

Vibrant Neighbourhoods and a Sustainable City: The Opportunities of Mayor's Tower Renewal

Toronto's Opportunity

Our aging modern towers may be our greatest urban resource.

In contrast to typical North American cities, Toronto's tower communities provide high densities, a mix of housing types and options for renters throughout the region. Planned with ambitions of regional equity, and complete communities, Toronto's diverse modern communities were built with the promise of a high quality of life; transforming the region forever during the post-war boom.

Looking to the future, these buildings provide special advantage for the key challenges facing the region.

Specifically, our aging concrete towers present opportunities for significant greenhouse gas reduction, have the flexibility to adapt to new housing needs, have space for needed services and amenities, contain dense populations to support vibrant communities and rapid transit, and have the durability to last several more generations.

Thoughtfully managed, they may once again transform the region; enabling vibrant neighbourhoods, healthy communities and a sustainable built environment.

Major opportunities include:

- Green buildings and neighbourhoods
- Foster vibrant and diverse places
- Promote a housing mix
- Promote locally produced energy, food and culture
- Connect neighbourhoods to the city at large
- Empower the local community
- Enable policy change

Opportunities: Green Buildings and Neighbourhoods

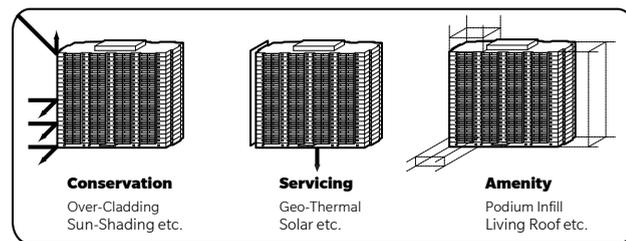


Toronto's Most Wasteful Housing

Aging and wasteful, Toronto's modern apartments are perfectly suited for green upgrades to make them among Toronto's most sustainable buildings. Every green technique celebrated in new construction can be applied to these existing buildings. These include, but are not limited to, the strategies outlined in the diagram on the opposite page.

Straightforward upgrades, including thermal over-cladding will cut energy use significantly. Using a combination of techniques, including geo-thermal heating, grey-water recycling, solar water heating and other clean energy options, will not only reduce energy requirements, but render this energy clean.

The Building



Images

Top: Conceptual thermal over-cladding of apartment tower. Opposite, Top: Sample strategies for green renewal. Opposite, Bottom Left: Estimate of current greenhouse gas production of aging towers. Opposite, Bottom Right: Estimate of greenhouse gas production of towers following green renewal. Section Cover: Crescent Town. Source data: Canadian Mortgage and Housing Corporation, Toronto Community Housing Corporation.

Green Buildings, Neighbourhoods and City

Climate Change is one of the key issues facing cities in the 21st Century. Meeting these goals will not only require a high green standard when building new, but more importantly will require addressing the existing built environment – making the existing city green.

As mentioned in the previous section, Toronto's aging apartment towers are among the most wasteful buildings in the City. However, with relatively simple modification, they could become our greenest.

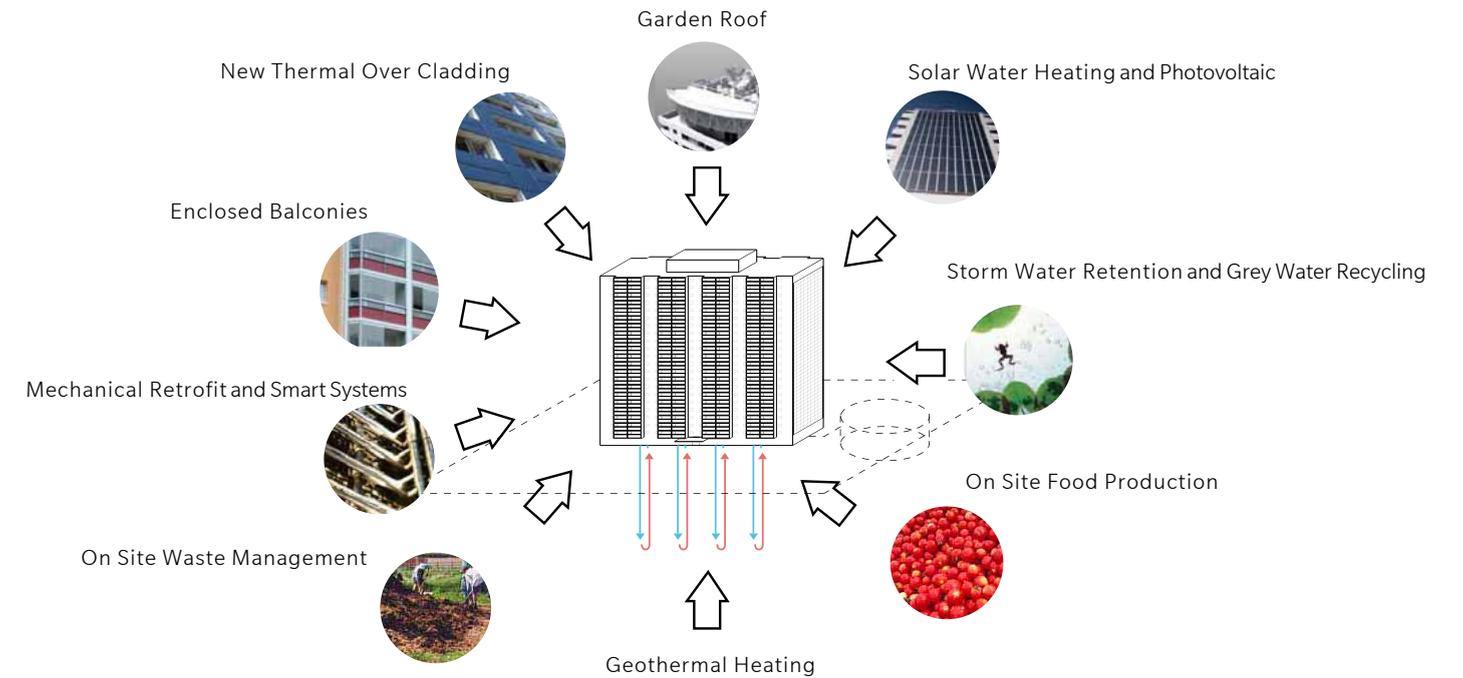
Due to their straightforward concrete construction, as well as ample open space, these aging apartments are highly suited for green retrofits that will provide an immediate and significant reduction in carbon output as well as substantially reduce building operating expenses at a fraction of the cost of building new. These include, but are not limited to: thermal over-cladding, clean energy installations, grey-water recycling, and 'smart' metering.

