

Ontario's Electrical Future: Global Environmental Limits, Systems Thinking, and Electrical Power Planning in Ontario, 1974-1983

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Volume 37, numéro 1-2, 2014

Énergie et société au Canada

URI : <https://id.erudit.org/iderudit/1030639ar>

DOI : <https://doi.org/10.7202/1030639ar>

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Éditeur(s)

CSTHA/AHSTC

ISSN

1918-7750 (numérique)

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Citer cet article

Conway, C. D. (2014). Ontario's Electrical Future: Global Environmental Limits, Systems Thinking, and Electrical Power Planning in Ontario, 1974-1983. *Scientia Canadensis*, 37(1-2), 34–58. <https://doi.org/10.7202/1030639ar>

Résumé de l'article

Au milieu des années 1970, la Commission royale sur planification de l'énergie électrique (RCEPP) a été mandatée par le gouvernement de l'Ontario pour examiner les plans d'expansion ambitieux d'Ontario Hydro. Les historiens ont souvent considéré les travaux de la RCEPP comme intéressants mais ineffectifs, puisque c'est la conjoncture économique, plutôt que les recommandations de la Commission pour une croissance plus faible, qui a finalement ralenti l'élan d'Ontario Hydro, au début des années 1980. Cet article étudie la Commission comme un lieu important du débat sur l'énergie et comme un moyen ayant facilité les recherches de groupes d'intérêt public, tels qu'Energy Probe, à la fin des années 1970. Ce débat a permis à la Commission d'introduire les idées de « voies douces de l'énergie », de limites des ressources globales et de système de pensée cybernétique dans un ensemble de recommandations politiques visant une planification énergétique démocratique et basée sur le développement électrique. Cet article soutient que la tension existante entre le contrôle centralisé et l'action locale, qui se retrouve dans les approches systémiques de la planification de la Commission, illustre la difficulté de la négociation collective d'une planification globale à long terme médiée par des experts, dans une période considérée comme un « âge naissant de l'économie d'énergie ».

Ontario's Electrical Future: Global Environmental Limits, Systems Thinking, and Electrical Power Planning in Ontario, 1974-1983¹

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Abstract : In the mid-1970s, the Royal Commission on Electrical Power Planning (RCEPP) was ordered by the government of Ontario to review Ontario Hydro's ambitious expansion plans. Historians have often considered the RCEPP an interesting but ineffective commission as changing economic factors, rather than the Commission's recommendations for slower growth, eventually slowed Hydro's momentum in the early 1980s. This paper explores the Commission as an important venue for energy debate and as a means of facilitating research from public interest groups, including Energy Probe, in the late 1970s. From this debate the Commission negotiated ideas of "soft energy paths", global resource limits, and cybernetic system thinking into a set of policy recommendations for democratic, systems-based electrical power planning. I argue that the tension between centralized control and local action found in the Commission's systems approach to planning illustrates the difficulty of collective, long-term, and expert mediated, globalist planning in a period once thought of as a "dawning age of energy conservation."

Résumé : Au milieu des années 1970, la Commission royale sur planification de l'énergie électrique (RCEPP) a été mandatée par le gouvernement de l'Ontario pour examiner les plans d'expansion ambitieux d'Ontario Hydro. Les historiens ont souvent considéré les travaux de la RCEPP comme intéressants mais ineffectifs, puisque c'est la conjoncture économique, plutôt que les recommandations de la Commission pour une croissance plus faible, qui a finalement ralenti l'élan d'Ontario Hydro, au début des années 1980. Cet article étudie la Commission comme un lieu important du débat sur l'énergie et comme un moyen ayant facilité les recherches de groupes d'intérêt public, tels qu'Energy

1. The author would like to thank Janis Langins, Steve Penfold, Matthew Farish, Greg Lusk, Melanie Cooke, and the two anonymous referees for their thoughts and consideration.

Probe, à la fin des années 1970. Ce débat a permis à la Commission d'introduire les idées de "voies douces de l'énergie", de limites des ressources globales et de système de pensée cybernétique dans un ensemble de recommandations politiques visant une planification énergétique démocratique et basée sur le développement électrique. Cet article soutient que la tension existante entre le contrôle centralisé et l'action locale, qui se retrouve dans les approches systémiques de la planification de la Commission, illustre la difficulté de la négociation collective d'une planification globale à long terme médiée par des experts, dans une période considérée comme un "âge naissant de l'économie d'énergie".

"In this dawning age of energy conservation, how can we moderate, voluntarily or through legislation, the use of that which is taken for granted?"²

After over twenty five years of growth and expansion following the Second World War, Ontario Hydro, the crown corporation in charge of supplying the province of Ontario with "power at cost," found itself facing new challenges.³ Amidst questions about its nuclear program, the pollution generated by its massive investment in steam generating stations, and new concerns about energy stability following the energy crisis of 1973, were the perennial issues of the corporation's tenuous accountability to government and its ballooning debt. Hydro's announcement in 1974 that it would, in the next ten years, double its capacity by undertaking a massive investment in new fossil fuel and nuclear generation was met with considerable questioning of its internal forecasting and planning methodologies. With an election looming in 1975, Progressive Conservative (PC) Premier Bill Davis called for a Royal Commission to investigate the power planning and forecasting methods used by Hydro to justify its expansion. In calling for a Royal Commission on Electrical Power Planning (RCEPP) to examine "the long-range electric power planning concepts of Ontario Hydro for the period 1983-1993," Davis provided a venue for a growing cohort of Canadian energy experts to generate an alternative image of Ontario's electrical future.⁴ Dr. Arthur Porter, the engineer selected to chair the Commission, enrolled a unique set of actors to advise the Commission's five year project. This included drawing from the energy analysis of

2. Royal Commission on Electrical Power Planning (RCEPP), *The Report of the Royal Commission on Electrical Power Planning*, xv. Citations stating *RCEPP Report* refer to pages in volume one of the report.

3. A note on terminology: the Hydro-Electric Commission of Ontario (HEPCO) was official renamed Ontario Hydro in 1973 when it also became a crown corporation rather than a commission. As it had been informally called either Ontario Hydro or simply Hydro for many years prior, I will use only the latter two names even when it was technically HEPCO.

4. *RCEPP Report*, 1.

Amory Lovins, the Science Council of Canada's (SCC) *Canada as a Conservator Society*, work by David Brooks at his Office of Energy Conservation (OEC) in the department of Energy, Mines and Resources (EMR) in Ottawa, environmental activist groups Pollution Probe and Energy Probe in Toronto, academics from around the world, and broad public consultation. The Commission, through its broad mandate to stimulate public involvement, was uniquely given over \$350,000 to support research need to facilitate critical reports from these public interveners and interest groups. In this role the Commission uniquely contributed to stimulating Ontario's environmental movement in the 1970s.⁵ The final report of the RCEPP recommended that Hydro and the government of Ontario provide funding for research into renewable energy sources, promote conservation over consumption, and improve the electrical power planning decision-making process to take into account environmental and social matters of concern.

Most accounts of Hydro during this period address the RCEPP as an interesting but ineffective commission.⁶ Neil Freeman argues that the RCEPP did little to change Hydro's statutory relationship with the government of Ontario. He notes that during the election of 1981, just a year after the eighty-two of the eighty-eight recommendation of the Commission had been accepted by the Ministry of Energy, "the controversy over Hydro had died down sufficiently for the government to include accelerated construction at Darlington and an increased reliance on electrical energy in the province in its campaign platform."⁷ There was not, as the Commission imagined, "a dawning age of energy conservation." A rise in political conservatism in the Western world during the 1980s, in part, helps explain a shift away from the concerns of energy conservation.⁸ As Ontario returned to the majority rule of the PC party, the politics which had allowed this conservation ethos began to fade.⁹

5. Ryan O'Connor, *The First Green Wave: Pollution Probe and the Origins of Environmental Activism in Ontario* (Vancouver: UBC Press, 2014).

