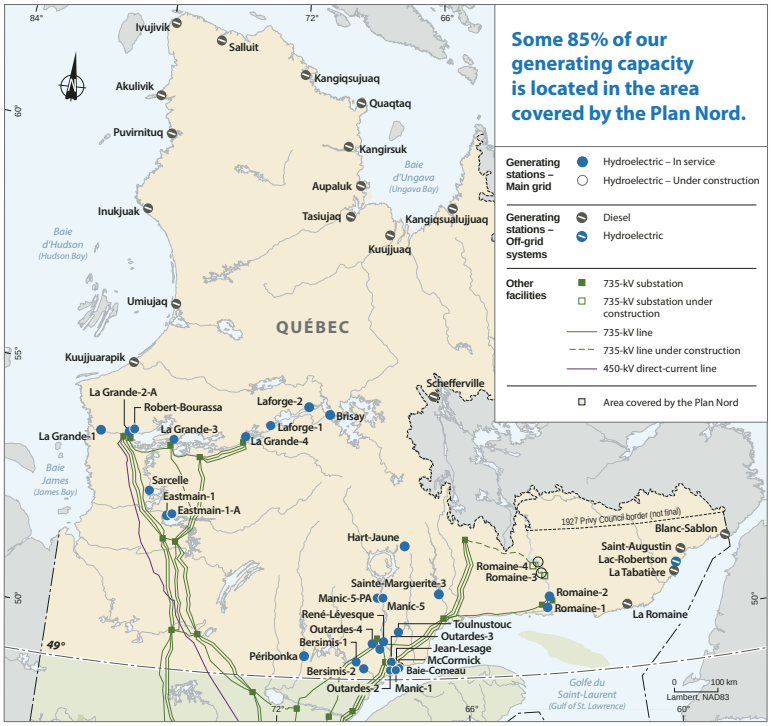
FOLLOW-UP ON THE ENERGY EFFICIENCY PLAN (2003–2015)

More than 25 programs and initiatives geared to all customer categories (residential, commercial, institutional and industrial) to promote energy conservation

- Awareness, market transformation and R&D activities
- Savings of 8.8 TWh, equivalent to the energy consumption of 500,000 households and 10% more than the initial target of 8.0 TWh
- $1.7 billion invested, including some $900 million in direct financial assistance for customers

We will contribute to the Québec government's Plan Nord with more than $4 billion in capital investment.

We'll take part in Québec's energy transition by increasing the capacity of our hydroelectric fleet and by converting our off-grid systems to cleaner, less costly energy sources.



OUR CONTRIBUTION TO THE PLAN NORD

- Invest $4.3 billion in our generation and transmission facilities in the Plan Nord area between 2016 and 2020
- Add 1,140 MW to our hydroelectric generating capacity in the area and build the related transmission facilities
  - Commissioning of Romaine-3 (395 MW) in 2017 and Romaine-4 (245 MW) in 2020
  - Uprating of some of our existing facilities (about 500 MW by 2025)
- Build new generating facilities if warranted by needs in the industrial and mining sectors
- Undertake projects to convert off-grid systems to cleaner and less costly energy sources
  - Launch of requests for proposals (RFPs) for all systems by 2020
- Contribute $15 million a year to the Northern Plan Fund
- Study the possibility of transferring some of our facilities that are not part of the power system (e.g., aerodromes) to a third-party operator, so as to contribute to the economic and social development of the Plan Nord area

We also have to start preparing now to meet Québec's long-term needs.

Between now and 2020, we'll commission the last two generating stations in the Romaine complex and determine what our next major hydropower project will be.

Construction of a large hydroelectric project can take about a decade. That's why we have to starting planning for the future now, rather than wait for 2020 when the Romaine complex will be completed.

Over the 2016–2020 Plan period, we'll carry out preliminary studies to determine the feasibility of various large-scale hydropower projects in the Plan Nord area.

By 2020, we'll thus be in a position to choose a hydroelectric project for the next decade based on future needs, and we'll also consider developing other clean energy sources in the Plan Nord area. In this way, we'll be ready to proceed to the draft-design phase, which includes conducting environmental studies and negotiating agreements with the communities affected.

Typical project phases

1	2	3	4
Planning (preliminary studies)	**Draft design and permitting**	**Construction**	**Operation**

We respect the communities affected by our operations.

INFORM, LISTEN, EXCHANGE, IMPROVE

We present up to **100 transmission and generation projects** a year to various Québec audiences.

