

# Reassessing the Recent Past: Tower Neighborhood Renewal in Toronto

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**Rehabilitation of postwar apartment towers in Toronto drives community development, promotes sustainable initiatives, and ensures the preservation of some of the city's most influential architecture and planning.**



Fig. 1. This late 1960s view shows the edge of the metropolitan area of Toronto where residential high-rise development abuts the greenbelt. Courtesy of the City of Toronto.

## Introduction

In 2008 the City of Toronto initiated its Tower Neighborhood Renewal program. The program looks at the significant impact of post-World War II construction in the city and proposes a plan for the rehabilitation of the many apartment towers that had been built during that period in the downtown core and inner suburbs (Fig. 1). The scale and ambition of the project is large, and it represents an important departure from previous thinking that had placed little value on the conservation of buildings from this period. The intent of the program is to use the rehabilitation of this postwar building type as the catalyst for creating stronger, more sustainable communities. Recognizing that such a large-scale renewal amounts to a 20-year program, this paper provides an update on current progress.

Like most North American cities, Toronto experienced significant growth during the postwar period. Part of that legacy is now being evaluated in the municipally led Tower Neighborhood Renewal program. The program focuses primarily on the “tower in the park” building typology that was integral to the Modernist urban-planning ideas of the mid-twentieth century. The apartment tower became the predominant building type in Toronto during the postwar decades, and it constitutes a significant component of the city’s current building stock. There are more than 1,000 postwar towers,<sup>1</sup> and that number increases to nearly 2,000 towers if the larger Greater Golden Horseshoe region, the regional area that surrounds Toronto extending to the western end of Lake Ontario, is considered. Collectively Toronto’s towers are home to approximately one million of the eight million people who live in the region.

## Assessing the Resource and Planning Ahead

The first component of the Tower Neighborhood Renewal program has been to inventory the resource, to increase the value of the buildings through infrastructure updates, and to determine a long-term management strategy. In 1968 Buckminster Fuller visited the city and wrote that “in Toronto, an unusually large number of high-rise apartments poke above the flat landscape many miles from downtown...this type of high-density suburban development is far more progressive and able to deal with the future than the endless sprawl of the U.S.”<sup>2</sup> Today that high-density development provides Toronto with a distinct urban form. Compared with Chicago, for example, the metropolitan area of Toronto is almost twice as dense,<sup>3</sup> and the number of postwar apartment towers in Toronto is greater than the number of all building types 12 stories and over (including office towers) for any North American metropolitan region other than New York.<sup>4</sup>

The development of the tower-in-the-park building typology occurred in Toronto for a number of reasons. Initially it was supported as a development policy by the municipal government, influenced by many of the European émigré planners who had arrived in the city, including important figures such as Hans Blumenfeld and Gordon Stevenson.<sup>5</sup> Secondly, the Canadian Mortgage and Housing Corporation provided financial support for this building type as a response to the dramatic need for housing after the war and as recognition of the need for progressive housing policies. And thirdly, this boom was also tied to technical innovations in the Canadian construction industry, such as the “flying form,” which increased the speed and efficiency of high-rise construction.<sup>6</sup>



Fig. 2. These five suburban towers, known as the Jane Exbury Towers and located in North York, were designed by Uno Prii and built in 1969. They are among the high-rise towers that have been identified for their heritage value. Courtesy of Uno Prii.

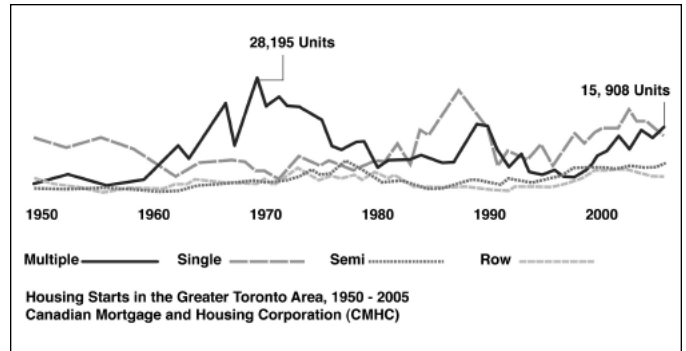


Fig. 3. Housing types of the Greater Toronto area, according to data from the Canadian Mortgage and Housing Corporation. Between 1960 and 1980 high-rise housing (multiples) was the dominant building form. Beginning in the 1980s this trend changed, as low-rise urban sprawl became more prevalent. Courtesy of Graeme Stewart, ERA Architects.