6. Aynskey Kellow, *Transforming Power: The Politics of Electricity Planning* (Cambridge: Cambridge University Press, 1995), 129.

7. Neil Freeman, *The Politics of Power: Ontario Hydro and Its Government, 1906-1995* (Toronto: University of Toronto Press, 1996), 166.

8. G. Bruce Doern, "Canadian Energy Policy and the Struggle for Sustainable Development: Political-Economic Context," in G.B. Doern, ed., *Canadian Energy Policy and the Struggle for Sustainable Development* (Toronto: University of Toronto Press, 2005), 3-50. More generally Carroll Pursell, "The Rise and Fall of the Appropriate Technology Movement in the United States, 1965-1985," *Technology and Culture* 34 (1993): 629-37.

9. Mark S. Winfield, *Blue-Green Province: The Environment and the Political Economy of Ontario* (Vancouver: UBC Press, 2012).

It is tempting to conclude that changing political situations, or the changing energy politics of the 1980s, or even Hydro's own institutional momentum provided too strong a force to be overcome by the RCEPP. Yet studying the RCEPP's vision of a framework for electric power planning reveals deeper conceptual tensions between technologies, environmentalism, expertise, and planning which played an important role in the failure of the Commission's vision. In many nations during the postwar period, systems thinking became a pervasive way of rallying together technologies and society. This approach to systems thinking "consisted of deliberate attempts to fit heterogeneous elements – artifacts, institutions, people, and ideas – into a whole that was greater than the sum of its parts."¹⁰ Hydro's planning in the postwar period had, through its ambiguous relationship with the government of Ontario, viewed systems planning as a method of relating these heterogeneous elements "in identifiable, describable, and controllable ways" which allowed for a technocratic approach to planning to dominate Ontario's electrical system.¹¹ Using a "grow and build" approach, Hydro planners designed larger electrical generating stations while at the same time advertising the consumption of electrical energy at an increasing rate to ensure lower rates and higher returns.¹² During a period of prosperity where growing electrical consumption could be directly linked to GDP growth this ambiguity which allowed for a tendency toward technocratic planning was accepted. With the energy crisis, this privileged technocratic approach was called into question. The RCEPP was an admonishment of ambitious and open-ended systems planning, yet while its solution was critical of technocratic decision-making, it relied on a more centralized and expansive systems-based vision of planning.

The rise of "global-scale environmentalism" deeply informed both the ideology and the approach of the *Final Report* of the RCEPP.¹³ Works like *The Limits to Growth* by the Club of Rome expanded environmentalism for both scientists and the general public "beyond the pollution paradigm" to broader "global issues" which recognized that the "interconnected nature of the world socio-technical-environmental

10. Gabrielle Hecht, "Planning a Technological Nation: Systems Thinking and the Politics of National Identity in Post War France," in Agatha C. Hughes and Thomas P. Hughes, eds., *Systems, Experts and Computers: The Systems Approach in Management and Engineering, World War II and After* (Cambridge, MA: MIT Press, 2000), 133.

11. Ibid., 154. On the ambiguity see Freeman, *The Politics of Power*.

12. Richard Hirsh, *Technology and Transformation in the American Electric Utility Industry* (Cambridge: Cambridge University Press, 1989).

13. J. R. McNeill, "The Environment, Environmentalism, and International Society in the Long 1970s," in Niall Ferguson, Charles S. Maier, Erez Manela, and Daniel J. Sargent, eds., *Shock of the Global: The 1970s in Perspective* (Cambridge, MA: Harvard University Press), 263-278.

systems.”¹⁴ Using computer models and Jay Forrester’s “systems dynamics” techniques, the Club of Rome imagined the environment as a part of a complex world system. The RCEPP stressed similar global “environmental constraints” like the “the Spaceship Earth concept” of Kenneth Boulding as it advocated for a new systems approach for electrical power planning.¹⁵ The Commission’s systems planning techniques, however, not only aimed to understand electricity in Ontario as situated in a global environment, but also considered decision-making a cybernetic information feedback loop between people, environments, and technology.¹⁶ Opposed to the technocratic and controllable systems approach of Hydro, the RCEPP used their expertise to attempt to create a cybernetic closed loop system to oppose the open loop, unbounded, and confident electrical growth model of the postwar period. The RCEPP de-emphasized technocratic planning and recommended the creation of a “strongly future-oriented and just as strongly people-oriented” Ontario Energy Commission, transparent information dissemination about planning, and funding for public advocacy group – “whether the expertise is supportive of or opposed to Ontario Hydro’s planning concepts” – to act as a feedback mechanism in energy planning.¹⁷

The RCEPP presented a form of systems thinking that appreciated both global limits and planning uncertainty. In emphasizing a new, long-term ecological understanding of resource management and energy planning, the RCEPP illustrates an attempt to negotiate the tension between expert-mediated, abstract, and global knowledge and more traditional, tactile, every day, and local environmental concerns.¹⁸ Amory Lovins’ ideas of

14. Paul Edwards, “The World in a Machine: Origins and Impacts of Early Computerized Global Systems Models,” in Hughes and Hughes, eds., *Systems, Experts and Computers*, 245. Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth: A Report to the Club of Rome on the Predicament of Mankind* (New York: Universe Books, 1972).

15. *RCEPP Report*, xvi; Kenneth Boulding, “The Economics of the Coming Spaceship Earth,” in *Environmental Quality in a Growing Economy* (Baltimore: The John Hopkins University Press, 1966).

16. Paul Edwards, *The Closed World Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: MIT Press, 1996); Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of Chicago Press, 2009); Otto Mayr, *Origins of Feedback Control* (Cambridge, MA: MIT Press, 1975); S. Bennett, *A History of Control Engineering, 1800-1930* (London: Institution of Electrical Engineers, 1979).

17. *RCEPP Report*, xxiii. The Office of Energy Conservation has been abbreviated OEC and to avoid confusion the Commission’s recommended Ontario Energy Commission will not be abbreviated in this discussion.

18. Stephen Bocking, *Nature’s Experts: Science, Politics, and the Environment* (New Brunswick, New Jersey: Rutgers University Press, 2004). It is also possible to phrase this using James Scott’s “high modern” terminology as a tension between state planning and local knowledge with the added complication of the need to see as an abstract “spaceship Earth” for long-term environmental protection. James Scott, *Seeing Like a State: How*

hard and soft energy paths were crucial for defining the tensions in the RCEPP's vision of state planning.¹⁹ Lovins' "hard path" represented the technocratic approach Hydro had taken for many years. The hard path relied "on rapid expansion of centralized high technologies to increase supplies of energy, especially in the form of electricity," while the "soft path" was more locally attuned and combined "a prompt and serious commitment to efficient use of energy, rapid development of renewable energy sources matched in scale and in energy quality to end-use needed."²⁰ The RCEPP maintained that a "complementary path," one that combined a commitment to efficient use while still relying on the technical merits of centralized high technologies, would be the best approach for Ontario.²¹ To manage complexity in an increasingly limited world, the RCEPP argued that technology ought not be rejected but rather embraced and brought into more democratic control using systems methodologies to provide long-term guidance.

