

The Strategic Value of the Hamilton Harbour Stelco Lands

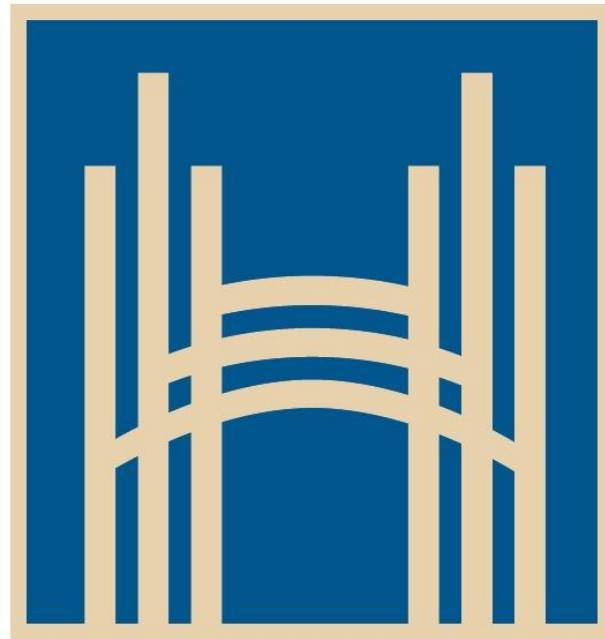
A socio-economic investigation

April 2017



**CANADIAN CENTRE FOR
ECONOMIC ANALYSIS**

An independent study conducted on behalf of:



Hamilton

About the Canadian Centre for Economic Analysis

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EXECUTIVE SUMMARY

The objective of this study was to find an evidence-based and realistic understanding of the socio-economic value of the 329 hectares (813 acres) of industrial land occupied by Stelco (the “Lands”) on the southern shore of Hamilton Harbour. The short answer: the Lands should not sit idle, as they possess significant strategic economic value. Situated in the rapidly growing Greater Golden Horseshoe region of Ontario, the Lands are spatially and economically significant given their location (e.g., a 5 kilometre drive from downtown Hamilton and a 68 kilometre drive from the U.S. Border at Lewiston).

The socio-economic potential of the land is highly dependent upon a coordinated response by planners and economic developers across all levels of government. In that regard, what is at risk (i.e., foregone opportunities for significant economic uplift) of the land being mismanaged or suffering patchwork development has been measured over a 45 year planning horizon and includes:

- For Hamilton: between 440,000 and 530,000 incremental job years (or an expected 10,800 per year on average) with between \$31B and \$38B in aggregate incremental wages paid in the region;
- For Ontario: an expected 150,000 incremental job years (or an expected 3,300 per year on average) with between \$2.4B and \$3.2B in aggregate incremental provincial tax revenues across the province; and
- For Canada: at least 38,000, and likely 115,000 incremental job years (or 800/2,500 per year on average) with between \$150M and \$520M in additional GDP per year.

Land use scenarios

Urban Strategies Inc. – in consultation with N. Barry Lyons Consultants Ltd. – prepared four scenarios that reflect possible planning and development outcomes for the Lands. Each scenario represents the extrapolation of a particular development program and site planning direction in order to differentiate and clarify such trends for detailed analysis. While each scenario is presented here in abstract, they are feasible from a city planning perspective.

(The following coloured bars show the end state of the scenario – please see Section 2.3 for more details.)

Note that for each scenario, the net benefits to Hamilton may compete with other regions in Ontario and across Canada (i.e., things that might have otherwise occurred outside Hamilton no longer would). In other words, the methodology employed in the study is sensitive to the movement of people and capital and can quantify how much *relative* benefit Hamilton yields in each scenario due to a new (additional) comparative advantage. That Ontario and Canada still benefit in aggregate is an indication of the net economic value of the scenarios writ large.

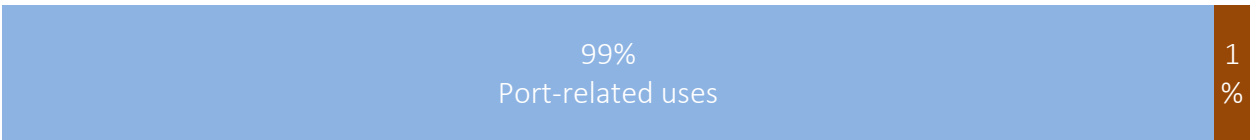
SCENARIO 1: STEEL AND PORT/LOGISTICS



Scenario 1 would see average annual GDP increase in Hamilton by an expected \$780M, half of which is due to increased wages. Senior orders of government reap benefits from this scenario as well: the Province would yield an additional \$40M to \$60M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$70M per year across the country.

From an economic benefit perspective, Hamilton and the Province would rank this scenario third while the federal government would rank it second.

SCENARIO 2: ALL PORT/LOGISTICS



Scenario 2 would see very similar annual GDP increases in Hamilton to Scenario 1, but the province and country overall would see less of a boost to economic activity. As such, senior orders of government reap less benefits from this scenario: the Province would yield an additional \$40M to \$50M per year in tax revenue across Ontario while the federal government would yield an additional \$10M to \$50M per year across the country.

From an economic benefit perspective, all three orders of government would rank this scenario last, though it is only slightly worse than Scenario 1 from Hamilton’s perspective.

SCENARIO 3: STEEL + MIXED EMPLOYMENT



Scenario 3 would see a significant boost to annual GDP in Hamilton of over \$1.6B per year, and GDP across the province and country are at their highest in this scenario. As such, senior orders of government reap the most revenue under this scenario: the Province would yield an additional \$50M to \$70M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$70M per year across the country.

From an economic benefit perspective, Hamilton would rank this scenario second while the other orders of government would rank it first.



Scenario 4 would see the largest boost to annual GDP in Hamilton of over \$2B per year, while GDP across the province and country is a little lower than in Scenario 3 (and even Scenario 1 for the country writ large). As such, senior orders of government reap slightly less revenue under this scenario: the Province would yield an additional \$50M to \$60M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$60M per year in tax revenue across the country.

From an economic benefit perspective, Hamilton would rank this scenario first, the province second, and the federal government third.

The opportunities for multi-modal development of the site were not considered in this analysis. However, the characteristics and comparative advantages of the land warrant further research into the use of the land as a unique multi-modal facility that could deliver greater provincial and federal benefits than the uses already identified in the analysis.

Conclusions

While all four scenarios investigated provide economic returns, they do identify trade-offs between the three orders of government. The “mixed use with steel” scenario stands out as the best “structured” solution. Achieving this scenario will require effort, particularly on the economic development front, but there are very significant economic risks in not moving ahead.

1. INTRODUCTION

The 45 kilometre shoreline of Hamilton Harbour, at the western tip of Lake Ontario, is shared by industry, commerce, and residential areas, along with both public and private open spaces (Bay Area Restoration Council, 2017). Much of the land along the southern shore is infill, and is largely used for industrial purposes, including over 329 hectares (813 acres) of industrial land occupied by Stelco (the “Lands”).

The City of Hamilton is attempting to set out a strategic vision for the Lands that achieves a number of strategic goals:

- Optimal treatment for Stelco pension holders;
- Maintaining steel operations on-site as long as possible;
- Maximizing the value of the balance of the site; and
- Maximizing the economic and public benefits of the site to Hamilton, Ontario, and Canada.

As such, this study seeks an evidence-based and realistic understanding of the socio-economic value of the Lands to the City of Hamilton economy and its residents, Ontario’s and Canada’s economies, and provincial and federal government revenues.