In 2008 the City of Toronto adopted the *Mayor's Tower Renewal Opportunities Book*,<sup>7</sup> which outlined the initial evaluation process and proposed key approaches the City wished to undertake for renewal and management. The City recognized the specific challenges of this aging building stock and proposed a holistic approach to renewal that was described as “a multi-faceted building upgrade, community revitalization and greening program of unprecedented scale.”

Few of these tower buildings had been assessed for their heritage value, but a number of the more distinctive towers have been included on the City's Inventory of Heritage Properties (Fig. 2).<sup>8</sup> On an individual basis many of the towers are quite ordinary, but cumulatively the Modernist environment they create has become an undeniable element of Toronto's urban landscape (Fig. 3). The *Opportunities Book* describes the tower-in-the-park as one of the defining housing innovations of the twentieth century and as a prominent feature of most Toronto neighborhoods (Fig. 4).

The City of Toronto has recently established a Tower Renewal Office, with a mandate to lead policies and programs for citywide tower renewal. In order to explore renewal opportunities, the Tower Renewal Office analyzed four sites in Toronto. Each site demonstrates different ownership patterns, geographic locations, and scales of development. Four buildings on three test sites were evaluated. The test sites, located in the North York, Etobicoke, and Scarborough communities of the Greater Tor-

onto Region, were analyzed for energy and carbon performance, demographics, and transit options. The analysis of these sites is intended to help the City to develop the policy framework required to establish tower renewal on a citywide scale.

Between 2008 and 2010 the City of Toronto commissioned the following studies to further develop a strategy for the Tower Neighborhood Renewal program:

- “Tower Renewal Guidelines for the Comprehensive Retrofit of Multiunit Residential Buildings in Cold Climates” by the John H. Daniels Faculty of Architecture, Landscape and Design, co-sponsored by the Canada Mortgage and Housing Corporation, City of Toronto, and the Toronto Atmospheric Fund, also known as the Daniels Study, <http://www.daniels.utoronto.ca/trg><sup>9</sup>
- “Community Energy Plans for Pilot Sites” by Arup Canada, also known as the Arup Study, <http://www.towerrenewal.ca/>.

Two additional studies were undertaken to address waste management and potential options for incentive financing:

- “Waste Management Strategy” by Genivar, <http://www.towerrenewal.ca/>
- “Financing Options Report” by Morrison Park Advisors, <http://www.towerrenewal.ca/>.

### The Daniels and Arup Energy Studies

The municipally funded Daniels and Arup energy studies link the rehabilita-

tion of apartment towers to the reduction of their energy inefficiencies. The apartment-tower boom in Toronto occurred prior to mainstream concern for energy conservation or the widespread application of building-science analysis. Consequently, Toronto's apartment towers consume more energy than new buildings, especially those constructed according to green-building practices. Both studies indicate that Toronto's apartment towers are among the highest energy users of all housing types in the region, requiring as much as 25 percent more energy per square meter than a single detached house. Their estimates indicate that greenhouse gas (GHG) production ranges from 5.3 to 5.8 tons per unit. When this range is aggregated across all apartment towers in the larger regional area, total GHG production for apartment towers falls between 2,056,000 to 2,226,000 tons annually. This represents roughly 6 percent of GHGs produced by all buildings in Ontario, with postwar apartment towers responsible for roughly 23 percent of residential emissions in Toronto. The waste-management study by Genivar also indicated that apartment towers were poor performers in other ways; for example, they typically have waste-diversion rates of less than 12 percent.

The Daniels study indicates that the high GHG output of apartment towers is generally linked to the poor performance of the building envelope, paired with aging mechanical systems. The study uses the building condition-assessment checklist developed by the National Research Council of Canada in



Fig. 4. The new town of Flemingdon Park, Toronto, which was planned in the late 1950s, photograph 1969. The apartment tower was part of the Modernist planning movement, which promoted new towns being constructed within the city limits as an alternative to unplanned sprawl. Courtesy of the City of Toronto.

