

2015 Ontario East Municipal Conference

Fiscal Impacts of Alternative Development Patterns: A New Tool for Municipalities

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Costs of Development - Background

- ❑ The Municipal Finance Officers' Association of Ontario (MFOA), in conjunction with the Province of Ontario retained Watson & Associates Economists Ltd. to investigate the costs and revenues associated with different patterns of development in Ontario municipalities.
- ❑ Exploring this relationship is important because of the impacts of land-use patterns on various costs to municipalities, consumers and society at large.
- ❑ Many studies have concluded that costs tend to increase with dispersed, low density, settlement fringe development patterns. This is critical since, public infrastructure and services that are needed to support development require permanent municipal financial investment for the operation, maintenance and replacement of this infrastructure.

Costs of Development - Background

- ❑ Using information from sample Ontario municipalities, a Microsoft Excel-based model was developed for use by municipalities, to:
 - Calculate costs (i.e. operating, capital and lifecycle) and revenues associated with new development;
 - Compare the costs of, and assess long-term financial outcomes of different development forms and patterns to help inform municipal planning decisions; and
 - Deal with specific geographies (e.g., neighbourhoods or secondary plans)
- ❑ A User Guide was also produced that provides a “how to” for the modelling process, assumptions used, data sources to be used, scenarios approaches and model limitations. Watson & Associates Economists Ltd. (Watson) was retained to assist the MFOA and MMAH in this study process.

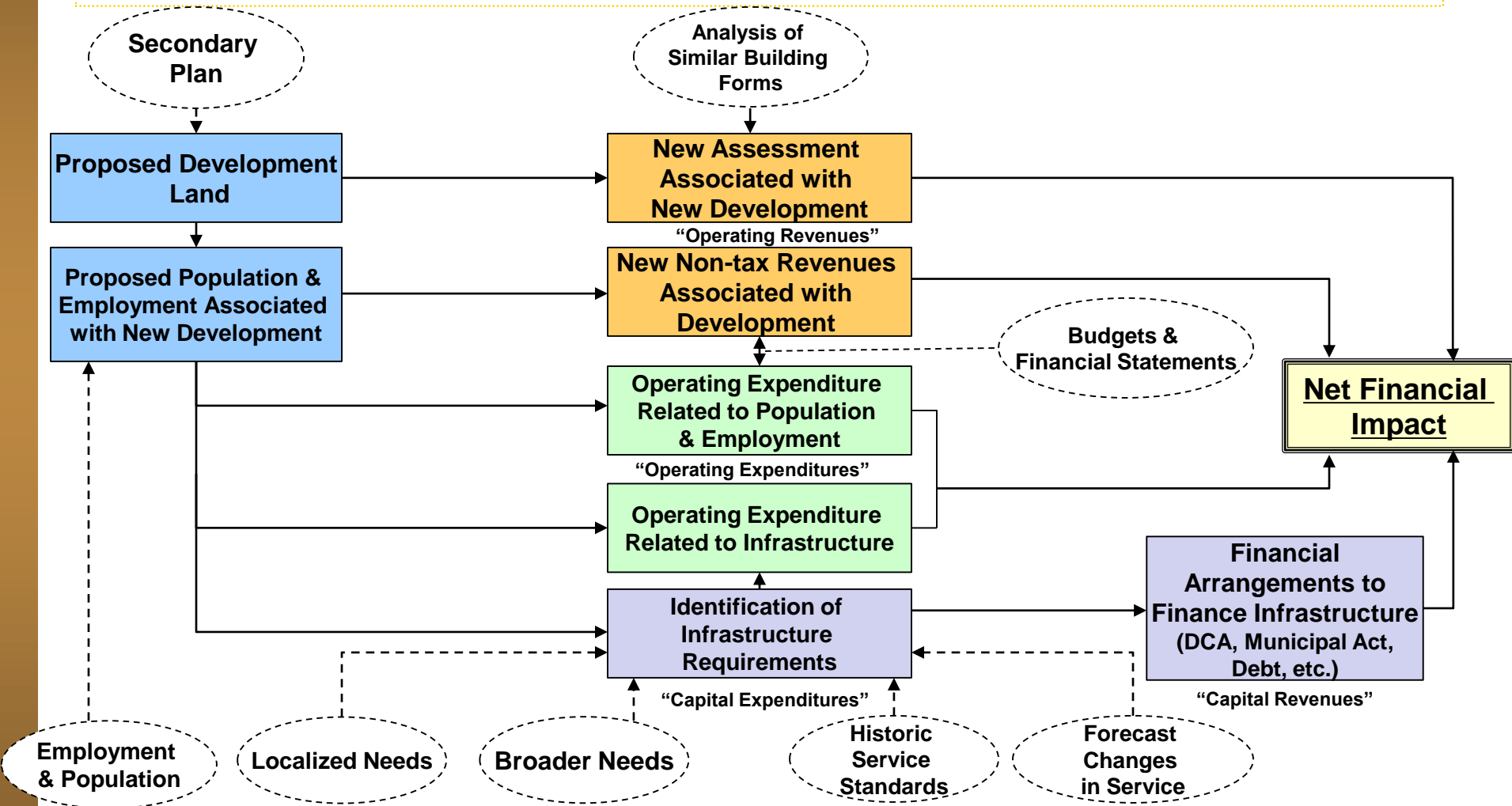
Costs of Development - Background

- ❑ In exploring the relationship between costs and development patterns and forms, this initiative's main goals were to:
 - Assess the links between land-use patterns, costs and revenues;
 - Examine how financial information can be integrated into the planning process to support informed decision-making; and
 - Examine how to assess long-term financial implications of new development for a variety of development types/forms.

CONCEPTUAL OVERVIEW OF THE MODEL

- ❑ The ability to model development patterns and related costs and revenues is a key step in supporting more informed and better decision-making in relation to the long term financial planning of a municipality.
- ❑ Generally, this analysis starts with the forecast of anticipated population and employment growth. It then allows for the estimation of residential and non-residential development to accommodate this growth and the amount and timing of operating and capital needs (note that within the model, different approaches to growth are provided for).