1.1 A short history of Hamilton Harbour

Hamilton Harbour, formerly proclaimed as Burlington Bay, had been a part of First Nations life for centuries before the arrival of French explorers in the early 17th Century. In the mid-1820s, the 12-foot deep Burlington Canal cut through a natural sandbar to connect Hamilton Harbour to Lake Ontario, and seven years later, George Hamilton successfully established a village on the Harbour’s banks (City of Hamilton, 2016).

By the mid-19th century, with railway expansion occurring across the country (including in Hamilton), plus Hamilton’s deep water port, Hamilton was economically well-positioned, and heavy industrial production began to boom (City of Hamilton, 2016). Over the next century Hamilton grew rapidly, and steel production – especially during the Second World War – started to shape the image of Hamilton as the “Steel City”. Helped by its proximity to Toronto and the United States, as well as the multi-modal nexus of roadways, rail lines, and port – which, with the addition of the Welland Canal in 1932 became one of the busiest on the Great Lakes (Hamilton Port Authority, 2017) – heavy industry flourished (Bay Area Restoration Council, 2017).

In 2001, the Hamilton Port Authority was born. Today, the Port of Hamilton handles over 9 million tons of cargo (roughly two-thirds of which are steel), meaning over a quarter of all Canadian Great Lakes-St. Lawrence Seaway cargo moves through Hamilton (Hamilton Port Authority, 2016).

1.2 Canada's "Steel City"

The Steel Company of Canada – what became known as “Stelco” – was formed in 1910 with the merger of a number of companies, largely the Montreal Rolling Mills and Hamilton Steel and Iron Company. The changing war-time and post-war economies served Stelco well. By the 1960s, particularly with the purchase of Edmonton's Premier Steel Mills in 1962, Stelco had become the largest producer of cold drawn steel in Canada (Stelco Canada, 2017). But this growth would not last – by the 1980s, Stelco's standing started to decline, starting with a 125-day strike in 1981 (one of many over the following decades) followed by recessionary pressures to cut 7,000 out of 25,000 workers in 1982 (The Hamilton Spectator, 2007).

In the 1990s, international competition – particularly from China (see below) – started to put further pressure on the company. Between 1991 and 1992, the share price of Stelco dropped from \$26 to less than \$1, only to partially rebound to \$9 by 1994.

In 2004, Stelco entered bankruptcy protection under the *Companies Creditors' Arrangement Act* (CCAA), “not as an insolvent company (a requirement for CCAA) but as one that argued its mounting debts would drive it into bankruptcy in a matter of months if the court didn't intervene. At the top of its list: a \$1.3-billion pension shortfall” (The Hamilton Spectator, 2007). In 2007, Stelco was acquired by U.S. Steel and renamed U.S. Steel Canada (USSC) (Stelco Canada, 2017).

Six years later, USSC announced it would permanently close its idle iron and steel-making operations in Hamilton, to which many – including the head of the United Steel Workers Local 1005 – declared a loss of hope that steel-making jobs would return to the region (CBC News, 2013). The following year, USSC said that its operations in Hamilton and Nanticoke had again gone under CCAA protection, citing pension costs and employee benefits and a five year loss of \$2.4 billion (The Hamilton Spectator, 2014). By January 2015, USSC was actively seeking buyers for pieces of its Hamilton Bayfront property, and reports surfaced that the Hamilton Port Authority was considering purchasing those lands (Kenny, 2015). No sale occurred.

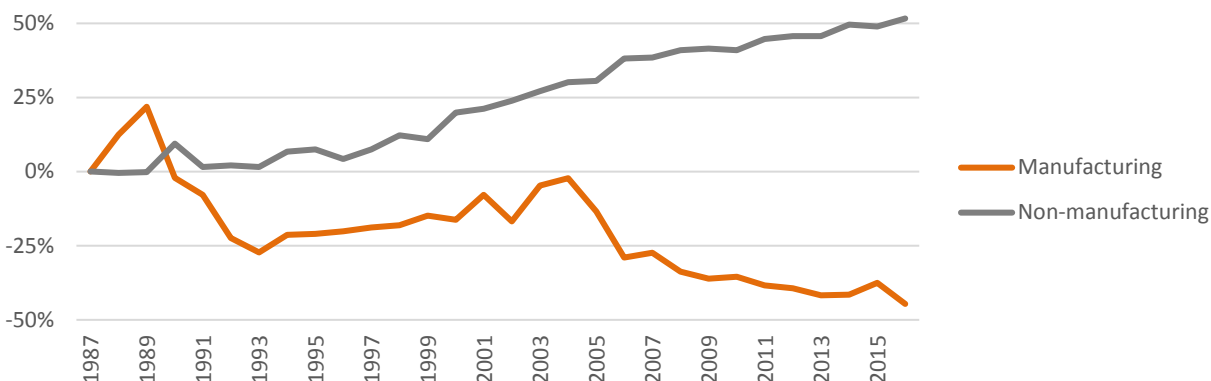
In October 2015, it was ruled that USSC could sever ties with its American parent company and go forward as a new entity. The ruling also stated that USSC could suspend payments of health-care benefits to retirees and property taxes (Craggs, 2015). A year later, the resulting company was renamed Stelco, around the same time that the private holding company Bedrock Industries Group reached a deal to buy the company, that would release US Steel from all claims relating to environmental, pension, and other liabilities (Globe and Mail, 2016).

As of the time of writing, creditors will begin voting in April 2017 to run Stelco as an independent steelmaker. Stelco plans to “continue with substantially all of its producing assets and operations emerging as a stand-alone steel manufacturer with a restructured balance sheet and sufficient liquidity to enable it to compete in a challenging steel market” (Keenan, 2017).

1.2.1 HAMILTON'S CHANGING ECONOMY

Stelco's recent issues have not been singular. As Figure 1 shows, over the last 30 years, manufacturing employment in Hamilton has dropped by 45%.

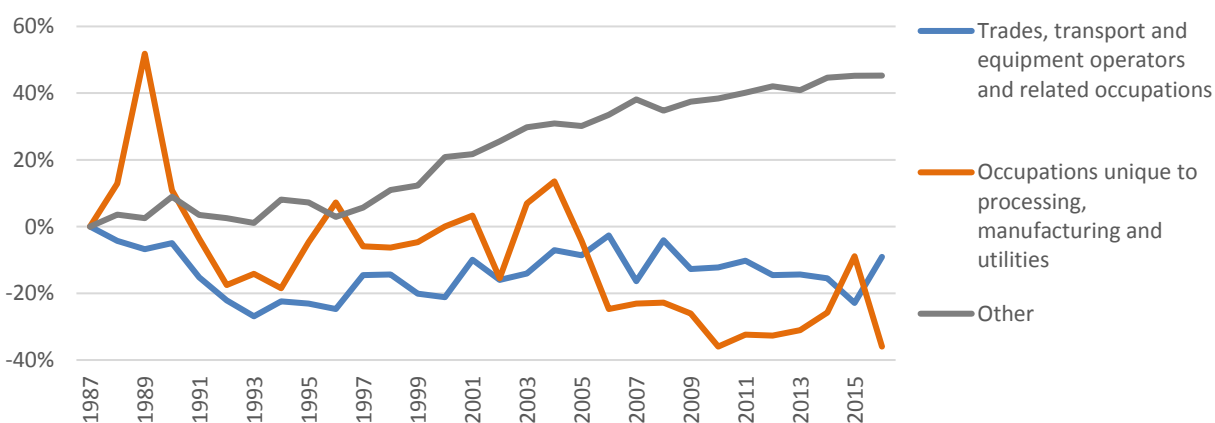
Figure 1. Cumulative growth in employment in Hamilton (CMA) by industry (from 1987 base)



Source: Statistics Canada Labour Force Survey; calculations by CANCEA

And while Hamilton's manufacturing sector has certainly suffered overall, it appears that traditional "blue collar" workers (e.g., machine operators and assemblers) have suffered most – likely because their skills are less transferable. In fact, the only groups of occupations who have seen a net reduction in employment in the region over the past 30 years are workers in processing, manufacturing, utilities, trades, transport, and equipment operators – a net reduction of over 16,000 employees. As Figure 2 shows, other job types have grown by 45% over the past 30 years, or close to 97,000 net new employees.

