Lights Out: Conserving Electricity for War in the Canadian City, 1939-1945

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Résumé de l'article

La mobilisation économique au Canada pendant la Seconde Guerre mondiale a fait croître de façon importante la demande en électricité du secteur industriel. Afin de suffire aux besoins de l'industrie en temps de guerre, le gouvernement fédéral a imposé des mesures de conservation de l'électricité. De plus, on cherchait à inspirer, par la conception des appareils électriques, une attitude de conservation volontaire parmi les consommateurs urbains, en particulier parmi les consommatrices. Ces mesures ont entraîné des conflits à propos de leur application adéquate et de leur signification étendue. On en est venu à comprendre la conservation non pas comme une mesure environnementale, mais comme une politique de planification visant à réduire l'utilisation dans certains secteurs de la société et, en contrepartie, à permettre une utilisation sans entraves dans d'autres. La conservation en temps de guerre n'a finalement pas réduit la demande d'électricité au Canada, mais a mis en place les conditions favorables à la croissance massive d'après-guerre.

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Abstract

Economic mobilization in Canada during the Second World War drove a major expansion in power demand in cities of the industrial heartland. To meet the needs of wartime industry, the federal government imposed power conservation measures, and utilities sought to inspire voluntary conservation among urban and primarily female consumers. These measures produced conflicts over their proper application and broader meanings. Conservation came to be understood not as an environmental measure, but as a planning policy to restrict uses in some sectors of society to allow for unfettered use in others. Wartime conservation did not ultimately reduce power demand in Canada, but it did lay down conditions that would support massive postwar growth.

Résumé

La mobilisation économique au Canada pendant la Seconde Guerre mondiale a fait croître de façon importante la demande en électricité du secteur industriel. Afin de suffire aux besoins de l'industrie en temps de guerre, le gouvernement fédéral a imposé des mesures de conservation de l'électricité. De plus, on cherchait à inspirer, par la conception des appareils électriques, une attitude de conservation volontaire parmi les consommateurs urbains, en particulier parmi les consommatrices. Ces mesures ont entraîné des conflits à propos de leur application adéquate et de leur signification étendue. On en est venu à comprendre la conservation non pas comme une mesure environnementale, mais comme une politique de planification visant à réduire l'utilisation dans certains secteurs de la société et, en contrepartie, à permettre une utilisation sans entraves dans d'autres. La conservation en temps de guerre n'a finalement pas réduit la demande d'électricité au Canada, mais a mis en place les conditions favorables à la croissance massive d'après-guerre.

Visiting Winnipeg in 1943, *Globe and Mail* reporter Ken Ford described the city as a magical bright spot in an otherwise dark Canadian urban landscape. Unlike cities in Ontario and Quebec that observed dim-out restrictions due to wartime power shortages, and unlike cities on the east and west coasts that maintained blackout restrictions because of the danger of enemy bombing, Winnipeg lights blazed late into the night. Street lights were numerous; gaudy signs hung along major thoroughfares; neon signs adorned taxi stands, lunch counters, and seemingly every small shop in the downtown. On Saturday nights or on special occasions, gala lights along Portage and Main lit up the city centre. Looking west by night, Ford wrote that he had “the

impression of a vast tunnel or canopy of light as far as the eye can see.” Winnipeg, for Ford, was Canada’s Great White Way.¹

Winnipeg impressed Ford because of its brilliant difference, its profligate illumination despite the war. Light became a metaphor for hope and a return to more peaceful and prosperous times. Although the city laboured under more restrictions than Ford knew, it did provide a point of contrast to the more familiar street scenes of Toronto, where householders reduced light use, storefronts went dark after five, and large businesses paraded their patriotism by turning off the lights. In Toronto, as in other cities and centres in Canada’s industrial heartland, strict power restrictions had been imposed to conserve electricity use in domestic, commercial, and manufacturing sectors. Across Canada, increased power use in wartime industry placed burdens on urban utilities and forced discussions of conservation measures. What sacrifices would have to be made, where, and by whom?

This paper considers the effects of wartime power conservation on Canada’s urban centres, with a particular focus on policies executed in Ontario. First, it identifies the Canadian regions that experienced the sharpest increases in electricity demand with the outbreak of war and assesses the steps taken by the federal government to respond to those new needs by prioritizing some uses and cities over others. Second, it analyzes some of the conservation measures adopted in urban centres, and the public discussions and controversies associated with them. Wartime power conservation was never conceived as a specifically urban policy, but in practice it had to be. Cities were the major demand centres in the wartime economy, and federal policy consistently favoured urban industrial and manufacturing needs over others. However, cities also consumed large amounts of power in commercial, lighting, and domestic sectors. For this reason, urban markets were also targets of conservation policies that sought to reduce demand for ephemeral needs.

Wartime conservation can best be conceptualized as a form of rationing, rather than an environmental policy. Whereas early twentieth-century conservation doctrines advocated resource management by experts for the greatest social utility and for the long term, wartime conservation operated with a strategic and military logic and assumed short-term time horizons.² The pursuit of conservation for war thus introduced a fundamentally different logic and language. It was not about reducing society’s take of resources, but of diverting uses. It was not about future generations, but of meeting immediate needs.

