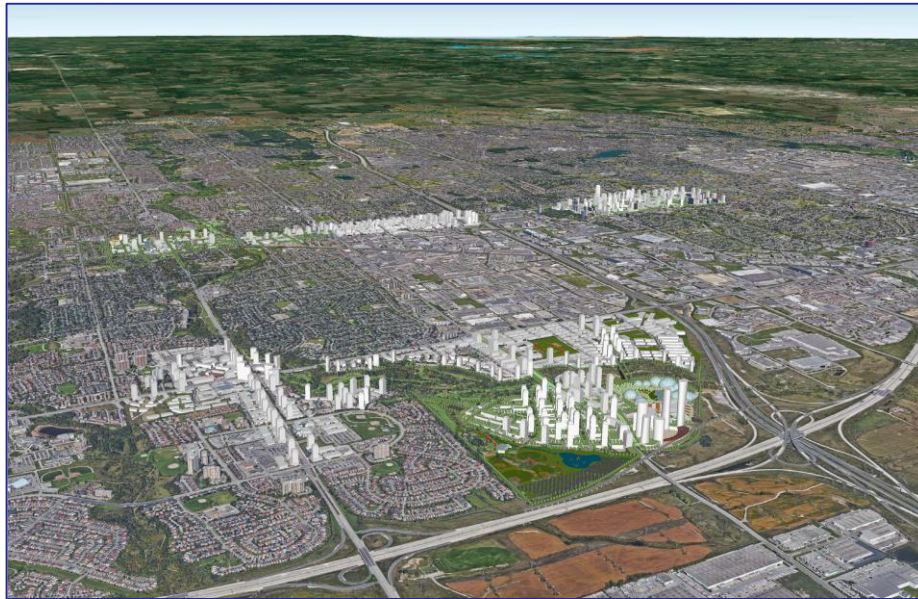


Community Energy And Emissions Reduction Plan

Task Force Meeting #1



Key Piece of The Mosaic

City of Brampton

Community Energy & Emissions Reduction Plan

1. Welcome and Opening Remarks

City of Brampton

Community Energy & Emissions Reduction Plan

2. Introductions

- a) Acting Chair*
- b) Project Working Team (City & Sheridan-GIL)*
- c) Task Force Members*

Project Work Team & Stakeholders (Status 19-03-28)

City of Brampton Council

Residents & Businesses

Brampton CEP Sponsor
Cllr Doug Whillans

Community Task Force

Sheridan Centre Sponsor
Herb Sinnock

CEP Strategy
Michael Won

CEP Strategy
Peter Garforth

Brampton PM
Michael Hoy

Sheridan Centre PM
Katie Rinas

Consulting PM
Bruce Bremer

Sustainability
Michael Hoy

Policy and Data
Anna Pautler

Building Demand
Ajit Naik

Planning
Pamela Cooper

Extended GIS Mapping
Tianya Zhang

Energy Supply
Gerd Fleischhammer

Economic Development
Daryl van Moorsel

CEP Visualization
Dave Clark

Integration & Mapping
Gerd Fleischhammer

Transportation
Brian Lakeman

District Energy
Ole Johansen

Corporate Facilities
Mikkel Marr

Policy & Implementation
Rob Kerr

Communications
Kelly Brooks

Administration
Cindy Palmatier

Official Plan Update Mgr.
TBD (2019 Jan)

Community Engagement
Rob Kerr
Karen Farbridge

City Property Data
Multiple

Enbridge
Saru Jain

Brampton Hydro / Alectra
William Whiting/Bill Wylie

Peel Region Water
Carol Chaput

City of Brampton

Community Energy & Emissions Reduction Plan

3. Agenda Review

- a) Distribution/Confirmation of Meeting Package*
- b) Approval of Agenda*

City of Brampton

Community Energy & Emissions Reduction Plan

- ### 4. Task Force Business
- a) Task Force Charter*
 - b) Task Force Co-Chairs*

City of Brampton

Community Energy & Emissions Reduction Plan

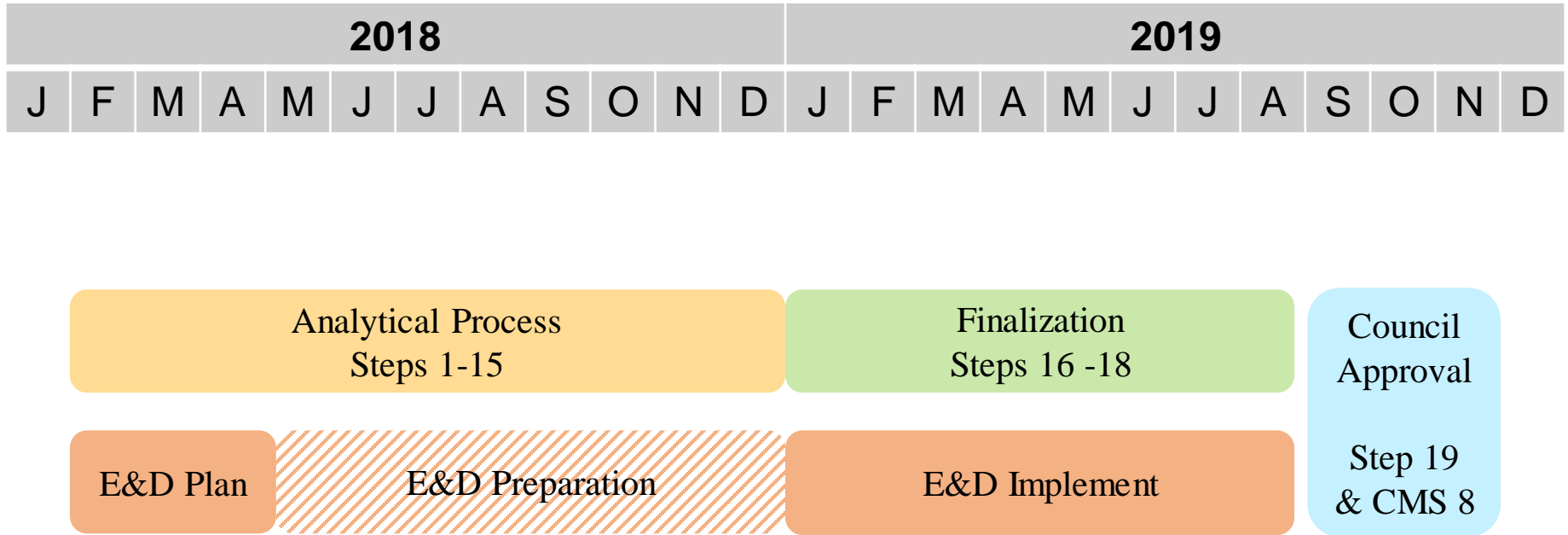
5. Project Overview

- a) Origins and Context for the CEERP*
- b) CEERP Planning Process Overview*
- c) Draft Framing Goals for Brampton*

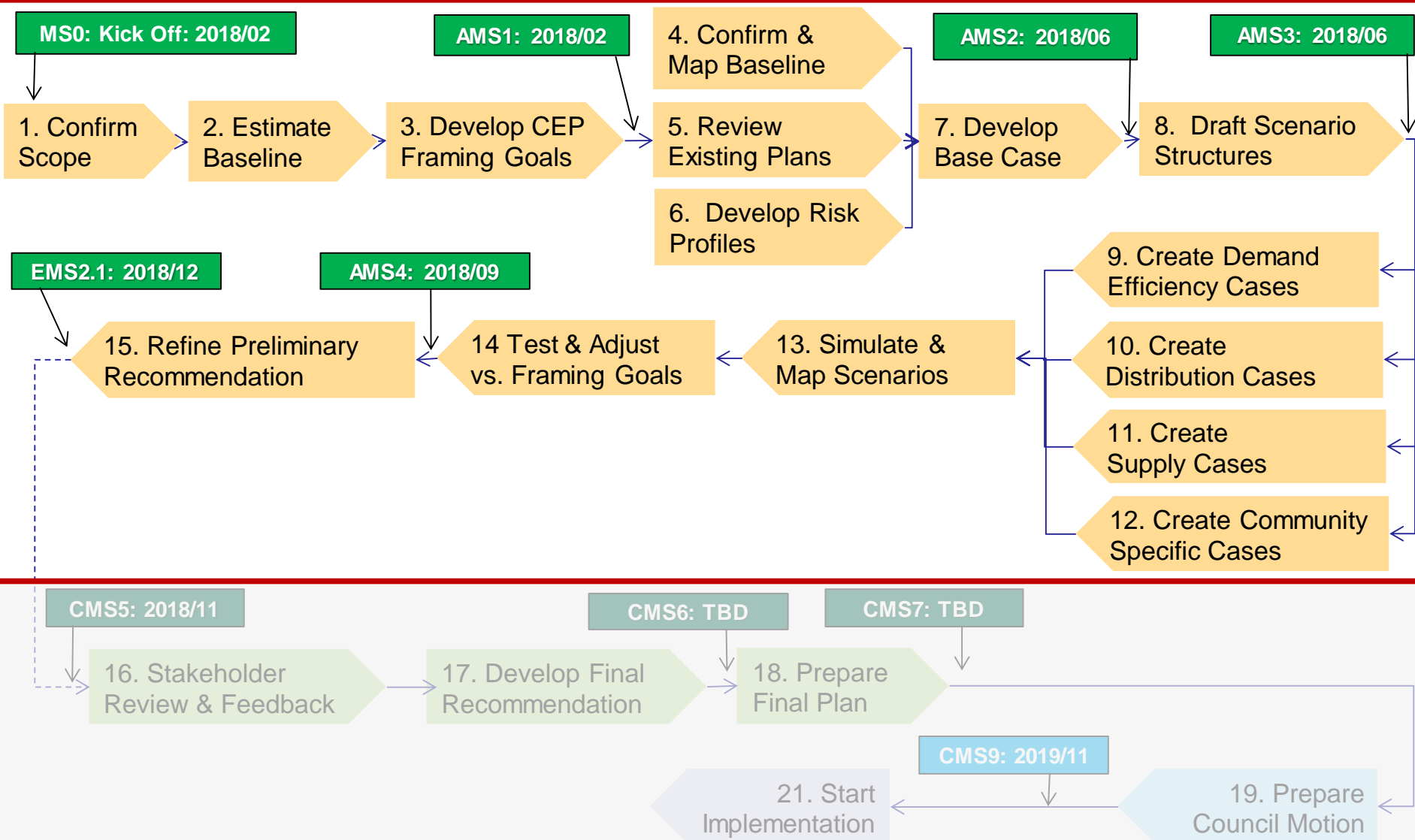


Community Energy Plan Schedule

Community Energy Plan *Timing Overview*



Brampton Community Energy Plan Analytical Process Map





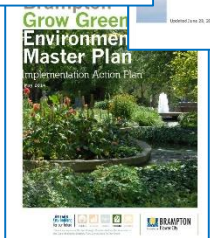
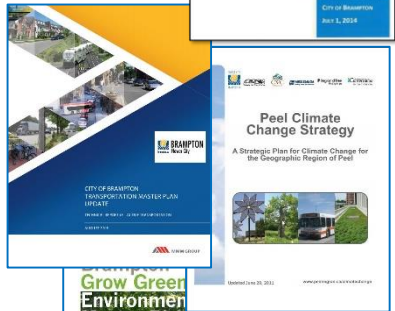
Community Energy Planning Background

Why Brampton Cares

New Energy Realities...

- Community Values and Image
- Investment and Green Jobs
- Energy affordability
- Supply quality and security
- Mitigate Energy & Climate Risks
- Support Federal climate goals

Community Energy Plan *Supports City Planning*



- CEP aligns with Vision 2040 and other existing plans
- CEP is coherent energy framework for all City plans
- Embed CEP energy and climate targets and policies across all City Plans

From Recent News *UNPCC Climate Change Report*

“The report finds that limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO₂) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050. This means that any remaining emissions would need to be balanced by removing CO₂ from the air.”

UNPCC Policy Makers' Summary http://ipcc.ch/news_and_events/pr_181008_P48_spm.shtml



Community Energy Plan Goals

Community Energy Plan *Goals (Short Version)*

- Support realization of “Brampton 2040 Vision”
- Economic
 - *Energy investments*
 - *Competitive energy cost*
 - *New high-quality employment*
- Greenhouse Gas
 - *Cut emissions 50% by 2041*
 - *Path to 80% cut in 2050*
- Energy Efficiency
 - *Global best-practice by 2041*
 - *At least 50% gain by 2041*

Community Energy Plan

Framing Goals

- Support realization of “Brampton 2040 Vision”
- Economic
 - *Energy investments will meet acceptable returns*
 - *Energy costs will be competitive compared to comparable Canadian and US communities*
 - *Generate incremental high-quality employment*
- Greenhouse Gas Emissions
 - *Reduce emissions by 50% in 2041 relative to 2016*
 - *Pathway to reduce emissions by 80% in 2050 from 1990 levels to meet Federal and Provincial targets*

Community Energy Plan

Framing Goals

- Energy Efficiency
 - *Global best-practice by 2041*
 - *At least 50% below 2016 level by 2041*
- Reliability / Resilience / Flexibility
 - *Energy systems will meet changing user expectations, climate uncertainty and new technologies*
 - *Service quality will at least meet 2016 levels*

City of Brampton

Community Energy & Emissions Reduction Plan

■ 6. Analytical Process – Baseline to Base Case

What does the data tell us about energy consumption and emissions in Brampton in 2016?

What does the modeling tell us about energy consumption and emissions in Brampton in 2041 and 2050?