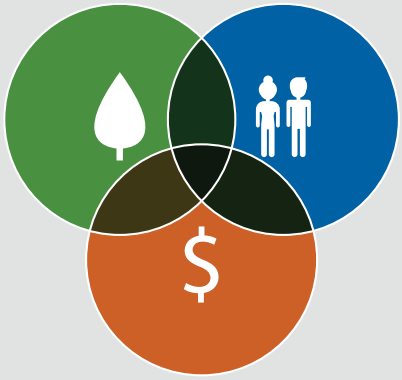
Our objectives:

- Explain the how and why of our projects
- Reduce impacts on the local environment while remaining fair to the Québec population as a whole

OUR CHALLENGE: FIND A FAIR BALANCE BETWEEN THE 3 PILLARS OF SUSTAINABLE DEVELOPMENT

ENVIRONMENT
Environmental acceptability

SOCIETY
Favorable reception by communities affected



ECONOMY
Technical aspects and profitability

Examples of enhancements made in the wake of public consultations to promote social acceptance of our projects

- Optimization of line routes; e.g., the line connecting the Mesgi'g Ugju's'n (Rivière-Nouvelle) wind farm in the Gaspésie–Îles-de-la-Madeleine region
- New tower designs such as the tower developed for the Langlois–Vaudreuil-Soulanges transmission line in the Montérégie region
- Maintaining instream flow to protect fish habitats, ensure navigability and preserve the quality of the landscape, as we did for the Eastmain-1-A/Sarcelle/Rupert hydroelectric project in the Nord-du-Québec region

Our performance hinges on our employees' skills and engagement.

Marylene Asselin, customer services representative: "I like serving people. Satisfied customers are my biggest reward."

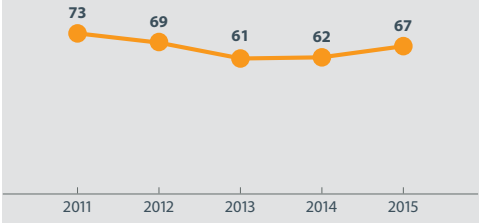
David Marcil, line crew chief: "All along our lines, there are customers counting on reliable service. That's who I'm working for."

Jean Caumartin, environment advisor: "I'm proud because I know our hydropower makes Québec greener and helps our export markets reduce their GHG emissions."

Skills development is one of our priorities: we devote 3% of our payroll to training and we will continue to do so.

The overall engagement index improved in 2015, after dipping in 2012 and 2013. To continue improving employee engagement, we will rely on a unifying corporate culture focused on pride and results.

Change in overall employee engagement index (%)[a]



a) 2009 and 2010 data not available

We know we need to meet your expectations better.

YOUR EXPECTATIONS

- Reliable electrical service
- Rapid restoration after power failures
- Accurate, easy-to-understand bills
- Easy access to customer services
- Rapid, efficient processing of requests
- Products and services to help you understand and manage your energy use and reduce your electricity bill

IN 2015

- $2.3 billion invested in the power system
- Nearly 16,000 simple service connections completed, 83% within 10 business days (average lead time of 7.7 days)
- Nearly 8,000 connections involving multiple parties; in 55% of cases, technical services completed by date indicated to customer
- 2,450,000 calls received; 62% were answered in less than 210 seconds (average response time of 205 seconds)

A reliable system delivering reliable power

We continue to make large investments in our system.

- Québec's electricity needs are growing. Our system must grow accordingly.
- Some of our assets need to be replaced, optimized or overhauled.

We regularly evaluate the security of our strategic infrastructure and critical systems, and we take the necessary protective measures.

We keep improving our vegetation control practices to prevent power failures.

Recent improvements made possible by next-generation meters

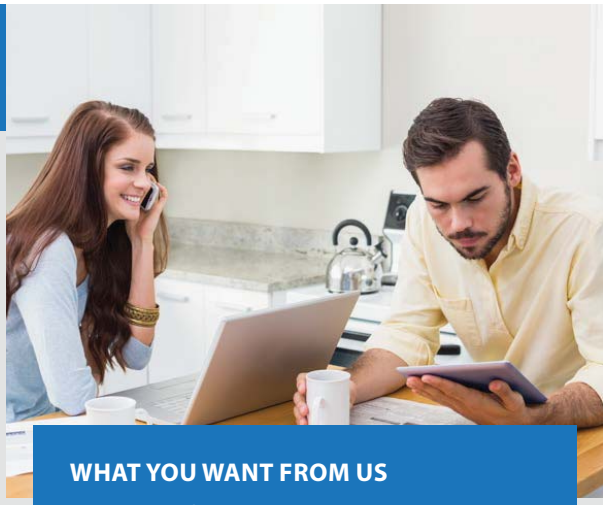
- Faster detection of power failures and restoration of service
- Real-time monitoring of outages via our Power Outages Web site or mobile app
- Billing always based on your actual consumption
- Simplified integration of residential wind or solar customer generation systems into the grid (net metering)

We also need to be more present and more accessible.