Rationing and conservation programs sought to save scarce goods. These goods were generally fixed objects that could be moved about and stored, such as coal, timber, or metals. Electricity, however, was not a fixed object; it was transmitted

over distance within defined networks, and only small amounts could be stored. Power conservation thus introduced a different set of challenges for planners. First, the structure of systems affected the range and scope of activity. Electric power systems "consist of power generation, transformation, control, and utilization components of power and distribution networks."³ Transmission and distribution lines define the limits of the system and connect sites of generation and consumption. Although electrical systems are not necessarily closed and may interconnect with other networks and generation sources (as they do today in continental grids), they are generally managed according to system-specific requirements. Power conservation thus had to take seriously the regional character of systems.

Second, the factors shaping system operations marked out the parameters of the problem. Electrical systems are designed to meet peak demands. They are also incapable of storing energy from one period of the day to another. As a result, conservation focused on two aspects of system operations: lowering peak demands to maintain system integrity, and cutting base loads to reduce generation requirements. By maintaining system integrity, conservation warded off the threat of brownouts. By lowering generation requirements, conservation reduced the use of primary energy sources that drove turbines. In hydroelectric systems, this meant that water could be stored in reservoirs to provide insurance against future increases in demand, or dry periods in which river flows were unexpectedly reduced.

Third, planners had to develop policies that would affect the behaviour and demands imposed by a diverse constituency of end users and consumers. They had to address the fact that most end users did not think so much about consuming electricity as they did about the uses of electricity delivered by lights, appliances, and machinery.⁴ For the purposes of wartime policy, government officials and utilities effected specific reductions in lighting to target peak periods in the late afternoon and evening, and advocated general reductions in use to lower base loads. As a result, end users had to be enrolled as conservation agents with the capacity to reduce demand. This led to a more complexly organized and understood power system in which producers and end users operated in a relationship of what Elizabeth Shove and Heather Chappells call "co-provision," "in which consumer and provider roles are scrambled up or in which service provision involves the restriction or redirection of resource flows."⁵ To work effectively, in short, conservation depended on wide public support and a thousand individual choices, each, in its way, contributing to the war effort and helping to sustain the operations of some users at the expense of others.

To examine wartime power conservation in its urban and regional settings is to open up discussion of the spaces of consumption in the environmental history of war.⁶ To date, much of the work on the environmental history of war focuses on the environmental effects of warfare and wartime production and their "uneven, contradictory, and often equivocal" results.⁷ This exploration has been essential, but it is also important to

examine the policies and practices of belligerent states as they addressed rationing and conservation programs at vast, sometimes unprecedented, scales. Rationing and conservation all depended on the consent of industries and citizen consumers; these policies were realized unevenly between urban centres and rural areas, across jurisdictions and within resource distribution networks. They shaped state policies and consumption patterns during the war and after. Although these policies were rarely, if ever, cast in environmental language, they had environmental effects. Urban power conservation, for example, shifted patterns of consumption that, at a distance, affected rivers and their flows. William Tsutsui argues in the context of wartime Japan that conservation programs made citizens and institutions "unconsciously more environmentally responsible in their behaviour and their consumption patterns."⁸ Simo Laakkonen argues in the case of Finland that wartime imposed a lighter ecological footprint than peacetime.⁹ Perhaps this was the situation in some frontline states, but the balance of evidence in this case points in other directions.

In 1939, Canadian cities existed within an uneven regional landscape of electrical systems. Although water-power opportunities existed in many parts of Canada, and hydro sources provided over 90 per cent of electrical horsepower generated across the country, the regional pattern of development was highly varied.¹⁰ As in so many matters of Canadian industrial development, the central Canadian provinces commanded the vast majority of developed water power. In 1939, Quebec alone held just under half of Canada's total installed capacity of hydroelectric power.¹¹ Seven central station organizations operated in the core settlement and industrial areas of the province. In the same year, Ontario accounted for almost a third of the total. The Ontario Hydro-Electric Power Commission (OHEPC) distributed electricity to approximately eight hundred municipal utilities and a wide rural constituency. Compared to the rest of the country, in the central provinces water power was plentiful, cheap and better developed. Although one might have expected the industrial heartland to account for the bulk of power supplies and use in Canada at this date, its lead was profound. Two provinces produced and consumed over 80 per cent of the country's water power.

In other provinces, the pattern varied. In the Maritimes, small utilities powered urban centres, but network integration was limited and installed capacity low.¹² Combined, the maritime provinces operated slightly more than 3 per cent of the country's installed capacity. In general, these provinces relied heavily on thermal sources of power. In Nova Scotia in 1939 a full quarter of the province's kilowatt hours came from coal- and oil-fired steam plants.¹³ In the prairie provinces electrical systems were also limited. The projects on the Winnipeg River operated by the Manitoba Power Commission (MPC) accounted for three-quarters of installed capacity in the prairies region. Alberta and Saskatchewan held just over 1.5 per cent of Canada's installed capacity. Utilities in several prairie centres such as Edmonton

Figure 1: Hydroelectric horsepower installed by province, 1937–1946 (in 000s)

From *Hydro-Electric Progress in Canada*, Department of Mines and Resources, Ottawa, 1937–1946

and Saskatoon operated central plants burning coal. Further west, larger centres and markets, combined with abundant water-power opportunities, allowed British Columbia to follow in a distant third position to Quebec and Ontario, with 9 per cent of installed capacity. The most developed electrical systems supplied Vancouver and Victoria from local hydro sources.

The regional imbalances in the country's power supplies reflected the longstanding industrial dominance of Quebec and Ontario. During the war years, the retooling of the national economy to wartime production only reinforced this pattern. The vast majority of wartime industry was assigned to proven manufacturers and industrialists in Toronto, Montreal, and the industrial regions in their vicinities. War was not looked upon as a time for experiments in regional development. The industrial heartland grew rapidly as a result. In the case of Toronto, for example, between 1939 and 1944 the gross value of manufactured goods produced more than doubled. In 1943, over eighty industrial and manufacturing plants worked on war contracts in the city.¹⁴ Toronto's wartime industry placed heavy new demands on the province's electrical generating capacity.