Figure 2. Cumulative growth in employment in Hamilton (CMA) by job type (from 1987 base)



Source: Statistics Canada Labour Force Survey; calculations by CANCEA

This decline has occurred as China has effectively taken over world crude steel production. According to data from the World Steel Association (2016), Canada produced nearly 15 million tons of crude steel in 1987, equivalent to 2% of world production. After a few decades of already ramping up from a point of equivalence to Canada, China produced 56 million tons, or nearly 8% of world production. Only three decades later, by 2015, Canadian production was down 15% to less than 13 million tons, or less than 1% of world production, while China's production was up 1,328% to over 800 million tons, or *effectively 50% of world production*. Further, China has been seen to be throwing its weight around.¹

Figure 3. Cumulative growth in production of crude steel (From 1987 base)

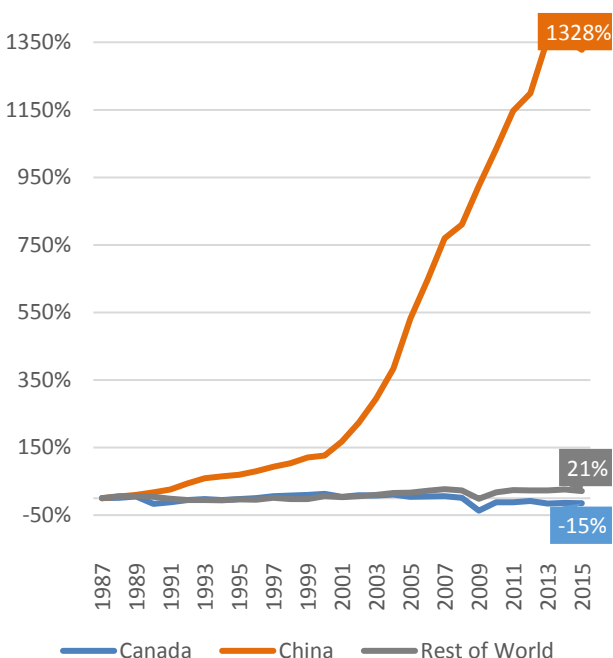
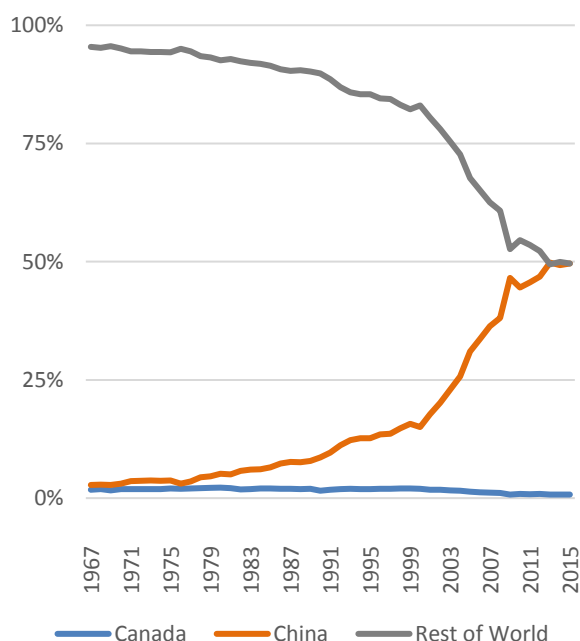


Figure 4. Share of total world production of crude steel



So, while Hamilton's manufacturing sector has dropped from representing 26% of all employees in the region in 1987 to 11% in 2016, a rapidly growing service sector – particularly in the healthcare and education sectors (which now account for 22% of Hamilton employees) – has transformed Hamilton into one of the most diversified economies in the country. The largest single sector in the region is trade, representing one in six Hamilton employees.

1.3 The Lands

Situated in the rapidly growing Greater Golden Horseshow region of Ontario, the Lands in question are 329 hectares (813 acres) and are spatially and economically valuable given their location (e.g., a 5 kilometre

¹ By the end of 2016, the European Union, United States, and other trading partners were ratcheting up duties on Chinese steel to curb low-cost exports. Such actions were taken against what are seen as improperly low prices to hurt international competitors (Globe and Mail, 2016).

drive to downtown Hamilton and a 68 kilometre drive to the U.S. Border at Lewiston). In fact, Hamilton is the only city in southern Ontario that can offer all four modes of transportation (i.e., rail, highway, air, and marine) with significantly uncongested global connections. Further, 170 million people live within a day's drive of the city. These are perhaps among the reasons why several major companies are using Hamilton for distribution or warehousing. (Hamilton Economic Development, 2017)

Figure 5. Proximity to the Lands



1.3.1 DEMOGRAPHICS

Despite the industrial-heavy site of Hamilton driving over the Burlington Skyway, there are actually 65,000 households (largely single-detached) within a 5 kilometer radius of the Lands.

