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GREEN ANALYTICS

# **Ontario's Good Fortune: Appreciating the Greenbelt's Natural Capital**

A presentation of the Results

March 2017



# Natural Capital in the Greenbelt 730,000 ha

An aerial photograph of a large agricultural field, likely a cornfield, showing neat rows of green crops stretching towards a distant treeline under a blue sky with scattered white clouds. The text '430,000 ha' is overlaid in the center of the image.

**430,000 ha**

An aerial photograph of a dense forest with a river winding through it. The trees are in various stages of autumn, showing vibrant colors of red, orange, yellow, and green. The river is a light brown color, flowing from the top right towards the bottom right. The overall scene is a lush, natural landscape.

**183,000 ha**

A photograph of a flooded forest. The trees are mostly bare, with some yellow leaves visible on the left. The ground is covered in water, reflecting the sky. A wooden fence is visible in the foreground. The text "100,000 ha" is overlaid in the center.

**100,000 ha**



**8,600 ha**



**7,800 ha**



**212 ha**



**144 ha**

# Greenbelt Beneficiaries

**In the  
Greenbelt**

**Greenbelt +  
20km**

1,700,000  
Residents

9,200,000  
Residents

1,400,000  
Aged 18+

7,400,000  
Aged 18+

415,000  
Households

3,000,000  
Households

Population Per km<sup>2</sup>

1 - 15

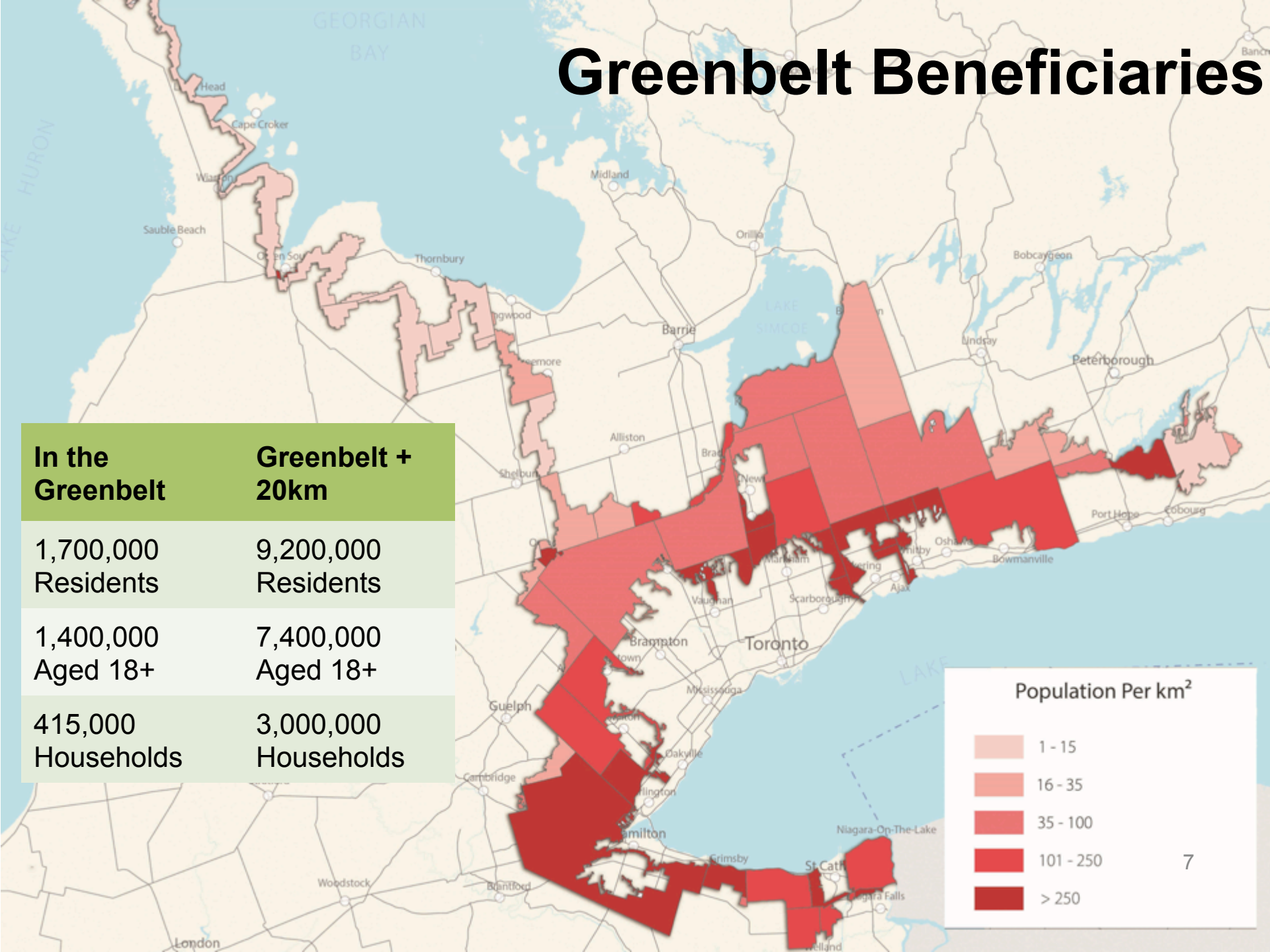
16 - 35

35 - 100

101 - 250

> 250

7





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# Accounts Summary

## 100 Accounts Identified

## 65 Valued

Aquatic

(26/39)



**\$1.1 Billion**

Terrestrial

(38/63)



**\$2.1 Billion**

Atmospheric

(1/1)



**\$0.018 Billion**

**\$3.2 Billion**



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# The Value of Carbon Sinks

Carbon Stores = \$11.2 Billion  
Annual Sequestration = \$52 million

Forests	Agricultural Land	Wetlands
Storage 29.6 Mt \$4.65 B	Storage 34.38 Mt \$5.4 B	Storage 7.1 Mt \$1.12 B
Sequestration 204,149 tC/yr. \$44.94 M/yr.	Sequestration 19,516 tC/yr. \$3.07 M/yr.	Sequestration 25,016 tC/yr. \$3.93 M/yr.





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# Valuation Summary By Use

Use / Non-Use	Value (\$M)
Recreation	2,105
Existence, Bequest, Aesthetics	425
Extractive Use	376
Protection of Human Property	224
Plant Cultivation/Pollination	48
Clean Air	18
<b>TOTAL</b>	<b>3,196</b>