This complementary path, however, was dissatisfactory for both environmentalists and the government of Ontario. As the 1980s unfolded, environmentalists from Energy Probe and the Ontario Public Interest Research Group began a new call for the dissolution of Hydro's monopoly to allow for small scale, soft energy paths to become a viable option. The tenor of environmentalism in Ontario had never been quite as libertarian as in America, but a critique of centralization, particularly relating to Hydro, was still present in many debates.²² Describing Hydro in 1983 as "a juggernaut that is simply out of control" activists like Paul McKay called for community-based action that "would reduce local dependence on remote corporations and institutions" and "bring the existing political process... under the control of those it was meant to serve."²³ The government of Ontario, for their part, rejected the RCEPP's calls for an Ontario Energy Board and argued environmental and energy questions could be resolved on a case-by-case basis or as part of normal policy making in the Ministry of Energy. The government had accepted the

Certain Schemes to Improve the Human Condition Have Failed (New Haven: Yale University Press, 1998).

19. Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 65 (1977): 66–96 and *Soft Energy Paths: Towards a Durable Peace* (San Francisco: Friends of the Earth International, 1977).

20. Lovins, "Energy Strategy," 65.

21. *RCEPP Report*, 45.

22. Andrew Kirk, "From Wilderness Prophets to Tool Freaks: Post World War II Environmentalism" in Douglas Cazaux Sackman, ed., *A Companion to American Environmental History* (Chichester, West Sussex: Wiley-Blackwell, 2010) and *Counterculture Green: The Whole Earth Catalog and American Environmentalism* (Lawrence, Kansas: University Press of Kansas, 2007).

23. Paul McKay, *Electric Empire: The Inside Story of Ontario Hydro* (Toronto: Between the Lines, 1983), 9, 283.

policy *products* of the RCEPP as a means of reining in Hydro's ambitious growth, but not the RCEPP's new systems *process* of electrical power planning to bring the notion of global limits and long-term planning into continuous debate in Ontario. Without a venue or funding to facilitate discussions and research on Ontario's long-term electric future, short term goals and the environmental impact of individual generating stations once again dominated. The idea of an expert mediated vision long-term planning within a global environment was rejected and the more fragmented approach that had dominated planning remained.

Visions of Planning

Since the recovery from an acute energy shortage after the Second World War, Ontario Hydro had worked hard to provide an abundance of energy for Ontarians.²⁴ While the energy needs of the war had opened up hydro resources which had previously been tied up in border disputes on the St. Lawrence Seaway and the Ottawa River, Hydro's forecasts for energy in a growing Ontario continued to rise beyond its hydro-electric capacity.²⁵ Even before the St. Lawrence Seaway development had been completed, many at Hydro predicted that to sustain a load growth rate of nearly eight percent per annum new sources of power would have to be developed.²⁶ With hydroelectric power resources growing short in southern Ontario, Hydro furthered its investment in coal-powered steam generation and attached a greater significance to the promise of nuclear power. As this investment in steam generation grew, a trend toward a "grow and build" approach to planning, noted in the United States by Richard Hirsh, began to develop in Ontario.²⁷

"Grow and build" electrical development was predicated on economies of scale. Large, centralizing steam and nuclear plants could produce power at a lower cost than more decentralized small plants. These large generating stations, however, required power consumption match the generation capacity that had been forecasted when they were built. In the United States, as Hirsh points out, electrical utilities aimed promote consumption through "live better electrically" campaigns which aimed to promote their electrical load, including electrical house heating, to

24. Matthew Evenden, "Lights Out: Conserving Electricity for War in the Canadian City, 1939-1945," *Urban History Review* 34 (2005): 88-99 and "Mobilizing Rivers: Hydro-Electricity, the State and the Second World War in Canada," *Annals of the Association of American Geographers* 99 (2009): 845-55.

25. Daniel Macfarlane, *Negotiating a River: Canada, the US, and the Creation of the St. Lawrence Seaway* (Vancouver: UBC Press, 2014).

26. A. W. Manby, "Optimistic Note," *Hydro News* 44, 1 (January 1957): 19.

27. Hirsh, *Technology and Transformation*, 19.

produce lower electrical rates.²⁸ This sales and promotion boost in the late 1950s and into the 1960s in Ontario was also driven by a new “threat” of losing electrical load to natural gas companies who had entered the Ontario market in 1957.²⁹ In the name of protecting low rates, providing “power at cost,” and protecting the taxpayer’s “investment” in their electrical system, Hydro began to adopt “grow and build” methods and an aggressive load building advertising campaign using the “live better electrically” slogan while it continued to invest in larger generating facilities.³⁰ In Ontario, system planners like Hydro’s Chairman George Gathercole continued to argue into the early 1970s that “the long-term trend” was “undoubtedly up.”³¹

The Toronto-based environmental group Pollution Probe disagreed. Formed in 1969 and largely drawing from students and faculty at the University of Toronto, Pollution Probe was sparked, like many environmental activists in southern Ontario, by the CBC documentary *The Air of Death*.³² Rallying around causes popularized by American environmentalists, such as highway litter, returnable containers, phosphates, and river health – particularly along Toronto’s Don River – Pollution Probe became “Canada’s most important environmental activist group on the domestic front through the 1970s.”³³ Pollution Probe was critical of Hydro’s rampant “promotion of power consumption” and argued that “Hydro continues to not only meet the demand but to actually encourage and promote additional electrical demand.”³⁴ In early 1975 Energy Probe formed as a spinoff group from Pollution Probe and set its sights on studying energy policy, correcting “errors and failures that dominate our current approach to energy problems,” and to “stabilize average per capita energy consumption in Ontario.”³⁵

Despite growing this environmentalist critique and public concern about energy limits stimulated by the 1973 energy crisis, Hydro’s optimism for the potential of a high-energy society was high and its vision of planning

28. *Ibid.*, 52. Also see chapter two of Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (Cambridge: Cambridge University Press, 2001).

29. Freeman, *Politics of Power*, 105.

30. Ross Strike, “Challenge for Utilities,” *Hydro News* 44, 10 (October, 1957): 19.

31. Ontario Hydro (HEPCO), *Sixty-Second Annual Report for the Year 1969* (Toronto: Ontario Hydro, 1970), v.

32. Ryan O’Connor, “An Ecological Call to Arms: The Air of Death and the Origins of Environmental Activism in Ontario,” *Ontario History* 105, 1 (2013): 19-46.

33. *Ibid.*, 46.

34. Pollution Probe, *Brief to Task Force Hydro* (Toronto: Pollution Probe, 1972), 3.

35. “Statement by Dr. Donald Chant,” quoted in Ryan O’Connor, *Toronto the Green: Pollution Probe and the Rise of the Canadian Environmental Movement* (PhD Thesis, London, Ontario, University of Western Ontario, 2010), 212.

matched its ambition.³⁶ The energy crisis, for Hydro, was something to be met head-on with new electrical development using nuclear and coal to replace a decline in oil and natural gas rather than a fundamental crisis for a high-energy electrical culture.³⁷ For much of the postwar period there had been a strong correlation between GNP and electric power consumption in many Western nations and Hydro's forecasters argued that it was imperative that a high level of growth be maintained.³⁸ The ideology of "endless expansion" which had characterized the systems planning approach of Hydro was, even with the gloomy energy prognosis of the early 1970s, difficult to alter.³⁹ In February 1974 Ontario Hydro reported its plans to double its generation capacity over the next ten years.⁴⁰ The economics and the politics surrounding this expansion, however, did not line up with the concerns of the time. Stephen Lewis, the leader of the opposition New Democratic Party (NDP), attacked the PC government of Bill Davis in 1975, calling attention to the inability of the government to underwrite \$24-billion in capital expenditures which Hydro had projected.⁴¹ "Quite simply," Lewis stated, "we just cannot afford Hydro's expansion plans."⁴² With an election scheduled for September, Davis ordered the RCEPP to study the issue of power planning on March 13, 1975.⁴³

A Venue for Debate

The initial mandate for the RCEPP was to examine "the long-range electric power planning concepts of Ontario Hydro for the period 1983-1993" and "to relate them to provincial planning, to the utilization of electrical energy and to environmental, energy and social-economic

36. Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London: Verso, 2011).