1993 as the basis for its performance analysis.<sup>10</sup> The study emphasizes the need for a building-envelope retrofit and outlines three possible strategies to be applied to each renewal: an interior retrofit, an exterior retrofit, and a combination of the two. Possible reductions in GHG output are estimated to be more than 50 percent for a full retrofit. Although interior retrofits are often effective in cold climates, exterior retrofits are recommended in the study, as they are less intrusive for the tenants and more cost effective. Cost-benefit analysis and payback periods are identified for each retrofit option, and while the exterior retrofits are more expensive, the study argues that they would be highly effective. Three types of exterior-retrofit approaches are identified:

- basic overcladding: air barrier and insulation protected by an exterior cladding applied to opaque wall elements, excluding balconies; combined with window replacement
- comprehensive overcladding: air barrier and insulation protected by an exterior cladding applied to the entire opaque wall area, including balconies; combined with window replacement and appropriate enclosure of open balcony areas
- integrated overcladding: similar to comprehensive overcladding but incorporating a secondary framing

system that enables the updating and integration of building services between the exterior insulation and existing facade, as well as the introduction of features such as double-facade systems for natural ventilation and sound control.

These overcladding techniques have significant repercussions on the appearance of the structures, and they could have a significant impact on the towers' potential heritage value. While the Daniels study identifies preservation, conservation, and cultural-resource management as principles for the development of the guidelines for best practices, it also makes a distinction between the concrete frame of the building and its envelope. The Daniels study argues that the building envelope will require eventual replacement as part of renewal and presents this retrofitting as a "process that improves the energy efficiency and durability of the building skin, notwithstanding its appearance."

The GHG estimates in the Daniels study are based solely on the energy used for building operation. They do not reflect total household energy use related to transportation and other factors. Actual GHG emissions attributable to apartment towers and their residents would be much higher with these other factors considered.

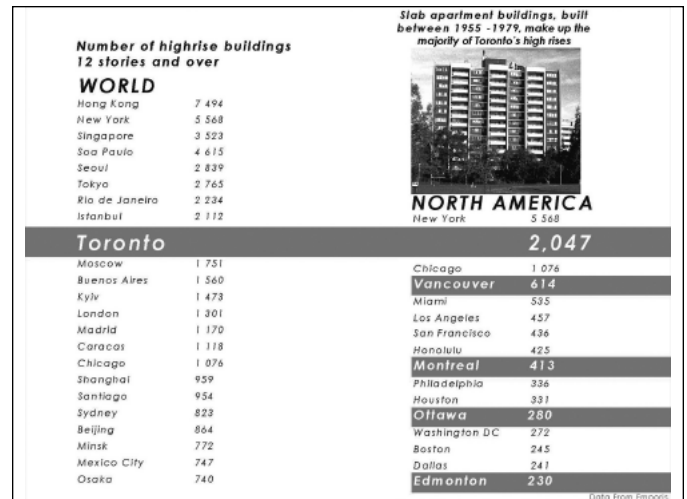


Fig. 5. Compilation of high-rise buildings having 12 stories and more, according to data compiled in 2007 from Emporis. The majority of Toronto's high-rise buildings on this chart are the postwar residential towers described in this paper. Data for Chinese cities was incomplete and has greatly changed since 2007. Courtesy of Graeme Stewart, ERA Architects.

The Arup study reports on the issue of energy consumption of the apartment towers both at the level of the individual building and within the larger urban context. At the urban-context level, the study stated that significant energy reductions could be made through improved public transit or through lessening travel times to work or shopping, particularly for those apartment neighborhoods in more isolated suburban locations. District energy options were limited, however, since the suburban setting of most of the pilot sites "offers an inadequate customer density to meet the traditional load-factor threshold necessary for a District Energy System to be economically feasible." Further population intensification in those areas would make district energy a more desirable consideration.

