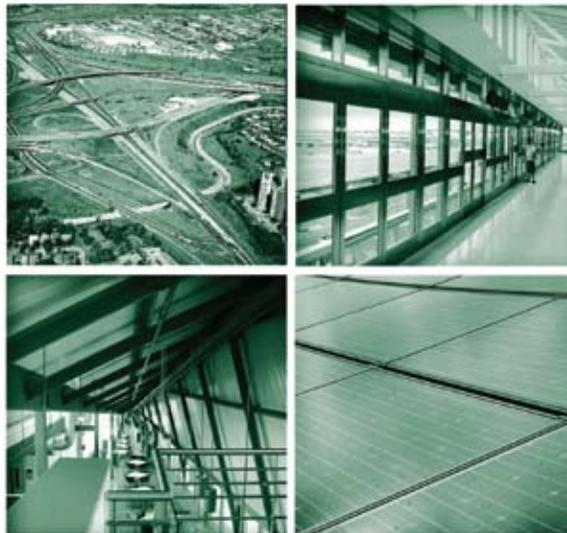


GTAA  
Partners in  
Project Green  
A PEARSON ECO-BUSINESS ZONE  
Strategy



Produced and published by  
Toronto and Region Conservation Authority  
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This project was carried out with the assistance of the following organizations:



This project was carried out with assistance from the Federation of Canadian Municipalities' Green Municipal Fund, an endowment created by the Government of Canada.



## Letter from Partners in Project Green

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The development of Partners in Project Green: A Pearson Eco-Business Zone is the culmination of over a decade of partnership between the Greater Toronto Airports Authority (GTAA) and the Toronto and Region Conservation Authority (TRCA).

This partnership began with a mutual understanding and a drive to restore, protect and enhance the region's natural resources. The founding of conservation authorities in the late 1940s was based on the need to protect and promote Ontario's resources, but with a clear focus on its related resource economy. The TRCA continues to work with industry leaders to promote green technology adoption as a way to reduce threats to the region's resources while building a sustainable economy.

Meanwhile, Canada's largest employment area has grown not only around, but as a direct result of, Toronto Pearson International Airport generating a significant economic benefit to the region. Along with the increase in business development, the area's residential communities have also grown. Recognizing the impact of the airport's operations, the GTAA promotes environmental stewardship within the communities it serves as a longstanding core mandate.

Today, it is with the goal of a sustainable green economy that the GTAA and TRCA launch Partners in Project Green. The project's vision is to work with local businesses in transforming the lands surrounding Toronto Pearson into an internationally recognized eco-business zone. Our goal is to have the companies recognized globally as the greenest in their sectors, and have the area itself become the first place progressive green-tech companies look to locate.

We invite you to take this journey with us and become a partner in Project Green. Work with us to create value for your business, your industry and your community. Together we can make the Greater Toronto Area the greenest place globally to do business.



**Lloyd McCoomb**  
PRESIDENT AND CEO  
GREATER TORONTO AIRPORTS AUTHORITY  
AUTHORITY



**Brian Denney**  
CHIEF ADMINISTRATIVE OFFICER  
TORONTO AND REGION CONSERVATION

# Disclaimer

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## Information sources and limitations

Business information came primarily from economic development data from Toronto, Mississauga and Brampton, completed with data from GTAA.

Complementary information for those businesses was also provided from Scott's directories, direct communication from businesses, the CB Richard Ellis Industrial directory, Peel Water, Toronto Water, as well as general research.

The scope of this project (over 12,000 businesses) allowed a limited level of data quality control. The most recent economic development data was considered the most up-to-date and complete dataset, and thus prioritized. It is, however, understood that changes of address and/or tenants may not be reflected in the lists. As well, possible overlap may occur when data for several businesses is provided for a same address; it is not feasible to systematically verify the actual property occupants within this project.

Another limitation to data analysis resides in format disparities between jurisdictions and organizations. For example, better consistency in business name and address formats would allow for easier integrations of multiple data sources. In addition, Toronto Economic Development data reports industrial classification using the Standard Industrial Classification (SIC) codes, while Brampton and Mississauga use the North American Industrial Classification System (NAICS) codes to different levels of precision.

Geographic Information Systems (GIS) data was provided by the Toronto and Region Conservation Authority (TRCA), the Greater Toronto Airports Authority (GTAA), the Region of Peel, and the cities of Toronto, Mississauga and Brampton. Ortho-rectified aerial photos were provided by the Region of Peel and the City of Toronto. Data was received in a variety of formats and projections; data manipulation through format conversion, projection assignment and/or geo-referencing was necessary for most of the received files. In many cases, where digital data was not provided, new GIS layers were digitized based on available source information such as PDF documents.

Fundamental to the ability to analyze business data in GIS is the capability to link each business to a spatial location by address. Limiting this procedure were the above-mentioned disparities in data schema and format. Significant manipulation of address information was necessary to make sure that the maximum number of businesses were assigned locations. Because there were many different data providers, it was inevitable that some of the datasets would cover only part of the study area. In these cases, analysis could only be performed on that part of the study area that had complete information. In contrast to this, many datasets overlapped. Municipal data was generally considered to be the most accurate and up-to-date compared to regional level data; however, extensive quality assessment was out of the scope of this project.

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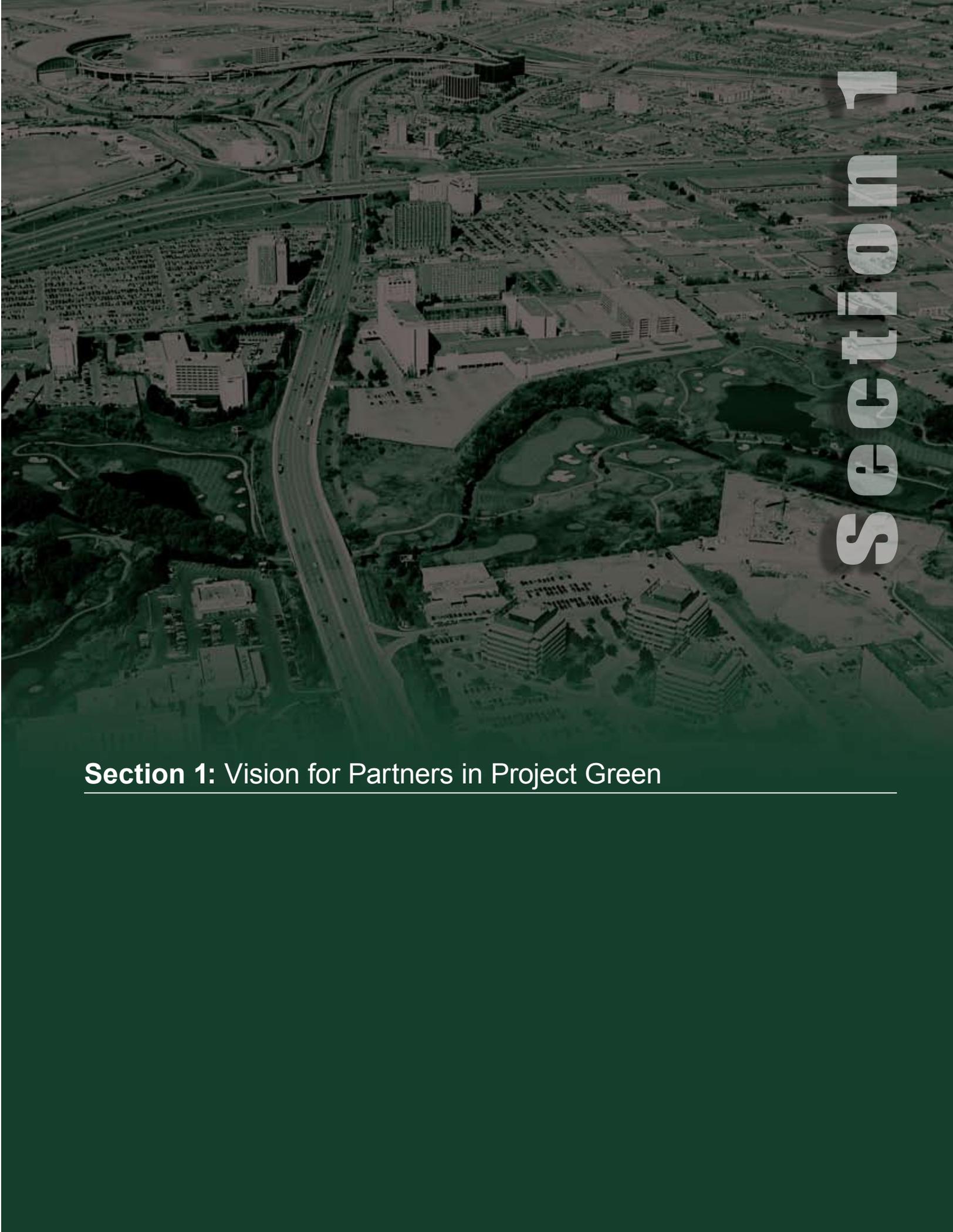
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An aerial photograph of a city, likely Chicago, showing a multi-lane highway (I-55) running vertically through the center. To the right of the highway is a large, green golf course with several holes and sand traps. The surrounding area is filled with various buildings, including high-rises and lower-rise structures, as well as parking lots and other urban infrastructure. The overall scene is a mix of urban development and green space.

# SECTION 1

## **Section 1: Vision for Partners in Project Green**

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## Section 1: Vision for Partners in Project Green

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Partners in Project Green is creating the Pearson Eco-Business Zone, envisioned to be an **internationally recognized community known for its competitive, high performance and eco-friendly business climate.**

Partners in Project Green will:

- Demonstrate that the simultaneous pursuit of economic and ecological goals result in greater benefits for the business community;
- Assist businesses to improve their financial and environmental performance; and,
- Attract and retain investments in eco-economic development initiatives.

In the short-term, Partners in Project Green will focus on working with existing businesses within the Pearson Eco-Business Zone to realize the financial benefits of addressing environmental issues. Partners in Project Green will work to achieve the following key objectives:

1. Build general awareness and capacity for eco-business and eco-development among partners and throughout the business community.
2. Implement collaborative green business projects and programs that create triple-bottom-line benefits for all involved.

3. Build municipal capacity and support for eco-economic development on the region's employment lands.

With respect to the first objective, Partners in Project Green will focus on businesses in existing major sectors, such as food processing, logistics, plastics, air transport supply chain and automotive supply chain.

In the longer-term, Pearson Eco-Business Zone will evolve to become the first choice location for progressive companies with clean-tech operations and a desire to demonstrate eco-business leadership. These companies will be drawn by the existing regional assets, including Toronto Pearson International Airport (Toronto Pearson); the success of existing businesses; and the knowledge infrastructure established by Partners in Project Green to assist companies in saving money and reducing their environmental impact.

With successful implementation of the eco-opportunities described in this strategy, Partners in Project Green will create the Pearson Eco-Business Zone, where the existing major sectors will become the greenest in their class globally, and the area will be home to a world-scale cluster of like-minded, integrated, and highly competitive businesses with a reputation as the place to do business in a high performance, eco-friendly way.



# Section 2

## **Section 2: Context for Partners in Project Green**

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## Section 2: Context for Partners in Project Green

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### 2.1 Pearson Eco-Business Zone location

The Pearson Eco-Business Zone encompasses over 12,000 hectares of industrial and commercial land surrounding Toronto Pearson International Airport. The area falls under four municipal jurisdictions, including the Region of Peel, City of Toronto, City of Mississauga and the City of Brampton. The area consists primarily of employment areas bisected by a CN rail line and five major highways (401, 407, 409, 410 and 427), with Toronto Pearson lying at the heart of the study area. The dominant existing green spaces include natural areas surrounding Mimico Creek and the Humber River in the east and Etobicoke Creek in the west. The Pearson Eco-Business Zone area is shown in Figure 1.

### 2.2 The “eco-industrial” approach

Through the development of the GTAA Living City Project (2006), TRCA and GTAA recommended businesses surrounding Toronto Pearson be encouraged to take an eco-industrial approach to achieving sustainability. Therefore, Partners in Project Green will champion an eco-industrial approach in its efforts to create the Pearson Eco-Business Zone. Eco-industrial activity is being advanced around the world, from China and Korea, to Germany, Finland and the United Kingdom. Overseas, this activity is often referred to as “industrial symbiosis.”

The eco-industrial approach takes into account the complexities of business. Through a systems ‘lens’, each business is seen as part of an integrated and interdependent economic system of businesses, whether through geography or their supply chain. Business in general is also seen as part of the local (and even global) ecosystem, which directly or indirectly provides the resources it ultimately needs. In the words of Marlo Reynolds, executive director of the Pembina Institute, “The economy is a wholly-owned subsidiary of the environment.”

The “eco-industrial” approach seeks to take advantage of the position of businesses in these systems by creating webs or networks of businesses that accrue financial benefits through strategic and collaborative management

of materials, water, energy, land, infrastructure and knowledge.

The eco-industrial approach is applied through the entire business cycle, from site and subdivision planning, to the way in which infrastructure is provided and used, to the planning and construction of buildings, then, ultimately, to the way in which businesses operate.

Since the Pearson Eco-Business Zone is largely built out, it is that last part of the cycle-operations-that is important for Partners in Project Green. Change will occur through existing businesses and long-term renovation, retrofit and redevelopment, although some new development opportunities exist in some parts of the study area. For example, the eco-industrial approach might result in the following types of business activity:

- Waste materials from one sector become the inputs for another, possibly new, sector.
- Businesses with common purchasing needs work together to secure larger contracts and better pricing, especially for ‘green’ materials.
- Several businesses in one industrial park require compressed air; they work with a utility company to establish a small local compressed air utility operation that reduces each business’s cost to produce compressed air, the amount of energy used, and greenhouse gas emissions produced.
- Waste heat from one business is used by other nearby businesses.
- Several businesses augment boiler systems with solar hot water technology. They work together to identify and select technology, and secure better capital and operating pricing.

By working together, businesses make the adoption of green technologies more economically feasible. Knowledge exchange and social networking result in better informed,

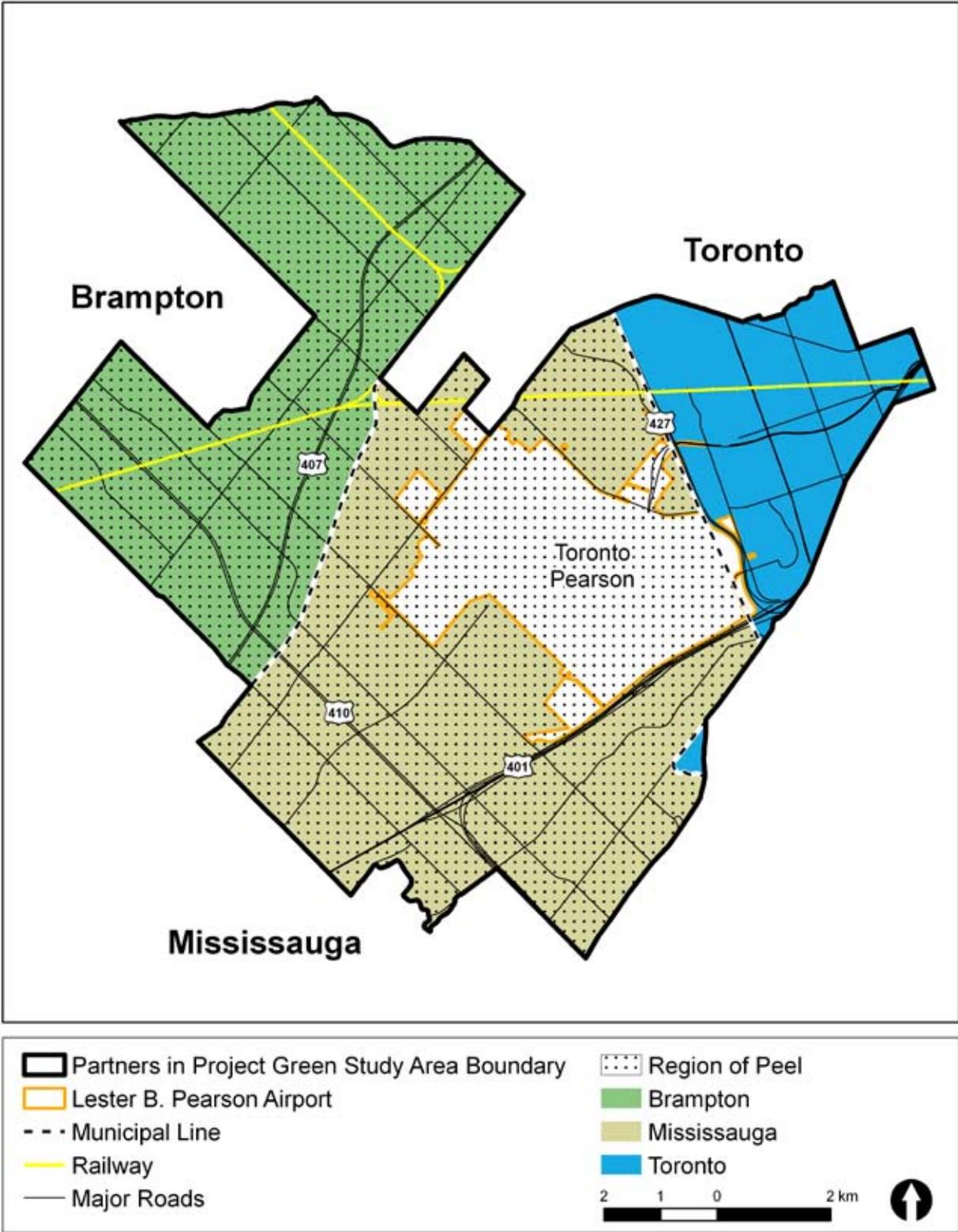


Figure 1: Partners in Project Green study area

trusting relationships that, in turn, make it easier for businesses to decide to pursue a new practice. Collaboration and the eco-industrial systems viewpoint also increases the number of financially and environmentally beneficial actions available to businesses. For example, after all feasible in-house options for waste heat recovery have been implemented, a business that is 'plugged in' to the needs of



other businesses might be able to find an additional sink beyond its boundaries for its excess heat. Through the eco-industrial approach, the business case for most initiatives is enhanced with increased participation from groups of businesses-by working together, an atmosphere of trust and team work is built, and opportunities become more feasible. Further, the approach maximizes benefits to businesses, by reducing the upfront costs of innovation, reducing payback times, and improving operations and building efficiency.

The idea that businesses can build relationships and work synergistically to become more efficient and effective, and therefore more profitable and competitive, has its roots in industrial ecology, an interdisciplinary field of study that looks to natural ecosystems for lessons to apply to business systems.

## 2.3 Founding partners

### Greater Toronto Airports Authority (GTAA)

The GTAA manages Toronto Pearson, located near the

centre of the Pearson Eco-Business Zone. Toronto Pearson occupies 1,867 hectares of land, the majority of which falls into the City of Mississauga (1824 hectares) and the remainder within the City of Toronto.

As Canada's largest and busiest airport, Toronto Pearson receives over 30 million passengers annually. The airport creates employment for approximately 130,000 (2005) and generates around \$900 million in annual revenue. As such, Toronto Pearson plays a key role as an economic engine in the Greater Toronto Area (GTA).

The GTAA has a keen and demonstrated interest in reducing impacts from their operations. In 1999, Toronto Pearson became the first North American airport to achieve ISO 14001 certification for their environmental management system.

Over the past decade, GTAA has maintained a strong partnership with TRCA to protect and enhance the Etobicoke and Mimico creeks, including implementing state-of-the-art stormwater management practices and completing habitat restoration activities.

The GTAA continues to actively pursue other sustainability initiatives, including using co-generation for electricity/heating/cooling, and has implemented a LEED (Leadership in Energy and Environmental Design) standard for all new development. The GTAA has also made a long-term financial contribution towards the development and implementation of Partners in Project Green.

### Toronto and Region Conservation Authority (TRCA)

The TRCA is responsible for managing renewable natural resources within nine watersheds and Lake Ontario waterfront in the Greater Toronto Area. The TRCA has partnerships with six municipalities, encompassing 3,467 square kilometres, nine watersheds and over three million people.

They work with partners to develop programs and services to provide: natural resource protection, support for good land use practices, community environmental projects and conservation education programs.

The TRCA works with all levels of government and partners towards its four objectives in supporting its Living City vision that calls for the restoration of river and water systems in their nine watersheds; restoring and protecting

natural areas and regional biodiversity; facilitating action towards sustainable community development; and pursuing continuous improvement in business excellence.

In 2006, the TRCA and the GTAA completed the GTAA Living City Project that provided a background and restoration strategies for the natural and aquatic systems surrounding Toronto Pearson. The findings of the report included an outline for a business outreach strategy and suggested developing an eco-industrial model to enhance the environmental and financial performance of businesses surrounding Toronto Pearson. This recommendation provided the foundation for the development of Partners in Project Green.

## Region of Peel

The Region of Peel (Peel) was one of the first supporters and financial contributors to Partners in Project Green. The Region of Peel is home to over one million people, over 500,000 jobs and more than half of the Pearson Eco-Business Zone. Partners in Project Green complements the Region of Peel's own sustainability objectives, as noted in their "Liveable Peel" initiative, including:

- Reducing development impacts-ensuring the region takes a strategic approach to balancing demands of population and employment growth, and providing the necessary supporting services.
- Supporting sustainable land use and transportation planning-working with the business community and government partners to facilitate safe, efficient, accessible and integrated movement of goods and people.
- A triple-bottom-line (TBL) approach-conserving agricultural and natural resources, and protecting environmentally sensitive areas while promoting a healthy, regional economy.

The Region of Peel also has a strong and demonstrated interest in Partners in Project Green because of its potential to attract new eco-economic development

investments and jobs, while highlighting its commitment to environmental excellence and enhanced quality of life.

## 2.4 Municipal and business partners

The following municipalities are home to the Pearson Eco-Business Zone. Each municipality has supported Partners in Project Green by providing financial support and/or data information, as well as by actively participating in workshops.

### City of Brampton

The City of Brampton (Brampton) has more than 3,800 hectares in the Pearson Eco-Business Zone. Brampton sees Partners in Project Green as an initiative to support their efforts to encourage and facilitate eco-economic developments. Recently, Brampton released draft industrial development design guidelines that support good urban design.

### City of Mississauga

The City of Mississauga (Mississauga) has more than 6,400 hectares in the eco-business zone, which is the largest of any of the municipalities. Mississauga encourages sound planning principles that support energy and water conservation, reduced impervious cover and reuse of materials. They have the GTA's largest supply of modern, high-quality industrial lands and are eager to participate in Partners in Project Green.

### City of Toronto

The City of Toronto (Toronto) has more than 1,700 hectares in the study area, primarily classified as employment lands. Having recently completed its Green Development Standard and its Green Economic Development Strategy, which included the recommendation to pursue an eco-industrial park project, Toronto is keen to participate in Partners in Project Green. Table 1 lists businesses that have also expressed interest in participating in Partners in Project Green<sup>1</sup>.

<sup>1</sup> Businesses invited to June 10 2008 stakeholder workshop.

**Table 1:** Businesses interested in participating in Partners in Project Green

<b>Utility Providers</b>	<b>Food processors</b>	<b>Real estate/development</b>
<ul style="list-style-type: none"> <li>• Enbridge Gas Distribution</li> <li>• Brampton Hydro One</li> <li>• Toronto Hydro</li> <li>• Enersource Hydro Mississauga</li> <li>• Sithe Global</li> <li>• Waste Management</li> <li>• Algonquin Power</li> </ul>	<ul style="list-style-type: none"> <li>• Unilever</li> <li>• Molson</li> <li>• Cargill</li> <li>• Italian Home Bakery Ltd.</li> <li>• Weston Bakeries</li> <li>• Lassonde Beverages Canada</li> <li>• Cardinal Meat Specialists Ltd.</li> <li>• Maple Leaf Foods</li> <li>• Coca-Cola</li> </ul>	<ul style="list-style-type: none"> <li>• Orlando Corporation</li> <li>• First Gulf Corporation</li> <li>• Colliers International</li> <li>• Oxford Properties</li> <li>• Bentall Real Estate Services</li> <li>• CB Richard Ellis</li> <li>• ProLogis</li> <li>• ING Real Estate</li> <li>• Menkes Development</li> </ul>
<b>Logistics</b>	<b>Construction related</b>	<b>Associations</b>
<ul style="list-style-type: none"> <li>• Lange Transportation</li> <li>• Canadian Tire</li> <li>• Bison Transport</li> <li>• Hybrid Logistics</li> <li>• Kuehne and Nagel</li> </ul>	<ul style="list-style-type: none"> <li>• Delcan</li> <li>• Morrison Hershfield Ltd.</li> <li>• Gottardo Group</li> <li>• St. Lawrence Cement Inc.</li> <li>• Ready Mixed Concrete</li> <li>• Association of Ontario</li> <li>• Dufferin Concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Canadian Manufacturers and Exporters</li> <li>• Supply Chain and Logistics Association</li> <li>• Brampton Board of Trade</li> <li>• Mississauga Board of Trade</li> <li>• Toronto Region Research Alliance</li> <li>• ONEIA</li> <li>• OCETA</li> </ul>
<b>Manufacturing</b>	<b>Airport related</b>	<b>Government</b>
<ul style="list-style-type: none"> <li>• Shawcor Ltd</li> <li>• KIK Corporation</li> <li>• Chrysler</li> <li>• Henkel Corporation</li> <li>• Irving Tissue</li> <li>• Bayer</li> <li>• BASF Canada</li> </ul>	<ul style="list-style-type: none"> <li>• GTAA</li> <li>• Air Canada</li> <li>• Air Transat</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry of Agriculture, Food and Rural Affairs</li> <li>• Ministry of the Environment</li> <li>• Ministry of Research and Innovation</li> <li>• Ministry of Economic Development and Trade</li> <li>• Ministry of Small Business and Entrepreneurship</li> </ul>
<b>Energy service companies</b>	<b>Entertainment</b>	<b>Aerospace</b>
<ul style="list-style-type: none"> <li>• Toronto Hydro Energy Services</li> <li>• Energy At Work</li> <li>• 360 Energy</li> <li>• Halcrow Yolles</li> </ul>	<ul style="list-style-type: none"> <li>• Woodbine Entertainment Group</li> </ul>	<ul style="list-style-type: none"> <li>• Pratt and Whitney Canada</li> <li>• Magellan Aerospace Corporation</li> </ul>

## 2.5 Business activity

### 2.5.1 Overview<sup>2</sup>

The Pearson Eco-Business Zone includes an estimated 12,500 businesses, generating upwards of \$6,529,500,000 gross revenues annually, and providing employment

<sup>2</sup>Please refer to the disclaimer regarding limitations around business data analysis. For more in-depth business information, please refer to Appendix A. Data sources and gaps are discussed in Appendix B.

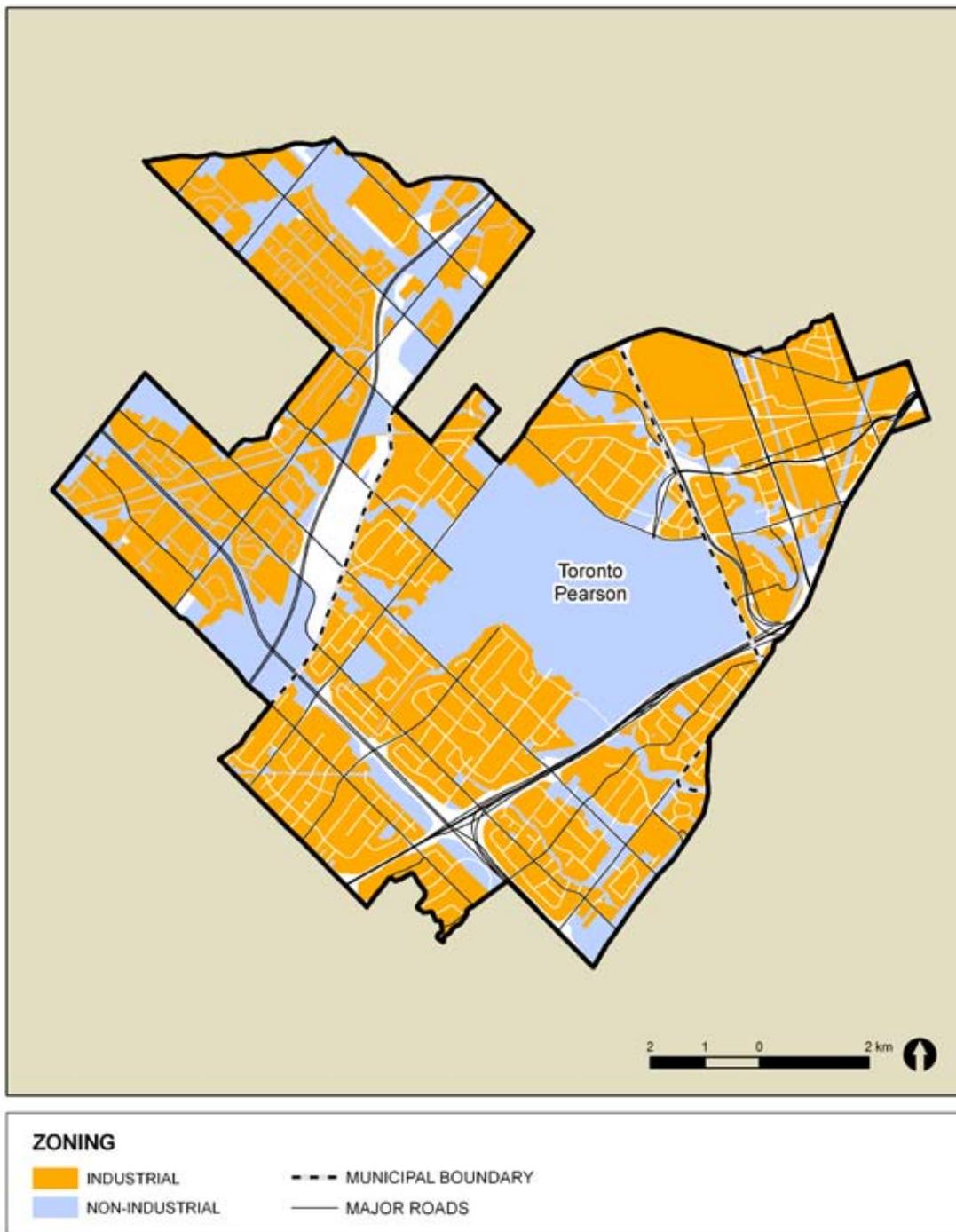
for approximately 355,000 people. The distribution of businesses across Partners in Project Green municipalities roughly aligns with the portion of the Pearson Eco-Business Zone belonging to that municipality one-third of the businesses are in Brampton, half in Mississauga and one-sixth in Toronto. Figure 2 provides a look at the existing business parks within the Pearson Eco-Business Zone.



Figure 2: Existing business parks within the Pearson Eco-Business Zone

For this study, characterization of these businesses generally focused on businesses located on industrially zoned lands (as opposed to commercially zoned lands, for

example) and/or businesses that were described as being industrial rather than commercial. The areas zoned industrial within the Pearson Eco-Business Zone are shown in Figure 3.



**Figure 3:** Industrially zoned lands in the Pearson Eco-Business Zone

### 2.5.2 Sector representation

As Figure 4 shows, the manufacturing and service sectors are dominant. Indeed, as shown in Table 2, manufacturing and services are the top two general sectors in each of the area municipalities.

This is consistent with the region’s national reputation as a manufacturing centre. About one-third of businesses are in the manufacturing sector. Sub-sectors include food processing, with more than 140 businesses; plastics, with more than 350 businesses; and transportation and logistics and automotive supply chain, which each comprise over 1,000 businesses.

This manufacturing supports related activities. For example, food processing is supported by food wholesale

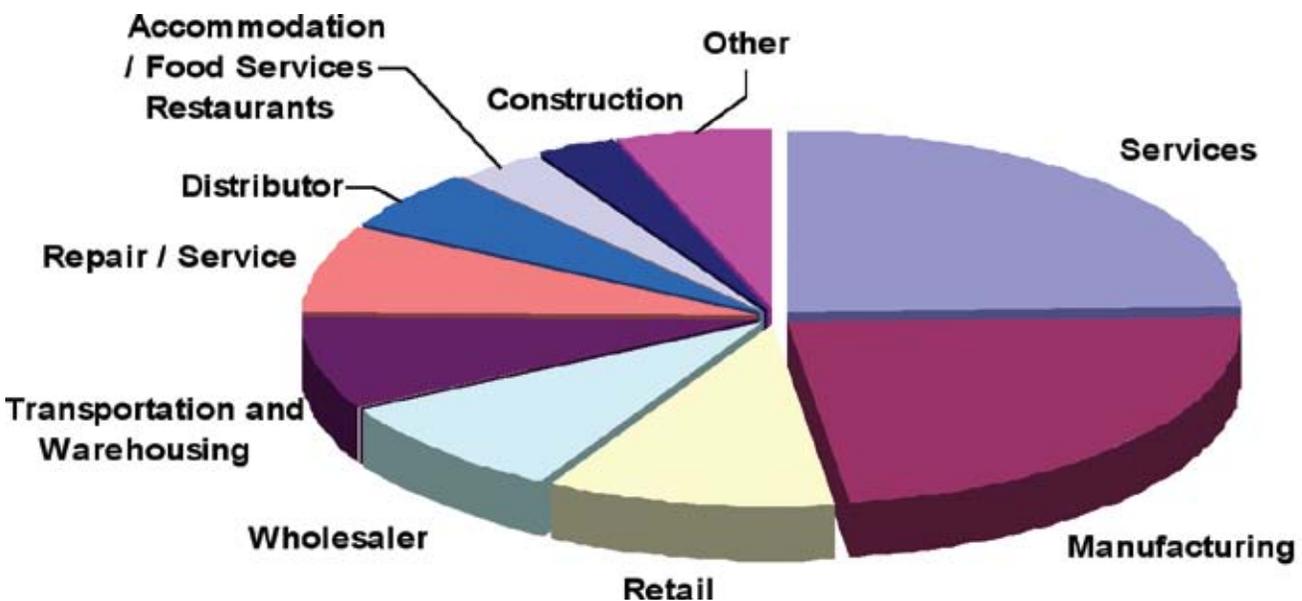
and distribution; cold storage type operations; airline and hotel catering; and companies manufacturing food packaging. In reviewing the database, it was estimated that 280 businesses could be either food-processors, or food-related industries.

Toronto Pearson is one of the most important economic engines in the area. It is estimated that at least 700 businesses are directly airport- or aircraft-industry related (e.g., in-flight catering, air transportation, and airplane maintenance and parts), including those businesses located on GTAA lands.

Lastly, research has shown that businesses in ‘re’-sectors<sup>3</sup>, such as repair, remanufacture, recycling, reprocessing, or rental, contribute greatly to the success of individual company recycling or business-to-business by-product

**Table 2:** Top four business types in each partner municipality

Rank	Brampton	Mississauga	Toronto
1	Service	Manufacturing	Service
2	Manufacturing	Service	Manufacturing
3	Retail	Wholesale	Wholesale
4	Repair/service	Transportation and warehousing	Retail



**Figure 4:** Business type distribution in the Pearson Eco-Business Zone.

<sup>3</sup> Cote, Raymond P., and Theresa Smolenaars. 1997. Supporting Pillars for Industrial Ecosystems. *Journal of Cleaner Production* 5 (1-2): 67-74.

synergies. These businesses act just like scavengers and decomposers in a natural ecosystem, breaking materials down so that they can be re-used elsewhere in the food chain. It is estimated that the Pearson Eco-Business Zone has about 400 of these businesses.

### 2.5.3 Resource Use

#### Introduction

One of the main objectives of the Pearson Eco-Business Zone is to improve businesses' financial and environmental performance through more efficient resource use. To measure the success of such endeavours, it is important to understand the initial resource use in the area. All levels of government and the businesses themselves have invested heavily in infrastructure and buildings in the Pearson Eco-Business Zone. In addition, the businesses continue to invest in their operations, purchasing materials, water, and energy, while investing in facility improvements. The goal of all of these investments in resources is to add profit-making value to the individual businesses and the area in general.

So, where is the Pearson Eco-Business Zone starting from? A snapshot of land use and transportation systems, energy, water and wastewater, is presented in the following pages.

#### Land use and transportation

As shown in Figure 5, while there are many different land uses in the Pearson Eco-Business Zone, most of the uses are related to business activity. Excluding the airport lands and based on available data, just over 75 per cent of the area is under some sort of industrial land use.

Table 3 provides some of the key land use information available for the Pearson Eco-Business Zone, especially related to natural space and stormwater management. As discussed in Appendix A, there were various sources of information and calculation or estimation methods to determine land use areas. For some uses, data overlapped, while for others, the data was not complete for the entire Pearson Eco-Business Zone. Therefore, some of the sub-classifications will not sum to the total site size, e.g., Total impervious area plus total open space will not equal total site size.

<sup>4</sup> Includes Smart Commute members and other businesses involved in carpooling (source: survey).

**Table 3:** Selected land use information

Land use and development patterns	
Total site size	12,100 ha
Total building footprint (land covered by buildings)	2,000 ha
Total impervious area (land covered by buildings, parking, etc.)	8,100 ha
Total parking area	1,310 ha
Total open space (TRCA heritage data, municipal park, or open space, green space, park land, or related "green" areas in the land use/zoning)	1,800 ha

Land use and transportation systems are generally inter-related. For example, land use planning can determine how much transportation infrastructure is required, and how effective it is. Some key transportation characteristics for the Pearson Eco-Business Zone are provided in Table 4.