2016 to 2041 to 2050 Baseline-Base Case

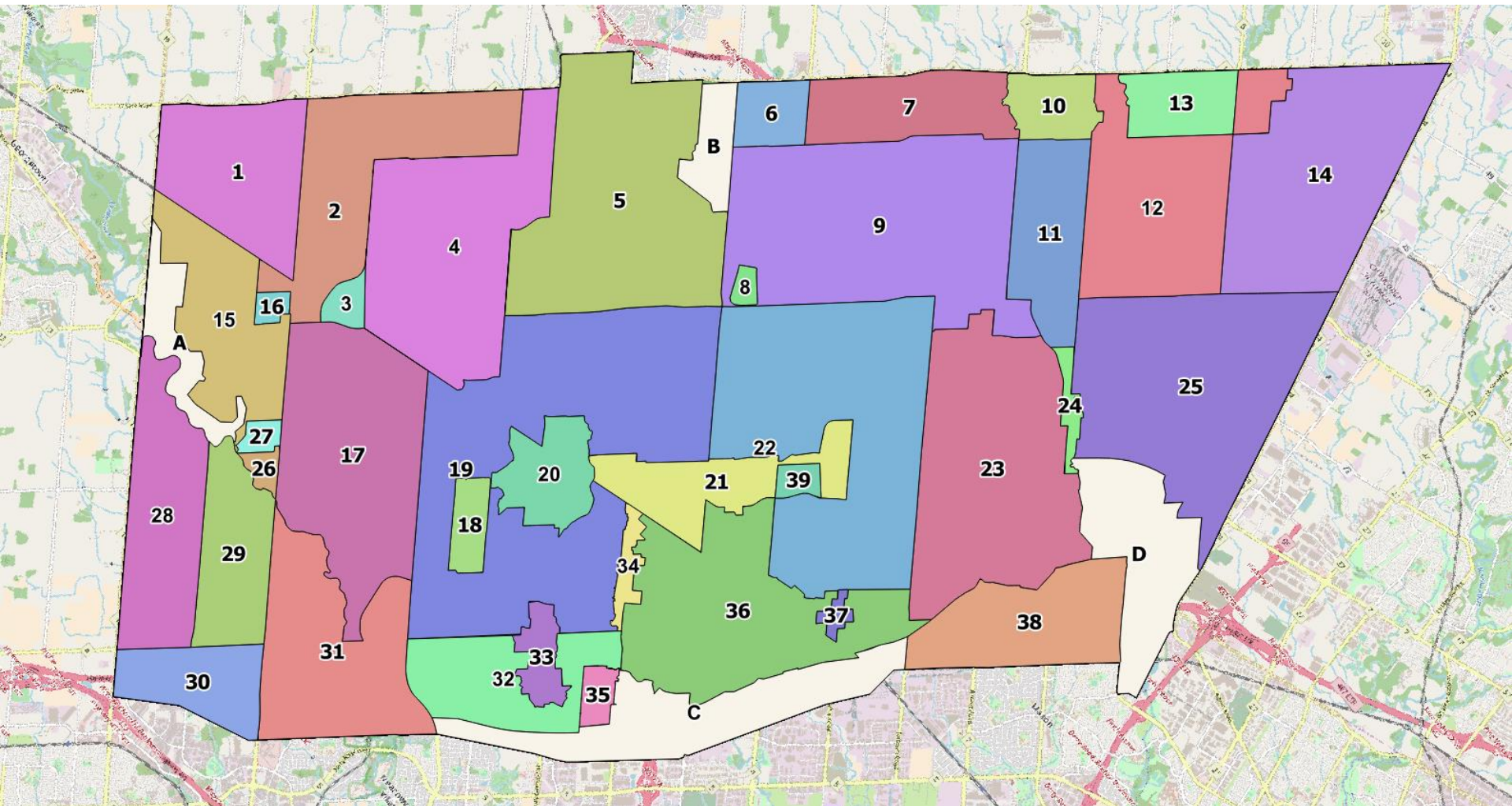
The data and analyses in this presentation are based on sources and assumptions that could be refined and updated. They are all subject to revision in future versions.

Brampton 2040 Vision *“Living the Mosaic”*



Outstanding Plan – CEP Will Add Energy Layer

Community Energy Plan *Energy Planning Districts*



*Confirmed 2018-09-11 – “Brampton North” rendering

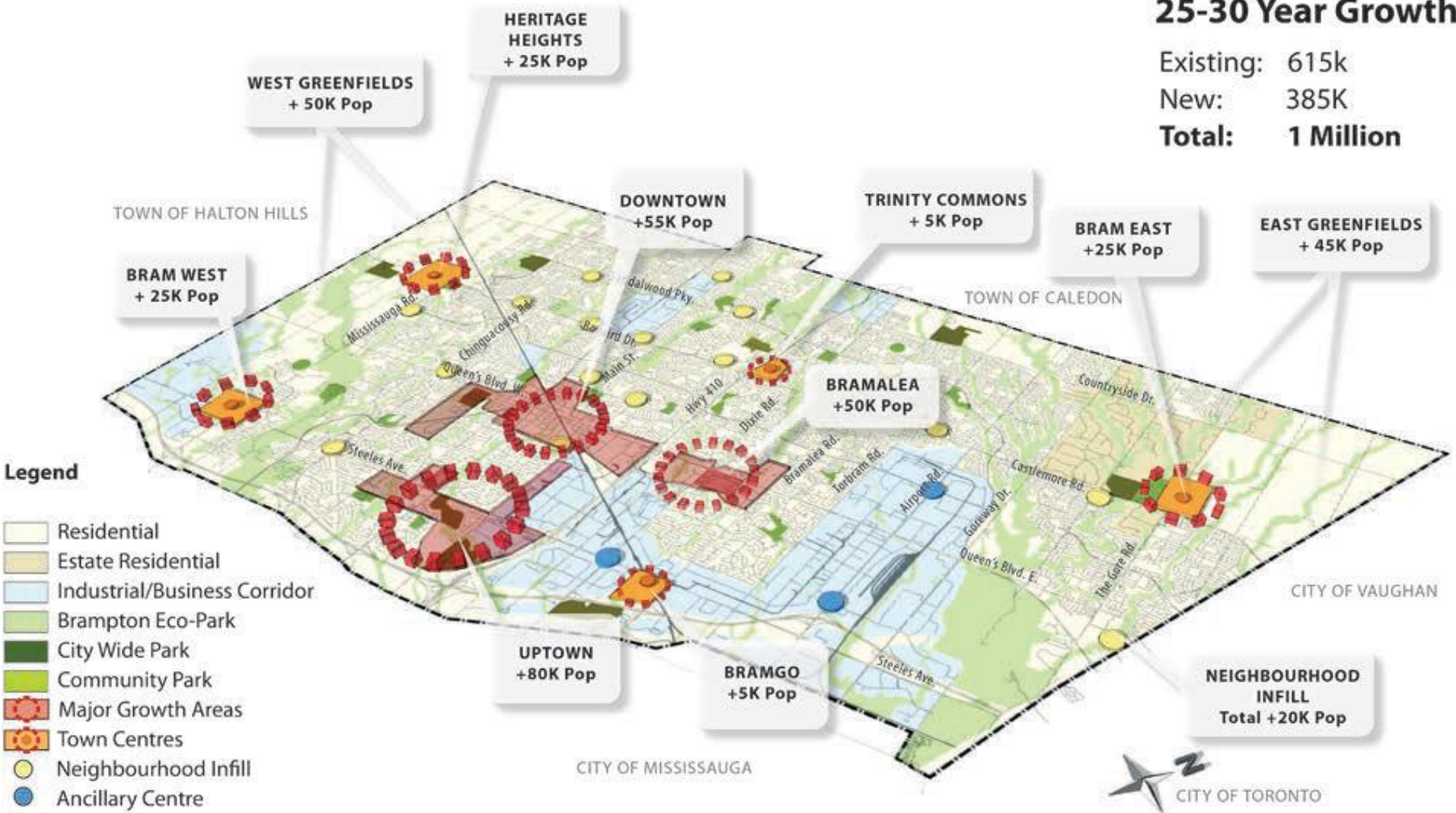
Brampton Energy Planning Districts *Naming Convention*

#	Name	#	Name	#	Name
1	Mount Pleasant West	15	Huttonville North	29	Brampton West (b)
2	Mount Pleasant East	16	Heritage Heights	30	Brampton West (d)
3	Mount Pleasant Go Station	17	Credit Valley	31	Brampton West (c)
4	Fletcher's Meadow	18	Flower Centre/Correctional Area	32	Fletcher's Creek South
5	Snelgrove/Heart Lake	19	Brampton Flowertown	33	Hurontario-Main Corridor
6	Countryside Village (a)	20	Brampton Downtown	34	Kennedy Road South
7	Countryside Village (b)	21	Queen Street West Corridor	35	Powerade Centre
8	Trinity	22	Bramalea	36	Highway 410 / Steeles Avenue
9	Springdale	23	Airport Intermodal	37	Bramalea Road South Gateway
10	Vales of Castlemore North	24	Goreway Drive Corridor	38	Park Way Belt Industrial Area
11	Vales of Castlemore South	25	Brampton East	39	Bramalea City Centre
12	Toronto Gore Rural Estate	26	Huttonville (a)		
13	Vales of Humber	27	Huttonville (b)		
14	Highway 407 Industrial	28	Brampton West (a)		

Population Framework

25-30 Year Growth:

Existing: 615k
 New: 385K
Total: 1 Million



Jobs Framework

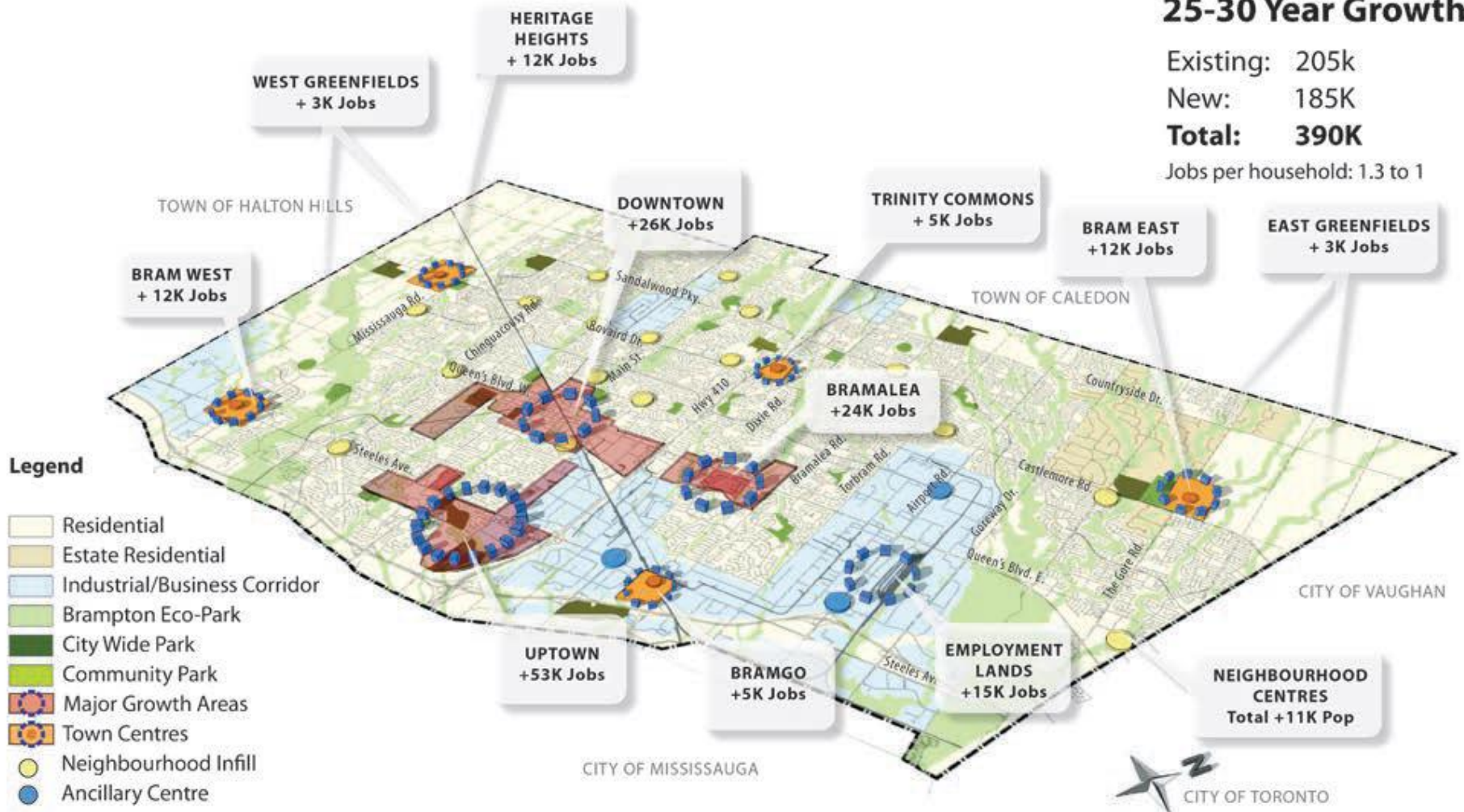
25-30 Year Growth:

