

## NB POWER 1967–72: CONSTRUCTING THE EXPORT DREAM

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### Abstract

This study examines the origins of the export-led strategy of the New Brunswick Electric Power Commission (NBEPCC) beginning in the late 1960s, a period when NBEPCC integrated its planning with American markets to a greater extent than other Canadian electrical utilities. Utilizing archival records of NBEPCC and of several federal and provincial government departments, the research documents strategic choices made by NBEPCC managers as they attempted to take advantage of markets in New England to deal with limits to their organizational growth within New Brunswick. The result was a shift from NBEPCC's power-for-industry strategy of the 1950s to a power-for-export strategy by the early 1970s. The research emphasizes the power of the state enterprise managers to control the policy formation process, a capacity that originated in the 1950s. While NBEPCC executives were driven by their theories of the technical benefits of interconnections and associated economies of scale, the costs were the adverse implications for air quality, federal regional policy, and provincial taxation policy.

### Résumé

La présente étude examine les origines de la stratégie axée sur les exportations de la Commission d'énergie électrique du Nouveau-Brunswick (CEENB) à partir de la fin des années 1960, période au cours de laquelle la CEENB a davantage intégré sa planification aux marchés américains que les autres services publics d'électricité canadiens. À l'aide d'archives de la CEENB et de plusieurs ministères fédéraux et provinciaux, les travaux montrent les choix stratégiques faits par les gestionnaires de la CEENB, qui tentaient de tirer parti des marchés de la Nouvelle-Angleterre pour surmonter les limites de leur croissance organisationnelle au Nouveau-Brunswick. Résultat : au début des années 1970, la stratégie de la CEENB pour les industries au cours des années 1950 a été remplacée par une stratégie axée sur le pouvoir d'exportation. La recherche met l'accent sur le pouvoir des dirigeants de la société d'État quant au contrôle du processus d'élaboration des politiques, qui a vu le jour dans les années 1950. Alors que les dirigeants de la CEENB étaient motivés par leurs théories sur les avantages techniques des interconnexions et les économies d'échelle associées, les coûts étaient les conséquences négatives pour la qualité de l'air, la politique fédérale de développement régional et la politique fiscale provinciale.

The idea of exploiting New Brunswick's geographical location and energy infrastructure to meet New England's needs originated in the 1960s. Plans ranged from damming the upper Saint John River watershed in the 1960s, to nuclear exports in the 1970s, followed by coal exports in the 1980s, and visions of a Saint John energy hub in the twenty-first century. Most recently, NB Power, in May 2017, set up an independent subsidiary, NB Energy Solutions Corporation, to market wind, solar, and hydro power in export markets. It was hoped that, as a subsidiary corporation, it could access federal infrastructure funding and avoid direct regulation by the New Brunswick Energy and Utilities Board.<sup>1</sup>

Canadian export initiatives in the resource sector have at various times involved extensive government subsidies and preferential regulatory treatment, beginning in the colonial period and extending throughout the twentieth century.<sup>2</sup>

In contrast with the staple exports of timber, wheat, minerals, and hydrocarbons, electricity exports had historically been restricted by federal regulations to short-term exports, primarily between Ontario utilities and utilities in neighbouring American states. In October 1963, the federal government changed its policy to allow long-term power exports in cases where exports would accelerate new investments in electrical generating capacity in Canada.<sup>3</sup> Subsequently, in the 1960s and 1970s, several provincial utilities including the New Brunswick Electric Power Commission (NBEPCC), the Quebec Hydro-Electric Commission (Hydro Quebec), Manitoba Hydro, and the British Columbia Hydro and Power Authority altered their investment strategies to generate power for the American market.<sup>4</sup> NBEPCC was relatively early in developing its export market, so much so that by 1977 it was second only to Ontario Hydro in the value of export revenues. Among Canadian public utilities, NBEPCC was also the most dependent on exports to the United States, with export sales making up 33 per cent of total revenues.<sup>5</sup> Not only was this the most aggressive attempt among Canadian utilities to integrate with American markets at that time, but it would drive NBEPCC's investments over the following twenty years. This article explores the historical origins of NBEPCC's export strategy, focusing on the strategic choices of NBEPCC managers who created the strategy and the associated conflicts with other areas of public policy both at the provincial and federal levels.

My approach is influenced by the historical research of Thomas P. Hughes into the comparative history of electrical systems in the United States, England, and Germany. For Hughes, electricity networks could not be adequately explained solely within a framework of technological and economic determinism, but required an exploration of institutional and social contexts. Especially important for Hughes were the variations in what he called the sociotechnical systems that developed around electrical utilities that "had high momentum, force, and direction because of their institutionally structured nature, heavy capital investments, supportive legislation, and the commitment of know-how and experience."<sup>6</sup> Hughes used this framework to explore the variation among utilities in their capital intensity, efficiency, organizational form, extent of interconnections, and degree of public ownership. In addition to utilizing Hughes's framework of sociotechnical systems, this research is sensitive to two important aspects of the development of electricity in Canada: the environmental context<sup>7</sup> and the organized power of utility managers within primarily state-monopoly enterprises.<sup>8</sup> The research findings in New Brunswick suggest that the principal actors in this transition were the NBEPCC managers who had the social capacity to construct the new export strategy in a manner consistent with their assumptions about the technical benefits of interconnections and their desire for organizational growth. My approach necessarily relies on primary documentary evidence, which includes archival records of NBEPCC, New Brunswick premiers Robichaud and Hatfield, and the federal Departments of Finance, Regional Economic Expansion, Environment, and Energy, Mines and Resources.

## **The Beginning of an Integrated Public Power System in New Brunswick**

In the case of New Brunswick, early plans for an integrated public power system<sup>9</sup> were set back by the election of 1925 when the Liberal government was defeated along with plans for an interconnected provincial electricity system under public control. The new Conservative government halted the process and transferred the lucrative Grand Falls hydro site to International Paper as a public

subsidy for their proposed pulp and paper mill in Dalhousie, New Brunswick.<sup>10</sup> Subsequently, between 1920 and 1945, NBEPCC developed incrementally as a small public commission serving communities that were of little interest to the for-profit private companies. However, by the late 1940s, political and business elites agreed that a much-expanded electrical supply system was a necessary condition for economic growth in the province, a system that the private sector was not interested in developing. Given the increasing American demand for a reliable supply of strategic resources for military purposes and the material needs of mass production in the United States, the New Brunswick government focused its growth strategy on accelerating the processing of forestry and mineral resources for export to the United States, a strategy that necessarily required new large-scale power supplies for the power-intensive industries.<sup>11</sup> Central to this process was the transformation of NBEPCC from a politically controlled state agency to a quasi-autonomous public utility with its own planning capacity. Under the slogan “power for industry,” the provincial government mandated NBEPCC to construct an integrated provincial electrical system building on the hydroelectric potential of the Saint John River watershed. In spite of significant public opposition,<sup>12</sup> the Saint John River was transformed in the 1950s and 1960s by a complex of hydroelectric generating units. The subsequent reductions in industrial electricity rates contributed to attracting foreign capital, especially significant in the processing of pulp and paper and base metals. Dams also generated thousands of short-term construction jobs, with the associated political benefits that both Conservative and Liberal governments endorsed. At the same time, it created an expanded state enterprise, the NBEPCC, monopolizing not only the electrical system but also the planning capacity to pursue its increasingly self-defined organizational interests.