To meet growing power needs, a range of wartime development projects were rapidly planned and executed. In Quebec, a massive, integrated hydroelectric project was completed on the Saguenay River by the Aluminum Company of Canada to provide for an enormous increase in output in the company's

smelters at Arvida.¹⁵ At various points during the war, power was diverted from the city of Montreal to Alcan to bridge short-falls during the construction phase—the primary exception to the urban bias of wartime power policies.¹⁶ In Ontario, growth occurred particularly in the most urbanized sections of the province served by the Niagara and eastern Ontario systems. Various upgrades and plant expansions were executed in plants on the Niagara River to serve the core industrial areas of southern Ontario. New dams and diversions on the St. Lawrence and Ottawa rivers were also developed and with them new transmission lines constructed. Figure 1 plots the expansion in installed capacity by province in the years leading up to and during the war. It demonstrates plainly the continuing and growing importance of Quebec and Ontario in Canadian hydroelectric development.

Another aspect of figure 1 is significant. The peak year of hydroelectric expansion occurred in 1943, four years into the war, following, rather than leading, a wide-ranging phase of wartime industrial expansion. Before the war, system expansions had been limited. During the Depression, the pace of hydroelectric development had slowed at both ends of the decade, as developers and utilities scaled back expansion plans in light of reduced economic activity and electricity demands in the major markets.¹⁷ Several large-scale projects were abandoned in favour of small plant expansions and turbine upgrades. In British Columbia, for example, developers and utilities sought to follow demand cautiously rather than to stimulate it, and did not develop an anticipatory policy in which war demands figured. Such caution appeared prudent in the Depression years, but introduced considerable risks as Canada's wartime economy mobilized. After the outbreak of war, the gap between available power and growing system demands closed rapidly in the core industrial regions.¹⁸

In Ontario, commissioners of the OHEPC foresaw difficulties unless new generating capacity became available soon. Although in 1939 commissioners estimated a reserve 35 per cent greater than primary peak loads of the previous winter, it was quickly decreased well below that.¹⁹ Calls were made on private power producers in Quebec to sell more electricity to the OHEPC.²⁰ The province of Ontario began to lobby in favour of the St. Lawrence Seaway Project, which it had formerly avoided as too costly and unnecessary.²¹ Diplomatic negotiations were opened with the United States to allow for diversions into the Great Lakes that would increase generation at the Niagara River facilities. Some of these actions boosted supplies relatively quickly; others would take longer to complete or would not occur at all. By 1942, commissioners of the OHEPC predicted that they would be unable to meet demands through the winter without effective conservation measures.²² In the meantime, a growing wartime economy, overwhelmingly centred in the industrial heartland, threatened to outstrip the region's considerable power-generating capacity.

As in other aspects of the wartime economy, the federal government sought to impose a strong, controlling hand on

the Canadian power field. The aim was to ensure adequate electricity for wartime uses and to increase power where most needed and justified by strategic demands. Such policies were effected through the Department of Munitions and Supply and the office of Power Control, held throughout the war by Herbert J. Symington, a Montreal lawyer attached to Royal Securities Corporation with wide experience in the power business (including stock holdings in several major utilities) and a close friend of C.D. Howe, the responsible minister.²³ Power was one of the first controls established by the federal government as a basic lever to regulate the Canadian wartime economy and manage its growth. In his position, Symington was immediately thrust into the role of assessing the power outlook and seeking to anticipate and plan for power demand increases, particularly in central Canada. Given the politics of Canadian federalism, and the incursions into provincial jurisdiction that were inherent to Power Control, Symington sought to pursue a cooperative policy of regulation, working with provincial authorities and local utilities to organize and condition power development and distribution.²⁴ In Ontario, for example, Symington appointed the OHEPC as his agent to act as power controller for the province, even as he maintained ultimate responsibility. In general, he aimed not to impose formal orders on power users or regions unless absolutely necessary.

Even as Symington pursued a modest approach to Power Control, his authority was wide-ranging and significant. His mandate extended to all matters involving power in the Canadian economy, whether these concerned public corporations, domestic customers, or pulp-and-paper firms. Industrial developers seeking to establish plants for wartime purposes had to apply to the power controller to insure adequate electrical supplies. Utilities pressed by growing demands required the power controller's permission to build projects using strategic materials, components, and labour. Utilities selling gas supplies had to coordinate their activities through Power Control. Wherever power was made or used in Canada, Power Control held an interest. Market mechanisms were not entirely suspended, but they operated with an unprecedented oversight.

By the nature of its mandate, Power Control pursued a regionally specific policy, both at the national level and within core industrial areas. There could be no consistent national policy where regional systems demonstrated such different capacities and faced such different demands. Because the vast majority of war-related growth occurred in the urban-industrial regions of Ontario and Quebec, Symington placed these areas and the systems that served them in priority status. Several large projects in these provinces were launched with significant encouragement and support from Power Control. In other parts of the country, Symington sought instead to maintain stability. In the prairie provinces, he took almost no action, except to support a small hydro project on the upper Bow River to supply a chemical firm on war contracts in Calgary. In the Maritimes, he counselled urban interests in New Brunswick to develop a power conservation policy in 1942 when peak power

demands threatened to outstrip generation capacity in St. John, Fredericton, and Moncton.²⁵ But beyond that he took no significant actions.