Existing: 205k

New: 185K

Total: 390K

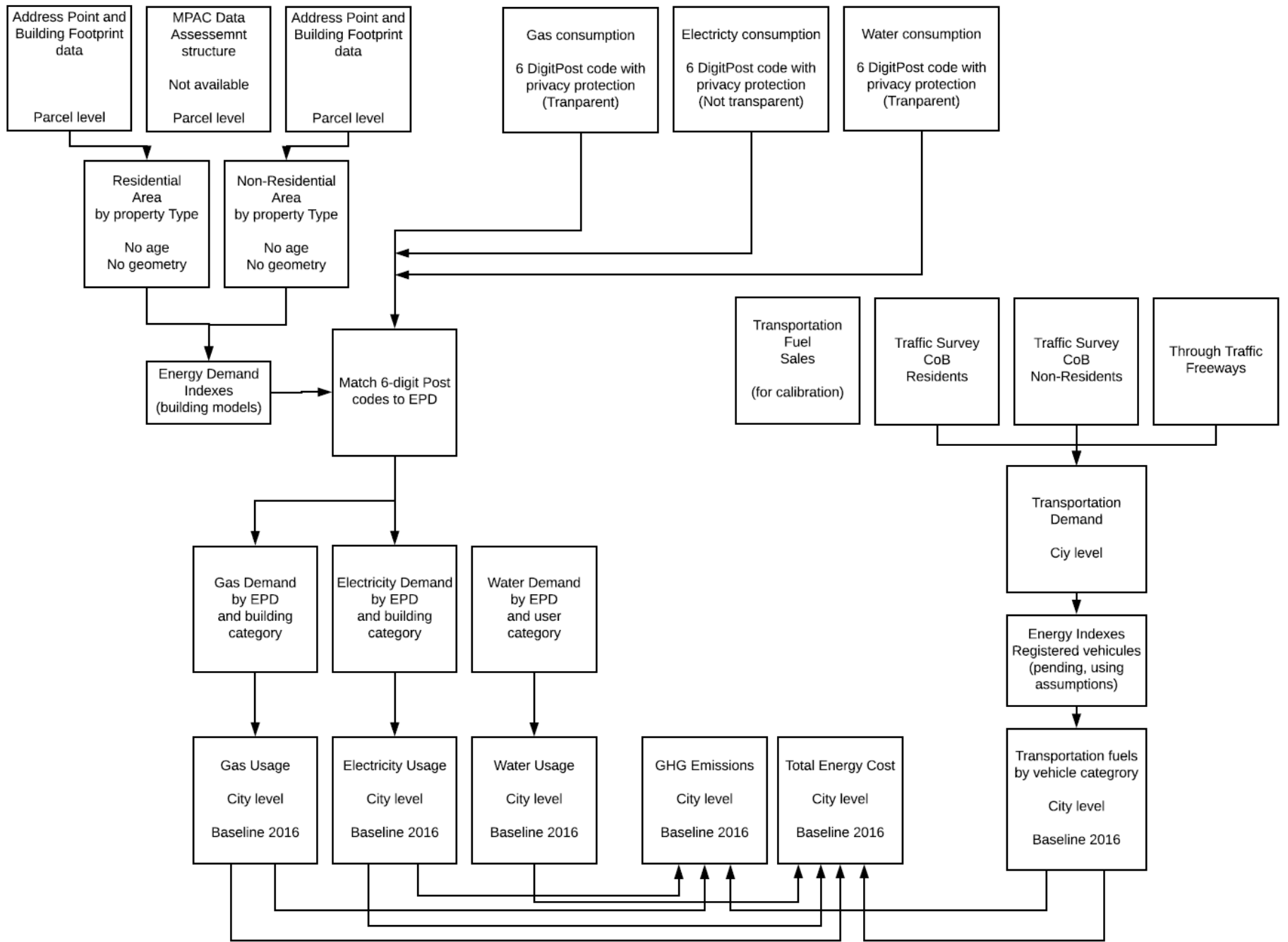
Jobs per household: 1.3 to 1

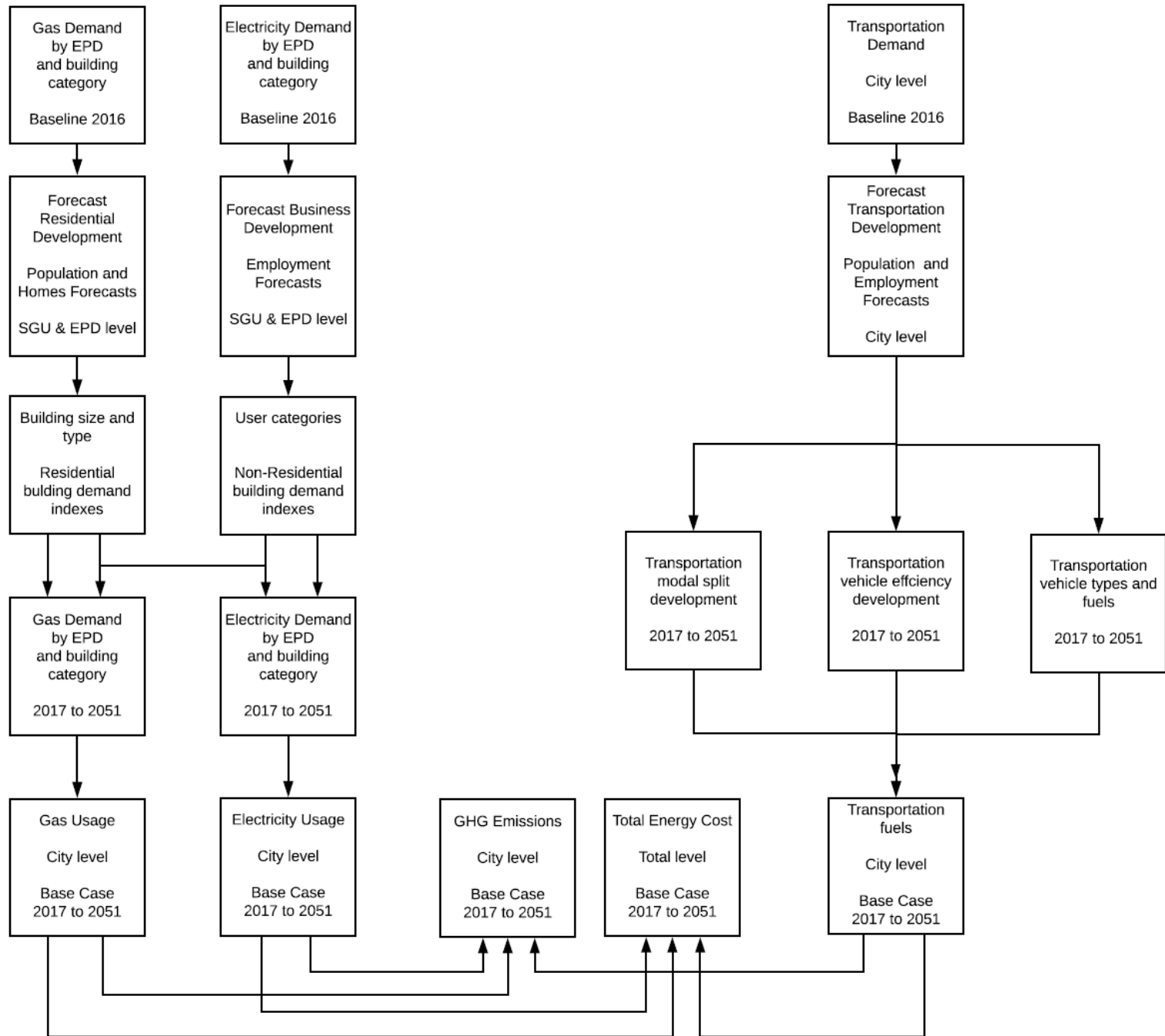


Brampton

Growth Indicators

Indicator	2016	% y-t-y Growth	2031	% y-t-y Growth	2041	% y-t-y Growth	2050
Population	614,100	2.2%	834,000	0.7%	886,700	0.5%	925,000
Homes	169,304		234,600		250,500		261,000
Occ. / Home	3.63		3.56		3.54		3.54
Avg. Home m ²	160		149		146		143
Jobs	194,927	2.4%	275,600	1.0%	303,700	1.1%	334,000
Jobs/Pop	0.32		0.33		0.34		0.36
CII Area 1,000 m ²	14,728		19,638		20,948		22,000
Density m ² / Job	76		71		69		66