The organizational autonomy of NBEPCC was based on its technological capacity to extract economies in the sector, economies that depended on growing sales to justify progressively more efficient and larger generating units. The ensuing relations among the government, public power, and private business reflected a set of symbiotic relations based on a continuation of rate reductions through economies of scale, economic growth in the resource-processing sector, public sector employment in construction, modernization of the electrical sector, and the organizational growth of NBEPCC. However, by the late 1960s, the exceptional growth of the resource-processing industries of the 1950s slowed within New Brunswick, reducing the immediate gains from the power-for-industry model. NBEPCC responded, as was the case with other electrical utilities in the 1960s,<sup>13</sup> with an aggressive marketing strategy, increasing the marketing staff to forty-one employees, introducing sales quotas, increasing advertising, and providing incentive rates for power-intensive residential appliances such as water heaters and space heating. In the words of one memo sent to staff, “Selling power is the business of every employee.”<sup>14</sup> However, this more intensive use of electricity within the province could not overcome the limits of the small size of the provincial market. NBEPCC managers believed that they needed to expand their sales beyond New Brunswick if they were to escape what they viewed as the small-utility trap, and approach the same levels of system efficiencies as Ontario Hydro and Hydro Quebec. By the late 1960s, senior managerial meetings were preoccupied with what they increasingly referred to as their “export dream”<sup>15</sup> as an alternative to the limits of the small New Brunswick market.

As part of the original planning for dams on the Saint John River, NBEPCC staff worked closely with federal agencies in the United States in the planning for hydro dams on the international Saint John River watershed. Within New Brunswick, the Mactaquac dam was the last of three major hydro projects. It was completed in 1968 with three installed 100-megawatt turbines. Additional generation of up to 300 megawatts could be installed, but would generate primarily temporary peaking power during periods of exceptional high-water flows.<sup>16</sup> Such additional generation was planned to be added incrementally to serve future growth in provincial demand unless export sales could justify earlier developments. For

NBEPC managers, the export option was preferred and was viewed as an extension of the work they had done with the public power interests in the United States. Specifically, future development of hydro dams on the Saint John River in northern Maine would involve high-voltage interconnections to southern New England, which NBEPC could also use for exporting present and future surpluses of Mactaquac power.<sup>17</sup> However, the Dickey-Lincoln project in northern Maine was never a certainty and became the focal point of an intense public/private power battle in New England. When the U.S. House of Representatives voted 233 to 169 on 25 July 1967 to defeat a motion to allocate \$1,676,000 for the final engineering and design work for the Dickey-Lincoln project, NBEPC turned its focus to developing an export strategy to New England independent of the Maine hydro project.<sup>18</sup> This required not only a substitute for the Dickey-Lincoln high-voltage transmission system to southern Maine but also a new set of corporate relations with the New England private power sector and a new source of power for export to supplement additions to the Mactaquac generating capacity.

## Designing the Logic of the New Export Strategy

As demonstrated in the work of Hughes, particular electrical systems interconnect with other systems in distinctive ways, reflecting the technical and social context. NBEPC was no exception. In 1967, NBEPC managers began the process of sorting out the logic of how they would benefit from the emerging opportunities in neighbouring markets. While the Dickey-Lincoln option was being foreclosed, new opportunities for interconnections were opening for NBEPC as a result of Hydro Quebec's exclusive contract for the 5,400-megawatt Churchill Falls dam in Labrador, providing surplus power that could be available to NBEPC.<sup>19</sup> In the summer of 1967, NBEPC management hired some of the leading Canadian and American utility consultants to identify the potential of large-scale interconnections with the Hydro Quebec and New England systems and the particular ways NBEPC could benefit both in the short and longer term.

The role of oversight, coordination, and articulation of the strategy was given to G.W. Clayton, Vice-President, Acres Research and Planning Limited. He was supported by Joseph P. Swidler, who had formerly been the Chief Attorney of the Tennessee Valley Authority and Chairman of the United States Federal Power Commission. He provided advice on the American political context and the challenges of navigating through the private/public power political conflicts in New England. Shawinigan Engineering was hired to construct supply/demand balances for the New England utilities in order to identify possible markets. In a progress report of 16 July 1967, G.W. Clayton reported to NBEPC's general manager with detailed notes of meetings with NBEPC senior executives, staff of the U.S. Department of the Interior, and Swidler. The notes provide insight into the key actors' perceptions of the opportunities and challenges of large-scale interconnections. NBEPC managers were focused on the opportunities for building new generation to serve the export market with capacity and energy sales, as well as the possibility of acquiring Hydro Quebec power for re-export to New England.<sup>20</sup> There is no evidence in the 1967 correspondence that NBEPC had any interest in purchasing Hydro Quebec power for the long term to meet New Brunswick demand, even though there are several references to Hydro Quebec offering at that time up to 1,200 megawatts to Vermont and New York utilities for twenty-five years.<sup>21</sup> Of special interest for future negotiations were references to the implications for NBEPC of the animosity between private and public utilities in New England. In spite of NBEPC's almost exclusive past relations with the public power interests, their Washington advice from both Swidler and the Department of the Interior officials was to develop new relationships with the private utilities if they were to develop the necessary transmission interconnections.

The final report of Clayton, “New Brunswick Electric Power Commission Interconnections Study,”<sup>22</sup> provided NBEPCC managers with a framework for investments in interconnections that was tailored to NBEPCC’s context. The standard potential advantages from interconnections were summarized, ranging from very short-term exchanges to take advantage of the varying load and generation characteristics to potential long-term participation agreements designed to capture potential economies of scale.<sup>23</sup> The thesis of the report was that interconnections and participation agreements in larger units could assist NBEPCC in overcoming limits imposed by the small size of its utility. However, there was no discussion of the typical way for a small utility to do this through participation in another utility’s project as part owner. For NBEPCC management, generation for provincial needs would have to be in-province and under their control. They proposed that larger, more efficient generating units could be built by NBEPCC either by using electricity imports to defer small-scale units until larger units were justified in the province, or building larger units to serve both domestic and export markets over the long run.<sup>24</sup> Swidler, for his part, expressed some reservations about the risks to NBEPCC if their exports could not compete with the several nuclear projects being built in New England in the late 1960s. In spite of these concerns, NBEPCC managers moved forward, inspired by the vision of becoming a cost-effective generator serving much larger systems—what they came to refer to as their “export philosophy.”<sup>25</sup>