37. "The Energy Crisis," *Hydro News*, December (1970): 6-9. In "Can electricity fill the energy gap?" *Hydro News* answered the titular question with a resounding "yes." *Hydro News*, November/December (1973): 8-11.

38. Ontario Hydro, *Submission to the RCEPP Public Information Hearings, Socio-economic Factors*, (Toronto: Ontario Hydro, 1976), 4.

39. Daniel Rosenbloom and James Meadowcroft, "The Journey towards Decarbonization: Exploring Socio-Technical Transitions in the Electricity Sector in the Province of Ontario (1885-2013) and Potential Low-Carbon Pathways", *Energy Policy* 65 (February 2014): 670-79.

40. Ontario Hydro, *Long Range Planning of the Electric Power System, Report 556 SP* (Toronto: Ontario Hydro, 1974).

41. "Lewis says Hydro creating a monster," *The Globe and Mail* (March 15, 1975): 36

42. Thomas Claridge, "Proposal attacked on 2 flanks: Hydro rate rise of 30% called unrealistic," *The Globe and Mail* (April 26, 1975): 5.

43. For a very political reading of this attempt by Harris to "skate right past energy issues" see former Ontario NDP leader Howard Hampton's book with Bill Reno, *Public Power: The Fight for Publicly Owned Electricity* (Toronto: Insomniac Press: 2003), 128.

factors.”⁴⁴ Initially, the Commission had been ordered to complete its report by October of 1977, however, this mandate was expanded in December of 1977 to more closely examine nuclear power in Ontario.⁴⁵ Involving broad public consultation and an ever widening mandate, the Commission grew into five year-long study producing numerous reports and issue papers before finally publishing its final, nine-volume report on February 29, 1980.⁴⁶ Dr. Arthur Porter, a professor of engineering at the University of Toronto whose previous work had included writing a textbook on cybernetic systems and chairing the Canadian Environmental Advisory Council was selected as chairman.⁴⁷ The other commissioners included Robert Costello, the vice-president of operations for the Abitibi Paper Company passed away in 1977, Solange Plourde-Gagnon, a journalist formerly on the Queen's Park beat for *Le Droit* who “represented the consumer viewpoint to the commission,” George McCague of the Ontario Federation of Agriculture, and Dr. William Stevenson, an economist and member of the Ontario Energy Board.⁴⁸

The RCEPP was ordered not only to review planning of specific projects, but to study “broader issues relating to electric power planning.”⁴⁹ This mandate allowed the Commission to become a venue for an array of ideas about energy policy in a limited world that would eventually be honed into a vision of Ontario's electrical future.⁵⁰ The Commission timespan was not immediate, which allowed for latitude to seek out “public attitudes concerning not the life styles of today but the life styles which most people hope or trust will be in vogue a decade or even two or more decades hence.”⁵¹ While the Commission would make

44. *RCEPP Report*, 1.

45. RCEPP, *A Race Against Time* (Toronto: RCEPP, 1978).

46. The first volume was the official report and the ninth was a bibliography. The seven technical appendix all contained a boilerplate note which stated that the Commission had “relied heavily” on these document to make their recommendations but “views expressed in this volume are ultimately the responsibility of the author.”

47. Thomas Coleman, “U of T professor to head commission into planning for Ontario power needs,” *The Globe and Mail* (March 14, 1975), 1; Arthur Porter, *Cybernetics Simplified* (New York: Barnes & Noble Books, 1969). Porter discusses his time as chairman of Science and Medicine for Expo '67 and Ontario's Committee on Automation and Employment in the mid-1960s extensively in his autobiography *So Many Hills to Climb: My Journey as a Computer Pioneer* (Silver Spring: The Beckham Publication Group, 2004).

48. *RCEPP Report*, “The Commission.” “Commissioners named to study Hydro plans,” *The Globe and Mail* (July 25, 1975): 5.

49. *RCEPP Report*, 187.

50. Other commissions during this period explored more direct issues relating to specific projects. See Liora Salter and Debra Slaco, *Public Inquiries in Canada* (Ottawa: Science Council of Canada, 1981), 79.

51. RCEPP, *The Future Begins Here: Facts for you from the RCEPP* (Toronto: RECPEP, 1976), 1.

some rulings about contemporary debates in Hydro's planning, its project was motivated by a concern to generate a long-term decision-making framework which could guide planning. The role of "public attitudes" within this decision-making framework was highly valued by the Commission.

The polling of these "public attitudes" was done through a series of public meetings throughout Ontario during late 1975 and early 1976. Publicised in newspapers and in its own short-lived newsletter, *Contact*, the Commission called for short submissions to be read and discussed at these meetings.⁵² These public meetings generally reflected the direct concerns of local citizens about Hydro's development, often citing concerns with local issues such as transmission line rights of way, and included submissions from individuals as well as groups as diverse as the Wellington Federation of Agriculture, the Consumer's Association of Canada, and the Ontario Pork Producers Board.⁵³ The meetings in Toronto in late 1975 were most heavily attended by environmental groups including the Working Group on Canadian Energy Policy, Energy Probe, and the Sierra Club of Ontario.⁵⁴ Energy Probe member William Pedan's submission garnered special attention of the commissioners. Commissioner Stevenson responded to Pedan that in the future "Energy Probe might be able to assist us more usefully in terms of looking at matters that may... be better done by you than our own small research staff or by consultants."⁵⁵ He further suggested that Energy Probe look into applying for the Commission's funding for public interest groups. In keeping with its mandate to educate the public, a summary of the preliminary meetings, *Shaping the Future*, was published in 1976, where the Commission reported that "conserving energy and restricting growth were issues raised at virtually every meeting."⁵⁶ It further echoed the public concerns about Hydro's technocratic planning when citing a public participant from Sudbury who summed up Hydro as an "energy monster" which business and industry fed by encouraging consumers "to buy more

52. RECPP, *Contact* 1 (Toronto: RCEPP, 1975) and, for example, "Royal Commission Advertisement," *The Globe and Mail*, 12 November 1975, 12.

53. Space does not permit a full survey of the numerous transcripts of these meetings. Examples are *Preliminary Meeting of the RCEPP: January 22 1976, Listowel, Ontario, Volume 17* (Toronto: RCEPP, 1976) and *December 16 1975, Kingston, Ontario, Volume 15A*. Of course, the kind of public form allowed for more outlandish suggestions too. One "independent inventor" suggested Tesla's wireless transmission scheme as a solution to Hydro's transmission system.

54. RCEPP, *Preliminary Meeting of the RCEPP: November 12 1975, Toronto, Ontario, Volume 5A* (Toronto: RCEPP, 1976).

55. *Ibid.*, 817.