Greater transparency involves better communication.

OUR EXCHANGES WITH YOU

- 140,000 visitors a year to our facilities and partner-operated sites
- Mentioned 16,000 times in the media
- 2,500 requests from the media
- 4 social platforms
- 18 million visits to our Web pages
- 5,000 requests from community representatives
- 200 advertising campaigns and public notices
- 500 organizations supported through our donations and sponsorships
- 25 educational kits circulating in schools



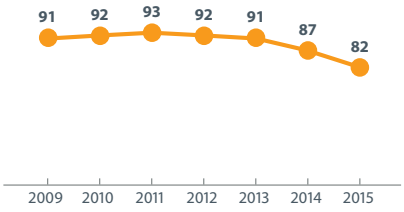
WHAT YOU WANT FROM US

- Direct, authentic communication
- Explanations of our activities and decisions
- Optimized digital communications

WE'RE LISTENING

Your overall satisfaction with us has decreased over the past few years. We need to do a better job of meeting your expectations, especially by improving our service and communications.

Change in overall public satisfaction (%)



We will continue to support the decarbonization of Québec by furthering electric transportation.

Replacing gasoline with clean, renewable and affordable electricity

- helps reduce smog and GHG emissions,
- benefits the Québec economy by reducing dependency on imported oil, and
- translates into sizeable savings for vehicle owners.

There are now over 8,000 plug-in electric vehicles on Québec roads.

- They account for about 50% of all such vehicles licensed in Canada.
- Nearly 80% of their owners are members of the Electric Circuit.

The Electric Circuit: An initiative of Hydro-Québec and its partners

It's the first public charging network in Canada, and the largest in Québec.

- 130 partners, including 5 founding partners
- 577 charging stations in 140 municipalities and 16 administrative regions at December 31, 2015
  - 548 240-V stations and 29 fast-charge (400-V) stations
- 1,000 curbside stations planned as part of Montréal's electric car sharing project

Our challenge: densify the charging station network as the number of electric vehicles increases.

We're developing and commercializing innovative technologies:

- Battery materials
- Energy storage systems
- Electric powertrains

Hydro-Québec subsidiary TM4 develops and commercializes electric powertrains for world markets.

Through a joint venture set up with Prestolite Electric Beijing Ltd., TM4 has succeeded in penetrating the electric bus market in China.

TM4 will also work with French companies PSA Peugeot Citroën and Exagon Motors to develop a powertrain for high-performance electric vehicles.

We're furthering the electrification of public transit in Québec:

- TM4 technology chosen by Québec-based bus manufacturer Novabus
- Financial contribution to the development of electric infrastructure in accordance with the regulatory framework

We need to grow in order to contribute more to the prosperity of Québec.

If we keep within our current sphere of operations, we're forecasting annual profits (net income) of $4 billion for 2030, which is equivalent to about $3 billion in constant 2015 dollars.

That would be maintaining our current financial performance. But we want to take it further.

Financial outlook excluding new growth avenues

	Actual	Projected[a, b]					
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2030 HORIZON**
Net income ($M)	3,147	2,550	2,600	2,475	2,575	2,850	**4,000**
Dividend ($M)	2,360	1,913	1,950	1,856	1,931	2,138	**3,000**
Capital program ($B)	3.4	3.9	3.9	4.0	3.2	3.1	

a) Assuming normal temperatures.

b) Certain factors such as runoff, temperatures and economic conditions could have a positive or negative impact on the achievement of the projected net income.

We need to find new growth avenues if we're to improve our performance.

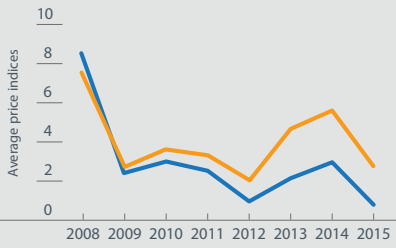
We'll focus on

- seizing new export opportunities,
- acquiring assets or stakes outside Québec, and
- commercializing our innovations.

For us to be able to export more, new transmission facilities are needed.