CONCEPTUAL OVERVIEW OF THE MODEL



CONCEPTUAL OVERVIEW OF THE MODEL

- ❑ The analysis starts by determining the proposed development: the pattern of residential and non-residential development, amount of development and when such development will occur.
- ❑ This provides a basis for determining development growth, the \$ amount of operating and capital expenditure needed to support such growth and when such expenditure is needed.

CONCEPTUAL OVERVIEW OF THE MODEL

- ❑ Estimated capital expenditure is analyzed further to determine appropriate financing sources.
 - Capital expenditure recovered by development charges is calculated. Any outstanding expenditure is assumed to be financed by municipal debt.
- ❑ Operating expenditure and non-tax revenue is forecast based on current per capita/per employee program costs.
 - From new assessment, incremental property tax revenue is also forecast.
 - Comparing total revenues and expenditures helps estimate an overall financial impact for the development.

Land Uses to be Considered

Residential

- Low/Medium/High Density
- Institutional (e.g. Nursing homes, Group homes, etc.)

Commercial

- Office
- Retail
- Big Box
- Other

Industrial

- Warehouse
- Manufacturing
- Prestige
- Other

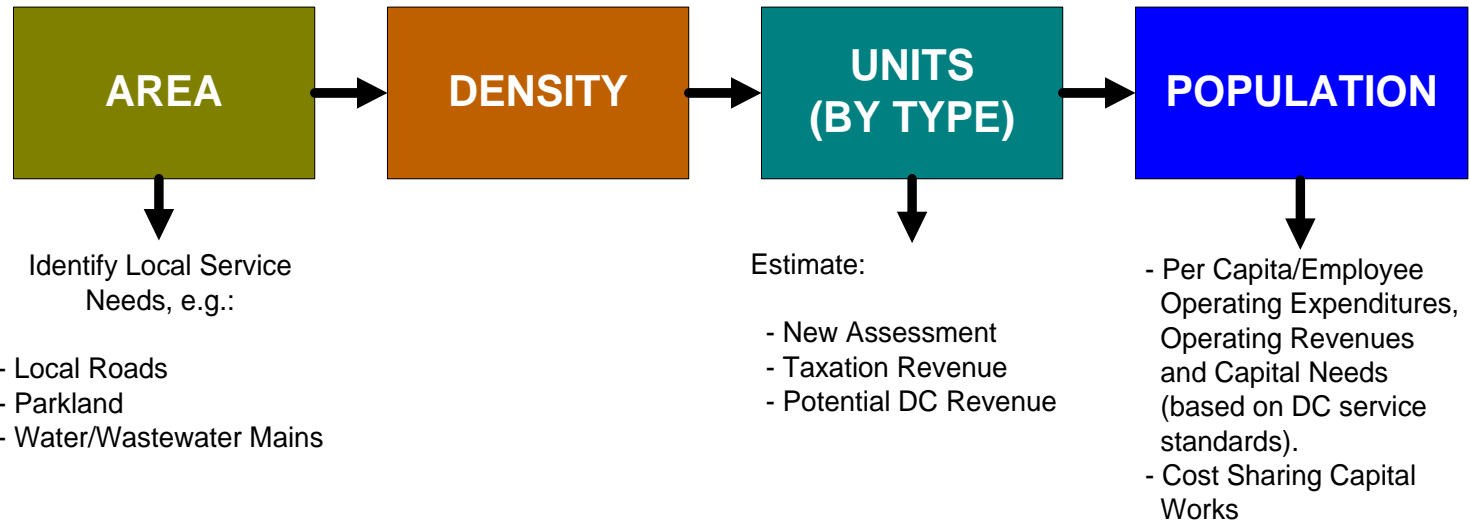
Institutional

- Schools
- Hospitals
- Federal/Provincial
- Municipal
- Other

Model Outputs based on Development Information

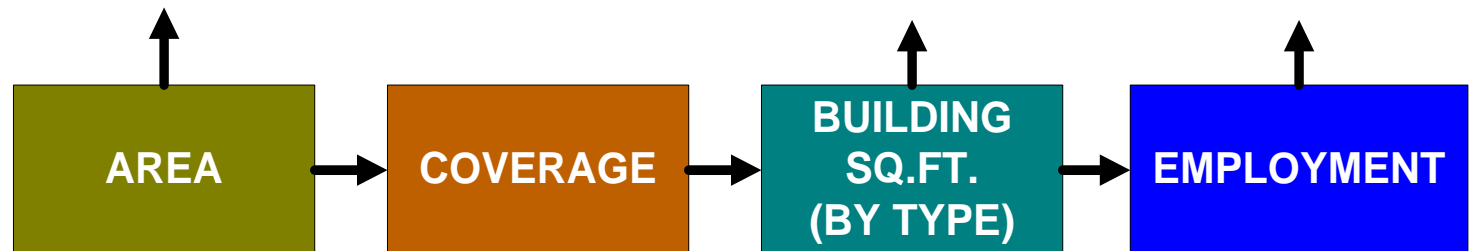
Development Type

Residential Development



→ estimate capital costs
→ estimate operating costs

Non-Residential Development



Land Fabric Model Input Table

(Example – New Development)

Development Land Fabric

Land Use	Land Area (ha)	Density (units/ha)	Total # of Units	% of Total Land Area
Low Density Residential	54.6	29	1,571	51%
Medium Density Residential	7.0	47	326	6%
High Density Residential	0.0		-	0%
Commercial - Office	0.0		-	0%
Commercial - Retail	0.0		-	0%
Commerical - Other	0.0		-	0%
Institutional - School	2.8		-	3%
Institutional - Other	0.0		-	0%
Open Space	7.7		-	7%
Parks	5.2		-	5%
Roads - Local	27.4		-	25%
Roads - Collector	3.0		-	3%
Roads - Arterial	0.0		-	0%
Railway	0.0		-	0%
Stormwater Facilities	0.0		-	0%
Industrial	0.0		-	0%
Total	107.7		1,897	

Development Scenarios

- ❑ The model has been set up to consider three different forms of development:
- ❑ **Scenario 1 – Secondary Plan/Greenfield Development** - evaluates options which may be considered during a Secondary Plan process. During these planning processes, different options may be developed and considered from a financial perspective.