**Table 4:** Key transportation system characteristics

Transportation characteristics	
Total road right-of-way (includes lanes, shoulders, and any sidewalks or utility corridors found within the right-of-way)	1,900 ha
Total Employees in companies with Smart Commute <sup>4</sup>	4,500
Distances to alternative fuel service stations	1.77 km
Total businesses within walking distance to public transit	2,400
Total businesses within walking distance to key services	4,000
Total businesses within walking distance to open space	5,700

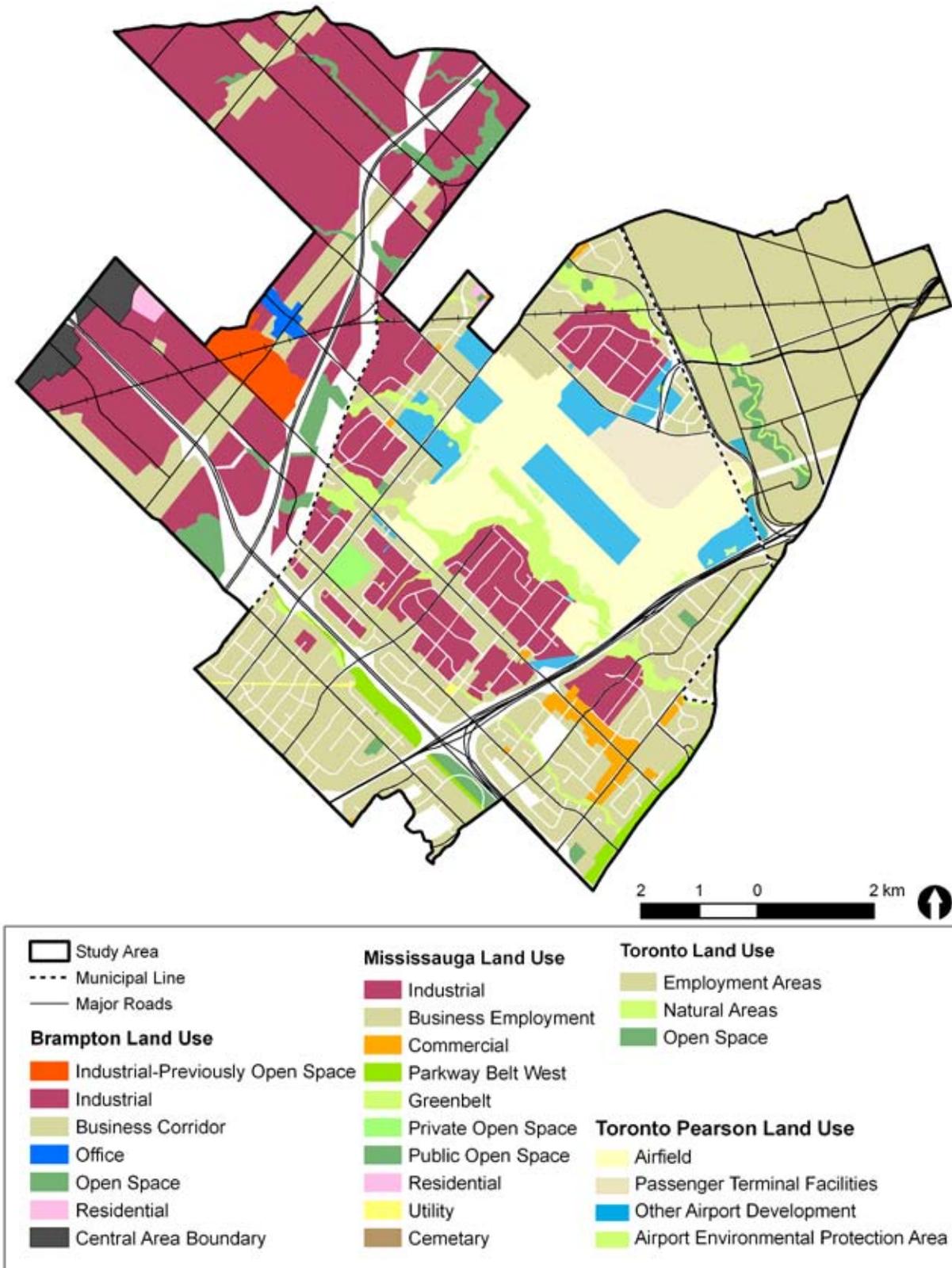


Figure 5: Official Plan land use designations

## Energy

The total, roughly estimated<sup>5</sup> energy consumption for Pearson Eco-Business Zone, and associated estimated greenhouse gas (GHG) emissions, is presented in Table 5. Table 6 presents energy consumption for businesses in each of the partner municipalities, along with related GHG emissions. Corresponding annual costs for non-process energy requirements are estimated<sup>6</sup> to be over \$290 million in electricity and \$273 million in natural gas.

Table 7 shows the estimated total energy consumption for the different business types in the Pearson Eco-Business Zone, along with the median consumption within each group. This illustrates how energy intensive certain business types are compared to others.

**Table 5:** Overall energy consumption

Energy and GHGs	
Estimated total energy consumption <sup>7</sup>	53,852,000 GJ
Estimated electricity consumption	5,801,000 MWh
Actual total natural gas consumption	46,447,000 GJ
Estimated GHG emissions	1,736,000 T eCO <sub>2</sub>

**Table 6:** Estimated energy consumed by businesses in Pearson Eco-Business Zone

City	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)	GHG emissions (T eCO <sub>2</sub> )
Brampton	1,333,000	6,573,000	12,440,000	402,000
Mississauga	3,865,000	18,741,000	35,838,000	1,155,000
Toronto	602,000	2,918,000	5,573,000	179,000
Total	5,801,000	28,231,000	53,852,000	1,736,000

<sup>5</sup> Energy consumption estimates were based on building footprints and energy intensity factors provided by NRCan. These factors come from data on commercial businesses operations; hence the estimates do not include process energy likely consumed by manufacturers or other process-oriented businesses.

<sup>6</sup> Based on amalgamated electricity costs of \$0.05/kWh and natural gas at \$0.37/m<sup>3</sup>

For example, the transportation and warehousing group represents a large portion of the energy consumed in the Pearson Eco-Business Zone, and its individual members have high consumption relative to other business types. Conversely, the service-related businesses collectively consume a large amount of energy, but it is likely due to their large number because individual consumptions are below average. It could also mean that a few energy-intensive businesses are driving the group's total.

## Water and Wastewater

Businesses in Pearson Eco-Business Zone consume an estimated 109 million m<sup>3</sup> of water each year, and generate an estimated 106 million m<sup>3</sup> of wastewater. Investments in water and sewer infrastructure in the area include an estimated 800 kilometres of water and sanitary sewer lines.

Data provided by Peel Water and Toronto Water reflect the industrial nature of the Pearson Eco-Business Zone. As shown in Table 8, the average water consumption is consistently higher than the median, indicating that the area includes some very high water users who skew the average upward. Sector-wide, such water-intensive businesses are mostly present in the manufacturing, transportation and warehousing and utility industries. Businesses across the accommodation/food services/restaurants industry generally have large water uses.

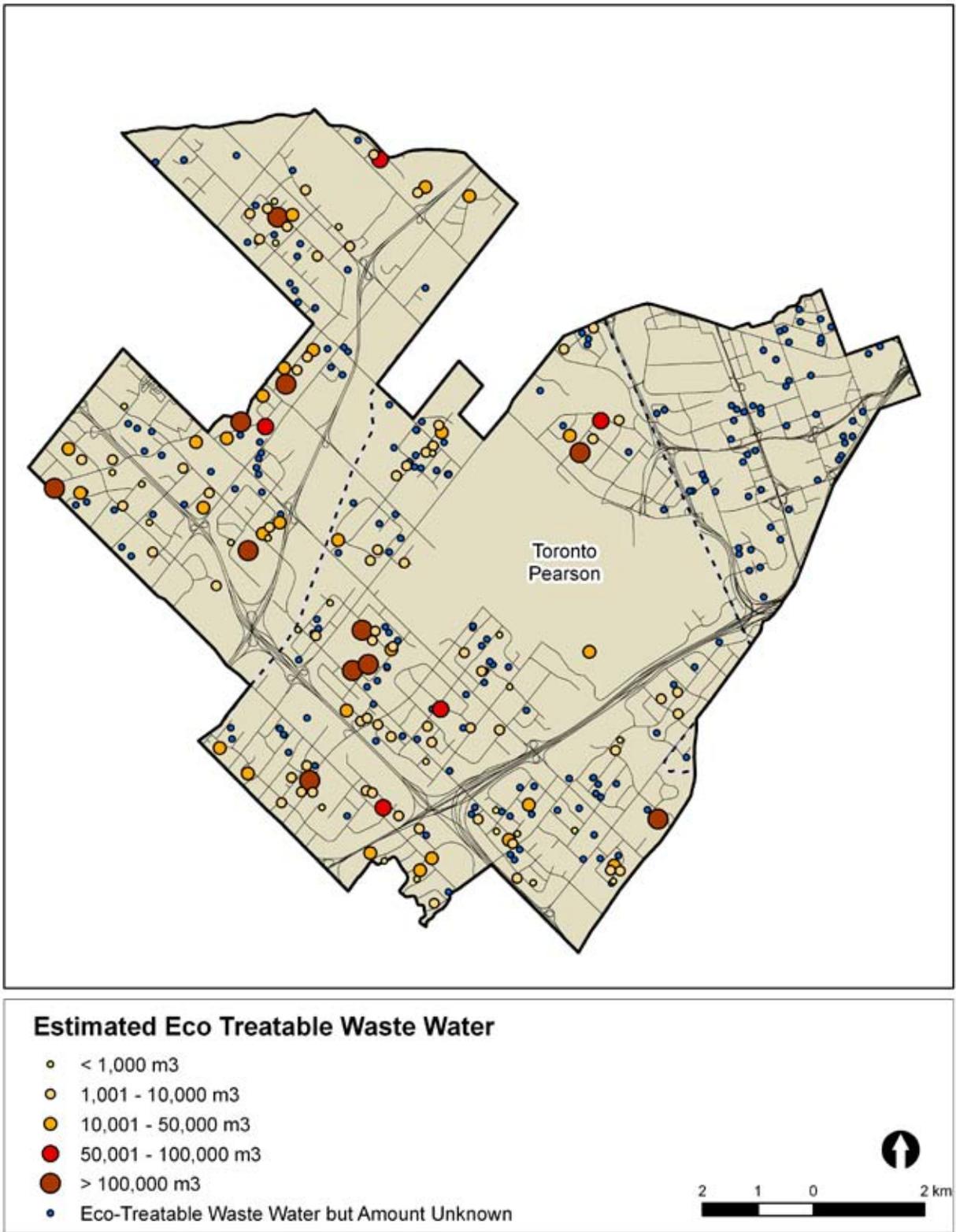
<sup>7</sup> In the absence of actual energy data per business, average consumption factors from Natural Resources Canada's Comprehensive Energy Use Database were used. Given the large variance in industrial building types and operations, these estimates are, at best, likely +/- 40 per cent. Therefore all energy data presented here was rounded substantially. The energy consumption includes energy from electricity, natural gas, light fuel oil, kerosene, heavy fuel oil, steam, coal and propane.

Water is often an inefficiently used resource. Increasingly, its value is being recognized and innovative technologies and related policies are entering the mainstream as ways to conserve water. Wastewater cascading is a way to reuse effluent from one business into another business' operations requiring a lower water quality, thereby reducing the needs for municipality-treated potable water. This can be repeated a number of times under proper conditions, with or without minimal treatment between uses. Ecological wastewater treatment processes use no chemicals and are well suited for distributed treatment facilities requiring primarily biochemical oxygen demand (BOD) breakdown (no heavy metals, solvents, etc.). Figure 6 shows businesses from sectors having BOD as their major contaminant,

City	Sum	Mean	Median
Brampton	5,339,000	10,900	1,700
Mississauga	83,682,000	65,500	1,100
Toronto	19,542,000	51,700	900
Total	108,563,000	51,000	1,200

**Table 7: Estimated energy consumption, by sector**

Business type	Total Energy Consumption (GJ)	Per cent of total energy	Average energy consumption (GJ)	Median consumption (GJ)
Manufacturer	13,757,000	26 per cent	5,000	2,000
Transportation and warehousing	11,867,000	22 per cent	12,400	2,600
Services	6,108,000	11 per cent	2,800	600
Wholesaler	5,807,000	11 per cent	5,500	2,400
Distributor	4,782,000	9 per cent	7,400	2,500
Repair/service	3,143,000	6 per cent	3,600	800
Retail	3,136,000	6 per cent	3,400	900
Accommodation/ food services/restaurants	2,505,000	5 per cent	9,700	1,400
Waste management	876,000	2 per cent	21,900	1,700
Construction	628,000	1 per cent	2,100	900
Utility	365,000	1 per cent	16,600	3,400
Contractor	330,000	1 per cent	2,100	800
Association	246,000	< 1 per cent	2,600	700
Printing	232,000	< 1 per cent	2,900	1,000
Outdoor entertainment	37,000	< 1 per cent	3,300	1,500
Municipality	15,000	< 1 per cent	-	-
Agriculture/forestry/ fishing/hunting	14,000	< 1 per cent	2,800	800
Resource extraction	4,000	< 1 per cent	-	-
<b>Total</b>	<b>53,852,000</b>			



**Figure 6:** Wastewater generation from businesses with effluent likely treatable using ecological processes

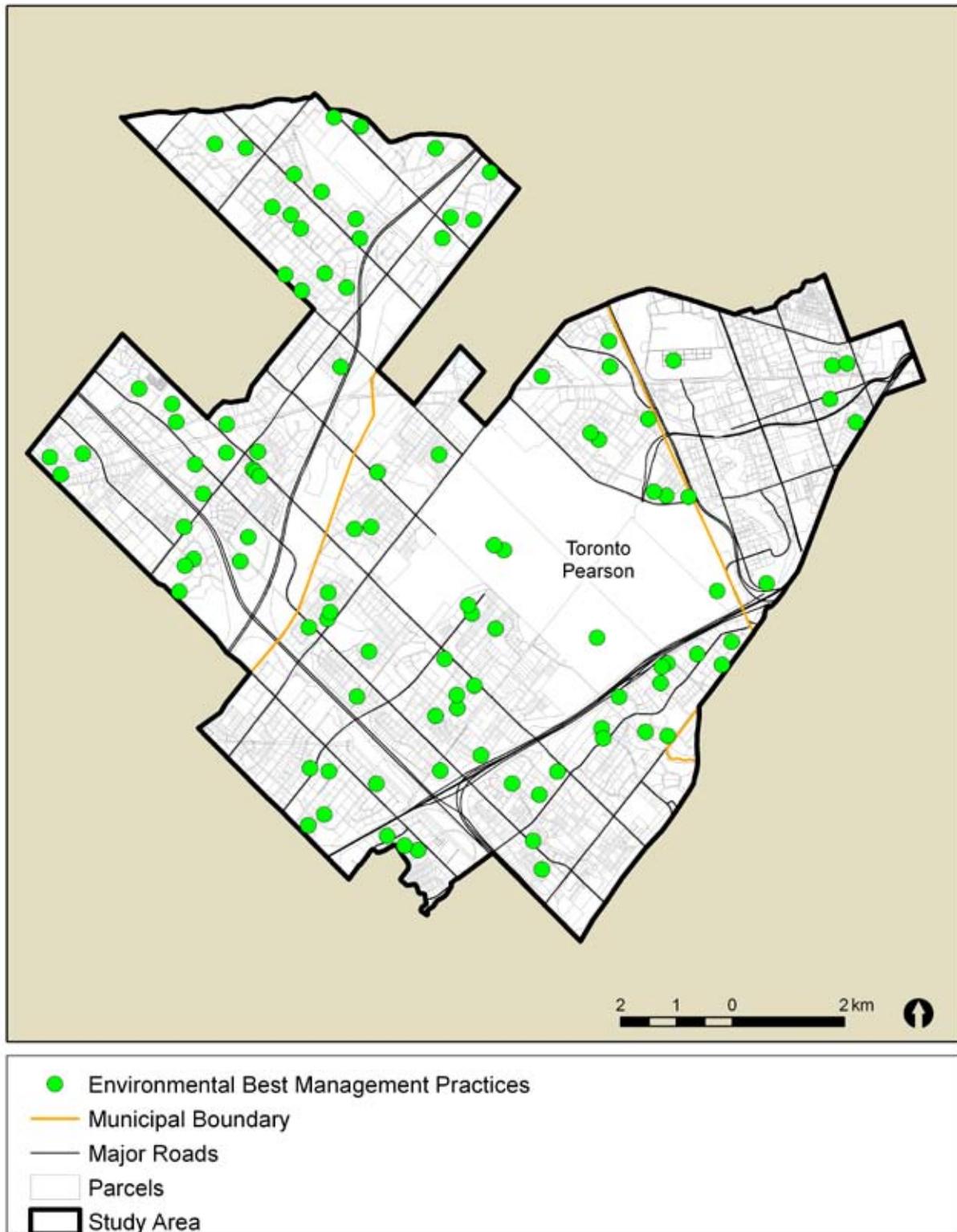


Figure 7: Business featuring environmental best management practices

also indicating the wastewater generation intensity. A wide array of sectors can make use of non-potable water in their operations, the main exception being food-related industries.

### 2.5.4 Eco-business best practices from study area



**Figure 8:** Wall of fame case studies at stakeholder workshop #1 (Dec. 2007)

As shown in Figure 7, the Pearson Eco-Business Zone already contains some of the most nationally and even internationally progressive companies. Their sustainability achievements form an excellent foundation from which to launch Partners in Project Green. From basic office recycling programs to lighting retrofits to green energy generation, green initiatives are seen across sectors and business types.

As part of a Partners in Project Green Business Workshop held in December 2007, several eco-business case studies were assembled into a “Wall of Fame,” featuring local leaders in sustainability (see Figure 8). Examples are presented after the figure. The reader is encouraged to visit the environmental best practices database on the Partners in Project Green website ([www.partnersinprojectgreen.com](http://www.partnersinprojectgreen.com)) for more examples of the achievements made by businesses to-date.

### Environmental leadership in transportation and logistics

Lange Transportation provides a wide range of transportation and logistics services, specifically catering to

the exposition and special event industry.

In addition to its building’s energy efficiency retrofits and geothermal heating and cooling system, Lange is also supporting the development of the Hydrogen Injection Process (HIP) technology to increase fuel efficiency and performance in Ontario’s commercial truck transportation. Lange has committed to make its fleet available for testing the HIP technology, and to connect the manufacturer with the trucking industry network.



Lange Transportation in Mississauga, Ontario

Lange Transportation was awarded the 2007 Environmental Achievement Award by the Mississauga Board of Trade.

### Energy conservation in food processing

The Unilever Canada Rexdale plant, an ISO14001 registered site since 1999, produces approximately 185 million pounds of edible oil products each year. This waste has led to an innovative solution at the plant that utilizes waste oil and margarine as fuel for boilers.

The plant has also been reducing its production costs through a wide array of energy conservation initiatives since 1999. Cumulative cost savings since the program began have totalled more than \$3.5 million with an average payback period of six months for each conservation project.

### Material management through innovative packaging

Whyte’s Food Corporation’s manufacturing facilities are equipped to pack products in a variety of containers such as glass, plastic jars and bottles. Special equipment has been developed in-house to accommodate the unique requirements of customers.

This led to the development the Envira Care PPPouch Pack, making Whyte’s a leader in poly-pouch packaging for both liquid and solid products. The Envira Care pack features a clean, lightweight bag that is easy to store and dispose of, and is an environmentally friendly alternative to glass or metal.

Overall, Whyte's plastic and glass jars, plastic jugs, pouches and pails provide solutions that improve performance in the food industry.

## Facility energy retrofit at retail giant's head office

Zellers' head office is located in Brampton. In 1999, Zellers embarked on a retrofit project for 40 per cent of its total floor area. This included changes to the lighting systems, use of demand controls, installation of high-efficiency motors and changes to the HVAC plants. Total costs were about \$5 million. However, annual energy cost savings are over \$1.5 million. Zellers is also showing environmental stewardship through:

- Procurement strategies
- Operating and maintenance procedures
- Monitoring, tracking and benchmarking
- Design standards for new construction
- Awareness and employee incentives
- Fleet management

## 'Brewing' good ideas for minimal waste generation and energy use

It seems like almost nothing goes to waste at Molson Canada's brewing and bottling facilities thanks to a wide array of material management strategies. From the common cans and glass-bottle refill and/or recycling, to photodegradable six-pack holding loops, to reusing carbon dioxide from fermentation into the carbonation process, and selling spent grain as livestock feed or fertilizers to local farms, employees' ideas are put forward to improve operations and reduce their impact on the environment.

Molson is also very active in energy management, earning the CIPEC Leadership Award for their Montreal plant in 2007. Among other strategies, thoughtful design of packaging ensures optimal use of materials and reduced transportation-related energy use.

### 2.5.5 Businesses' current sustainability knowledge and attitudes

To determine business' familiarity with various green businesses or eco-development-related terms and strategies, a Knowledge and Attitudes Survey was developed and completed by 114 businesses. The survey also gathered information on businesses' needs and priorities with

respect to Partners in Project Green programs and services. By delivering a similar survey in the future, Partners in Project Green will be able to evaluate its impact on green business knowledge and attitudes.

Judging by the limited response to the survey, there is a tremendous green business foundation, in terms of awareness and actual implemented projects, on which to build Partners in Project Green programs in the Pearson Eco-Business Zone. For example, **more than 90 per cent of businesses indicated they are committed to becoming more environmentally friendly.** A large majority (70 per cent) also agreed that, by adopting eco- or green initiatives into their operations, they would become more competitive in the market. In terms of actual eco-initiatives in the works, more than half of respondents indicated they were implementing energy conservation programs/projects or pollution prevention programs (68 per cent and 66 per cent respectively) at their facilities.

But there is still work to be done. While there appears to be great intentions on the part of businesses to green their operations and facilities, there are several barriers impeding success. For example, when asked why they had decided against pursuing eco-initiatives and projects in the past, the majority (53 per cent) responded they did not have enough resources to implement or that the financial return was too long. Both of these barriers will be addressed by Partners in Project Green.

An understanding of current business knowledge and attitudes informed the Partners in Project Green Business Model, especially the resulting Marketing and Communications Plan. The implications of this information are discussed further in Section 5.

## 2.6 Governance context

### 2.6.1 Policies and regulations

#### Official Plans

Depending on the location within the Pearson Eco-Business Zone, development activity is guided by one of four different municipal Official Plans, or the airport's master plan. As was found with businesses, there is an excellent municipal foundation from which to leverage Partners in Project Green. Each of the Official Plans encourages efficient development practices and reducing environmental impacts. The Official Plans speak of the



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importance of retaining employment lands, and enhancing the systems needed to support a productive and competitive business community: sound land use planning; attention to regional and municipal transportation systems for the safe and efficient movement of goods and people; and conservation and protection of natural areas. A summary of Official Plan land use designations is shown below in Figure 8. Land uses in the area are primarily employment related: industrial, commercial, business/office, etc. Each municipality also has some measure of lands designated as ‘open space’.

## Zoning

Development in the study area is regulated through the zoning bylaws of Toronto, Mississauga and Brampton. At the time of reporting, the City of Toronto was in the process of consolidating and updating its 41 zoning bylaws remaining from the pre-amalgamated municipal authorities. As a result, those portions of the study area within the City of Toronto municipal boundaries are regulated through the (former) City of Etobicoke Zoning Code. A summary of land use designations was shown in Figure 5. A summary of zoning designations is shown in Figure 9.

Zoning bylaws establish the permitted uses in each area, as well as general standards for building sizes and types, lot layout and parking requirements. As each municipality has their own zoning bylaw, there are many different zoning designations within the study area. A number of these have a similar intent, for instance, allowing for light industrial activity, but there is no coordination between the municipal partners with regards to aligning zoning bylaws to a common standard.

## Airport context

Toronto Pearson falls under federal jurisdiction. Development of Toronto Pearson facilities is controlled by the Toronto Lester B. Pearson International Airport Zoning Regulations. The airport also has its own master plan to guide airport management. The most recent update in 2008 establishes development goals through 2030 and builds on previous master plans and GTAA’s strategic business vision. The master plan establishes policies for environmental and land use performance, and addresses linkages to municipal and provincial transportation and transit systems.

The airport is now largely built-out and extremely

constrained, from a land use perspective. The GTAA is working with municipal partners to ensure future development is compatible with surrounding land uses. All three adjacent municipalities, as well as the Region of Peel, have explicit policies in their Official Plans with regards to supporting Toronto Pearson operations.

## Provincial context

Development in southern Ontario is subject to a number of provincial planning directives. *Places to Grow, Ontario’s Growth Strategy*, provides guidance for how and where growth and development will occur in the Greater Golden Horseshoe area in the next 25 years. Regional and local municipal Official Plans must be reviewed to conform to these policies.

Places to Grow complements the Ontario Greenbelt Plan, which establishes permanent protection of the agricultural and ecological land base by identifying where urban growth can and cannot occur. The growth strategy also builds on the Provincial Policy Statement (PPS), which provides general policy direction on matters of provincial interest regarding land use and development. The PPS was updated in 2005, and encourages efficient and low-impact planning and development practices. Other provincial plans, such as the Parkway Belt West Plan, are already integrated into existing Official Plans (Peel, Brampton and Mississauga), and are reflected in current municipal policies.

### 2.6.2 Current municipal policy best practices

Each of the municipal partners has already implemented some policies that support the objectives of Partners in Project Green. When considered as standalone policies, they indicate an active interest in enhancing municipal sustainability efforts. When considered together, they form a strong foundation for Partners in Project Green. Highlights of existing municipal partner best practices are presented in Table 9.

## 2.7 Challenges to Eco-Industrial activity

Municipal and business representatives participated in a workshop, part of which was designed to explore some of the challenges to pursuing eco-industrial activity. The main challenges articulated at those workshops are summarized in Table 10.

In addition to the general types of challenges, one business interestingly observed that the relatively low cost of energy provides little incentive to conserve or to motivate businesses to focus more strongly on waste and inefficiency. This observation highlights that some of the challenges can

be directly addressed through the activities of Partners in Project Green, while others, like energy pricing or shifting corporate culture, require much broader efforts. While such activity may fall beyond the scope of Partners in Project Green, it is nonetheless a valuable insight.

**Table 9:** Highlights of municipal best practices

<b>Toronto</b>	Official Plan: Green Development Standard: Zoning bylaw:	Support for green industry and green energy production. Green building requirements. Promotes green energy generation.
<b>Mississauga</b>	Zoning bylaw:  Design Guidelines for Industrial Areas:	Defines green energy uses including cogeneration and renewable energy facilities. Supports display and design of heavy industry areas to promote public interest (modeled after Granville Island in Vancouver).
<b>Brampton</b>	Official Plan:  Transportation and Transit Master Plan:	Encourages Region of Peel to initiate resource recovery programs and matching markets. Create Travel Management Association (TMA) for key areas of commercial/industrial activity.
<b>Peel Region</b>	Water Efficiency Plan:  Strategic Plan 2007–2010:  Long-Term Waste Resource Management Strategy:	By 2015, reduce: <ul style="list-style-type: none"> <li>• Average annual daily demand by 8-10 per cent</li> <li>• Peak day demand by 8-10 per cent</li> <li>• Wastewater by 5-7 per cent</li> </ul> Promotes and demonstrates leadership in environmental management practices, sustainable transportation and energy use.  Aims to achieve 70 per cent solid waste diversion from landfill by 2016.

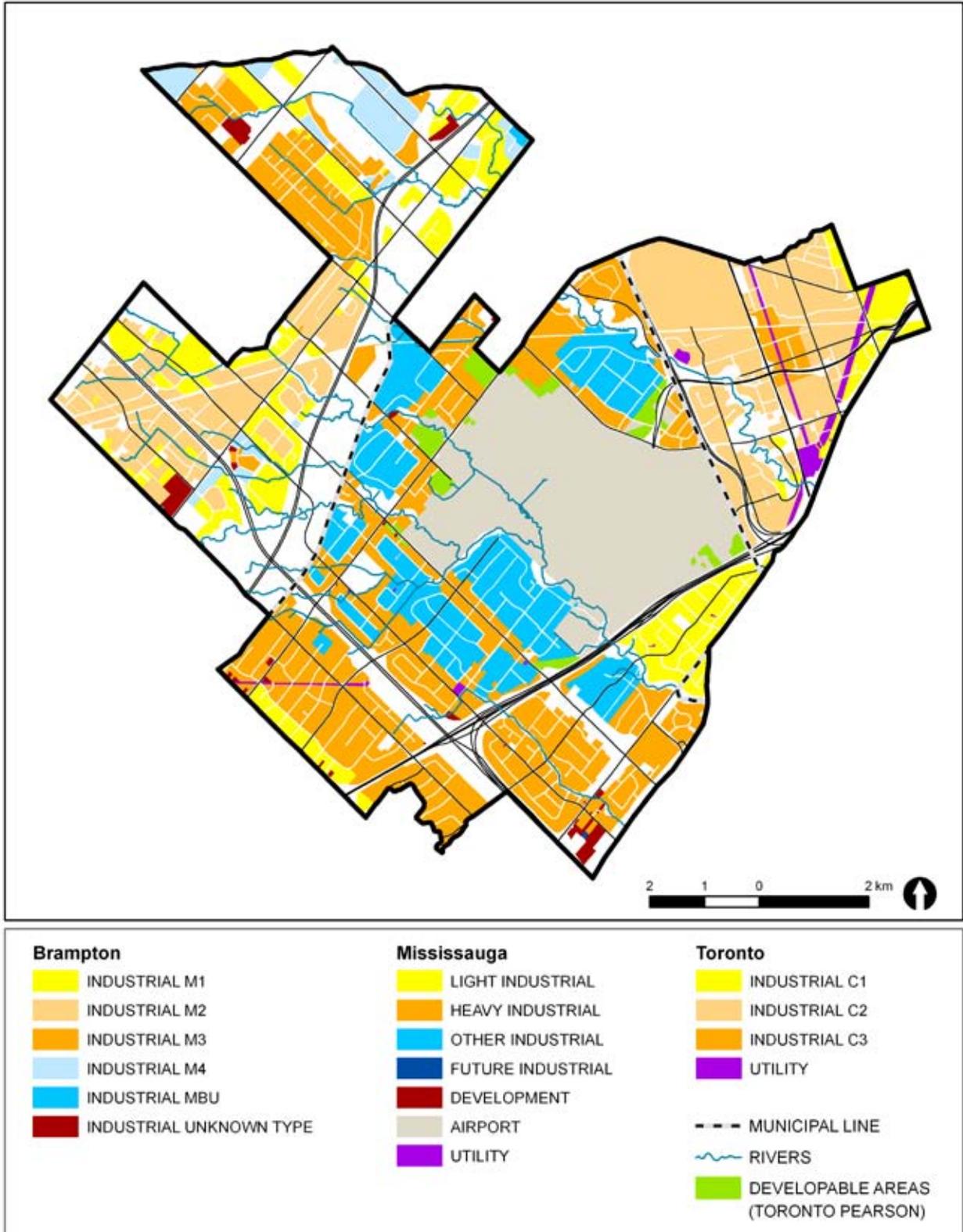


Figure 9: Zoning designations across Pearson Eco-Business Zone.

**Table 10:** Summary of municipal and business challenges to eco-industrial activity

Main types of barriers	Business	Municipal
<b>Costs</b>	Costs of ‘going green’ – business perceptions of how much it will cost to adopt green practices. Need for business cases that are related to local conditions.	Municipalities need a business case themselves for ‘going green’ and promoting ‘eco business’ activity before they can commit to creating/adopting a toolbox.
<b>Roles and responsibilities</b>	<p>Businesses do not need to rely on public sector handouts, but do need guidance.</p> <p>‘Disconnect’ between staff and senior management. What is corporation’s responsibility with regards to ‘eco-businesses’?</p> <p>How to convince senior management and where to get guidance?</p>	Difficulty maintaining green project momentum, especially when individuals drive such a project.
<b>Risk</b>	<p>Perceived liability issues.</p> <p>Difficulty in getting businesses to share information to overcome ‘business as usual’ the expectations around directly sharing information with competition.</p>	<p>Perceived liability issues.</p> <p>Land use compatibility issues – how to reconcile potential conflicts between different uses, such as live/work areas, industrial and other traditionally incompatible uses.</p>
<b>Knowledge</b>	Lack of time and incentives for businesses to learn about what is involved, what is required of them, what the potential benefits are.	<p>Tools are needed to help municipalities build flexibility into their processes. Municipalities need to avoid being constrained/locked into policies where there is potential to get hung up on the technical aspects, rather than the intent.</p> <p>Lack of training/awareness at municipal and office operations level.</p>
<b>Regulations</b>	Outdated regulations do not support innovative business practices.	<p>Inconsistent regulatory environment (zoning, OCP, etc.) between municipalities.</p> <p>Bureaucratic layers–need for less bureaucratic ‘sticks’ and more incentives, e.g., less requirements for quantitative reporting. Additional steps hinder interest and capacity to support this type of innovative eco-business activity.</p>



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# Section 3

## Section 3: Eco-opportunities

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### 3.1 Overview



One of the core functions of Partners in Project Green will be to develop and deliver programs, services and projects targeted at greening business activity in the Pearson Eco-Business Zone. These “eco-opportunity” programs, services and projects should meet some or all of the following criteria:

1. Respond to issues communicated by businesses;
2. Meet the needs of businesses in the study area OR are directly transferable to other businesses in the study area;
3. Not duplicate services already offered by the private sector, especially businesses in the study area;
4. Have the potential to generate revenue; and,
5. Provide value to municipal partners.

With respect to criteria 1, 2 and 5, the feedback provided by business and municipal representatives at project workshops was particularly helpful (a compilation of workshop feedback can be found in Appendix C). For example, businesses and municipalities hoped that Partners in Project Green would act as a one-window for information, whether it is municipal or business best practices, or for the myriad of municipal, regional, and provincial policies and regulations that affect business. From a business perspective, a database of best practices helps them to learn about new opportunities and provides the information they need to secure management buy-in. From a municipal perspective, a database on municipal best practices offers the same benefit, but municipalities would also use a database of business best practices to support their efforts in encouraging businesses to ‘go green.’

Businesses and municipalities were also interested in information on financing structures and programs that would support their individual eco-business efforts. Businesses noted they would welcome technical assistance with respect to managing stormwater; identifying water recycling opportunities; identifying and evaluating green technologies; or establishing by-product synergies. Businesses also requested information that would help them to complete cost-benefit analyses and return on investment calculations of green initiatives, beyond energy savings. Businesses also suggested that Partners in Project Green could help them to quantify their impacts and measure success.

Municipalities were very interested in Partners in Project Green facilitating relationships and communications between different parties. They would also like to see education programs targeting developers, but also to support capacity building for municipal staff, e.g., in plan review. Municipalities would also like Partners in Project Green to develop resources that will help them understand and work with the business community, such as sector-based profiles that discuss those businesses’ expectations from the municipality. Municipalities also expect Partners in Project Green to offer programs and services that tie directly to municipal objectives, such as improving air quality and supporting related data collection. From a municipal perspective, Partners in Project Green should also generate publicity and support economic development objectives.

Sections 3.4 to 3.16 summarize the top eco-opportunities for Partners in Project Green. Eco-opportunities are described in the context of resource data analysed to date, as well as local policy contexts. General

implementation steps are also provided. Three of these opportunities have been prioritized by the TRCA, following discussions and consultation with business and municipal stakeholders, and their implementation plans are provided in more detail in Section 6.

### 3.2 Eco-opportunities: Eco-efficiency versus eco-industrial networking

The difference between eco-efficiency initiatives and eco-industrial networking is this: successful implementation of eco-efficiency/greening business opportunities requires the participation of only one business or several businesses acting individually; while the successful implementation

of eco-industrial networking opportunities requires the collaboration of more than one business (a network of businesses).

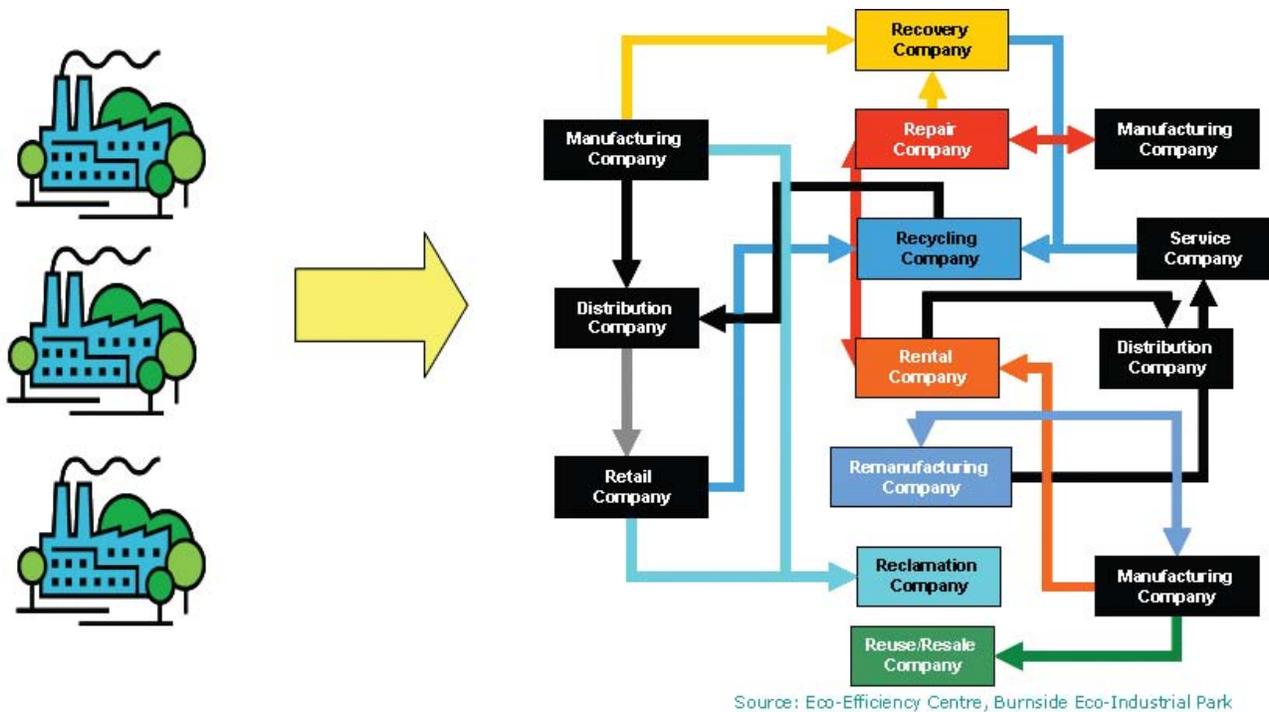
While the opportunities are similar, it is the level of coordination amongst business participants that makes the difference. Eco-industrial networking opportunities will require more coordination and integration, which maximizes triple-bottom-line benefits. This change in scale is illustrated in Figure 10.