$902 million
in profits generated by sales outside Québec in 2015

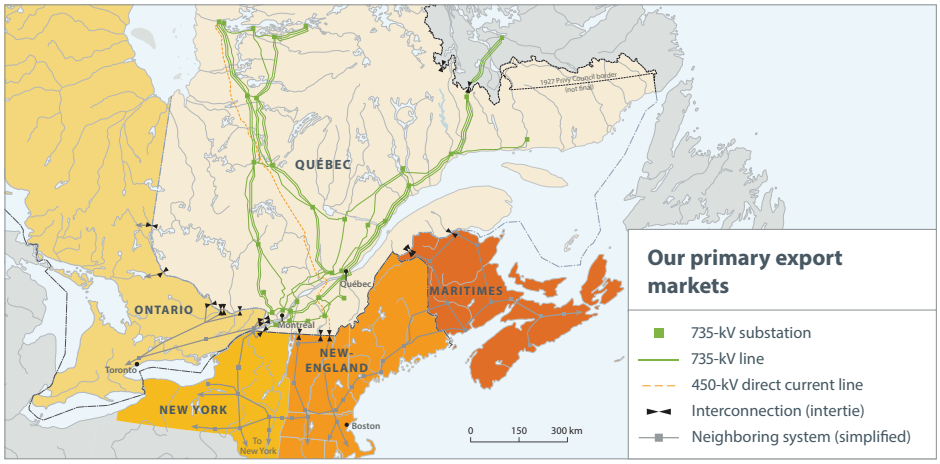
Energy prices on markets outside Québec



Energy prices have fallen as a result of the intensification of shale gas extraction.

Exports are profitable, as long as we sell at the right time and on the right markets. That's even truer today, in the context of low market prices.

That said, we still have growth opportunities because markets outside Québec want to reduce their GHG emissions. Some of these opportunities will require the construction of transmission facilities in the U.S. and Québec. Note that all power companies have fair and open access to transmission systems throughout North America, including Québec.



Conditions favorable to growth in exports

- Growing recognition of the environmental attributes of hydropower
- Nuclear plant refurbishment in Ontario
- Nuclear plant closures in the U.S.
- Potential long-term agreements to sell clean energy in New England

We are considering the purchase of assets or stakes outside Québec.

Our high-value know-how is recognized throughout the world.

Historic cross-border link inaugurated in 1990: MTDCS, Phase II

- We designed and deployed the world's first multiterminal direct-current system (MTDCS) in collaboration with the New England utilities.
- The MTDCS is the key component in an ultra-high-performance intertie that stretches 1,500 km from the Nord-du-Québec region to the Greater Boston area and transmits huge quantities of renewable power.
- It's a good revenue source for us, and for our partners it's an economical way to replace high-emissions fossil fuels.

From 1996 to 2005, we invested $1 billion in power generation and transmission assets, which we sold at a profit in 2006 and 2007. E.g.:

CHILE

We acquired and operated Transelec, Chile's national power transmission company, whose grid covers some 10,000 km (2000–2006).

PANAMA

We purchased a stake in a company operating a 300-MW hydroelectric project in Panama, and managed its operations (1999–2006).

A LONG-STANDING COMMITMENT TO MAJOR INTERNATIONAL ORGANIZATIONS, SUCH AS:

World Energy Council

Global Sustainable Electricity Partnership

International Hydropower Association

International Council on Large Electric Systems

We will step up our efforts to commercialize our innovations.

INSTITUT DE RECHERCHE D'HYDRO-QUÉBEC (IREQ)

In 2015, we spent **1%** of our revenue on R&D. We'll continue to do so over the 2016–2020 Plan period.

Our scientists, technicians, engineers and specialists develop technological solutions to support our operations and create new growth opportunities.

Some promising areas of innovation

- Large-scale battery storage systems for power grids
  - Demonstration under way by Technologies Esstalion, a joint venture of Sony and Hydro-Québec
- Robotic maintenance and inspection of power grids
  - Commercialization of our technologies by subsidiary MIR Innovation
- High-performance flexible steel for manufacturing next-generation transformers—less expensive and more efficient

Applications for our battery materials technologies:

- large-scale energy storage systems for power grids (including off-grid systems)
- storage systems for residential wind or solar customer generation facilities
- electric vehicles

FOLLOW-UP ON R&D SINCE 2009

Dynamic and collaborative research efforts

- 350 partners, ranging from multinationals to Québec-based small businesses
- 116 patents obtained
- 65 licences granted
- An average of 18 research chairs supported annually in Québec universities
- $100 million to $130 million in annual R&D spending