When looking at the energy consumption at the individual-building level, the study lists a series of resource conservation measures (RCM) and four scenarios for employing them at the city's pilot sites, providing each with a specific capital cost, savings, payback period, and GHG reduction. The four scenarios were calculated under the assumption that the RCMs were interactive components of a single system, as opposed to independent factors. The four scenarios are as follows:

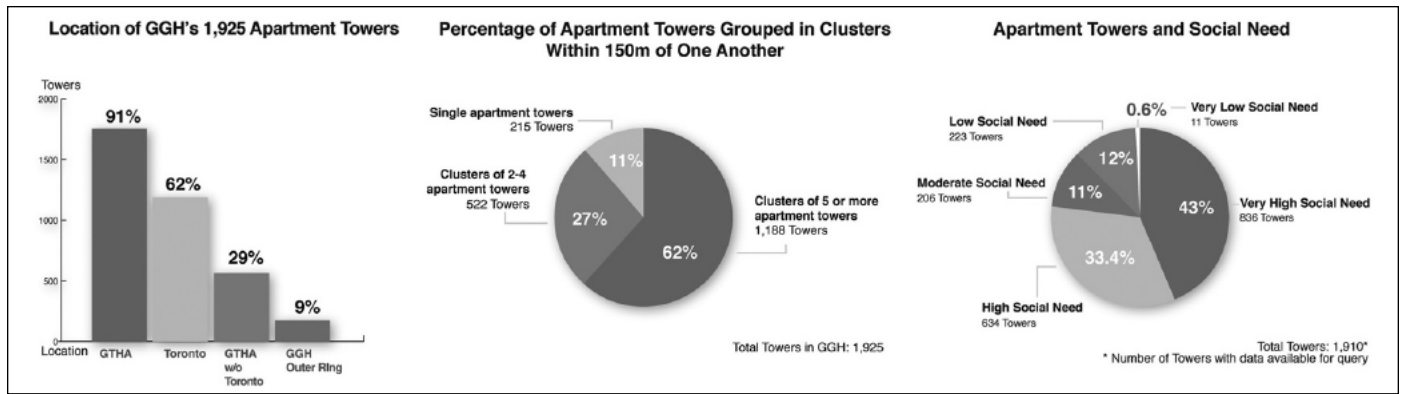


Fig. 6. This data, collected by the Province of Ontario Growth Secretariat, analyzes the distribution, organization, and social characteristics of the postwar towers in the Greater Golden Horseshoe (GGH), the Greater Toronto and Hamilton Area (GTHA), and the City of Toronto proper.

- Scenario one combines RCMs that have a payback period (where the financial savings produced through the conservation of energy and other resources balance the cost of installation) of five years or less. In this scenario, only minor variations in RCM selection occurred between sites, indicating that all buildings included in the study would benefit from similar resource-conservation measures.
- Scenario two analyses RCMs most apt to reduce greenhouse gases. Only RCMs providing an estimated 30 tons of CO<sub>2</sub>e reduction were included. This scenario indicated that almost 1,600 tons of CO<sub>2</sub>e could potentially be eliminated from just the North York site.
- Scenario three uses scenario one as a foundation but also includes window-replacement and overcladding measures to enhance each building's thermal performance.
- Scenario four further builds on scenario three, adding apartment radiators to the calculation.

On the issue of whether to rehabilitate or replace structures, the Arup study references earlier work done in Britain, where it was "concluded that in general the rehabilitation of towers will always cost substantially less than rebuilding them." At the same time, the study notes that political issues, personal preferences, and general lack of understanding by property owners and lenders of energy-efficiency retrofits often lead to a skewed perspective of the merits of rehabilitation versus replacement that in turn often favors replace-

ment. Basing decisions on economic parameters is the logical approach that property owners and lenders can be expected to follow. Typically, however, an economic decision would not assign any value to the huge difference in the embodied carbon between a rehabilitation and replacement project; this consideration needs to be appropriately accounted for, as its impact on Toronto's Sustainable Energy Strategy goals will be substantial.

In addressing concerns about the structural integrity of these buildings, Arup again references earlier British studies that looked at the structural integrity of apartment towers before demolition. These studies found that the structural components of many apartment towers had not significantly deteriorated. The findings helped to dispel concerns regarding poor craftsmanship and determined that the structural integrity of apartment towers needed to be evaluated on a per-case basis.

In discussing whether this aging building stock required this comprehensive plan for renewal, the Arup study notes that there are several reasons why the improvements are essential:

- Tenant energy costs could increase to the point where the towers are not competitive with newer properties, leading to declining occupancy rates, decreased revenues and property value, deteriorating physical conditions, and declining neighborhoods.
- Building systems and possibly structural elements could deteriorate to the point where the property is not suitable for occupancy and must be

replaced at a cost approximately three to four times greater than the cost of major renovation.