In British Columbia, Symington cancelled projects instead. When power demand spiked in the Vancouver region after 1941, and local interests worried about the possibility of new needs in the event of escalation in the Pacific theatre, Symington refused the approaches of the BC Electric company, the principal utility in the Vancouver region, because he deemed the requirements insufficiently strategic. The company would gain no priority in obtaining necessary supplies or financial support in pursuing a wartime building program. As a result, no expansion occurred in the Vancouver region, and by 1944, power levels reached a crisis. Strict conservation measures and ultimately a tie-in across the border linking Vancouver to power grids in the United States allowed the city and BC Electric to ride out the difficulty, despite recurring brownouts.²⁶ In the BC interior, by contrast, Power Control supported the expansion of plant facilities on the Kootenay River to power Cominco's facilities at Trail, which produced heavy water for the atomic research project.²⁷ Symington never set down a national power policy, but in practice his actions focused on the urban-industrial areas of Ontario and Quebec and occasional actions in the rest of the country to avert power crises in cities or to shore up war-related projects in resource-processing centres.

Part of Symington's concerns in central Canada focused upon increasing power-generating capacity, but as wartime growth continued, he and his advisors determined that a strong conservation program would be necessary to provide a bridge between current demand and envisioned increases. Already measures had been put in place in 1940 to extend daylight savings in Ontario and Quebec in the hopes of dampening domestic and commercial demand.²⁸ Further, Symington had supported moves by the controller of supplies to restrict the manufacture of domestic appliances, such as heaters and electric ranges, which accounted for significant domestic demands.²⁹ However, in the fall of 1942, with advice from several utilities about looming shortfalls, Power Control developed an even more sweeping conservation policy for the core areas of central Canada. Contained in Restrictive Order No. P.C. 5, concerning "power shortage areas," this new policy aimed to reduce ephemeral power use for domestic, commercial, and urban lighting.³⁰ It was the most wide-ranging and significant order passed during the war by Symington's office. Envisioned initially as a bridge mechanism, the policy endured. It came into force 20 September 1942 and would not be rescinded for two years.³¹

The policy focused on the core industrial regions of Ontario and Quebec. In Ontario, for example, power shortage areas were described as "that part of the Province of Ontario lying south of the line (or the easterly or westerly extension thereof) from Parry Sound, Ontario, to Huntsville, Ontario and from Huntsville to Pembroke, Ontario, including municipalities situated on this line."³² This designation encompassed Ontario's major cities,

but also smaller centres, hamlets, and rural areas. Although the major aim of this policy was to shore up electricity for wartime industry in and around Ontario cities, it had to extend far beyond them. This was because the OHEPC's electrical systems did not operate narrowly, settlement by settlement, but covered wide regional territories. The area described in the order covered three of four OHEPC systems: Niagara, Georgian Bay, and eastern Ontario. An urban-oriented power conservation policy therefore depended upon a more broadly conceived regional application. The range of private utilities in Quebec produced a more complicated pattern. In this case, the policy was not broadly regional, but focused on central station systems in the major centres and excluded independent, locally oriented utilities that maintained adequate generation. In either case, the policy included a clause that allowed for the extension of the designated power shortage areas in the future, if deemed necessary by Power Control. As it turned out, such extensions, while contemplated at several points, did not occur.

The primary aim of the restrictive order was to reduce unnecessary lighting in and outside of buildings. According to studies conducted by the Dominion Bureau of Statistics, in 1942 commercial and street lighting accounted for 4 per cent of Canada's total electricity consumption measured in kilowatt hours.³³ If these needs could be reduced, particularly in the peak demand periods of the late afternoon and early evening, then existing power reserves might hold through the winter. Four particular categories of light use were outlined in the restrictive order:

- interior or exterior sign lighting (whether commercial or non-commercial), but not including direction signs in stores and signs at the office or residence of a medical practitioner
- interior or exterior show window and showcase lighting (but not including stock wardrobes)
- interior or exterior outline or ornamental lighting
- interior or exterior lighting for decoration or advertising³⁴

These categories were broadly defined but emphasized the need to reduce lighting as a promotional and spectacular device in commerce. They were open-ended enough, however, to encompass a range of other uses as well. Households and churches that wished to erect well-lit Christmas trees were asked to refrain. When asked for clarification on this point by the Wartime Industries Control Board, following questions from the public, Symington explained that "two weeks prior to Christmas are the heaviest power weeks of the year and nobody is being permitted to light Christmas trees during that period."³⁵

If Christmas trees were covered by the order, along with store window displays and some indoor lights, then a number of uses were explicitly excluded. Grey areas of the policy allowed some forms of commercial and public lighting. Street lights were to be used less, particularly in daylight hours, but without affecting traffic-signalling systems. Outdoor lights for hockey rinks were allowed, provided that only one watt shone per nine square metres. Lighting that could be classified in terms of

public safety was permitted, so too lights in schools. Critical economic uses of electricity were not affected. Radio communications, railways and terminals, airports, passenger or freight carriers, oil refineries, power generation projects, post offices, telephone and telegraph systems, water supply and sanitation systems—all of these uses were specifically excluded from the conservation regulations. In addition, war plants and war-related activities were granted secure access and use. This, after all, was the aim. Even some commercial uses of electricity were allowed in seeming contradiction to the policy. After politicians in Niagara Falls, ON, and Niagara Falls, NY, jointly protested restrictions on nighttime illumination of the falls in 1942, an exception was granted in view of the effects on tourism.³⁶ Defining the exception to some extent meant defining the policy and its ambiguities.