The scale of these buildings, many containing several hundred units, provides the critical mass required to making to make green retrofits viable. Investments are also possible at the neighbourhood level, such as district energy, auto-sharing, community gardens and on-site waste management. Furthermore, the addition of a mix of uses providing local services and amenities will reduce the need for auto trips, and more importantly, foster vibrant and self sufficient communities.

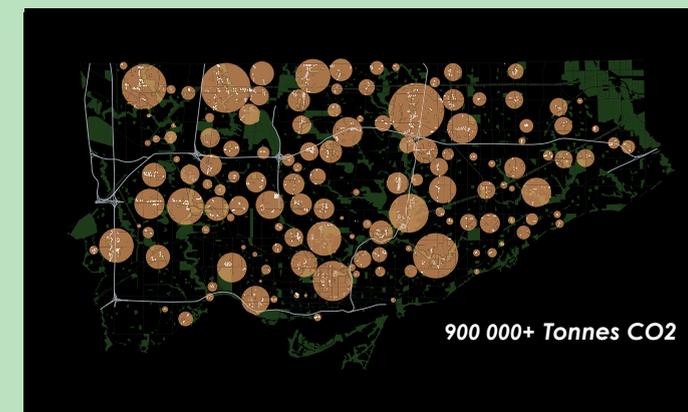
The modern concrete tower in the park is an incredibly valuable resource which will be a key aspect of Toronto's future. City-wide upgrades will significantly reduce regional energy use and greenhouse gas production, will improve the quality of existing housing and neighbourhoods, and will enable innovation and leadership in the growing green economy.

Note: Estimated carbon counts are conservative, and based on currently available data.

Creating a Sustainable Built Environment



Applied city-wide, green renewal will cut Toronto's greenhouse gas production by hundreds of thousands of tonnes



Opportunities: Green Buildings and Neighbourhoods



A Housing Resource for Easy Upgrade

Significant retrofits and upgrades are necessary to meet increasing expectations of building performance. Fortunately, the structure of these buildings will allow this to be accomplished with relative ease.

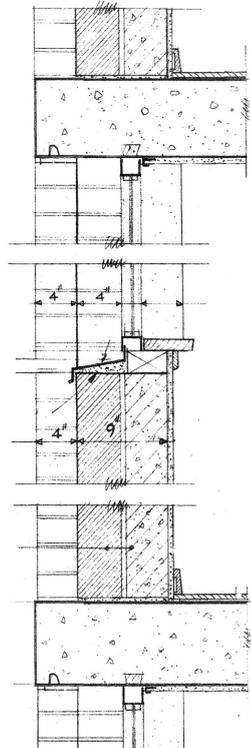
The majority of the buildings are made of poured concrete, shear wall construction, with the envelope (outer walls) consisting of brick and block masonry from slab to slab (see sidebar). These existing masonry walls can act as a base on top of which today's green standards can be applied, quickly upgrading buildings with minimal disruption to existing residents.

Toronto's aging modern towers are a flexible and durable resource, highly suited for continual upgrade for generations to come.