Development Scenarios

- ❑ **Scenario 2** – Population Driven Development - considers the impacts of development under different levels of density. The user may input a target population and then assess the impact of different mixes of housing forms (i.e., low, medium and high density units) and at different levels of intensity (i.e., units per hectare).
- ❑ **Scenario 3** – Redevelopment - assesses the impacts of redeveloping an area.

Long-Term Financial Model

- ❑ Model considers all local government services:
 - General Government (Council, CAO, Clerks, Legal, Finance, etc.)
 - Protection (Fire, Police, Protective Inspection, Building Permit, etc.)
 - Transportation (Roads, Winter Control, Transit, Parking, Streetlights, etc.)
 - Environmental (Water, Wastewater, Storm)
 - Health (Ambulance, Cemeteries, etc.)
 - Social & Family (Ontario Works, Assistance to Aged, etc.)
 - Social Housing (Public Housing, Non-Profit Housing, etc.)
 - Recreation & Cultural (Parks, Recreation, Libraries, etc.)
 - Planning & Development

Financial Impact Assessment

- ❑ Analysis includes:
 - Growth Projections (population, housing units by type, employment by category, non-residential floor area by type)
 - Current and Future Property Assessment along with Non-Tax Revenues
 - Lifecycle Analysis (New assets)
 - Capital and Operating Budgets/Forecasts
 - Development Charge Revenue Forecast

Overall Approach to the Analysis

- ❑ The model has been structured to allow an intermediate excel user to draw upon demographic and financial information which is generally available to municipalities. With this information, a more detailed analysis of the relationship between development forms and patterns and long term financial implications can be conducted.
- ❑ A number of general assumptions have been included throughout the model to assist the user. Users may override these general assumptions should more detailed information be available. While it is desirable to use more detailed specific data within this evaluation, it is recognized that this information is not always available.

Overall Approach to the Analysis

- ❑ To fully use and understand the model, and to achieve the best results, a coordinated, team approach is recommended, that includes municipal staff from Planning, Finance and Engineering, who can facilitate the populating of the model, provide key assumptions and interpret the results
- ❑ As well, the benefits of the tool can be optimized only if at least two alternative scenarios are modeled – in order to provide a comparative analysis between different development patterns.

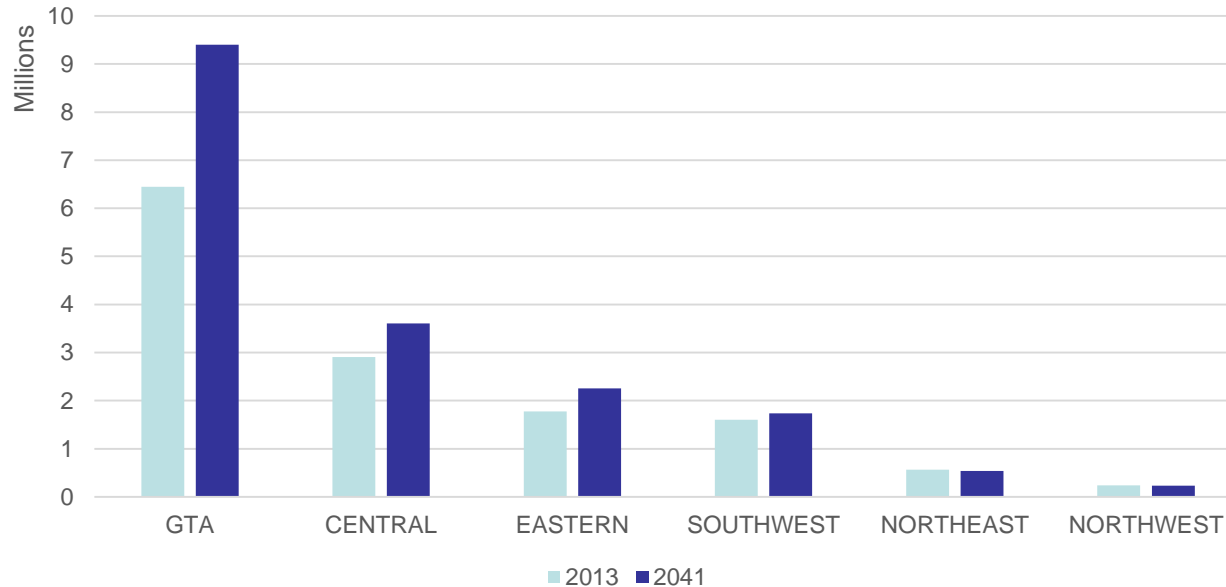
Model Set Up

- ❑ The model is separated into three core areas:
 - **Financial Information Return (FIR) Data Input** - A user would initially copy and paste the FIR schedules used into the worksheets here; these worksheets provide much of the information needed to run the model.
 - **Scenario Input Assumptions** – the model has three different scenarios that can be run; in this area the user enters assumptions relating to the scenario chosen, i.e. land fabric size/development mix/target population/park size/roads.
 - **General Input and Analysis** – in this area general assumptions relating to residential/non-residential split, financing options and assessment values are entered. Data from the DC background study is also entered here and calculations largely flow through the entire model to yield final results.