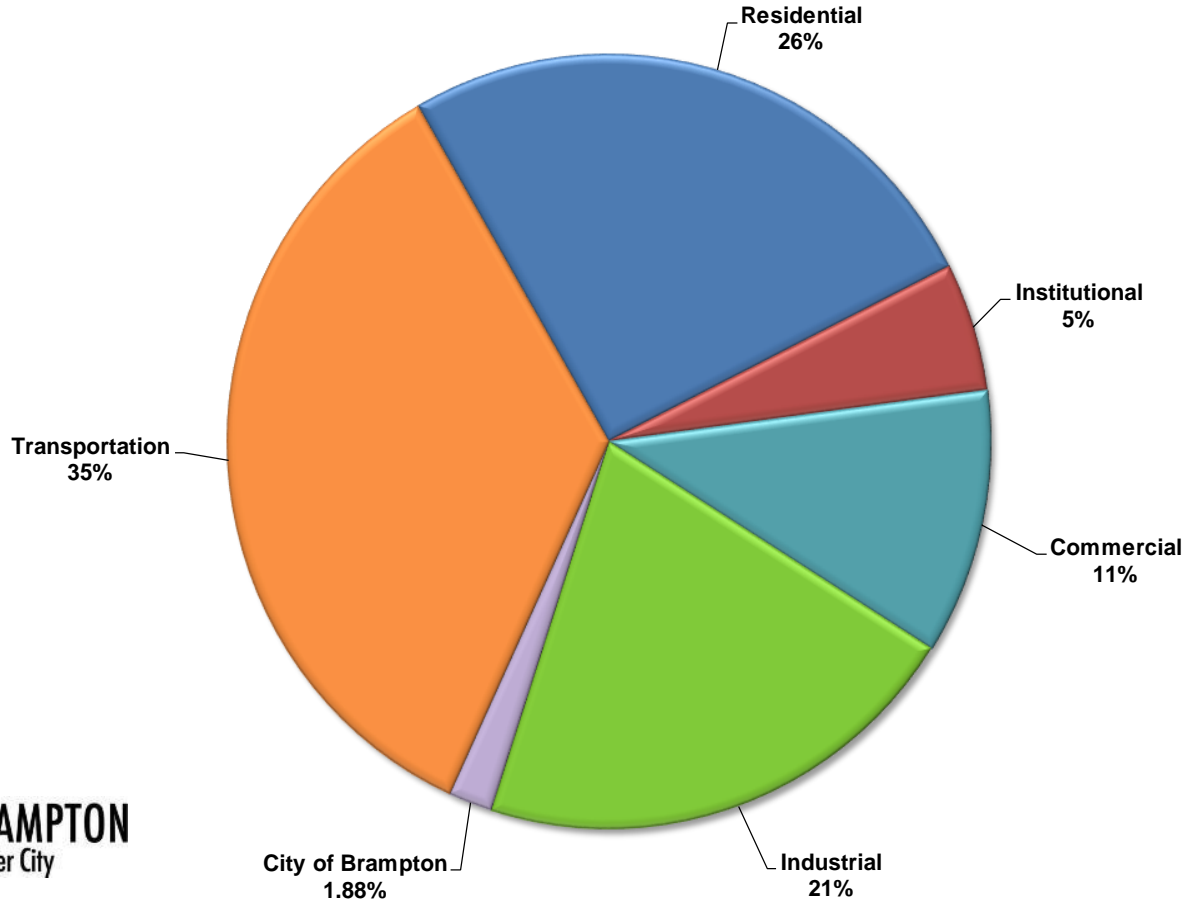




City of Brampton CEP 2016 Baseline

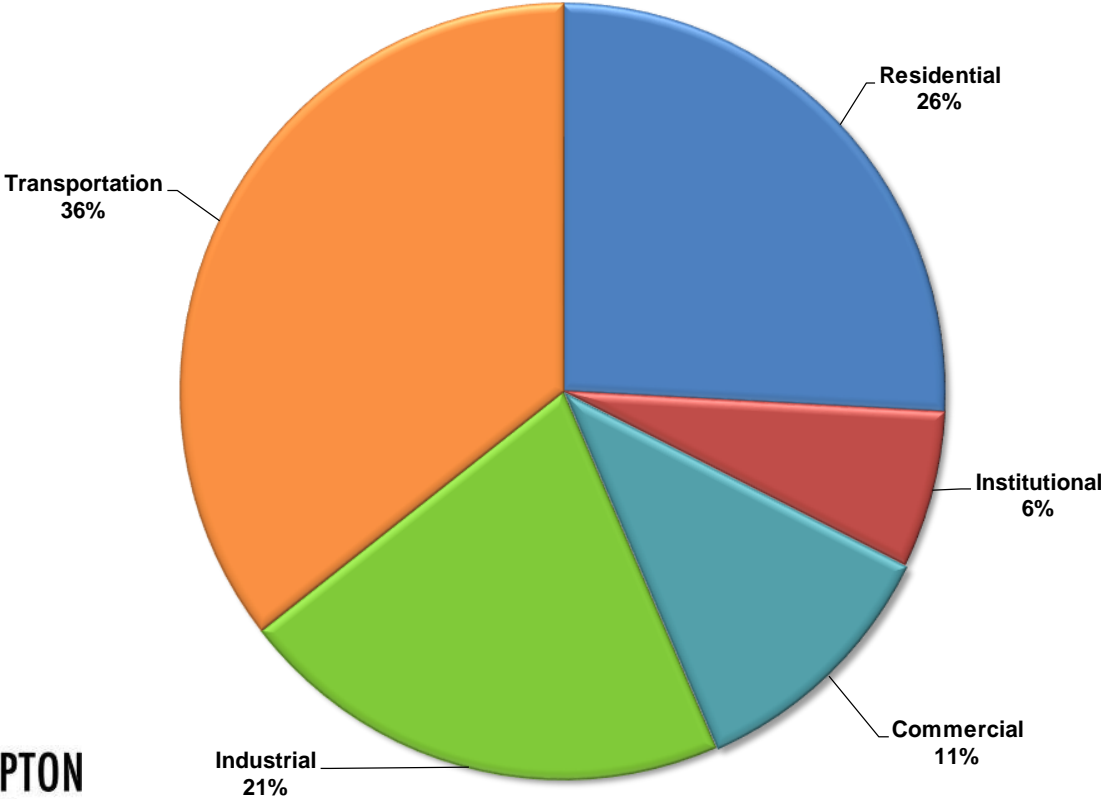
Customer Source Energy – 92M GJ

CEP Brampton - Source Energy Usage - by Sector 2016



City of Brampton CEP 2016 Baseline *Customer Source Energy – 92M GJ*

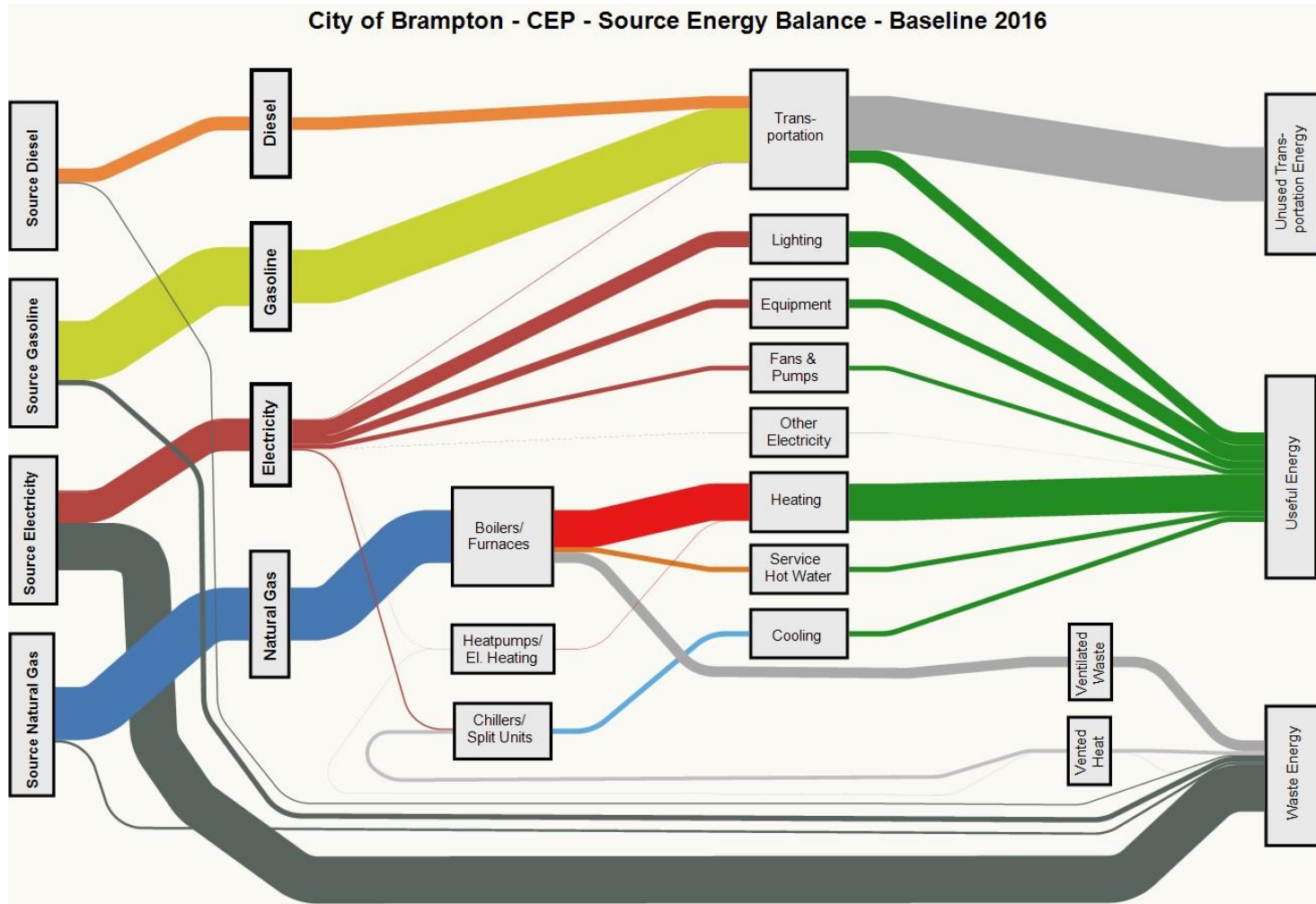
CEP Brampton - Source Energy Usage by Sector - 2016