Main areas

- Smart grids and big data processing
- Performance and long-term operability of power system assets
- Services for our customers
- Integration of renewable energy sources (wind, solar, distributed generation)
- Battery materials
- Robotics

OUR STRATEGIES FOR THE FUTURE

Our objectives and strategies at a glance

OBJECTIVES

Lay the groundwork to double our revenue over the next 15 years so as to increase profits

Be a benchmark in customer service

Contribute to Québec's economic development and energy transition

Keep rate increases lower than or equal to inflation

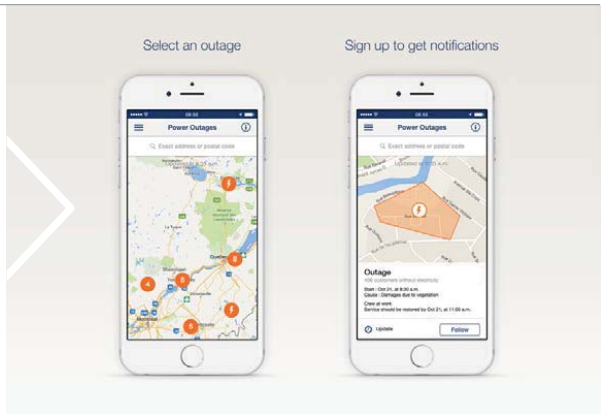
STRATEGIES

1. **Improve customer service**
   - Enhance the performance of our customer relations centres by making our services more accessible
   - Estimate service connection lead times more accurately
   - Launch new initiatives and maintain advances made in energy efficiency
   - Work to further transportation electrification
2. **Communicate proactively with our customers, employees and partners**
   - Inform and listen
   - Prioritize accessibility and openness
3. **Improve productivity**
   - Optimize our use of information and communication technologies
   - Make new energy purchases according to Québec's electricity needs
   - Adjust our goods and services procurement practices to create more value
   - Bank on employee performance and engagement
4. **Develop new growth avenues**
   - Increase exports
   - Acquire assets or stakes outside Québec
   - Commercialize our innovations
   - Increase the capacity of our generating fleet

Improve customer service

ENHANCE THE PERFORMANCE OF OUR CUSTOMER RELATIONS CENTRES BY MAKING OUR SERVICES MORE ACCESSIBLE

- Extend the business hours of our customer service offices and give you the option of reaching us through a variety of digital platforms
- Reduce call wait times to a level in line with industry standards
- Give you the option of having a representative call you at a time that's convenient for you
- Enrich our offer of Web-based self-service options to make it easier for you to manage your account and track your requests
- Optimize our representatives' integrated information tools to improve the rate of first-call resolution



Improve customer service (cont.)

ESTIMATE SERVICE CONNECTION LEAD TIMES MORE ACCURATELY

- Give you and your master electrician the possibility of tracking the progress of your service connection requests on our Web site
- Remind you about the steps you need to take so that we can complete the service connection
- Keep you updated about your scheduled connection date and any changes as your project goes forward
- Continue to standardize our work methods with a view to reducing lead times

Improve customer service (cont.)

LAUNCH NEW INITIATIVES AND MAINTAIN ADVANCES MADE IN ENERGY EFFICIENCY

- Progressively convert off-grid systems to cleaner, less expensive energy sources
  - Launch requests for proposals (RFPs) for all systems by 2020
  - First conversions: Kuujjuarapik and Tasiujaq systems in the Plan Nord area, Obedjiwan (Opitciwan) system in the Haute-Mauricie region, and the Îles-de-la-Madeleine system
- Offer new programs for reducing power usage during peak periods, taking advantage of home automation
  - Load curtailment programs for residential, commercial, institutional and industrial customers
- Maintain energy efficiency efforts
  - Residential: promote energy-saving habits
  - Commercial, institutional and industrial: provide financial support for energy efficiency projects
  - Industrial: promote rate options for interruptible electricity
- Work with the competent bodies to keep improving standards
- Improve the quality of service provided to residential customer-generators of renewable energy who are making use of the Net Metering Option and consider the possibility of enhancing the conditions related to this rate option

Conversion of off-grid systems

RFP launch schedule

YEAR	GENERATING STATION	COMMISSIONING HORIZON
Ongoing	Îles-de-la-Madeleine (wind power)	2020
2016	Kuujjuarapik Tasiujaq Obedjiwan	2020
2017	Kangiqsujuaq La Romaine Salluit Umiujaq	2019 2020
2018	Inukjuak Kangiqsualujjuaq Kuujjuaq Puvirnituq	Post 2020
2019	Îles-de-la-Madeleine (conversion) Akulivik Ivujivik Kangirsuk Port-Menier	
2020	L'Île-d'Entrée Quaqtaq Clova Aupaluk	

Project implementation approach

- RFPs prioritized according to the expected end of life of existing facilities, additional capacity requirements and conversion opportunities
- Partnerships between project proponents and communities
- Competitive bidding (local acceptability, cost)
- Consideration given to the particularities of each system and the needs of each community so as to choose the most appropriate technological solutions, e.g.:
  - Leveraging of the latest innovations (hybrid systems involving renewables, energy storage), liquefied natural gas, biomass, connection to main grid

Improve customer service (cont.)