Ontario Growth Forecasts

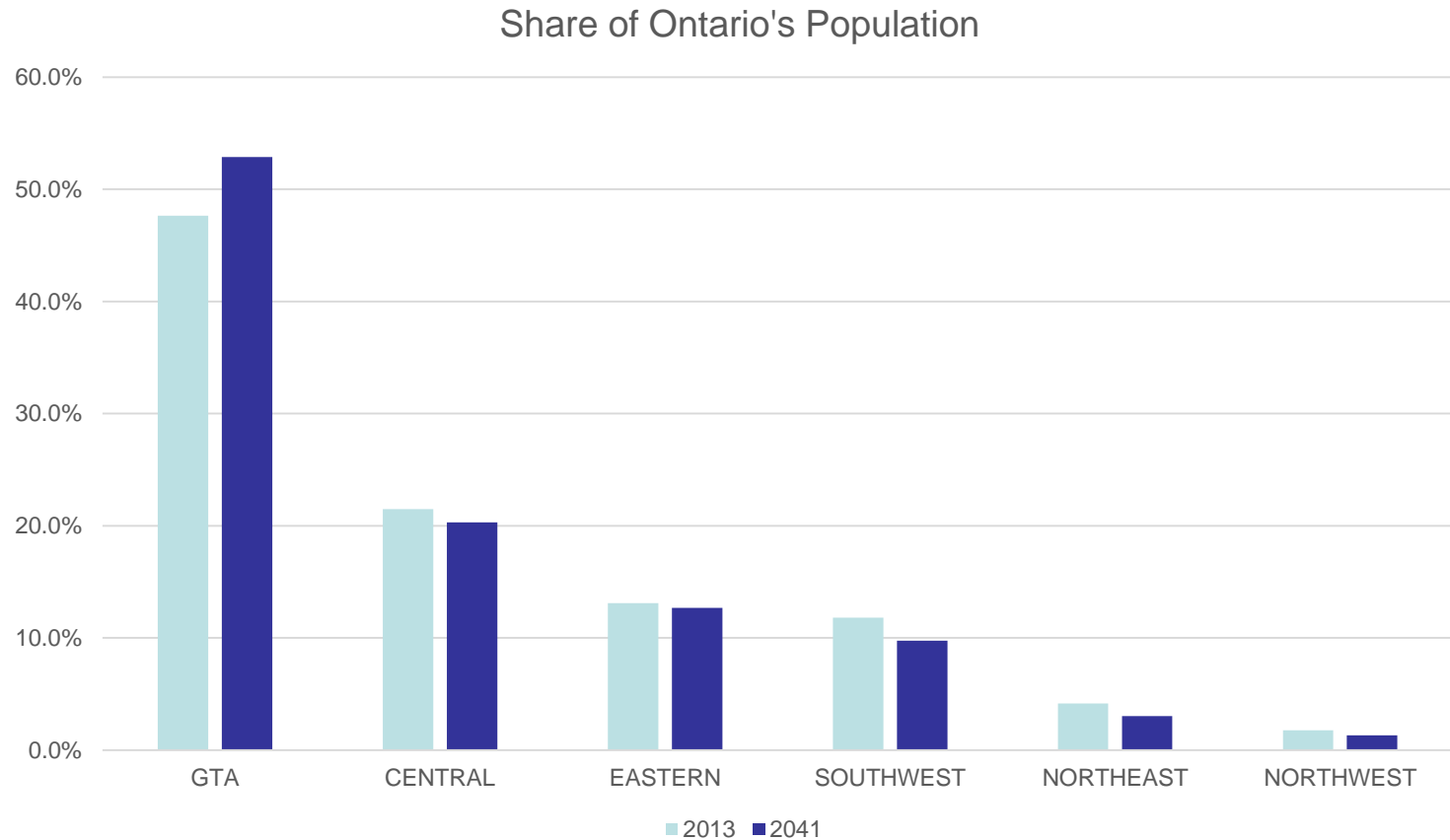
Growth in Ontario

Ontario Population Forecast to 2041



- ❑ Ontario's population is projected to grow by 4.2 million (31.3 %), from 13.5 million to almost 17.8 million over the next 28 years
- ❑ The Greater Toronto Area (GTA) is projected to be the fastest growing region of the province, with its population increasing by almost 3.0 million, or 45.8 per cent, to reach over 9.4 million by 2041.

Population Share by Region



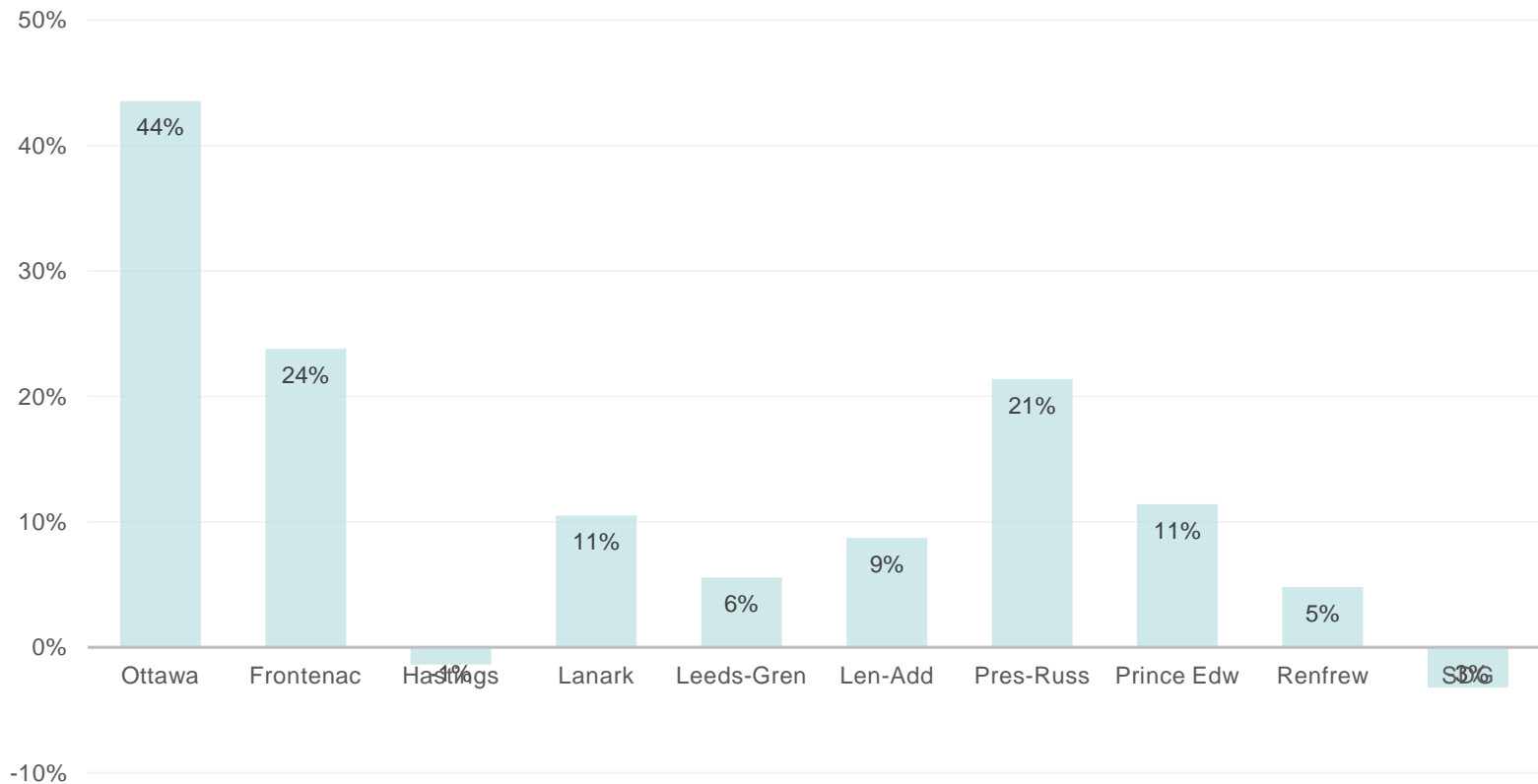
70% of growth to 2041 will occur in the GTA