The restrictive order was wide-ranging. But how was it to be realized? Apart from restricting lighting, the order also implicated utilities as quasi-enforcers. Utilities were held responsible and called upon not to sell electricity to customers who disobeyed the restrictions. This role for the utilities built upon earlier policies that divested aspects of Power Control to provincial and local authorities. Beyond this point, contravening the order could result in prosecution, but Power Control held no significant investigative branch to assess compliance. It is partly for this reason that Symington hesitated before imposing orders. He had few means to deal with non-compliance or opposition. To a large extent the restrictive order depended upon communicating the policy to the public and inspiring voluntary cooperation. This was seen as a reasonable approach because of the significant social pressure to respect such orders and limit electricity use for wartime ends. But just as Michael Stevenson has found in the area of labour regulation during the war, or Jeffrey Keshen has suggested regarding the prevalence of black market activity, the existence of controls did not simply change behaviour or ensure acceptance.³⁷ As one member of the Wartime Industries and Control Board was told by a fruit vendor on Bank Street in Ottawa, "A lot of people are going to beat the Power Controller."³⁸ Soon after the regulations were put in place, the secretary of the Wartime Industries Control Board noticed that in Toronto "several buildings, which to the best of my recollection, have not in the past made a practice of leaving on their general interior floor lights, were now doing so, thus giving a considerable degree of illumination in their show windows even though the window lights themselves were turned off, with no sign of any person working in the interior of the building."³⁹ In the face of this, Symington sought to project confidence and consistency. He asked that the fruit vendor on Bank Street be told, for example, that "window lights are out no matter what the situation is; we cannot permit it in one case and not in others."⁴⁰

In urban centres where commercial lighting was most widely used, and where levels of compliance were a matter of public display, social contests emerged in response to different interpretations of the order. Because the restrictions imposed new light standards on commercial users, a range of busi-

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ness interests began to observe the pattern of light use of their neighbours and competitors more closely. If one business was to forsake its ability to display products in a well-lit storefront window, its owners did not wish another to sidestep the order and thereby obtain an advantage. By the same token, various interests looked upon government lighting with new scrutiny. Symington reported in 1944 that he had received numerous complaints about the excessive use of light in government buildings in Ottawa.⁴¹ One complainant expressed shock at the "apparent waste" and described government buildings as being "a blaze of light." This seemed unfair at a time when businessmen were "deprived of one of [their] best advertising methods."⁴²

Through the duration of the war, Power Control received complaints from a range of interests, informing on neighbours, complaining of waste, and insisting that something *must* be done. For the most part, such complaints could be handled individually by contacting the identified interest or responsible utility and calling for respect of the order. However, sometimes controversy was less easily diffused. In 1942, for example, shortly after the restrictive order had come into force, the Eaton's Company moved to extend its operating hours in its Toronto stores on Friday evenings to allow war shift workers convenient access. Or so it claimed.⁴³ Eaton's department stores occupied prominent positions in Toronto's retail landscape. The Queen Street store functioned as the company's standard bearer and drew working- and middle-class shoppers; the College Street store, with seven stories, high-end merchandise, and classical architectural detailing aimed for a higher-end market.⁴⁴ The Eaton's stores stood out; they commanded a presence in the streetscape and in the retail market.

Because of its centrality in Toronto's commercial scene, Eaton's level of compliance to the restrictive order drew the attention of other businesses. In November 1942, a range of small shopkeepers wrote short, pointed letters to Power Control complaining of Eaton's late shopping hours and underlining that they blatantly contradicted the federal order. "This is my protest," wrote David Davis, one independent businessman, "at the action of a large department store that is deliberately contravening every decency of wartime trade. I am amazed that the intelligence of smaller business is rated so low that we are expected to believe that the reasons are patriotic."⁴⁵ Some of this protest was organized by or channelled through local business organizations, particularly the Bloor District Businessmen and the Danforth District Businessmen's Association.⁴⁶ Like Davis, they questioned the motives behind Eaton's late hours and asked with heavy sarcasm, "Might the reason be a desire for more business?"⁴⁷ Protests such as these played upon the patriotic discourses of war, but also grew from older patterns of retail activism against the large department stores and mass marketing system.⁴⁸ Apart from such complaints, Symington received advice from R. T. Jeffrey, chief municipal engineer, Toronto, of the OHEPC, who toured Eaton's on a Friday night opening. Without announcing his presence, Jeffrey asked

clerks how many war workers shopped in the evening openings and found the number to be negligible. He informed Symington, "There is quite a strong feeling throughout the City that small stores are being unjustly treated by Wartime Prices and Trade Board in permitting the T Eaton Company to keep its stores open on Friday evenings to, as they think, grab a lot of the free Christmas trade."⁴⁹

With such advice in hand, Symington realized that if he did not respond effectively to the controversy, the legitimacy of his entire policy would be put at risk. "Nothing is so destructive to our campaign of saving power, which is an absolute necessity," he informed Henry Borden, coordinator of controls, "as a well-grounded belief that the big man is being favoured as against the little man."⁵⁰ Through various channels, Symington and his subordinates contacted Eaton's and applied pressure to cancel the special Friday night openings.⁵¹ Very shortly, the company complied. Fearing for its own patriotic image, Eaton's took out a large advertisement in the *Globe and Mail* seeking to set the record straight. "*Friday Night Shopping Discontinued*," it announced. "To enable war workers on shifts to do their shopping without loss of working time, and thus reduce absenteeism," went the ad, "EATON'S co-operated with Industries making war materials by experimenting in the keeping open of its Toronto stores on Friday evenings for the past three weeks." It had been reported, the ad continued, that absenteeism had been reduced by other means. Therefore there would no longer be a need for evening shopping.⁵² No mention was made of the intervention of Power Control in the matter. Although this single episode ultimately posed no difficulties to the restrictive order, and did not put the electrical system in jeopardy, it did illustrate how competitive commercial relationships in urban areas provided one of the more important, informal compliance instruments. It also suggests the extent to which this order and its enforcement related primarily to urban areas, where commercial lighting was widely used, concentrated, and public.