The difference between the two scales is further discussed on the following page in the context of two common green business practices.

**Green Purchasing:** Many individual businesses practice green purchasing; one of the most common examples would be the decision to purchase recycled paper. Each business deals with its own supplier in isolation from other businesses, even those right next door. An eco-industrial approach to green purchasing would see businesses partnering with other businesses to identify and evaluate

products, then working together to negotiate better pricing. An eco-industrial approach would also foster information sharing – for example, businesses could share language used in corporate green purchasing policies. The eco-industrial approach will likely lead to reduced business costs for green products, and increased use of green products. With co-ordination from Partners in Project Green, businesses could form green purchasing networks with neighbouring businesses or with other businesses in their sector. Municipalities as well, through their own purchasing policies, can pursue similar initiatives, potentially in partnership with local businesses.

**Recycling:** Solid waste disposal represents a real cost to businesses. Individual businesses generally recycle whatever materials are prohibited from landfill, or whatever materials their solid waste contractor is able to pick up on a regular basis. However, the majority of solid wastes generated by businesses still end up in the landfill. Individual businesses that wish to increase their recycling must expend significant effort sourcing a recycler. Process changes might even be required to make a waste product recyclable. The



## Eco-Efficiency

## Eco-Industrial Networking

Figure 10: Evolution from eco-efficiency to eco-industrial networking

eco-industrial approach positions wastes as misplaced resources, which the company has paid for, but from which no value was extracted.

Wastes aren't wastes, but are by-products and potentially useful, profit-making materials. The eco-industrial approach seeks to establish **by-product synergies**, which transform one or more businesses' wastes into one or more other businesses' feedstock, creating new revenue sources, reducing handling and raw material costs, and reducing environmental impacts. By working together, businesses can increase by-product synergy potential by aggregating by-products and co-ordinating feasibility studies. A proactive eco-industrial approach would help businesses to systematically identify potential by-product synergies, through resource mapping and social networking.

By-product synergy can also apply to wastewater streams. Much of the water used by industry is a much higher quality than required. In addition, "clean" wastewater is often discharged straight to the sanitary sewer, where its value is lost. **Wastewater cascading** involves the re-use of wastewater to displace potable water, by closely matching actual water use requirements with the quality of the water supply. **Heat exchange networks** are also analogous to by-product synergy; for example, an increasingly common municipal initiative is the recovery of waste heat from ice arenas to heat adjacent buildings.

### 3.3 Program and service delivery mechanisms

Table 11 provides a high level overview of the types of delivery mechanisms that Partners in Project Green can use to implement the identified eco-opportunities. For many of the opportunities, Partners in Project Green will have to use more than one delivery mechanism.

### 3.4 Opportunity 1: Establish and manage "green purchasing blocks"

#### Description and rationale

Businesses trying to purchase green products and services can face a number of barriers, such as: researching and sourcing products and contractors, managing risks

<sup>8</sup> Increased urban temperature due to thermal mass of buildings and dark roofs absorbing solar heat.

associated with alternative technologies and higher capital costs. By joining a purchasing block, a group of businesses combines their common needs for a specific service or product, with the aim of getting a group discount and easing the implementation process through collaboration.

#### Ross coordinated capacitor opportunity

*The Regina Eco-Industrial Network Association (REINA) is helping businesses in the Ross Eco-Industrial Park co-ordinate bulk-rate services for green technologies. On behalf of participating businesses, REINA is organizing energy audits and negotiating the joint purchase of capacitor banks to reduce peak power demands. This group procurement will result in discounted evaluation, design, capital, installation and maintenance services costs.*

The larger scale of such projects compared to isolated actions also means greater environmental benefits in the region. Purchasing blocks could target:

- Green office supplies: business clusters can jointly source green office supplies (recycled printing paper, refurbished ink cartridges).
- "Enviro-roof" systems: installing green, vegetated roofs, synthetic insulation or white ceramic paint on roof space contributes to reducing the urban heat island effect<sup>8</sup>, as well as reduces the businesses' heating and cooling requirements.
- Photovoltaic panels: roof surfaces could also be used for photovoltaic solar energy systems to produce power for on-site use and/or feed into the grid through net metering. The study area includes nearly 2,000 hectares of underutilized roof space.
- Others, including: alternative fuels (biodiesel, natural gas, hydrogen); packaging; green/alternative power (wind, geothermal, biomass); native plant/drought-tolerant landscaping; permeable parking surfaces; industrial chemicals; building technologies (e.g., bay door remotes, radiant heating); energy management (e.g., capacitor banks); other green technologies.

#### General steps

1. Determine specifications and volume needed by the group of committed businesses.
2. Develop an request for proposal (RFP) or tender to find a supplier, requesting volume pricing (for product/service, installation, maintenance, etc.)

- or other benefits from group buying.
- 3. Negotiate an optimal contract on behalf of the business purchasing group.

### Partner types

- Industry associations
- Green product and service providers

### Funding types

In addition to bulk pricing discounts, businesses may be able to access grants or alternative financing.

- Participating businesses should be responsible for directly funding most of the purchase.
- Federal energy efficiency programs – funding

agencies might be attracted to programs that impact more than one business. Or, Partners in Project Green could co-ordinate applications for individual businesses.

- Provincial incentives for small-scale energy generation.
- Credit unions or other financial institutions that might offer lower interest eco-financing to support businesses’ efforts, especially if they see that many businesses are committed.
- Emission brokers–by aggregating the emission credits (carbon, NOx, SOx) from participating businesses, Partners in Project Green might be able to secure revenues that could be applied back to offset the cost of whatever product or service being purchased.

**Table 11:** Program and service delivery mechanisms, by type

Education and Outreach	Service Broker	Special Project Management	Regulatory Liaison
<p>Partners in Project Green will provide zone-wide education and capacity building. Without a broad private and public sector understanding of the need for, and benefits of, greening buildings, infrastructure, and operations, within the business and development community, Partners in Project Green will not be sustained in the long term.</p> <p>Education as a service can be broken down as follows:</p> <ul style="list-style-type: none"> <li>i. Passive Education: best practice, case studies, other technical information;</li> <li>ii. Active Education: tools and facilitated training;</li> <li>iii. Social Networking: in-person knowledge exchange and relationship building.</li> </ul> <p>Businesses and municipal representatives overwhelmingly requested that Partners in Project Green become a “one window” information hub for the Pearson Eco-Business Zone.</p>	<p>This role could take several forms. Partners in Project Green can act as a matchmaker, helping individual businesses to find appropriate technology and service providers on a ‘one-off’ basis.</p> <p>Partners in Project Green could also work with businesses to develop terms of reference; source and contract product or service suppliers, then retain and manage the work of third party suppliers.</p> <p>Partners in Project Green could also represent zone businesses in negotiations with third party players.</p> <p>Partners in Project Green could negotiate ‘bulk’ rates with product or services suppliers, creating direct economic benefit for participating businesses. This is an important role with respect to coordinating eco-opportunities among several businesses.</p>	<p>Some Partners in Project Green programs and services will have:</p> <ul style="list-style-type: none"> <li>i. A definitive start and end date;</li> <li>ii. A specific project budget; and</li> <li>iii. Succinct, definable deliverables.</li> </ul> <p>These are special projects that will be led by TRCA on behalf of the Partners in Project Green.</p> <p>There are several potential special projects in the short, medium, and long term.</p> <p>Special projects should be developed in a way that establishes a baseline, sets targets and measures success.</p>	<p>Businesses and municipalities were strongly in favour of Partners in Project Green acting as a liaison with regulators. Municipal staff noted TRCA’s previous success at ‘getting all the players to the same table’.</p> <p>In particular, given the business focus of Partners in Project Green, it will have to communicate on behalf of, and advocate for the interests of, the businesses in the study area.</p> <p>Promoting programs, policies and procedures that support the needs of businesses as well as flagging proposed changes that could have unintended negative impacts.</p> <p>Regulatory liaison includes ensuring that regulators are aware of the issues and opportunities for businesses; and facilitating the development of policies that support eco-innovation and eco-development.</p>

### 3.5 Opportunity 2: Eco-efficiency audit/implementation program

#### Description and rationale

Eco-efficiency is achieved by businesses who deliver competitively priced goods and services, while progressively reducing their ecological impacts and resource use throughout the life-cycle of their product(s)<sup>9</sup>. In short, eco-efficiency is the creation of **more value with less impact**. For example, if businesses reduce their energy consumption, they will not only save on the monthly energy bill (economic benefits), but will also reduce emissions (environmental benefits) and contribute to improving a community's air quality (social benefits).

In the Pearson Eco-Business Zone alone, there are at least 120 businesses that have implemented eco-efficiency practices and processes into their operations, achieving triple-bottom-line benefits, **but there are much more savings that could be achieved in the area**.

An eco-efficiency audit/review is the best way to identify potential eco-efficiency savings. It involves an on-site review of business operations and practices. The reviewer evaluates how a business is using energy, water and other resources, and identifies opportunities to dramatically improve production efficiency and environmental performance.

#### Eco-efficiency at Canadian Tire

*Canadian Tire has applied eco-efficiency principles to substantially reduce the amount of transportation packaging material sent to landfill.*

*They have implemented aggressive pallet re-use and packaging recycling programs to achieve the following:*

- *Reduced waste generation through the use of reusable plastic tote shipping containers at Associate Stores.*
- *Landfill diversion of 3,100 tonnes of cardboard; 2,337 tonnes of wood pallets; 435 tonnes of stretch film; 339 tonnes of scrap wood; 318 tonnes of scrap metals; and 33 tonnes of paper.*

<sup>9</sup> This is a condensed definition of that which is provided by the World Business Council for Sustainability.

<sup>10</sup> Food processors were part of the manufacturer "business type". Given previously expressed interest by the food processors, they would be good candidates for an eco-efficiency audit and implementation program.

Partners in Project Green, in partnership with Ontario Centre for Environmental Technology Advancement (OCETA), are developing a one-window, bundled eco-efficiency program. The program will provide a **free** walk-through assessment; a cost-shared eco-efficiency audit with a pre-qualified consultant (50 per cent up to \$5,000); an implementation plan; and assistance with finding grants and other incentives.

#### General steps

Partners in Project Green can:

- a) Respond to individual businesses' inquiries and work with them on an as-requested basis; and
- b) Actively promote the program to a specific sector.

The Project team may want to target food processors. Manufacturers<sup>10</sup>, such as food processors, are prime candidates for eco-efficiency audits for both energy and water. A map showing estimated energy consumption for food processors is shown in Figure 11.

Another sector to focus on might be transportation and warehousing, one of the most important in the Pearson Eco-Business Zone and a significant energy consumer. Transportation and warehousing firms may be interested primarily with respect to how they can reduce their building energy demand and costs. A map showing energy consumption in the transportation and warehousing sector is shown in Figure 12.

Regardless of approach, Partners in Project Green can help groups of businesses to implement eco-efficiency opportunities by:

- Tracking the implementation recommendations from audits and identifying common opportunities;
- Liaising with technology providers or eco-professionals;
- Coordinating purchase and installation of common eco-technologies or services for a group of businesses;
- Negotiating volume discounts; and,
- Finding additional funding, if needed.

#### Partner types

- Innovative/green technology consortia, such as OCETA.

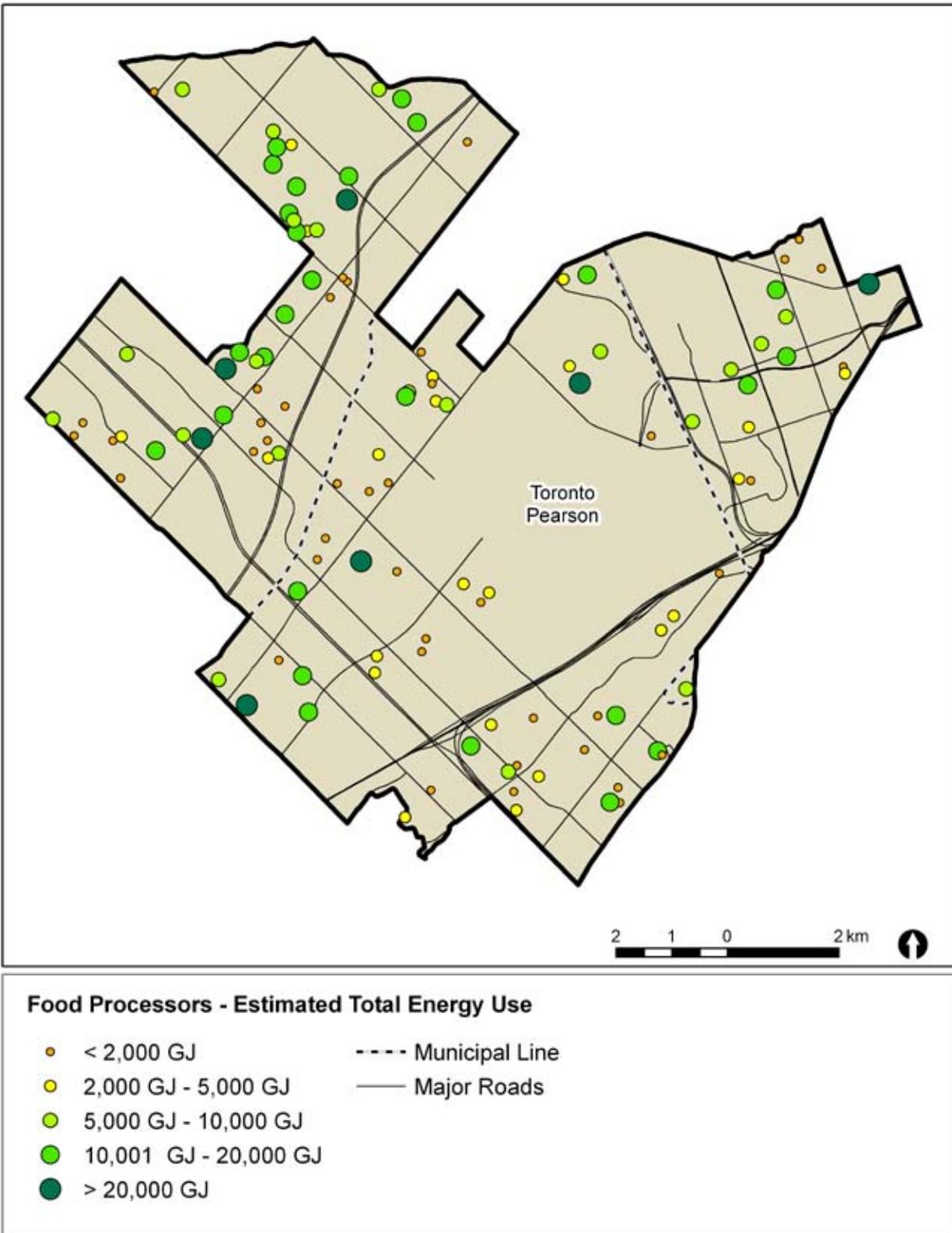
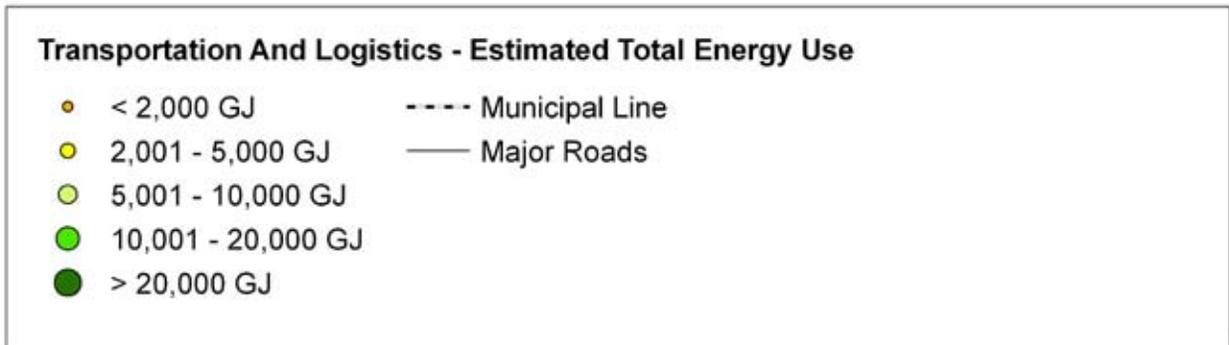


Figure 11: Estimated energy consumption for food processors



**Figure 12:** Estimated energy consumption by transportation & logistics businesses

- Consortia of green design professionals (e.g., eco-efficiency audit expertise) such as the Canadian Green Building Council or the World Business Council for Sustainable Development (industry expertise).
- Institutions with eco-efficiency expertise (post-grad students).
- Government agencies that are keen to adopt green technologies.
- Government agencies that are focused on sustainable economic development.
- Municipal economic development departments.

### Funding types

- Energy Service Company Model (see ESCO sidebar, Section 3.9).
- Local distribution companies, e.g., Enersource Mississauga, Toronto Hydro, Hydro One Brampton or the Ontario Power Authority.
- For energy-specific Ontario funding sources, see Appendix D.

## 3.6 Opportunity 3: Support Smart Commuting initiatives

### Description and rationale

*“Employees commuting to and from our facilities are a major challenge for our industry which makes employee turnover a big problem. This area is the second largest employment area in the GTA, so moving employees should be a major focus here.”*

*-Food processor focus group participant*

The Smart Commute program, as administered by Metrolinx, fosters alternative modes of transportation to reduce travels by single-occupancy vehicles and associated impacts on people, communities and the environment. Smart Commute offers services to member businesses to help promote commuting options such as carpooling. Typically, members are large companies with the resources to coordinate commuting efforts and the people base to support group initiatives. As an illustration, larger pools

of commuters increase the potential for successful carpool matches.

Diverse commuting options yield appreciable benefits to businesses and their employees, such as enhanced social cohesion, individual productivity, employee attraction and retention, company reputation, and reduced needs for parking infrastructure. These are all important elements for thriving economic development.

The study area provides employment to more than 355,000 people, including about 125 businesses with over 300 employees. Figure 13 shows the current Smart Commute members, as well as surrounding businesses with more than 300 employees<sup>11</sup> and other high-employment clusters to indicate potential geographic area-based cluster members.

Smart Commute initiatives can also target sector-based initiatives. For example, businesses in the food processing industry have recently expressed concerns regarding employee commuting issues and related retention challenges. This sector could be prioritized through a partnership with Smart Commute and Partners in Project Green.

### General steps

1. Identify clusters and/or sectors of businesses facing employee transportation issues.
2. Match interested groups of businesses with Smart Commute.
3. Provide employment data and other supporting information.
4. Support businesses in promoting the Smart Commute programs.

### Partner types

- Economic Development offices
- Smart Commute Mississauga
- Smart Commute Brampton–Caledon
- Smart Commute Toronto

### Funding types

Other than a nominal annual fee per business for Smart Commute services, there are no costs for businesses to participate in Smart Commute.

<sup>11</sup> Smart Commute prioritizes companies with greater than 400 employees; however, employment data received was precategorized and the categories included 200-300, 300-500, and so on, so the 400+ cutoff could not be made.

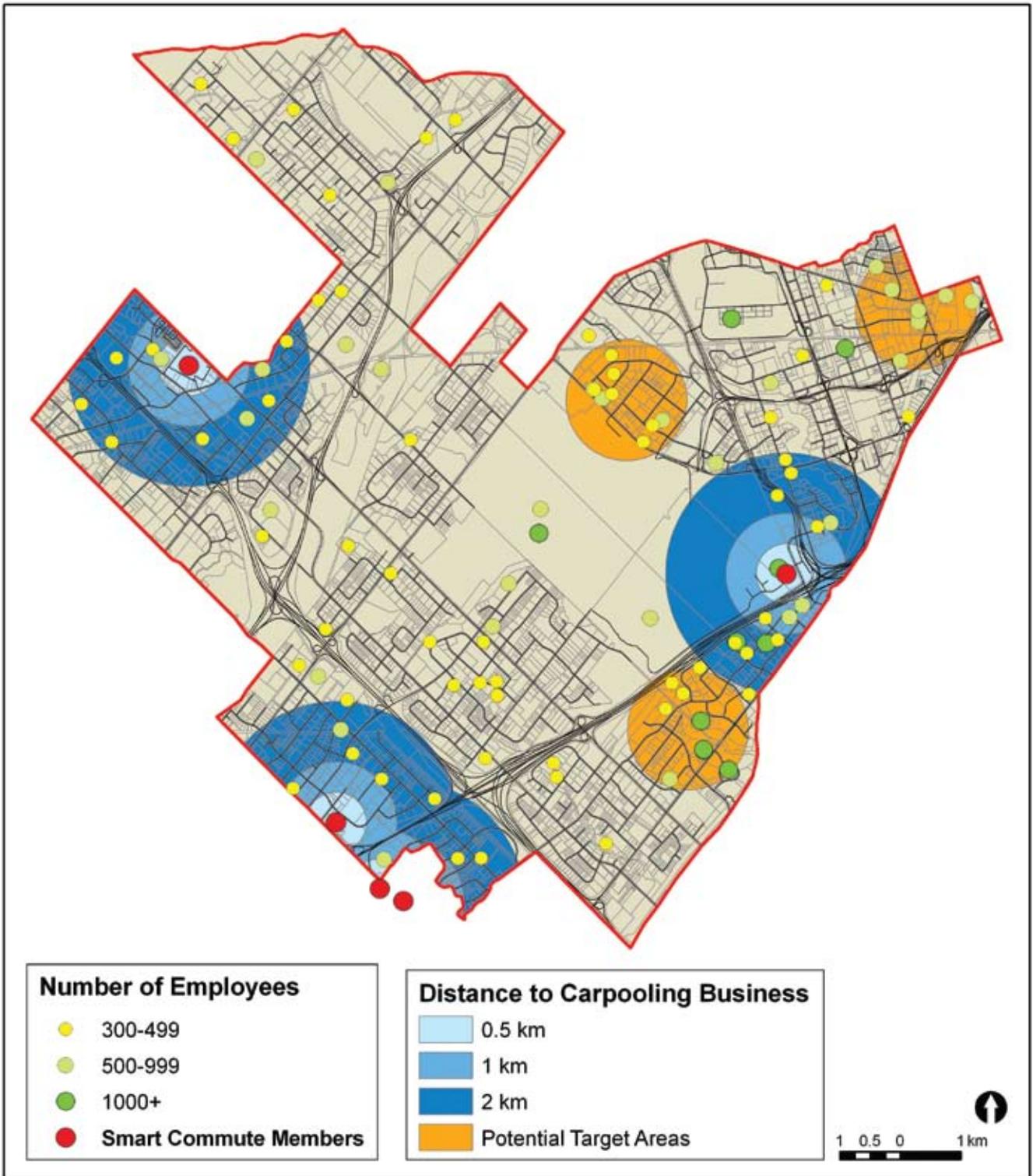


Figure 13: Smart commute actual & potential members

### 3.7 Opportunity 4: Waste reutilization projects

#### Description and rationale

Our notion of “waste” is rapidly changing. Waste represents resources that businesses have paid for but have been unable to extract value from. These misplaced resources hold potential to be further used in other processes, directly or once transformed, or converted into feedstock for energy production. The high concentration of industrial activity, including food processors, in the study area represents a considerable amount of waste that could be turned into valuable material resources. For example, one food facility alone reported 150,000 tonnes of food waste per year, enough to generate over 2.5 megawatts of electricity.

Waste reutilization reduces pressure on waste management infrastructure, conserves resources and provides savings to both generators and users. Specific waste reutilization projects may include:

- **Wastewater cascading:** a number of industrial and commercial water users do not require potable quality. As such, wastewater leaving one company could be cycled internally and/or distributed to another company to be used directly or following minimal treatment. Partners in Project Green could play a similar broker role described for general waste exchanges. Businesses that generate a significant amount of wastewater could be potential non-potable water suppliers—these businesses are shown in orange and red on Figure 14.
- **Food waste reutilization:** Organic waste from the food and food processing sectors, including restaurants, hotels and the airport’s international food waste, can be used in various processes such as:
  - a) Energy generation: bio-gas can be generated from food waste and wastewater, which can then be used to generate electricity. Large businesses may have their own installations, or a distributed among neighbours or into the grid;
  - b) Centralized composting: to produce natural fertilizers and other soil enhancements;
  - c) Aquaculture: nutrient-rich water within ecological wastewater treatment facilities (chemical-free) can be used as fish feed. Businesses that might contribute food waste are shown in Figure 15.
- **General waste exchange:** opportunities for waste exchange within the Pearson Eco-Business Zone or the broader GTA can be identified through partnerships with industry groups. In addition, Partners in Project Green can operate a centralized information source (e.g., a “Craigslist” of waste exchange opportunities) and play an active role in resource offers/demands compilation and relationship facilitation. Waste exchanges typically result in bilateral exchanges only. By acting as a broker, Partners in Project Green can not only facilitate these exchanges, but could also flag larger synergy opportunities, such as the aggregation of a waste product for use by a particular business or to support a new business opportunity.

#### General steps

1. Literature review/case study compilation of by-product synergies in operation.
2. Resource mapping to identify/quantify sources of a particular by-product (e.g., food and other organic waste). Scope sector- or geography-based projects.
3. Engage potential businesses – conduct workshop(s) to examine their input/waste streams.
4. Engage utilities in the area which might have similar resource streams (e.g., wastewater).
5. Complete feasibility studies to assess technical and economical viability.

#### Partner types

- Industry associations
- GTAA
- Utilities
- Major businesses
- Economic Development offices
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

#### Bacteria to produce energy

*At global food giant Cargill Foods’ processing plant in Illinois, the wastewater from cleaning their equipment needs to be treated at on-site wastewater treatment lagoons. Through the treatment process, bacteria feed off of organic materials and generate methane gas. That gas is fed to the company’s boiler room to generate steam and hot water, for sterilizing instruments. That cuts Cargill’s energy bill, helping the company battle rising costs and thin margins.*

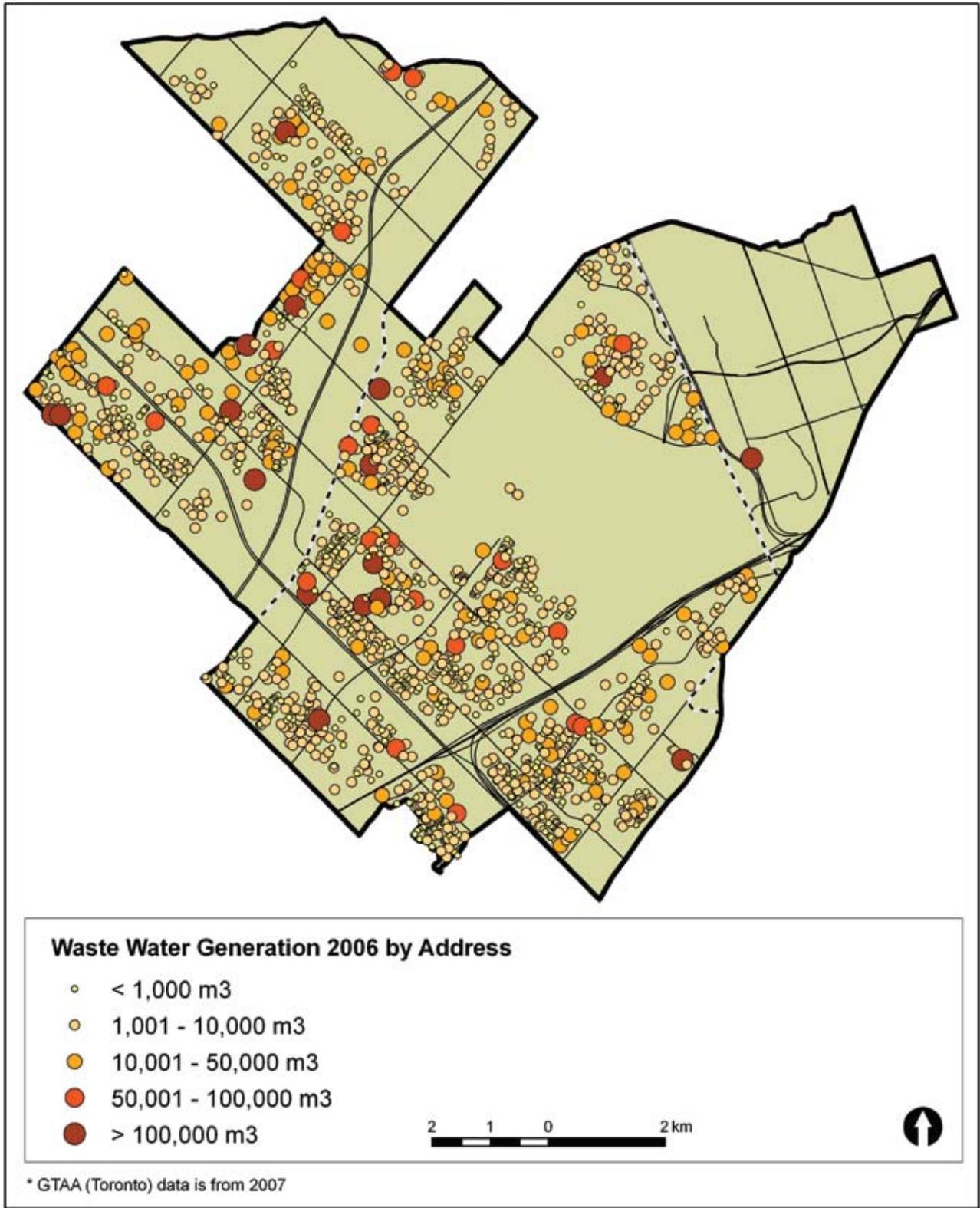


Figure 14: Wastewater generation–potential non-potable water suppliers

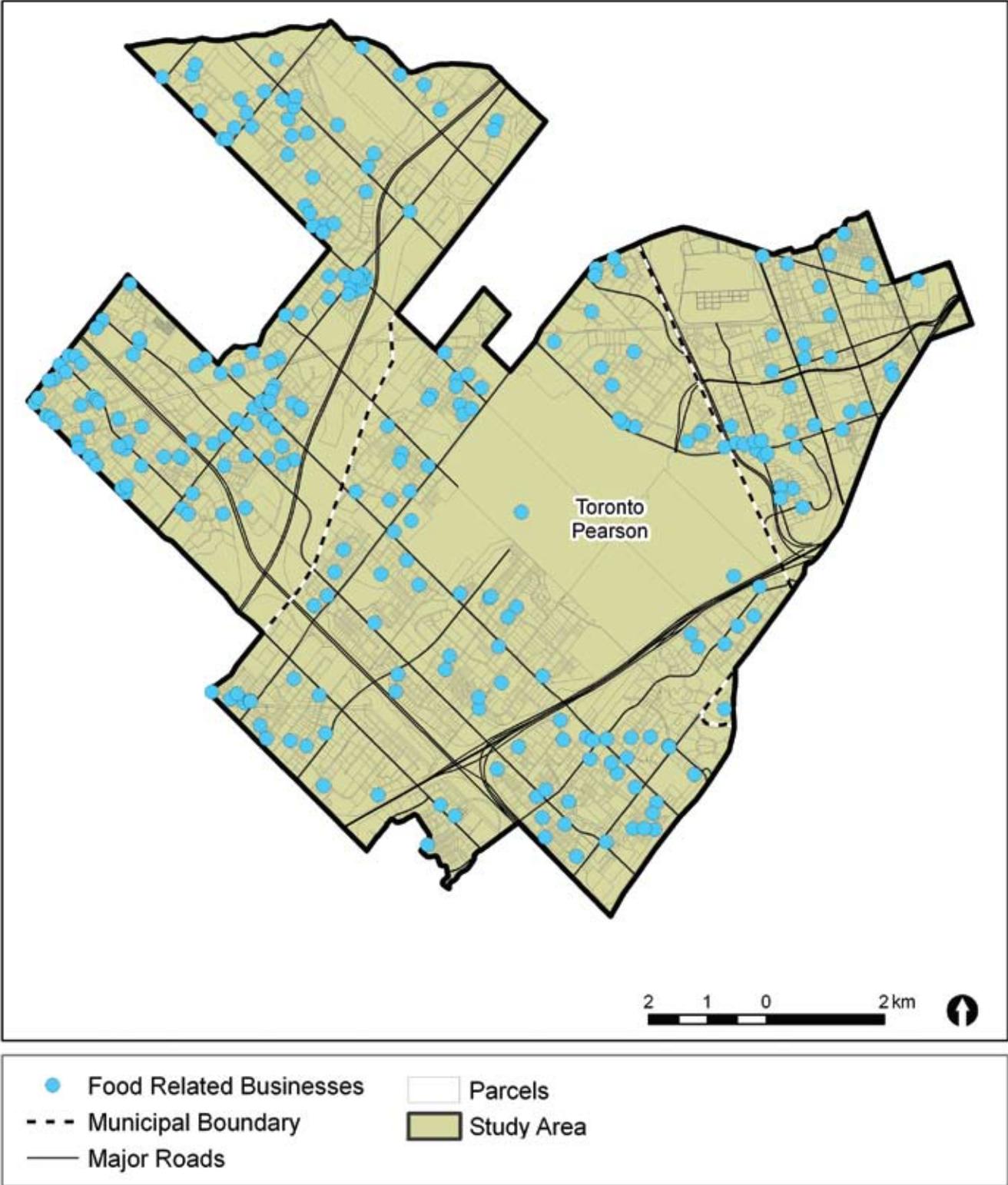


Figure 15: Food-related Businesses – Potential suppliers of food waste for reutilization

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## Funding types

1. Funding resources
  - Provincial incentives for small-scale energy generation (review Appendix D).
  - Green Municipal Fund for green infrastructure projects, especially for any waste-to-energy or wastewater re-use projects.
  - Grants from industry associations to support research and feasibility studies for wastes of interest to their industry.
2. Revenue potential for Partners in Project Green
  - Broker fees, perhaps as a per cent of savings, for facilitating waste re-use opportunities.
  - Direct support from businesses with wastes for which they are seeking a re-use.

### 3.8 Opportunity 5: District energy system

#### Description and rationale

District energy systems directly link energy producers to energy consumers. A network of piping carries a heating or cooling stream (e.g., steam, hot water or chilled water) from a central energy plant operated by the energy producer, to consumers who use it to meet space heating/cooling, domestic hot water, or process heating/cooling requirements.

The central energy plant could be a conventional, fossil-fuel powered boiler or co-generation system, but could also use deep-water cooling technology (e.g., City of Toronto); sewer heat recovery (e.g., Southeast False Creek in Vancouver); solar power (e.g., Okotoks, AB); geo-exchange; or even industrial waste heat recovery.

Once the thermal energy has been extracted, the heating or cooling stream is returned to the central energy plant for recycling via a second piping network. The district energy system in effect replaces the functions provided by furnaces, air conditioners, boilers and chillers in individual buildings. The systems are most effective in areas with high heating/cooling energy demand, such as those with high building density and/or high heating/cooling loads.

District energy systems are more efficient than the sum of small building level systems they replace. Therefore, they can reduce GHG and other air emissions, more so

if the energy source is renewable. Energy dollars stay in the community and can provide new revenue streams to businesses with waste energy. Owner/operators of buildings connected to the system may also be able to reduce their operating and maintenance costs, and save space on heating/cooling equipment.

Matching and evaluating energy supply to consumer demand will be important to building a business case for any district energy system. Business cases are most easily justified if clusters of high-energy demand can be identified near sources of waste heat. As examples of potential waste heat sources, **four electricity generating operations exist within the Pearson Eco-Business Zone, another operates just outside the study area, and two new plants are under consideration.**

These are all examples of facilities that could provide waste heat sources that might support a district energy system.

The demand side of the business case must also be defined to determine where, how much and for what uses energy is consumed within the study area. As an example of first-pass energy demand estimation, sector-specific Natural Resources Canada energy intensity factors were used to estimate space heating, space cooling and domestic hot water requirements for businesses in the study area. The following figures present this data, as well as the locations of the five existing electricity generation facilities (potential waste heat sources). Heating demand, cooling demand, and water heating demand have been roughly estimated for businesses in Pearson Eco-Business Zone (refer to Figure 17, Figure 18 and Figure 19 respectively).

In addition to using new district energy systems to link existing energy suppliers to existing consumers, identifying **energy demand clusters throughout the region** could also lead to viable business cases for new district energy systems to meet those demands.

Partners in Project Green can take the lead to conduct a feasibility study for evaluating district energy opportunities across the study area. The feasibility study would investigate (but not be limited to):

- Planned and existing energy demand clusters;
- Planned and existing energy sources (e.g., industrial waste heat, electricity/cogeneration plants, landfill gas recovery systems);
- Opportunities for other energy source technologies (e.g., deep-water cooling, sewer heat recovery,

- solar, geo-exchange, biomass);
- Ownership and operation options (including advantages and disadvantages);
- Potential partners; and,
- Funding opportunities.

## General steps

- Define Partners in Project Green's objectives for the district energy feasibility study initiative.
- Review literature and case studies for similar endeavours.
- Develop feasibility study scope and terms of reference (TOR).
- Issue RFP to conduct feasibility study.
- Evaluate proposals and award feasibility study contract.

*An implementation approach for three of the five generation facilities - the GTAA (117 MW), Mississauga (108 MW), and Magellan Aerospace (2.5 MW) Cogeneration Plants - is provided in Section 6.3.3. The steps described there could also be adapted to other potential existing sources of waste heat.*

## Partner types

- Energy producers
- Energy consultants
- Municipal government
- Engineering/construction companies
- Facilities management companies

## Funding types

- Funding will largely depend on the ownership model selected and what role, if any, municipal government plays
- Conventional financing for any sound business case
- Federation of Canadian Municipalities Green Municipal Fund
- New Deal for Cities and Communities (Gas Tax Revenue Sharing)
- Ontario Power Authority Clean Energy Standard Offer Program

## 3.9 Opportunity 6: Coordinated green building retrofit

### Description and rationale

The GTA is subject to harsh climatic extremes, with hot summers and cold winters. The natural gas and electricity required to keep buildings comfortably inhabitable represents approximately one-third of all energy produced in Canada<sup>12</sup>. Implementing green building technologies and strategies will reduce the amount of energy used, and associated costs to heat, cool and light buildings.