Figure 6. Current distributions of households near the Lands

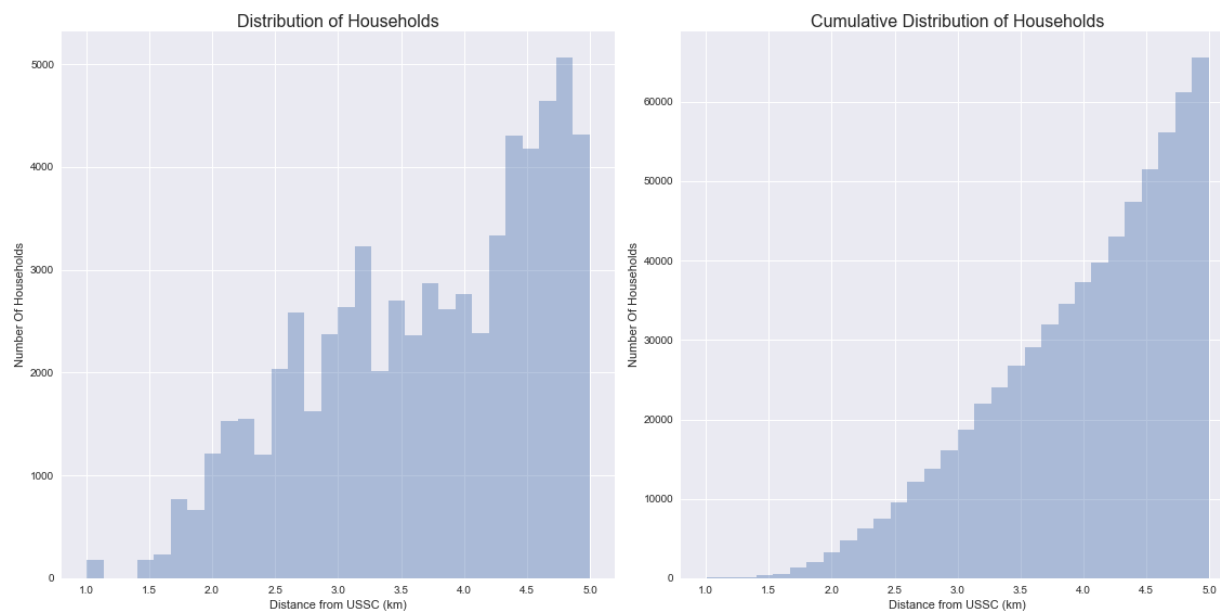
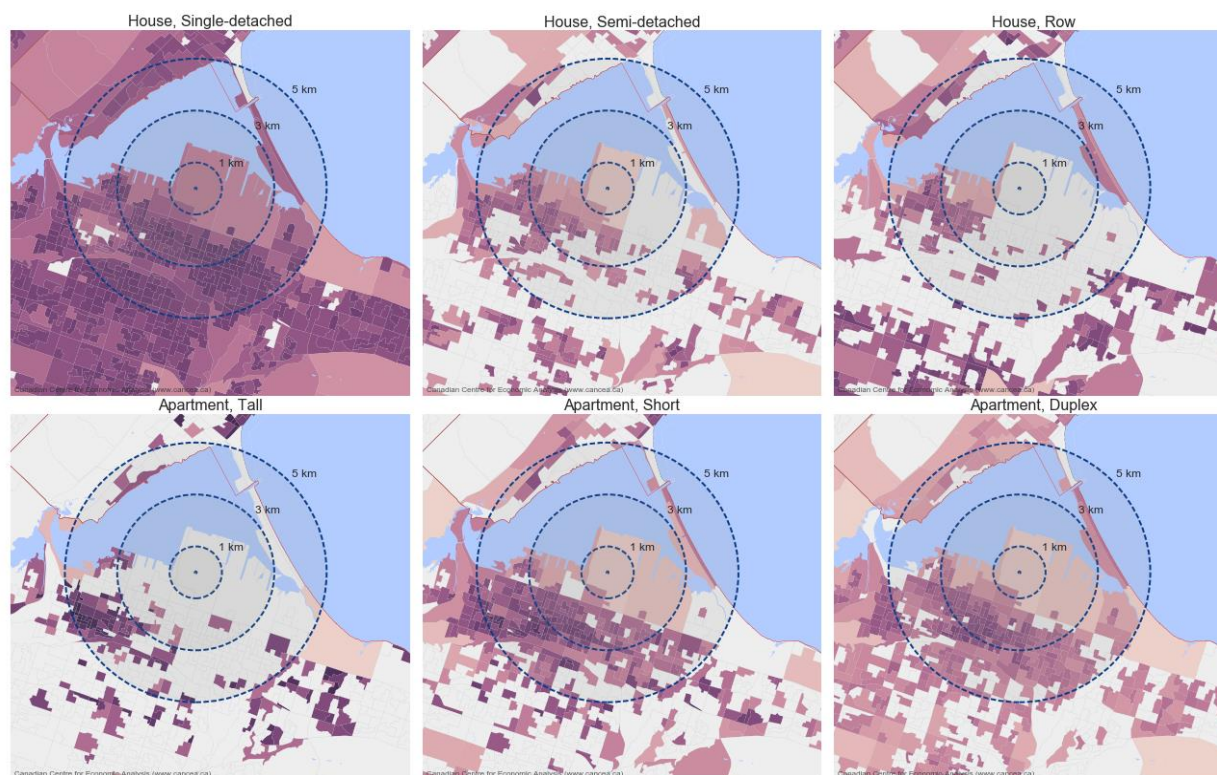


Figure 7. Current density of housing by type



2. THE STUDY

2.1 Modeling approach

Given the incredible complexity of modeling the range of economic impacts required for this project – from economic activity (e.g., output, wages, employment) to government revenue to housing – a different approach is required. Thankfully, with improvements in computing power and data, a new method of inquiry is on the rise.

Agent-based modeling provides a framework for investigating dynamic, networked systems, such as an economy (with specific land-uses), by means of individual agents (e.g., households, businesses, governments), their mutual interaction with each other and their environment. *Prosperity at Risk* (PaR) is CANCEA’s award-winning “big data” computer simulation platform that incorporates social, health, economic, financial, and infrastructure factors in a networked system. This platform models agents as:

- Individuals, with individual budget constraints (e.g., income, expenses, assets, and liabilities) and production/consumption activities (dependent upon economic input/output tables), thereby recognizing the independence of their motivations and decisions; and as
- Part of a spatial and economic network, thereby recognizing the dependence of their economic decisions upon other agents (via, for example, policy, investment decisions, and land use).

As such, PaR simulates the interactions of more than 40 million agents that are each encoded with behavioural rules to guide their decisions, act based on those rules, and be influenced by the actions of others. This is enabled by an enormous “linked-path” database that links hundreds of disparate (and typically cross-sectional) data sources back to the very objects that created them². This allows for varied constraints and behaviours over time. The goal of such analysis is to identify the risks and rewards (intended or not) across various stakeholders.

² For example, PaR imbues in agents hundreds of data sources (e.g., Statistics Canada tables, many down to detailed geographic areas) on demographics, income statements and balance sheets, consumption patterns, labour force statistics, and commuting choices, among many others.

2.2 Applying PaR to this study

Based on estimates from N. Barry Lyon Consultants, it is assumed that – for all scenarios – the job densities on the Lands materialize from the following distributions, along with the actual simulated expected values from PaR:

Table 1 Summary of job density (per hectare) likelihoods by land use

Land use	Low likelihood	High likelihood	Simulated expected values
Steel manufacturing/processing	8	20	12
Port-related uses (storage, warehousing, logistics)	15	20	18
Other industrial (manufacturing, assembly, recycling)	40	50	47
Creative industries (e.g., ICT, media)	75	125	97
Office (professional, scientific, technical)	75	125	98
Retail and recreational	5	15	5
Infrastructure	0	0	0

For each of the thousands of trials run in PaR for this study, job density distributions described in Table 1 are assigned across the scenario-determined land uses. For example, if in a given scenario, steel is assigned 37% of the land use (or just over 120 hectares), and a randomly assigned job density of, say, 12.3 jobs per hectare were chosen for steel, then that trial run would require approximately 1,500 steel jobs on site ($329 \text{ Ha} * 37\% \text{ steel} * 12.3 \text{ steel jobs/Ha}$). Jobs for the other land uses are similarly calculated for each trial run.

In a similar fashion, wages – distributed around the average for each job type – are then randomly assigned to the given job types from a known distribution. Many simulated trials of the entire economy are then run, and those that provide the assigned number of jobs on site as dictated above are selected for investigation. Using commuting pattern data (e.g., from the Canadian census), PaR further indicates how many households would be residents, and how many would commute into Hamilton from surrounding areas.

The resulting *total* population (i.e., correcting for commuting that results in the correct number of jobs on site) provides a number of households, which can be compared to the base population projections. When the number of households in the scenario exceeds that of the base scenario, new housing units are required in the city.

Then, the agents identified in the selected trials pay taxes on their income and spend their wages according to their normal consumption patterns, inducing new economic activity. Further, increased employment and the redeveloped Lands increase real estate values. (In each scenario, Hamilton is compared to similar looking surrounding areas to estimate the value uplift.) This uplift increases GDP as well (through increased

direct and imputed³ rent), and is taxed accordingly by the City. All new economic activity attracts private capital development and is taxed by senior governments accordingly.