- Forecasted increases in Toronto's population could result in increases in vehicular-based trips, significantly increasing GHG emissions, congestion, and competition for open space.

### The Tower Renewal Implementation Book

The findings of the Daniels study, the Arup study, the waste-management study, and the financing report were included in *The Tower Renewal Implementation Book*,<sup>11</sup> which was endorsed by Toronto City Council in July 2010. Primarily focused on sustainable building refurbishment, the report establishes a program for tower renewal, outlining how owners can incrementally achieve low-carbon buildings through phased building upgrades. It recommended the creation of a city-run Tower Renewal Corporation, which would aid in the funding of building retrofits through access to pools of low-interest private financing. The Tower Renewal Office is now in the process of developing the details of the Tower Renewal Corporation, as well as beginning to examine the wider planning-policy implications of the Tower Neighborhood Renewal program. The primary focus on sustainable building initiatives was felt to be strategically important, since significant reductions in energy consumption could be made both at the individual building and community levels, as shown in the studies by Daniels and Arup.

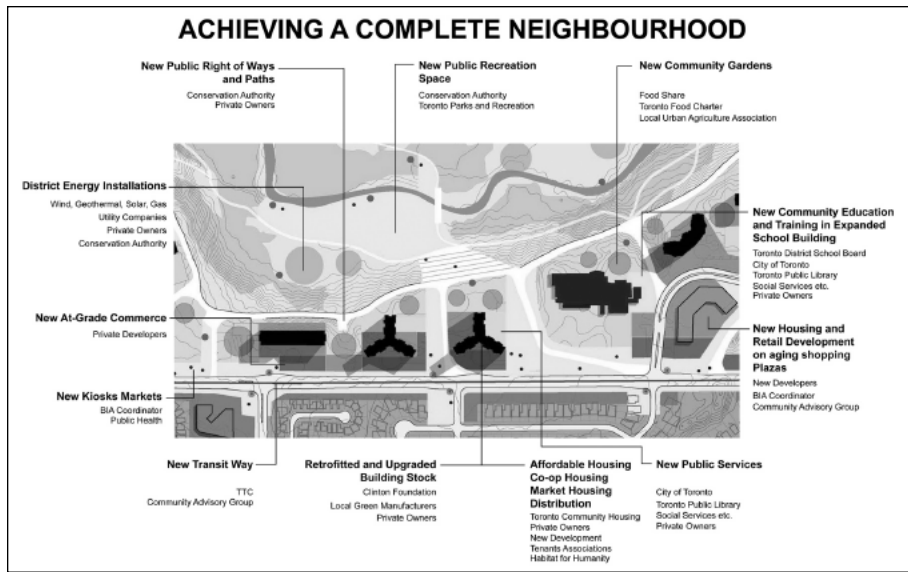


Fig. 7. A schematic indicating a holistic program of neighborhood renewal with the aim of achieving livable and sustainable communities. Courtesy of Graeme Stewart, ERA Architects.

### Tower Neighborhood Renewal at a Regional Scale

In addition to the work undertaken by the City of Toronto, there are various initiatives and investigations that have been completed or are currently underway related to the Tower Neighborhood Renewal program. These initiatives have tended to explore other aspects of analyzing apartment towers, beyond the issues of greening and building refurbishment.

A key study was commissioned by the Province of Ontario's Ontario Growth Secretariat, Ministry of Infrastructure, called the "Tower Neighbourhood Renewal in the Greater Golden Horseshoe: An Analysis of High-Rise Apartment Tower Neighbourhoods Developed in the Postwar Boom (1945-1984)."<sup>12</sup>

The report provides the most detailed inventory of the towers in the region. Using the definition of the postwar apartment tower as a residential building composed of eight or more stories and constructed between 1945 and 1984,<sup>13</sup> it states that there are 1,925 postwar apartment towers in the Greater Golden Horseshoe, containing 383,838 residential units. In addition there are 1,155 apartment buildings with between five and seven stories from the same period of construction. In total, they constitute about 17 percent of all housing units in the area (Fig. 5).