Durable Structure

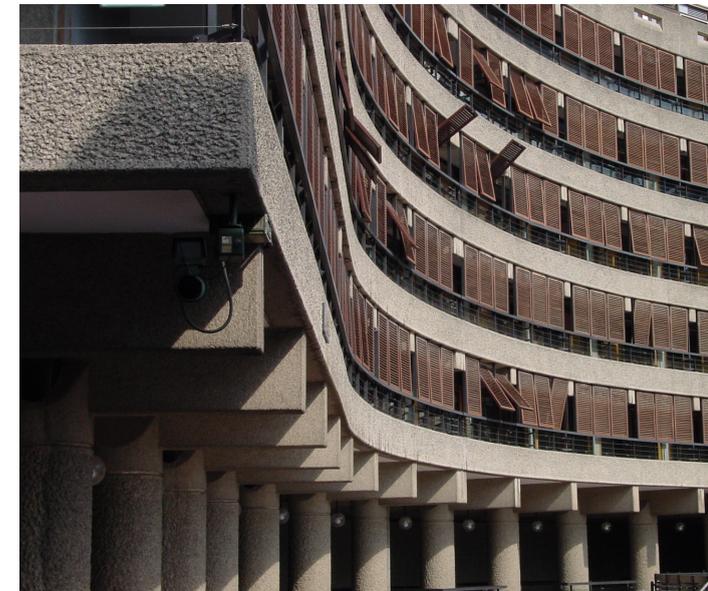
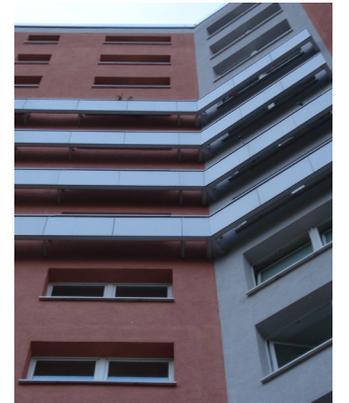
As seen in the section drawing to the left, exterior walls consist of cement block covered in brick veneer running from one concrete floor slab to the other. Though currently lacking modern building science (and insulation), the robust masonry walls of Toronto's apartment buildings are a durable resource.

If adequately maintained, they should last well into the future. As seen from the multiple international examples on the opposite page, they can also be built upon as new needs emerge. When properly covered in insulation, the thick walls will also act as a thermal mass; creating a more efficient building. They provide a surface for easy upgrade.



Images

Top: Typical masonry façade of apartment in Toronto. Bottom: Section of wall construction in typical building. Courtesy of Studio Saleff. Opposite: A variety of international examples of building upgrade, clockwise from top left; Toronto (image courtesy of the archives of Canadian Architect), Berlin, London, Helle Germany, London, Bratislava Slovakia and Stockholm Sweden.



Opportunities: Green Buildings and Neighbourhoods



Over-Cladding and Upgrade



Images

Top: Example of over-cladding, Berlin. Bottom: Schematic building renewal in London UK. Courtesy of Cole Thompson Anders Architects. Opposite; Top, Bottom Left and Bottom Centre: Conceptual framework for building over-cladding. Opposite; Bottom Right: Example of over-cladding, Berlin.

Make Buildings Fresh, Beautiful and Efficient

Among the most effective strategies in reducing the ecological footprint of our stock of aging concrete residential towers is the application of thermal over-cladding; providing a winter coat to buildings which today are naked to the elements.

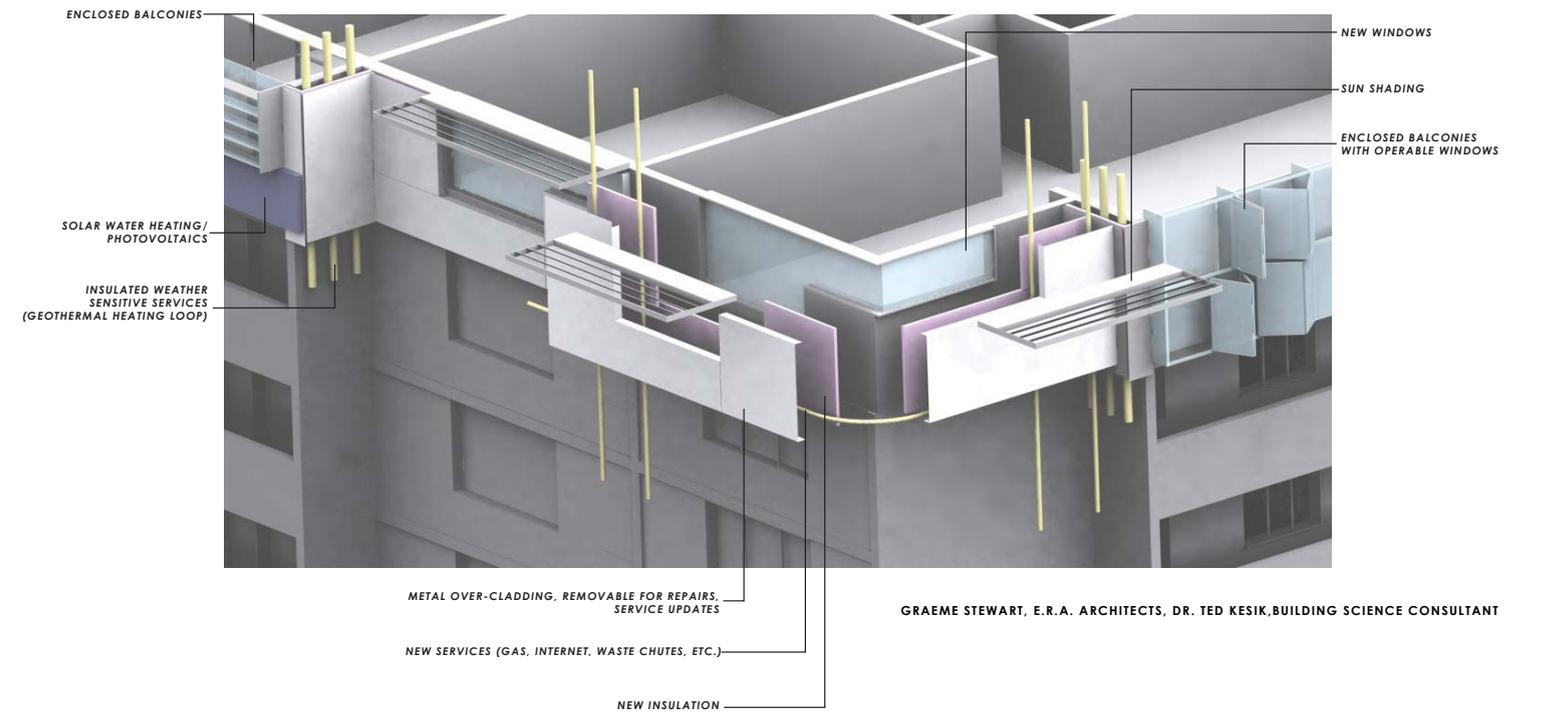
The fundamental challenge with these buildings is the lack of a 'thermal break' between interior and exterior environments. A new 'skin', consisting of insulation, rain screen and exterior cladding, can be applied over the existing building surface. This approach extensively insulates the exterior of the buildings and covers leaky slab edges. Furthermore, new operable balcony enclosures, consisting of an insulating double glazed enclosure would similarly improve building performance, while able to open to the elements in the warm months and provide a usable space in the winter.