Eastern Ontario

- Approximately 482,000 more people in Eastern Ontario in 2041 than in 2013 or an increase of 27%
- Most of the growth (approx. 84% of it) will occur in Ottawa
- There will be growth elsewhere in Eastern Ontario, particularly Frontenac and Prescott-Russell

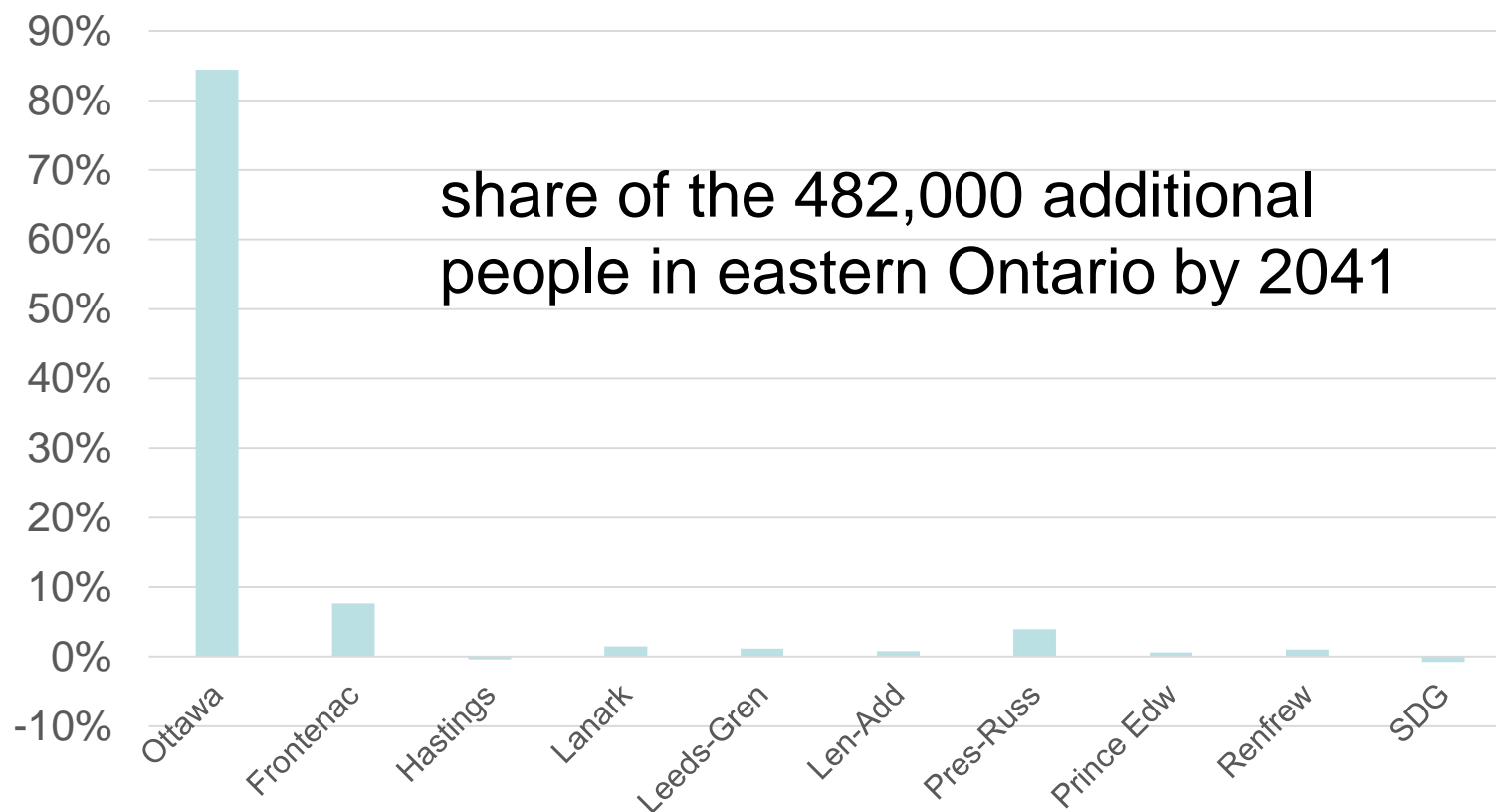
Eastern Ontario Forecast

Population Change: 2013-2041

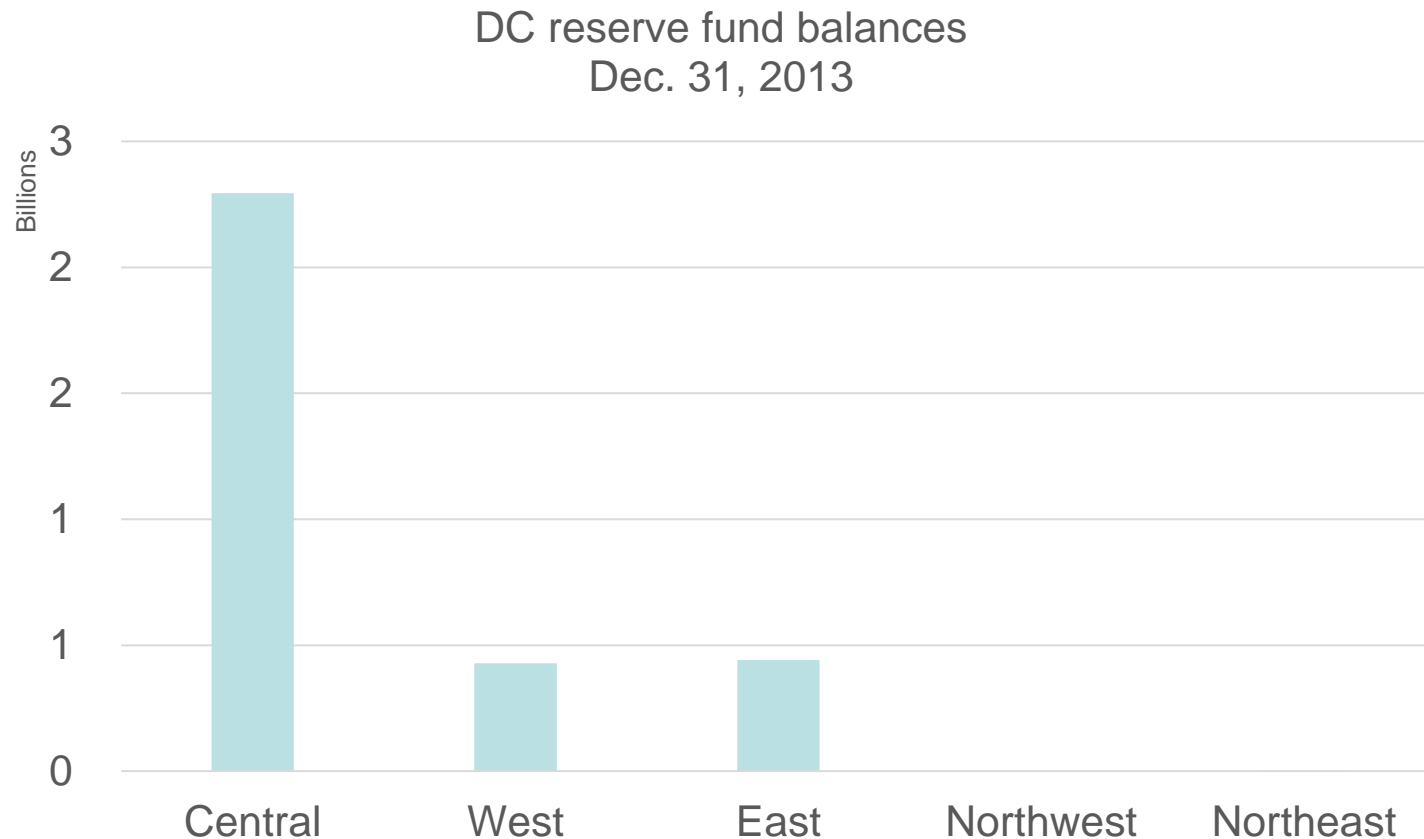


Viewed Another Way

Share of Growth: 2013-2041



2013 DC Reserve Fund Balances



DC Reserve Fund Balances (con't)

- Approx. 211 municipalities had non-zero balances in 2013
- 61 or 29% of these municipalities are in the east
- Just under \$3.2 b in DC reserves at the end of 2013
- 14% of these balances in the east

Implications for the Model

- The model was built to measure the impacts of growth through alternative development scenarios
- Very useful tool for high growth municipalities and municipalities captured by the Province's "Places to Grow" policies

Implications (con't)

- Is it useful in Eastern Ontario?
 - There is growth in Eastern Ontario
 - 61 eastern municipalities have DC balances