56. RCEPP, *Shaping the Future*, 19.

and more energy consuming goods thus creating the demand for energy.”⁵⁷

Chairman Arthur Porter understood that many thought of the Commission cynically as a “way of getting politicians off the hook,” but took his mandate seriously, particularly in what he saw as the Commission’s “experiment in the funding of public interest groups as a vehicle to encourage public participation.”⁵⁸ Over the course of the Commission, \$357,315.84 in funding was allotted for individuals and organizations to undertake submissions and research.⁵⁹ In the years between 1976 and 1980, approximately \$50,000 of this funding went to Energy Probe, \$35,000 to the Sierra Club of Ontario, \$67,500 to the Public Interest Coalition for Energy Planning (a Commission organized office “intended to encourage the public to participate in a variety of ways in the work of the RCEPP”), \$13,000 to the Conservation Council of Ontario, and \$25,000 to the Canadian Coalition for Nuclear Responsibility. Smaller amounts went to groups including *Alternatives Magazine*, the Consumers’ Association of Canada, and private individuals and consultants. These funds for interveners were critical not only for the development of the report, but in providing a venue, “a ready-made forum,” for environmental critiques of Hydro and environmental activism in Ontario.⁶⁰

The research community facilitated by the Commission was given an opportunity to formally communicate some of their findings at a conference held in downtown Toronto in the autumn of 1976.⁶¹ Presenters at the “Symposia on Ontario's Electrical Future” included Dr. Kenneth Hare from the Institute for Environmental Studies at the University of Toronto, Dr. Arthur Smith who was the Vice President of Inco, Gil Winstanley from the Office of Energy Conservation, and Fred Roots from Environment Canada who addressed “some of the environmental constraints that we should face in the next few centuries.”⁶² Attended by members of Energy Probe and the Sierra Club, the meetings often continued well into the night, with one meeting continuing until “about a quarter to 12 at night” on a Friday evening.⁶³ The funding opportunities and venue provided by the RCEPP allowed for environmental groups in Ontario to focus more directly on long-term planning on a global-scale. It

57. Ibid.

58. Arthur Porter in a form letter responding to interested parties. Included in “The Future Begins Here,” 1-2.

59. *RCEPP Report*, Appendix C, 193-4.

60. O’Connor, *The First Green Wave*, 126.

61. RCEPP, *Symposia on Ontario's Electrical Future* (Transcript of Proceedings, 1976) three volumes.

62. *Symposia*, 9775.

63. *Symposia*, 10,289.

provided an opportunity to generate a community of global energy policy expertise who could mediate their knowledge of a global-scale environment to electrical power planning in Ontario.

Hard and Soft Paths

While not present at the conference in 1976, Friends of the Earth member Amory Lovins' thinking on energy policy was the matter of some discussion during a talk by Gordon Edwards, the National Chairman of Canadian Coalition for Nuclear Responsibility. Lovins' paper "Exploring an Energy Efficient Future for Canada" had recently appeared in *Conservator Society Notes*, where he had worked "some figures for Canada on contract for the Science Council."⁶⁴ The Science Council of Canada's "Committee on the Implications of a Conservator Society" was formed in 1975 to study the potential of transitioning Canada from a consuming society to a "conservator society." With concerns stemming "from a deep concern for the future, and the realization that decisions taken today, in such areas as energy and resources, may have irreversible and possibly destructive impacts in the medium to long term," the SCC had similarly enrolled and commissioned academics to generate innovative policy directions in the wake of a global environmental awareness and limited energy supplies.⁶⁵ As *Saturday Night* put it in their profiles of prominent advocates for the conservator society, "as Schumacher [the author of *Small is Beautiful*] is to the conservator society as a whole, so Lovins is to those aspects of it that relate directly and specifically to energy."⁶⁶

While Lovins' ideas were important to SCC's approach, the most concrete translation of his approach into Canada in general and Ontario in particular was through the work of David Brooks at his Office of Energy Conservation (OEC) in the Department of Energy Mines and Resources (EMR). Lovins' ideas were communicated directly to the minister of EMR, Alistair Gillespie, through their correspondence and soon Brooks' OEC began translating, adapting, and expanding upon these ideas to create a coherent energy plan for both consumers and legislators in

64. Amory Lovins, "Exploring Energy-Efficient Futures for Canada," *Conservator Society Notes* 1 (1976), 5-16.

65. SCC, *Canada as a Conservator Society: Resource Uncertainties and the Need for New Technologies* (Ottawa: Science Council of Canada, 1977), 10-13. On SCC's "conservator society" see chapter three of Henry Trim, *Experts at Work: The Canadian State, North American Environmentalism, and Renewable Energy in an Era of Limits, 1968-1983* (PhD dissertation, University of British Columbia, 2014).

66. "The Conservator Credo," *Saturday Night*, 81 (March 1977): 35; E. F. Schumacher, *Small Is Beautiful: A Study of Economics as If People Mattered* (London: Blond & Briggs, 1973).

Canada.⁶⁷ The OEC was, as Lovins later recalled, “the best in the world” allowing for Canadians to be “among the first people in the world to recognize that the scope for efficient energy use and harnessing a wide range of renewable energy flows deserved serious study.”⁶⁸ Beyond the ideas of Canadian energy self-reliance put forth by EMR, Brooks aimed to moderate consumption of energy in Canada as the prime focus of energy policy.⁶⁹ The issue, he argued, was that energy policy too often focused on the correct ways to develop new supplies of energy, whether they be nuclear, thermal, or renewable like solar. The “key to sensible resource policy” was about moderating consumption “both in its character (what we consume) and its scale (how much we consume).”⁷⁰ He concluded: “demand rather than supply is the issue.” The focus on the environmental impact of demand tied into a vision of a wider conserver society which focused less on the local environmental impact of electrical power plants and more on the underlying values and aims of a high energy society.

Lovins presented before the RCEPP on October 19, 1977. Lovins position made a clear impression on the Commission's phrasing in its 1978 report on nuclear power, *A Race Against Time*.⁷¹ The report stated that finding “energy balance may depend on a remolding and reshaping of our institutions, organizations and value systems” which necessitates “increasing efforts to match, most appropriately, energy quality with end-use requirements.” Lovins had similarly argued for a “rapid development of renewable energy sources matched in scale and in energy quality to end-use needed.”⁷² The report was described as a “lukewarm endorsement” of nuclear power in that it argued that nuclear was “hard technology requiring very long lead-times, highly sophisticated controls, extensive planning and regulation and unending vigilance to ensure safety.”⁷³ While suggesting that Lovins position was valuable, the report was far from an endorsement of his energy strategy.⁷⁴ The report did not

67. Henry Trim, “Brief Periods of Sunshine: A History of the Canadian Government's Attempt to Build a Solar Heating Industry, 1974-1983,” *Scientia Canadensis* 34 (2011): 38.

68. Introduction to Robert Bott, Robert, David Brooks, and John Robinson, *Life after Oil: a Renewable Energy Policy for Canada* (Edmonton: Hurtig Publishers, 1983) 1-2.

69. EMR, *An Energy Strategy for Canada: Policies for Self-Reliance* (Ottawa: EMR, 1976). Also see John Erik Fossum, *Oil, the State, and Federalism: The Rise and Demise of Petro-Canada as a Statist Impulse* (Toronto: University of Toronto Press, 1997).

70. Brooks, *Zero Energy Growth*, x.

71. RCEPP, *A Race against Time* (Toronto: RCEPP, 1978).

72. Lovins, “Energy Strategy,” 65.

73. Walt Patterson, “Porter with Nuclear Reservations,” *New Scientist* (November 2, 1978): 362-363. *A Race against Time*, 64.

74. I will return to this tension when discussing the final report. See RCEPP, *A Race Against Time*, 184 where the report cites Alvin Weinberg's review of Amory Lovins, *Soft Energy Paths in Energy Policy* 6 (March 1977): 85-87 which chides Lovins position as

propose for a moratorium on nuclear development, but indicated that “hard energy paths” were problematic and foreshadowed a strong desire to include the public and environmentalist groups in debates not only about the sources of energy, but also modifying social desires to consume energy in a limited world. Rather than a limited picture of planning based upon an ever growing demand, the RCEPP indicated that new social and global-scale environmental factors needed to be taken into account when discussing electrical power planning.