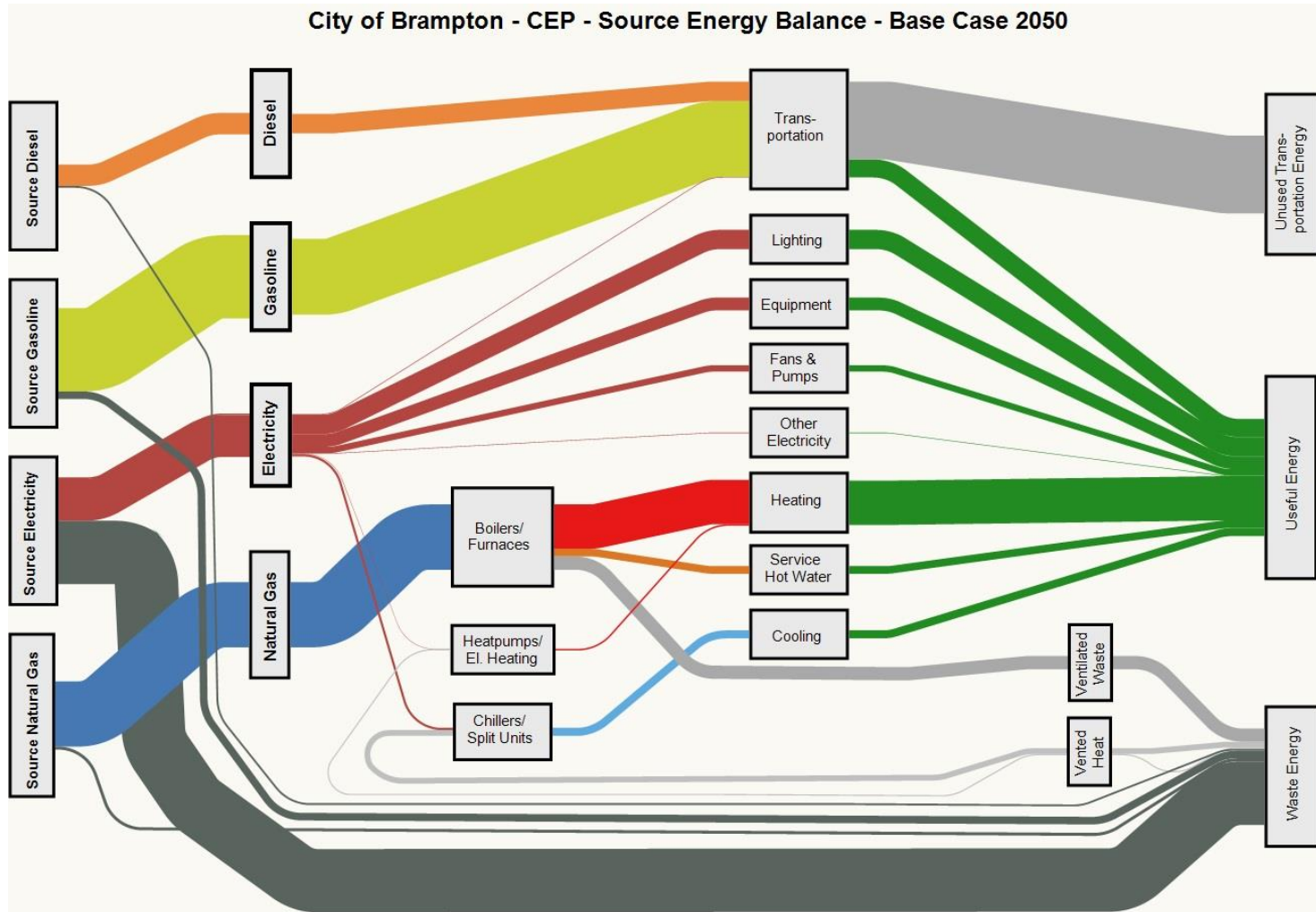
At Least 27% Conversion Losses

Sheridan | Get Creative

2016 CoB CEP Baseline Source Energy Balance

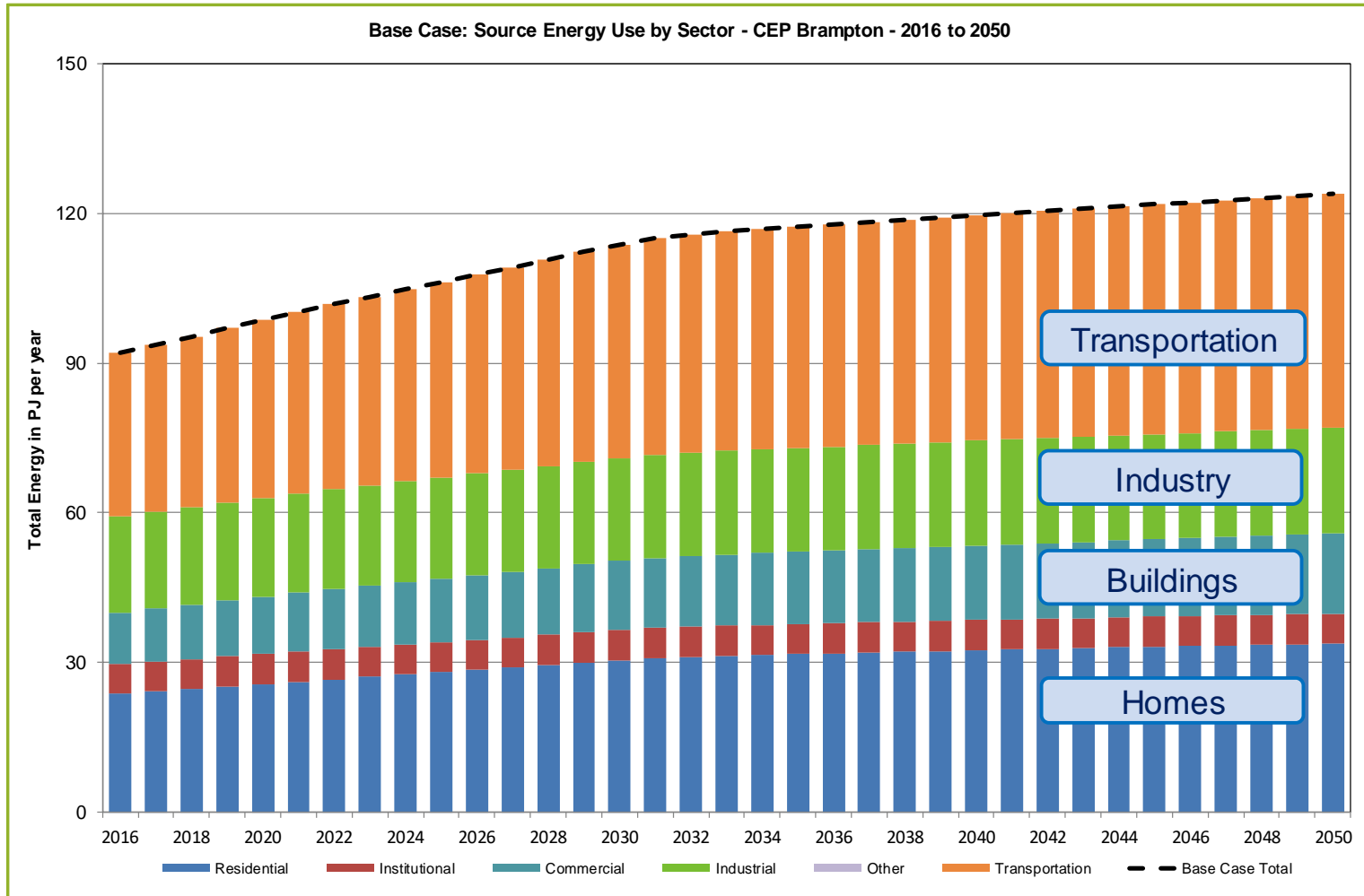


2050 CoB CEP Base Case Source Energy Balance



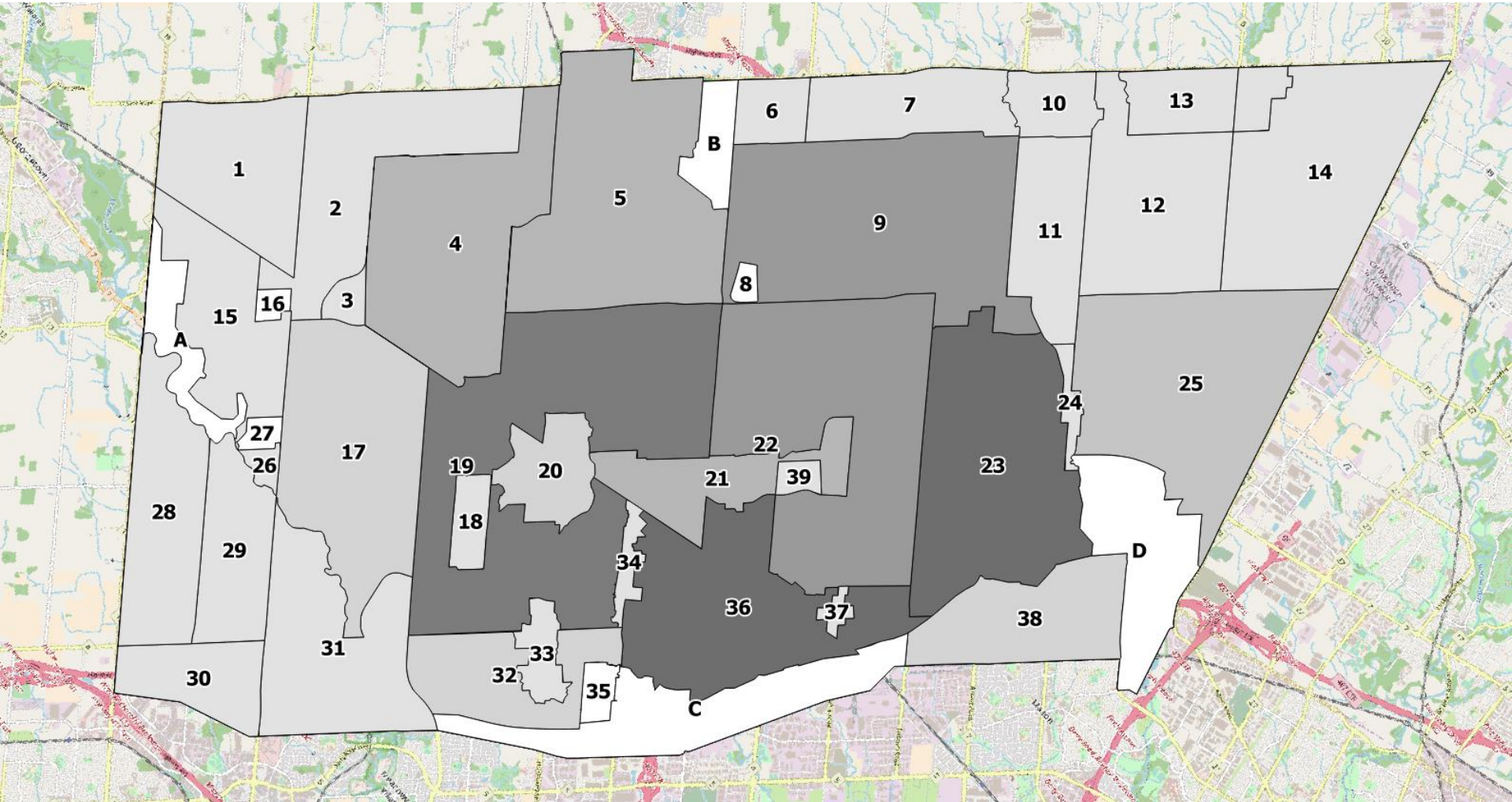
Brampton Base Case to 2050

Source Energy Use by Sector



2016 Baseline

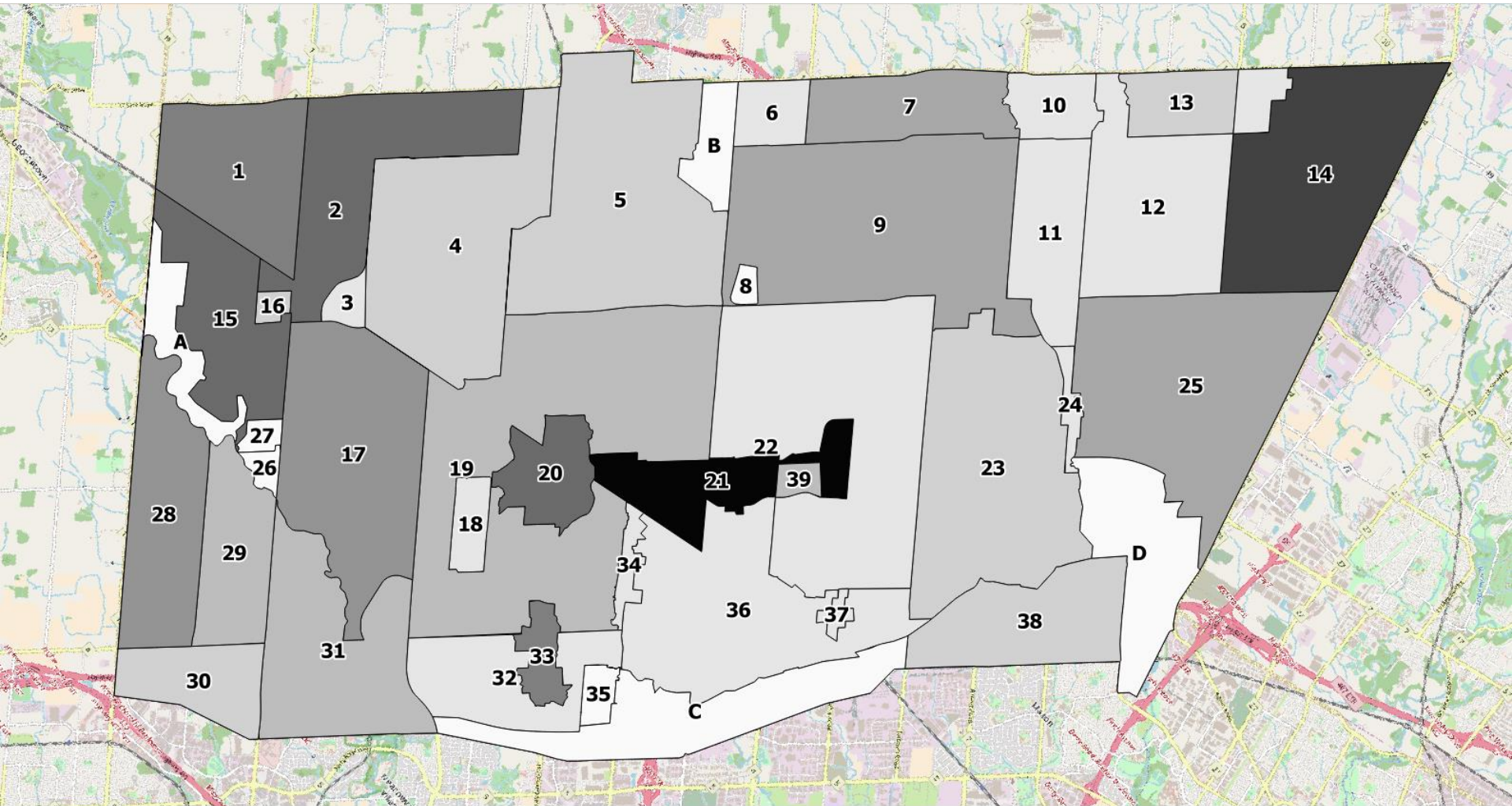
Total Source Energy * - Absolute in GJ



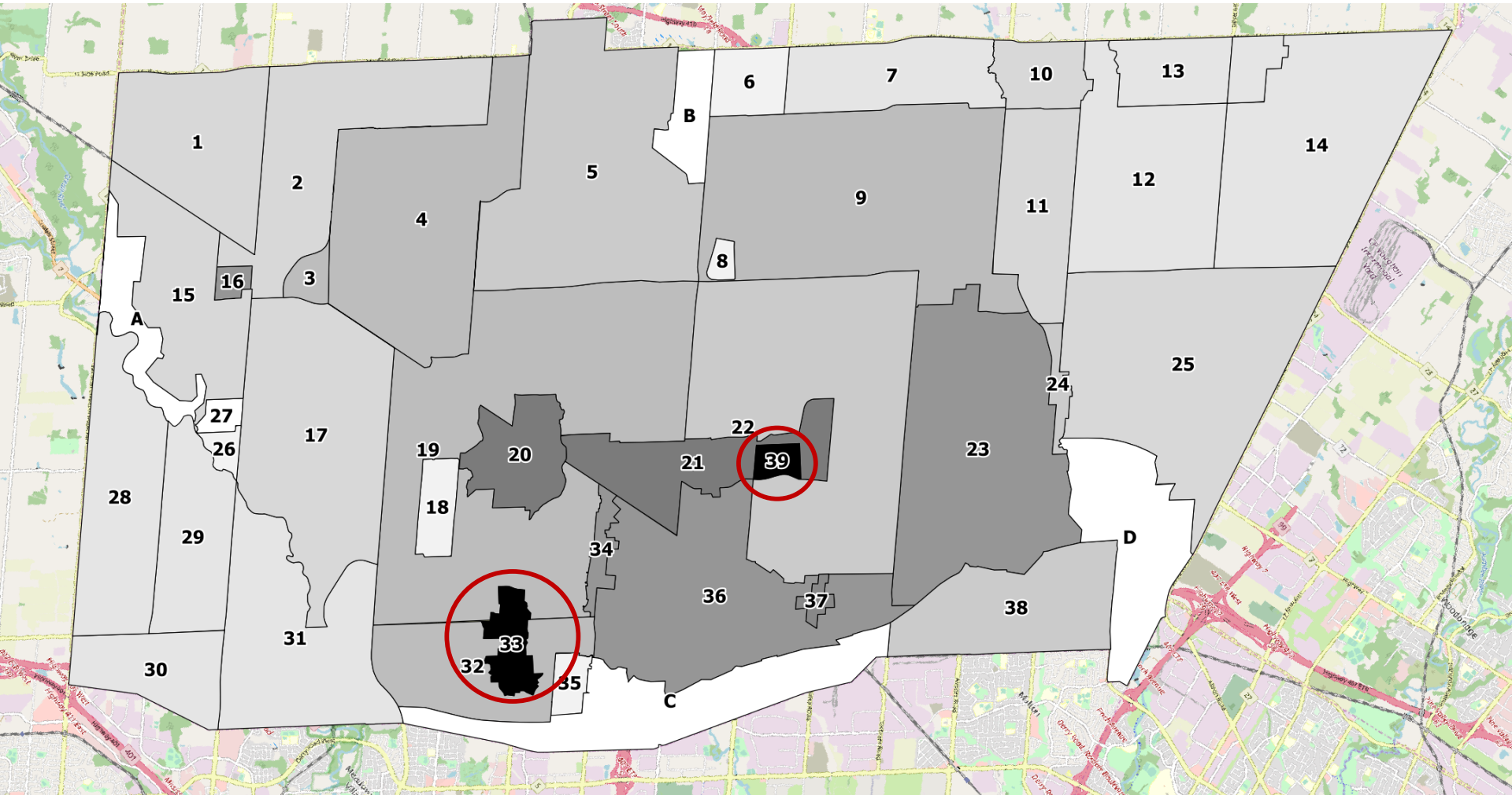