- The model can be VERY useful even if there are no alternative growth scenarios to model

Useful LTFP tool as well?

- How many municipalities have a model that integrates:
 - 20 year forecasts for tax and non-tax revenue and expenses
 - Calculate full life cycle costs of all assets including those to be acquired over the 20 year planning period
 - Integrates operating and capital requirements

Pilot Testing the Model

Pilot Testing the Model

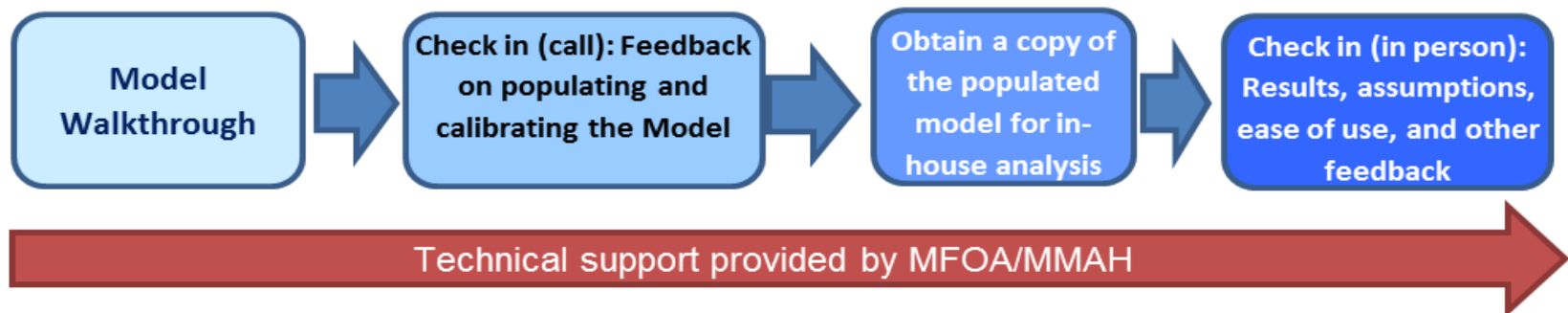
- ❑ A pilot process was initiated with four municipalities of different populations and from different regions in the province.
- ❑ Each pilot municipality was facing growth pressures and had defined development proposals or population projections to work with.
- ❑ The following pilot municipalities were chosen:
 - Two suburban rapidly growing municipalities in the Greater Toronto Area
 - An agricultural but growing smaller town on the outskirts of Hamilton
 - Growing bedroom community outside of Ottawa
- ❑ All the pilot municipalities were interested in evaluating how different densities or land use mixes could impact longer term financial outcomes or the amount of land required for growth.