One critic of the federal government's restrictive order was E. A. Lowry, a Kitchener-based, self-styled hydro expert who published *Wartime Power Facts*, an occasional report on the state of hydro in the province, which he delivered faithfully to the premier's office. Lowry's aims were to dismantle or weaken the public monopoly and secure some form of employment with the government, not necessarily in that order. In pursuit of these aims, he busily typed his reports and drew attention to apparent contradictions in hydro policy. He did not simply accept the need for the restrictive order, for example, but saw the policies on street lighting as simply wrong-headed. First, they hardly made a dent in the power demands of the province. Second, they unfairly targeted urban areas. Third, they risked the safety of women workers returning from nighttime industrial shifts. Conservation would be much more effective, he argued, if the OHEPC turned its attention instead to domestic power demands, particularly those caused by power-hungry appliances like ranges, which had been sold aggressively in the late 1930s by the OHEPC to consumers in Toronto.⁵³ Lowry's

attacks neither brought down the OHEPC, nor produced any hint of employment with the Ontario government. They did point to a gap in official conservation policy, however, which the OHEPC was rapidly trying to fill.

As the agent of Power Control in Ontario, the OHEPC looked for voluntary forms of conservation that might produce savings in electrical supply outside the formal framework of the restrictive order. As Lowry had intimated, domestic power demands were significant. Since the last war, the OHEPC had pursued a policy of promotional rates and appliance sales with the aim of boosting loads. The electrical system had been modernized and markets had been built to maximize the use of the electricity available and to improve the load factor—the ratio of the average load to the peak load in a set period. The result was a domestic electricity market that loomed larger in the war years than ever. In an address to the Royal Canadian Institute in 1942, OHEPC chairman Thomas Hogg illustrated this point graphically by contrasting images of houses and their appliance demands in 1918 and 1939 (see figure 2).⁵⁴ Tens of little horses stood in for two decades of demand-stimulation policy and suggested that domestic consumption posed risks to system capacities and ultimately war production. In 1940, Ontario's domestic demands made up almost 60 per cent of total Canadian domestic demands.⁵⁵ By 1942, with system shortfalls looming, the domestic market consumed 12.5 per cent of Ontario's total kilowatt hours.⁵⁶ This domestic demand was overwhelmingly weighted towards urban centres, where populations were higher and consumers owned and used more electric appliances. In 1940, the OHEPC conducted surveys of appliance use in homes across the province and found that 31 per cent of urban households used electric ranges, compared to 13 per cent and 18 per cent of hamlet and rural households, respectively. Different numbers, but a similar pattern applied to other appliances.⁵⁷ For this reason, a domestic conservation policy would have to target urban households.

Apart from identifying domestic consumption as an important system demand, the OHEPC aimed to induce voluntary conservation. Unlike the formal order, which identified a particular area and set of uses that must be restricted, the call for domestic conservation identified and targeted a diffuse spatial and social constituency. In a range of persuasive materials, from films to published speeches to advertisements, the OHEPC identified the core domestic demand as urban in location and female in responsibility. Hogg's speech, for example, developed a central image of a housewife who made choices about the use of her electric range and addressed how those choices had far-reaching effects beyond the city on power stations, dam operations, and ultimately the flow and storage of rivers. He sought to explain the link between here and there and identified women as the decision makers who monitored and drove electricity consumption in the home. Hogg's speech exemplified OHEPC's wartime policy to modify urban female consumer behaviour.⁵⁸

Consider a range of advertisements published in 1942 and 1943 in the *Ontario Hydro News*, a glossy, monthly magazine widely distributed by the OHEPC across the province (see

ELECTRICAL HORSEPOWER UTILIZED IN WELL EQUIPPED ONTARIO HOME

Figure 2: Electrical horsepower utilized in well-equipped Ontario home, 1918–1940

Thomas Hogg, "Saving Hydro Power for Victory" speech to the Royal Canadian Institute, 5 Dec. 1942, file: Hydro Electric Power Commission, Box 413, Premier Gordon Conant Correspondence, RG 3–15, AO.

figures 3, 4, and 5).⁵⁹ In different ways, they expand upon Hogg's claims and call on urban female consumers to win the war on the home front. Figure 3 depicts the line of connection that Hogg tried to drive home in public speeches. A female hand reaches to a light switch. From that critical action, consequences flow. They may be observed beyond the home (depicted as a suburban row house), across transmission lines, and at the horizon where a distant power house and finally a river remind the viewer of the power source. In this single image, the gendered, urban focus of the OHEPC voluntary conservation policy comes into focus. At once, the image constructs its subject (female decision maker, urban demand) and seeks to educate the consumer about the effects of personal and local decisions. The river on the horizon is represented as one component in a production system, which can be variously depleted or conserved by urban consumer actions.