Geographically, apartment towers tend to be clustered in groups, with 62 percent located in groups of five towers or more (Fig. 6). Only 11 percent of towers are found in isolation. This pattern of grouped sites creates a land-use anomaly, where densities of postwar apartment neighbourhoods can be high despite retaining significant open space. Net densities of clusters of towers typically range from 150 to 350 people per hectare (pph) and have even been found to exceed 500 pph. Despite this density, 47 percent of the apartment towers are located on sites larger approximately hectare.

The "Tower Neighbourhood Renewal" study links the analysis of Toronto's substantial body of postwar housing to a series of provincial policy objectives:

- The Big Move – Metrolinx Transportation Plan: the Growth Secretariat's report identifies the special characteristics of apartment neighborhoods that are reliant upon an improved transit plan.
- Ontario's Poverty Reduction Strategy: the Growth Secretariat's report indicates that many apartment neighborhoods are identified as areas of high or very high social need.
- The Go Green Action Plan: the Growth Secretariat's report indicates that apartment towers in the City of Toronto are responsible for ten per-

cent of all greenhouse-gas emissions related to natural gas and electricity usage.

- Places to Grow, The Growth Plan for the Greater Golden Horseshoe: the Growth Secretariat's report indicates that apartment neighborhoods, having more than 2,000 hectares of vacant land, could accommodate growth and are often within or near already prescribed growth areas.

This provincial study emphasizes the need to fully understand apartment buildings from the postwar building boom, link them with improved public transit, and utilize the clustering of apartments as nodes for continued expansion and growth.

### Social Studies

Other researchers have looked at the current cultural communities that now exist in these apartment neighborhoods. The towers had been built as part of the building boom following the war, and they were intended to house a mix of income levels. This mix has now changed dramatically, and a series of studies on the current demographics have been very helpful in recognizing the present-day characteristics of these neighborhoods and in understanding the importance of community engagement in the process of rehabilitation.<sup>14</sup>

### Conclusions and Next Steps

Work conducted on Toronto's apartment towers to date represents a body of research and analysis that has been necessary to understand and appreciate the extent and complexity of this legacy of the recent past. It has indicated that the tower-in-the-park is an important component of Toronto's urban fabric and that it has significance for almost all components of municipal policy (Fig. 7). The City of Toronto's Tower Renewal Office and the Urban Design Division of the Planning Department are currently conducting design workshops throughout the city to develop community-driven responses to change and renewal within these neighborhoods.

In order to achieve the technical goals of building preservation and rehabilitation, it has been necessary to place conservation within a larger cultural

context and to harness the more broad-based interests of the community. Key learning points have been the following:

- Education plays a major role. The architecture of the recent past is still poorly understood both by the general public and by professionals in the fields of architecture, planning, and heritage. However, a gradual recognition of the quality of the recent past is a continuing trend in heritage preservation.
- Burgeoning interest within the development industry regarding the greening of buildings can be seen as an important ally for building conservation but can also often have conflicting agendas. The decision-making process around energy efficiency needs to consider the impact of upgrades where there is a potential heritage resource.
- It is necessary to bring heritage preservation into greater contact with the worlds of planning and politics. To manage the conservation of large-scale urban resources, it is necessary to map out not only the past but also the future of the resource, to understand how preservation can be the catalyst for obtaining effective and economic planning objectives.

The underpinning of this work has been that the Modernist ideas behind the architecture and urban design of the recent past are worthy of consideration and that the built form from that period is an asset for reinvestment. Tower renewal has provided a response to the attitude that buildings of the recent past have reached a point of obsolescence. The multiple partners in the current research have described this work as an ecology of change, where reinvesting in the recent past is creating a future for the City of Toronto.

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### Acknowledgements

A special thanks to Eleanor McAteer, project director for the Tower Renewal Project, for reviewing this article.