Along with insulation, new building skins can include sun shading which responds to the light exposure of each building face. Furthermore, these assemblies could be integrated with services, ranging from geothermal heating, to gas, to high-speed internet, to garbage separation chutes. The new building surface itself could contain clean energy installations such as solar water heating and photovoltaics. Over-cladding offers a range of innovative options.

Research conducted at the Faculty of Architecture, Landscape and Design at the University of Toronto, predict that comprehensive over-cladding would dramatically reduce the energy required to operate these buildings by as much as 50 percent, significantly reducing costs and greenhouse gas production.

Key to the over-cladding strategy is minimizing tenant disruption during the process of retrofit through phased upgrades applied from the outside in. This process would also offer the opportunity to update building appearance, creating unique and attractive neighbourhood landmarks.

CONCEPTUAL FRAMEWORK OF BASIC HIGH-RISE OVER-CLADDING STRATEGY



Improving energy efficiency and modernizing services, thoughtful renewal can also create landmarks throughout the city



Opportunities: Green Buildings and Neighbourhoods



District Energy

Apartment Neighbourhoods contain the density of people and buildings to support local resource networks, such as district energy. Taking these communities off the grid will free capacity for the system, while also ensuring that neighbourhoods are serviced by clean energy. In addition to large apartment buildings, local energy networks could include schools, shopping centres, nearby places of employment, and traditional housing. Toronto's dozens of Apartment Neighbourhoods are ideal candidates to emerge as sustainable energy hubs.

Take Buildings Off the Grid

Energy can be reduced, and it can also be made clean. Generally found in grouped clusters representing several thousand units located in large areas of open space, Apartment Neighbourhoods provide the critical mass for the installation of district and renewal-energy installation. Some options include geothermal heating and cooling or co-generation, turbine installations, solar hot-water heating (from panels on generous blank end walls), green roof technology, storm water retention, and grey water recycling. Applied at a district level, large installations of these techniques could radically reduce the ecological footprint of these buildings, taking them off the city's grid. Carefully implemented, Apartment Neighbourhoods could become local green energy hubs.

Applied comprehensively, these strategies are predicted to provide carbon reductions of more than two thirds of the current output. Such a model could allow a 200 unit apartment building to produce lower greenhouse gas emissions than 50 traditional bungalows. Far less daunting than greening thousands of individual homes, a large apartment neighbourhood, containing thousands of households, can be made sustainable with targeted investment in a handful of buildings.

City-wide, initiatives such as district energy will go a long way in combating climate change, creating a green and sustainable region.

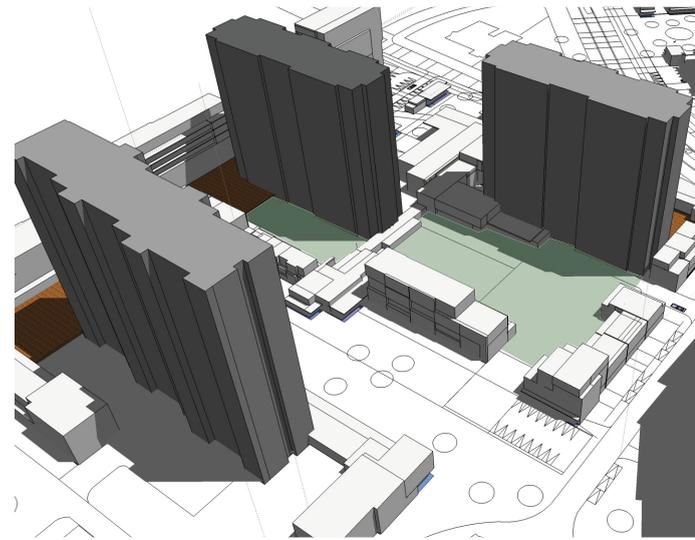


Dense Apartment Neighbourhoods, adjacent to large open and natural areas, offer many opportunities for local resource networks such as district energy

Images

Top: Conceptual district energy installation near Apartment Neighbourhood.
Opposite: Aerial photo of Kipling and Steeles. Courtesy of the City of Toronto.