*Homes & Buildings Only

2050 – Base Case

Source Energy Increase * - Absolute in GJ

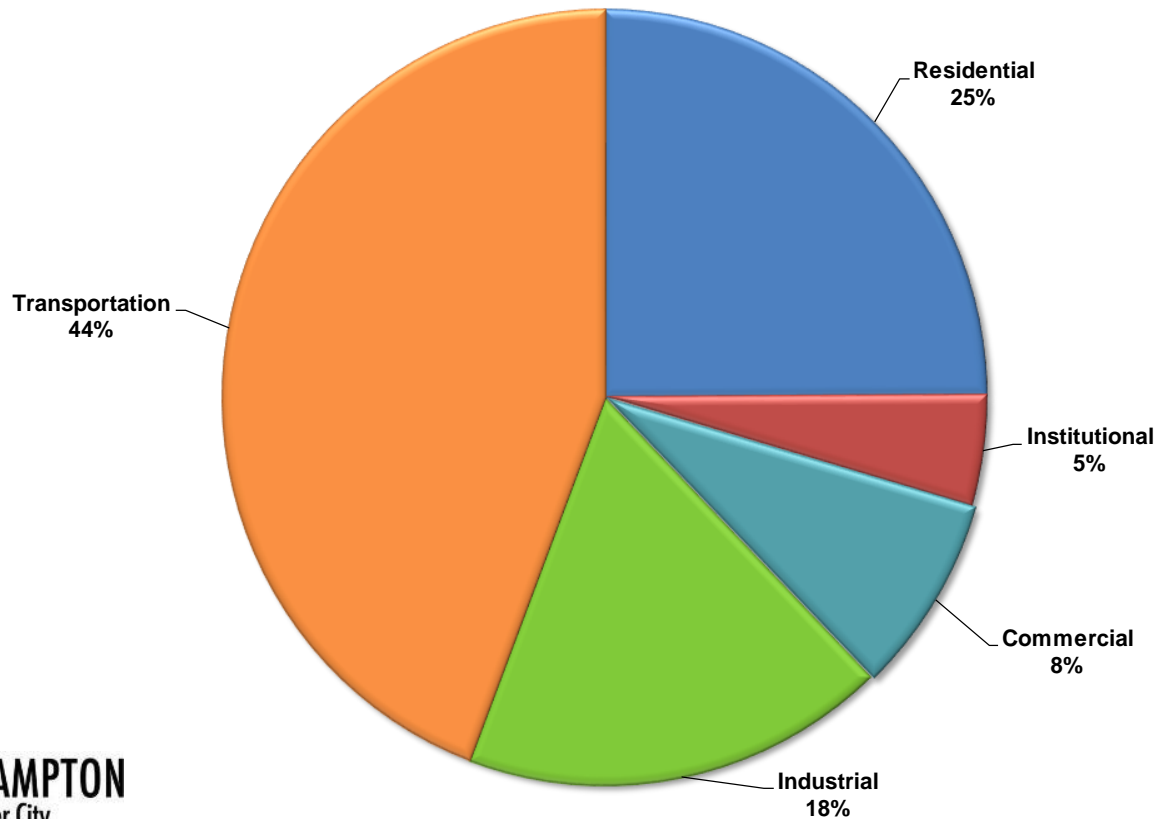


2050 – Base Case Source Energy Intensity* – GJ/km²

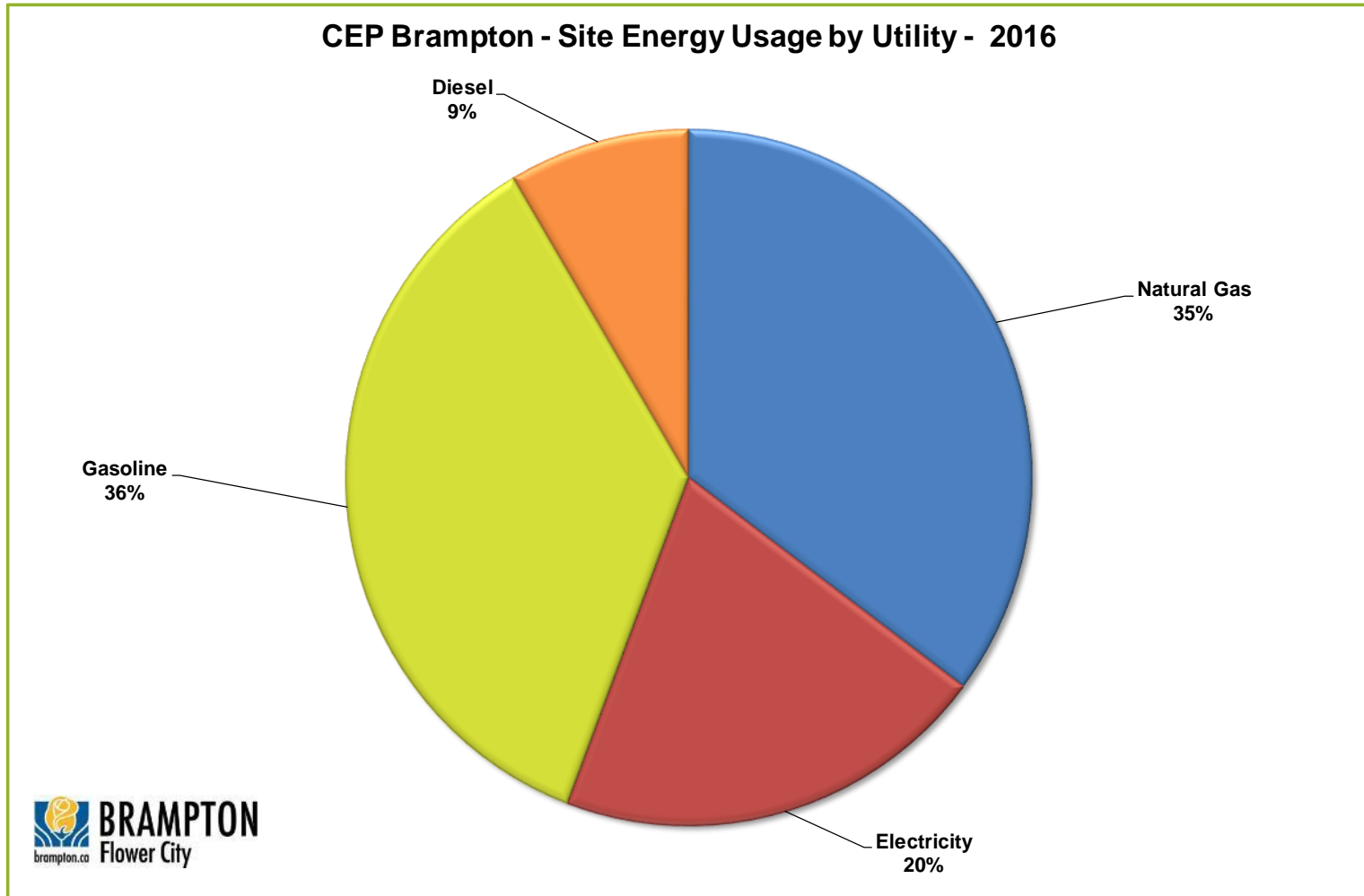


City of Brampton CEP 2016 Baseline *Customer Site Energy Use – 67M GJ*

CEP Brampton - Site Energy Usage by Sector - 2016

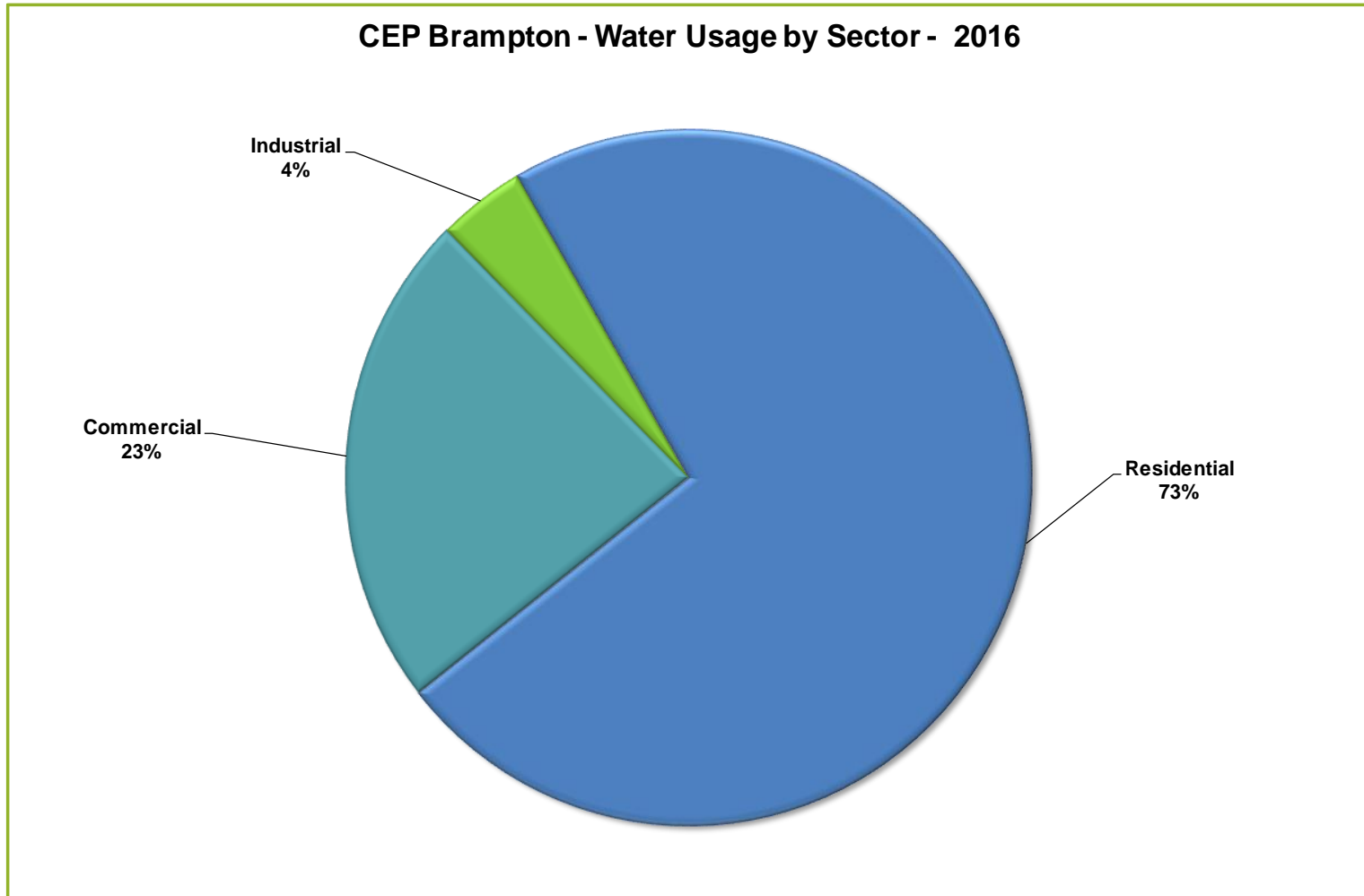


City of Brampton CEP 2016 Baseline *Site Energy Use by Utility – 67M GJ*