WORK TO FURTHER TRANSPORTATION ELECTRIFICATION

- Accelerate deployment of the Electric Circuit in Québec, especially fast-charge stations, in collaboration with our partners
- Study the possibility of expanding the Electric Circuit outside Québec
- Contribute financially to the development of electric infrastructure for public transit, in accordance with the regulatory framework
- Support innovation in the field of transportation electrification
  - Develop and commercialize innovative technologies in energy storage and electric powertrains
  - Demonstrate concepts combining our technologies with charging services
  - Support high-benefit projects involving contributions from private- or public-sector partners

Deployment of the Electric Circuit in Québec

- Objectives:
  - 800 charging stations by the end of 2016
  - 1,100 stations by the end of 2017
  - 2,500 stations on the 2020 horizon
- Aim: To support the Québec government's objectives regarding transportation electrification

Reduction of our vehicle fleet's GHG emissions

We currently have about 100 hybrid or plug-in vehicles in our fleet. To further reduce its carbon footprint and increase the proportion of electric vehicles, we'll take steps to

- decrease the size of our fleet, and
- replace internal combustion vehicles as they reach the end of their useful lives with hybrid or plug-in vehicles.

Communicate proactively with our customers, employees and partners

INFORM AND LISTEN

- Favor a personable communication approach based on authenticity and attentive listening
- Provide the right information on a timely basis
- Provide clearer explanations of our activities, business context, challenges and contribution to the Québec economy
- Raise visibility for our expertise and promote our activities

Communicate proactively with our customers, employees and partners (cont.)

PRIORITIZE ACCESSIBILITY AND OPENNESS

- Modernize our communications by deploying a digital strategy that allows direct and rapid exchanges, wherever you are (e.g., through social media, mobile apps or an enhanced Web experience)
- Be more active in all spheres of communication throughout Québec
- Answer information requests in compliance with our commitment to transparency.

Our commitment to transparency

Answer information requests in accordance with the following 3 guidelines:

- The disclosure must comply with applicable laws, regulations and directives.
- The disclosure must not affect Hydro-Québec's financial and commercial interests.
- The disclosure must represent a reasonable workload.

Improve productivity

OPTIMIZE OUR USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

- Implement high-performance, competitive, value-added technological solutions
  - Develop our capacity for big data processing
  - Help improve decision-making and operating processes
  - Adapt our integrated ICT governance as a function of corporate priorities
- Continue to ensure cybersecurity for all operations and systems

Improve productivity (cont.)

MAKE NEW ENERGY PURCHASES ACCORDING TO QUÉBEC'S ELECTRICITY NEEDS

- Launch calls for tenders when the energy available over and above the quantity required to meet Québec needs in a given year dips below the threshold of 2.5% of total needs or 5 TWh
  - Inform markets in a timely manner before the 2.5% or 5-TWh threshold is reached
  - Determine purchase volumes according to anticipated needs

Improve productivity (cont.)

ADJUST OUR GOODS AND SERVICES PROCUREMENT PRACTICES TO CREATE MORE VALUE

- Generalize the use of best practices in strategic procurement in order to generate economies based on total cost of ownership
- Review goods and services specifications to make sure we're getting the right level of performance at a fair price
- Develop lasting business relations with suppliers wherever such relations will help both parties attain shared objectives in terms of cost reduction or of performance improvement or technological development with a view to profitability

Improve productivity (cont.)