Opportunities: Apartment Neighbourhoods as Complete Communities



Legacy for Creating Complete Communities

The dense clusters of Apartment Neighbourhoods found throughout the city are perfectly suited to evolve into dynamic and sustainable communities. From Thorncliffe and Flemingdon Parks, from the Peanut to Jane and Finch, these neighbourhoods were originally built with self-sufficiency in mind. They provide a solid base which can evolve to meet the expectations of the 21st Century.

Take Down Fences and Create Places

Clusters of high-rises form Apartment Neighbourhoods throughout the city. Many of these neighbourhoods are home to tens of thousands of inhabitants, yet they are largely dormitories, lacking the diversity and vibrancy their density would suggest. Instead, due to prohibitive zoning inherited from the 1960s, they mainly consist of disconnected and unused space.

Truly sustainable neighbourhoods are more than simply efficient buildings, they are communities organized in a fashion promoting social, economic, cultural and ecological health. The Province's Places to Grow document promotes the creation of 'Complete Communities'; neighbourhoods which provide the full range of services and amenities, housing types and tenures, accessibility, equity, as well as ecological responsibility. Neighbourhoods which are vibrant, self-sufficient, and in which residents are proud to call home.

To date, this has not been achieved in most of Toronto's Apartment Neighbourhoods. Yet there is enormous potential. Allowed to evolve in response to the needs and aspiration of the dense and diverse resident community, these neighbourhoods could mature into the vibrant and dynamic 'complete communities' known to enable sustainable cities and a high quality of life. They only need to be given the proper tools.

Creating Sustainable and Vibrant Neighbourhoods



Images

Top: Conceptual framework for neighbourhood infill, defining usable public and private spaces, and a mix of uses. Opposite: Opportunities for complete communities.

Opportunities: Foster Vibrant, Dynamic and Mixed Use Places



A Mix of Use

Existing buildings can accommodate mixed-uses. By design, the concrete walls found in apartment buildings create the necessary fire separations to allow for a mix of uses: anything from at-grade retail and office conversion to cottage industry. Expected to remain standing for several more generations, these concrete structures are an infrastructure for uses which have yet to be considered, and can evolve along with neighbourhoods.

Services at community hubs may include:

- Retail
- Social services
- Cultural institutions
- Transportation
- Employment
- Recreation space
- Outdoor and indoor publicly accessible gathering places
- Green and permacultural uses
- Day care / senior care
- Community gardens
- Community centres
- Language training
- Job training
- Libraries
- Health services

Create Urban Villages with an Active Public Realm

Apartment Neighbourhoods could be transformed into truly self-sufficient urban villages. Reconsidered as hubs, and incorporated with community services, gathering and recreation space, new retail and housing; these neighbourhoods could evolve into vibrant nodes servicing the resident community and city at large.

Thoughtfully designed, new structures of a variety of uses could be integrated into existing buildings; arranged in a manner that defines private spaces, as well as an expanded public realm. Infill could give definition and form to areas today criticized for their 'placelessness'.

A mix of uses would significantly reduce auto trips for apartment dwellers and the surrounding community, provide opportunity for entrepreneurship, and foster active public realm. Most importantly, it would enable these communities to mature into the lively and diverse neighbourhoods for which our city is celebrated.



Images

Top: Conversion of apartment units into retail, Moscow. Opposite: Conceptual framework of permanent and temporary mixed-use in a variety of tower block communities in Toronto.

Opportunities: Promote a Housing Mix



Provide Housing for the Entire Life Cycle, of Every Tenure and Type

The open space within these neighbourhoods presents the possibility for new housing. This would aid in reducing sprawl, but more importantly, provide greater housing options within these communities. This could provide appropriate dwellings for the entire life-cycle; from young families to the seniors.