**\$873  
Million**



**\$326  
Million**



**\$236  
Million**



**\$205  
Million**



**\$180  
Million**



**\$162  
Million**



**\$47  
Million**



**\$41  
Million**



**\$36  
Million**



# Existence, Bequest, Aesthetics



**\$425 Million**  
(**\$300M T + \$125M A**)

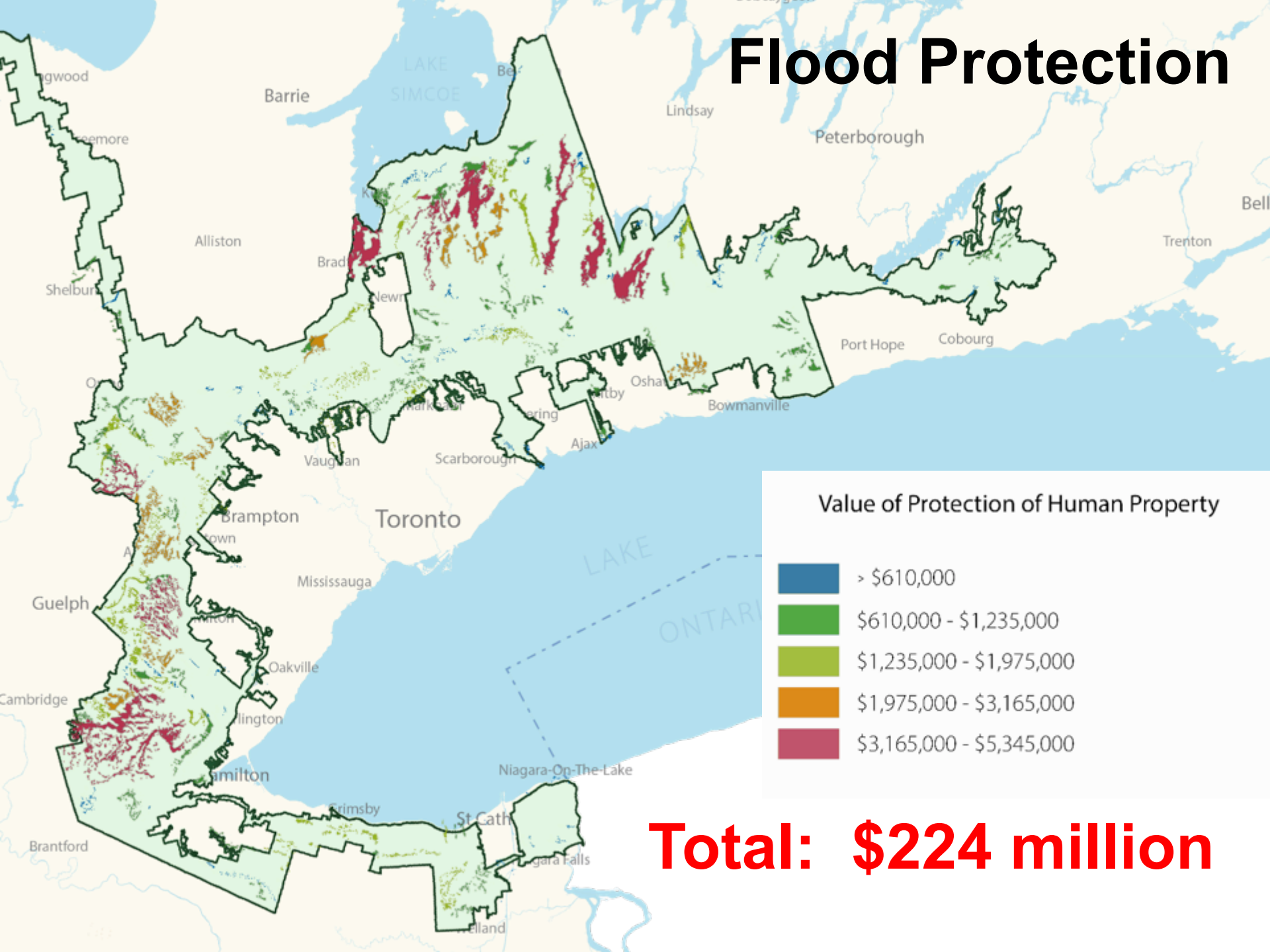


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# Extractive Uses

Extractive Use	Valuation Unit	Annual Value (\$m)
Water Supply (A)	415,000 households	360
Crop Irrigation (A)	5.5 million m <sup>3</sup> water	7.65
Maple Products (T)	34,000 taps	7.25
Water for livestock (A)	2.3 million m <sup>3</sup> water	1.05
Non-timber forest (T)	183,000 ha forest	1.05
Livestock grazing (T)	23,000 ha unimproved pasture	0.9
<b>TOTAL</b>		<b>\$378 Million</b>