BANK ON EMPLOYEE PERFORMANCE AND ENGAGEMENT

- Build a unifying corporate culture focused on pride and results
- Modernize working conditions with a view to improving our operational flexibility and meeting our business needs, among other objectives
- Continue our efforts in talent management, in particular by developing employee skills in our priority areas of operation
- Continue to pay incentive compensation to non-unionized personnel in accordance with the rules approved by our Board of Directors and the Québec government, which reflect results determined by the company while incorporating the achievement of Strategic Plan objectives

Develop new growth avenues

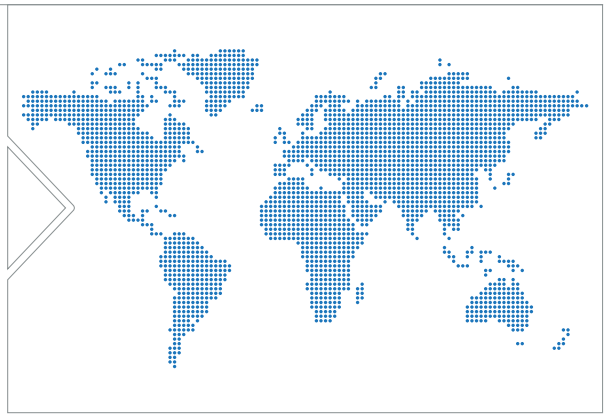
INCREASE EXPORTS

- Ensure a sustained market presence
- Remain on the lookout for opportunities to sell our hydropower profitably, especially in the U.S. Northeast and Ontario
- Promote the attributes of our clean, renewable energy to our customers as part of the solution to climate change
- Participate in initiatives that will help develop promising markets, such as transmission projects outside Québec

Develop new growth avenues (cont.)

ACQUIRE ASSETS OR STAKES OUTSIDE QUÉBEC

- Target assets or projects that will capitalize on our expertise in hydroelectric generation or high-voltage transmission
- Consider potential partnerships
- Take regulatory and market risks into account
- Offer consulting services to support our acquisition strategies or maintain certain key competencies
- Target politically stable countries with reputable legal systems, and apply irreproachable business ethics



Develop new growth avenues (cont.)

COMMERCIALIZE OUR INNOVATIONS

- Work with our partner to commercialize the large-scale battery system developed by joint venture Technologies Esstalion, a prototype of which is currently being tested at our research institute
- Increase the presence of subsidiary TM4 on world markets by offering high-performance, custom-designed powertrains to electric vehicle manufacturers
- Concentrate on innovations that will lead to high-value-added products and services
- Get our technologies to market, primarily through agreements or joint ventures. Objectives:
  - Share resources and risks
  - Benefit from complementary expertise, especially with regard to industrialization and commercialization
  - Gain access to markets outside Québec
  - Maximize economic benefits for Québec
- Continue to closely monitor advances in solar power, in particular as regards its competitiveness and its fields of application

Develop new growth avenues (cont.)

INCREASE THE CAPACITY OF OUR GENERATING FLEET

- Add 1,140 MW to our hydroelectric generating capacity in the Plan Nord area
  - Commission Romaine-3 (395 MW) in 2017 and Romaine-4 (245 MW) in 2020, along with the related transmission facilities
  - Uprate some of our generating facilities (about 500 MW by 2025)
    - Sign agreements with the regional and Aboriginal communities concerned
    - Conduct the necessary technical and environmental studies
    - Start commissioning the units in the early 2020s
- Carry out preliminary studies to determine the feasibility of various large-scale hydropower projects in the Plan Nord area
  - By 2020, determine what our next major project will be after the Romaine complex and consider developing other renewables in the area
- Build new generating facilities in the Plan Nord area if warranted by needs in the industrial and mining sectors

Breakdown of strategies by operating segment

	COMPANY-WIDE	DISTRIBUTION	GENERATION	TRANSMISSION	CONSTRUCTION	CORPORATE AND OTHER ACTIVITIES
1. IMPROVE CUSTOMER SERVICE						
Enhance the performance of our customer relations centres by making our services more accessible		●				
Estimate service connection lead times more accurately		●				
Launch new initiatives and maintain advances made in energy efficiency		●				
Work to further transportation electrification		●				●
2. COMMUNICATE PROACTIVELY WITH OUR CUSTOMERS, EMPLOYEES AND PARTNERS						
Inform and listen	●					
Prioritize accessibility and openness	●					
3. IMPROVE PRODUCTIVITY						
Optimize our use of information and communication technologies	●					
Make new energy purchases according to Québec's electricity needs		●				
Adjust our goods and services procurement practices to create more value	●					
Bank on employee performance and engagement	●					
4. DEVELOP NEW GROWTH AVENUES						
Increase exports			●	●	●	●
Acquire assets or stakes outside Québec			●	●	●	●
Commercialize our innovations						●
Increase the capacity of our generating fleet			●	●	●	