### Notes

1. ERA Architects, Planning Alliance and Cities Centre at the University of Toronto, *Tower Neighbourhood Renewal in the Greater Golden Horseshoe: An Analysis of High-Rise Apartment Tower Neighbourhoods Developed in the Postwar Boom (1945-1984)*, Ontario Growth Secretariat, Ministry of Infrastructure, 2010, <http://www.cugr.ca/tmrgh>. Initial studies had indicated smaller percentages both for rental housing and for the overall number of towers, but this recent study has provided more detailed data.
2. Fuller Geometrics, Architects, Engineers, Planners, "Project Toronto: A Study and Proposal for the Future Development and Design of Toronto" (Cambridge, Mass., 1968).
3. The Neptis Foundation's 2007 Metropolitan Indicators Study indicated that Chicago had 15.0 people per hectare and Toronto 27.0 people per hectare. Data sources for their study can be found at [www.neptis.org](http://www.neptis.org).
4. ERA Architects, 20.
5. A more complete background on the planning history of this period can be found in Graeme Stewart, "The Suburban Tower and Toronto's Legacy of Modern Housing," *Docomomo* 39 (Sept. 2008): 23-29. Early planned communities in the inner suburbs of Toronto included the early "new towns" of Don Mills, Thorncliffe, and Flemingdon Park, whose plans were approved in 1953, 1955, and 1958, respectively.
6. The flying form is a method of concrete construction where formwork is reused and hoisted from floor to floor for rapid construction. Pioneered in Toronto in the early 1960s, it is standard practice today.
7. *Mayor's Tower Renewal Opportunities Book* can be accessed through the Tower Renewal Office of the City of Toronto, [www.towerrenewal.ca](http://www.towerrenewal.ca).
8. Several towers by Uno Prii, an Estonian architect practicing in Toronto during the 1960s, have been designated heritage structures. In addition, the heritage committee in the north district of Toronto (North York) has submitted several inventories of Modern buildings that they are recommending for heritage designation. See [www.era.on.ca/2010/11/10/download-north-york's-modernist-architecture-revisited](http://www.era.on.ca/2010/11/10/download-north-york's-modernist-architecture-revisited).
9. This study was followed by a second study entitled "Workforce Challenges and Opportunities." The key objectives of this study were to identify tower-renewal employment opportuni-

ties and to forecast future challenges to the recruitment, training, and education of the tower-renewal workforce. This report also looks ahead to the longer-term implications of building infrastructure revitalization on the Toronto construction industry.

10. Institute for Research in Construction, "Protocols for Building Condition Assessment," NRCC 36913 (Ottawa: National Research Council of Canada, 1993), [http://irc.nrc-cnrc.gc.ca/pubs/catalogue/nrcc36913\\_e.html](http://irc.nrc-cnrc.gc.ca/pubs/catalogue/nrcc36913_e.html).

11. This report can also be downloaded from the City of Toronto's web site at [http://www.toronto.ca/city\\_manager/pdf/tr\\_implementation\\_book.pdf](http://www.toronto.ca/city_manager/pdf/tr_implementation_book.pdf).

12. This study can be downloaded at [www.towerrenewal.ca/](http://www.towerrenewal.ca/) or <http://era.on.ca/blogs/towerrenewal/>.

13. The bulk of the target building type was built between 1960 and 1980 (89 percent) with 6.5 percent built prior to 1960 and 4.5 percent built in the early 1980s. The beginning of the boom coincides with the adoption of the concrete high-rise housing typology in the early 1950s, and the end of the boom relates to a shift in high-rise typology and the slowdown of the housing market in the early 1980s. The youngest building found conforming to the typological criteria was completed in 1984. A later condominium-tower building boom subsequently occurred in Toronto and currently continues, but it is very different in its effect on the morphology of the city.

14. The participants in these studies include Jane's Walks, the United Way, the National Film Board of Canada, and Cities Centre at the University of Toronto. Jane's Walk is an organization named after Jane Jacobs; it has now issued a series of eight preliminary studies on the "walkability" of tower neighborhoods in Toronto, which can be viewed at [www.janeswalk.net/walkability](http://www.janeswalk.net/walkability). The United Way has introduced a component of its Building Strong Neighborhoods Strategy called Vertical Poverty, which focuses specifically on the social issues in the tower neighborhoods. The National Film Board of Canada has initiated a high-rise documentary series that can be found at [www.highrise.nfb.ca](http://www.highrise.nfb.ca). The University of Toronto's Cities Centre has organized a series of symposia on tower renewal that has brought together other local universities, colleges, and the private sector to provide a forum for discussion. York University has an active program called Global Suburbanism, including post-doctorate positions, that is further studying apartment neighborhoods and Tower Neighborhood Renewal. Ryerson University, OCADU, and the Daniels School at the University of Toronto are all engaged in similar planning, architecture, or urban-design studies.



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