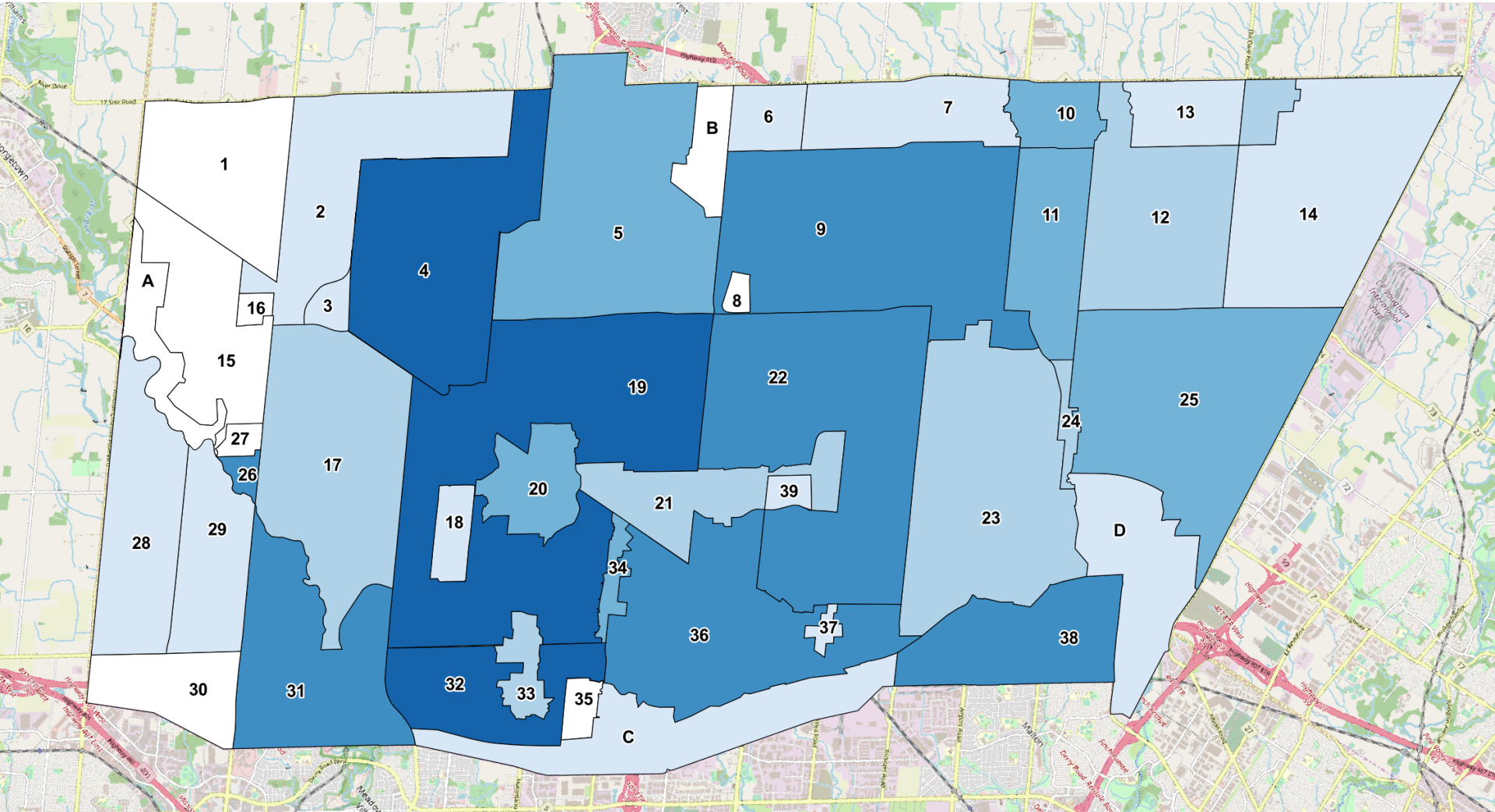


City of Brampton CEP 2016 Baseline

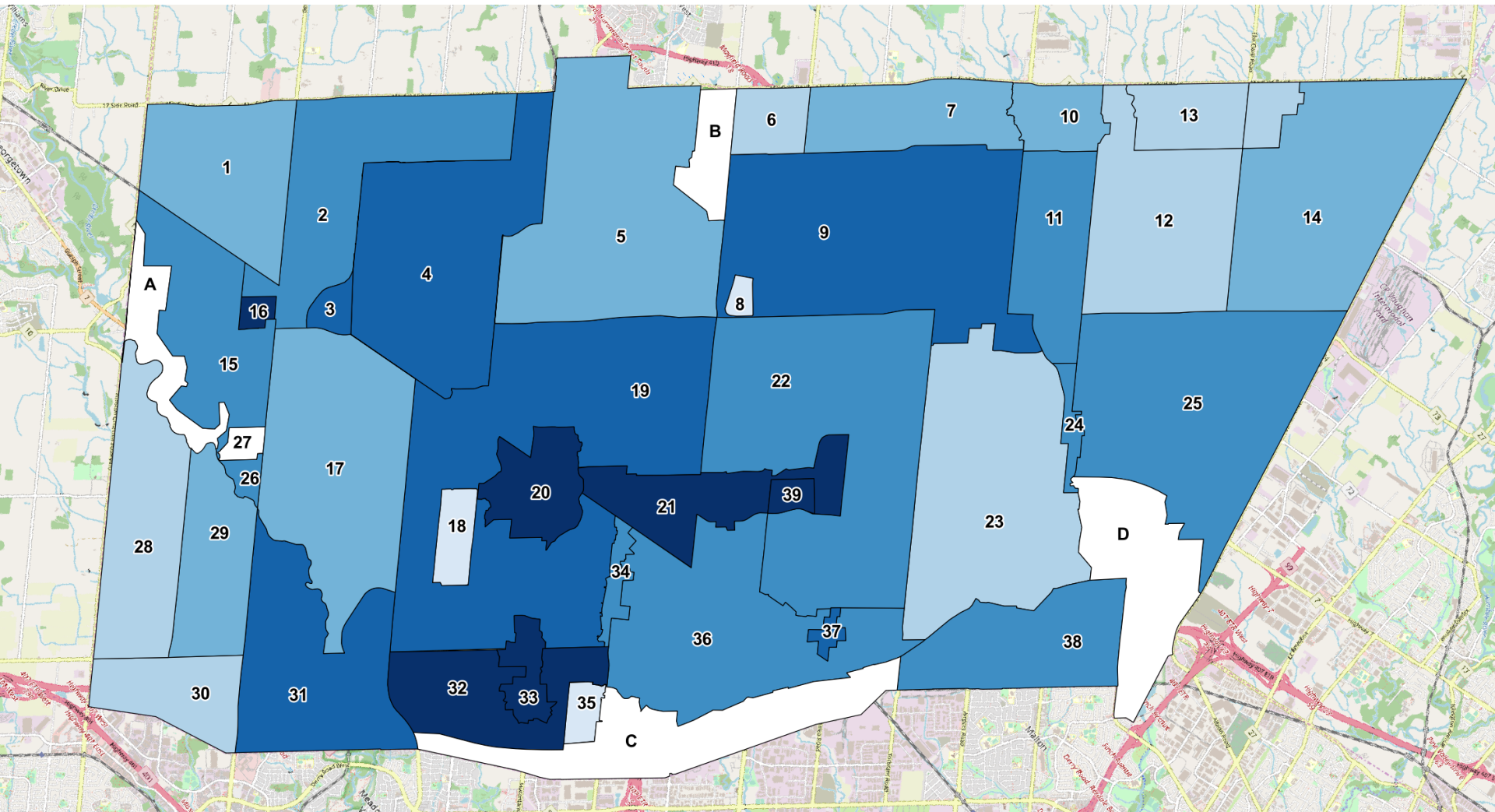
Site Water Use by Sector – 64M m³



Brampton CEP 2016 Baseline Water Use Density - m^3/km^2

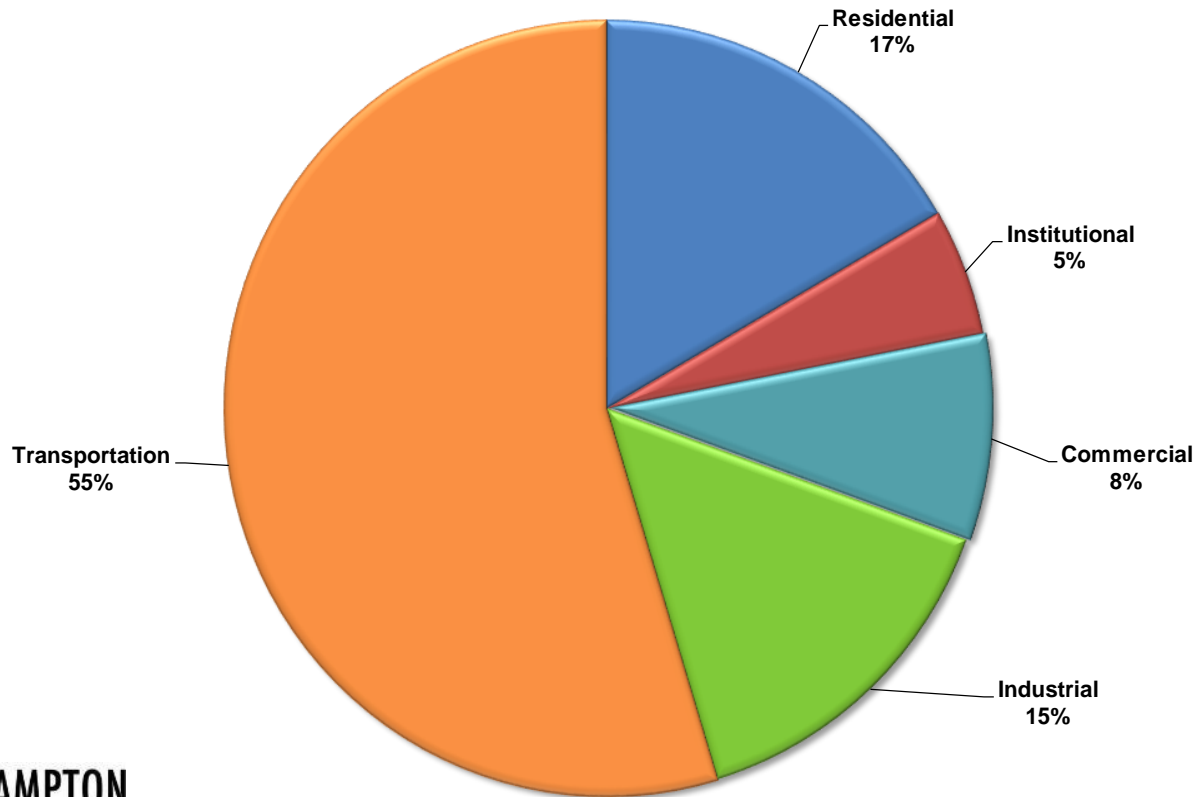


Brampton CEP 2050 Base Case Water Use Density - m^3/km^2



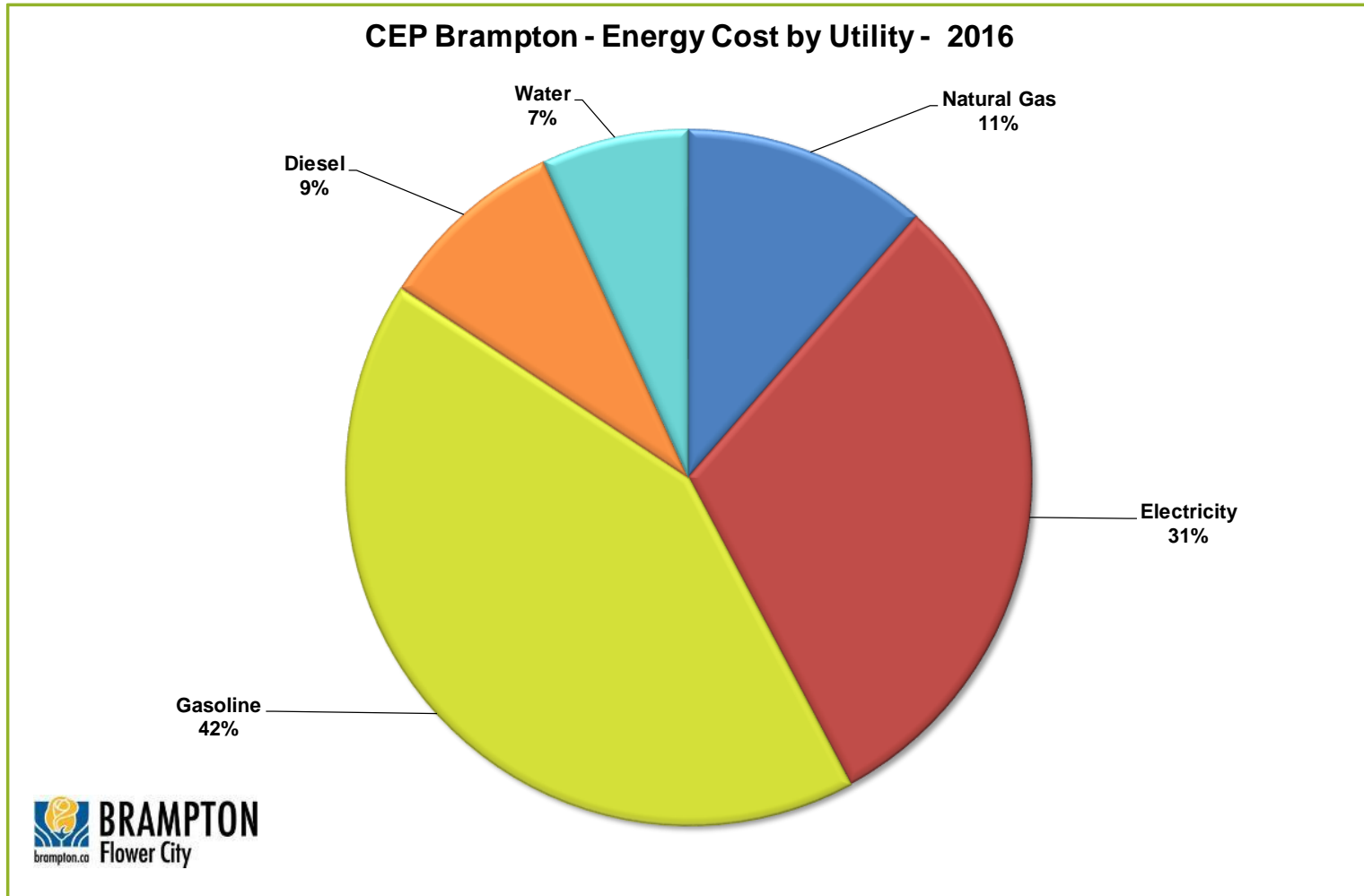
City of Brampton CEP 2016 Baseline *Energy-Water Cost (Sector) ~ \$1,800 Million*