Looking across all trials investigated, a distribution of outcomes starts to emerge, along with a sense of the likely expected revenues and associated costs, job years, GDP, wages, and private capital for the city of Hamilton, Ontario, and Canada. Section 3 provides the results of these trials.

2.2.1 REAL ESTATE VALUE UPLIFT

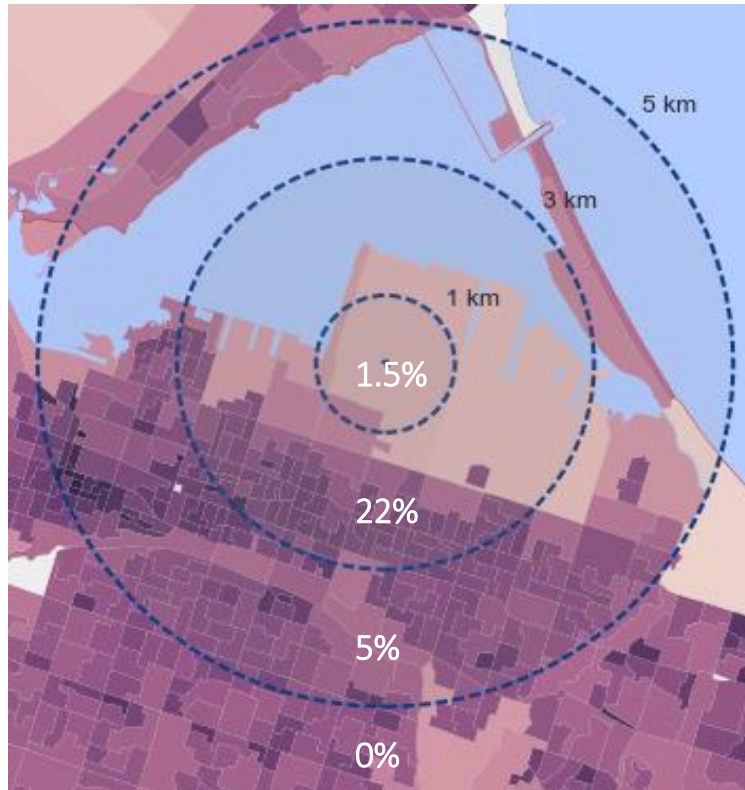
As discussed above, additional economic activity (as well as demographic expansion) leads to a change in real estate value attributable to the area being more desirable. A land use transition away from steel is assumed to further drive positive changes in real estate values. Real estate value changes are driven by many demand and supply factors, one of which is a regional factor/premium. Measurement of these premiums for different housing characteristics and communities across the GTHA was conducted in a recent report by CANCEA for the Toronto Real Estate Board (which covers Hamilton): *Regional Express Rail's Impact on Housing Affordability in the Greater Golden Horseshoe*.⁴

Currently, the regional premium for the Peel region is higher than the Hamilton region (all other things being equal). For this study, the maximum potential real estate uplift in Hamilton is set at the current real estate regional premium attributed to the Peel region. This represents approximately a 30% max value uplift which varies by different dwelling types. Figure 8 shows the estimated average real estate value changes by proximity to the Lands.

³ This is the rent that homeowners effectively pay themselves for shelter consumption.

⁴ Available at www.cancea.ca/?q=node/108

Figure 8. Average estimated real estate value uplift by proximity to the Lands



2.3 Scenarios

Urban Strategies Inc. – in consultation with N. Barry Lyons Consultants Ltd. – prepared four scenarios that reflect possible planning and development outcomes for the Lands. Each scenario represents the extrapolation of a particular development program and site planning direction in order to differentiate and clarify such trends for detailed analysis. While each scenario is presented here in abstract, they are feasible from a city planning perspective.

The scenarios are – out of necessity – simplifications, and suggest a comprehensive development resolution for which the timing and likelihood of success depends on the level of coordinated effort in seeing them through. They nonetheless represent important contributions in the full process of understanding the future of the Lands. All four scenarios are compared to a base case in which the land sits unused for strategic purposes.

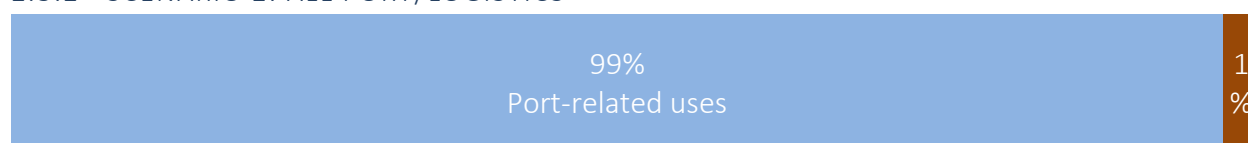
The bars below reflect the use of the land in the long-term (25+ years), between **steel** (dark gray), **port-related uses** (blue; e.g., storage, warehousing, logistics), **other industrial** (light gray; e.g., other manufacturing, assembly, recycling), **office** (orange; e.g., professional, scientific, technical), **creative industries** (purple; e.g., ICT, media), and **infrastructure development** (brown). Scenarios 3 and 4 also include **retail and recreation space** (green).

2.3.1 SCENARIO 1: STEEL AND PORT/LOGISTICS



Scenario 1 reflects the leasing of 122 ha./301 ac. for steel purposes, with almost the remainder of the land being used for port-related uses, including some warehousing and logistics. Port-related use starts with low-density logistics evolving into higher-density logistics over time. Due to the nature of port activities on the site, it is assumed that a portion of the site may benefit from being publicly accessible, so a small amount of land has been dedicated to roads.

2.3.2 SCENARIO 2: ALL PORT/LOGISTICS



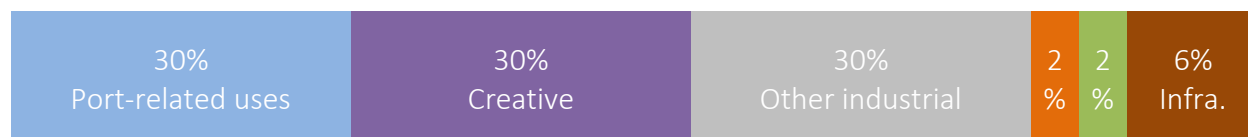
Scenario 2 reflects the discontinuation of steel-related industries and employment on the site, with the entire site being taken up by port-related uses and the infrastructure (e.g., roads) necessary to support these uses, with no public realm provided. Port-related use starts with low-density logistics evolving into higher-density logistics over time.

2.3.3 SCENARIO 3: STEEL + MIXED EMPLOYMENT



Scenario 3 reflects the leasing of 122 ha./301 ac. for steel purposes, with the remainder of the land being evenly distributed among a variety of employment uses, including port-related, manufacturing, and creative industries, in a combination of new and repurposed former industrial buildings. Port-related use starts with low-density logistics evolving into higher-density logistics over time. In this scenario, a redevelopment entity would be proactively leading the regeneration of the site, attracting a variety of businesses. Assumptions for infrastructure in the form of public roads is assumed as well as a modest but generously landscaped public space and waterfront destination.