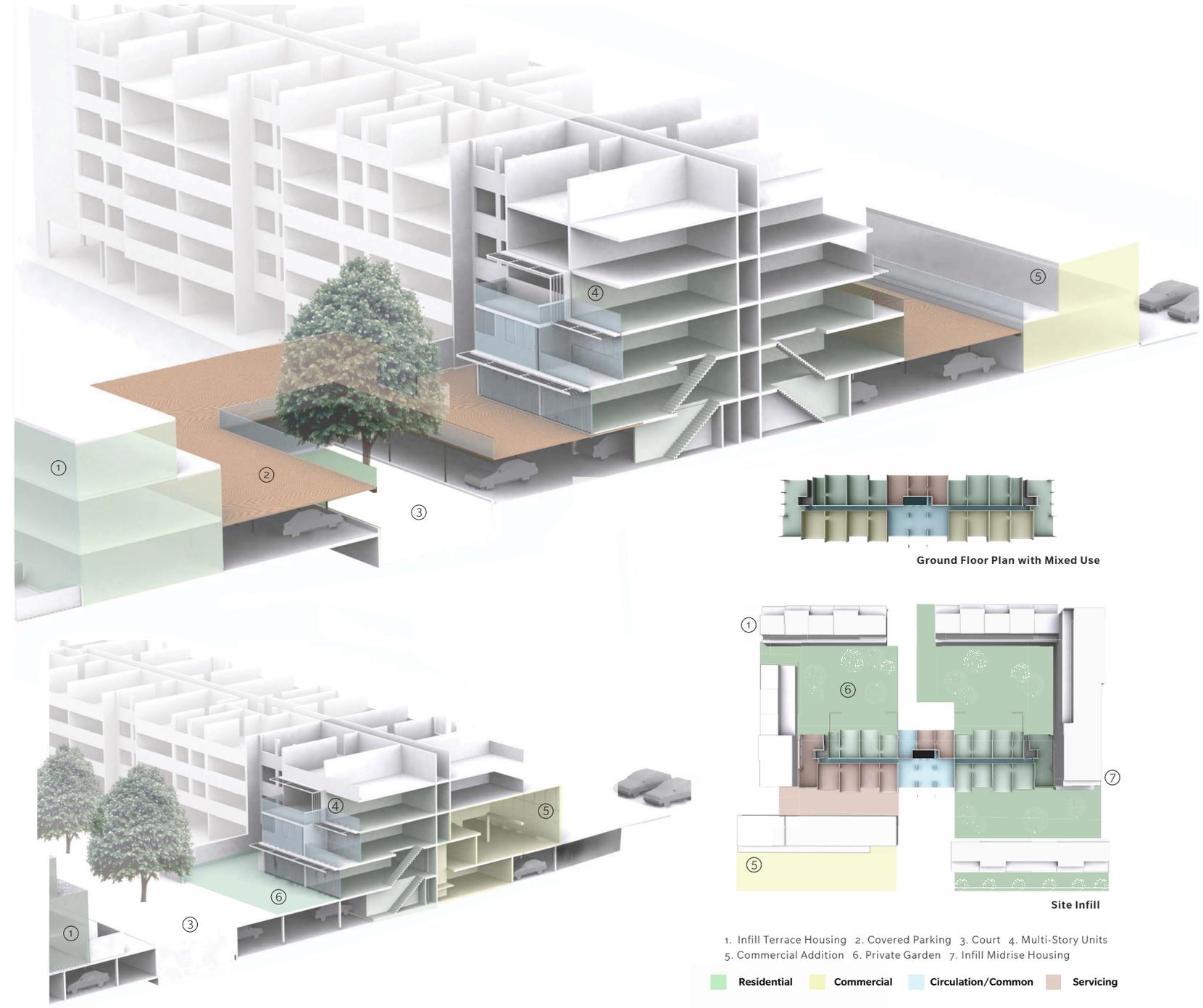
Furthermore, in existing buildings themselves, the adaptability of the concrete structure lends itself to the possibility of layout alterations and building repurposing as the needs of residents evolve.

Within buildings, apartments could be combined both vertically and horizontally to create family sized dwellings. Alternations could include creating at-grade terrace units with back gardens, as well as conversion into communal areas or retail. They are a very flexible infrastructure.

Introduction of new housing with a variety of types and tenures could add variety to the monolithic areas of apartment housing, and provide new options for current residents as well as the city at large. New housing options include, but are not limited to:

- Ownership,
- Co-ops,
- Rent to own,
- Family sized housing,
- Multi-generational housing,
- Housing for seniors, etc.

Images: Top: Conceptual low-rise infill in Toronto. Middle: Infill housing in Stockholm. Bottom: Infill housing in Berlin, Marzahn. Opposite: Conceptual addition of terrace housing and mixed-use infill in Toronto tower block site.



Opportunities: Promote Locally Produced Energy, Food and Culture



Self-Sustaining Communities

Opportunities Include:

Resources:

- District energy
- Urban agriculture
- On-site waste management
- Access to food and services

Cultural Production

- Community, arts and business associations
- Markets, festivals
- Funding for entrepreneurs

Images

Top: Existing community garden in North York. Opposite: The conceptual framework for district urban agriculture, farmers markets, and new infill in a 'Pastoral' Apartment Neighbourhood in Toronto.

Create Self Sufficient and Engaged Neighbourhoods

Beyond traditional mixed use, there also exists the possibility for local and sustainable initiatives; including both environmental and cultural opportunities. Containing remarkable built, natural and human resources, these communities can become places of production to offset what they consume.

As an example, the open space found in Apartment Neighbourhoods was, only a generation ago, used for agriculture. Once re-engaged, current no-man's-land could again be rendered productive. Within the context of large Apartment Neighbourhoods, food production could be tied with local composting programs, as well as emerge as focal points for diverse communities, including youth training, seasonal markets and community kitchens.