# Flood Protection



**Total: \$224 million**



# Support for Plant Cultivation

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Crop Type	Average Crop Value (\$/ha)	Area of Crop in the GB (ha)	Annual Value of Crop in GB (\$)	Dependency Factor	Value of Wild Pollination (\$ Million)
Beans	1,497	122	182,368	0.05	<0.01
Berries	11,884	25	296,807	0.65	0.19
Canola	1,192	1,069	1,274,819	0.25	0.32
Orchards	4,922	2,556	12,578,312	0.65	8.18
Pasture/Forage	972	181,808	176,673,561	0.05	8.83
Soybeans	1,535	70,879	108,798,499	0.25	27.20
Other vegetables	4,328	2,289	9,905,184	0.10	0.99
Vineyards	4,134	6,292	26,012,317	0.09	2.34
<b>TOTAL</b>					<b>48.06</b>



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# Value of Services to Agriculture

**\$56.5 Million**

## Irrigation

- A total of 7,877 ha are under irrigation in the Greenbelt
- The Greenbelt represents 25% of irrigation by area in Ontario with an estimated annual consumption of 8.57 M m<sup>3</sup>
- This yields an overall value for irrigation of \$7.63 M/yr

## Livestock

- According to the 2011 Census of Agriculture, there were 3,978,188 heads of poultry and 95,040 cattle in the Greenbelt
- This yields a total livestock valuation of \$1.06 M/yr
- Grazing value based on 22,357 ha of unimproved pasture - \$0.89 M/yr

## Wild Pollinators

- Support for plant cultivation is estimated at \$48.06 M/yr

# Support for Human Health

# \$18.4 Million

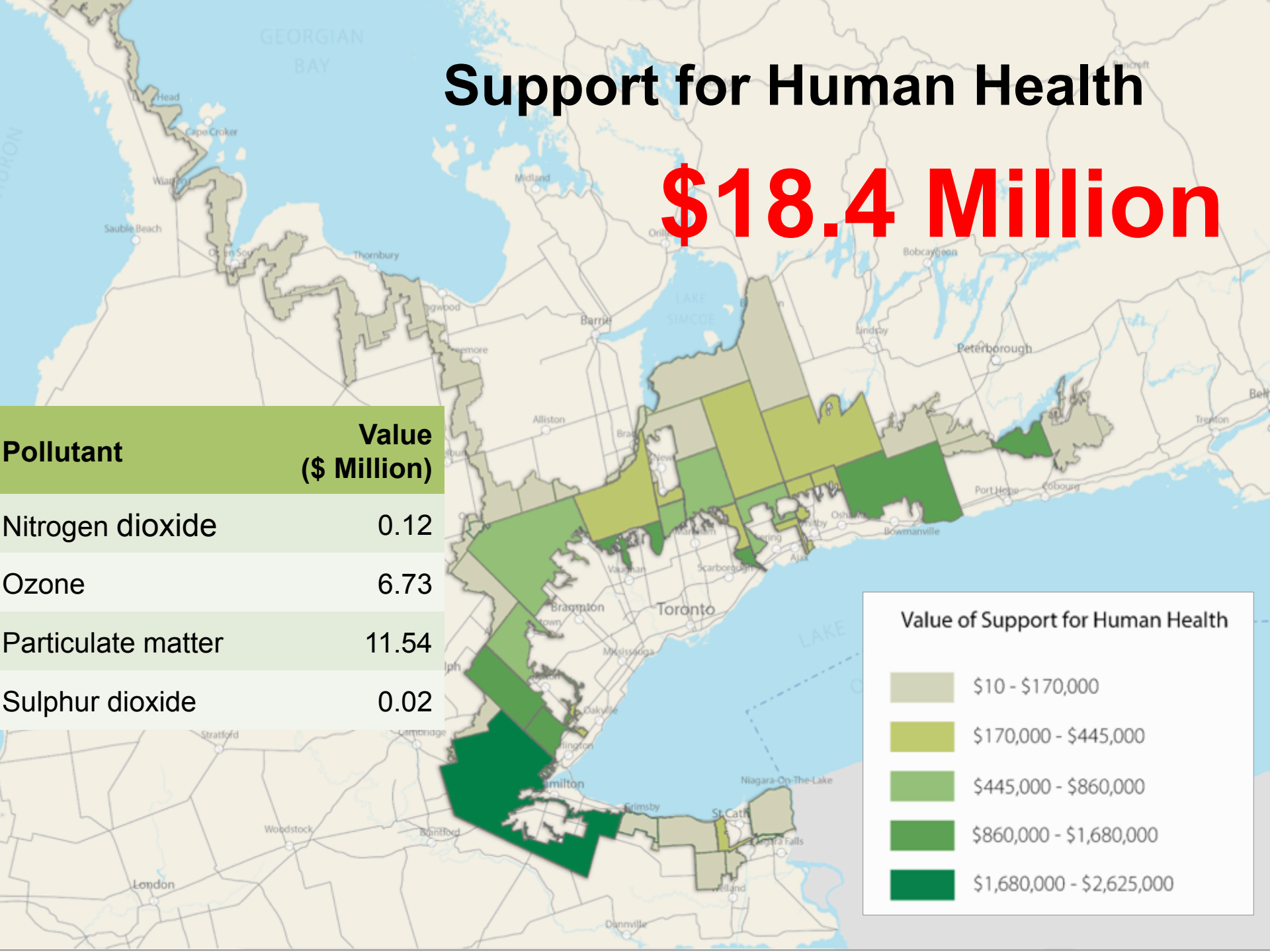
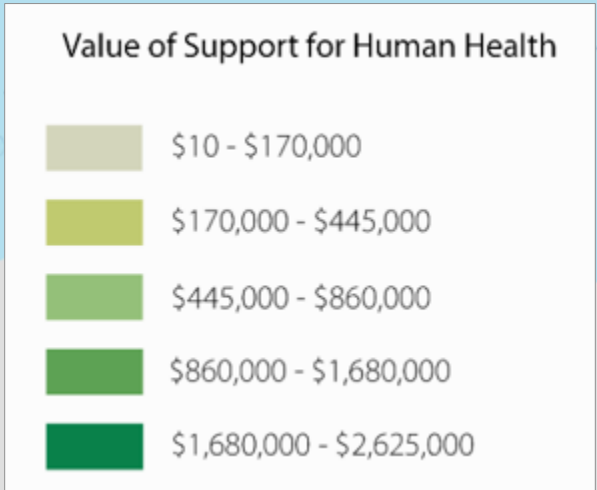
Pollutant	Value (\$ Million)
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Nitrogen dioxide	0.12
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Ozone	6.73
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Particulate matter	11.54
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Sulphur dioxide	0.02
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# Moving Forward