## **The New England Export Package—Phase One (December 1970–June 1975)**

### **The Hydro Quebec Component**

Additional turbines at the Mactaquac dam could generate intermittent peaking power at a relatively low marginal cost but would not be sufficient to justify the costs of a large-scale interconnection with New England. The utility was especially in need of high capacity-factor power that would improve utilization on the interconnection. For that, NBEPCC turned its attention to Hydro Quebec and its surpluses from the purchase of the power generated from the Churchill Falls project of the Churchill Falls Labrador Corporation (CFLC) in Labrador. As documented elsewhere,<sup>26</sup> Hydro Quebec’s Churchill Falls contract produced significant Hydro Quebec surpluses for export from the 5,400-megawatt project. NBEPCC managers had been closely monitoring the Hydro Quebec/CFLC negotiations and the opportunities it might provide for NBEPCC re-exporting some of that power to the United States. NBEPCC’s planning consultant, H.G. Acres & Company, also a consultant to CFLC, had kept NBEPCC informed of the Churchill Falls situation and had suggested, as early as September 1964, a strategy of NBEPCC re-exporting CFLC power purchased from Hydro Quebec to New England, in combination with surplus Mactaquac power from New Brunswick.<sup>27</sup> Building on the working relationships that NBEPCC had established with Hydro Quebec in the negotiations between 1961 and 1966 for a small 75-megawatt interconnection,<sup>28</sup> the chairman of NBEPCC wrote to the president of Hydro Quebec on 12 July 1966 requesting discussions for a purchase of up to 750 megawatts of Churchill Falls power.<sup>29</sup> Once the 13 October 1966 Letter of Intent was signed between Hydro Quebec and CFLC, NBEPCC began negotiations with Hydro Quebec for a major interconnection agreement and an option on power for possible export to New England.<sup>30</sup>

The negotiations with Hydro Quebec were carried out by NBEPCC managers in parallel with their New England market development efforts. The Hydro Quebec purchases were a necessary component of their long-term export strategy. First, the re-export of purchased Hydro Quebec power would open up the New England market, financing the interconnections in the short term and providing the infrastructure for future dedicated exports to the United States.<sup>31</sup> Second, the exports would

improve the financial position of NBEPC for future borrowings for larger generating projects.<sup>32</sup> Third, the Hydro Quebec imports would allow NBEPC to build demand in New Brunswick to be served by larger, more efficient generating units in New Brunswick in the future, part of which could serve export markets. Given its large surpluses from the Churchill Falls purchase and its lack of transmission to American markets, Hydro Quebec was willing to construct transmission lines to the New Brunswick border and sell part of its Churchill Falls surplus. At a meeting on 17 November 1967, Hydro Quebec offered NBEPC up to 500 megawatts of base-load power between 1972 and 1977, an offer that was formalized in a Letter of Intent in October 1968 and a contract in May 1969. Throughout, Hydro Quebec's offer changed very little and it was left to NBEPC managers to choose how much they wished to purchase.<sup>33</sup> In correspondence of 8 December 1967, the general manager of NBEPC, writing to the general manager of Hydro Quebec, provided a summary of his common interest in the interconnection. From Hydro Quebec's perspective, the NBEPC interconnection was relatively inexpensive, involving upgrading the planned transmission facilities into the Gaspé region. NBEPC had the option of sales to New England and temporary deferral of in-province generation.<sup>34</sup> The Hydro Quebec-NBEPC converter station was to be situated in New Brunswick at NBEPC expense, whether a standard AC/AC interconnection or the much more expensive asynchronous design (AC/DC/AC), should it be necessary for system stability. Considerable technical discussions took place with Hydro Quebec to ensure that the NBEPC interconnection did not cause instability in the North American grid, which might preclude Hydro Quebec interconnections with the U.S. market in the future.<sup>35</sup> Having an option on Hydro Quebec power provided NBEPC with a medium-term source of generation for export, but did not guarantee a demand in New England.

### **The New England Component**

In contrast with the Hydro Quebec negotiations, the New England situation was much more complicated, and discussions with New England proceeded very slowly, extending from September 1967 to May 1969. In 1967, NBEPC's interconnections with New England were restricted to two small, isolated local utilities in Maine: Eastern Maine Electric Co-op (EMEC) and Maine Public Service (MPS). Additionally, Maine did not have an integrated grid in the mid-1960s, with the northern utilities isolated from the more populous southern Maine market. The largest utility, Central Maine Power, operated primarily in southern Maine's Portland area without interconnections with the second largest Maine utility, Bangor Hydro Electric in central Maine—and it had only limited interconnections with utilities in New Hampshire and Massachusetts.<sup>36</sup> As discussed previously, the private-public power conflict had escalated to the point where private utilities were not communicating with public utilities for new transmission or generation initiatives. Until mid-1967, NBEPC managers had worked almost exclusively with the public power interests in the United States. Aside from the localized exports to MPS and EMEC, NBEPC managers had little or no contact with the private power interests in New England, who were viewed as at best uninterested, and at worst obstructionist on the Dickey-Lincoln project, which NBEPC had supported.

The meetings between NBEPC and the Maine utilities up until September 1968 avoided any discussion of the economics of potential sales, focusing instead on the technical issues surrounding any major interconnection.<sup>37</sup> The first meeting of the technical committee convened in February 1967. There were several technical challenges to be addressed, principally due to the size of the interconnection relative to the underdeveloped nature of the Maine electrical grid and associated system stability issues among the eastern North American utilities. The interconnection for the resale of Hydro Quebec power would require at least a 345-kilovolt transmission line to transmit the power to southern Maine, a New

England utility or consortium willing to construct it, and purchasers for the power. Additionally, the interconnection was complicated by NBEPC's planned interconnection with Hydro Quebec as, due to stability issues, one of the ties would have to be asynchronous. After several meetings, the inter-utility Transmission and Stability Task Force reported in September 1968 that, based on preliminary studies, the interconnection between NBEPC and Maine was technically feasible provided the Maine high-voltage transmission component was constructed.<sup>38</sup>

While the technical studies were proceeding, NBEPC officials continued to meet with New England utilities to market the benefits of a major New Brunswick interconnection with a sales package consisting of Mactaquac peaking power and Churchill Falls firm power exports through New Brunswick. Initially, the New England utilities were indifferent to the NBEPC proposals until problems emerged with their planned nuclear generation. New England participants in the Wiscasset Maine Yankee nuclear plant (led by Central Maine Power) had formed the Maine Electric Power Company (MEPCO) to transmit power on new 345-kilovolt transmission lines from the nuclear plant to participants in Massachusetts and Maine. The Maine transmission expansion, as far north as Bangor, would make the New Brunswick interconnection much less expensive for New England utilities.<sup>39</sup> By early 1968, American utilities were concerned with a potential supply shortage caused by unplanned delays in the construction of various nuclear plants in New England, including the Maine Yankee reactor. Such delays were creating a demand for new short-term supply alternatives, which NBEPC was interested in providing.<sup>40</sup> New England's needs were for a combination of base-load and peaking capacity, which NBEPC could supply from Hydro Quebec and Mactaquac, respectively. The New England demand was short-term, as the delayed nuclear units in New Hampshire and Vermont were expected to be completed by 1977.<sup>41</sup> Given these changed external circumstances, Central Maine Power, as an agent of MEPCO, initiated a new round of negotiations with NBEPC beginning 27 September 1968, which resulted in a Letter of Intent of March 1969 for a twenty-five-year interconnection agreement and a power purchase from December 1970 to June 1975.<sup>42</sup>

The role of the Hydro Quebec purchase in the New England exports was described in the testimony of NBEPC staff at the National Energy Board hearing of 21 October 1969 and the Board's Report, February 1970. The exports of yearly quantities of 200–280 megawatts of firm power between December 1970 and June 1975 were drawn from the 120–385 megawatts of Hydro Quebec imports, supplemented by NBEPC's Courtenay Bay thermal plant in the first year and new Mactaquac turbines built for the export contract.<sup>43</sup> The profits from the New England contracts were expected to be substantial, based on the difference between the Hydro Quebec purchase price and the New England export price. The profits from the capacity sales were estimated at \$5 million on export sales of \$27 million over the five-year period,<sup>44</sup> sufficient to pay for the entire capital investment by NBEPC in the Keswick terminal and the transmission facilities to the Maine border.