There are many green building strategies businesses can adopt to cut their energy usage:

- Energy-efficient lighting
- Solar-water heating
- Energy-efficient Windows

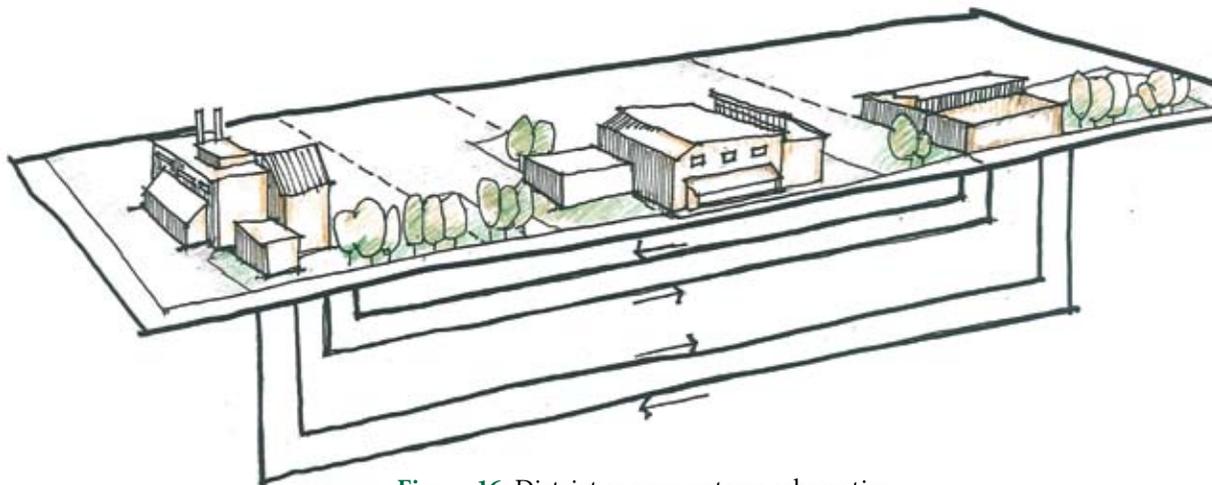
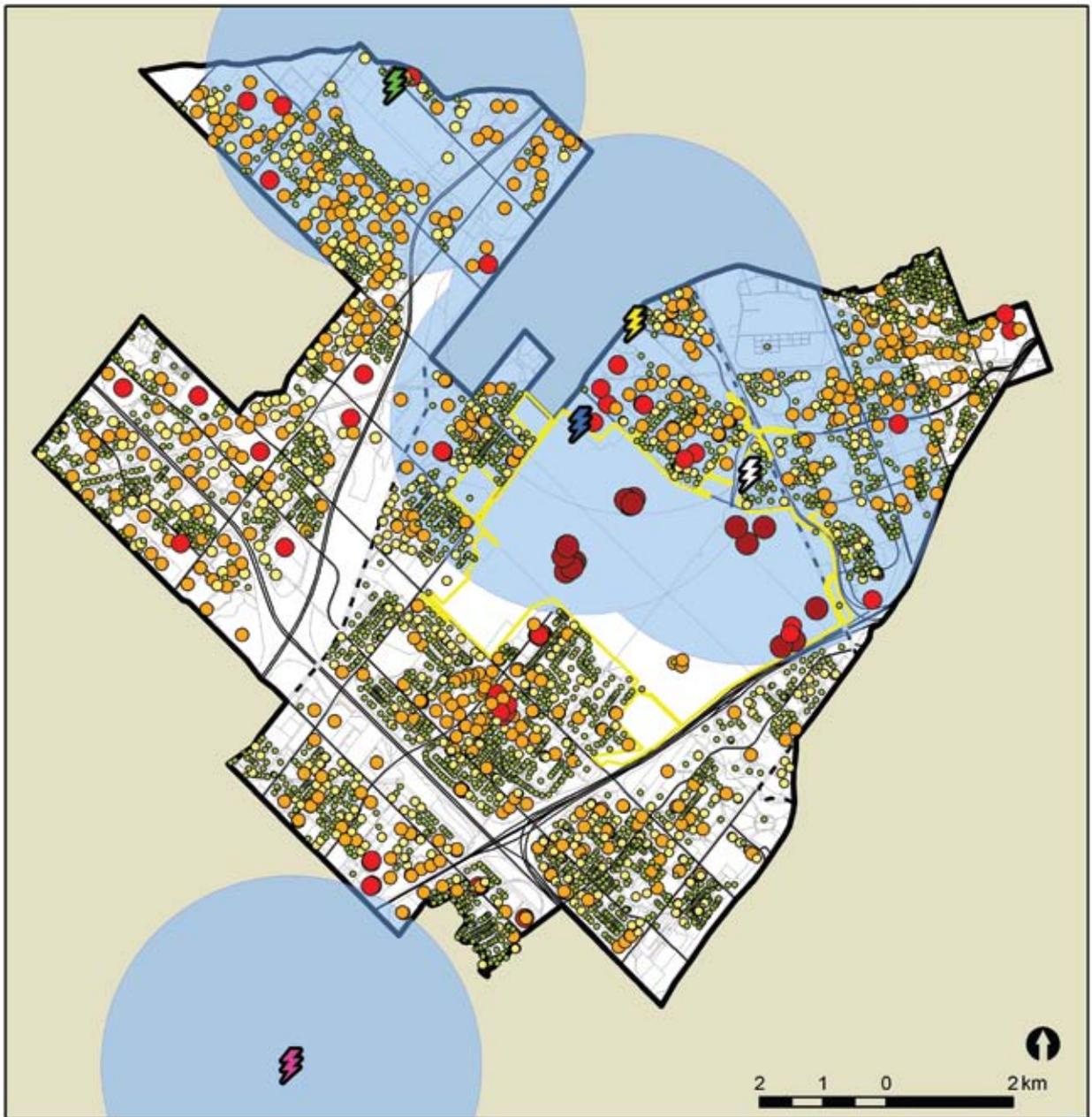


Figure 16: District energy systems schematics

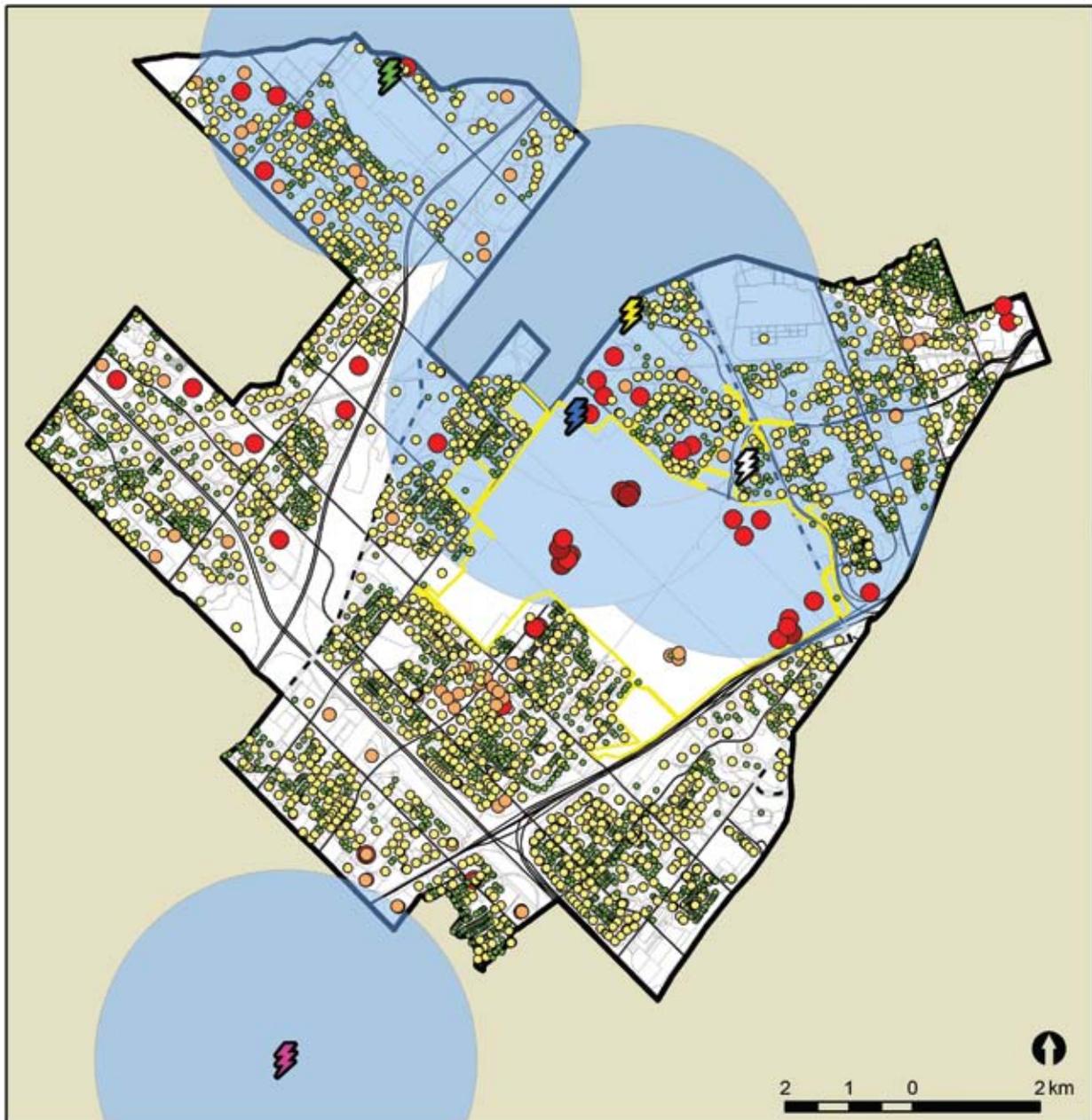
<sup>12</sup> A Business Case for Green Buildings in Canada, M. Lucuik, Morrison Hershfield, 2005



**Estimated Space Heating Energy Consumption by Address**

- |                             |                                                                               |
|-----------------------------|-------------------------------------------------------------------------------|
| • > 500,000 GJ              | ⚡ GTAA Cogeneration Plant, 117 MW                                             |
| • 500,001 - 1,000,000 GJ    | ⚡ Mississauga Cogeneration Plant, 108 MW                                      |
| • 1,000,001 - 5,000,000 GJ  | ⚡ Britannia Landfill Gas Compression and Electricity Generation Plant, 5.5 MW |
| • 5,000,001 - 20,000,000 GJ | ⚡ Goreway Station, 875 MW                                                     |
| • > 20,000,000 GJ           | ⚡ Magellan Aerospace Corporation Cogeneration Facility, 2.5 MW                |

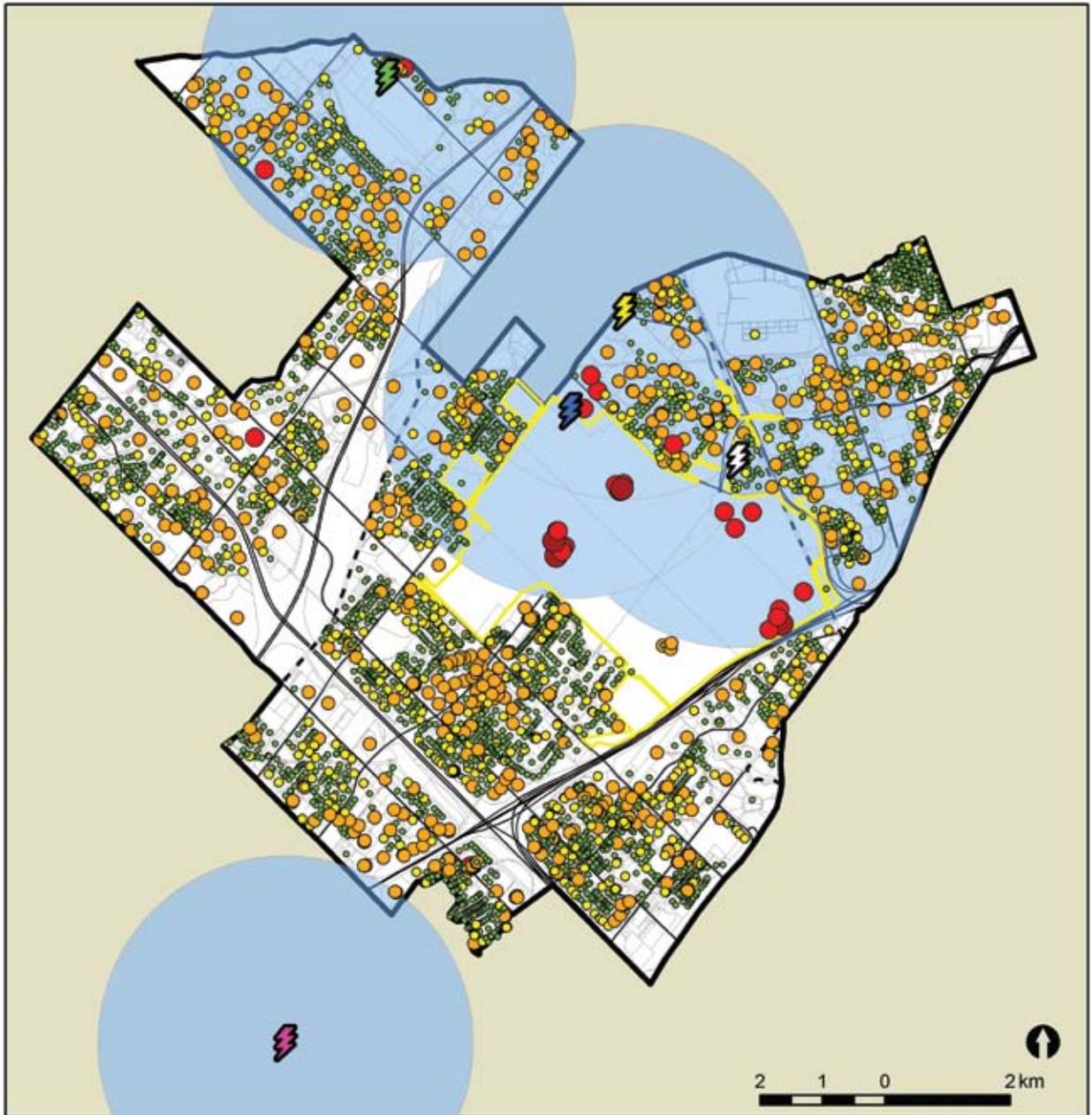
Figure 17: Electricity-generating facilities and space heating demand



**Estimated Space Cooling Energy Consumption by Address**

- |                            |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| • < 50,000 GJ              | ⚡ GTAA Cogeneration Plant, 117 MW                                             |
| ○ 50,001 - 500,000 GJ      | ⚡ Mississauga Cogeneration Plant, 108 MW                                      |
| ○ 500,0001 - 1,000,000 GJ  | ⚡ Britannia Landfill Gas Compression and Electricity Generation Plant, 5.5 MW |
| ● 1,000,001 - 5,000,000 GJ | ⚡ Goreway Station, 875 MW                                                     |
| ● > 5,000,000 GJ           | ⚡ Magellan Aerospace Corporation Cogeneration Facility, 2.5 MW                |

Figure 18: Electricity-generating facilities and space cooling demand



**Estimated Water Heating Energy Consumtopn By Address**

- |                            |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| • < 50,000 GJ              | ⚡ GTAA Cogeneration Plant, 117 MW                                             |
| • 50,001 - 100,000 GJ      | ⚡ Mississauga Cogeneration Plant, 108 MW                                      |
| • 100,001 - 1,000,000 GJ   | ⚡ Britannia Landfill Gas Compression and Electricity Generation Plant, 5.5 MW |
| • 1,000,001 - 5,000,000 GJ | ⚡ Goreway Station, 875 MW                                                     |
| • > 5,000,000              | ⚡ Magellan Aerospace Corporation Cogeneration Facility, 2.5 MW                |

**Figure 19:** Electricity-generating facilities and water heating demand

- Photovoltaics
- Cooling/heat-recovery ventilation
- Insulation and weather stripping
- Ceramic paint
- Timers, occupancy detectors and programmable thermostats
- Solar walls
- Low-flow water fixtures
- High-efficiency HVAC systems,
- Drought-tolerant landscaping
- Boilers and furnaces

Building owners stand to gain more than lessees, so it would be strategic for Partners in Project Green to

target owners. Table 12 summarizes the top 20 property owners in the study area based on building area owned. Tackling retrofits as a group will reduce costs and improve information exchange.

The foundation of a green building retrofit strategy is established through the energy audit. The audit analyzes how energy (natural gas and electricity) is currently being used by each building, and identifies/prioritizes opportunities for retrofits that ultimately reduce energy costs. For simple operations, a preliminary audit provides sufficient information to make sound, prioritized retrofit decisions based on simple payback period. In more complicated operations, detailed energy auditing might

**Table 12:** Top 20 property owners in the study area (building area)<sup>13</sup>

RANK	COMPANY	CITIES	APPROX FLOOR SPACE (m2)
1	ORION/ORLANDO	Mississauga	1,049,900
2	GREATER TORONTO AIRPORTS AUTHORITY	Mississauga	565,900
3	BCIMC REALTY CORPORATION	Mississauga	238,000
4	THE GREAT-WEST LIFE ASSURANCE CO.	Brampton/Mississauga	184,600
5	2725312 CANADA INC.	Brampton/Mississauga	177,800
6	PENSIONFUND REALTY LIMITED	Brampton/Mississauga	164,600
7	KUEHNE and NAGEL INTERNATIONAL	Brampton/Mississauga	150,000
8	INDUSTRIAL 5000 REAL ESTATE INV INC.	Brampton	148,000
9	CANADIAN TIRE	Brampton	145,500
10	HOOPP REALTY INC.	Brampton/Mississauga	112,500
11	AIRPORT 407 BUSINESS CAMPUS INC.	Brampton	112,100
12	CANTAY HOLDINGS INC.	Mississauga	110,800
13	SUN LIFE	Brampton/Mississauga	90,600
14	HUDSON'S BAY COMPANY	Brampton	85,900
15	FORD MOTOR CO. OF CANADA LTD.	Brampton	83,700
16	GE CANADA REAL ESTATE EQUITY	Brampton/Mississauga	83,700
17	O-I CANADA CORP	Brampton	82,100
18	CANADA POST CORPORATION, CPC	Mississauga	79,700
19	ROGERS COMMUNICATION INC.	Brampton/Mississauga	75,700
20	LAUREL LYNN INVESTMENTS LTD.	Mississauga	70,900
	CITY OF BRAMPTON	Brampton	63,200
	CITY OF MISSISSAUGA	Mississauga	35,700

<sup>13</sup> In the ownership information supplied by both Mississauga and Brampton owner name was provided first and management company name second. For the purposes of analysis, the true land owner was used. This resulted in large land management companies such as Bentall being excluded from the above table. The spatial analysis of parcel ownership information was limited to those business records which have a viable link by address to the GIS. It is of note that owners' names were

not standardized, requiring a manual check for business names with misspelled or slightly varying entries. Due to the size of the dataset, a manual search was done only for those companies in the top 30. In addition, the southeastern parcel of Toronto Pearson was excluded from the calculation in order to avoid extensive manual manipulation of the address data. For these reasons, the results of the analysis may have underestimated the land owned by certain property owners, and the final table is intended only as an estimate.

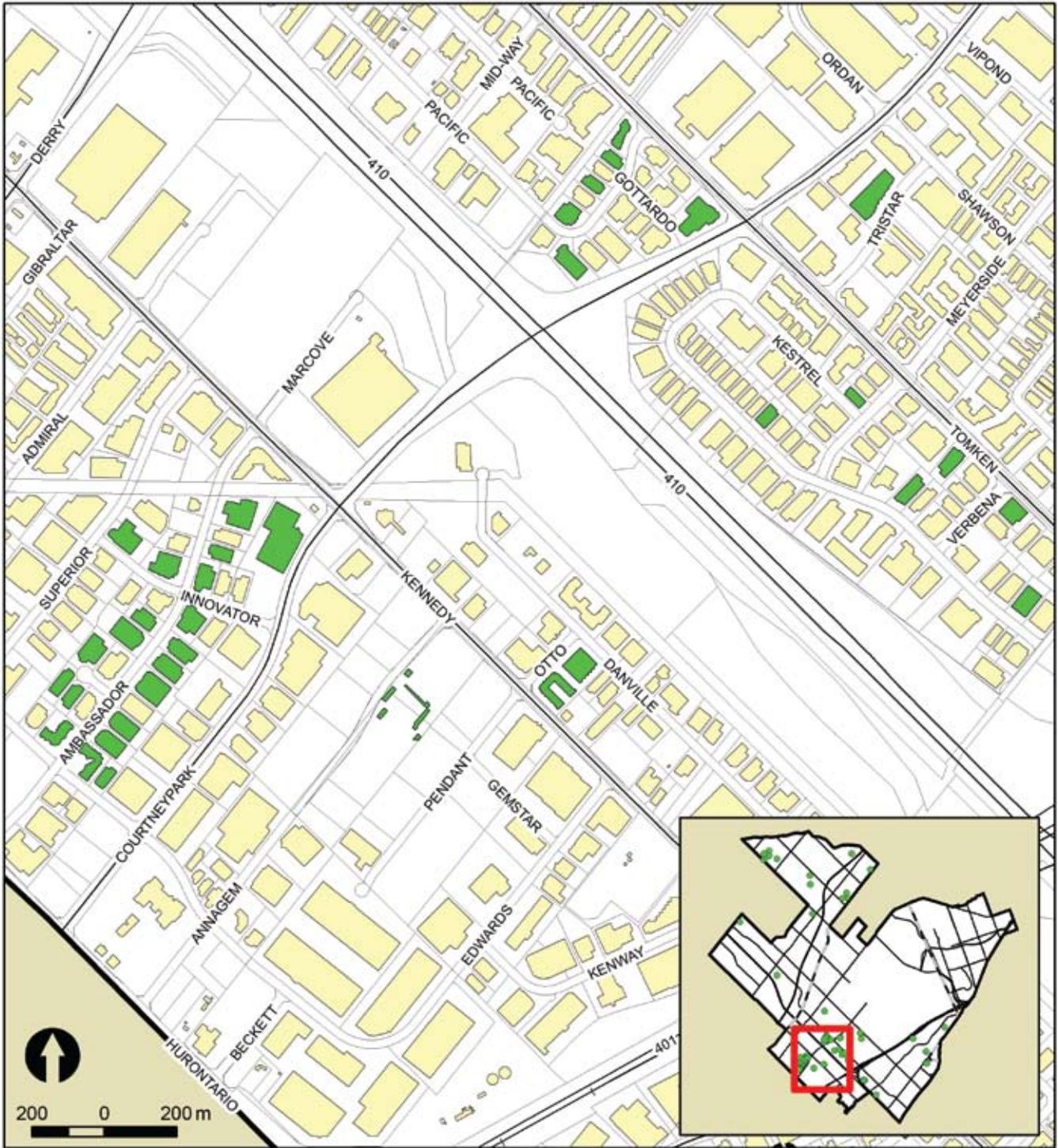


Figure 20: Properties managed by Bentall

be required to better inform the retrofit strategy with expected return on investment. Opportunities for cost savings might exist for group purchases of energy auditing services. Aggregating the recommendations of multiple buildings and multiple property owners can lead to cost savings in capital equipment purchasing and installation as demonstrated in Figure 21.

Several property management companies in the study area have expressed an interest in the Green Building Retrofit initiative. Harnessing this enthusiasm and experience by including these companies in discussions with property owners would maximize the impact of the initiative. Figure 20 provides an example of how much influence one property management company (Bentall) can have.

### General steps

- Compile a target list of multi-property owners based on owned-building area.
- From the target list establish a group of multi-property owners interested in participating in a coordinated energy audit strategy.
- Invite interested targeted owners to an implementation session.
- Work with committed owners to implement short-term cost-saving initiatives that may have already

been considered/evaluated by owners that do not require energy audits (e.g., if several owners are interested in installing solar hot-water systems).

- Negotiate the best price for purchase and installation of these items. Figure 21 shows how working together can result in savings.
- Work with committed businesses to develop terms of reference for multi-business energy audit RFP or

### Clinton Climate Initiative

The Clinton Climate Initiative (a William J. Clinton Foundation program), works with the C40 Large Cities Climate Leadership Group to realise their pledge to accelerate efforts to reduce energy consumption and GHG emissions. As part of the initiative, member cities will aggregate their buying power to reduce costs for energy-efficient products including building materials and systems, lighting, clean buses and waste-to-energy systems.

### Energy Efficiency Building Retrofit Program

The Clinton Climate Initiative announced the creation of the global Energy Efficiency Building Retrofit Program in May 2007 that partners four of the world's largest ESCOs, five of the world's largest banks and 16 of the world's largest cities to reduce energy consumption in existing buildings. The program will make funding available to member cities and their private building owners to finance energy efficiency retrofit projects. Loans secured through partnering banks for the retrofits will be repaid through the energy savings generated. Toronto is a partner city.

### Energy Service Company – ESCO

ESCOs are businesses that can help make capital-intensive energy efficiency programs a reality by assuming the project's financial risks. ESCO contracts are based on energy savings: the customer pays the project capital costs through the energy savings estimated and then verified by the ESCO. ESCOs provide the following performance-based services:

- Develop a supporting business case for the project including development, design and funding;
- Install, operate and maintain the related project equipment;
- Verify projected energy savings through ongoing energy measurement/monitoring; and,
- Assume the risk that projected energy savings will be realized.

Honeywell and Johnson Controls are two ESCO examples.

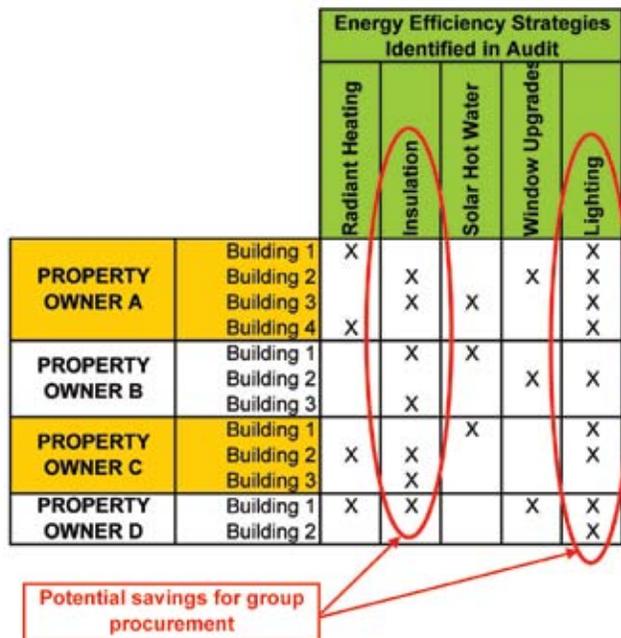


Figure 21: Illustration of potential energy savings for group procurement of green building technologies

Energy Service Company (ESCO) delivery.

- Issue a proposal call for providing volume discount-based services for:
  - Preliminary energy audits of current operations;
  - Identification of group buying opportunities.
  - Detailed audits for interested businesses to expand upon the findings/recommendations of the preliminary audit.
- Make recommendations to interested businesses for awarding contract.
- Award and execute the contract.
- Evaluate performance and promote success stories.

## Partner types

- Multi-property owners
- Energy audit providers
- Energy service company model (see sidebar)
- Canada Green Building Council
- Businesses specializing in energy-efficient building materials and technologies.

## Funding types

- Natural Resources Canada's Industrial Energy Audit Incentive (IEAI)
- Natural Resources Canada's ecoENERGY Retrofit Incentive for Industry
- Natural Resources Canada's ecoENERGY Retrofit Incentive for Buildings (commercial/institutional)
- Ontario Power Authority, BOMA Toronto CDM Program
- Ontario Power Authority, Industrial Energy Efficiency Program
- Ontario Power Authority, Electricity Retrofit Incentive Program
- Clinton Climate Initiative/Energy Efficiency Building Retrofit Program

### 3.10 Opportunity 7: Municipal eco-development policy harmonization

#### Description and rationale

Development within the study area is currently regulated by four Official Plans and three zoning bylaws. Although the Official Plans share common goals (e.g., reducing energy, water, waste, more green energy, etc.) the three zoning bylaws have fewer common elements. Zoning classifications, allowable uses, site development standards,



The Etobicoke Creek south of the Pearson Eco-Business Zone

and parking requirements all differ between the three bylaws. Other related policy tools include education programs and incentive programs.

Municipal land use policies and regulations have inadvertently been a barrier to other eco-industrial development projects, and indeed any type of green development. The potential policy challenge is magnified by the number of jurisdictions working to create the Pearson Eco-Business Zone.

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*"It would be great if we had access to information on municipalities, elsewhere that have developed policies to support industrial intensification or infill as well as green building retrofits."*

*—Municipal workshop participant*

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*"It would be great if we had access to information on municipalities, elsewhere that have developed policies to support industrial intensification or infill as well as green building retrofits."*

*—Municipal workshop participant*

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On the plus side, each municipality already has a number of supportive policies in place (refer to Appendix A for an overview of the existing policy context). However, equivalent policies often do not exist in all of the municipal jurisdictions, meaning that development in some parts of the Pearson Eco-Business Zone is regulated differently than in other parts.

Staff attending the municipal workshop noted a lack of expertise and knowledge required to foster eco-business activity and eco-development. Participants also expressed

an interest in having access to land use tools such as zoning, best management practices and design standards that support green activity. With access to this information, each municipal partner could then look to implement these best practices within their existing policy framework.

Businesses in Pearson Eco-Business Zone will be working together to share and build knowledge, and to identify and adopt common practices when it makes sense. Municipal partners could also work in the same fashion. Therefore, it is recommended that Partners in Project Green establish an eco-development policy harmonization project team.

By working together, municipalities will reduce the costs to investigate and develop policies and tools that support eco-industrial development. There may even be opportunities to co-operate on pilot projects. Ultimately, municipal partners should be able to transfer or adapt policy innovations developed for Pearson Eco-Business Zone, and learned from each other, to other industrial, and even commercial, areas within their jurisdiction.

## General steps

An overview of partner municipality policies supportive to eco-development has already been completed (see Appendix A). To add to this knowledge, the project team may wish to collect policy case studies and best practices that support eco-industrial development, especially in the industrial context.

For example, zoning amendments and design guidelines for both the Innovista Eco-industrial Park in Hinton, and the TaigaNova Eco-industrial Park in Fort McMurray are publicly available on the internet. Pearson Eco-Business Zone companies with significant ownership interests, such as the Bentall Group, might also be willing to share their voluntary practices for greening their holdings.

The project team should establish overall principles and

objectives to guide development (and re-development) in Pearson Eco-Business Zone. Working from the existing policies and best practices, municipal partners could then begin to incorporate the best eco-industrial development policies into their existing framework.

In essence, the project team would be a platform for research, sharing and developing, eco-industrial development policy guidelines that could be shared among municipal partners.

## Partner types

- Municipal and regional governments
- Local government policy advocates (e.g., International Council for Local Environmental Initiatives)
- Planning law associations (e.g., Canadian Environmental Law Association)
- Consortia of green design professionals (e.g. eco-efficiency audit expertise) such as the Canadian Green Building Council or the World Business Council for Sustainable Development (industry expertise)
- Business associations (e.g., Toronto Industry Network)
- Development industry, especially significant owners (e.g., Bentall Group or Oxford Properties)

## Funding types

Government funding agencies linked to municipal governments or government operations might be interested in funding the development of municipal policy templates. Such groups include:

- Federation of Canadian Municipalities Green Municipal Fund
- Ontario Ministry of Municipal Affairs and Housing
- Canadian Housing and Mortgage Corporation

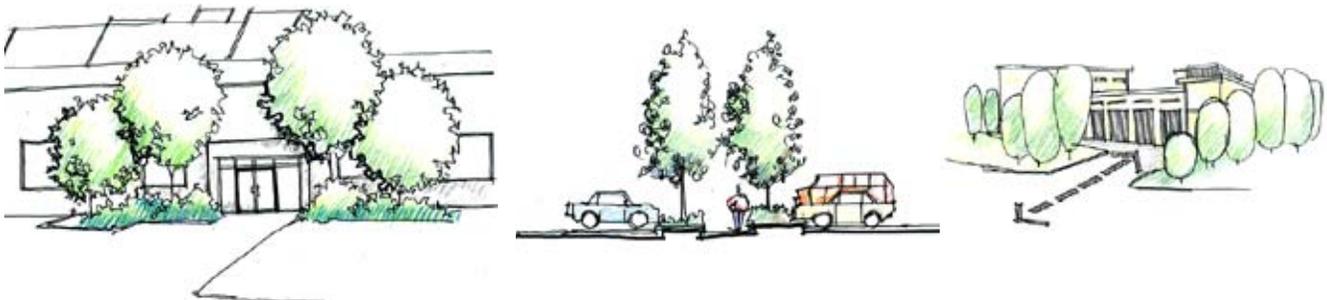


Figure 22: Images from TaigaNova Eco-industrial Park design guidelines

- National Association of Industrial and Office Properties

### 3.11 Opportunity 8: Business park sustainability benchmarking

#### Description and rationale

There are 23 business parks in the Pearson Eco-Business Zone. By comparing the sustainability performance of these business parks, Partners in Project Green could help to identify which ones are the most “eco” and which ones it might want to focus on making more eco. Municipalities and major commercial investment firms Bentall Real Estate and Oxford Properties both indicated that it would be helpful for them to be able to compare business parks. A Partners in Project Green-led business park sustainability benchmarking project could begin by measuring the sustainability performance in at least one business park/area for each of the three member municipalities within the Pearson Eco-Business Zone, plus possibly Toronto Pearson. By measuring the performance now (creating a baseline), Partners in Project Green will be able to measure progress within those business parks and use the baselines to benchmark other business parks in future.

Although a substantial amount of data has already been collected to-date, analysis was focused on the regional level. Also, some data gaps still exist that could be filled as part of the benchmarking project.

Some of the characteristics that Partners in Project Green may want to measure (indicators) are presented in Table 13 and shown graphically in Figure 23. Road density shows how well transportation has been planned for the site; the

number of green buildings shows leadership in building construction; and the number of eco-businesses reflects identified businesses pursuing environmental initiatives.

#### General steps

1. Work with municipalities and large landowners/ investors to select the business parks for benchmarking. Ideally, target business parks with the most relevance for economic development.
2. Determine which indicators are most important. Refer to the Foundation for Sustainability (Appendix A) and Industrial Canada Sustainable Industries Benchmarking Study (Appendix E) for ideas. Generally, it is recommended that business park sustainability indicators cover land use, financial performance, energy/materials/water use, transportation practices and environmental management practices.
3. Gather and “clean” data.
4. Calculate indicators.
5. Compare the business parks – which ones offer best practices that could be adapted? Which ones might most benefit from Partners in Project-Green specific eco-business efforts?
6. Revisit indicators periodically to monitor changing conditions.

#### Partner types

- Economic Development offices
- Utilities
- Major landowners/investment firms (e.g., Bentall, Orlando, ING Real Estate, Oxford Properties)
- Commercial real estate firms (e.g., Colliers, CB Richard Ellis)

**Table 13:** Sample business park benchmark indicators

BUSINESS PARK	ROAD DENSITY	GREEN BUILDINGS	ECO-BUSINESSES <sup>14</sup>
Westcreek Business Centre	22%	0	2
Brampton Industrial Park Goreway	8%	0	3
Bramalea Business Park I	14%	0	7
Gateway	21%	2	7
Airport	22%	1	9

<sup>14</sup> From Partners in Project Green’s best management practices database, plus information on participants in TRCA’s green landscaping and green parking lot programs; Smart Commute members; and the Knowledge and Attitudes Survey.