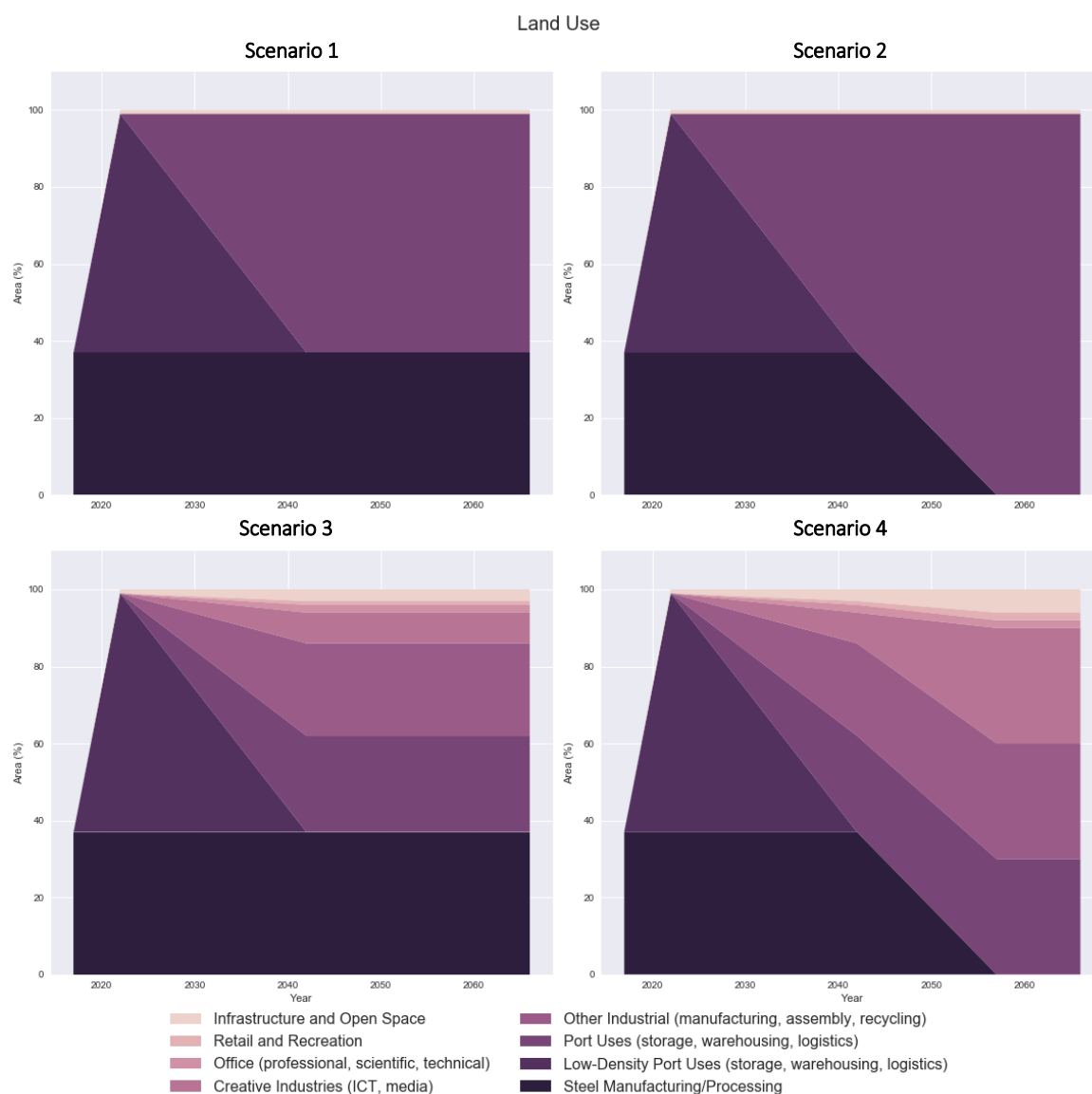
2.3.4 SCENARIO 4: MIXED EMPLOYMENT



Scenario 4 reflects the discontinuation of steel-related industries and employment on the site. The land would be evenly distributed among a variety of employment uses, including port-related, manufacturing, and a more aggressive amount of creative industries, in a combination of new and repurposed former industrial buildings. Port-related use starts with low-density logistics evolving into higher-density logistics over time. In this scenario, a redevelopment entity would be proactively leading the regeneration of the site, attracting a variety of businesses. Land uses also include significant infrastructure in the form of public roads, as well as a modest but generously landscaped public space and waterfront destination.

Over time, these scenarios would divide uses with some evolution:

Figure 9. Evolution of Land Uses in Each Scenario



3. RESULTS

3.1 Long-term results by scenario

3.1.1 SCENARIO 1: STEEL AND PORT/LOGISTICS

Scenario 1 would see average annual GDP increase in Hamilton by an expected \$780M, half of which is due to increased wages. Senior orders of government reap benefits from this scenario as well: the Province would yield an additional \$40M to \$60M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$70M per year across the country.

From an economic benefit perspective, Hamilton and the Province would rank this scenario third while the federal government would rank it second.

Table 2 Average annual incremental economic activity (over 45 years) – Scenario 1

Geography:	Hamilton	Ontario	Canada
GDP (2016\$m)			
Low	690	390	140
Expected	780	450	420
High	880	530	490
Job Years			
Low	5,000	2,400	800
Expected	5,700	2,700	2,400
High	6,300	3,200	2,800
Wages (2016\$m)			
Low	340	190	70
Expected	390	220	210
High	430	260	240
Private Capital (2016\$m)			
Low	10	10	-
Expected	20	10	10
High	20	10	10
Provincial taxes (2016\$m)			
Low	80	40	
Expected	90	50	
High	100	60	
Federal taxes (2016\$m)			
Low	90	50	20
Expected	110	60	60
High	120	70	70

3.1.2 SCENARIO 2: ALL PORT/LOGISTICS

Scenario 2 would see very similar annual GDP increases in Hamilton to Scenario 1, but the province and country overall would see less of a boost to economic activity. As such, senior orders of government reap less benefits from this scenario: the Province would yield an additional \$40M to \$50M per year in tax revenue across Ontario while the federal government would yield an additional \$10M to \$50M per year across the country.

From an economic benefit perspective, all three orders of government would rank this scenario last, though it is only slightly worse than Scenario 1 from Hamilton's perspective.

Table 3 Average annual incremental economic activity (over 45 years) – Scenario 2

Geography:	Hamilton	Ontario	Canada
GDP (2016\$m)			
Low	690	320	110
Expected	780	370	320
High	860	430	380
Job Years			
Low	5,300	2,000	600
Expected	5,900	2,300	1,900
High	6,500	2,700	2,200
Wages (2016\$m)			
Low	340	160	50
Expected	380	180	160
High	420	210	190
Private Capital (2016\$m)			
Low	10	10	-
Expected	20	10	10
High	20	10	10
Provincial taxes (2016\$m)			
Low	80	40	
Expected	90	40	
High	90	50	
Federal taxes (2016\$m)			
Low	90	40	10
Expected	110	50	40
High	120	60	50

3.1.3 SCENARIO 3: STEEL + MIXED EMPLOYMENT

Scenario 3 would see significant boosts to annual GDP in Hamilton of over \$1.6B per year, and GDP across the province and country are at their highest in this scenario. As such, senior orders of government reap the most revenue under this scenario: the Province would yield an additional \$50M to \$70M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$70M per year across the country.

From an economic benefit perspective, Hamilton would rank this scenario second while the other orders of government would rank it first.