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# Monitoring Change and Improving the Valuation

- Using the study as a baseline to track changes: e.g. carbon storage, recreational participation, wetland restoration
- Improving the valuation over time by filling data gaps and refining modelling, e.g. hydrological system and flood mapping
- Making the data available so the valuation can be adjusted for smaller-scale assessments with more refined local data (e.g. recreation usage, or property location data)



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# How the Foundation is Using the Information

- Adding this valuation to other economic studies to enhance public appreciation of the Greenbelt's permanent protection of natural assets
- Highlighting how people personally benefit from the protected landscape
- Promoting the use of natural capital valuation as a tool to inform decision-making and the insights that come from focusing on final services
- Exploring the potential to evaluate the impact of our programs on building the value of specific accounts e.g. increasing recreational participation through bikes routes



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# Conclusions

- The natural heritage and agricultural systems protected by the Greenbelt provide a wealth of services for millions of residents in the region
- The value derived by people is dependent on the condition of the natural capital (quantity and quality)
- Regular monitoring and valuing of natural capital can inform how those assets are managed, and support the business case for additional investment in conservation, restoration and enhancement
- For instance:
  - Knowing the value derived from trails can help justify expenditure on their maintenance and expansion
  - Knowing where wetland restoration would provide flood protection, support biodiversity and provide recreational opportunities, can help target resources in a cost effective way



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# Any Questions?