Taking advantage of this potential for urban agriculture, onsite waste management and the aforementioned district renewable-energy installations, Apartment Neighbourhoods could manage local resource networks. This could take significant pressure off Toronto's grid, and foster engaged and green communities. Neighbourhoods could emerge as hubs servicing the city at large, with surplus energy sold to adjacent communities and yields from farming initiatives supplying local markets.

Contained behind the homogenous facades are some of Canada's most diverse communities. Given the proper tools, residents could transform these areas into a series of truly unique and vibrant neighbourhoods. Support for local retail, organizations and cultural production will promote engagement, entrepreneurialism, and pride of place, as well as unlock the boundless ingenuity that is currently trapped behind closed doors.



Opportunities: Connect Neighbourhoods to the City at Large



Integrated and Connecting Communities

Transit City will bring rapid transport to many Apartment Neighbourhoods, whose needs are currently not being met by the existing bus system. This will improve mobility and connect these neighbourhoods to the city at large. Furthermore, it will provide the opportunity for focused investment within Apartment Neighbourhoods.

Carefully placed transit stops could emerge as hubs for the larger community; providing retail, community services, public gathering space, and an interchange of several modes of transit. Thoughtfully implemented and integrated with Mayor's Tower Renewal, Transit City will transform the region and aid in creating a equitable and sustainable city.

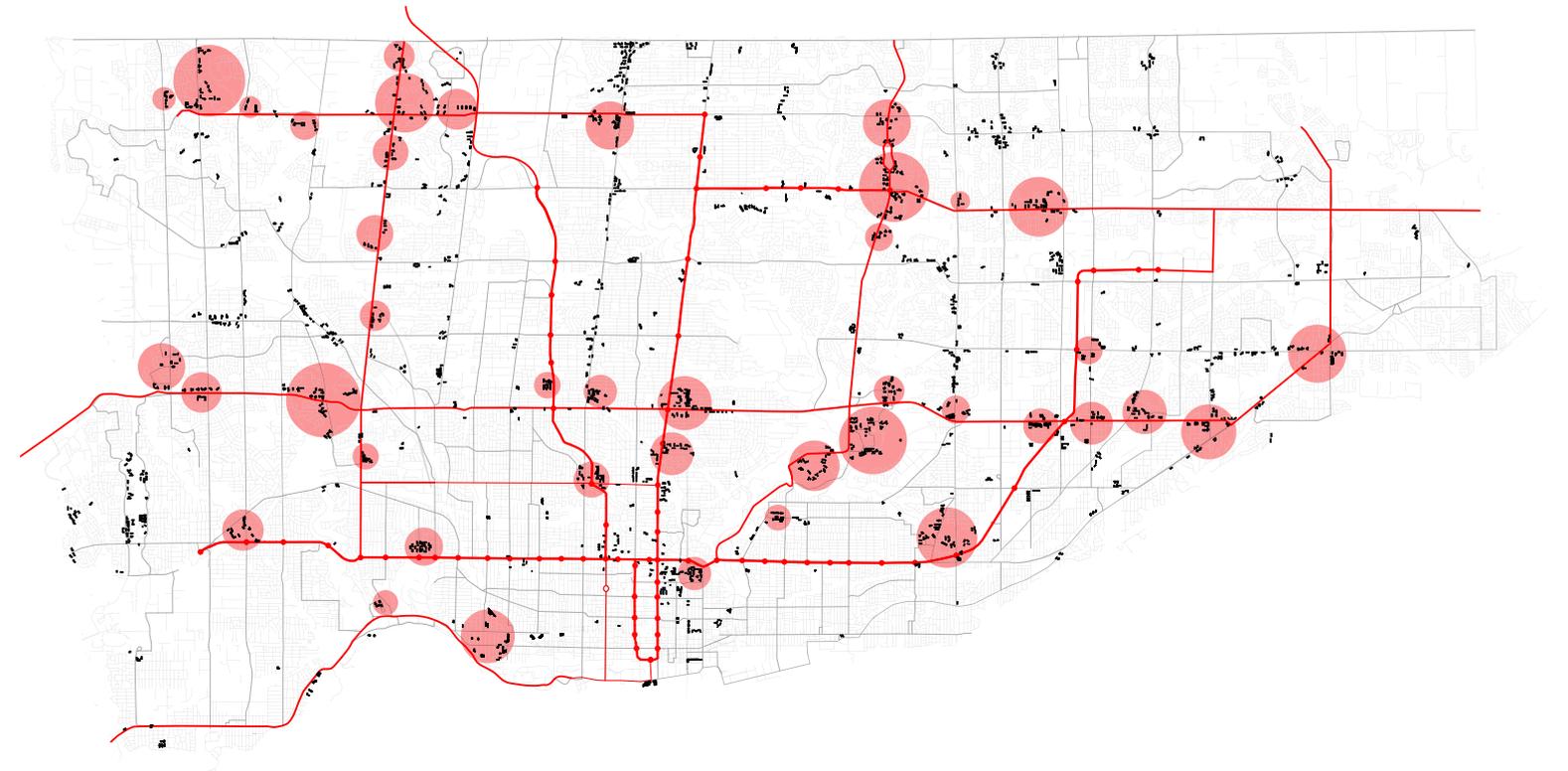
Create Nodes and Connect them: Tower Renewal, Self-Sufficient Communities and Transit City

At the regional scale, Mayor's Tower Renewal offers opportunities related to growth and transport.