The publicity campaign, however, did not seek simply to educate implied female readers about the links between here and there; it also sought to target female consumers, using advertising techniques that provoked anxiety and assigned responsibility. Alongside news stories of the sacrifice and hardy work ethic of female war workers, the *Ontario Hydro News* published images of women as vain, unthinking, and irresponsible consumers in whose hands rested the solution to the wartime power crisis. In figure 4, for example, a woman poses before

Figure 3: From Hydro News 30, no. 5 (1943), inside cover

her vanity mirror framed by brilliant lights. In the background, seemingly every light in the house burns brightly. The woman at the centre of the piece inhabits a spacious, well-furnished, and well-appointed home, all markers of class privilege. Her perspective is represented as both limited and selfish. She represents an individualistic consumer, not producing for the benefit of the household or nation but focusing sinfully only upon her own face. Read in the context of the period, this image of selfish consumption contrasts sharply with the wartime discourses of self-sacrifice, womanly industry, and virtuous domestic self-restraint. The didactic component of the image addresses the reader with the subtlety of a large naval vessel, found in its lower right-hand corner. Similarly, figure 5 represents a housewife cooking and wasting electricity by her use of several range

Figure 3: From Hydro News 30, no. 4 (1943), inside cover

burners (the OHEPC advocated the use of one burner using stacking pots). Such images were not unique to *Hydro News* or to OHEPC advertisements. In a 1942 Westinghouse advertisement carried in the *National Home Monthly* and *Saturday Night*, a series of images depict women unhelpfully leaving appliances on; accompanying captions instruct readers to "save power in the home."⁶⁰

The contrasts suggested between the wartime roles of women and men underlined the gender-specific aspects of this advertising campaign. In the vanity mirror piece, the contrasting image of the naval vessel under construction is the preserve of productive male workers. In *Wardens of Power*, an OHEPC publicity film shown in cinemas around the province, a woman is

depicted as a housewife cooking and improving her consuming habits, while other action shots show men digging, damming, and producing yet more power for the province and nation.⁶¹ The only times when the advertising campaign identified all of society as responsible for domestic consumption patterns was when discussion turned to lighting. In these instances, a universal consumer was invoked. In Hogg's speech, he refers to housewives and ranges but also to the benefits that come when "we all turn off the lights."⁶² In *Wardens of Power*, a nuclear family huddles underneath a single living-room lamp, saving electricity as they are drawn ever more closely together in practice and metaphor. When represented in a family context, electricity conservation lost guilt-laden implications and became the site of cooperation and communion. Families were represented conserving together, not wasting individually.

From one perspective, these images contrasted sharply with the seemingly ubiquitous images of women as workers carried in print media and propaganda during the war.⁶³ Instead, they reinforced gender stereotypes of women as housewives. These images, however, may be read in other ways. They played off similar attempts to enrol women as conservationists on the home front, collecting fat, scrap metals, and other products for wartime production. Even as they operate to provoke anxiety in female viewers, they also affirm the new importance of women as political actors, through their decision-making responsibilities as consumers. Referring to the contemporary American context, Elizabeth Cohen argues, "The moral judgment of 'good citizen' took on new, gender-specific meaning in wartime. . . . Loyal female citizens were defined in consumerist ways, as keepers of the homefront fires through their own disciplined, patriotic market behaviour as well as through the enforcement of high moral standards in others."⁶⁴ The burden of responsibility implied in the *Hydro News* images also underlined the importance of women's actions not only in the domestic sphere, but also, through the regional electricity networks, the entire economy.

The results of the power controller's restrictive order and the OHEPC's voluntary conservation campaign are difficult to assess. Internal memoranda summarizing the wartime actions of Power Control insisted on the importance of the restrictive order: "The effect of these restrictions on the use of power was severely tested during the peak period, and there is not the slightest doubt that had they not been imposed, there would have been a serious shortage of power."⁶⁵ Similarly, the OHEPC publicized the end of wartime shortages with congratulatory advertisements reminding customers that voluntary conservation had been "worth while."⁶⁶ Available evidence suggests that these claims tell half a truth. Statistics collected to measure the demands for commercial and street lighting demonstrate that in 1943 a small decline occurred across the country in real terms and as a proportion of total demand; but in the final year of the war, demands rose higher than ever before.⁶⁷ The voluntary conservation strategy seems to have been even less effective. In every year during the war, the Dominion Bureau of

Figure 5: From *Hydro News* 30, no. 2 (1943), inside cover

Statistics measured increases in domestic consumption across the country. The number of customers, the rate of per capita consumption, and the revenues earned from domestic customers increased in every province between 1939 and 1945.⁶⁸ During the war, domestic demand grew in Ontario by just over 40 per cent.⁶⁹ These increases may have been lower than they might otherwise have been without conservation policies and programs. Certainly, the steep climb in electricity demand at the end of the war, facilitated by the release of new domestic appliances, would support this view. However, the fact that domestic consumption levels increased during the war as a component of total kilowatt-hour use at a time of soaring power demands in industry would lead one to the conclusion that power conservation targeting urban areas and female consumers was less effective than the Power Control office or OHEPC

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intimated. This made matters difficult in Ontario where relatively high rates of domestic use were the norm, but may have been of less consequence in Quebec where they were lower. In a 1942 meeting with American counterparts, Symington pointed out that in Quebec roughly 90 per cent of the province's power was consumed by 164 firms. "Therefore," he pointed out, "civilian restriction could not achieve much."⁷⁰ It may well be that the reduction of lighting under the restrictive order and voluntary conservation measures produced only marginal benefits in peak demand periods and in distressed systems. It was at these moments and places when the policy delivered its results, but not otherwise.