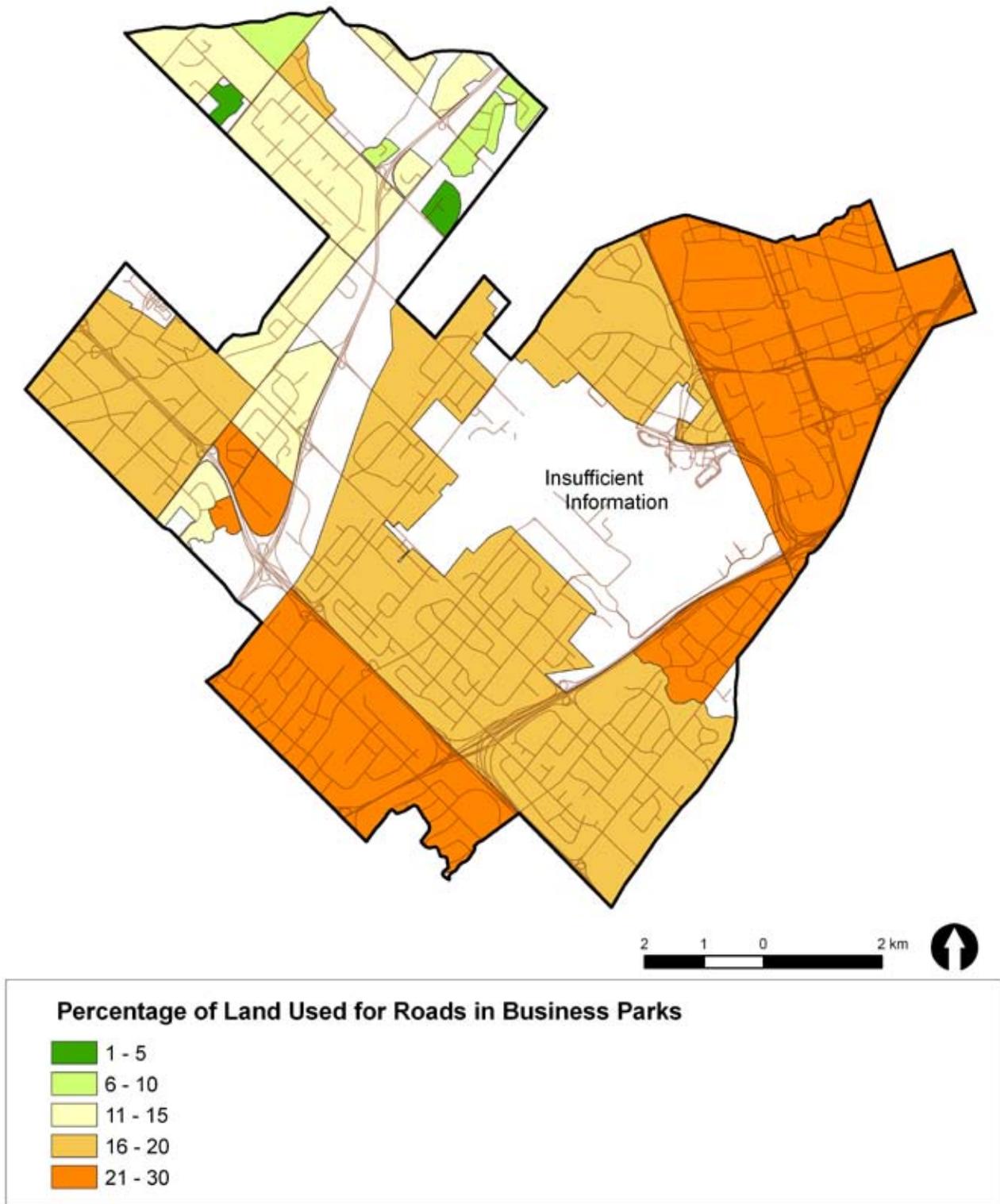


Figure 23: Road density in business parks

- National Association of Industrial and Office Properties (NAIOP), Urban Development Institute (UDI)
- Canadian Green Building Council, which may be interested in this work as part of a long-term process to create a LEED-ND-type rating for eco-industrial parks
- Universities, whose planning and/or geography students might be able to assist with data collection and analysis

## Funding types

- Major landowners/investment firms
- Commercial real estate firms, which may be interested in the resulting data
- Industry Canada
- National Research Council
- Foundations

### 3.12 Opportunity 9: Green business retention and attraction strategy

#### Description and rationale

Inherent in Partners in Project Green’s mission and activities will be the objective to support and promote green business activity in the area. In addition to delivering programs and services, Partners in Project Green would like its brand to represent a supportive and competitive business environment in which to grow or relocate a progressive/green business. This will require a formal strategy to retain and attract green businesses in the Pearson Eco-Business Zone. A formalized approach will ensure success is measurable and communicated to all of Partners in Project Green’s partners and stakeholders. There are several examples locally, nationally and internationally, of regions and zones formalizing their business retention and attraction strategy, with a focus on eco-business or clean technology sectors. Partners in Project Green should look to the other case studies as potential competition for businesses of the new, sustainability-focused economy, and to the local examples<sup>15</sup> as a starting point for potential partnerships. Early elements of a green business retention and attraction strategy include two programs that Partners in Project Green is already exploring:

<sup>15</sup> The City of Toronto has produced an economic development strategy that focuses on “catalyzing green business development in Toronto.” The City is a Partners in Project Green partner and has committed to working with Partners in Project Green to implement the action items in its portion of the Pearson Eco-Business Zone.

1. **Clean-technology sector development:** Partners in Project Green is working with OCETA to identify what types of clean-tech businesses are operating within the Pearson Eco-Business Zone to determine what they offer/produce. Partners in Project Green will work with these companies to identify their needs and opportunities for growth, as well as to determine how best to attract new clean-tech investment.
2. **Green job development program:** Partners in Project Green has identified the need to work with public and private sectors to identify and develop programs that address the employment and training needs of companies looking to expand “green-collar jobs.” Potential programs could include a green job corps that could provide training and work experience in the study area dealing with eco-efficiency, green building retrofits, stormwater and naturalization projects; or internships dealing with energy and waste management.

#### East Bay Green Corridor Partnership

*Four East Bay cities (eastern shore of San Francisco Bay) have formed a partnership that will establish the East Bay region of California as a leading centre of environmental innovation, alternative-energy research, and green business and industry. It involves supporting research partnerships with the University of Berkley, implementing green buildings, and creating a variety of incentives for green businesses to locate in the East Bay. A key focus is on regional workforce initiatives and training for “green-collar” jobs, such as biofuels manufacturing and solar-panel installation that directly improve environmental quality.*

#### South East England Sustainable Economic Development

*The South England Development Agency is focusing on eco-technology and development in the region. It is pursuing development in renewable energy, sustainable construction, and waste management. The region has an established and growing environmental sector, proximity to European markets, and a highly educated workforce graduating from local institutions. It has developed innovative science parks, enterprise hubs, and centres of excellence which bring entrepreneurs, businesses, and universities together for research and development and marketing.*

## General steps

To formalize a strategy for the Pearson Eco-Business Zone, Partners in Project Green should work closely with its municipal partners, who already have individual economic development strategies—some of which focus on green or innovation technology investment—and work together to align policies and actions that support green business retention and attraction.

Partners in Project Green’s gained expertise in planning and policy alignment (see Section 3.13) will create a strategic competitive advantage for the area. The partners will already be working together to align their green business and eco-development related policies, with the aim of creating a consistent and well-understood regulatory environment that is conducive to business innovation.



Highway interchange in the Pearson Eco-Business Zone

## Partner types

- City of Mississauga’s Economic Development Office
- Mississauga Business Enterprise Centre (MBEC)
- City of Brampton Economic Development and Communications Department
- City of Toronto Economic Development Division
- Toronto Economic Development Corporation (TEDCO)
- Business representatives, such as Woodbine Entertainment Group
- Ministry of Research and Innovation
- Ministry of Economic Development and Trade

## Funding types

The main funding for this initiative could come from a variety of sources, including municipalities, the Province of

Ontario and even the Government of Canada, all of which would have an interest in enhancing an area that is part of the largest metropolitan centre in Canada. Therefore, grants to support the development of strategies and associated collateral materials may come from agencies such as Industry Canada and Ontario Economic Development.

Industry associations with a strong presence in the area, such as Canadian Manufacturers’ and Exporters, may also be interested in financially supporting this initiative.

## 3.13 Opportunity 10: Business best practices and regulatory alignment

### Description and rationale

Feedback from business participants indicated a ‘disconnect’ between business best practices for going green, and the regulations introduced to encourage such activity. Businesses also indicated an interest in seeing regulations that provide measurable and quantifiable results, so it is clear what is expected. As a result, many regulations have either set the mark too high, so that no business can actually achieve the desired results, or too low, such that there is little or no incentive for innovation. There is a need for more flexible processes and more realistic targets that allow businesses a real opportunity to pursue the incentives.

### General steps

There is a need for an effective communication channel, as businesses often lack the resources and time to pursue the issue among the various levels of government. To address these concerns, Partners in Project Green could take on the role as liaison between the business community and the public sector. Partners in Project Green could direct one of their programs towards aligning municipal policies, programs and incentives with business needs and limitations.

#### Regulation and innovation

*Bio-fuel from waste is an example of innovation impeded by regulation. As an alternative to food crops being used for fuel, more and more businesses are exploring the production of biofuel from municipal and process wastes (and other non-food based sources.) Since it is a waste product; however, there are a number of hurdles to deploying a waste-to-biodiesel project.*

Businesses and municipalities expressed an interest in having access to a “one-window” information source. In their role as ‘honest broker’ and neutral party, Partners in Project Green could work with municipalities and businesses to provide information on innovative regulations, as well as sector-specific progressive business practices. In addition, Partners in Project Green could coordinate knowledge-sharing events, such as industry networking between OMAFRA and other relevant agencies. As the liaison between both public and private sectors, Partners in Project Green could leverage this position to help modernize regulations so they reflect current and progressive best practices and policies that help businesses ‘go green.’

Partners in Project Green could start by identifying regulatory issues and overall goals that both municipalities and business are interested in pursuing (e.g., water conservation and reuse) and the regulations that are already in place to encourage businesses in addressing these goals. Partners in Project Green could, through workshops, focus groups or other stakeholder communication, identify businesses affected by these policies and document their issues and experiences. For instance, if municipal plans and programs encourage water recycling, but provincial regulations make re-use of treated wastewater difficult and overly complex to implement.

There would be a need to develop a mechanism that made it simple for businesses to quickly alert them if and where they encountered these types of regulatory inconsistencies. This would ideally be developed in concert with a business focus group to ensure the Partners in Project Green system does not simply add to the existing regulatory maze, and discourage businesses even further.

Partners in Project Green would be responsible for finding the right government department and contact person(s), to discuss challenges from the perspective of both business and regulator. The project may also consider looking to other jurisdictions to identify possible solutions to the regulatory alignment issue. As a final step, Partners in Project Green could establish and facilitate a meeting between parties to explore solutions for businesses in the area.

## Partner types

All levels of government have an interest in making sure their policies and regulations work together to promote sustainability. It is likely that many municipal, provincial



Bayer Inc. Belfield Road facility in Toronto features a 8,000 square foot green roof.

and possibly even federal departments might be engaged at some point.

## Funding types

This type of activity would likely require operational funding. It is unlikely that a grant would be available to support it.

### 3.14 Opportunity 11: Ongoing education and outreach programs

Partners in Project Green will deliver education and outreach programs to the business community and municipal staff. As part of business planning, the partners will have to prioritize education and outreach activities for the first year. This section suggests education and outreach programs for Partners in Project Green.

1. Passive education: Provide best practice, case study, and other technical information relevant to businesses and local governments in the Pearson Eco-Business Zone.
2. Active education: Develop tools and facilitate training relevant to businesses and local governments in the Pearson Eco-Business Zone.
3. Social networking: Foster in-person knowledge exchange and help build the relationships needed for successful eco-industrial networking.

### 3.15 Opportunity 12: Greenspace expansion

#### Description and rationale

An important aspect of an eco-business zone is ensuring natural systems are incorporated into the developed lands. Given Partners in Project Green takes a retrofit approach to greening the employment lands surrounding Toronto Pearson and most of the development on these lands pre-dates the initiation of this project, this presents an interesting challenge and presents a number of opportunities.

The status of the natural heritage system in the Pearson Eco-Business Zone is degraded, with the existing system

having poor connectivity, featuring small forest patches that are heavily influenced by the surrounding urban areas. Yet the Pearson Eco-Business Zone does feature approximately 1,000 hectares of natural cover, with the potential for expansion to 1,230 hectares.<sup>16</sup>

Given this potential, through the TRCA’s Terrestrial Natural Heritage System Strategy methodology, a number of Priority Candidate Restoration Sites were identified and ranked from high to low, based on ecological gains to the terrestrial system and immediacy for action.

This potential for expansion opens a number of program and project opportunities for Partners in Project Green, including:

PASSIVE EDUCATION	ACTIVE EDUCATION	SOCIAL NETWORKING
<ul style="list-style-type: none"> <li>• Website—most tools and reference materials will be made available online.</li> <li>• Compilations of sector-specific eco-best management practices.</li> <li>• Dynamic database of industrial BMPs.</li> <li>• Compilations of municipal regulations and policy frameworks.</li> <li>• Progressive municipal policy case studies, e.g., policies that support and encourage industrial infill, intensification and energy efficiency building retrofits.</li> <li>• Pre-approved green design professionals ‘roster.’</li> <li>• Listing of green products or technologies that are already produced in the area</li> <li>• Sustainability presentation templates for adaptation and delivery to CEOs/ senior management.</li> <li>• Regulatory reference tool.</li> <li>• Green funding sources library.</li> <li>• Web-based virtual map of the area, for example, using a GIS overlay with Google search function.</li> <li>• Information on how to build flexibility into regulations.</li> <li>• Information on how to create and implement green development incentives.</li> <li>• Life-cycle analysis or business case development tools for decision-making.</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop series: Partners in Project Green will coordinate and host a series of ‘how-to’ workshops on several topics or themes. Invitations will target specific businesses and/or sectors, and will answer the question: “What’s in it for me?” Potential topics include (key audience in brackets):                         <ul style="list-style-type: none"> <li>- The Business Case for Sustainability (CEOs; owners of SMEs)</li> <li>- Greening the office (Office Managers)</li> <li>- Carbon credits for SMEs (owners)</li> <li>- Green accounting or “what is the triple bottom line” (finance depts.)</li> <li>- Eco-Development Standards/ Trends in Green Building (municipal staff)</li> <li>- EMS/CSR reporting (CEOs)</li> </ul> </li> <li>• Eco-development/green building tours</li> <li>• Green building design charrette(s)</li> <li>• Green-collar job development program (See also Section 3.12)</li> <li>• Other projects and initiatives, e.g., focus groups and meetings for feasibility studies; eco-efficiency audit site visits; testing new policies, etc. All include an educational component and should be considered part of the Partners in Project Green’s education and outreach programming.</li> </ul>	<ul style="list-style-type: none"> <li>• Eco-Business Zone tradeshow(s)— Opportunity and venue to showcase business activities; green development case studies; and eco-technology suppliers and services providers.</li> <li>• Business-to-business speed dating Program, with possible focus on by-products or energy, or water.</li> <li>• Other Social Networking forums:                         <ul style="list-style-type: none"> <li>- Softball league</li> <li>- Pub nights</li> <li>- Blogs and forums for media-based issues (water, wastewater, solids, etc.)</li> </ul> </li> </ul>

<sup>16</sup> Existing natural cover comprises riparian areas and existing natural cover. Potential expansion areas include Candidate Restoration Sites. The areas were calculated based on data contained in TRCA GIS files.

- Employment Land Planting Program – engage businesses within the Pearson Eco-Business Zone in employee team-building exercises that work to restore the identified candidate sites and other natural areas. This type of program would look to get businesses and their employees to take ownership of neighbouring natural areas and become stewards of the land.



The West Etobicoke Creek running adjacent to Toronto Pearson and Mississauga employment lands.

- Corporate Tree Planting Sponsorship – offer businesses in the Pearson Eco-Business Zone the opportunity to sponsor tree planting and restoration projects, in exchange for recognition.

## General steps

1. Identify businesses adjacent to potential restoration areas.
2. Develop business case that identifies value of natural heritage to communities.
3. Match interested businesses with restoration opportunities.
4. Provide planning and logistical support for the implementation of restoration projects.

## Partner types

- Businesses
- Community services departments

## Funding Types

Funding for this initiative could be a combination of cost

<sup>17</sup> Roughly estimated using TRCA impervious surface factors applied to the land use areas calculated from GIS data provided by TRCA.

sharing between Partners in Project Green’s municipal partners and businesses for larger restoration initiatives, while employee engagement and sponsorship initiatives could be utilized by Partners in Project Green as a revenue source to fund reforestation projects.

## Opportunity 16: Stormwater improvements

### Description and rationale

One of the biggest issues impacting the health of the aquatic system in the Pearson Eco-Business Zone is stormwater. With roughly 8,000 hectares<sup>17</sup> of impervious surfaces and a majority of the area being developed prior to stormwater management practices being required, in some places there are uncontrolled discharges that go directly into the aquatic systems, leading to degraded water quality and increased erosion.

The GTAA Living City Project (2006) laid-out a number of stormwater management strategies for the industrial areas surrounding Toronto Pearson, including opportunities for both the public and private sector:

- Development of a new wet stormwater pond west of Dixie Road and south of Derry Road.
- Retrofitting of existing stormwater outflows to allow for onsite retention.
- Retrofitting existing industrial sites to utilize onsite stormwater controls, such as green parking lots and green roofs.
- Implementing a spill response system for the containment and mitigation of chemical and oil spills to land and water.

The TRCA is currently working with its municipal partners to address these recommendations. Working to retrofit existing industrial sites to include onsite stormwater controls could be completed as part of Partners in Project Green. For example, a green parking lot initiative could help businesses to implement measures such as:

- Rerouting runoff from employee parking areas into vegetated swales;
- Installing permeable paving surfaces to reduce run-off and increase infiltration; and,
- Developing landscaping plans that introduce native species and utilize stormwater for irrigation.

The City of Toronto currently has Design Guidelines for Greening Surface Parking Lots that provides

recommendations on how parking lots can be designed to reduce their impacts on air and water quality. All four municipal partners have indicated their interest in reducing the impacts of stormwater on the local environment, and the City of Toronto's guidelines could provide a foundation for a common approach.

## Partner types

- Businesses
- Municipal planning and engineering departments
- Toronto Region Remedial Action Plan
- University of Toronto Centre for Landscape Research



Bioswales are a way to treat stormwater onsite and improve local water quality.

## Funding types

Funding for this initiative could come from various sources, including businesses, municipal partners (such as the City of Toronto's Community Program for Stormwater Management) and in-kind design work by the University of Toronto.



Permeable pavement is a way to treat stormwater onsite and improve local water quality.



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An aerial photograph of a city, likely Chicago, showing a major multi-lane highway (I-55) running vertically through the center. To the right of the highway is a large, well-maintained golf course with several green fairways and sand traps. The surrounding area is densely packed with various buildings, including residential high-rises and commercial structures. The overall scene is captured from a high angle, providing a comprehensive view of the urban landscape.

# Section 4

## **Section 4: Implementation – Business model**

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## 4. Implementation – Business model

### 4.1 Overview

A business model describes the value that an organization offers to customers and outlines the capabilities, and partners required for creating, marketing, and delivering this value. A business model constitutes “a simplified description of how a company does business without having to go into the complex details of all its strategy, processes, units, rules, hierarchies, workflows and systems”<sup>18</sup>. A business model is the precursor to the business plan, which is a far more detailed description of the operational and financial objectives of a business and contains the actual plans and budgets for how the objectives are to be realized. The Partners in Project Green business model is intended to inform future business planning stages that will take place once the project steering committee is formed.

#### 4.1.1 Business model case study review

In preparing this business model, examples of organizations and programs of a similar focus (e.g., greening industrial developments and business operations) were reviewed with attention to: operational mandates, revenue streams, programs and service delivery mechanisms, and certain signs of success. In total, 14 organizations/programs were reviewed, along with regular conversations with the TRCA and the GTAA, to inform the Partners in Project Green business model. These organizations (with service area) are listed here:

- Toronto Region Research Alliance (Toronto, CA)
- Institute for Fuel Cell Innovation (Vancouver, BC)
- Sustainable Business Network (NZ)
- Canadian Business for Social Responsibility
- The Pembina Institute (Canada)
- David Suzuki Foundation
- Pacific Northwest Pollution Prevention Resource
- Kwinana Industry Council (Perth, W. Australia) Center (Seattle, WA)
- Alberta Industrial Heartland (Fort Saskatchewan, AB)
- National Industrial Symbiosis Program (UK)
- Industrial Symbiosis (Kalundborg, Denmark)
- Regina Eco-Industrial Network Association (Saskatchewan)
- Tilbury Eco-Industrial Partnership (Delta, BC)
- Eco-Efficiency Center - Burnside Industrial Park (Halifax, NS)

#### 4.1.2 Principles for partners in Project Green business model

This business model review revealed some general guiding principles for initiatives like Partners in Project Green (see Appendix F for details of this business model case studies completed as part of this review). The TRCA should become familiar with these guiding principles, summarized in Table 14 on the following page, and they should be kept in mind when Partners in Project Green commences detailed business planning.

**Table 14:** Guiding principles for Partners in Project Green business model

ORGANIZATION HAS SIGNIFICANT BUSINESS “BUY-IN.”	The target audience sees value in what the organization offers and is willing to pay for services or support the organization in other ways.
ORGANIZATIONS HAVE CLEAR AND WELL-DEFINED TERMS OF REFERENCE.	Including scope and objectives of both the organization as a whole and of individual initiatives and services offered.
THE STEERING COMMITTEE HAS CLEAR AND WELL-DEFINED TERMS OF REFERENCE. ORGANIZATIONS HAVE A HIGH DEGREE OF TRANSPARENCY TO THEIR MEMBERS.	As do project teams appointed for specific initiatives. In particular, committees’ terms of appointment are specified. They produce very good annual reports, including financial reporting, which stem from good, upfront, stakeholder consultation. The business model is developed based on the needs expressed by the community.
PROGRAMS AND SERVICES ARE COMMUNICATED WELL, ACROSS THE ORGANIZATION’S AREA OF INFLUENCE.	Executive directors (or equivalent) of other local associations are engaged to become champions and carry the organization’s message to their respective members.

<sup>18</sup> Osterwalder, A., The Business Model Ontology. A Proposition in a Design Science Approach. PhD-Thesis. University of Lausanne, 2004.

Other considerations for the Partners in Project Green business model should include:

- The creation of mechanisms that will allow the TRCA or other partners to adapt the Partners in Project Green business model to eventually create other eco-business zones elsewhere. Current partners envision the activities of Partners in Project Green being confined to the Pearson Eco-Business Zone, but that the idea could flow to other areas in the GTA.
- Means for the Partners in Project Green to achieve quick-wins, e.g., prioritizing easier, low capital projects that will have distinct, measurable results. This low-hanging fruit is essential to building and maintaining businesses’ interest and buy-in early and throughout the organization’s existence.

## 4.2 Value

### 4.2.1 Overview

The “value proposition” gives an overview of a company’s bundle of products and services and positions this bundle as having a competitive advantage. The value of Partners in Project Green was established through consultation with businesses, municipal staff, the TRCA and GTAA. The Partners in Project Green Steering Committee will develop

the Partners in Project Green Business Plan, which will clarify the value of Partners in Project Green by detailing programs and services to be delivered in the coming years and the necessary budget to do so. Recommendations in this business model will inform business planning.

### 4.2.2 Value proposition

Partners in Project Green designs and delivers eco-business programs, services and projects through its industry and other partners, with the goal of creating a competitive, high performance and eco-friendly business zone.

Partners in Project Green offers a unique partnership-building approach to delivering programs, services and projects in a way that does not create competition for the private sector. Partners in Project Green will compile and enhance existing resources and programs for greening businesses, and make them easily accessible for businesses and partner municipalities, helping all of its partners to better serve the business community.

### 4.2.3 Program and project areas

As detailed in Section 3, Partners in Project Green programs and projects (or “Eco-opportunities”) are generally one or more of the following types:

<p><b>EDUCATION AND OUTREACH</b></p>	<ul style="list-style-type: none"> <li>• (PASSIVE) Provide a “one-window” source for information on regulations; technologies; innovations and best practices; funding sources; ‘how-to’ guides; directories of key service/goods providers; etc.</li> <li>• (ACTIVE) Engaging and educating businesses and municipalities through workshops; networking events; training forums, etc.</li> <li>• (ACTIVE) Develop tools and reference materials for use by zone businesses and municipalities.</li> </ul>
<p><b>SERVICE BROKER</b></p>	<ul style="list-style-type: none"> <li>• Act like a matchmaker, helping individual businesses find appropriate technology and service providers on a ‘one-off’ basis.</li> <li>• Facilitate collaborative projects/initiatives among multiple businesses by developing terms of reference; sourcing/negotiating with/contracting/product or service providers. Ensuring there is added value/benefits for businesses working together rather than individually.</li> </ul>
<p><b>SPECIAL PROJECTS MANAGEMENT</b></p>	<ul style="list-style-type: none"> <li>• Projects have a definitive start and end date; specific project budget (funded by ‘capital-type’ expenditures); and succinct, definable deliverables.</li> <li>• Scope projects to ensure results are measurable (e.g., establish a baseline; set targets; establish monitoring framework, etc.)</li> </ul>

**BUSINESS –  
REGULATOR LIAISON  
(ADVOCACY)**

- Enhance communication between businesses and regulators.
- Facilitate businesses’ navigation and adherence to regulations.
- Educate regulators on business best practices; eco-development trends; how to incorporate flexibility into regulations.

Through consultation with private and public sector stakeholders, Partners in Project Green has selected three eco-opportunities to illustrate how Partners in Project Green programs and projects might unfold (Section 6). These are not necessarily going to be the first eco-opportunities to be implemented, but rather, they are intended to provide a conceptual overview of potential implementation plans. The three eco-opportunities are:

1. Sector-based waste re-utilization project(s)
2. District energy feasibility study(ies)
3. Establishment of green purchasing blocks

**4.2.4 Earned reputation**

Spearheaded by the TRCA, Partners in Project Green will be regarded as a **network of businesses that together serve the business community**. It is critical that Partners in Project Green maintains the reputation of being business-led, rather than government driven, in order to maintain businesses’ trust and involvement. Business leaders from the Pearson Eco-Business Zone will sit on the Partners in Project Green Steering Committee where they will directly inform decision-making, as well as lead individual projects. Ultimately, business leaders will form the majority of the Partners in Project Green Steering Committee.

Partners in Project Green will be regarded as the **one-window source** of eco-business and eco-development information, including best management practices, regulations, local and non-local case studies, templates, green design professionals, etc. To secure and maintain this reputation, Partners in Project Green will have to ensure the information it provides and tools it develops are accurate, up-to-date, and relevant to area businesses and municipalities. Partners in Project Green will liaise with its partners to ensure all information reflects the most current industry trends and developments.

The reputation of Partners in Project Green will grow from the **exceptional reputations of its founding partners:** TRCA and GTAA.

- The TRCA is renowned for its ability to form

partnerships in the community and to deliver programs for the management of the renewable natural resources within its watersheds. The TRCA brings 50 years of watershed management leadership to Partners in Project Green and is a respected entity within the business community.

- The GTAA manages Canada’s largest airport and is cognisant of its responsibility to the community and the environment. The airport is home to some of the most progressive stormwater management, building, and other environmental technologies and best practices found at airports in Canada, and around the world. The GTAA brings this expertise and partnership building approach to Partners in Project Green.



**Sustainability and airports**

Toronto Pearson is one of the world’s leaders in implementing sustainability into airport developments and operations. Meanwhile, there are several other examples of how airports are implementing sustainability.

**Paris-Charles de Gaulle**

Developed a free driverless train transferring passengers and the 85,000 employees of the airport. It links the three terminals of the airport, the RER-TGV stations and long-term car parks. Carrying approximately 140,000 passengers/day, 24/7 will cut bus traffic by half and save 750

tonnes of fuel per year and 2,500 tonnes of carbon dioxide. It will also cut the journey time from 25 minutes to eight minutes.

### Oakland Airport

Mandated that 50 per cent of all Ground Support Equipment (GSE) be converted to alternative fuel (mostly CNG). Port of Oakland is installing a photovoltaic array that will generate approximately 1 megawatt of electricity for the airport. Also, electric vehicle recharging units are located in 50 per cent of its parking lots.



### Heathrow Airport, London

In 2001, BAA opened the Heathrow Consolidation Centre to cut the number of vehicle deliveries. Rather than each company making their own delivery to the airport, deliveries are consolidated off-airport so that multiple deliveries can be made with just one vehicle. This has successfully cut the number of retail deliveries at Heathrow from 49,000 to just 8,300 a year.

### Dallas/Fort Worth

As of 2005, they operated the largest alternative fuel fleet in America, with 100 per cent of the light and medium-duty fleet and 72 per cent of the heavy duty and off-road vehicles converted to alternative fuel vehicles (AFV), mainly compressed natural gas (CNG). 87 per cent of the light and medium fleet meet or exceed super ultra low emission vehicle standards; three per cent were hybrid and electric vehicles; and 18 rapid rechargers for electric vehicles were installed to supply airport vehicles and those purchased by airlines.

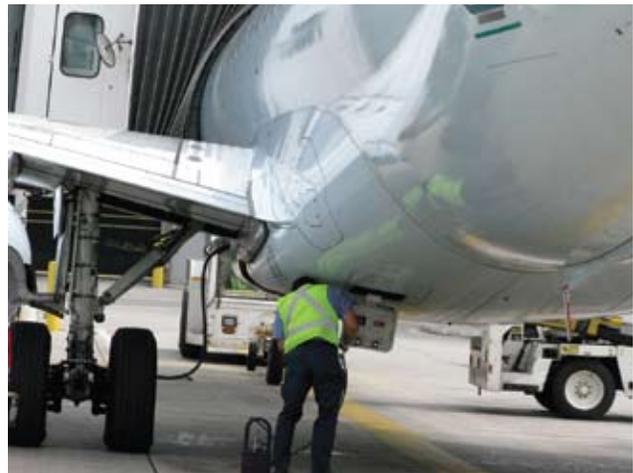
## Sustainability and the aviation industry

Airports Council International has formed a working group within its Environmental Affairs Committee dedicated to Sustainability. Their mandate is to define and promote Aviation Sustainability as a standard business practice. For example, they are looking to develop a ‘beyond-LEED-type’ standard for the aviation industry that promotes the core benefits of economic viability, operational efficiency, natural resource conservation and social responsibility. The committee is a cooperative and collaborative body of airport directors, consultants and relevant stakeholders whose foremost interest is one of developing and delivering these benefits for the Aviation Industry.

### 4.3 Customers

#### 4.3.1 Zone businesses

As described in Section 2.5, there are more than 12,500 businesses in the eco-business zone. These businesses are all potential “customers” of Partners in Project Green. Depending on the program or project, Partners in Project Green will be targeting various employees, including owners; CEOs; operations managers; floor staff; and



administration. With such a large business customer base, several market segments, or subgroups, emerge. The following table provides a general overview of possible market segments in the business community. It will be important for Partners in Project Green to adapt and/or customize its program and service delivery mechanisms to accommodate these unique groups.

## Business engagement

Partners in Project Green will involve zone businesses in the following ways:

- Businesses will be engaged to participate on the Partners in Project Green Steering Committee (Section 4.4.1) and will thereby have direct input and decision-making authority for the future directions of Partners in Project Green.
- Businesses are the focus of the majority of eco-opportunities that have thus far been prioritized (see top ten opportunities in Section 3). Partners in Project Green will engage businesses to inform and even lead some of the action plans for implementation, as part of business-led, project-specific task forces.
- The Partners in Project Green website will be designed and managed to best accommodate and reflect business needs. Businesses have overwhelmingly asked Partners in Project Green to play the “one-window information source” role and this website will provide the majority of this information.
- The Partners in Project Green will play an ongoing regulator–business liaison function, working directly with businesses to help them navigate municipal (and other) regulatory frameworks.

Partners in Project Green will also reach zone businesses by delivering ongoing education and outreach programs (e.g., workshops, tours, educational materials, etc.) and through traditional public relations tools and strategies. For more detail on how Partners in Project Green will communicate to businesses, see the implementation section on marketing and communications.

### 4.3.2 Municipal staff

Partners in Project Green will be working with staff responsible for contributing to, and maintaining, a community’s quality of life and liveability, with a primary focus on staff that are responsible for addressing the

industrial land uses in their jurisdictions. In particular, Partners in Project Green will target staff responsible for planning, design and development approvals, and long-range planning and growth management.

Partners in Project Green is also targeting economic development staff, who are responsible for attracting and retaining business activity in their communities. Partners in Project Green is a brand that will ultimately be used to attract progressive businesses to the eco-business zone and it will be important to ensure that economic development staff have input into, and benefit from, Partners in Project Green’s value and brand.

While the aforementioned departments have been prioritized for municipal liaison, Partners in Project Green will seek to develop partnerships with municipal staff in all departments. The following table outlines which municipal departments have the expertise and knowledge required to support certain Partners in Project Green programs and services.

### Municipal Engagement

Partners in Project Green will involve the partner municipalities, through implementation of its programs and services, in the following ways:

- Partners in Project Green will play an ongoing regulator–business liaison role, working directly with municipalities to increase their knowledge and understanding of innovations in industrial development; business best practices; progressive policy frameworks, etc. In addition, Partners in Project Green will act as a liaison between municipal and provincial staff regarding broader regulations.
- Specific eco-opportunities have been identified that speak directly to municipal staff, namely: municipal eco-industrial development policy harmonization; business park sustainability benchmarking; green business retention and attraction strategy. Municipalities will have direct involvement in Partners in Project Green moving

GENERAL SECTORS	PROPERTY OWNERSHIP	EMPLOYMENT	BUILDING TYPE/SIZE
Food Processors	Owner operated	Small (1–10)	Strip mall
Transport and Logistics	Lessee/multi-tenant	Medium (10–100)	Individual industrial
Auto supply chain	Land owner	Large (>100)	Shared industrial
Airport/related			Office

forward with these opportunities.

- The Partners in Project Green website will have sections that are dedicated to the municipal audience, who also suggested that Partners in Project Green be a “one-window” information source for items including: green building incentives; municipal best practices; tools for preparing a triple-bottom-line business case, etc.

Partners in Project Green will also reach municipal staff by delivering ongoing education and outreach programs (e.g., workshops, tours, educational materials, etc.) and through traditional public relations, tools and strategies. For more details on how Partners in Project Green will communicate to municipalities, see the implementation section on marketing and communications.

## 4.4 Governance and administrative infrastructure

### 4.4.1 Partners in Project Green Steering Committee

On July 28, 2008, the TRCA Board authorized the creation of the Partners in Project Green: A Pearson Eco-Business Zone Steering Committee (Steering Committee). The Terms of Reference (TOR) for the Steering Committee are summarized in this section with the approved version found in Appendix G. The Steering Committee’s mandate, role and reporting structure will be reviewed after two years.

The Steering Committee is mandated to:

- Assist businesses in the Pearson Eco-Business Zone to improve their financial and environmental performance; and,
- Retain and attract green investment in the Pearson Eco-Business Zone.

The Steering Committee has a responsibility to:

- Oversee the development, implementation and management of the Partners in Project Green Business Plan.
- Facilitate, initiate and direct resources to project teams to implement projects and programs identified through stakeholder consultation. This may include requesting that TRCA staff develop and implement projects and programs.
- Champion green economic development and infrastructure investments in the Pearson Eco-Business Zone.
- Provide a regional business perspective in the areas of federal, provincial and municipal policy and program development as it pertains to green economic development.
- Publish an annual report, undertake regular stakeholder consultation, and commit to an ongoing process to review, evaluate and improve Partners in Project Green programs and projects.
- Provide status reports twice yearly to the TRCA Board, and as requested to municipal councils and

PARTNERS IN PROJECT GREEN PROGRAM/ PROJECT EXAMPLES	KEY MUNICIPAL DEPT.
Partnering on pilot projects and/or feasibility studies.	Planning Public Works/Engineering
Municipal eco-development policy templates.	Planning Public Works/Engineering Economic Development
Modifying standards to support green infrastructure /green industrial subdivision designs.	Planning Public Works/Engineering
Encouraging innovative and progressive/green business practices (operations.)	Planning Public Works/Engineering Economic Development
Profiling eco-business sectors and projects.	Economic Development

the GTAA Board.

The Steering Committee will meet at least four times per year.

The majority of the Steering Committee will be comprised of businesses from within the Pearson Eco-Business Zone, with a total of 27 voting members, with 75 per cent representing business community and the remainder representing government. The terms of reference lists the composition as:

- **Business Community** – a minimum of 17 members drawn from the Pearson Eco-Business Zone and representative of the business community. These representatives will have a keen interest in the development, promotion and greening of the Pearson Eco-Business Zone. One of these members will include the GTAA.
- **Business Organizations** – up to three members will be business organizations with members within the Pearson Eco-Business Zone.
- **Municipalities** – a council member from each of the Region of Peel, City of Toronto, City of Brampton and City of Mississauga will be represented.
- **Federal and Provincial Governments** – one staff will be appointed from both the federal and provincial governments.
- **TRCA** – the Chair of the Authority or other designated Authority member or staff (CAO).

Steering Committee members will be appointed for two-year terms and can serve up to a maximum of two terms. Initially, business representatives will be appointed based on their expressed interest and ability to commit the required time and/or expertise. The remaining groups will be asked to appoint representatives. Where there are more potential appointees than positions, the GTAA, Region of Peel and TRCA staff will review the appointees' qualifications and make a recommendation to the TRCA Board.

Once the Steering Committee has been formed, its members will appoint a Chair and Vice-Chair.

## Steering Committee Roles and Responsibilities

Committee members will be expected to act as advocates at various events (e.g. visibility at key events and speaking engagements) and participate in or provide members for project teams.

**TRCA:** The TRCA will assign staff to liaise with the Steering Committee and manage delivery of programs and services. They will be responsible for signing all contracts, Memorandum of understanding, and other legal documents, as endorsed by the Steering Committee.

**Businesses:** The Steering Committee's business members should represent a good cross-section of Pearson Eco-Business Zone businesses, and vary in sector, size and location. Business members may also come from an industry association with significant membership in the area. It would be ideal to also always have a business that represents GTAA businesses, preferably a business located within GTAA lands, but this could also be a business that is directly airport-related, e.g., airline catering. At least one of the business members should represent land owners. Business members are responsible for bringing not just their perspective, but the perspective of businesses in the Pearson Eco-Business Zone within their sector, geographic area or scale.

**Government:** The Council members will be responsible for bringing the perspective of each of their municipalities to

### Steering Committee Model: South East England Economic Development Agency (SEEDA)

*The South East England Economic Development Agency Sustainable Business Steering Group initially appointed four action teams to deliver strategic projects. The teams meet as and when required and are responsible for:*

- *Producing an action plan for their project.*
- *Working with SEEDA to implement the action plan.*
- *Monitoring progress against the action plan.*
- *Reporting on progress to the Steering Group.*

*The first four action teams were assigned: 1) Co-ordination and Capacity – mechanisms for co-ordinating the region's sustainable business activity more effectively; 2) e-generation and Menu of Opportunities – developing an online regional portal for information about all aspects of sustainable business; 3) Marketing and public relations – raising awareness and understanding of the benefits of being a sustainable business; and, 4) Performance Indicators and Monitoring – establishing effective processes for monitoring progress against strategy targets. In addition, the Steering Group will form additional time-limited action groups to implement specific regional collaboration opportunities or the implementation of new environmental support programs.*

Partners in Project Green, and to ensure that information about Partners in Project Green is delivered to the appropriate municipal department. In addition, each municipality will be asked to designate a staff person from its economic development department to liaise with the Steering Committee, assisting their council member and TRCA staff. It is hoped that the provincial and federal representatives will make their best efforts to not just liaise with their own departments, but will also help to connect Partners in Project Green to other departments as necessary.