Energy Probe took a similar approach in their later submissions to the Commission, *Energy Planning in a Conserver Society*.⁷⁵ Using the funding system of the RCEPP, these reports submitted to the commission aimed to illustrate how the transition to a conserver society “seems the most promising candidate” for the needed reforms for dealing with “serious - and in the long term overwhelming - economic and resource problems.”⁷⁶ The implementation strategies suggested by these reports emphasized demand side conservation “to change the attitudes, values, and beliefs on which that behaviour is based.”⁷⁷ To establish this new “moral” context, the reports suggested the development of education programs focused on the “long term costs” of energy use, the limits to growth, and the responsibility of energy use in a high-energy society. Key to this message was that rather than continuing to promote demand and growth, Hydro ought to take “a new leadership role in policy, information and education, the development of other energy technology, energy management and administration of government energy policy.”⁷⁸ Most fundamentally, these approaches attempted to expand the scope of the system to be modelled and forecasted to include a new mediated global-scale environment.

Expanding the Scope of the System

The final report of the RCEPP was submitted in February 1980. It called for a lower load forecast for Ontario and recommended holding off on nuclear development in favour of increased demand management through conservation and further research into sources of electrical energy like

“revolutionary” and concludes with a “hope that common sense as well as social inertia will conspire to maintain our society on some middle road that embraces all ways to salvation from energy catastrophe.”

75. Robert Crow, Peter Szegedy-Maszak, Christopher Conway, *Energy Planning in a Conserver Society: The Future's not What it Used to Be* (Toronto: Energy Probe, 1979) and Chris Conway, Robert Crow, Brain Marshall, and David Brooks, *Energy Planning in a Conserver Society: Implementation Strategies* (Toronto: Energy Probe, 1979). The cited Conway is of no relation to the author.

76. Conway et al., *Implementation Strategies*, 1.

77. *Ibid.*, 3.

78. *Ibid.*, 63.

solar and wind power. Other historians of Energy Probe and Hydro have noted that the broad recommendations of the RCEPP “echoed those long forwarded by Energy Probe” and that its “stop building and start conserving” approach “validated NDP policy.”⁷⁹ A turn to renewable energy resources and a conclusion that, using Brooks’ term, “zero energy growth per capita by the year 2000, if not before, is a realistic and necessary goal for an industrial society such as exists in Ontario,” were two of the primary ways the report imagined living in moderation “within environmental constraints.”⁸⁰ The RCEPP recommended a forecasted growth rate of between two and a half and four percent per annum for its planning period which, while higher than the rate proposed by Energy Probe, was considerably lower than Ontario Hydro's previous estimates of seven percent.⁸¹ While lower growth rates were critical, the energy sources, rationale, and means for making future decision about this limited growth was a key and often overlooked factor in the Commission's report.

The final report took a view of the environment on a global-scale, borrowing from the concept of spaceship Earth. From this perspective it argued “it should not be assumed, *a priori*, that there is inevitably a conflict between the utilization of energy, on the one hand, and the environment, on the other.”⁸² The environmental ethic used by the report is borrowed from the Canadian Environmental Advisory Council, of which Porter was past chairman, and stated that “every person shall strive to protect and enhance the beautiful everywhere his or her environmental impact is felt, and to maintain or increase the functional diversity of the environment in general.”⁸³ The “beautiful” in its passage is meant not only to reflect “that which pleases our senses in the ordinary meaning but also that which pleases our minds, that which is functional,” or, to put it another way, the beautiful is that which is found:

In a new complex natural system whose multitude of balanced, inter-related parts appeals to our sense of order and the *rightness* of things. Disordered, disturbed ecosystems are ugly: they offend us in the same way that a car buff is offended by a malfunctioning engine. On the other hand, ecosystems in which each intricate part, the species and the roles they play, is functioning smoothly and contributing to the integrity of the whole system are elegant - they have beauty.⁸⁴

79. O'Connor, *Toronto the Green*, 224. Hampton, *Public Power*, 130.

80. *RCEPP Report*, xvi.

81. See O'Connor, *The First Green Wave*, 138 for Energy Probe's criticism that the report had not “gone far enough.”

82. *RCEPP Report*, 119.

83. *Ibid.*, 121.

84. Emphasis in original, quoted in *Ibid.* from Donald Chant, “Toward an Environmental Ethic,” *Ontario Naturalist* (March 1977).

Quoting from Donald Chant above, an important figure in the early history of Pollution and Energy Probe, the RCEPP argued that education about the nature of the Earth as a system was key to understanding “the concepts of life quality and style and how they are completely dependent upon the way man treats the environment.”⁸⁵ This approach in particular, appealing to the “rightness” of systems theory, is offered without much more additional discussion.

Unpacking the meaning of this “rightness” provides critical insight into the kind of systems understanding of the environment which underlies the Commission’s ethic. First, it is useful to recall that Porter, as an engineer and author of a text on cybernetic systems, was drawing from a different pedagogical tradition than his engineering colleagues at Hydro.⁸⁶ For Porter, as he described in his text *Cybernetics Simplified*, cybernetics was a set of ideas which were “having a profound influence on the transformation of man’s environment.”⁸⁷ “The systems concept,” the Commission reported, “is ubiquitous in nature and in the man-made environment.”⁸⁸ Marshall McLuhan also suggested a strongly restructured idea of nature in systems terms in his introduction to Porter’s text where he stated “we would do well to consider the effect of the new satellite environment around the planet as altering our very concept of Nature... ‘Nature’ is now content, as it were, in a man-made environment.”⁸⁹ Unlike an environmental land ethic or a wilderness, the cybernetic life support system of spaceship earth was the environment being discussed by the Commission.⁹⁰ Also unlike land or wilderness, however, this life support system was only visible as abstract data in energy and environmental expert’s forecasts and models.

Modelling and Forecasting Energy Futures

This systems understanding shaped not only the environmental ethic of the RECPP, but also how it approached planning and the decision-making process. The “technology assessment” process, advocated by the Office of Appropriate Technology (OAT) in the United States, was suggested as an iterative planning process which was “attempting to fit technology to society rather than vice versa.”⁹¹ The decision-making process required an

85. Ibid. On Chant with Pollution Probe see O’Connor, “An Ecological Call to Arms,” 42.

86. On engineer’s social and environmental challenges see Matthew Wisnioski, *Engineers for Change: Competing Visions of Technology in 1960s America* (Cambridge, MA: MIT Press, 2012).

87. Porter, *Cybernetics Simplified*, vii.

88. RCEPP Report, 93.

89. Porter, *Cybernetics Simplified*, foreword by Marshall McLuhan.

90. Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge: Cambridge University Press, 1987).

91. RECEPP Report, 9. On OAT see Pursell, “The Rise and Fall.”

active involvement with the “environments” within which “the system” existed, including the global environment, local environments, and society. The “planning of an electrical power system can be undertaken only in the context of its environmental and social consequences,” but planning in this kind of complex interactive system depended “on a high level of judgement” to construct energy forecasts and scenarios to steer the system.⁹² This meant, “*ipso facto*, that the model loses its air of scientific authority.”⁹³ The Commission contrasted Hydro’s 1979 load forecast, the Ministry of Treasury and Economics 1976 submitted forecast, and their own “scenario approach” to show how all have potential flaws. The difference between these models was in the role of judgement and how explicitly it was recognized. Rather than relying on econometric models using a “forecasting equation” for electrical loads as a function of GDP, the Commission emphasised the impossibility of finding a truly “objective forecasting method” and instead recommended an iterative, cybernetic feedback-like, process of second guessing and public participation to constantly update an ensemble of possible scenarios based on collective social value.⁹⁴

The models used by Energy Probe, Brooks, and others who had submitted reports on forecasting to the Commission had emphasized similar approaches. These models relied on “model back-casting” which did not create a “*prediction* of likely futures” but rather studied the “*feasibility* of alternative scenarios.”⁹⁵ The systems modelling used by these reports criticized the simplistic extrapolation used by Hydro to “grow and build” without limits. As Jim Dooley from the University of Toronto’s Faculty of Management outlined, “conservation measures” might change a model of exponential growth such that the model was “no longer valid.”⁹⁶ Dooley’s review of “the Energy Demand Forecasting Methods” of Hydro, which he submitted to the Commission, called for the adoption of a “policy-forecasting framework.”⁹⁷ More than simply trying to predict the future, he insisted that Hydro’s forecasts ought to be expanded to better account for their “economic, social, and environmental

92. RCEPP Report, 119 and 30.

93. Ibid., 30.

94. Ibid. The report indicates that Hydro’s 1979 model was “much more sophisticated.”

95. John B. Robinson and Clifford A. Hooker, “Future Imperfect: Energy Policy in Canada Institutional Mandates and Constitutional Conflict,” in Thomas Baumgartner and Atle Midttun, ed., *The Politics of Energy Forecasting: A Comparative Study of Energy Forecasting in Western Europe and North America* (Oxford: Oxford University Press, 1987), 227.