Table 4 Average annual incremental economic activity (over 45 years) – Scenario 3

Geography:	Hamilton	Ontario	Canada
GDP (2016\$m)			
Low	1,440	490	150
Expected	1,610	560	440
High	1,760	640	520
Job Years			
Low	9,800	2,900	800
Expected	10,800	3,300	2,500
High	11,800	3,800	3,000
Wages (2016\$m)			
Low	690	240	70
Expected	760	270	220
High	840	310	260
Private Capital (2016\$m)			
Low	30	10	-
Expected	40	10	10
High	40	10	10
Provincial taxes (2016\$m)			
Low	150	50	
Expected	170	60	
High	190	70	
Federal taxes(2016\$m)			
Low	190	70	20
Expected	210	80	60
High	230	90	70

3.1.4 SCENARIO 4: MIXED EMPLOYMENT

Scenario 4 would see the largest boost to annual GDP in Hamilton of over \$2.0B per year, while GDP across the province and country lower than in Scenario 3 (and even Scenario 1 for country writ large). As such, senior orders of government reap slightly less revenue under this scenario: the Province would yield an additional \$50M to \$60M per year in tax revenue across Ontario while the federal government would yield an additional \$20M to \$60M per year across the country.

From an economic benefit perspective, Hamilton would rank this scenario first, the province second, and the federal government third.

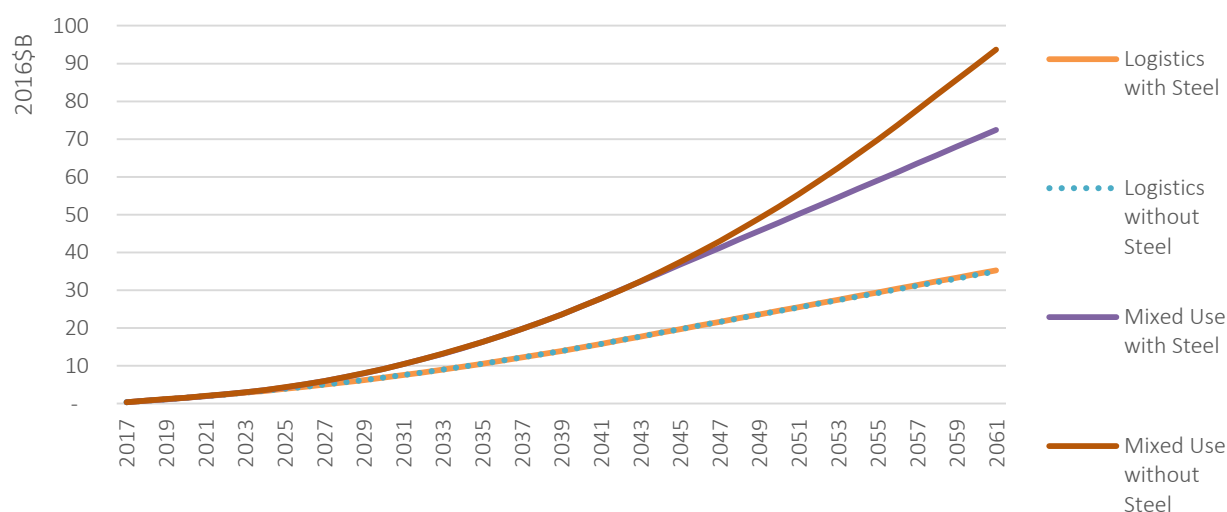
Table 5 Average annual incremental economic activity (over 45 years) – Scenario 4

Geography:	Hamilton	Ontario	Canada
GDP (2016\$m)			
Low	1,850	450	120
Expected	2,080	520	350
High	2,250	590	410
Job Years			
Low	12,400	2,800	700
Expected	13,900	3,200	2,000
High	15,000	3,600	2,400
Wages (2016\$m)			
Low	850	220	60
Expected	960	250	170
High	1,030	280	200
Private Capital (2016\$m)			
Low	40	10	-
Expected	50	10	10
High	60	10	10
Provincial taxes (2016\$m)			
Low	190	50	
Expected	210	60	
High	230	60	
Federal taxes (2016\$m)			
Low	240	60	20
Expected	270	70	50
High	290	80	60

3.2 What does success look like for Hamilton?

These results show that mixed land use and strong economic development are the keys to success from Hamilton’s perspective. Scenarios 3 and 4 would see between double and triple the number of incremental annual job years (loosely “jobs”) in the region as Scenarios 1 and 2, leading to significantly more new wages. By the end of the time horizon studied, this would lead to the incremental annual economic activity in the region being between 2 and 4 times what it would be without mixed land use.

Figure 10. Expected cumulative incremental GDP in Hamilton by Scenario



(Note: despite the expected cumulative GDP from Scenario 4 outstripping that of Scenario 3 in the long-term, the difficulty of predicting that far into the future means the range of potential outcomes overlap.)

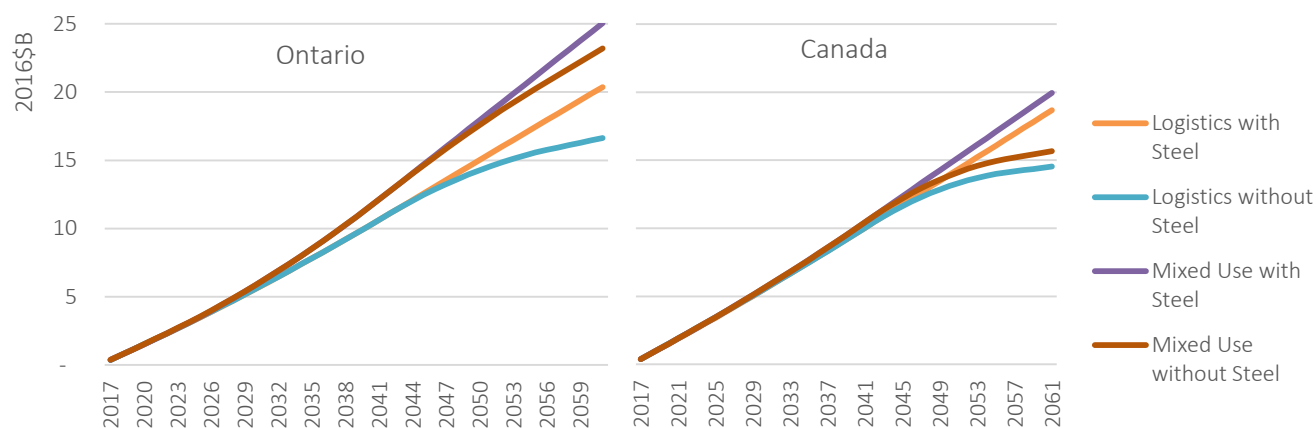
Figure 10 also shows that Hamilton’s economy starts to look different under the scenarios starting in the early 2030s, a difference that continues to grow noticeably going forward. This suggests that the sooner effective economic development could get mixed industry up and running, the better.

3.3 What does success look like for Ontario and Canada?

These results also show that the provincial and federal governments have a stronger economic interest in keeping steel going strong in the region. As shown in Figure 11, Scenario 3 would see higher incremental cumulative economic activity in the two broader economies than the other scenarios. Further the Canadian economy even prefers Scenario 1 (no mixed use) to Scenario 4 (mixed use without steel).

As Figure 11 shows, senior government should take a much more long-term strategic view with respect to the Lands, rather than expecting any short-term “win”. There is little that separates the scenarios for Ontario until the late 2030s; for Canada, no noticeable difference occurs until the late 2040s.

Figure 11. Expected cumulative incremental GDP in Ontario and Canada by Scenario



3.4 “Optimal” development mix

While there are obvious trade-offs between the three orders of government, from a strict economic perspective, there is a “compromise” scenario. Specifically, as described in Scenario 3, replacing low-density logistics (i.e., storage) with higher density logistics over the short-term and starting to add industrial and creative industries to position for long-term benefits seems to be the highest aggregated-rank.