### Project teams

As illustrated in Figure 24, the Steering Committee will establish ‘action-oriented’ project teams, comprising of some Steering Committee members, as well as other volunteers from businesses, government, and NGOs. This provides an additional route for businesses, as well as local municipal staff to be involved, yet focused on a specific interest. Each project team will have its own specific work plan. The Steering Committee will allocate resources to project teams to deliver their work plans.

### Project Team Model: Leduc-Nisku Economic Development Authority (EDA)

The Leduc-Nisku Economic Development Authority is an award-winning partnership between the City of Leduc and Leduc County, marketing products, services and technologies of eight partnering municipalities and 2,600 companies in Alberta’s International Region. The EDA’s mandate is to “encourage the sustainable development of economic wealth within Alberta’s International Region and Alberta’s Capital Region”. This includes providing a ‘one-stop’ shop for business interests; advocating for infrastructure improvements; and promoting smart growth and environmentally sensitive development. The Leduc-Nisku model is world-famous for its business involvement and leadership.

businesses and other stakeholders participate to implement projects and initiatives. For example:

- The Business Attraction Team is developing an online, GIS-based regional land inventory to showcase current industrial, commercial and residential land available in the region.
- The Transportation Team’s goal is to address the issue of public transportation in order to attract employees to the region. The team has already delivered a transportation needs survey to regional businesses and, incorporating its results, are preparing a business plan and applying for grant funding.

The EDA comprises several volunteer teams on which

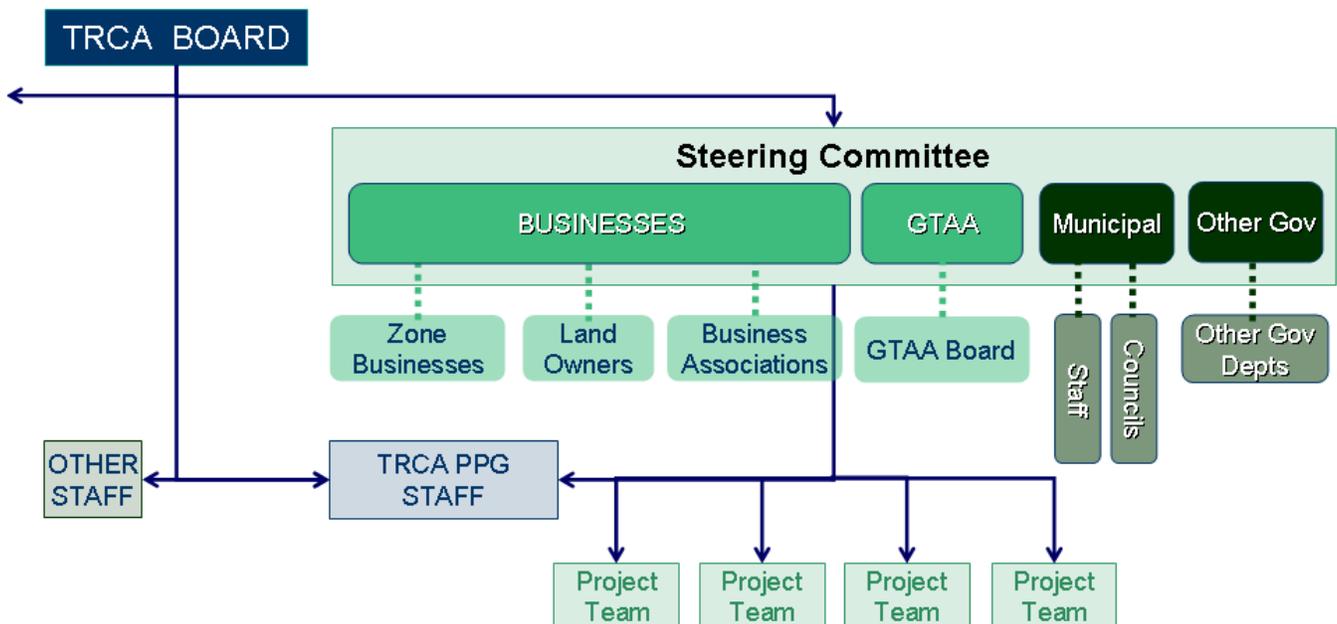


Figure 24: Composition of the Partners in Project Green Steering Committee and relation to TRCA

## 4.5 Financial considerations and funding models

Partners in Project Green must be financially sustainable, although that does not necessarily mean financially independent. In the short term, Partners in Project Green will be funded by its municipal partners and the GTAA, with additional funding being procured from both private and public sources for individual programs and projects.

Over time, funding for Partners in Project Green will come increasingly from businesses, as donations or fee-for-service/product, from various provincial and federal agencies and from revenue-generating programs, such as carbon trading, royalties and fees-for-service. This change in funding composition is represented in Figure 25.

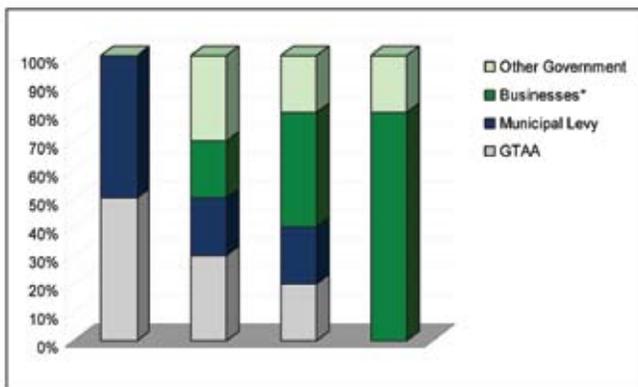


Figure 25: Partners in Project Green funding over time

One of the first responsibilities of the Partners in Project Green Steering Committee will be to develop a business plan for Partners in Project Green and consider all opportunities to promote the long-term financial sustainability of the initiative.

The TRCA will allocate funds to deliver Partners in Project Green programs and services. The Partners in Project Green budget will be prepared by the Steering Committee, and will be presented to the TRCA Board for approval, as will the Partners in Project Green annual reports.

It should be noted that the Steering Committee structure creates a liability chain for the TRCA Board. Therefore, alternative structures, such as private-sector-led joint ventures or limited partnerships, might be required to allow Partners in Project Green to champion capital-intensive or higher-risk projects. The business plan should

address liability management, including under which circumstances a new arrangement, or altered partner role or structure may be required.

### 4.5.1 Possible revenue sources

Partners in Project Green will receive revenues meant to support either its general operation or the delivery of a specific program or service. How Partners in Project Green allocates revenues will depend on the project and the contributor. Potential revenue sources are described below:

#### Municipal levies

This is one of the current revenue streams for TRCA. The TRCA may, with permission from its partners, direct municipal levies to Partners in Project Green or specifically to a Partners in Project Green initiative.

*The South East England Development Agency (SEEDA) and its partners have come together to create a vision for sustainable businesses in the region. Led by the South East Sustainable Business Steering Group which reports to the SEEDA Board, this initiative comprises a model that is very similar to that which Partners in Project Green could develop. The SEEDA is contributing to funding the implementation of this strategy. Other resources will include partners who will continue to be encouraged to provide additional funding and in-kind support; collaborative regional funding bids, e.g., to European Union programs; and sponsorship from large companies either through cash, in-kind donations or secondments.*

#### GTAA Contribution

The GTAA has already made a long-term funding commitment to Partners in Project Green.

#### Member fees

Generally, membership fees are associated with direct organizational benefits, such as access to privileged information or discounts on event registration fees. Because Partners in Project Green will be involving businesses and governments that may vary vastly in size and may have very different reasons for wanting to support it, it may be difficult to fairly determine member fees. Similar initiatives, such as those led by Devens Eco-Enterprise Center in Massachusetts and the Burnside Eco-Efficiency Centre, have not relied on membership fees for significant revenue.

The current business model assumes that if the Steering Committee decides to charge membership fees, they do not comprise a significant revenue stream.

## Government contributions

Many of the objectives of Partners in Project Green are very similar to those of provincial or federal government agencies. For example, the Ontario Ministry of Food, Agriculture and Rural Affairs (OMAFRA) and Partners in Project Green would like to help local food processing businesses reduce their operating costs and environmental impact. Depending on their mandate, government agencies may wish to contribute financially to Partners in Project Green in general, or to a specific initiative, to help advance their objectives.

## Corporate sponsorship

Sponsorships, unlike donations which have little to no expected return, provide tangible benefits for the sponsor. A corporation may sponsor programs or an organization not directly linked to its normal operations by providing financial support. In return, the corporation gains marketing and communications benefits, and may also gain knowledge relevant to its operations. Corporations that sponsor Partners in Project Green might gain:

- Credit towards corporate social responsibility or equivalent corporate objectives (typically larger firms);
- A significant marketing advantage;
- A stake and/or a say in the decision making/prioritization of projects; and,
- Other tangible benefits from Partners in Project Green.

The ability of Partners in Project Green to attract funding and/or sponsorships will depend on it delivering measurable results and offering transparent reporting.

## Grants

Government agencies and private, non-profit foundations may provide non-repayable financial support, or grants. Grants are usually awarded based on well-defined criteria, and often have set application procedures. There are an increasing number of grants available to organizations that are working towards sustainability. In many cases, an initiative with many collaborating participants are more

attractive to granting agencies, since the grants might help to achieve benefits on a wider scale. For example, this approach helped the East Bay Green Corridor (Bay Area, CA) secure hosting a new Department of Energy biofuel research center.

## Fee-for-services

Partners in Project Green may provide value to businesses through fee-for-services to generate revenue to support activities in service arrangements. For example, if 20 businesses wish to commission a feasibility study regarding the same technology, Partners in Project Green may be able to charge these businesses a fee in return for developing and administering a single research/consulting contract for the feasibility study.

## Royalties

One advantage of Partners in Project Green is that it will work directly with businesses in the Pearson Eco-Business Zone. This relationship may provide it the opportunity to derive royalties on specific projects, such as the development of district energy or by-product reutilization projects. For example, if a private sector organization funded the capital of a district energy project, Partners in Project Green could receive a royalty for signing up businesses to the system.

## Sale of Aggregated Carbon Credits

There are many small and medium-sized businesses within the Pearson Eco-Business Zone. These businesses are unlikely to have the time, and in many cases, the technical resources to verify and find buyers for any carbon credits they create by reducing energy consumption or switching to renewable energy. Therefore, there could be an opportunity for Partners in Project Green to aggregate and sell these carbon credits on behalf of these businesses. Depending on the source and scale of the credits, revenues might be wholly or partially retained by Partners in Project Green to continue to support greenhouse gas-reducing initiatives.

When preparing its business plan, the Steering Committee should explore whether Partners in Project Green can build the capacity to directly aggregate and broker carbon credits, or should partner with an existing third-party, collecting a ‘finder’s fee’ for bringing carbon-reducing projects to the attention of the third party. Some large companies within the Pearson Eco-Business Zone might even be carbon credit buyers. Partners in Project Green would offer great value if



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it could match carbon credit buyers and sellers right within the Pearson Eco-Business Zone.

## 4.6 Next steps

Through the TRCA, Partners in Project Green will continue to engage businesses, and to adaptively manage the overall business model and specific project plans to suit their needs. The TRCA has already held multiple business workshops and one-on-one interviews, and so has already identified some business leaders keen to participate in future Partners in Project Green initiatives.

1. Write up agreements/MOUs with relevant stakeholders agreeing to participate (e.g. letters of intent).
2. Form the Steering Committee.
3. Business planning: Identify priority projects/ programs and budget accordingly. Submit to TRCA Board for approval.
4. Form business implementation task forces.
5. Form partnerships with other relevant stakeholders.
6. Start with implementation of the “low-hanging fruit” or those opportunities that are low-cost and high interest, and will therefore achieve quick, measurable wins for Partners in Project Green.
7. Begin scoping the longer term, more capital intensive, special projects.

An aerial photograph of a city, likely Chicago, showing a multi-lane highway (I-55) running vertically through the center. To the left of the highway is a large stadium (Soldier Field). To the right is a golf course (Wentworth North Golf Club). The city is densely packed with buildings and parking lots. The image is overlaid with a dark green gradient.

# Section 5

## **Section 5: Implementation – Marketing and communications**

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## 5. Implementation – Marketing and communications

### 5.1 Overview/scope

The marketing and communications plan falls directly out of the business model. If the business model is the engine of the Partners in Project Green strategy, then the marketing and communications plan is the road map to get it there. A good communications plan will identify the tools, the time frames and the people that Partners in Project Green will have to reach in order to achieve their organizational objectives.

This section outlines the overall communications objectives for the first year of Partners in Project Green, including the communications tools and suggested collateral materials that may be required to achieve those objectives. In addition, this section provides direction on key messages that should be communicated to partners and other stakeholders, in order to deliver a consistent message about Partners in Project Green and what it is trying to achieve.

The GTAA and the TRCA have already begun work on Partners in Project Green branding, so this aspect of marketing and communications is not addressed here, except to provide direction on the wording of promotional materials that relate to green business and eco-development—topics that are still relatively new and not well understood in the general public. Once the Steering Committee develops a full business plan, it should extract and refine this plan to create a stand-alone, more robust document.

#### 5.1.1 Key strategies

The key strategy for marketing and communicating Partners in Project Green will be **to create a network of sustainability leaders** and help them to spread the Partners in Project Green eco-business message. Partners in Project Green will develop marketing and communication tools and collateral materials; however, the more that this message is delivered by Pearson Eco-Business Zone members, the better. Partners in Project Green will augment this strategy through traditional public relations, as well as education and outreach, **to build trust and knowledge** of who Partners in Project Green is and what Partners in Project Green can do.

The results of the knowledge and attitudes survey<sup>19</sup> showed that many businesses in the study area are affiliated with another business association, e.g., Boards of Trade or sector-specific industry associations (see Figure 26, on the following page). Partnerships with these and similar types of organizations should be leveraged for communicating Partners in Project Green programs and benefits. Since Partners in Project Green is a brand-new entity, it will take time to develop the trust of the business community. By working through organizations that are already respected and teaching them how to deliver a common message around sustainability, Partners in Project Green will be able to reach a much larger audience faster than if they were working alone.

Ultimately, Partners in Project Green: An Eco-Business Zone will become a brand for coordinated green business activity that is desirable by businesses in the community; distinctive from other eco-business programs that already exist; and trusted and recognizable over the long term.

#### 5.1.2 Communication objectives

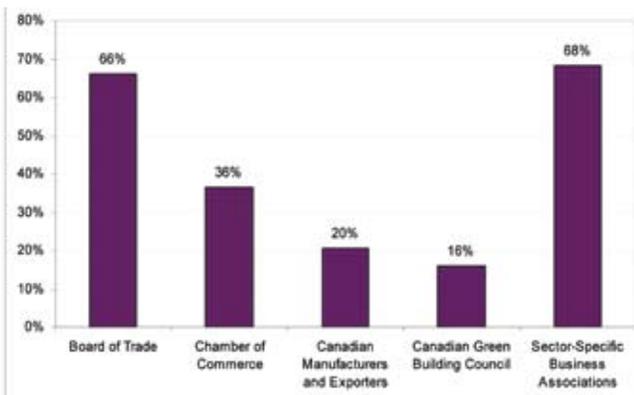
In the early stages, it is important for Partners in Project Green to set communications objectives to guide marketing and communications. Suggested qualitative communications objectives for the first year of Partners in Project Green operations are listed below. These can be revisited/refined as Partners in Project Green programs and projects unfold. (Quantitative targets for Partners in Project Green communications can be found in section 5.6.)

1. Create enhanced awareness of Partners in Project Green in the eco-business zone.
2. Create enhanced awareness of the importance of sustainable business activity from an economic, social and environmental standpoint.
3. Establish strong relations with all levels of government so as to allow for projects to be implemented quickly and efficiently.

The first two objectives could be evaluated by re-issuing the knowledge and attitudes survey annually and analyzing the data to see if there is an increase in familiarity with green business/eco-development terms and strategies and in familiarity with Partners in Project Green.

<sup>19</sup> While the survey response rate was low (180 responses out of more than 5,000 businesses), these results can be extrapolated to provide a rough perspective of knowledge and attitudes in the study area. Partners in

Project Green will have to re-issue the survey annually to get a more accurate picture of Partners in Project Green program effectiveness and eco-business awareness in the Pearson Eco-Business Zone.



**Figure 26:** Business membership in industry associations

The third objective, while difficult to measure, will be reflected in the number of governmental partners on board for different projects, as well as participating on the Steering Committee and/or individual project task forces.

## 5.2 Market overview

The Partners in Project Green communications “market” is the same subset of businesses and stakeholders as outlined in the business model section on “customers.” The two primary market segments are businesses whose facilities are located in the area and the partner municipal staff.

### 5.2.1 Pearson Eco-Business Zone businesses

With such a large business customer base, several market segments, or subgroups, emerge. As with its programs and services, it will also be important for Partners in Project Green to adapt and/or customize its marketing and communications mechanisms to accommodate these unique groups.

Further, there are several business “types” or sectors that exist in the study area, including: manufacturers; wholesalers; services providers; office/professionals; distributors; waste management; utilities, etc. Some Partners in Project Green projects will target a specific sector or will be broader in scope. In any case, communications about these initiatives will have to speak to a diverse audience.

### 5.2.2 Municipal staff

As described in the business model, Partners in Project Green will be targeting municipal staff responsible for planning, design and development approvals, long-range planning and growth management, and economic development. The following table lists the specific municipal departments that will be a focus for Partners in Project Green marketing and communications.

### 5.2.3 Market demand

**Strength in numbers:** In the knowledge and attitudes survey, many businesses reported that they chose not to pursue eco-initiatives because they did not have enough resources (time and money). This trend is supported by a number of other eco-industrial studies and business surveys<sup>20</sup>. This speaks to the need for a coordinating body, like Partners in Project Green, to broker the implementation of eco-initiatives among groups of businesses. This approach will:

- Reduce the need for businesses to do much of the legwork (e.g., feasibility studies; research; negotiations with suppliers etc.)
- Increase the potential for volume discounts from suppliers or service providers (e.g., multiple businesses that want to buy solar water heaters.)
- Increase the attractiveness of green building or eco-efficiency projects to outside funders. The projects of a group of businesses working together to achieve even greater (GHG emissions; wastewater; etc.) reductions in resource consumption is far more attractive than an individual facility doing it alone.

**Regulatory alignment:** During workshops and focus groups, several businesses raised the issue of difficulty navigating regulatory requirements and standards, as well as aligning regulations with business best practices. In some cases, the “bar was raised too high,” making it impossible for businesses to achieve innovation; while in other cases

GENERAL ‘THEMES’	PROPERTY OWNERSHIP	EMPLOYMENT	BUILDING TYPE/SIZE
Food processors Transport and logistics Auto supply chain Airport-related	Owner-operated Lessee/multi-tenant Land owner	Small (1–10) Medium (10–100) Large (>100)	‘Strip mall’ Individual industrial Shared industrial Office

<sup>20</sup> LeBreton (2003)

the “bar was far too low,” providing little to no incentive for innovation.

**Understanding municipal and industry best practices:** Municipalities expressed a need for information to better enable them to align development and other policies with current industry best practices. Partners in Project Green can compile examples of innovative municipal policy

frameworks that support eco-industrial development. Partners in Project Green can also provide information on sector-specific industry best practices that will enable municipalities to write policy that reflects these advancements in technology and building design etc., as well as incorporate flexibility into the regulation(s).

**Table 15:** Municipal departments for Partners in Project Green marketing and communications focus

<b>MUNICIPAL PARTNER</b>	<b>DEPARTMENTS</b>
<b>Region of Peel</b>	<p><b>Environment, Transportation and Planning Services</b></p> <ul style="list-style-type: none"> <li>• Water; Waste Water; Transportation; Transportation Planning; Waste Management; Planning Policy and Research; Development Planning</li> </ul>
<b>City of Mississauga</b>	<p><b>Planning and Building</b></p> <ul style="list-style-type: none"> <li>• Administration and Technology ; Mechanical Engineering and Inspections; Customer Services and Zoning; Building Engineering and Inspections; Policy Planning; Development and Design</li> </ul> <p><b>Transportation and Works</b></p> <ul style="list-style-type: none"> <li>• Transit; Business Licensing; Transportation and Infrastructure Planning; Engineering and Works</li> </ul> <p><b>City Manager’s Office</b></p> <ul style="list-style-type: none"> <li>• Economic Development Office; Mississauga Business Enterprise Centre</li> </ul>
<b>City of Brampton</b>	<p><b>Planning, Design, and Development</b></p> <ul style="list-style-type: none"> <li>• Community Design, Parks, Planning and Development; Planning and Land Development Services; Engineering and Development Services; Building; Business Services; Heritage.</li> </ul> <p><b>Works and Transportation</b></p> <ul style="list-style-type: none"> <li>• Engineering and Construction; Maintenance and Operations; Fleet Services; Transit</li> </ul> <p><b>Economic Development and Communications</b></p> <ul style="list-style-type: none"> <li>• Economic Development; Small Business Support</li> </ul>
<b>City of Toronto</b>	<p><b>City Planning</b></p> <ul style="list-style-type: none"> <li>• Community Planning; Policy and Research; Urban Design; Transportation Planning; Zoning Bylaw and Environmental Planning</li> </ul> <p><b>Toronto Water</b></p> <ul style="list-style-type: none"> <li>• Water Treatment and Supply, Wastewater Treatment, Water Infrastructure Management</li> </ul> <p><b>Economic Development, Culture and Tourism</b></p> <ul style="list-style-type: none"> <li>• Business Development and Retention; Business Improvement Areas; Employment Area Revitalization; Key sector partnerships; Special projects</li> </ul> <p><b>Toronto Environment Office</b></p> <ul style="list-style-type: none"> <li>• Climate change, clean air and sustainable energy programs and initiatives</li> </ul> <p><b>Transportation Services</b></p> <ul style="list-style-type: none"> <li>• Road right-of-way standards</li> </ul> <p><b>Municipal Licensing and Standards</b></p> <ul style="list-style-type: none"> <li>• Business licensing – business data</li> </ul>

## 5.3 Key messages

Key messages are critical to ensuring that the value of Partners in Project Green is communicated consistently and effectively. The following principles should be applied when Partners in Project Green is developing key messages.

### 5.3.1 Principles for developing key messages

**Translate competitive advantages:** In developing key messages, Partners in Project Green should ask itself, “How does Partners in Project Green’s competitive advantage translate into a unique, relevant and appealing benefit to its customers?” In other words, from the customer’s perspective, the key messages should answer the question:

*“What’s in it for me?”*

**One of the unique competitive advantages of Partners in Project Green is the ability to bring together multiple partners to get eco-development or eco-industrial networking projects moving forward expediently and efficiently. For business customers, this might translate into an opportunity to “get my green ideas implemented more cost effectively than if I had done it on my own.”**

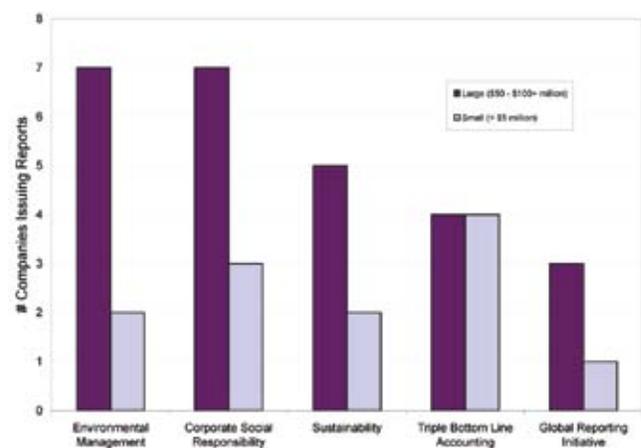
**Audience-specific language:** In general, Partners in Project Green should use the language of business owners. The tone, manner/personality of communications should appeal to the business person by explicitly explaining how programs or initiatives will save or make money for businesses. Communications should be to the point, emphasize economic benefits, and use non-academic phrasing and vocabulary.

**Key messages for municipal staff and other government stakeholders require a similar, but distinct, focus. For example, saving money could be an important benefit to municipalities, but more from the perspective of reduced infrastructure capital and operating costs. Municipal audiences are also likely to be more receptive to benefits as they affect municipal goals and objectives that have been formalized in community-wide strategies and plans.**

**Reflect audience diversity:** The diverse Partners in Project Green audience, as outlined in the market overview, could impact how key messages are developed and delivered. For example, familiarity with green business and eco-development terms can be directly correlated with

business size. For example, most small businesses are not issuing corporate sustainability reports, while many larger corporations are. Therefore, larger corporations tend to be familiar with expressions like “triple bottom line” and “corporate social responsibility.” More discussion around terms to use/avoid is found in Section 5.3.4. For example, as shown in Figure 27, larger companies are far more likely to issue Corporate Social Responsibility reports. Diversity is also seen in businesses’ motivations for implementing green initiatives, and Partners in Project Green should understand and adapt its communications to reflect this. The knowledge and attitudes survey asked, “What are your company’s main motivations for participating in ‘green’ or ‘eco’ initiatives?” Figure 28 shows the results.

Businesses appear to be motivated by multiple factors. On the one hand, this offers Partners in Project Green more angles from which to secure support. On the other hand,



**Figure 27:** Corporate environmental reporting, by company size (classified by annual gross revenues)

it makes communications more challenging, as there is no single factor clearly motivating business. Nearly 80 per cent of respondents indicated they were motivated by a corporate culture that embedded environmental awareness.

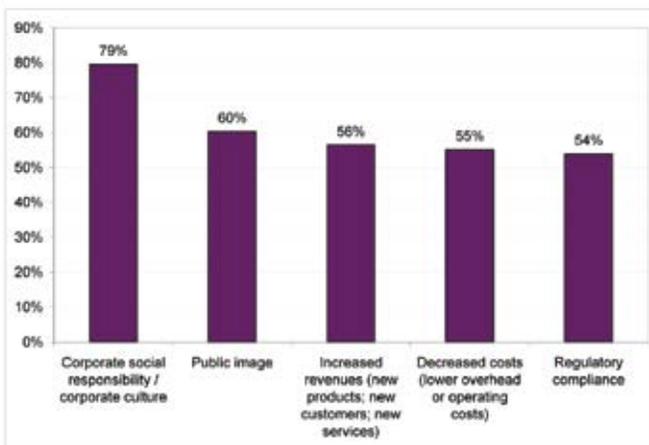
The other motivations were all chosen by more than 50 per cent of respondents. These motivations could all be promoted as possible benefits of Partners in Project Green programs and projects.

### 5.3.2 The Key Message document

The Key Message Document acts as a quick reference to ensure that communications from Partners in Project

Green consistently support the same goals. It contains all of the messages that are important to telling the story of the Pearson Eco-Business Zone, for example, it is the story of a progressive and ground-breaking initiative that is implementing sustainable industrial development and operations. Because Partners in Project Green is delivering its programs through multiple partners and channels, having a single message becomes critical to avoiding customer confusion and misunderstanding.

For the purposes of this plan, we have organized suggested key messages into the three-second “elevator pitch;” a 30-second “elevator pitch”; and a “leave behind” pitch. A key message document should include all three-message lengths



**Figure 28:** Businesses’ motivation to participate in eco-initiatives (survey results)

and be distributed to Partners in Project Green partners so that they can market/communicate Partners in Project Green in a consistent manner.

The three-second elevator pitch should answer the questions: Who is Partners in Project Green? What are the objectives of Partners in Project Green? It can be developed simply by adapting the Partners in Project Green value proposition, for example:

*Partners in Project Green will create North America’s largest eco-business zone by delivering eco-business programs, services and projects with its industrial and municipal partners.*

The 30-second pitch should answer the same questions but in slightly more detail. This message can include pitch points for the different customers of Partners in Project, for example:

*Partners in Project Green offers a unique partnership-*

*building approach to delivering programs, services and projects. Partners in Project Green coordinates and facilitates green building, eco-efficiency and other eco-business programs to serve the business community.*

**For zone businesses, this means:**

- *Reduced operating costs: By finding new uses for by-products, businesses will reduce disposal costs; green building retrofits will reduce buildings’ energy demands and costs.*
- *Employee retention: Better working environments and comfort; improved access to diverse commute options; improved productivity and satisfaction.*
- *Easier regulatory navigation: Partners in Project Green will facilitate business-to-regulator communications; liaise with regulators to better align regulations with business best practices.*

**For municipalities, this means:**

- *Green development awareness at the staff level: Partners in Project Green will educate staff about green industrial development strategies.*
- *Development, attraction, and retention of progressive and sustainable business activity.*
- *Employment areas that are attractive, competitive, cost-saving (e.g., reduced servicing costs), and showcase recent advances in sustainability.*

It is difficult to convey all of the advantages of Partners in Project Green in a ‘sound bite’, and it is important that all participants and partners have complete information, in case they want to delve deeper in their own reporting or storytelling. The leave behind pitch, typically two pages, can be used to feed into media releases and other written materials about Partners in Project Green. It provides still more detail on the benefits and activities of Partners in Project Green.

A key message document should include all three message lengths and be distributed to Partners in Project Green partners so that they can market/communicate Partners in Project Green in a consistent manner.

**Key messages:  
What is an “eco-business”?**

Partners in Project Green might consider providing a definition of “eco-business” in terms that are straight

forward and understandable to the majority of businesses. The following definition of a “sustainable business” is provided in the South East England Development Agency’s Sustainable Business Strategy (2006):

*“A sustainable business is a successful and profitable business. It is one that continuously improves its productivity by taking action on the economic, social and environmental impacts of its business. That means a sustainable business takes a sustainable approach to what it produces, how it buys and sells, how it affects the environment, where it invests, how it recruits, trains and develops its own people, how it engages with the community in which it operates and how it respects the rights of people.”*

### 5.3.3 Key messages per audience

As introduced in the previous section, key messages need to reflect the needs and motivations of different audiences. This is especially true when one describes the benefits of greening business. Table 16 expands on the suggested key

messages provided in the previous section in describing the benefits most appreciated by zone businesses versus municipal staff.

### 5.3.4 Terms to use/avoid

In developing key messages, it is important to know the audience’s familiarity (or lack thereof) with specific terms. In this case, we used the knowledge and attitudes survey to determine the community’s familiarity with green business and eco-development-related terms and strategies. As expected, large companies more frequently reported (70 per cent or 116 out of 166 respondents) a “strong familiarity” with these terms, illustrated by Figure 29.

Familiarity with individual terms provided interesting results that could be incorporated into Partners in Project Green marketing and communications. As illustrated in Table 17, there are groups of terms that respondents found “strongly familiar,” “very familiar,” “somewhat familiar” and “not familiar.” (Top five for each category shown.)

It should be recognized, however, that the response rate

**Table 16:** Overview of key message points per audience

	<b>ZONE BUSINESSES</b>	<b>MUNICIPALITIES</b>
<b>Environment</b>	<ul style="list-style-type: none"> <li>• Reduce raw material and disposal costs, increase efficiency</li> <li>• Make innovation more feasible (e.g., green buildings, green infrastructure, pilot projects, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced community greenhouse gas emissions</li> <li>• Improved air quality</li> <li>• Meet goals and targets in our community energy plan</li> <li>• More efficient land use</li> </ul>
<b>Economic</b>	<ul style="list-style-type: none"> <li>• Increased return on private investments</li> <li>• Improved employee retention</li> <li>• Maximize competitiveness and profitability</li> <li>• Access grants, financing and technical support</li> </ul>	<ul style="list-style-type: none"> <li>• Increased return on public investments</li> <li>• Attract and retain innovative, competitive businesses</li> <li>• Reduce infrastructure capital (replacement) and operating costs</li> <li>• Improved employee retention</li> <li>• Maximize competitiveness and profitability of industrial areas/ business parks</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>• Support innovative projects you don’t have time, money, or expertise to do on your own</li> <li>• Better relationship with other businesses, local government and the community</li> </ul>	<ul style="list-style-type: none"> <li>• Meet job creation, environmental, and quality-of-life objectives simultaneously</li> <li>• Improved environmental and human health</li> </ul>

for each of these categories differed substantially, with few respondents indicating they were “strongly familiar” (14 per cent) with select terms, and a relatively large number of respondents (57 per cent) indicating they were “not familiar” with select terms. Partners in Project Green should avoid using words in Group 4.

## 5.4 Marketing and communications delivery

Partners in Project Green will communicate to its audiences through its general operations and specific projects that

it delivers, including education and outreach, as well as through traditional public relations means. This section describes these communications channels.

### 5.4.1 Partners in Project Green operations and projects

Partners in Project Green will communicate to businesses and municipal staff through its operations and projects in the following ways. For more detail on how Partners in Project Green might interact with its audiences through this channel, review the eco-opportunities outlined in Section 3.

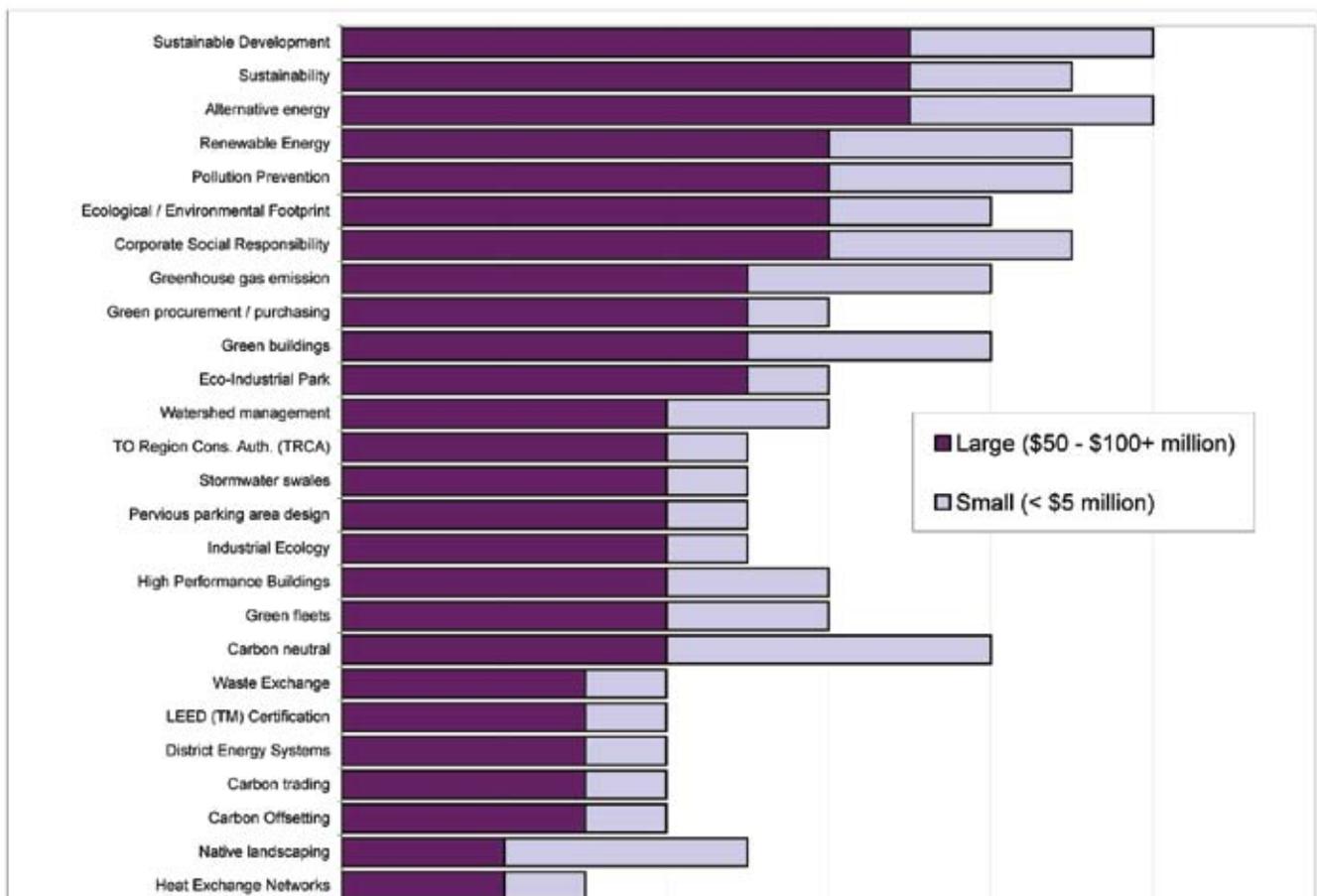


Figure 29: Companies reporting “strong familiarity” with eco-business terms, by size

**Table 17:** Businesses’ familiarity with eco-terms

<b>Group 1:</b> “Strongly familiar”	<b>Group 2:</b> “Very familiar”	<b>Group 3:</b> “Somewhat familiar”	<b>Group 4:</b> “Not familiar”
<ul style="list-style-type: none"> <li>• Pollution prevention</li> <li>• Alternative energy</li> <li>• Sustainable energy</li> <li>• Renewable energy</li> <li>• Corporate social responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Greenhouse gas emission</li> <li>• Alternative energy</li> <li>• Renewable energy</li> <li>• Corporate social Responsibility</li> <li>• Pollution prevention</li> </ul>	<ul style="list-style-type: none"> <li>• TRCA</li> <li>• Corporate social responsibility</li> <li>• Green procurement</li> <li>• Alternative energy</li> <li>• Green buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Pervious parking</li> <li>• Stormwater swales</li> <li>• Heat exchange networks</li> <li>• Native landscaping</li> <li>• Eco-industrial park</li> </ul>

<b>Businesses</b>	<b>Municipal staff</b>
<p><b>Steering Committee ‘Ambassadors’</b></p> <ul style="list-style-type: none"> <li>• Businesses will be engaged to participate on the Partners in Project Green Steering Committee (Section 4.4.1) and will thereby have direct input, and some decision-making authority, for the future directions of Partners in Project Green.</li> </ul>	<ul style="list-style-type: none"> <li>• Municipal staff will be engaged to participate on the Partners in Project Green Steering Committee. Local government positions, however, will be far fewer than for local businesses.</li> </ul>
<p><b>Eco opportunity delivery (initiatives and projects)</b></p> <ul style="list-style-type: none"> <li>• Businesses are the focus of the majority of eco-opportunities that have thus far been prioritized (see top 10 opportunities in Section 3). Partners in Project Green will engage businesses to inform and even lead some of the action plans for implementation, as part of business-led, project-specific task forces.</li> </ul>	<ul style="list-style-type: none"> <li>• There are eco-opportunities that speak directly to municipal staff, namely: municipal eco-industrial development policy templates; business park sustainability benchmarking; green business retention and attraction strategy. Municipalities will have direct involvement as Partners in Project Green moves forward with these opportunities.</li> </ul>
<p><b>Website</b></p> <ul style="list-style-type: none"> <li>• The Partners in Project Green website will be designed and managed to best accommodate and reflect business needs. Businesses have overwhelmingly asked Partners in Project Green to play the “one-window information source” role and this website will provide the majority of this information.</li> </ul>	<ul style="list-style-type: none"> <li>• The Partners in Project Green website will have sections dedicated to the municipal audience, who also suggested that Partners in Project Green be a ‘one’window’ information source for items including: green building incentives; municipal best practices; tools for preparing a triple-bottom-line business case, etc.</li> </ul>
<p><b>Business /regulatory liaison</b></p> <ul style="list-style-type: none"> <li>• The Partners in Project Green will play an ongoing regulator–business liaison function, working directly with businesses to help them navigate municipal (and other) regulatory frameworks.</li> </ul>	<ul style="list-style-type: none"> <li>• The Partners in Project Green will play an ongoing regulator–business liaison role, working directly with municipalities to increase their knowledge and understanding of innovations in industrial development; business best practices; progressive policy frameworks; etc. In addition, Partners in Project Green will act as a liaison between municipal and Ministry of the Environment (MOE) staff regarding provincial regulations.</li> </ul>

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### 5.4.2 Education and outreach programming

Partners in Project Green will deliver ongoing education and outreach programs to the business community and municipal staff, including: subject and audience-specific workshops; business networking activities and events; sustainability tours; and development of a resource-rich and up-to-date website for both businesses and municipal staff (more detail is found in Section 3.14).