The first stage of NBEPC's export strategy appeared to be working. NBEPC managers were able to build their interconnections strategy by exploiting Hydro Quebec surpluses and temporary New England generation problems, acting essentially as a marketer of electricity. These first major interconnections with New England grew from the particular circumstances and problems in the New England market, especially the particular problems of the nuclear industry in New England. The requirements for transmission associated with the nuclear industry in Maine had brought high-voltage transmission lines closer to the NBEPC system, at the same time that nuclear delays had created a short-term demand for power from NBEPC.

## The New England Export Package—Phase Two (1976–86)

While the initial 1971–75 New England contract was based primarily on re-exporting Hydro Quebec power, the longer-term objective of the export strategy was to build large-scale capacity in New Brunswick to serve the export market. From the perspective of NBEPC executives, the long-term choice was nuclear power.<sup>45</sup> Discussions had been taking place between NBEPC and officials of Atomic Energy of Canada Limited and the federal Department of Energy, Mines and Resources since 1966 about the potential for nuclear power in New Brunswick.<sup>46</sup> However, NBEPC's analysis in 1970 concluded that nuclear units were not competitive with thermal units in New Brunswick at that time.<sup>47</sup> Large-scale thermal generation was NBEPC's first choice, especially if it could be justified in association with participation agreements with New England utilities. New England utilities were experiencing further delays in construction of their nuclear units by 1971 due to a combination of construction and regulatory problems. Especially relevant was the success of environmental opposition to nuclear reactors in New England through regulatory intervention. The severity of problems varied among the utilities depending on their nuclear involvement and the economics of the available alternatives. The situation was especially serious for New England Electric System and Central Maine Power with their relatively large investments in the nuclear plants under construction.<sup>48</sup> In response to the New England shortages, NBEPC proposed in July 1971 to supply up to 1,050 megawatts of primarily thermal power to New England utilities and to build the associated additional transmission from New Brunswick to the Maine border.<sup>49</sup> The negotiations proceeded quickly with a Letter of Intent by 18 August and the final contract signed by November 1971 for 400 megawatts of firm power for ten years from 1976 to 1986 with MEPCO acting as the agent for the New England buyers.<sup>50</sup>

The final export contract was for American utility participation in the proposed 900-megawatt Coleson Cove oil-thermal generating plant on the Bay of Fundy near Saint John in southern New Brunswick. The MEPCO participation was in the form of a "take-or-pay" contract for 400 megawatts of capacity and energy, composed of 133 megawatts from each of three 300 megawatt units at the Coleson Cove site. The contract was based on a pro-rating of full costs with the addition of a site charge. Over the ten-year life of the participation agreement, NBEPC expected between \$260 and \$300 million in export revenues with net earnings from the deal of over \$80 million.<sup>51</sup> At the same time, NBEPC was able to reduce its financial risk of failure of any one unit at Coleson Cove, as the New England utilities covered their share of costs, regardless of operating performance. The Coleson Cove project would almost double the generating capacity of NBEPC from the 1970 level of 1,032 megawatts to 1,932 megawatts. The New England exports from Coleson Cove would be 2,803 gigawatt hours each year for a utility with in-province sales of only 3,561 gigawatt hours in 1970.<sup>52</sup> In spite of the magnitude of the exports, the negotiations with New England were left entirely to NBEPC managers. As with the previous New England exports, NBEPC was expected to continue to provide reduced power rates in New Brunswick and in-province construction jobs, which New Brunswick politicians had grown to expect in exchange for leaving electrical energy policy development and administration to NBEPC managers.<sup>53</sup>

The speed of the negotiations reflected the shortages of power in New England and problems with nuclear delays and increasing costs. The competitiveness of the NBEPC exports depended on the ability to underprice the New England alternatives. Based on the minutes of meetings between NBEPC and the New England utilities, the New England utilities were most interested in the ability of NBEPC to burn oil of 2.0–2.5 per cent sulphur content as opposed to their environmental requirements to use 1 per cent sulphur-content fuel.<sup>54</sup> This meant that estimated fuel costs in New Brunswick were \$3.00 per

barrel compared to \$4.00 per barrel for the cleaner fuel required in New England.<sup>55</sup> In addition, New England utilities requested and received a detailed account of the lower taxes that NBEPCC would be subject to as a public corporation, savings that would be passed on to New England utilities, given the terms of the participation agreement.<sup>56</sup> These two factors—the ability of NBEPCC to burn dirtier fuel than allowed in New England and the preferential tax treatment on NBEPCC generation—provided NBEPCC with its competitive advantage. In spite of this, NBEPCC managers presented their “Export Power Programme for New Brunswick” to the premier and NBEPCC Board of Commissioners in late 1971, claiming it was based on exploiting the economies of scale of larger generating units with no reference to the real factors creating the competitive advantage.<sup>57</sup>

The environmental consequences of the exports were significant. The 400 megawatts of exports would generate 192,000 tons of sulphur oxides, 42,400 tons of nitrogen oxides, and 3,230 tons of particulate over the ten years of the exports. As well, the Coleson Cove site was not using any of the best-available technologies to reduce emissions, relying instead on very high stacks to dilute the pollution.<sup>58</sup> NBEPCC managers were aware of the potential problems, having been advised by their consultant that the environmental impacts of the exports would likely be one of the areas of concern for the National Energy Board.<sup>59</sup> The National Energy Board, while documenting some of the environmental implications of the exports, was satisfied by NBEPCC’s commitment to meet provincial and federal environmental regulations.<sup>60</sup> The then-current federal regulations were relatively weak, but as the new federal Department of the Environment enhanced its regulatory powers and environmental assessments, NBEPCC managers became concerned. In contrast with the planning for the Mactaquac dam in the early 1960s, where NBEPCC employees were integrated with inter-departmental planning agencies that were designed to socially manage potential conflict,<sup>61</sup> the newly created federal environmental agencies and the environmental review process were developed independently of NBEPCC. By late 1972, NBEPCC internal files were replete with references to the negative impact of the environmental reviews, to the point where the general manager reported to the senior executive meeting that environmental hearings “constituted a threat not only to the Commission and Cabinet but to industry within the Province.”<sup>62</sup> In response, NBEPCC management developed a corporate environmental program focused on public relations (stressing the need for more electricity) and the promotion of efficient regulations.<sup>63</sup> They were successful in avoiding restrictions on burning high-sulphur fuel, convincing the government that a high stack was sufficient for dilution of emissions. The sensitivity of NBEPCC managers to environmental regulations was understandable, given the dependence of the exports on the relatively weak environmental regulations applied to NBEPCC’s thermal generation.