Piloting

The Reason for Piloting

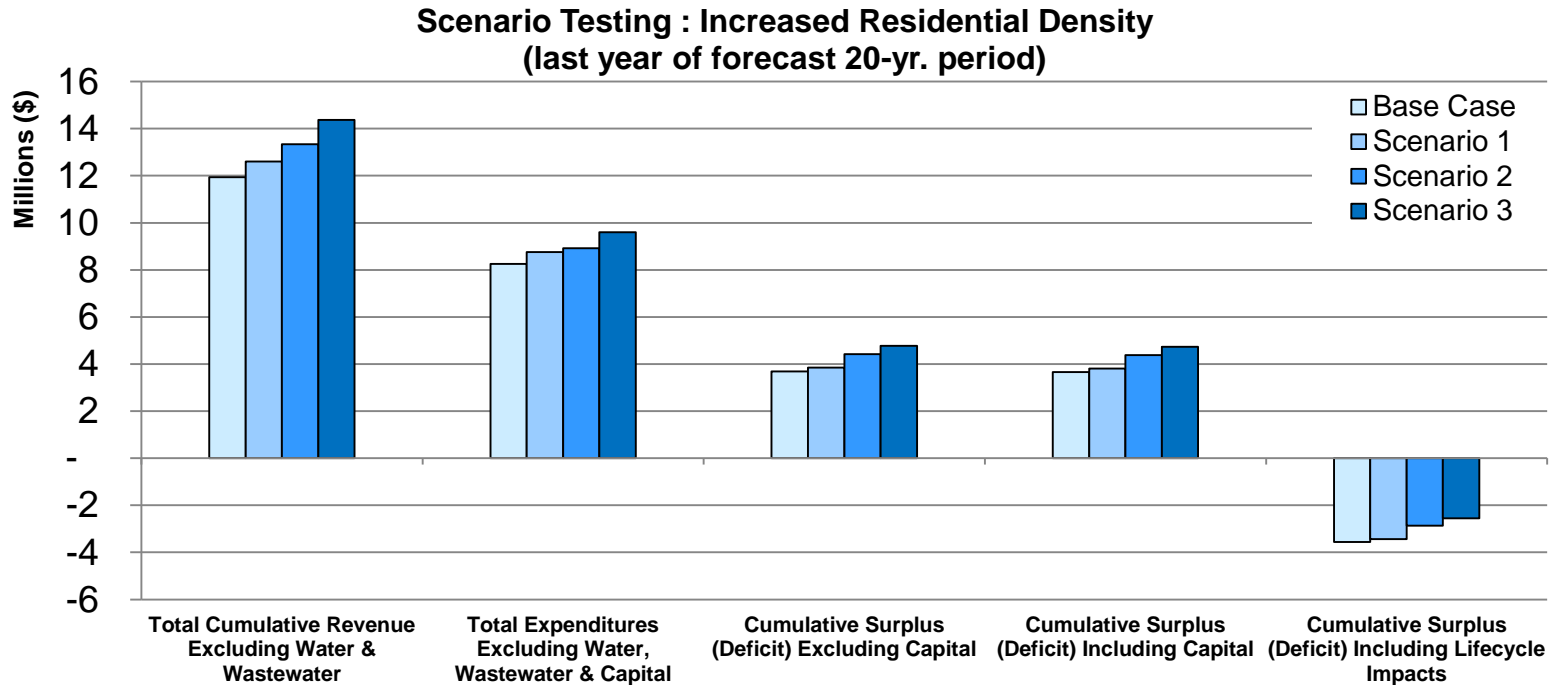
- *Testing the Model*
- *Observing if model results in line with expectations*
- *Determining the Model's ease of use*
- *Assessing how the Model is best used*
- *Understanding the supports needed by future municipal users of the Model*