### 5.4.3 Traditional public relations

Partners in Project Green will employ public relations campaigns to ensure a consistent and positive message is heard throughout the Pearson Eco-Business Zone and beyond. The following public relations tools will likely be used:

- **Awards**
  - Particularly awards in the sustainability/green business field. Partners in Project Green will flag upcoming deadlines and application requirements.
  - Use awards to create trust and believability in what Partners in Project Green is trying to achieve.
- **Editors and analysts**
  - Partners in Project Green will track those editors and analysts nation-wide who follow sustainability/green business issues.
  - Send appropriate material to the list – the objective is to make Partners in Project Green staff well-quoted in articles and in news briefs, effectively building the name of Partners in Project Green among the experts in the field.
- **Speaker placement**
  - Partners in Project Green staff should be available to speak on the topic of business and sustainability for the various Boards of Trade and Chambers of Commerce and other industrial associations.
  - Partners in Project Green should dedicate its executive director (or equivalent) to be available as a guest speaker for corporations.
- **Story placement**
  - Partners in Project Green should create a media calendar of upcoming stories to be published in relevant journals, newspapers, TV shows, etc. The media calendar should prioritize national publications.
  - Send appropriate pitch materials to the editors for consideration.

- **Press releases**

- Partners in Project Green will prepare an annual media release schedule that represents anticipated news of both Partners in Project Green and its partners, and offers “triggers” for issuing media releases. For example public relations triggers could include: the first collaborative purchase of LED lights by a group to of zone businesses; or the first zone business become a member of the Smart Commute program, etc.

- **Success stories (“Wall of Fame”)**

- As outlined in Section 2, Partners in Project Green has already documented several green business or eco-development success stories from within the study area. These stories have been promoted at several Partners in Project Green events to-date and, in fact, directly led to the preliminary list of potential Steering Committee members. These stories will be published on the Partners in Project Green website.

## 5.5 Tools and collateral materials

In addition to traditional promotional/collateral materials, a large component of the communications from Partners in Project Green will be via its educational tools and resources. The effectiveness and applicability of which, to both businesses and municipal staff, will be a direct reflection of Partners in Project Green.

### 5.5.1 Educational materials and tools

*“Partners in Project Green’s website should be home to a ‘municipal toolbox’ on industrial green buildings.”*

*-Municipal staff workshop participant*

A much-repeated request from the business community and municipal staff is that Partners in Project Green becomes a **‘one-window’ source for information** for green business and eco-development information, tools and templates. Much of this information will be developed by Partners in Project Green and placed on the Partners in Project Green website, while some tools will have to be developed by third parties, in concert with Partners in Project Green stakeholders and partners.

ZONE BUSINESSES	MUNICIPALITIES
<ul style="list-style-type: none"> <li>• <b>Green business best practices and case study compilation.</b></li> <li>• Pre-approved green design professionals ‘roster’</li> <li>• Listing of green products or technologies that are already produced in the Zone.</li> <li>• <b>Sustainability presentation templates for delivery to CEOs/senior management.</b></li> <li>• <b>Regulatory reference tool.</b></li> <li>• Green funding sources library.</li> <li>• Web-based virtual map of the Zone, for example, using a GIS overlay with Google search function.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Progressive municipal policy case study compilation, e.g., policies that support/encourage industrial infill, intensification and energy efficiency building retrofits.</b></li> <li>• Information on:               <ul style="list-style-type: none"> <li>- How to build flexibility into regulations.</li> <li>- How to create and implement green development incentives.</li> <li>- Life-cycle analysis or business case development tools for decision-making.</li> </ul> </li> <li>• Pre-approved green design professionals ‘roster’</li> <li>• <b>Handouts describing sector-specific best practices and innovations.</b></li> </ul>

It is recommended that Partners in Project Green prioritize three – five tools for the first year. Those highlighted in the above table might be a good starting point.

### 5.5.2 Promotional (collateral) materials

Printed folders for material such as:

- Backgrounders on Partners in Project Green staff and leaders:
  - Rationale: One-page brief on the key executives in Partners in Project Green. Briefs should be available online with headshots. Brief should contain information on expertise and experience. Brief should also contain a list of topics that the executive has experience speaking to or can be quoted. The brief will be used in proposal writing, promoting Partners in Project Green leaders as speakers and for the media.
- Corporate brochure
  - Rationale: A brochure to be used to show overall capabilities of Partners in Project Green, where it is going and a bit of history. Its design should resemble the web site and support it. It should be no longer than four pages in length. ALL printed materials should be produced on environmentally friendly materials and methods.
  - Message: Brochure should have content that appeals to its two target markets (municipalities and businesses) and to executive and staff in the markets. It should be written at a Grade 9 level and should clearly indicate how people can participate with Partners in Project Green.

- Corporate presentation
  - Rationale: A presentation that is a template for individual presentations that Partners in Project Green will make.
  - Message: Should show positioning statement, structure and short history (founding partners), what we do, how programs are delivered, how programs are measured and future activities. Modules can be added depending on the audience, case studies, proposed program or services.
- Business cards with statement of vision on the back
  - Rationale: A business card is the most basic and heavily used communication vehicle. Placing a good description of what Partners in Project Green does on the back provides a quick tool to introduce the organization in non-formal settings.
  - Message: The card should contain either the positioning statement or a short bullet list of the ways that Partners in Project Green can help clients.
- One-page flyer on each of Partners in Project Green’s major projects
  - Rationale: The one-page flier amounts to a case study. Case studies are generally used to solicit clients in a similar field. The can also be used to help the media to write more informed stories. The case study should be mimicked on the website.
  - Message: The message on the case study is designed to build trust. What the project is, how we responded, the result and any rewards (can be quotes/testimonials from clients).

- Volunteer/membership/donation forms
  - Rationale: These are general forms that allow people to volunteer, become a member or donate funds. The donation form should explain the organizations policies (transparency, privacy).
  - The membership form should clearly show the various levels, the terms (yearly, life), benefits and policies (transparency, privacy).
  - The volunteer form should show policies (transparency, privacy, code of volunteer conduct, terms).
  
- Annual report
  - Rationale: A modest annual report should be prepared. Design of the piece should be started six months prior to the first year closing so that it can coordinate with end-of-the-year financials. The annual report should clearly show how funds were spent and report on either a triple bottom line, or other accepted principle for representing the social, economic and environmental progress of Partners in Project Green. The annual report will be used as a limited direct mail piece to key influencers and supporters among the target market to reinforce the direction of Partners in Project Green.
  - Message: The tone of the report should be modest but firm in the acknowledgement of successes that have taken place. The report should include a forward-looking statement from the Chair and co-Chair of the Steering Committee. Writing should be at a Grade 9 level and include clear talking points that partners can incorporate into their own reports. The piece should include testimonials from partners that emphasize the facilitative nature of the relationship.
  
- Website–[www.partnersinprojectgreen.com](http://www.partnersinprojectgreen.com)
  - Rationale: The Internet is now the first, and often only, source of information in the workplace and in the public. Therefore, it is important that Partners in Project Green have an Internet presence. Furthermore, both government and business representatives have asked that Partners in Project Green offer one-window access to information on a variety of topics; a website is one of the most effective means of providing this service.
  - Message: The website should be easy to navigate and should make it easy for municipal staff,

businesses, and the media to find the information most relevant to them. Language used on the website should be simple and direct. Terminology should reflect the findings of the knowledge and attitudes survey.

- Partners in Project Green has already developed a website, which will continue to evolve.

## 5.6 Marketing and communications targets

As part of its business planning, it is recommended that the Steering Committee establish marketing and communications targets. For example, for the goal to “Increase awareness of Partners in Project Green,” sample targets are:

- Number of event attendees;
- Number of businesses reporting they are ‘strongly familiar’ with terms in the knowledge and attitudes survey;
- Number of articles published in major publications;
- Number of awards;
- Number of speaking engagements for Steering Committee members; and/or,
- Number of events.

## 5.7 Next steps

Due to the enthusiasm already created around Partners in Project Green, the TRCA has already launched marketing and communications efforts. Therefore, the development of key message documents, website content, and other collateral materials is likely to be an adaptive and repetitive process.

Generally, the following actions should be taken between now and the end of 2008:

- Develop Key Message document.
- Launch project website (complete).
- Revisit and refine Knowledge and Attitudes survey for re-issuing on an annual basis.
- Organize one event, like social networking that can be announced at October launch.
- During business planning, the Steering Committee should revisit and refine the marketing and communications plan, including developing targets.
- Develop collateral materials.

An aerial photograph of a city, likely Phoenix, Arizona, showing a major multi-lane highway (I-17) running vertically through the center. To the right of the highway is a large, well-maintained golf course with several green fairways and sand traps. The surrounding area is densely packed with various buildings, including residential structures and commercial or institutional buildings. The overall scene is captured from a high angle, providing a comprehensive view of the urban and recreational landscape.

# Section 6

## Section 6: Implementation - Programs and service delivery

## 6. Implementation - Programs and service delivery

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### 6.1 Implementation and monitoring framework

Through consultation with the private and public sectors, Partners in Project Green has identified a number of initial initiatives for implementation. These initiatives range from large projects, such as the development of a food waste-reutilization network, to programs for assisting businesses green their parking lots.

This section provides a general framework for how the prioritized Partners in Project Green programs can be defined, set in motion, monitored and adapted. Figure 30 provides a visual representation of the framework. It should be noted that the district energy system opportunity (Section 6.3.3) cannot follow this framework for reasons to be explained in that section.

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#### **Scope project**

Before establishing a project team, the Steering Committee will need to have a general definition and estimated costs of the project, as well as some idea who best to approach outside of the Steering Committee to be on the project team. It would also be helpful if the Steering Committee created a starting point for the project team by giving high level consideration to the potential work plan, drivers and barriers, options, and implementation plan. That way, it will be easier to secure the right mix of representation and expertise for the project team.

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#### **Establish project team**

The Steering Committee will establish project teams, some of its members comprised of plus interested volunteers from businesses, business organizations, government and non-government organizations who offer expertise that is relevant to the project. Each opportunity area will likely have its own project team. Project teams will appoint/elect a project team Chair. In addition to managing the project teams, such as presiding over meetings, the Chair will act as the main liaison with the Steering Committee. The Project team Chair will also be the primary spokesperson for the project team at public and official functions.

- **Goal:** what one hopes to accomplish. For example reduce energy use and GHG emissions in Pearson Eco-Business Zone.
- **Indicator:** What will be measured to show if the goal has been met. For example total electricity consumed by businesses each year.
- **Baseline:** The starting value of the indicator. For example 5.8 MWh (see Table 5).
- **Target/Objective:** What value the indicator is expected to have at a defined point in the future. For example By 2015, total electricity consumed by businesses will be reduced by 10 per cent to 5.2 MW
- **Performance Measure:** The actual measure of the indicator in the target year. for example in 2015, businesses actually consumed 4.9 megawatts of electricity, indicating that the target was met.

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#### **Establish work plan and terms of reference**

Each project team will be required to develop a work plan and terms of reference, which must be reviewed and approved by the Steering Committee. The work plan should of clearly present goals, targets and indicators, which may be refined as the Project progresses. Where possible, the targets should link back to overall Partners in Project Green targets set forth in the future business plan. The project work plan should be structured according to this implementation framework.

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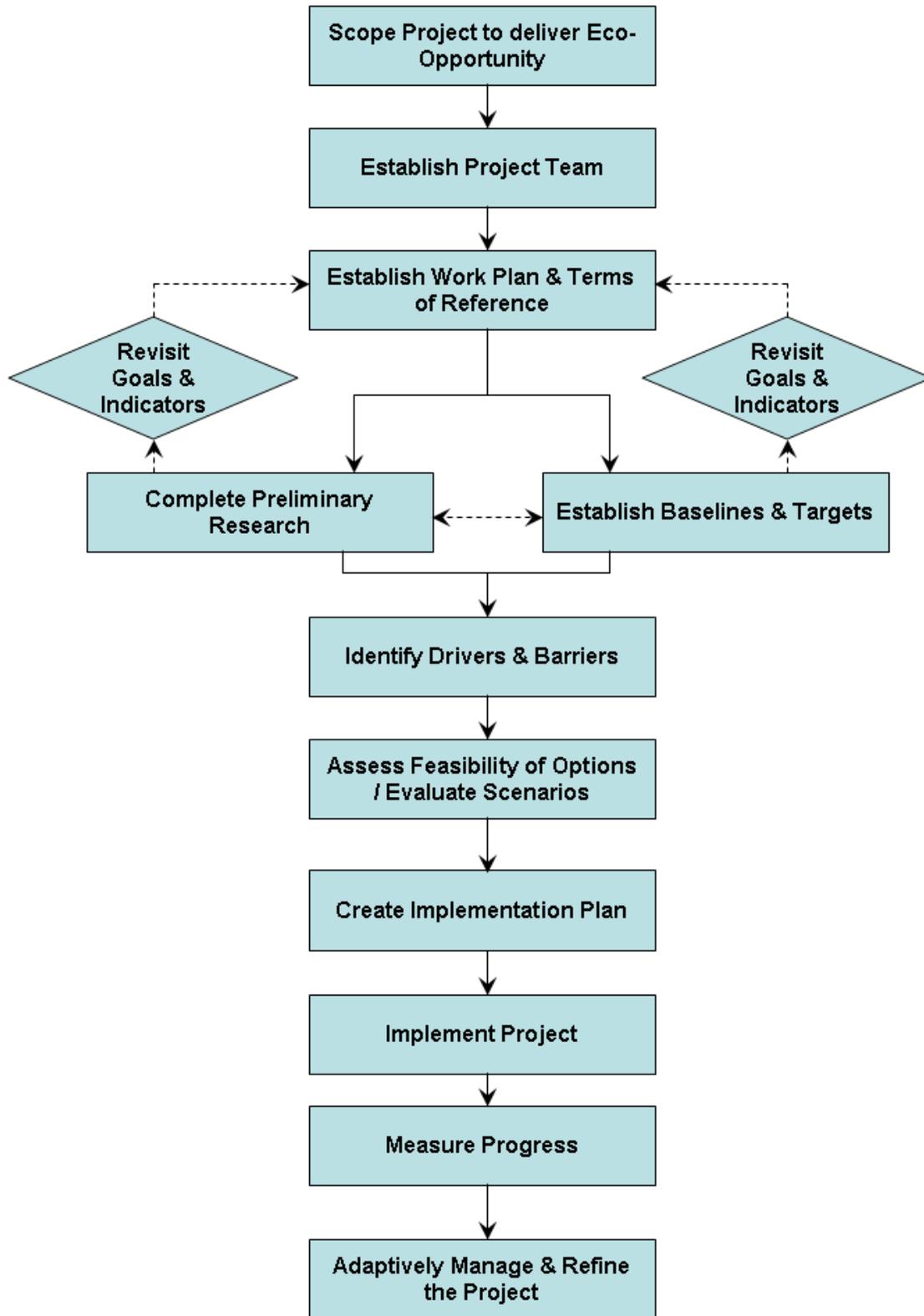


Figure 30: Program implementation and monitoring framework



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It is recommended that before delving too deep into a work plan, the project teams take some time to define their vision.

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**Establish baseline**

To measure future success, the project team will need to know from it started; the project should have a baseline. The baseline should be the current values for the Project Indicators. Evaluating the baseline might require the completion of primary research; the use of custom spreadsheets and database calculations; or the completion of surveys/ interviews with relevant businesses.

As has been shown in this study, project teams will likely find that data they thought might be available to help them determine their baseline and measure success might not be available. Project teams may need to adapt project targets and indicators during this stage to reflect a realistic availability of data.

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**Complete preliminary research**

Project team members may bring sufficient expertise and knowledge to allow the project team to determine how the Project will be implemented and how much it will cost. If not, additional research may be required. For example, if the project involves designing an educational program, the research might focus on collecting lessons learned from other similar programs. Or, if the project involves helping businesses adapt a new type of technology, then the research might include a review of case studies and requests for information from suppliers. The research might also include a literature review. Information gathered at this point should be incorporated in the project implementation plan.

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**Identify drivers and barriers**

Drivers are conditions that can facilitate implementation of the program; barriers can impede its implementation. Identifying drivers and barriers early in the process can be used to best plan how the program is executed. The project team should develop strategies to exploit drivers, and to remove barriers. For example, if capital cost is a barrier, the project team might develop a strategy to seek grants to offset costs.

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**Assess the feasibility of options/evaluate scenarios**

At this point, the project could likely unfold in a number of ways, depending on the success of the strategies to address drivers and barriers. The project team must evaluate the feasibility of these options or evaluate the possible scenarios, to determine the best and most likely path forward. The evaluations should consider the following aspects of the project:

- Economics: capital, operating, direct, indirect, individual versus group
- Technical
- Political and regulatory: policy (mis-)alignment
- Ecological: impact to natural heritage systems, air, water, soil, waste generation
- Social: How does this fit with the cultures of participating businesses? Does this make the Pearson Eco-Business Zone a better place to work? Does this help the businesses give back to the community?

During this stage, the project team may find that additional research or consultation is required.

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**Revisit targets**

Based on the information now available, the project team may find that its earlier targets were too aggressive or too modest. It might also have discovered that it cannot measure targets as it had hoped. Therefore, the initial targets, and associated results, permit evaluation of the program's progress over time; each indicator should have a quantifiable target that represents attainment of that program objective. Targets values are also often tied to target dates.

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<b>Create an implementation plan</b>	The project team will incorporate the information gathered to date into a project Implementation Plan. The plan should include some form of schedule, with actions and milestones, and a monitoring plan.
<b>Implement the project</b>	The implementation plan can now be put into action. Execute the plan, adhering to its terms and schedule as much as possible.
<b>Monitor progress</b>	The implementation plan will include a monitoring schedule that will measure program progress by comparing ongoing results with baseline data and targets. Measure indicators in accordance with the schedule defined in the implementation plan. Summarize and report measured progress as defined in the implementation plan.
<b>Adaptively manage and refine the project</b>	As the program proceeds and progress is measured, opportunities to adapt the process to enhance its effectiveness or ease of implementation should be highlighted. The implementation plan may be adjusted accordingly.

## 6.2 General implementation schedule

During its business planning, the Steering Committee will establish the timing and resource needs to implement projects associated with the opportunities presented in Section 3. Project teams will likely further refine project timing and resource needs.

Based on stakeholder consultation, a number of priority projects have already been identified. Possible timing to implement these projects is presented in Table 18.

## 6.3 Project scoping – Examples for three projects

As discussed in Section 6.1, the Steering Committee, assisted by TRCA staff, will need to scope projects so that

project teams can be established. The scoping of three projects has been presented in this section as an example:

1. Enviro-roof Technologies Purchasing Block
2. Food Processors Waste Reutilization Project(s)
3. District Energy System Feasibility Study

The project scoping will help project teams to develop work plans.

### 6.3.1 Enviro-Roof Technologies Purchasing Block

#### Introduction

Businesses in the Pearson Eco-Business Zone are interested in sustainable roof technologies, including but not limited

**Table 18:** Possible timing for projects already identified

Project team	Associated project	Rationale	Timeline
Eco-efficiency Team	One-window Eco-efficiency Program	There were a large number of businesses who requested that Partners in Project Green consolidate existing programs and make it easy for businesses to undertake eco-efficiency measures.	Implementation in 2008
Resource Re-utilization Team	Food Waste Re-utilization  General Waste Exchange	Resource re-utilization opportunities received the largest amount of support from both the public and private sectors. The large number of food processors provides a good foundation for waste-to-energy opportunities, while the large and diversity of businesses may provide a good foundation for a regional waste exchange program.	Project team – fall of 2008. First re-utilization begins – 2009. Begin waste-to-energy facility construction –2010. Project team – fall of 2008. Implementation – two to three years.

Project team	Associated project	Rationale	Timeline
Coordinated Green Building Retrofit Team	Energy Performance Contacting w/Clinton Climate Initiative	With 75 per cent of the study area being leased businesses, the ESCO model could provide the right impetus for realizing large change across the study area. Two large landholders have indicated their interest in this approach and could be used as a model.	Project team – fall of 2008. First assessment partnership w/large landholder in spring 2009, with implementation by the end of 2009.
	GTAA Tenant Program	The GTAA has indicated its interest in developing a tenant program to assist them in greening their operations.	Project team – spring 2009.
Green Purchasing Block Team	Enviro-roof Technologies	There is interest among stakeholders in the development of a purchasing block to drive down procurement costs.	Project team – spring 2009. Roof procurement project developed and implemented by end of 2010.
Transportation Team	Food Processor Commuting Initiative	Food processors were the most vocal in investigating commuter options for their employees. This project would look to develop commuter options that could be adopted by this sector and expanded to others.	Project team – fall 2008. Implementation– 2009/2010.
District Energy Team	Airport Vicinity DES	There is already a project team being developed by the private sector to look at this opportunity. Partners in Project Green could play a role in this process and bring the value of its relationships to the initiative.	Project team – fall 2008 – Implementation three to four years.
Business Park Benchmarking Team	Business Park Benchmarking Pilot	There is interest in both the public and private sectors in the development of sustainability benchmarking indicators for business parks.	Project team – spring 2009. Pilot completed – Spring 2010.
Green Business Team	Green job Retention and Attraction Strategy	All three municipal economic development departments are interested in harmonizing a green business retention and attraction strategy.	Project team – fall 2008. Completed – fall 2009.
	Green Job Corp	Partners in Project Green has received funding to develop a green job corps to connect local youth to green economy jobs.	Project team – spring 2009. Implementation – 2010.
Green Site Team	Employment Land Planting Program	Interest among businesses to engage employees in planting programs and enhance forest cover in the area.	
	Green Parking Lot	The area has vast expanses of impervious surfaces and businesses interested in improve their sites through green parking lot and native-landscaping opportunities.	Project team – fall 2008. Implementation – already underway.

to: green roofs; photovoltaic (PV) electricity generation; solar water heaters.

Almost 90 per cent of respondents to the knowledge and attitudes survey indicated they would like assistance in reducing energy use (dollars spent) to heat, cool, and light building(s). 60 per cent were interested in using renewable energy sources and 50 per cent were interested in increasing their company's use of green products and services. Enviro-Roof technologies meet all of these requirements.

As shown in Figure 31, there is an enormous amount of roof space available in Pearson Eco-Business Zone. Data available so far indicates there could be 2,000 hectares of roof space available (assuming it's roughly equivalent to the total building footprint).

### Potential project team roles and responsibilities

The Steering Committee should approach the following as potential project team members:

- Bentall and other significant property owners, on whose roofs these technologies might be installed;
- Green Roofs for Healthy Cities;
- Canadian Solar Industries Association;
- NRCan Office of Energy Efficiency;
- Businesses that expressed interest in this idea at the implementation workshop; and,
- Local technology providers, as long as there is no conflict of interest with respect to implementation.

The project team's roles and responsibilities might be as follows:

**General** ('in-team', contracted, and/or with assistance from TRCA staff)

- Research and consolidate a list of feasible technology options.
- Research case studies (within and outside of study area), gather information on technology and supplier options, and share with businesses.
- Survey and/or get feedback from businesses/industry associations on interest in the technology options and solicit their feedback for additional options.
- Facilitate partnerships between businesses.
- Support development of contract between supplier/ installation contractor and businesses, including negotiating group pricing.

### Industry associations/building owners groups

- Collect feedback with respect to technology interest from members. Forward sector issues and specifics to TRCA.

### Green technology research, government and non-government organizations

- Provide industry expertise; benchmarks.

### Businesses

- Commit to the purchasing block.
- Commit to implementing the technologies, and to liaising with non-project team businesses to help them participate in the project and implement the technologies.

## Preliminary research



### Photovoltaic panels

Photovoltaic (PV) solar cells within a "solar panel" convert sunlight into electricity. More and more PV installations are installed on buildings that are connected to the electricity grid. During the day, power is used from PV, and at night power is used from the electricity grid. Photovoltaic electricity generated in excess of the building's requirements can be sold to the grid.

### Solar water heaters

Solar water heating is the most widely used solar thermal system for domestic, industrial and commercial sectors. By reducing the amount of heat that must be provided by conventional water-heating, solar



water-heating systems directly substitute renewable energy for conventional energy, reducing the use of electricity or natural gas by as much as 80 per cent.

### Reflective roofs

Most convention roofs absorb solar radiation, contributing significantly to summer cooling loads for buildings. Incorporating reflective roofing technologies returns much of this solar energy back to the atmosphere rather than transferring it into the building, thus reducing the building's cooling costs. Specialized reflective roofing materials are available in many forms: metal panels, single-ply membranes, cold-applied coatings, shingles and tiles.

### Green roofs

A green roof is a roof of a building that is partially or completely covered with vegetation and soil, or a growing medium, planted over a waterproofing membrane. Green roofs offer the following benefits:

- Retain rainfall to reduce runoff by more than 60 per cent.
- Insulate buildings (reducing energy demand and costs).
- Potential to reduce the urban heat island effect<sup>21</sup>.
- Filter air pollutants.
- Provide habitat.
- Increase life span of roofs by protecting roof components from UV rays and temperature fluctuations.

### Potential revenues and costs

Coordinating this opportunity would require a considerable amount of human resources to get businesses' commitment and ensure the effective implementation of the purchasing blocks. There are no foreseeable other costs. This opportunity would generate savings, but no revenues.

### Considerations for implementation

- The implementation plan will likely involve developing group purchase agreements with suppliers and installation contractors. There should be a schedule with milestones, and a monitoring and reporting plan.

<sup>21</sup>The urban heat island effect is a phenomenon describing urban and suburban temperatures that are 1 to 6°C hotter than nearby rural areas. Heat islands form as cities replace natural land cover with pavement, buildings and other infrastructure (US EPA).

- There may be more than one acceptable technology; implementation may occur in parallel and will have to be managed accordingly. For technologies where custom evaluation of each business is required, consider a phased approach that allows businesses to opt-out if it appears the technology will not be viable.
- The project team may have to develop terms of reference for evaluation, design, installation and/or monitoring, and solicit quotations or proposals as



Chicago City Hall Green Roof  
(38,000 ft<sup>2</sup>)



Bayer Inc. Toronto Retrofit Green Roof (8,000 ft<sup>2</sup>)



Natty Boh Brewery Re-development Retrofit  
Green Roof (12,000 ft<sup>2</sup>)

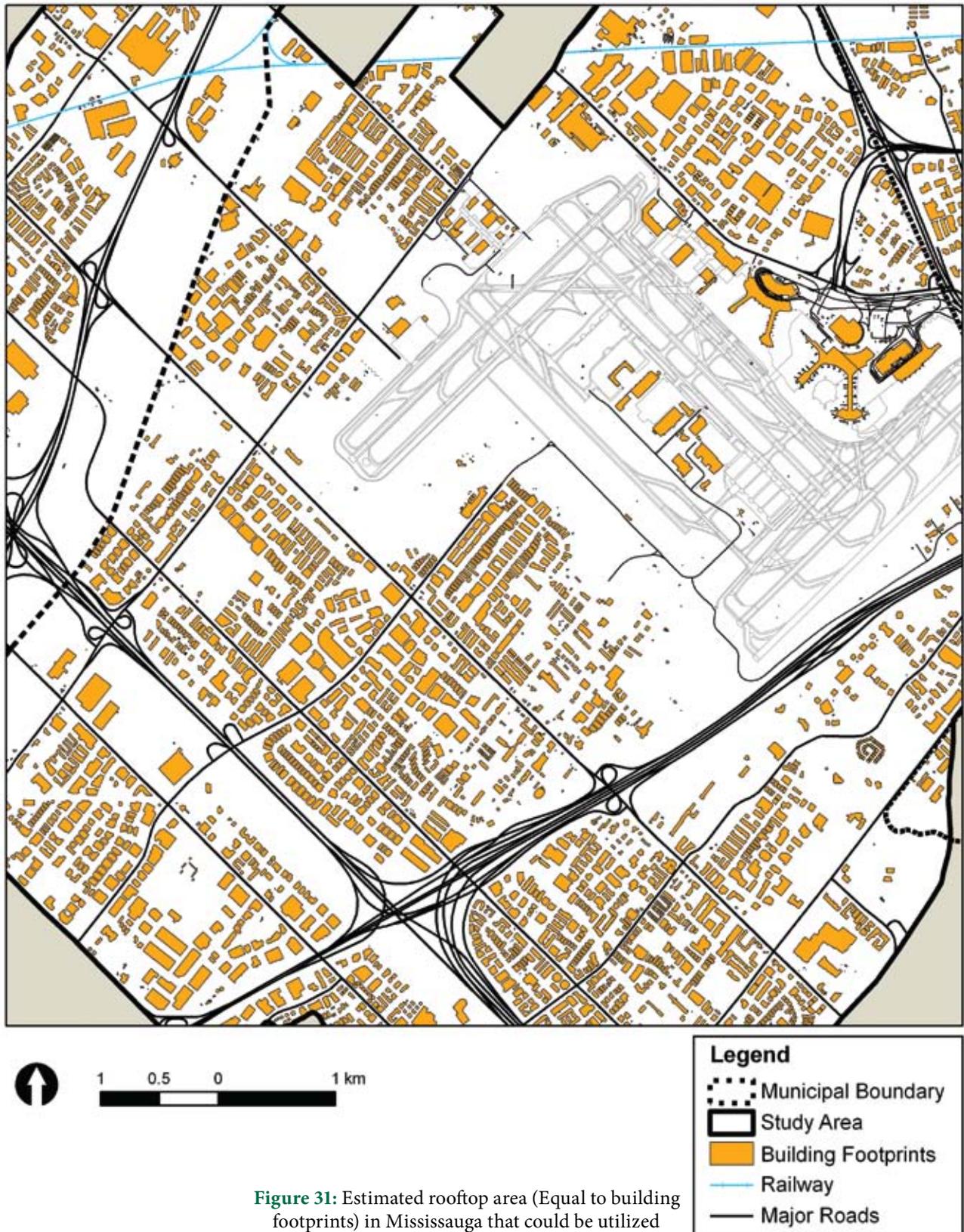


Figure 31: Estimated rooftop area (Equal to building footprints) in Mississauga that could be utilized

appropriate. In particular, it will be important for business members of the project team to shape the terms of reference for these processes. On the other hand, some simple technologies might be able to be implemented almost immediately.

- Businesses should commit to allowing Partners in Project Green to take and publish photos of their buildings during and after installation of the enviro-roof technologies so that success can be communicated effectively.

## Next steps

1. Steering Committee, with assistance from TRCA staff will:

### Phased commitment approach – green roof retrofit example

*Although this example is provided for a green roof retrofit program, a similar phased commitment approach could be employed for any of the Enviro-roof technologies identified for implementation.*

*Partners in Project Green identifies and works with interested businesses to develop an RFP that requests service providers to submit a proposal that would provide cost savings for group purchasing of the following services:*

- Preliminary building assessment that evaluates each structure’s ability to support the green roof infrastructure, estimates the expected annual energy savings, and provides a simple pay-back period for the project.
- Detailed design and costing for businesses interested in participating beyond the preliminary assessment/design phase.
- Purchase and installation for businesses interested in retrofitting their buildings with green roofs

*The contract for providing the group service contract would be awarded for the best proposal.*

*An interested business commits to investing in a preliminary green roof assessment. If the structure is unsuitable, or the pay-back period is too long, the business could opt out of proceeding to the detailed design phase. If the assessment results are favourable, the business could proceed to detailed design/costing, committing to pay for the services as defined through the group service contract. Similarly, the business could opt out of the process following detailed design/costing.*

- Refine the example scope presented.
  - ‘Pitch’ the concept to potential project team members.
  - Form a project team.
2. Project team will:
    - Develop a work plan, as per the implementation framework in Section 6.1 and scope started by TRCA staff and the Steering Committee

## 6.3.2 Food Processor Waste Reutilization Project(s)

### Introduction

Given the large presence and leadership demonstrated by the local food industry, we recommend that this opportunity focus on waste reutilization options involving this sector. Food waste that goes to landfill or “down the drain” represents lost economic value. Figure 32 shows businesses within the study area involved in food preparation and/or processing, such as:

- Meat processing
- Beverage bottling
- Bakeries
- Restaurants
- Catering
- Dairy product processing
- Breweries
- Other Food transformation

**Ecological Wastewater Treatment uses natural processes (such as plant filtering) to break down organic compounds in wastewater.**

### Potential project team roles responsibilities

The Steering Committee should seek members from the following organizations for the project team:

- Food, including beverage, processors who have already participated in Partners in Project Green workshops;
- Other food processors and food-related-industries in the Pearson Eco-Business Zone;
- Alliance of Ontario Food Processors and other industry associations;
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA);
- Engineering departments of local academic institutions;
- Major waste haulers, such as BFI (which sent representatives to a Partners in Project Green workshop);
- Utility operations or the Utility Commission; and,

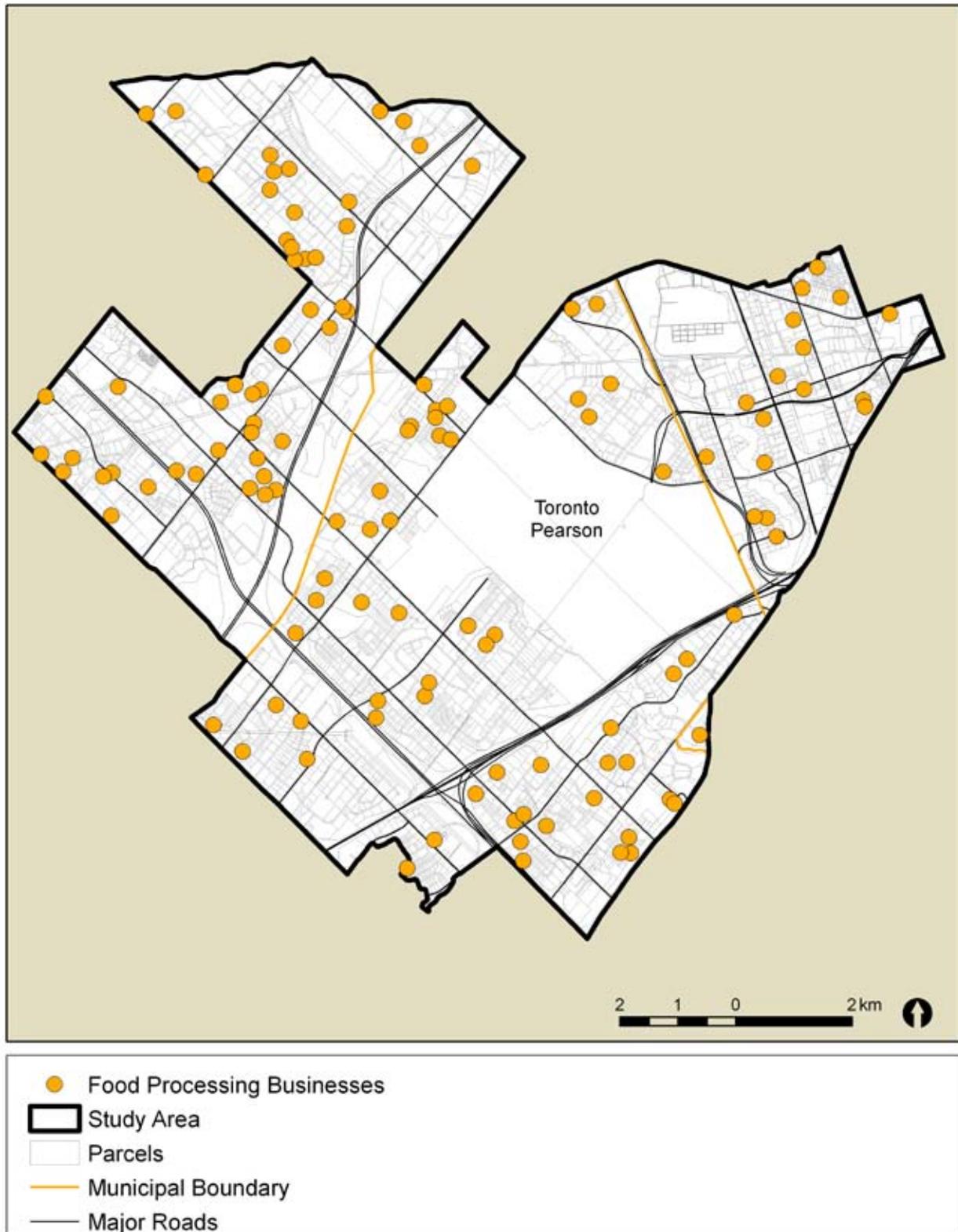


Figure 32: Food processors – potential food waste generators (other food-related businesses not shown)

- Municipal economic development staff.