More difficult to manage were the interests of the national government in promoting regional cooperation among the Maritime utilities, a position at odds with NBEPCC’s focus away from its neighbouring provinces and toward the American market. During the early 1960s, the federal government had attempted to work with the provinces to establish a national electrical grid. From the federal perspective, a national grid could have provided the potential for exploiting the standard short-term benefits of interconnections, in addition to accelerating the development of more capital-intensive generation (specifically hydro in Quebec and nuclear power across Canada), which was assumed to offer economies of scale to reduce power costs. The federal government viewed the national grid as especially advantageous for the Maritime provinces with their small, isolated systems. A federal-provincial working group was established to explore the advantages of a national grid, but the federal initiative was constrained by the competing interests of provincial governments, which had jurisdiction over provincial electricity policy.<sup>64</sup> The Quebec government was opposed to a Canadian national grid that could restrict its use of provincial hydro resources to attract industry. Additionally, they were unwilling to “accept

some kind of control by outside sources over the transfer of its energy to neighbouring provinces,”<sup>65</sup> reflecting the concern with possible enhanced functions of the National Energy Board as a regulator of inter-provincial trade in electricity. The focus of NBEPC, even at this early stage, was again on the American market, which offered the advantages of proximity and larger markets, in contrast with the Canadian grid with much longer distances among the utilities.<sup>66</sup> Thus, by the mid-1960s, the federal initiatives for a national grid were rejected by the provinces.

The federal government had been actively involved in subsidizing NBEPC's initiatives in the 1950s and 1960s through the *Atlantic Provinces Power Development Act* (APPDA), which provided coal subsidies and financing for transmission expansion. The federal government, on a case-by-case basis, also provided special financial assistance for large generating projects such as the Mactaquac and Beechwood hydroelectric dams.<sup>67</sup> By early 1970, the federal government had decided to wind up the APPDA, shift authority for regional electricity policy to the newly created Department of Regional Economic Expansion (DREE), and provide subsidies that would benefit the Maritime region as opposed to individual provincial utilities.<sup>68</sup> DREE was willing to provide financial assistance to large Maritime projects provided the benefits were shared among the Maritime utilities. However, NBEPC was moving in the opposite direction with its export strategy, and asked the federal government for subsidies for its interconnections with Hydro Quebec and New England as an alternative to all future federal assistance. Opposition to NBEPC's proposal was swift and not restricted to DREE. Officials in the federal Department of Finance argued that there was no economic justification for any subsidization of electricity, and that it had not been established that lower electricity prices stimulated economic development.<sup>69</sup> Nova Scotia utilities did not support NBEPC's intentions to monopolize the Hydro Quebec interconnection and were skeptical of any Maritime benefits, which NBEPC cited in its Ottawa application.<sup>70</sup> Subsequently, NBEPC received a subsidy of only \$4 million on its application for \$24 million for its Quebec and New England interconnections, with the subsidy primarily to compensate for the discontinuation of the APPDA programs.<sup>71</sup> NBEPC, then, was committed to its export strategy to the point of giving up federal assistance for joint Maritime projects.

Discussions with DREE over the form of assistance to the electrical sector in the Maritimes culminated in late 1970 over DREE's insistence that the Maritime utilities create a power pool with shared planning and co-ownership of regional generating units. From DREE's perspective, the provincial utilities were constrained primarily by their small markets, which could not independently justify the more economic larger units. In spite of this, the utilities were unwilling to establish a functioning power pool that could organize joint planning of new generation.<sup>72</sup> NBEPC was adamantly opposed to a fully integrated pool and wanted to continue with the voluntary pooling arrangements with some enhanced transmission capacity and short-term power exchanges. At a meeting between NBEPC and the Nova Scotia utilities in December 1970, the NBEPC representative was clear in stating that the utility had dealings with New England and Hydro Quebec that it was not willing to share or diminish with a Maritime pool approach.<sup>73</sup> From NBEPC's perspective, it had invested in interconnections with Hydro Quebec and New England that created what it was later to name its “earned strategic position”—that is, its unique ability among Maritime utilities to purchase relatively low-priced power from Hydro Quebec and to export into the relatively high-priced market in New England. NBEPC had created the interconnections to allow it to build new generation to export to New England. It was not something to be shared, as it was to be the cornerstone for its new corporate growth strategy.

## Conclusion

The new federal electricity export policy of the early 1960s provided an opportunity for NBEPC managers to overcome the limits of its small utility by integrating planning with the continental market. Its response was strategic, developing an approach that integrated future investments with the export market, altering the timing of investments, and more than tripling the size of power plants. This research has identified several necessary conditions for the implementation of the export strategy, including Hydro Quebec surpluses created by the Churchill Falls contract, problems with the construction of nuclear reactors in New England, the technocratic capacity of NBEPC managers and their consultants, and specific environmental and social subsidies that NBEPC could exploit. The research has also documented the particular manner in which interconnections were developed and the social power of NBEPC managers to construct the export strategy.

As demonstrated in the comparative international research of Thomas P. Hughes, the history of electrical networks cannot be adequately explained by technological imperatives, and, as this research shows, New Brunswick was no exception. The historical origins of NBEPC's exports and associated interconnections were conditioned by the particular social relations, institutional structures, and levels of expertise within NBEPC. Going beyond the work of Hughes, this research has benefited from internal corporate and government records that were unavailable in Hughes's cases. Utilizing documentary evidence, the research was able to identify not only the contextual challenges faced by utility managers but also their conflicts with other organizations and the ways they attempted to exercise their social power in response to those challenges. Especially empowering for NBEPC managers was their ability as a provincial public sector monopoly to act under the authority of the provincial government while investing public time and resources to develop a particular export strategy that prioritized corporate growth. The consequences included the lost opportunity of long-term hydro imports from Quebec and the tax and environmental subsidies applied to the Coleson Cove exports.

Fifty years after NBEPC managers constructed their vision of an export dream, the utility is a very small player in export markets dominated by utilities in Quebec, Ontario, Manitoba, and British Columbia. However, at various moments the export dream has resurfaced in New Brunswick with visions of large-scale exports of nuclear or coal-fired electricity to serve the New England markets. While such visions tended to attract a great deal of attention from one political party or another, they resulted in very little aside from diverting attention from the challenges of meeting provincial energy needs in a relatively small regional market. The latest version of the export dream involves producing renewable wind and hydro power for the export market from an NB Power subsidiary, NB Energy Solutions Corporation, which would be shielded from regulatory oversight. Given the historical experience of the late 1960s, it is difficult to see the need for bringing back the potential adverse consequences of a closed public sector decision-making process, especially in the case of the province's limited renewable energy resources.

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## Endnotes

<sup>1</sup> News Release. Government of New Brunswick, “Joint Venture to Explore Energy Export Opportunities,” 17 May 2017. [www2.gnb.ca/content/gnb/en/departments/.../news\\_release.2017.05.0717](http://www2.gnb.ca/content/gnb/en/departments/.../news_release.2017.05.0717).

<sup>2</sup> For a historical overview of the role of the federal and provincial governments in resource exploitation since the colonial period, see Janine Brodie, *The Political Economy of Canadian Regionalism* (Toronto: HBJ Canada, 1990).

<sup>3</sup> See Karl Froschauer, *White Gold, Hydroelectric Power in Canada* (Vancouver: UBC Press, 1999), pp. 29–39, for an explanation of the origins of the shift to the more continental approach.