Feedback Process



Scenario Testing by Pilot Municipalities

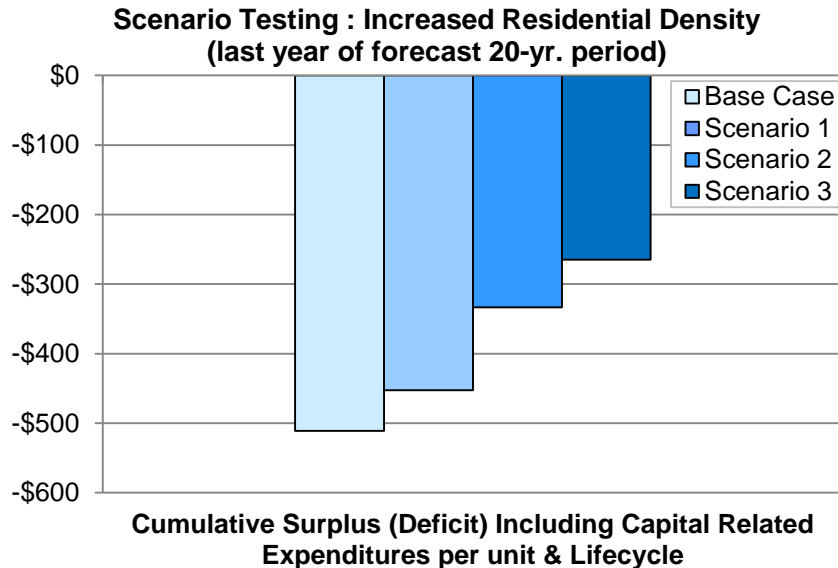
Totals



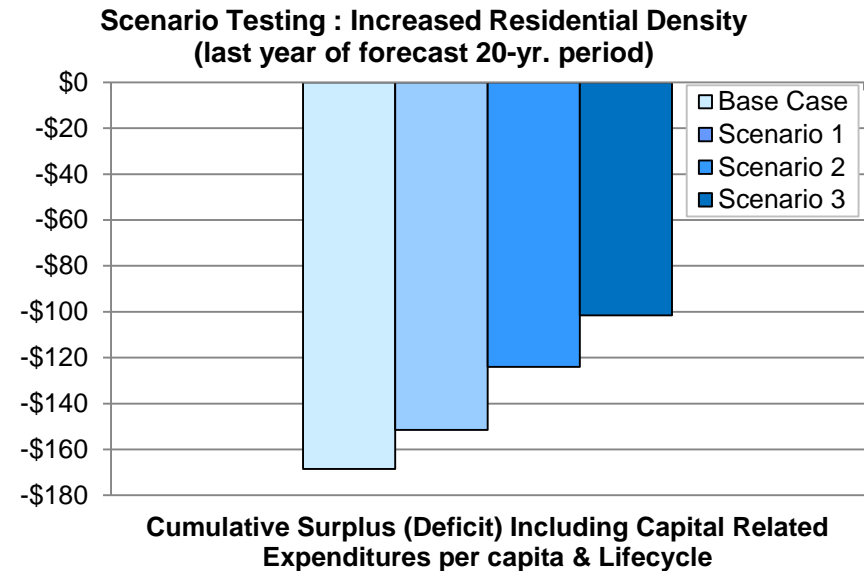
Base Case		Scenario 1	Scenario 2	Scenario 3
Land Use (Ha)				
- Low Density Residential	180.0	-Low Density decreased 20% (180 to 144 Ha).	-Low Density decreased 17.8% (180 to 158 Ha).	-Low Density decreased 35% (180 to 117 Ha).
- Medium Density Residential	40.0	- Medium Density increased 90% (40 to 76 Ha).	- Medium Density is unchanged .	- Medium Density increased 87.5% (40 to 75 Ha).
- High Density Residential	8.0	- High Density is unchanged .	- High Density increased 275% (8 to 30 Ha).	- High Density increased 350% (8 to 36 Ha).

Scenario Testing by Pilot Municipalities

Per Unit



Per Capita



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Model Results

		Base Case			
		2014 - 2018	2019 - 2023	2024 - 2028	2029 - 2033
Summary of Impact (Excl. Water/Wastewater)	2014 - 2033 Cumulative Residential Growth	1,270,159	4,597,067	7,305,248	9,027,270
	2014 - 2033 Cumulative Non-Residential Growth	34,496	91,988	183,976	229,970
	Total Cumulative Property Tax Revenue	1,304,655	4,689,055	7,489,224	9,257,240
	2014 - 2033 Cumulative Residential Growth	334,119	1,226,810	1,942,711	2,386,336
	2014 - 2033 Cumulative Non-Residential Growth	43,884	117,017	234,034	292,554
	Total Non-Tax Revenue	378,003	343,827	2,176,745	2,678,890
	2014 - 2033 Cumulative Residential Growth	1,604,278	5,823,877	9,247,959	11,413,606
	2014 - 2033 Cumulative Non-Residential Growth	78,380	209,005	418,010	522,524
	Total Cumulative Revenue Excluding Water & Wastewater	1,682,658	6,032,882	9,665,969	11,936,130
	Total Operating Expenditures	1,353,400	4,613,523	6,864,444	8,248,045
	Total Expenditures Excluding Water, Wastewater & Capital	1,353,400	4,613,523	6,864,444	8,248,045
	Cumulative Surplus (Deficit) Excluding Capital	329,258	1,419,359	2,801,525	3,688,085
	Debt Charges for Non DC Recoverable Capital	15,242	33,060	33,919	31,342
	Total Cumulative Expenditures Including Capital	1,368,642	4,646,583	6,898,362	8,279,388
	Cumulative Surplus (Deficit) Including Capital	314,016	1,386,299	2,767,607	3,656,742
	Long-Term Lifecycle Impacts (annualized) Excluding Water & Wastewater	1,708,591	3,705,959	5,510,809	7,219,400
	Cumulative Surplus (Deficit) Including Lifecycle Impacts	(1,394,575)	(2,319,660)	2,743,202)	(3,562,658)

Pilot Municipality Feedback

Pilot Feedback

- ❑ **Preliminary inputs simple:** Initial population and calibration work can be done by junior and intermediate staff, but the model needs senior level staff to finesse and ensure results are consistent with expectations.
- ❑ **Requires sufficient municipal resources:** The model is complex and requires a commitment of cross-functional staff, but “you only get what you put into the model.”
- ❑ **Technical resource required:** Users need a technical expert to contact when they encounter difficulties.
- ❑ **Need to involve multiple departments:** Larger municipalities may use the model in more complex ways due to detailed information available from a wider range of departments and technical experts.
- ❑ **Incorporate model into municipal process:** The model will better inform: the pre-secondary plan stage when talking to developers about different densities; internal decision making; and planning approval discussions with Council.

Pilot Results

- ❑ Increased residential density, either through an increase in high density units or a decrease in lot size, led to an improvement in the financial bottom line for pilot municipalities.
- ❑ Although a strong positive relationship between non residential density and revenues was observed from pilot model results, these were offset by employee-driven higher operating costs. Blending commercial space with residential space produced mixed financial outcomes.
- ❑ While the model was found by the pilots to accurately account for linear infrastructure costs within the development area, there was less consensus on how the model should account for infrastructure costs external to the development area.

General Observations

- ❑ The model allows municipalities to see how outcomes (consumption of land, finances, etc.) are positively or negatively affected by changes in density and land uses.
- ❑ Moving away from model defaults with actual data (locally driven data/knowledge), is likelier produce more meaningful/accurate results.
- ❑ Based on pilot municipalities, the current municipal finance framework used by municipalities may not adequately reflect the lifecycle costs associated with proposed developments.
- ❑ The conversation at municipalities around parks and green space has intensified with more funding expected to be dedicated to such uses.

Next Steps

- Second round of pilots is underway
- Expected to last several months
- Model and guide modifications
- Model release in 2016
- Model will require you to have a license, but the cost is \$0.00
- Available to all Ontario municipalities

Questions?