**General** ('in-team', contracted, and/or with assistance from TRCA staff)

- Coordinate efforts to gather waste generation information.
- Research and gather information on waste processing options, and share with businesses.
- Facilitate partnerships between businesses.
- Research funding options.
- Working with waste generators, develop terms of reference for and manage feasibility studies for prioritized projects.
- Support regulatory liaison. Industry associations
- Collect data and feedback from members. Forward sector issues and specifics to the TRCA.
- Publicize local waste reutilization projects to encourage participation of new businesses.

**Food-related businesses**

- Provide information on their waste generation.

**Waste-hauler businesses**

- Engage to gather data and play role in development.

**Utilities**

- Local distribution and operation options.
- Advice regarding regulatory process.

**Municipal economic development staff**

- Support initiatives to attract food waste processors.

**Preliminary research**

In addition to direct waste-to-feed synergies in which a waste food stream is used directly in another process (e.g., bones from meat processing plant could be used in broth production), there are a number of existing technologies

**Table 19:** Example indicators and source of baseline information for enviro-roof project

POSSIBLE INDICATOR		BASELINE
Different green roof criteria	Number of green roofs	There is a partial green roof at the FESTI building at GTAA, and a 9,000ft <sup>2</sup> green roof at Bayer Inc. Based on known data, these are the only green roofs in the study area to-date.
	Per cent of total roof area that is 'green'	Assuming total building footprint directly translates into total roof area, there is approx 1,900 hectares of roof space in the study area. (Brampton: 600; Mississauga: 1000; Toronto: 300.)
	Number of solar PV installations	There are none known. The target could be three in year one, 10 in year two.
	Number of solar water heating Installations	As above.
	Tonnes eCO <sub>2</sub> per year from participating businesses	Each business would have to submit its energy consumption to the project team.
	Dollars spent on natural gas per year	As above. Targets could be set based on general reported technology performance, e.g., 80 per cent reduction in natural gas consumption for solar hot-water heating.
	Number of technologies implemented through the project.	Could be a high level, general target such as one 'group buy' of an enviro-roof technology in the first year; or more ambitious/specific, like 20 new enviro-roof technologies installed in the next two years.

designed to take advantage of the nutrient or energetic content of food waste:

- Energy generation—biofuels (biodiesel, ethanol), electricity from biogas (produced by pyrolysis or fermentation) or heat transfer from wastewater. Ecological Wastewater Treatment uses natural processes (such as plant filtering) to break down organic compounds in wastewater.
- Nutrient utilization—composting, farm feed, aquaculture (wastewater from ecological treatment facilities used as nutrient source), land fertilizer (biosolids from wastewater), Partners in Project Green can act as a catalyst to merge “waste” streams within the study area into feedstock for processes that will benefit businesses collectively.

## Possible indicators and known baseline and target information

- Possible indicators: tonnes of material disposed of in landfill; tonnes of BOD in food-related wastewater; number of by-products or wastes being re-utilized; dollars in savings to businesses; number of food-related businesses re-utilizing their wastes.
- A food waste inventory is required. It should include information such as waste source, content, quality, quantity, availability, cost (if any) and location for both solid waste and wastewater. This will be important to create a baseline and set targets.

## Drivers and barriers

### Drivers

- There appears to be an abundance of food waste within the study area, for example one facility alone produces more than 150,000 tonnes of food waste per year, enough waste to generate over 2.5 megawatts of electricity.
- Storm Fisher Bio-Gas and Yield are two firms developing biogas-based renewable energy installations in the region.
- Toronto Pearson has flight-related food waste for which they are interested in eco-solutions.
- The Canadian Food Inspection Agency requires businesses selling food waste as farm feed to be registered. “Giving” their waste as feedstock to an energy generation plant could be advantageous to some businesses.

### Barriers

- There is a perception that waste has no value and is only a problem and by extension, by-product quality is not acceptable. This can be addressed through education, sharing of case studies, and emphasis on the potential economic and environmental benefits.
- Some food waste is already diverted to agricultural uses, which decreases the volume available for energy generation projects. A cost-benefit analysis will help to determine highest and best use for food waste, and show if other uses are more attractive.
- Some reuse technologies have specific quality requirements regarding feedstock content and quality.

While this might delay implementation, research partnerships and sound feasibility studies will help to determine what is necessary to ensure feedstock quality.

### First eco-industrial shrimp farm in Europe

*In the Port of Rotterdam, a high degree of synergy has resulted in efficient, low-cost operations for all companies. For example the Happy Shrimp Farm captures waste heat from local industry to run aquaculture ponds.*

### Potential revenues and costs

Other than direct use of the material as feedstock in existing operations, developing the infrastructure to use food waste would likely represent major capital costs, whether for a composting facility or a mobile composting plant; an energy generation plant; piping and heat exchangers for heat transfer, etc.

Some projects will create benefits to participating businesses with indirect monetary value, e.g., convenience, cheaper feedstock, free make-up energy source. Others, such as biofuels, would produce goods with market value available to any interested business or individual. Transfer of biogas-generated electricity to the provincial grid would also bring in revenues. Who will collect those revenues depends on the infrastructure funding scheme (Was the project financed by the end user, waste generator or by an intermediate party?) and the arrangements with feedstock suppliers (e.g., they get paid for their material or the waste disposal solution is enough compensation).

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## Considerations for implementation

- Complete a preliminary feasibility assessment that analyzes the information gathered to identify and prioritize possible food waste reutilization projects.
- Conduct feasibility studies and business plans for prioritized projects that, through the preliminary assessment, appear viable.
- Prioritize projects for implementation based on the results of the feasibility studies/business plans.
- Develop implementation plans for each project.
- Include a schedule, milestones and monitoring plan.
- Progress monitoring
- Evaluate performance as per evaluation criteria set in the plan.
- Adjust the plan if and when information becomes available that could improve plan implementation or outcome.
- Promote success stories as part of marketing and communications.

## Next steps

1. Steering Committee, with assistance from TRCA staff will:
  - Refine the example scope presented.
  - ‘Pitch’ the Project to targeted potential project team members.
  - Form a project team.
2. Project team:
  - Develop a work plan, as per the Implementation Framework in Section 6.1 and scope started by TRCA staff and the Steering Committee.

### 6.3.3 District Energy System Feasibility Study

#### Introduction

Within or near the boundary of the study area, five existing or proposed electricity and/or co-generation (combined electricity and heat) facilities have been identified that could potentially provide sources of industrial waste heat to support district energy systems. Facility details are provided in Appendix H.

The discussion that follows will focus on components for evaluating the economic viability of using the GTAA (117 megawatts), Mississauga TransAlta (108 megawatts)

and Magellan Aerospace Cogeneration Plants as energy producers for district energy systems and possible steps for implementing viable projects. The process described could also be applied to the remaining three facilities or, with some modification, to other sources of waste heat within or near the study area.

Benefits of using the GTAA, Mississauga TransAlta and Magellan Aerospace Cogeneration Plants as heat sources for district energy include:

- Centralized energy generation allows for implementation of cleaner, more sophisticated, and energy-efficient technologies as well as fuel purchasing that can take advantage of economies of scale;
- Significantly more efficient energy usage reduces atmospheric pollution associated with global warming and public health issues;
- More revenue spent on energy remains within the community and local jobs are created;
- The energy producer creates an additional revenue stream that is otherwise wasted; and,
- Owners/operators of consumer buildings can often reduce resources (e.g., labour, space) currently allocated to energy generation equipment.

The decision to proceed with using any of the existing cogeneration plants as an energy source for a district energy system will depend largely on the economic viability of the project. The process of determining economic viability involves a minimum of two steps: a detailed feasibility study, followed by a business plan.

In many cases, a pre-feasibility study can also prove beneficial. The purpose for each of these components is described in Appendix H.

#### Potential project team roles and responsibilities

The Steering Committee may want to approach the following organizations for Project Team members:

- Energy producers (GTAA and TransAlta)
- Local distribution companies (Enersource, Hydro One Brampton and Toronto Hydro)
- Ontario Power Authority
- Municipal government (City of Mississauga)
- Facilities management companies

(e.g., SNC-Lavalin ProFac)

- Energy consultants
- Engineering/construction companies

## Preliminary research

Figure 33, Figure 34 and Figure 35 contain enlargements of those presented in Section 3.8, focusing on the generating facilities nearest the airport. Estimated energy demand is based on sector-specific Natural Resources Canada energy intensity factors for space heating, space cooling and domestic hot-water requirements.

## Possible indicators and known baseline information

The primary goal of a district energy system will be to more efficiently heat and/or cool buildings. Therefore, some potential indicators could be:

- Area of buildings in Pearson Eco-Business Zone heated and/or cooled using district energy;
  - Dollars saved in business energy costs and
  - Tonnes eCO<sub>2</sub> emitting by buildings (before and after connection to the district energy system)
- Another more physical indicator might be of district energy pipe infrastructure in Pearson Eco-Business Zone

Accurate baseline information for energy consumption in buildings near the current and known proposed district energy systems is not known. This data gap will have to be addressed to support business case calculations and ultimate performance measurement.

## Potential revenues and costs

This project is likely to involve significant feasibility study, design, approvals and capital costs to implement. Most of these costs will likely be third-party. There may also be land costs.

## Project funding through carbon offsets

Energy efficiencies inherent in district energy systems could be eligible for generating carbon offset credits. As part of the feasibility study, projects should be evaluated for their carbon offset credit potential as a possible source of project funding. A district energy system should be

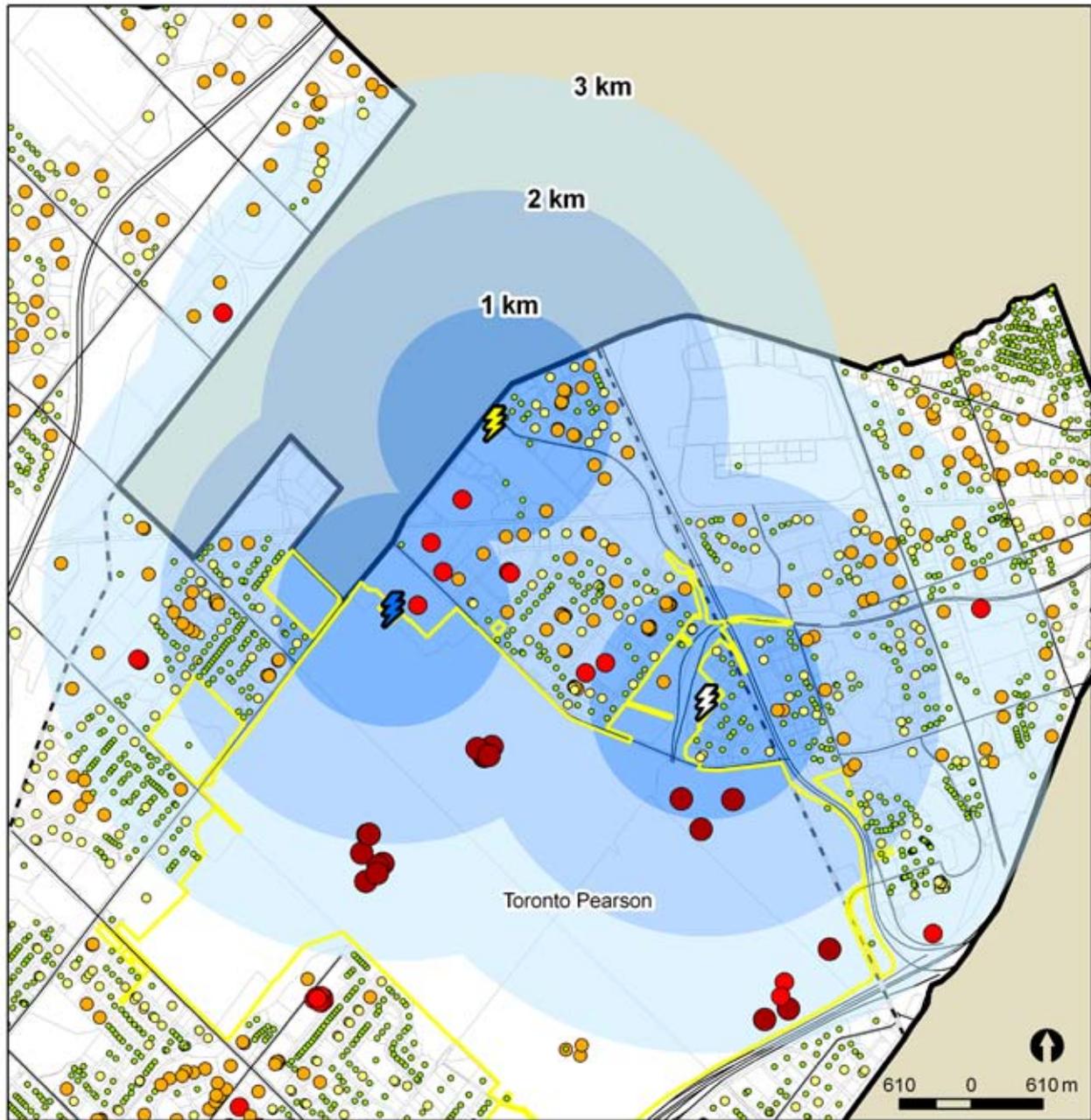
able to be conventionally financed—money is borrowed to pay for capital costs on the basis of projected revenues. The municipality in which the district energy system is located may be able to work with the project team to seek Federation of Canadian Municipalities Green Municipal Funding or to allocate some funding from the New Deal for Cities and Communities (Gas Tax Revenue Sharing). In addition, the Ontario Power Authority Clean Energy Standard Offer Program may also provide direct and indirect support. The project team, and/or ultimate District Energy Corporation, may be able to use Carbon Offset Credits, associated with increased efficiencies and possible renewable fuel source, to finance the project. And, of course, any party might bring land to the table as a financial contribution to the project.

## Considerations for implementation

- Many options are available for Partners in Project Green to move the GTAA, TransAlta and Magellan Aerospace district energy system feasibility and implementation initiative forward.
- How this process unfolds, and which participants assume which roles/responsibilities will depend on the outcome of early dialogue amongst potential participants (existing energy generators - (GTAA, TransAlta and Magellan) the City of Mississauga, and Partners in Project Green).

One implementation option is detailed in Appendix H, District Energy System: Idea through to Operation. This example is summarized as follows:

1. Define TRCA's and Partners in Project Green's vision, objectives and roles for the district energy initiative.
2. Initiate dialogue with existing energy producers (GTAA and TransAlta) to determine if excess heat, suitable for use in a district energy system, is available.
3. If so, gauge the energy producers' interest in ownership and/or operation of a district energy system.
4. If energy is available but the producer is not interested in ownership/operation, Partners in Project Green could commission a pre-feasibility study and/or detailed feasibility study to build a business case for the district energy system and recommend an ownership/operation model (five municipal



**Estimated Space Heating Energy Consumption by Address**

- > 500,000 GJ
- 500,001 - 1,000,000 GJ
- 1,000,001 - 5,000,000 GJ
- 5,000,001 - 20,000,000 GJ
- > 20,000,000 GJ
- ⚡ GTAA Cogeneration Plant, 117 MW
- ⚡ Mississauga Cogeneration Plant, 108 MW
- ⚡ Britannia Landfill Gas Compression and Electricity Generation Plant, 5.5 MW
- ⚡ Goreway Station, 875 MW
- ⚡ Magellan Aerospace Corporation Cogeneration Facility, 2.5 MW

**Figure 33:** Pearson electricity generating facilities and space heating demand

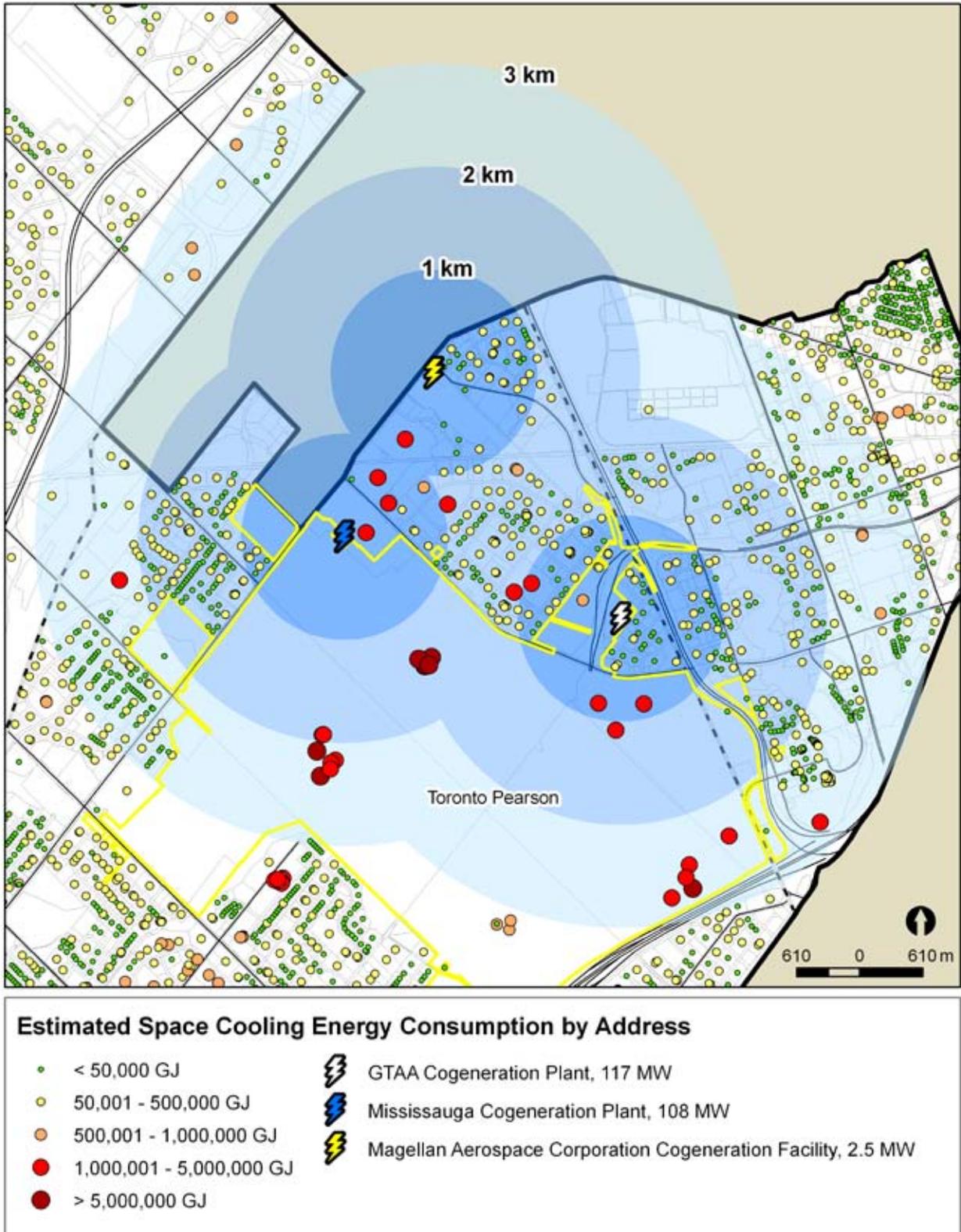
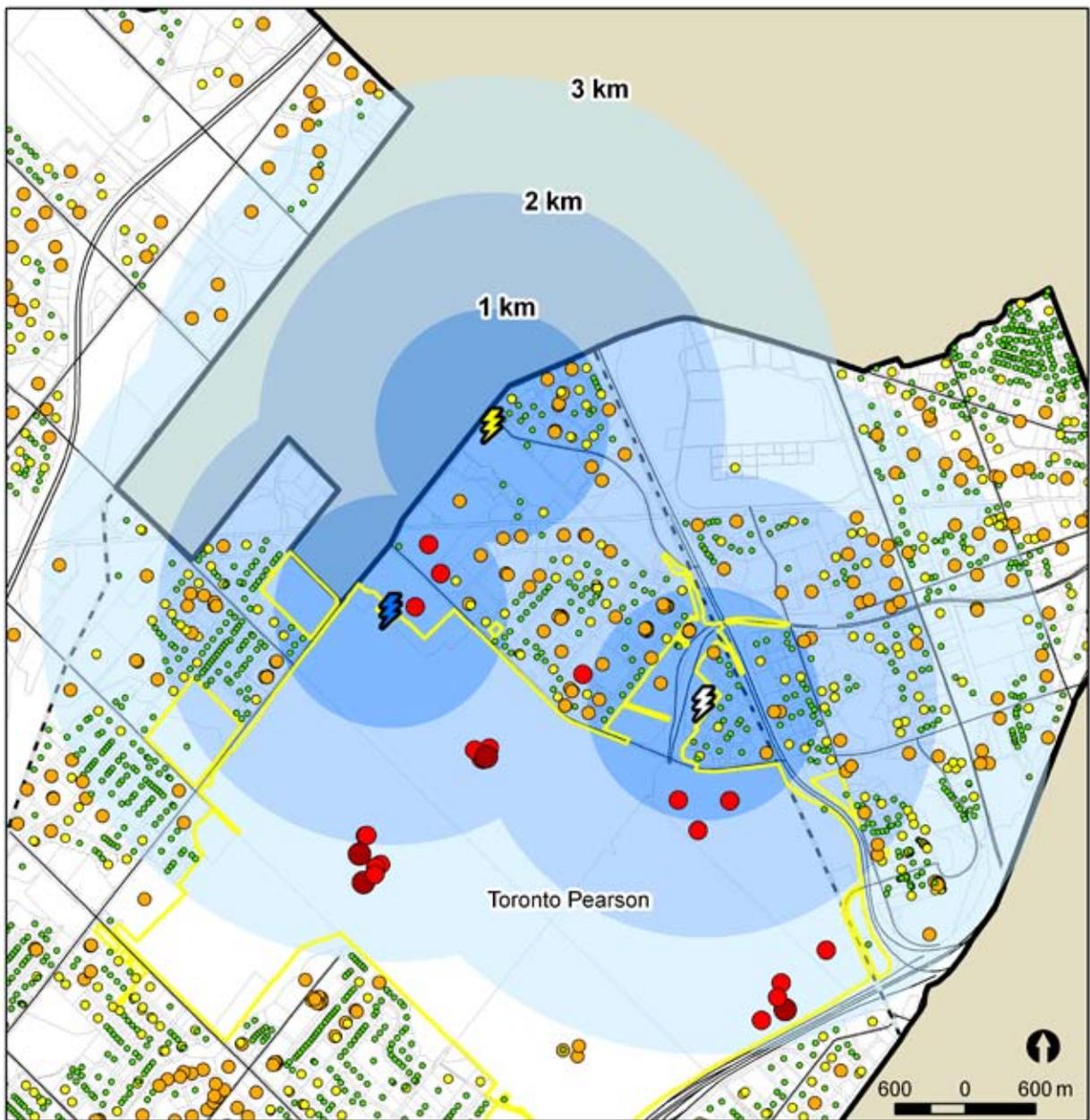


Figure 34: Pearson electricity generating facilities and space cooling demand



**Estimated Water Heating Energy Consumption By Address**

- |                            |                                                                |
|----------------------------|----------------------------------------------------------------|
| • < 50,000 GJ              | ⚡ GTAA Cogeneration Plant, 117 MW                              |
| • 50,001 - 100,000 GJ      | ⚡ Mississauga Cogeneration Plant, 108 MW                       |
| • 100,001 - 1,000,000 GJ   | ⚡ Magellan Aerospace Corporation Cogeneration Facility, 2.5 MW |
| • 1,000,001 - 5,000,000 GJ |                                                                |
| • > 5,000,000              |                                                                |

Figure 35: Pearson electricity-generating facilities and water-heating demand

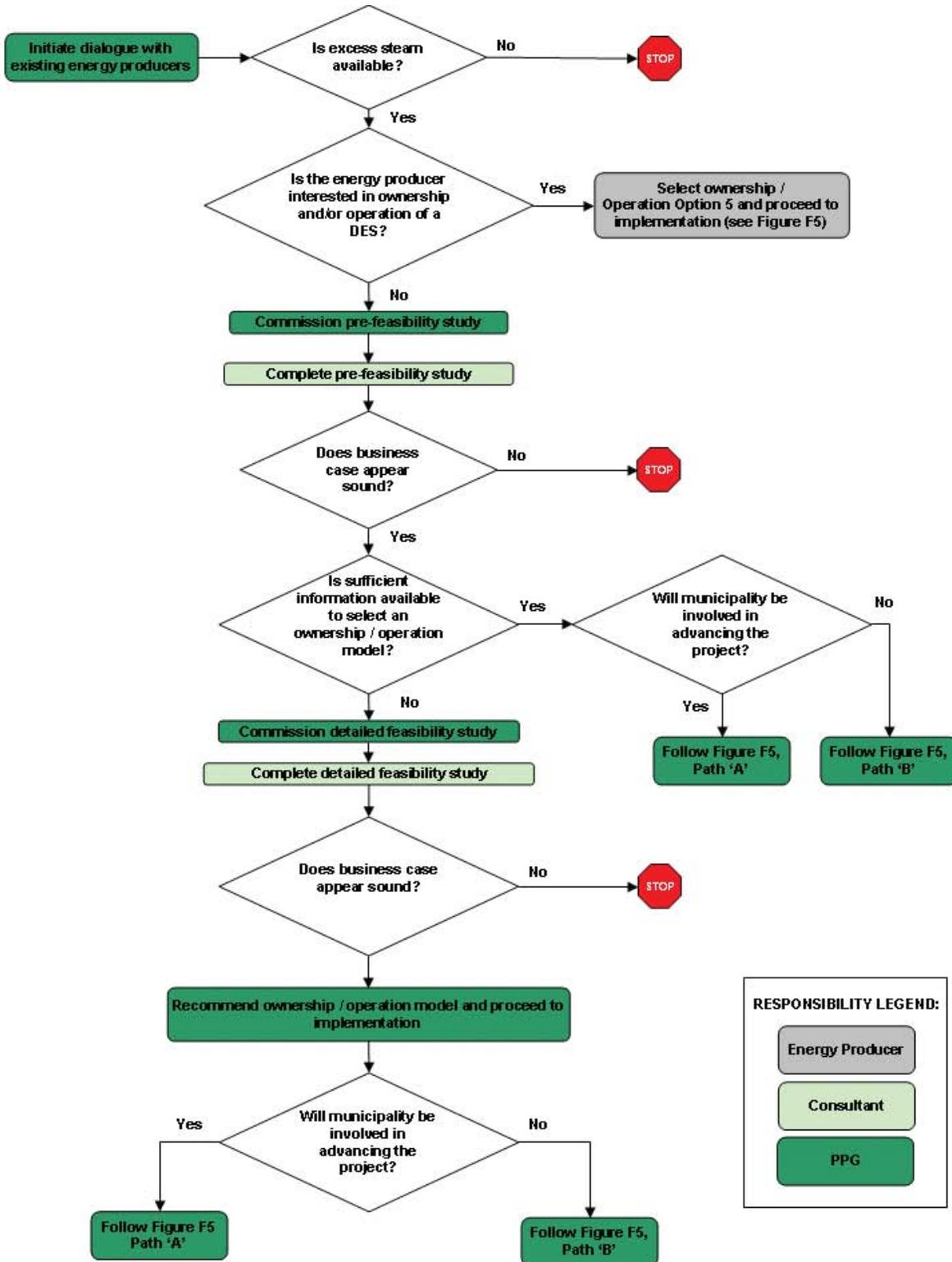


Figure 36: Example district energy implementation framework – Part 1

government/private sector ownership/operation options are detailed in Appendix H.

- Once the best ownership/operation model has been selected, Partners in Project Green could transfer project execution (system design, build and operation) to the City of Mississauga or continue to

manage implementation if Mississauga does not wish to (in the case of a purely private-sector endeavour).

- Possible frameworks for implementation have been provided in Figure 36 and Figure 37.

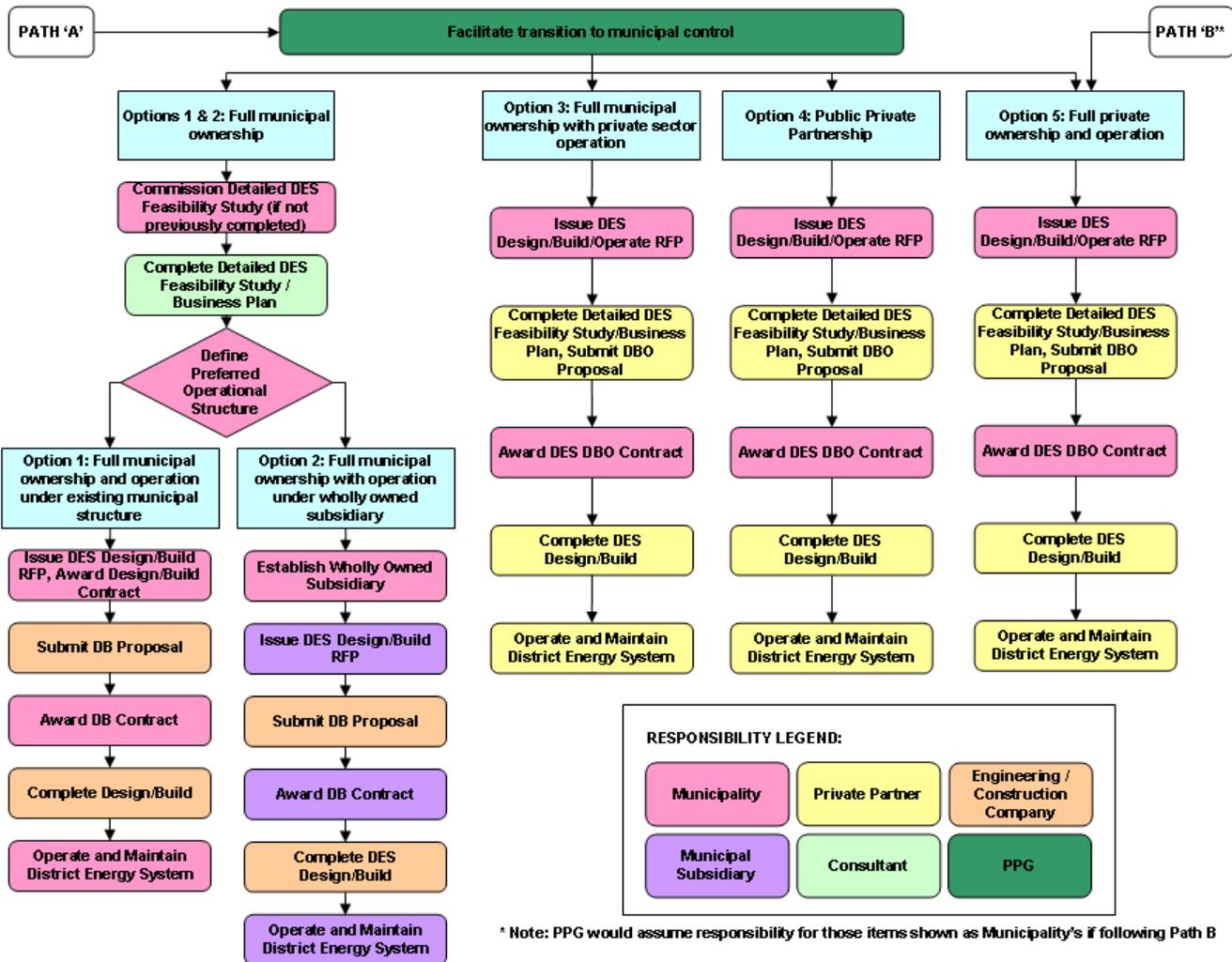


Figure 37: Example district energy implementation framework – Part 2

An aerial photograph of a city, likely Chicago, showing a multi-lane highway (I-55) running vertically through the center. To the right of the highway is a large, well-maintained golf course with several green fairways and sand traps. The surrounding area is densely packed with various buildings, including residential high-rises and commercial structures. The overall scene is captured from a high angle, providing a comprehensive view of the urban landscape.

# Section 7

## Section 7: Acknowledgements

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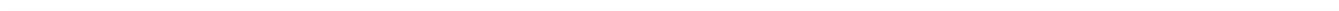
## 7. Acknowledgements

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<b>Frank Button</b>	Magellan Aerospace	<b>Doug Silk</b>	Bentall Real Estate
<b>Ron Tingle</b>	Magellan Aerospace	<b>Rob Penner</b>	Bison Transport
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<b>Doug Dittburner</b>	Molson Canada	<b>George Martin</b>	Molson Canada
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<b>Michael F Dimond</b>	Chep Canada Inc.	<b>Kathryn Newell</b>	Pratt and Whitney Canada
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<b>John Hull</b>	RMCAO	<b>Tom Ponessa</b>	Delcan
<b>Corinne Howell</b>	Sandalwood Suites Hotel	<b>Lynn Johannson</b>	E2M
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<b>Emilie Nadeau</b>	Saputo Foods Limited	<b>Scott Rouse</b>	Energy @ Work
<b>Phillippe Bernier</b>	ShawCor Ltd	<b>John Lenchak</b>	Irving Tissue
<b>Jolie Phillips</b>	Sithe Global	<b>Jon Douglas</b>	Enermodal Engineering
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<b>Ryan Little</b>	StormFisher Biogas	<b>Don Manlapaz</b>	First Gulf
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<b>Kris Ramkissoon</b>	Unilever Canada	<b>Tri Lu</b>	Henkel Manufacturing
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<b>Laura Amendola</b>	Waste Management Of Canada	<b>Jim Kushnir</b>	ING Real Estate
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<b>James McNeely</b>	Woodbine Entertainment	<b>Jane Holmes</b>	Woodbine Entertainment
<b>John Rosetti</b>	Italian Home Bakery Ltd.	<b>John Marhong</b>	Woodbine Entertainment
<b>Kimberly Clark</b>	KIK Corporation	<b>Karry Lai</b>	Volunteer
<b>Taylor Grey</b>	Woodbine Entertainment	<b>Gaea Walsh</b>	City of Brampton
<b>Alexis Morgan</b>	WWF	<b>Don Eastwood</b>	City of Brampton
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<b>Maja Prentice</b>	Region of Peel Councillor	<b>Jeff Baines</b>	City of Brampton
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<b>Kristen Reynolds</b>	IESO	<b>Michelle Charbonneau</b>	City of Mississauga
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<b>Enrico DiNino</b>	MOE	<b>John Sakala</b>	City of Mississauga
<b>Alex Blasko</b>	MOE	<b>Jeff Smylie</b>	City of Mississauga
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<b>Kevin Jones</b>	OCETA	<b>David Wright</b>	Region of Peel
<b>Mark Carr</b>	Smart Commute	<b>Richard Schafer</b>	Region of Peel
<b>Glenn Gumulka</b>	Smart Commute	<b>Karyn Hogan</b>	Region of Peel
<b>Ryan Lanyon</b>	Metrolinx	<b>Krista Gilliland</b>	Region of Peel
<b>Tim Van Seters</b>	TRCA	<b>Jamie Acosta</b>	Region of Peel
<b>Chris Gerstenkorn</b>	TRCA	<b>Rodney Bouchard</b>	Region of Peel
<b>Hendrik Amo</b>	TRCA	<b>Elaine Gilliland</b>	Region of Peel
<b>Dan Clayton</b>	TRCA	<b>Steve Runowski</b>	Region of Peel
<b>Rick Portiss</b>	TRCA	<b>Bryan Nichol</b>	Region of Peel
<b>Dushan Jojkic</b>	TRCA	<b>Lisa Botticella</b>	City of Toronto
<b>Chandra Sharma</b>	TRCA	<b>Nestor Uhera</b>	City of Toronto
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<b>Jeff Birchall</b>	TRCA	<b>Mark Bekkering</b>	City of Toronto
<b>Chris Rickett</b>	TRCA	<b>Mark Singh</b>	City of Toronto
<b>Joanna Parsons</b>	TRCA	<b>Sean Cosgrove</b>	City of Toronto
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<b>Adele Freeman</b>	TRCA	<b>Wendy LeBreton</b>	Eco-Industrial Solutions Inc.
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<b>Mark Taylor</b>	Etobicoke-Mimico Coalition	<b>Richard Ubbens</b>	City of Toronto
<b>Jaipaul Singh</b>	Etobicoke-Mimico Coalition	<b>Kevin Tierney</b>	City of Toronto
<b>Suzanne Barret</b>	Etobicoke-Mimico Coalition	<b>Michael Wolfson</b>	City of Toronto
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An aerial photograph of a city, likely Chicago, showing a multi-lane highway (I-55) running vertically through the center. To the right of the highway is a large, green golf course with several ponds and fairways. The surrounding area is densely packed with various buildings, including residential and commercial structures. The overall scene is captured from a high angle, providing a comprehensive view of the urban landscape.

# Section 8

## Section 8: Appendices

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## **8. Appendices**

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- A. FOUNDATION FOR ECO-INDUSTRIAL NETWORKING**
- B. LIST OF DATA/DOCUMENTS REVIEWED AND ANALYZED**
- C. WORKSHOP/FOCUS GROUP MINUTES AND FEEDBACK**
- D. ENERGY FUNDERS ONTARIO - SUMMARY OF GRANTING PROGRAMS**
- E. INDUSTRY CANADA SUSTAINABLE INDUSTRIES PERFORMANCE INDICATOR FRAMEWORK**
- F. BUSINESS MODEL CASE STUDY REVIEW**
- G. PARTNERS IN PROJECT GREEN STEERING COMMITTEE TERMS OF REFERENCE**
- H. DISTRICT ENERGY SYSTEM BACKGROUND INFORMATION**





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