<sup>4</sup> There is an extensive academic literature on Canadian electrical utilities, including research into the origins of their export strategies. These include Christopher Armstrong and H.V. Nelles, *Monopoly's Moment: The Organization and Regulation of Canadian Utilities, 1830–1930* (Philadelphia: Temple UP, 1986), J. Dales, *Hydroelectricity and Industrial Development: Quebec, 1898–1940* (Cambridge, MA: Harvard UP, 1957), Matthew Evenden, *Allied Power, Mobilizing Hydro-electricity during Canada's Second World War* (Toronto: University of Toronto Press, 2015), P. Faucher and J. Bergeron, “Hydro Quebec.” *Privatization, Public Policy and Public Corporations in Canada*. Eds. A. Tupper and G.B. Doern (Halifax: IRPP, 1988), Karl Froschauer, *White Gold, Hydroelectric Power in Canada* (Vancouver: UBC Press, 1999), Keith R. Fleming, *Power at Cost, Ontario Hydro and Rural Electrification, 1911–1958* (Kingston: McGill-Queen's UP, 1992), James L. Kenny and Andrew Secord, “Public Power for Industry: A Re-examination of the New Brunswick Case, 1940–1960,” *Acadiensis* 30(2) (2001): 84–108, James L. Kenny and Andrew Secord, “Engineering Modernity: Hydro-Electric Development in New Brunswick, 1945–1970,” *Acadiensis* 39(1) (2010): 3–26, H. Nelles, *The Politics of Development: Forests, Mines and Hydro-Electric Power in Ontario, 1840–1941* (Toronto: Macmillan, 1974), Alexander Netherton, “The Political Economy of Canadian Hydro-Electricity: Between Old ‘Provincial Hydros’ and Neoliberal Regional Energy Regimes,” *Canadian Political Science Review* 1.1 (2007): 107–24, P. Smith, *Brinco, the Story of Churchill Falls* (Toronto: McClelland and Stewart, 1975), R.A. Young, “Planning for Power: The New Brunswick Electric Power Commission in the 1950s,” *Acadiensis* 12(1) (1982): 73–99.

<sup>5</sup> National Energy Board, *Annual Report 77* (Ottawa: Supply and Services Canada, 1978), Appendix E-V, p. 78.

<sup>6</sup> Thomas P. Hughes, *Networks of Power, Electrification in Western Society, 1880–1930* (Baltimore: John Hopkins UP, 1983), 465. For his analysis of the factors contributing to the variation among the utilities, see Chapter 14, “RWE, PP&L, and NESCO: The Style of Evolving Systems,” 404–60.

<sup>7</sup> As Matthew Evenden suggests, in his work on Canadian hydroelectricity development during the Second World War, Hughes's view of the environment is primarily as a risk factor for engineers, while what is needed is a more “all-encompassing reality” relating the research to the environmental implications of hydrological exploitation and related uses of electricity in a more comprehensive context. Evenden, *Allied Power* 10, 198–200.

<sup>8</sup> See Peter Evans, Dietrich Rueschemeyer, and Theda Skocpol, *Bringing the State Back In* (New York: Cambridge UP, 1985) and Theda Skocpol, “Bringing the State Back In: Retrospect and Prospect,”

*Scandinavian Political Studies* 31.2 (2008): 109–24. This state-centric institutional approach has directed its research focus to the policy formation process within the state and away from traditional societal-centric research, whether of the pluralist or class-based varieties. However, it has been critiqued for going too far in that direction, excluding the potential explanatory role of pluralist politics, organized interests outside the state, and the social structures embedded in the particular phases of capitalism. For an exemplar of research that combines the state-centric and societal-centric methods within a general political economy framework, see Lynn Eden, “Capitalist Conflict and the State: The Making of United States Military Policy in 1948.” *Statemaking and Social Movements, Essays in History and Theory*. Eds. Charles Bright and Susan Harding (Ann Arbor: U of Michigan P, 1984), 233–61.

<sup>9</sup> A visual schematic of the proposed provincial public monopoly based on the interconnection of all load and generation can be found in the Annual Reports of NBEPCC, referred to as the “Ultimate Scheme,” NBEPCC, *Annual Report*, 1923, p. 5 and *Annual Report* 1924, p. 4. The economic logic of the public monopoly can be found in New Brunswick Cabinet Papers, 6 January 1920, *Interim Report of the Water Power Commission*.

<sup>10</sup> Bill Parenteau, “The Woods Transformed: The Emergence of the Pulp and Paper Industry in New Brunswick, 1918–1931,” *Acadiensis* 22(1) (1992): 5–43.

<sup>11</sup> For a description of the limited expansion of NBEPCC during the inter-war period, along with explanations of the post-WWII growth of NBEPCC, see Kenny and Secord, “Public Power for Industry,” 84–108 and Young, *Planning for Power*,” 73–99.

<sup>12</sup> Kenny and Secord. “Engineering Modernity,” 18–26.

<sup>13</sup> For an analysis that situates the marketing strategies of Canadian provincial utilities within a historical political economy framework, see Netherton. “The Political Economy of Canadian Hydro-Electricity,” 107–24.

<sup>14</sup> NBEPCC. “Minutes of Meeting of the Sales Planning Group, December 14 and 15, 1967” and “Monthly Report—Marketing Division, May 1968.” Central Records (CR), Reel 201a, File 3-335 Industrial Promotions General.

<sup>15</sup> See, for example, NBEPCC. Memo from A.J. O’Connor, General Manager, to Hon. H.G. Crocker, Chairman, NBEPCC, 7 March 1969. CR, Reel 138a, File 3-317 New England Interconnections 1969, General Data.

<sup>16</sup> Peaking power, as distinct from base-load power from thermal generators, is available only for certain time periods when the water flows are sufficient.

<sup>17</sup> The relation between the Dickey-Lincoln project and NBEPCC’s potential exports is summarized in NBEPCC. Memo from R.E. Tweeddale, General Manager, to Hon. H.G. Crocker, Chairman, “St. John River Studies and the Dickey-Lincoln School Development,” 26 July 1965. CR, Reel 1131, File 3-351-16, St. John River Studies.

<sup>18</sup> For a summary of the history and issues involved, see NBEPCC. “Appropriations for the Dickey-Lincoln School Project, APPA Memorandum of August 11, 1967.” CR, Reel 204a, File 3-351-16, St. John River Studies.

<sup>19</sup> For a historical account of the Churchill Falls hydro project, see P. Smith, *Brinco: The Story of Churchill Falls* (Toronto: McClelland and Stewart, 1975).

<sup>20</sup> NBEPC. Letter from G.W. Clayton, Vice-President, Acres Research and Planning Limited to R. Tweeddale, General Manager, NBEPC, 16 July 1967. CR, Reel 137a, File 3-317, MEPCO 1966-1970.

<sup>21</sup> NBEPC. Letter from G.W. Clayton to R. Tweeddale, 16 July 1967, "Report on Meeting with Department of the Interior July 6, 1967." Hydro Quebec was offering up to 1,200 megawatts of power to Vermont (VNEPCO Group) and, under NEB rules at that time, NBEPC could access the exports for domestic consumption. Dr. John Bates, former member of the New Brunswick Reconstruction Committee and member of the Board of NBEPC in the 1950s continued to argue for long-term hydro imports from Hydro Quebec, but with no success. See John S. Bates. *By the Way 1888–1983* (Hantsport: Lancelot Press, 1983).