96. *Symposia*, 9640.

97. James Dooley, *Review of the Energy Demand Forecasting Methods Used By Ontario Hydro and the Ministry of Treasury, Economics, and Intergovernmental Affairs* (Toronto: RCEPP, 1977): 2.

consequences.”⁹⁸ The “era of providing virtually unlimited services is commonly believed to be at an end,” Dooley wrote, both “due to the growing shortage of capital and physical resources and because of environmental considerations.”⁹⁹ As such, there was a need to transition from the “unconstrained” forecasting of grow and build utilities to a “constrained” forecast system with a “soft control... between uninhibited demand and rationing.”¹⁰⁰

For its own models, the RCEPP used the “long term simulation model” developed by B. C. McInnis of Statistics Canada to develop its forecasts. The RCEPP formally recommend that Hydro follow its lead to include “end use” forecasting, or “backcasting,” “in addition to macro-economic or top-down” models to not attempt predictions but to look at the feasibility of possible scenarios.¹⁰¹ These scenarios, it stressed, were not simply the dictum of some abstract computer model or “decision-making bodies” who “depend almost exclusively on scientists and technologists.”¹⁰² Critiquing an “élitist technocracy,” the report insisted that systems planning would be without merit without a robust feedback constraint from the people of Ontario through their government. This robust feedback, the Commission argued, was stunted by the “virtual monopoly on technical information relating to the planning and operation of the province’s electric power system” that the government of Ontario and Hydro enjoyed. The centrality of information degraded trust in electrical power planning and “unless this trust (both *de jure* and *de facto*) is assured, major social difficulties in the planning of the electric power system will persist.”¹⁰³ Recommending that “Hydro should ensure that the participants in the utility’s participation programme have access to independent expertise whether the expertise is supportive of or opposed to Ontario Hydro’s planning concepts,” the Commission attempted to add a feedback mechanism to the planning philosophy of Hydro.

Commission echoed some of the modelling techniques of environmental activists who had submitted to the Commission, but these activists also shared some of the same commitment to systems approaches to management and planning. Energy Probe contrasted the planning process, “which few energy decision makers seem willing to discuss,” as a

98. *Ibid.*, 5.

99. *Ibid.*

100. *Ibid.*, Appendix A, i.

101. *Ibid.*, 31. Bocking writes in *Nature’s Experts*, “The alternative futures would not be considered forecasts of what will happen, but scenarios of what could happen if certain decisions were made” which could be used for “determining what future would be most preferable”, 224.

102. *RCEPP Report*, 165.

103. *Ibid.*, 166.

“physical science” and a “social art.”¹⁰⁴ They opposed a strict technocratic vision of a planner who “attempts to assume the role of an objective or value-free scientist, technician, engineer or economist,” with a more organic school of planning which, borrowing from systems theory, understood society as an “open system.”¹⁰⁵ In this formulation, the ideas of systems theory were offered as a way to bring the technocratic planning process into a more social process of power planning.

This iterative systems planning mechanism was not a radical proposal for a rapid change from a “hard energy path” to a soft one, but rather slow process. The report noted that Hydro “epitomizes the highly centralized technology-based institution” which represented the hard energy paths of Lovins almost perfectly. In a “period when the 'small is beautiful' approach to energy questions is being advocated on a broad front” critiques of Hydro for following this path were “not surprising.”¹⁰⁶ But it also contended that soft and hard paths were not “mutually exclusive” and that a transition period to a “complementary path,” a rather lengthy one, was required.¹⁰⁷ Tempering Lovins’ strong argument for a rapid change, the Commission found that “even conceptually it is a mistake to talk about a hard-energy path and a soft energy path because these paths have already coalesced and in our opinion will continue to do so for many years to come.”¹⁰⁸ Furthermore, it rebuffed an idea that “Hydro has too much power over important decisions of social policy that should be left to the government.”¹⁰⁹ Rather than “arrogance” the RCEPP noted that Hydro’s planning over the course of the Commission became increasingly focused on “education, information, and public participation programmes.”¹¹⁰ Altering Hydro’s systems planning with structured feedback from the people of “Ontario, through the government,” would allow for this “complementary path” to fully flourish.¹¹¹ The first directions suggested were for research into biomass energy projects and solar space and water heating “with special reference to its potential role in energy conservation.”¹¹² The recommendations also called for tests on “the use of conventional as well as renewable or non-conventional fuels,” for the institution of “mandatory heating, insulation, and lighting standards” for

104. Crow et. al., *The Future's not What it Used to Be*, 4.

105. *Ibid.*, 8-17.

106. *RCEPP Report*, 22.

107. *Ibid.*, 45.

108. *Ibid.*, 48.

109. *Ibid.*, 169.

110. *Ibid.*

111. *Ibid.*, 29.

112. *Ibid.*, xii.

new residential and commercial constructions, and for stricter efficiency standards for appliances.¹¹³

There was no call for a total transition to decentralized, soft energy paths. A rapid push for soft energy exclusively or a “sudden transition to a ‘conservator society’ could have serious destabilizing effects on the economy.”¹¹⁴ Hydro’s system itself was, the Commission pointed out, a cheap and reliable one to operate.¹¹⁵ It was better, they argued, to view energy conservation – both in term of using less and using more efficiently – as a potential new “source” of energy which could be developed like any other source of energy. Through long-term demand management and carefully planning through systems methods, conservation could be emphasized. When it came down to a debate between the ethics of “secure storage of radioactive wastes” or the risks of “elevating levels of carbon dioxide in the atmosphere” the commission concluded that “only energy conservation is a certain winner.”¹¹⁶

Systems Planning and Environmental Action

The government of Ontario accepted most of the Commission’s recommendations and agreed, for the most part, on the final policy *products* of the report. It did not, however, accept the decision-making *process* which the report stressed must be created to continue the public participation and research facilitated by the RCEPP. Recommendations 12.6 to 12.9, which dealt with the creation of an Ontario Energy Commission which would be “responsible for advising the government and the people of Ontario on energy policy in general and on electrical power planning in general,” were rejected outright.¹¹⁷ The government argued there was an overlap with existing or planned legislation and that recently developed the Environmental Assessment Program was “an excellent means for accomplishing this for energy and other projects.”¹¹⁸ Energy policy advice, the government stated, should continue to be “primarily the responsibility of the Ministry of Energy.”¹¹⁹ Finally, the

113. Ibid.

114. Ibid., 146.

115. Ibid., 45.

116. Ibid., 128. The attention given to climate change in the report is notable and interesting, especially as discussed in its sixth volume, *Environmental and Health Implications of Electric Energy in Ontario*, co-authored by Club of Rome member James Rennie Whitehead which cites personal communication with climate scientist C. D. Keeling for its data. On Keeling see Spencer Weart, *The Discovery of Global Warming* (Cambridge, MA: Harvard University Press, 2008), 35-37.

117. *RCEPP Report*, 1. *Response of the Government of Ontario to the RCEPP* (Toronto: Ontario Ministry of Energy, 1981), 110-111.