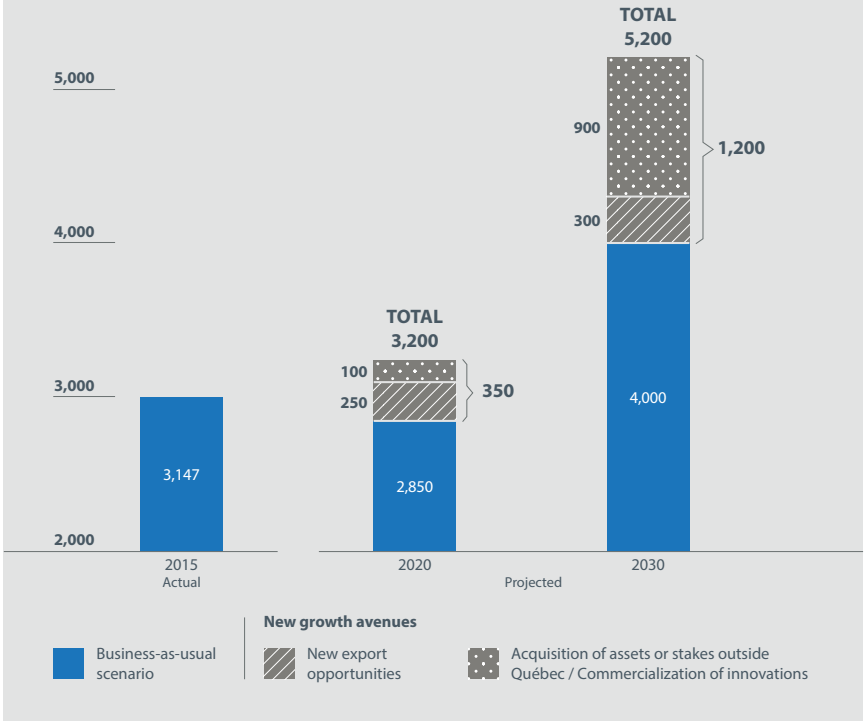
OUR FINANCIAL OUTLOOK AND PERFORMANCE INDICATORS

Our financial outlook

Our objective for 2020 is to lay the groundwork to double our revenue in 15 years, from $13.8 billion in 2015 to about $27 billion in 2030.

We plan to make profits (net income) of $5.2 billion (about $3.9 billion in constant 2015 dollars) by 2030, which represents an increase of $1.2 billion compared to the business-as-usual scenario.

Potential impact of new growth avenues on net income ($M)



Our performance indicators (follow-up and outlook)

INDICATOR	PREVIOUS STRATEGIC PLAN		OUTLOOK
	2009	2015	2020
Net income ($M)	2,871	3,147	3,200[a]
Average annual rate increase compared to inflation[b]	Average increase: 1.45% Average CPI:[c] 1.5% (2009–2015)		Average increase lower than or equal to inflation (2016–2020)[a]
Overall public satisfaction (% of residential customers satisfied)	91	82	Over 90
Service connections:			
– Simple (% completed within 10 business days)	89	83	Over 90
– Multiple-party (% of cases with technical services completed by date indicated to customer)	N/A	55	Over 90
Average annual capital investment ($B)	3.8 (2009–2015)		Between 3.1 and 4.0 (2016–2020)[d]

a) Operating expenses will be controlled so as to keep rate increases lower than or equal to inflation.
b) Excluding Rate L.
c) Consumer Price Index.
d) Excluding investments related to new growth avenues.

CONTENTS

The financial outlook is based on estimates and assumptions concerning our future results and the course of events. Given the risks and uncertainties inherent in any forward-looking statements, our actual results could differ from those anticipated.

UNITS OF MEASURE

¢/kWh	cent or $0.01 per kilowatthour
$M	millions of dollars
$B	billions of dollars
kV	kilovolt (one thousand volts)
W	watt (a unit for measuring capacity or power demand)
kW	kilowatt (one thousand watts)
MW	megawatt (one million watts)
Wh	watthour (a unit for measuring electric energy)
kWh	kilowatthour (one thousand watthours)
TWh	terawatthour (one trillion watthours)
MMBtu	million British thermal units

Note: All amounts are expressed in Canadian dollars, unless otherwise indicated.

Hydro-Québec wishes to thank all people,
in particular its employees, whose photos
appear in this Strategic Plan.

Développement de l'entreprise,
planification stratégique et innovation

Legal deposit – 2nd quarter 2016
Bibliothèque et Archives nationales du Québec
ISBN 978-2-550-74825-0 (PDF)

2015G360A

Ce document est également publié en français.

This is a translation of the original French text.

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