<sup>22</sup> NBEPC. "New Brunswick Electric Power Commission Interconnection Study," Acres Research and Planning Limited, September 1967. CR, Reel 138a, File 3-317, Maritime Power Pool.

<sup>23</sup> These included the traditional potential benefits from interconnections through cost reductions in the short run (reduced spinning reserve requirements, joint load dispatching, maintenance scheduling, and short-term power exchanges) and reductions in long-run costs through investments in larger and more efficient generating units (through participation agreements on larger units, deferred generation with local demand supplied by imports until larger units are justified locally, and reductions in capacity through the peak load diversity of larger pools).

<sup>24</sup> Until 1959, Canadian electricity exports were permitted on a year-to-year basis. Under the *National Energy Board Act* of 1959, exports could be permitted for up to twenty-five years in cases where generating projects would not be viable without exports. See House of Commons. *Hansard*. Tuesday 8 October 1963, pp. 3299–3302.

<sup>25</sup> NBEPC. Letter from A.J. O'Connor, General Manager, to G.E. McClure, Director of Programming, Eastern Region, Department of Regional Economic Expansion, 19 September 1969 with Appendix A: Philosophy of Interconnection Development. CR, Reel 149a, File 3-333, Federal General Data.

<sup>26</sup> Froschauer, *White Gold*, 108–37.

<sup>27</sup> NBEPC. Letter from R.L. Clinch, 11 September 1964, to R.E. Tweeddale, General Manager, NBEPC, with attached letter from C. Simpson, President, H.G. Acres & Company Limited to Hon. J.R. Smallwood, Premier of Province of Newfoundland and Labrador. CR, Reel 124, File 3-333, BRINCO & Hamilton Falls, General Data 1961–1965. H.G. Acres & Company was not only NBEPC's principal consultant on generation planning, rate setting, financial analysis, and strategic planning, but also acted as a business consultant developing potential contacts. See, for example, NBEPC. Letter from R.L. Clinch, Senior Vice-President, H.G. Acres & Company Limited, to Dr. E.P. Weeks, Executive Director, Atlantic Development Board, 3 June 1964. CR, Reel 1099, File 3-317, Maritime Power Pool 1964–65.

<sup>28</sup> NBEPC. Memo: "Summary of Quebec Interconnection Considerations to Date," from F.C. MacLoon, Assistant Manager Planning and Operations Division, to H.R. Marshall, Planning and Operations Division, 10 December 1964, and letter from A.J. O'Connor, Assistant General Manager, NBEPC, to

J.J. Villeneuve, Assistant General Manager, Quebec Hydro Electric Commission, 11 August 1965. CR, Reel 1099, File 3-317, Quebec Hydro, 1960–64.

<sup>29</sup> NBEPCC. Letter from H. Graham Crocker, Chairman, NBEPCC, to Jean-Claude Lessard, President, Quebec-Hydro Electric Commission, 12 July 1966. CR, Reel 139a, File 3-317, Hydro Quebec Interconnections 1966.

<sup>30</sup> For the chronology of NBEPCC meetings with Hydro Quebec, see NBEPCC. “Documentation of Development of Contracts between Hydro Quebec and NB Power.” CR, Reel 10695, File 3-317 Hydro Quebec.

<sup>31</sup> The logic of the parallel development of the Hydro Quebec/New England interconnections in the context of NBEPCC’s export-based development strategy is summarized in National Energy Board. Evidence of F. MacLoon. 19 April 1972, pp. 32–35. Order No. EH2-72 Transcript, K9 C16h Ap ‘72a, National Energy Board Library, Calgary.

<sup>32</sup> For an overview of NBEPCC’s weak financial position relative to other Canadian utilities, see NBEPCC. Montreal Engineering “Financial Forecast,” 15 October 1970 CR, File 3-317 New England Interconnections, General Data.

<sup>33</sup> NBEPCC. “Documentation of Development of Contracts between Hydro Quebec and NB Power,” 1–4.

<sup>34</sup> NBEPCC. Letter from A.J. O’Connor, General Manager, NBEPCC, to R.A. Boyd, General Manager, Hydro Quebec, 8 December 1967. CR, Reel 10695 (Film 1940), 3-317 Hydro Quebec.

<sup>35</sup> For the background consultant’s report on the need for the more expensive interconnection and the final decision, see NBEPCC. Memo from A.J. O’Connor, General Manager, to H. Graham Crocker, Chairman, “Hydro-Quebec and New England Interconnections,” 16 April 1968; and Shawinigan Engineering Company Limited. “Report: Technical and Economic Considerations of an Asynchronous Tie between New Brunswick or Quebec or Maine,” Report 3662-1-68, January 1968. CR, File 3-317, Hydro Quebec.

<sup>36</sup> NBEPCC. “Notes of Meeting with MEPCO Utilities Fredericton, February 3, 1967.” CR, Reel 137a, File 3-317, NB/MEPCO 1966–70; and NBEPCC. “Presentation on the Development of an Interconnection between the Utilities of the New England States and the Maritime Provinces,” November, 1967. CR, File 3-317, New England Interconnections General Data.

<sup>37</sup> NBEPCC began discussions with MPS, who then arranged meetings with CMP. NBEPCC. “Notes of meeting with Maine Public Service, Fredericton, 2 December 1966.” CR, Reel 137a, File 3-317, NB/MEPCO 1966–70.

<sup>38</sup> NBEPCC. “Report to the Interim Planning Committee from Transmission Task Force and Stability Task Force,” 4 September 1968. CR, File 3-317, New England Interconnections, General Data.

<sup>39</sup> NBEPCC. “Notes of Meeting with MEPCO Utilities.” 3 February 1967 and 9 February 1967. CR, Reel 137a, File 3-317 MEPCO 1965–70.

<sup>40</sup> NBEPC. Memo, 9 October 1968, from Manager of Production to Director of Planning. CR, Reel 10214, File 3-317 New England Interconnection.

<sup>41</sup> NBEPC. "Presentation on the Development of an Interconnection between the Utilities of the New England States and the Maritime Provinces," November 1967. CR, File 3-317, New England Interconnections General Data.

<sup>42</sup> NBEPC. "Notes of Meeting—September 27, 1968, Central Maine Power—Augusta, Maine." CR, File 3-317, New England Interconnections General Data; and NBEPC. Memo from A.J. O'Connor, General Manager to H.G. Crocker, Chairman, NBEPC. CR, Reel 138a, File 3-317 New England Interconnection 1969, General Data.

<sup>43</sup> National Energy Board. "Report to the Governor in Council in the Matter of the Application under the National Energy Board Act of the New Brunswick Electric Power Commission, February 1970." pp. 3–20; and Transcript of Evidence of Mr. MacLoon, pp. 12–13, NEB Hearing, 1969, Order No. EH-3-69, K9 C16h O.'69a. NEB Library, Calgary.

<sup>44</sup> For analysis of the financial advantages of the contracts, see NBEPC. Montreal Engineering, "Financial Forecast." CR, Reel 10148.

<sup>45</sup> National Energy Board. Transcript of Evidence of Mr. MacLoon, pp. 11–14, NEB Hearing, 1969, Order No. EH-3-69, K9 C16h O.'69a NEB Library. Calgary.