118. Ibid., 113.

119. Ibid.

government suggested further study would be needed to grant funding to public interest groups “for individually approved purposes” such as energy or environmental hearings on particular cases.¹²⁰

The holistic, systems vision of the RCEPP was mostly ignored by the government of Ontario. The government's position indicated that case-by-case energy and environmental issues would still be the concerns of the government ministries and the corporations effected by them. If sufficient debate was necessary, in a case like uranium mining at Elliott Lake, the “expenses of expert witnesses” would be covered as part of a hearing of “the Environmental Assessment Board under The Environmental Assessment Act.”¹²¹ In contrast to the wider demand-side issues the Commission had built its framework to address, the Environmental Assessment Program only allowed for debate on the supply-side, be it during the construction of new generating stations or their continued emissions and waste. The broader planning perspective of Ontario's energy future in a global-scale environment was to be left to the Ministry of Energy and Hydro to, once again, negotiate in the same, although slightly improved, fashion as before.¹²² With the final report of the RCEPP the Commission had fulfilled its objective to set planning targets which these two bodies could work toward. The methods of working toward these targets would continue to be as they were before the “dawning age of energy conservation.” Without a process to continue the generation of global energy expertise and to use that expertise to focus electric power planning in Ontario, a more fragmented patchwork of environmental concerns once again began act as the primary critique of Ontario's electrical future.

The reaction to global-scale environmentalism, however, could also minimize the traditional, local-focused values of environmentalism. One of the most surprising recommendations of the RCEPP pertained to *not* installing sulphur scrubbers at Hydro's “fossil-fuelled electrical power stations.” The Commission had decided that the continued practice of using low-sulphur fuels could offer environmental protection at a lower cost. Aside from the recommendations on planning, this was one of the few recommendations rejected by the government of Ontario who maintained that because Hydro was “a leader in reducing emissions contributing to acid rain” it would be installing the scrubbers.¹²³ The idea of global-scale environmentalism also may have played a key part in Porter's advocacy of nuclear power in the early 1980s even though he had

120. *Ibid.*, 114.

121. *Ibid.*, 115.

122. In the five years of attending the Commission's hearings Hydro had improved some of its approaches to public participation and exhibited a “desirable trend toward a more humanistic approach”. *Ibid.*, 169.

123. *Ibid.*, 79.

cautioned against nuclear during his time with the Commission. While Porter maintained his original position that all alternative sources of energy would be crucial to survival, by late 1980 he was less convinced that biofuels could manage the food-versus-fuel balance and that oil, above all, was to be avoided.¹²⁴ “If King Tut’s tomb could have been stored 4,000 years without being disrupted,” Porter argued, “then we certainly can store nuclear waste.”¹²⁵

Porter’s trust in technology and systems expertise to guide Ontario’s electrical future is interesting to contrast with that of economist Lawrence Soloman who had become a polarizing member of Energy Probe. Soloman had a more libertarian approach similar to some American environmentalists and argued that “the role of any modern government with integrity is to try to eliminate itself.”¹²⁶ Soloman, who had alienated many at Energy Probe, including David Brooks, for gaining funding from the oil industry and even listing hydro as a risky form of energy, emphasized the importance of energy decentralization, rather than increased systems planning.¹²⁷ In his 1982 book *Breaking up Hydro’s Monopoly*, Soloman further argued that deregulation of Hydro would be the only means of protecting Ontario’s environment and bringing Hydro into democratic order.¹²⁸ In a similar vein, Paul McKay from the Ontario Public Interest Research Group, presented Hydro’s history as “a juggernaut that is simply out of control” and argued for community-based action that “would reduce local dependence on remote corporations and institutions” and “bring the existing political process... under the control of those it was meant to serve.”¹²⁹ Opposed to reshaping Hydro to fit the needs of a systems planning vision, these activists rallied around removing Hydro altogether to ensure environmental health and democratic responsibility.

Conclusion

The four years that followed the publication of the final report of the RCEPP were a period of relative political stability in Ontario. While the implementation of the RCEPP’s recommendations was pushed by the

124. Halyna Perun, “Porter urges boost in Canada’s nuclear power,” *The Globe and Mail*, 9 September 1980, 1.

125. Ibid. For other examples of environmental calls Patrick Moore, Patrick. “Going Nuclear: A Green Makes a Case.” *The Washington Post*, April 16, 2006. www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041401209.html, accessed 20 May 2013.

126. Lawrence Soloman, *The Conserver Solution* (Toronto: Doubleday Canada Limited, 1978), 179. On libertarian environmentalism see Kirk, *Counterculture Green*.

127. O’Connor, *Toronto the Green*, 250-1.

128. Lawrence Soloman, *Breaking Up Hydro’s Monopoly* (Toronto: Energy Probe, 1982).

129. Paul McKay, *Electric Empire*, 9 and 283.

NDP in the 1981 Ontario election, Davis, after being in a minority position to the NDP from 1975-77 and to the Liberals from 1977-81, once again secured a majority.¹³⁰ With the return of a PC majority in the 1981 election “the pace of environmental initiatives seen during the minority government period, slowed considerably.”¹³¹ While Hydro curbed its nuclear expansion program in 1982 this was “driven by a collision with the economic realities of declining electricity demand and rising interest rates.”¹³² During the majority period, environmental groups and opposition parties continued to push environmental initiatives but their ability to enact change was limited by the government’s “models of economic development, to which environmental protection was regarded as a facilitative adjunct.”¹³³ Without the RCEPP to act as a venue and to facilitate studies of energy analysis in Ontario, many of the main actors who were pivotal in creating a global vision of Ontario’s electrical grid lost their institutional voice. The rejection of the Commission’s call to create a “strongly future-oriented and just as strongly people-oriented” Ontario Energy Board or to appoint an “energy ombudsman” undermined the ideas of systems management that were crucial to the Commission’s vision.¹³⁴

On one level, the RCEPP reinforces arguments for the importance of “government policy and politics” in the shaping of the Canadian energy technologies.¹³⁵ The government of Ontario provided the opportunity for RCEPP to provide a venue and funding for exploring the interconnected global-scale systems of energy and environments over the long-term. Yet, the direction the Commission took was not directly tied to government policies or decision-making. The intellectual culture of the Commission was driven by a question of how to moderate “voluntarily or through legislation,” the values of a high energy-society within global limits. Drawing from a diverse set of actors sharing concerns about the need to reduce consumer demand for energy through changing social values, the RCEPP found a complementary path approach by applying cybernetic systems thinking to electrical power planning. But, while the global factors which needed to be taken into account in long-term and global-scale planning were shared, the methods for putting these factors into

130. Hampton is particularly vocal about the NDP championing these issues, *Public Power*, 130.

131. Winfield, *Blue-green Province*, 38.

132. *Ibid.*

133. *Ibid.*, 39.

134. Porter later regrets other problems with planning due to the failure to implement the Ontario Energy Commission, see Arthur Porter, “Hydro Transmission,” *The Globe and Mail*, 6 August 1984, 6.

135. Trim, “Brief Periods of Sunshine,” 48.

collective order were divided.¹³⁶ While some argued the expert mediated idea of a global-scale environment ought to be managed through state structures, others felt that better caring for local environments and a de-escalation of centralized technologies would provide the best path towards Ontario's electrical future. The RCEPP should not be remembered as a bold idea for energy policy ignored by the government nor as a failure to overcome Hydro's ambitious growth plans, but as an attempt to negotiate the tensions between expert mediated knowledge of global limits, social and consumer values, technological systems, and long term planning.

136. Bruno Latour, *The Politics of Nature: How to Bring the Sciences into Democracy*, translated by Catherine Porter (Cambridge, MA: Harvard University Press, 2004).