Power conservation in wartime may not have reduced demand as significantly as some had hoped, but it did have a strong effect on public discourses of electricity use and expectations of new opportunities in peace time. All calls to delay power needs and to reduce consumption provided fertile ground for dreams of postwar power benefits. Joy Parr suggests that restrictions on domestic goods in wartime conditioned the expectations of female consumers. "The war forced householders to accept technological substitution. The experience made women . . . more conscious that the design and distribution of domestic goods was a product of choices."⁷¹ Electricity consumption patterns were attached to these understandings and expectations. All the new domestic appliances promoted as the benefits of peace would depend upon stable electricity sources and the transmutation of domestic electricity use from a wartime vice to a peacetime virtue. Laura E. Jamieson, a British Columbia social activist, feminist, and CCF MLA for Burnaby, articulated the new possibilities of electricity use in the home in her tract on future prospects, "Women Dry Those Tears."⁷² Among other expected changes to domestic conditions in a socialist future, Jamieson identified electricity and increased consumption levels as potential benefits. "Have you ever seen," she asked readers, "a completely modern kitchen where electricity is cheap and plentiful, and electrical appliances are cheap also?"⁷³ Even without a socialist future, the modernization of electrical systems and the growth of generation capacity in Canada's core regions set the foundations for massive increases in domestic electricity consumption in the postwar period. Power conservation would be a term identified with hardship and denial, no longer patriotism and virtue. What David Nye has called a narrative of limitation would give way to a narrative of abundance.⁷⁴

Wartime power conservation offered an unprecedented and short-lived policy and discourse to reduce non-essential consumption of electricity in Canada's cities. As a policy, it diverged from most existing conservation doctrines by targeting certain sectors of society and uses for a limited but indeterminate period in order to allow unrestrained consumption in others. In its application, this policy had a clear spatial focus: Montreal, Toronto, and surrounding industrial regions. Because power was distributed through regional systems, however, restrictions on use extended well beyond city limits. For the bet-

ter part of two years, the growth of wartime industry occurred against a background of dim urban landscapes. When stores such as Eaton's broke through the darkness, they not only challenged the restriction, they also unsettled convention and the mores of business practice in a politicized and competitive urban environment. It was this context that allowed a *Globe and Mail* reporter to visit Winnipeg in 1943 and be astounded by the use of electric lighting in all directions. As cities turned the lights out, attention shifted to the home and to the role of female consumers as potential conservationists. Particularly in Ontario, calls were made for female consumers to dim the house, reduce range use, and practise restraint for the greater good. Urban female consumers were the target of this campaign, and they were informed both of the links between urban demand and distant sources of supply as well as the benefits of reducing use to provide for all out war production. Such appeals hinged on the promise of future change and a return, or, for others, an introduction to the comforts of high electricity consumption.

The wartime crisis redefined the spaces of electricity consumption that indirectly bore on the environment. While most consumers' thoughts turned to conditions in urban households and city streets and spaces, the effects of power conservation and the policies and ideas built around it, reached beyond the city and beyond transmission lines. During the war, conservation discussions situated electricity consumption in a complex energy system shaped by households at one end and rivers at another. This explanation of electricity's origin and course educated consumers in the effects of their actions beyond immediate surroundings. This understanding, however, was mobilized to support efficient electricity use for war in the immediate term, not to suggest an environmental ethic. Hydroelectric development and diversion projects proceeded apace, as quickly as they could be built, all with a view to strategic military priorities. Transmission interconnections were struck, and the spatial reach of power systems expanded. Power conservation maintained systems of electricity generation and consumption in the process of expansion; it did not reign in those systems or reduce their environmental impacts. Rather, the discourse of self-denial, coupled with the reality of rising consumer and commercial demand, set the stage for a massive postwar demand surge, expectant in attitude and profound in effect.

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Notes

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6. Matthew W. Kingle, “Spaces of Consumption in Environmental History,” *History and Theory* 42 (Dec. 2003): 94–110.
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8. Tsutsui, “Landscapes in the Dark Valley,” 207.
9. Simo Laakkonen, “War: An Ecological Alternative to Peace? Indirect Impacts of World War II on the Finnish Environment,” in *Natural Enemy, Natural Ally: Toward an Environmental History of War*, eds. Richard P. Tucker and Edmund Russell (Corvallis: Oregon State University Press, 2004), 175–194.
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20. Chairman Hogg to J. S. Norris, president of Montreal Light, Heat and Power Co., 18 Nov. 1939, file: Hydro Electric Power Company, 1940, box 306, Hepburn Papers, RG 3-10, AO; Norris to Hogg, 24 Nov. 1939.
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24. For a description of his control strategy, see Symington to Mitchell, 17 Mar. 1942, file: Hydro Electric Power Commission, 1942, box 324, Hepburn Papers, RG 3-10, AO.
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63. M. Susan Bland, "Henrietta the Homemaker and 'Rosie the Riveter': Images of Women in Advertising in *Maclean's Magazine*, 1939-1950," *Atlantis* 8, no. 2 (1983): 61-86; Charles Lewis and John Neville, "Images of Rosie: A Content Analysis of Women Workers in American Magazine Advertising, 1940-1946," *Journalism and Mass Communication Quarterly* 72, no. 1 (Spring 1995): 216-227; Bilge Yesil, "'Who Said This Is a Man's War?': Propaganda, Advertising Discourse and the Representation of War Worker Women during the Second World War," *Media History* 10, no. 2 (2004): 103-117.
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