<sup>46</sup> See, for example, NBEPC. "The New Brunswick Electric Power Commission Design Department Notes on Meetings with Atomic Energy of Canada Limited in Ottawa and Toronto," 20 November 1968. CR, Reel 203a, File 3-351-5, Generation Study Thermal Nuclear 1967–70.

<sup>47</sup> NBEPC. "Future Generation Planning Study Information Relating to Estimated Capital Costs of New Thermal Generation," 25 May 1970. CR, Reel 202a, File 3-351-5, Future Generation Study—Cost Data.

<sup>48</sup> NBEPC. "Notes on Meeting with Central Maine Power, held in Augusta, Maine on April 24, 1971" and "Minutes of Meeting with New England Group Re: Power Sales" 7 June 1971. CR, Reel 10214, File 3-317, New England Interconnections, General Data.

<sup>49</sup> NBEPC. "Notes of Meeting, NEPLAN, CMP, and NB Power." Fredericton, 21 July 1971. CR, Reel 10214, File 3-317 New England.

<sup>50</sup> For the details of the contract, see National Energy Board. "Report to the Governor in Council in the Matter of the Application under the National Energy Board Act of the New Brunswick Electric Power Commission." EH-2-72, July 1972. pp. 1–10; for the structure of MEPCO, see National Energy Board. "Report to the Governor in Council in the Matter of the Application under the National Energy Board Act of the New Brunswick Electric Power Commission, February 1970." p. 7.

<sup>51</sup> These estimates are found in NBEPC. "Presentation to Ottawa, December 6, 1971." CR, Lepreau Records, 87-00000, Folder 2.

<sup>52</sup> NBEPC. *Annual Report*, 1970. The export figure is based on the contracted load factor of 80 per cent.

- <sup>53</sup> Correspondence between NBEPCC officials and provincial politicians typically mentioned the direct job creation along with the impacts for rate reductions. See, for example, NBEPCC. Memo from General Manager to Chairman, NBEPCC, 7 March 1969. CR, Reel 138a, File 3-317 New England Interconnection 1969.
- <sup>54</sup> NBEPCC. “Notes on Meeting with Central Maine Power held in Augusta, Maine, April 24, 1971.” CR, Reel 10214, File 3-317, New England Interconnections, General Data.
- <sup>55</sup> NBEPCC. “Notes of Meeting with New England Group re: Power Sales,” 30 July 1971. CR, Reel 10214, File 3-317, New England Interconnections, General Data.
- <sup>56</sup> NBEPCC. “Notes of Meeting with New England Utilities Held in Augusta, Maine,” 2 September 1971. CR, Reel 10214, File 3-317, New England Interconnections, General Data.
- <sup>57</sup> NBEPCC. Letter from G.E. McInerney, Chairman of NBEPCC, to Richard B. Hatfield, Premier of New Brunswick, 17 December 1971. CR, Reel 10214, File 3-317, New England Interconnections, General Data; and NBEPCC. Minutes of Board of Commissioners, 17 December 1971.
- <sup>58</sup> National Energy Board. “Report to the Governor in Council in the Matter of the Application under the National Energy Board Act of the New Brunswick Electric Power Commission.” EH-2-72, July 1972. p. 31.
- <sup>59</sup> NBEPCC. Memo from F. MacLoon, Manager of Production, to A.J. O’Connor, General Manager, NBEPCC, Subject: National Energy Board—New England Export, 23 September 1971. CR, File 3-317, New England Interconnections, General Data.
- <sup>60</sup> National Energy Board. “Report to the Governor in Council in the Matter of the Application under the National Energy Board Act of the New Brunswick Electric Power Commission.” EH-2-72, July 1972. 33–37.
- <sup>61</sup> Kenny and Secord, “Engineering Modernity.” 11–18.
- <sup>62</sup> NBEPCC. Senior Executive Meeting Minutes, 3 October 1972. PANB, MC 1677/MS2.
- <sup>63</sup> NBEPCC. Memo to Hon. G.E. McInerney, Chairman, from A.J. O’Connor, General Manager, NBEPCC, Subject: Environmental Objectives, Attachment to Senior Executive Meeting Minutes, 20 November 1972. PANB, MC 1677/MS2.
- <sup>64</sup> NBEPCC. “National Power Network Stage 1 Assessment, January 1964,” Federal-Provincial Working Committee on Long Distance Transmission prepared by H.G. Acres & Company Limited, Consulting Engineers. CR, Reel 1100, File 3-317, National Power Network January 1964.
- <sup>65</sup> NBEPCC. Letter from L. O’Sullivan, Quebec Hydro Electric Commission, to D.M. Stephens, Chairman, Manitoba Hydro, 4 December 1961. CR, Reel 1100, File 3-317, National Power Network, Interconnection Trans Canada 1961–62.

<sup>66</sup> NBEPC. Letter from R. Tweeddale, General Manager, NBEPC, to D.W. Gallagher, Economic Advisor to the New Brunswick Government, 25 July 1962. CR, Reel 1100, File 3-317, Interconnection Trans Canada 1961–62.

<sup>67</sup> For a summary of the subsidies, see NBEPC. Memo from W.A. Williamson, Treasurer, to A.J. O'Connor, General Manager, NBEPC, 7 December 1970. CR, Reel 149a, File 3-333, Federal General Data.

<sup>68</sup> NBEPC. Letter from Jean Marchand, Minister, Regional Economic Expansion, to Premier Louis J. Robichaud, 5 May 1970. CR, Reel 149a, File 3-333, Federal General Data.

<sup>69</sup> Canada. Department of Finance. Memo from R.I. McAllister to Mr. Bryce, Finance, 19 November 1968; and Memo from R.I. McAllister to Mr. Bryce, Subject: New Brunswick Electric Power Commission's Request for Financial Assistance—Progress Report, 29 November 1968. NAC, RG 19, Volume 5339, File 373508 Volume 1.

<sup>70</sup> NBEPC. Memo from F. Ryder, Director of Planning, to F. MacLoon, Manager of Production, 29 October 1968. CR, Reel 137a, File 3-317, Power Accommodations General Data 1969–70. Later, in 1970, A.R. Harrington, President of Nova Scotia Light and Power, in response to a request by A.J. O'Connor to comment on his latest draft of a DREE funding proposal, wrote a five-page letter expressing his critique of NBEPC's preoccupation with larger generating units and the export market. See NBEPC. Letter from A.R. Harrington, President, NSLP, to A.J. O'Connor, General Manager, NBEPC, 14 April 1970. CR, File 3-317, Nova Scotia Interconnections General Data 1969–70.

<sup>71</sup> See Canada. Memorandum to Cabinet: New Brunswick-Quebec Direct Current Transmission Interconnection, 10 December 1968. NAC, RG 19, Dept. of Finance, Volume 5339, File 373508, Volume 1.

<sup>72</sup> Canada, Department of Regional Economic Expansion. Memo from J.A. Tweeter, Director, Eastern Region, to Tom Kent, Deputy Minister, DREE, Subject: Maritime Power Pool, 2 April 1971. NAC, DREE, File 116-A-13.

<sup>73</sup> NBEPC. Minutes of "Meeting—NS NB Planning Committee, Confidential," 11 December 1970. CR, Reel 138a, File 3-317 Nova Scotia Interconnection General Data 1968–70.