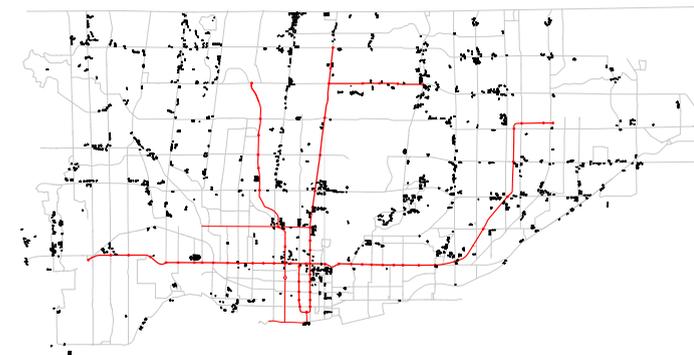
Connected by rapid transit, Toronto's Apartment Neighbourhoods could quickly emerge as zones of new growth and investment. The City's bold Transit City Plan will provide this opportunity. Building a series of light rail lines along Toronto's busiest surface routes, a transit grid will be created along the arterial network. Corresponding directly with Toronto's apartment clusters, major transit investments of this kind will be a catalyst for neighbourhood renewal.

The density of Apartment Neighbourhoods provides the ridership base to make new transit work. The thoughtful mixed-use developments proposed by Mayor's Tower Renewal within these areas would not only further support transit, but also enable dynamic neighbourhoods at the base of buildings for the use of apartment dwellers and the community at large.

Much like the successful urban nodes along the Yonge line, if given the proper tools, Apartment Neighbourhoods throughout the city could evolve into vibrant, mixed used communities, creating a self-sufficient, connected, and sustainable city throughout.



— Rapid Transit, Existing (below), and Proposed (above)
 ● Confluence of Modern Towers with Rapid Transit



Connecting the Dots:

Toronto contains dozens of high-density communities that were planned primarily for the car. Connected to rapid transit, as proposed by Transit City, these neighbourhoods will become integrated into the city as a whole, while also emerging as destinations within the network.

Images

Top: Proposed rapid transit light rail of 'Transit City'. Courtesy of Matthew Blackett.
 Opposite: Transit City overlaid with the existing clusters of high-density of Toronto's post-war apartments.

Opportunities: A Sustainable City and Region



Fostering Sustainable Suburbs

As suggested in previous sections, the greatest challenge facing North American cities is achieving a sustainable region; not simply in the historic core, but throughout the sprawling post-war suburbs. Toronto's heritage of high-density neighbourhoods within its post-war suburbs provides it with several distinct advantages. They are among Toronto's greatest assets.

With the critical mass for achieving local servicing, transit, and resource networks, Apartment Neighbourhoods can emerge as self-sufficient, vibrant and engaged communities. Through Mayor's Tower Renewal, Toronto has the opportunity to become sustainable, while fostering equity, ingenuity and a high quality of life in communities throughout the city.

Enabling Sustainable Growth

Though dense by North American standards, the Toronto area continues to gradually expand in all directions. In the context of the challenges of the 21st Century, we know that changes are needed. Encouraging appropriate growth within Toronto's existing fabric will not only curb sprawl, but also provide the density and investment necessary to support self-sufficient and vibrant communities. This growth must be thoughtfully placed, not only in the core, but in areas which would benefit throughout the city; Apartment Neighbourhoods among them.



Images

Top: Permacultural Tower Block Community, United Kingdom. Bottom: Growth of the GTA, 1870 to 2005. Opposite: Network of dense apartment clusters and natural system; Apartment Neighbourhoods can emerge as complete and sustainable communities.

A Staging Ground for Green Region

Nearly one-third of Toronto's housing stock is made up of high-rise apartment complexes, containing hundreds of thousands of inhabitants. If they were housed in traditional single-detached homes, the region would be significantly more sprawling and transit would not work in many communities in the former outer boroughs. This legacy of high-rise apartments has helped overall sustainability of the region in a real way. Re-examined in today's context, Mayor's Tower Renewal provides new possibilities for this legacy.

Carefully considered, Apartment Neighbourhoods may emerge as hubs for community activity, energy and food production, waste management, transport, growth, and service delivery, providing a venue for cost effective infrastructures and resource networks for the community, city and region as a whole.

Applied comprehensively, the opportunities of Mayor's Tower Renewal will have a significant impact on consumption, travel patterns, resource management, green house gas production, and most importantly, foster vibrant and equitable communities in areas that need it most.

Integrated with existing city-wide initiatives such as the Priority Neighbourhoods, Transit City, and the Agenda for Prosperity, Mayor's Tower Renewal could have a remarkable impact on the future shape of the city, significantly improve the quality of the built and natural environment, as well as the quality of life for all Torontonians.