Such a land-use mix would also see Hamilton’s population grow by close to 18,000 by 2061 (above and beyond natural growth), as people are attracted to the new jobs. Such population growth, along with the new economic activity, would lead to real estate values in the Hamilton area increasing by between 13% and 15% on average (again, above and beyond natural growth).

Figure 12. Economic ranking of scenarios by order of government

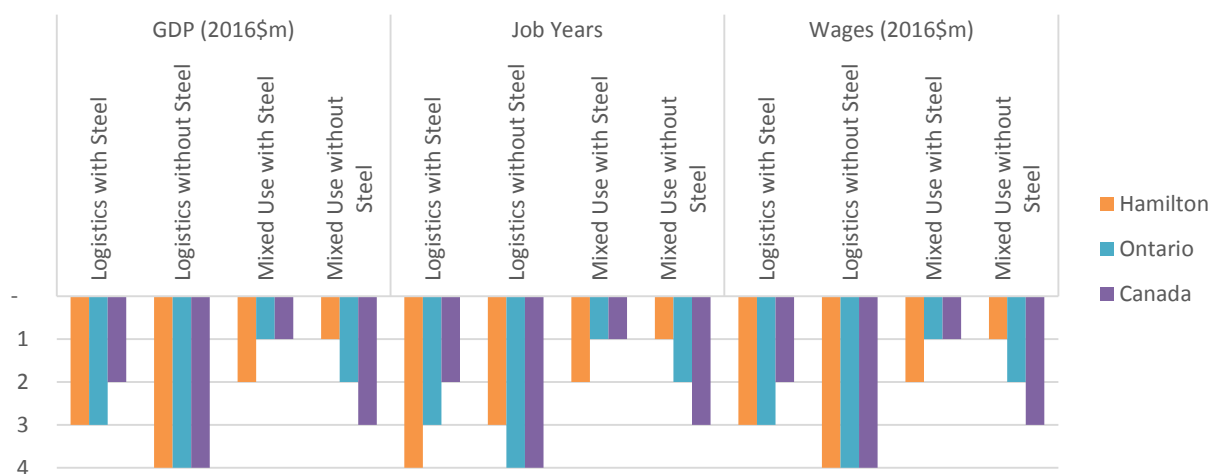
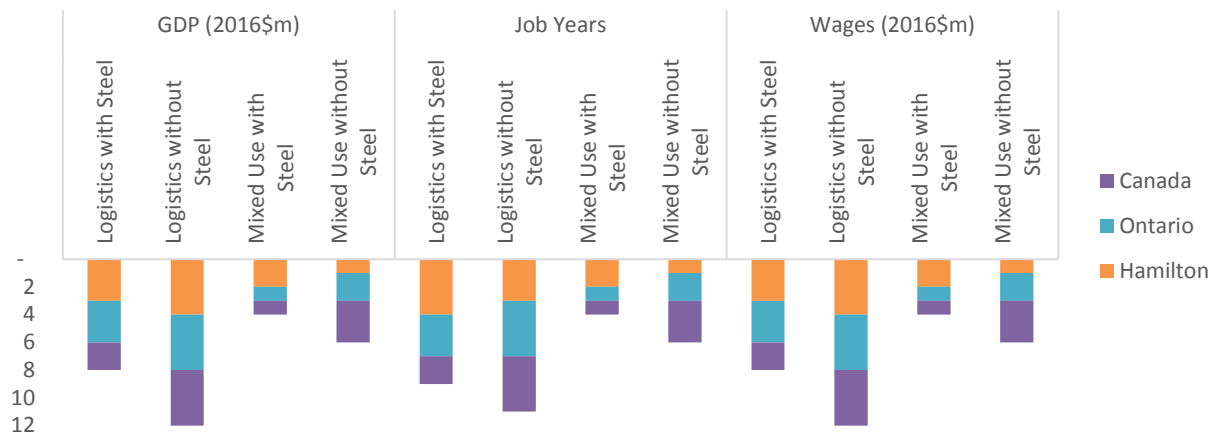


Figure 13. Aggregate economic ranking of scenarios across orders of government



4. CONCLUSION

This study set out to find an evidence-based and realistic understanding of the socio-economic value of the Lands to the City of Hamilton economy and its residents, Ontario's and Canada's economies, and provincial and federal government revenues. The short answer to this work: the 329 hectares (813 acres) Lands should not sit idle, as they possess significant strategic economic value.

While all four scenarios investigated provide returns, they do identify trade-offs between the three orders of government. The economic sensitivity for the federal government appears to be the maintenance of steel operations; while it is about economic diversity for the City of Hamilton. The Province's economic interests appear to more closely align with the City, though maintaining steel would appear to be of some additional economic benefit. As such, the "mixed use with steel" scenario (#3) looks like the "compromise" solution.

This scenario will require effort, particularly on the economic development front. But there are significant economic risks in not moving ahead in such a way. Over the next 45 years, there could be numerous economic benefits of this approach:

- For Hamilton: between 440,000 and 530,000 incremental job years (or an expected 10,800 per year on average) with between \$31B and \$38B in aggregate incremental wages paid in the region;
- For Ontario: an expected 150,000 incremental job years (or an expected 3,300 per year on average) with between \$2.4B and \$3.2B in aggregate incremental provincial tax revenues across the province; and
- For Canada: at least 38,000, and likely 115,000 incremental job years (or 800/2,500 per year on average) with between \$150M and \$520M in additional GDP per year.

Historically, Hamilton Harbour – and the economic activities that occurred along its southern shore – was the economic engine of Hamilton. But market forces in the region and across the world have forced the city's economy to diversify. It would appear only wise for such diversity to be applied to the strategically situated Lands going forward.

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A. DEFINITIONS

Agent: An autonomous individual, firm or organization that responds to cues from other agents and their environment using a set of evidence-based behavioural rules in response to those cues.

Agent-based modeling: A framework for modeling a dynamic system, such as an economy, by means of individual agents, their mutual interaction with each other, and their mutual interaction with their environment(s)

Employment: The number of employed residents living in a region, in a given year. These residents may work within their region of residence or may commute outside of the region to work.

Greater Golden Horseshoe: A large and fast growing region in southern Ontario – anchored (economically and demographically) by Toronto – representing roughly one quarter of Canada’s population.

Jobs: The number of jobs located in a given region, in a given year. These may be held by residents of the respective region, or may be held by individuals commuting in from other regions.

Job-years: Equivalent to person-years of employment, refers to the amount of work typically performed by one person working full-time for one year. However, because CANCEA distinguishes between employment and jobs, job-years are the unit used to measure job impacts over multiple years, as opposed to employment impacts.

The Lands: 329 hectares (813 acres) of industrial land occupied by Stelco (the “Lands”) on the southern shore of Hamilton Harbour (at the western tip of Lake Ontario)

Linked-path data: A set of data derived from multiple sources that links those sources to representations of the objects that created the data in the first place (e.g., households). This internally consistent database allows for modeling the objects in time (i.e., over a “path”) to understand a system (like an economy) from the bottom up.

Prosperity at Risk: An event-driven, agent-based, microsimulation platform that tracks over 40 million agents for all of Canada. It simulates the economy’s processes, including consumption, production, labour force dynamics, as well as evolving financial statements of agents. It conserves the flows of people, money and goods.

SCAR (Index): *Shelter Consumption Affordability Ratio*, measures the proportion of after-tax income that households allocate to shelter-related needs after paying for other necessities.

System effects: Impacts that transcend direct, indirect and induced effects, which are not traditionally measured by economics. These impacts arise from the relationship between every economic agent and the environment in which they operate, as they influence one another’s states and behaviours.