CEP Brampton - Energy Cost by Sector - 2016



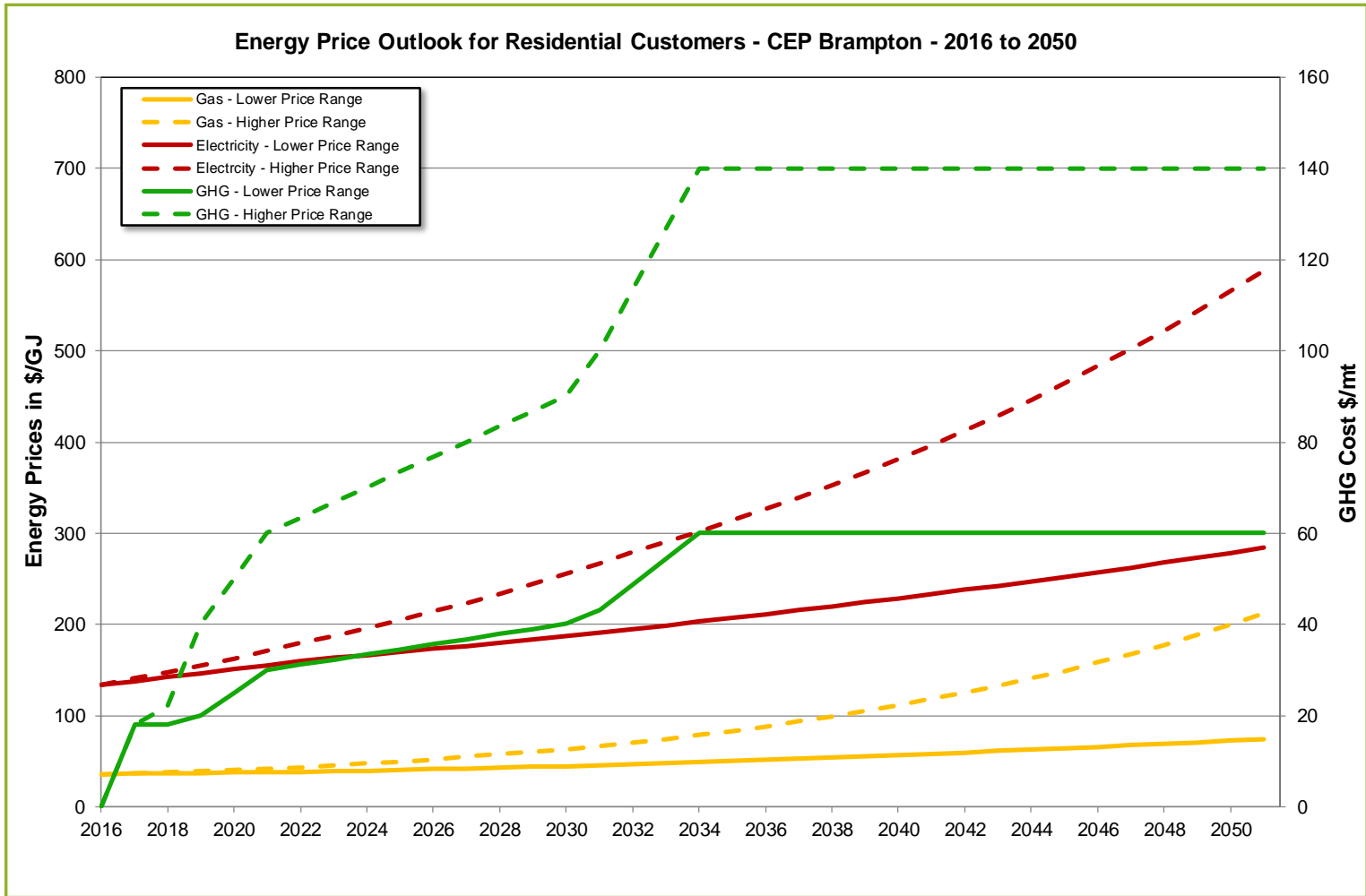
City of Brampton CEP 2016 Baseline

Energy-Water Cost (Utility) ~ \$1,800 Million

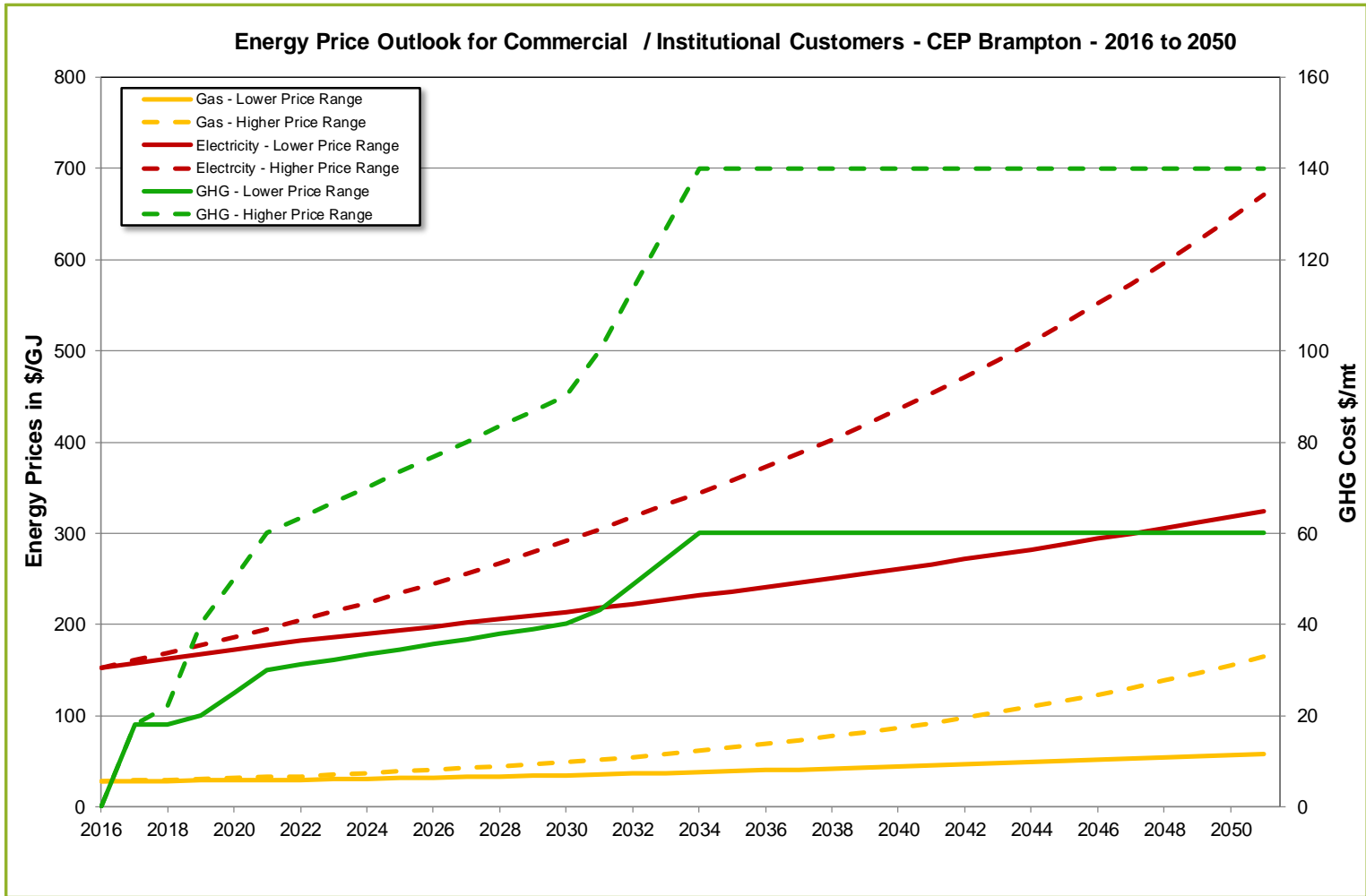


Price Outlooks to 2050

Utility & Carbon - Residential

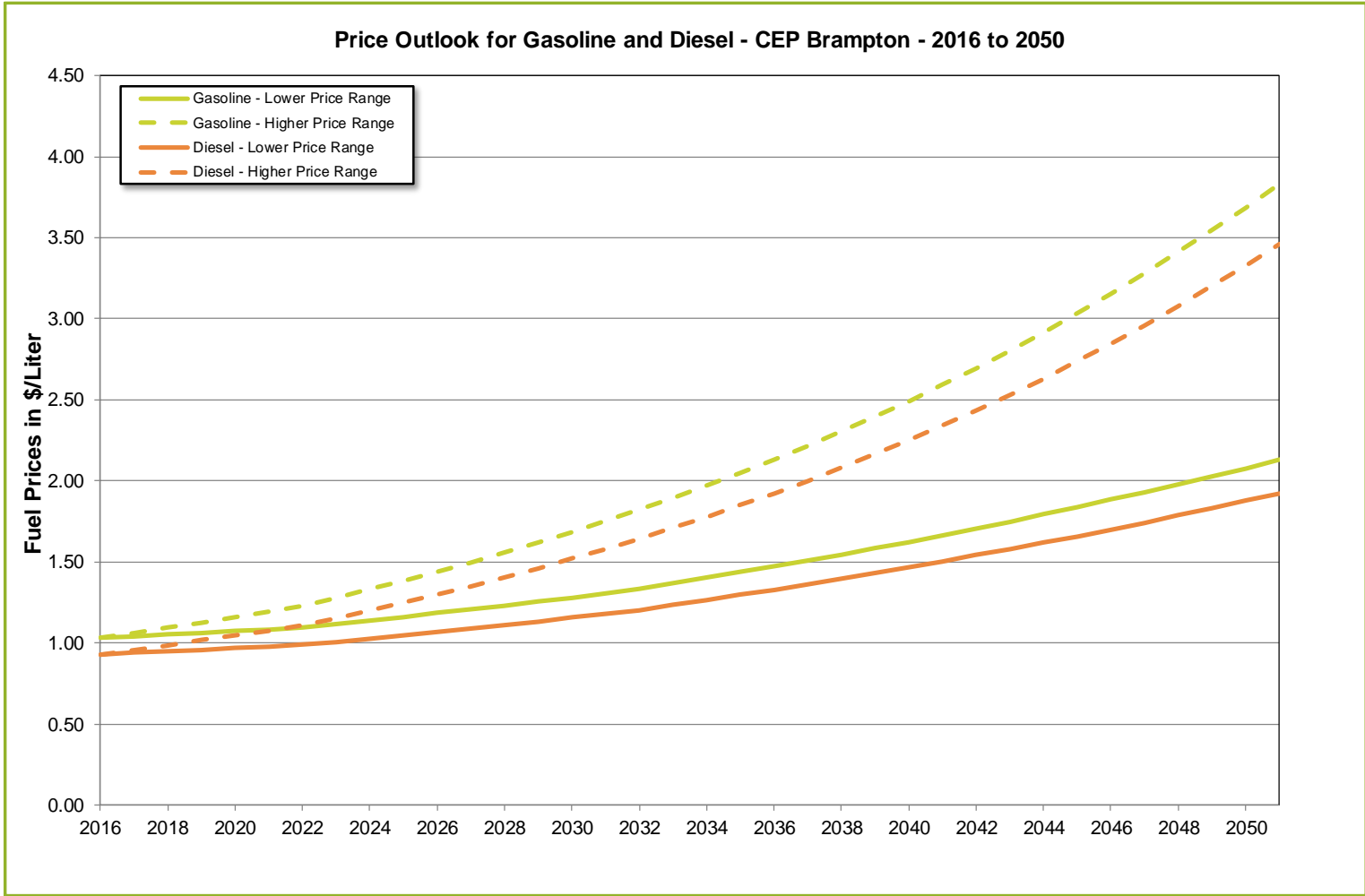


Price Outlooks to 2050 Utility & Carbon – C & I

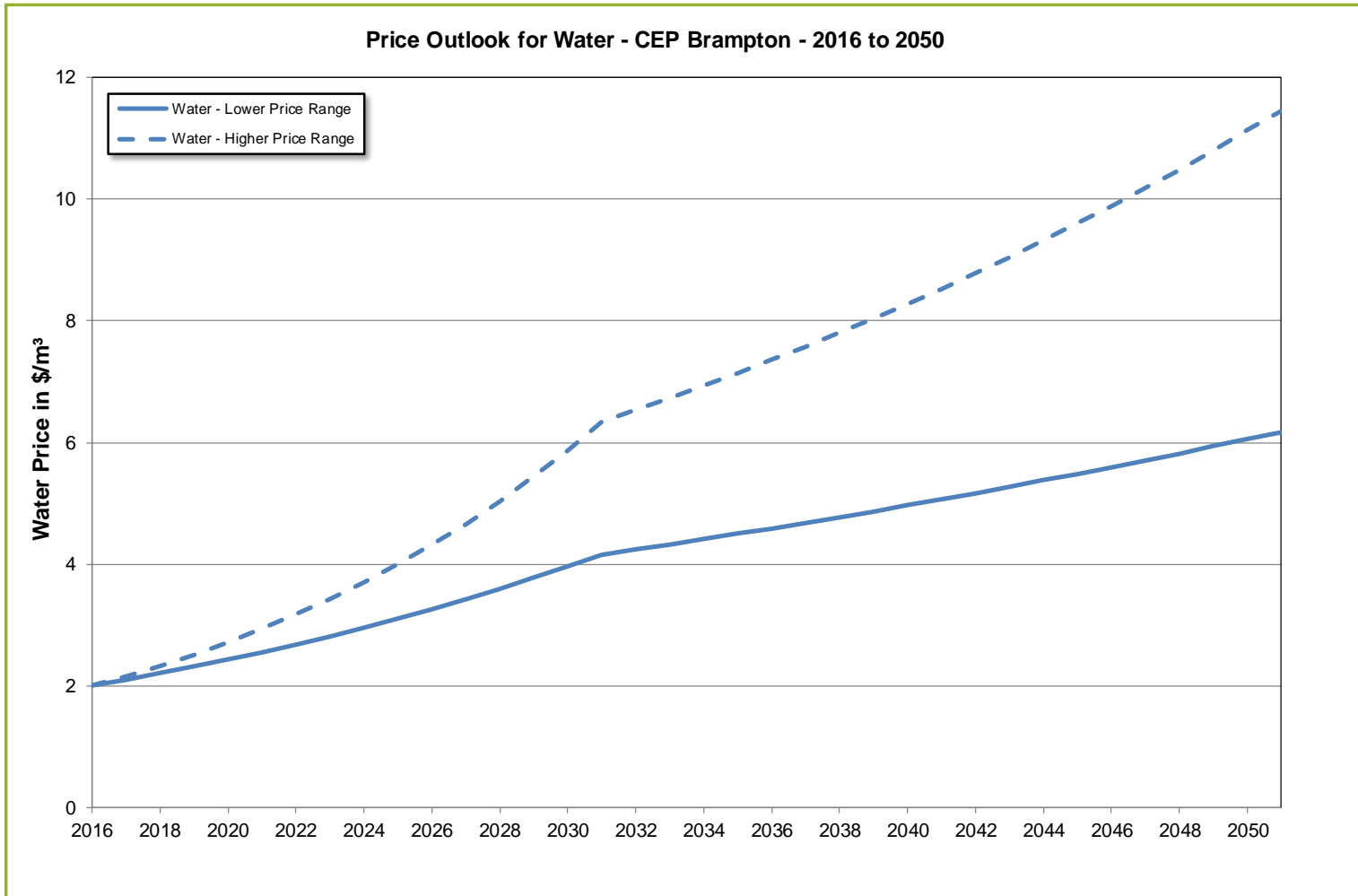


*Example– Industrial assumptions available

Price Outlooks to 2050 Gasoline & Diesel Fuel

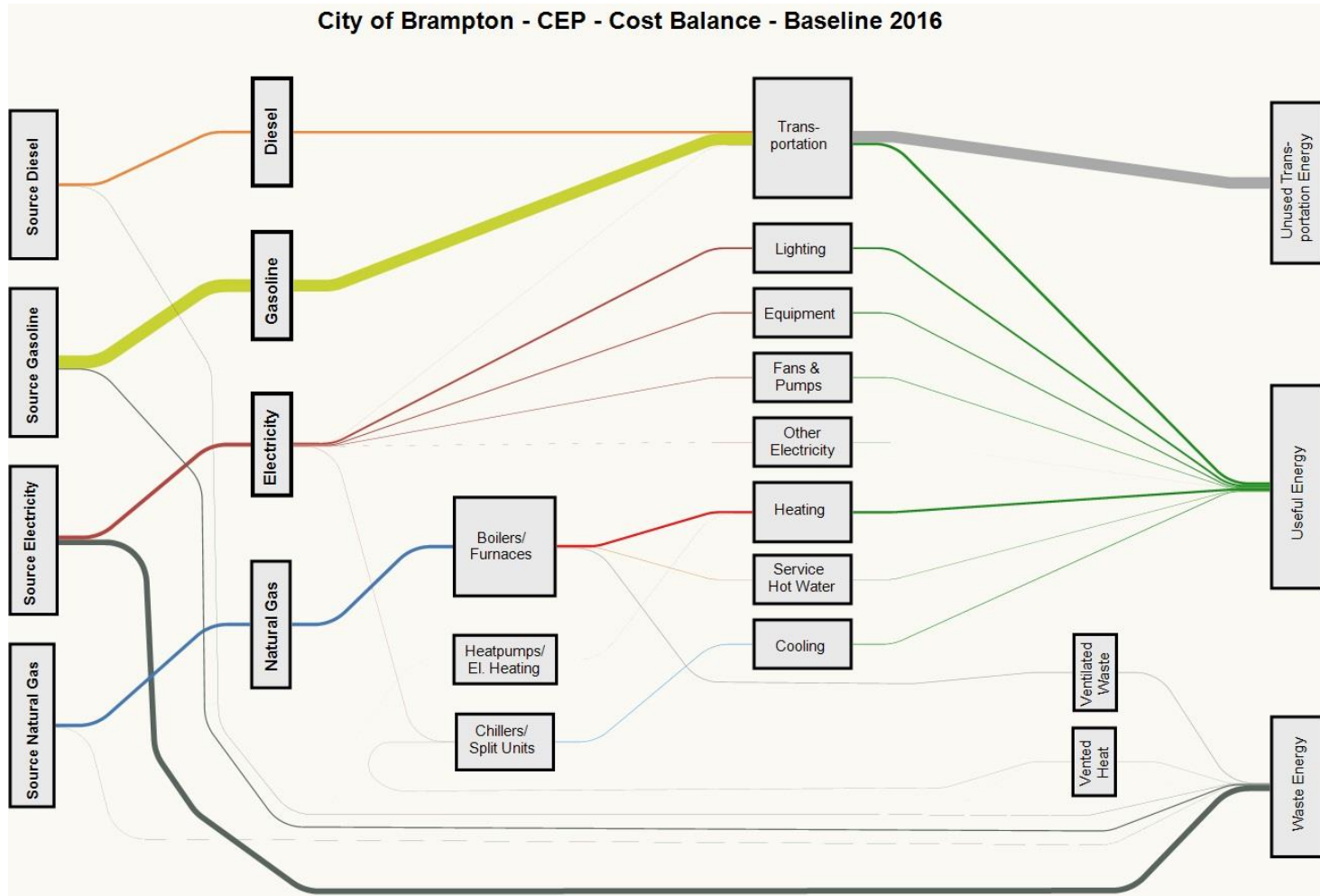


Price Outlooks to 2050 *Water & Waste Water*



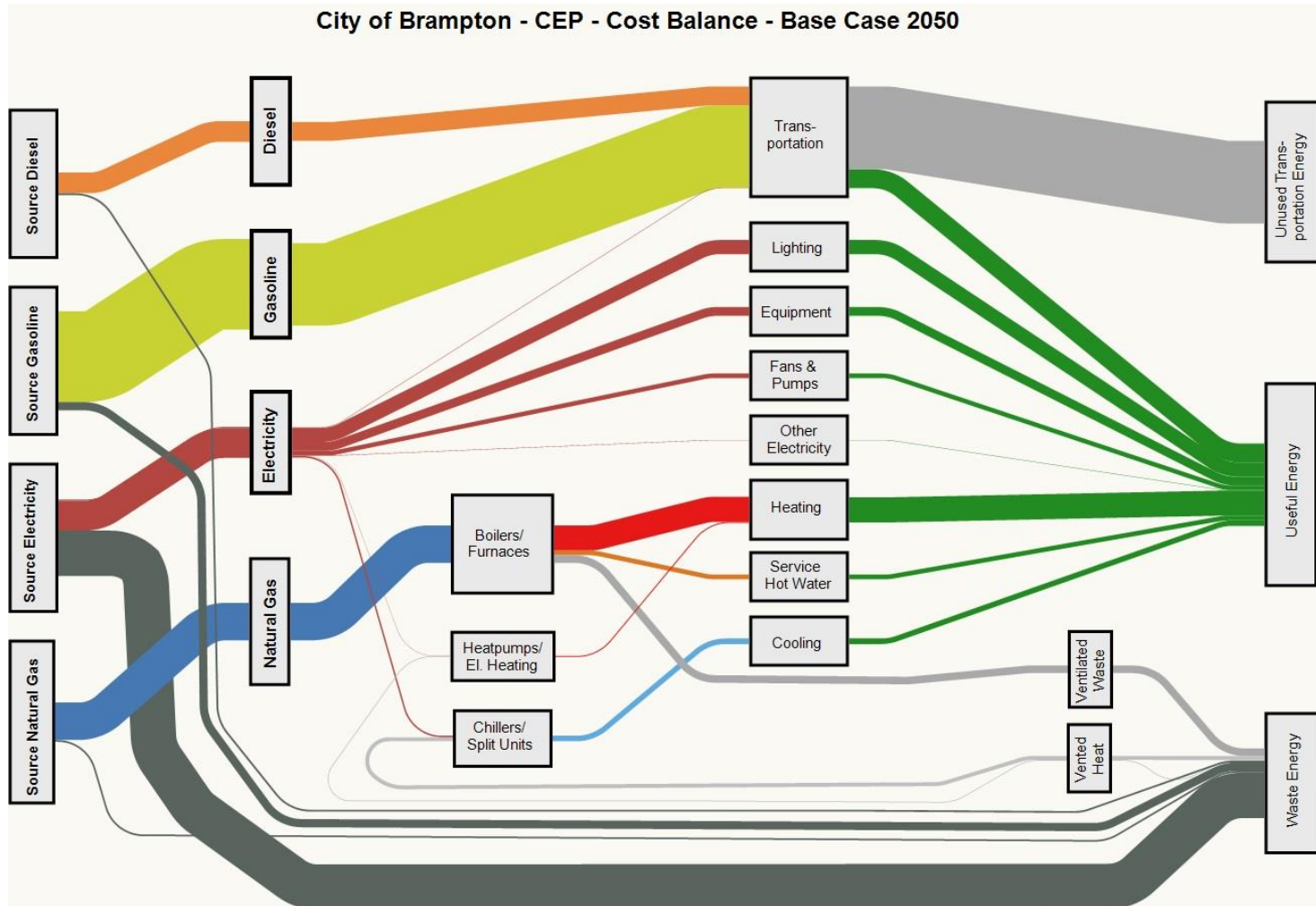
2016 CoB CEP Baseline

Energy Cost Balance ~ \$1,800 Million



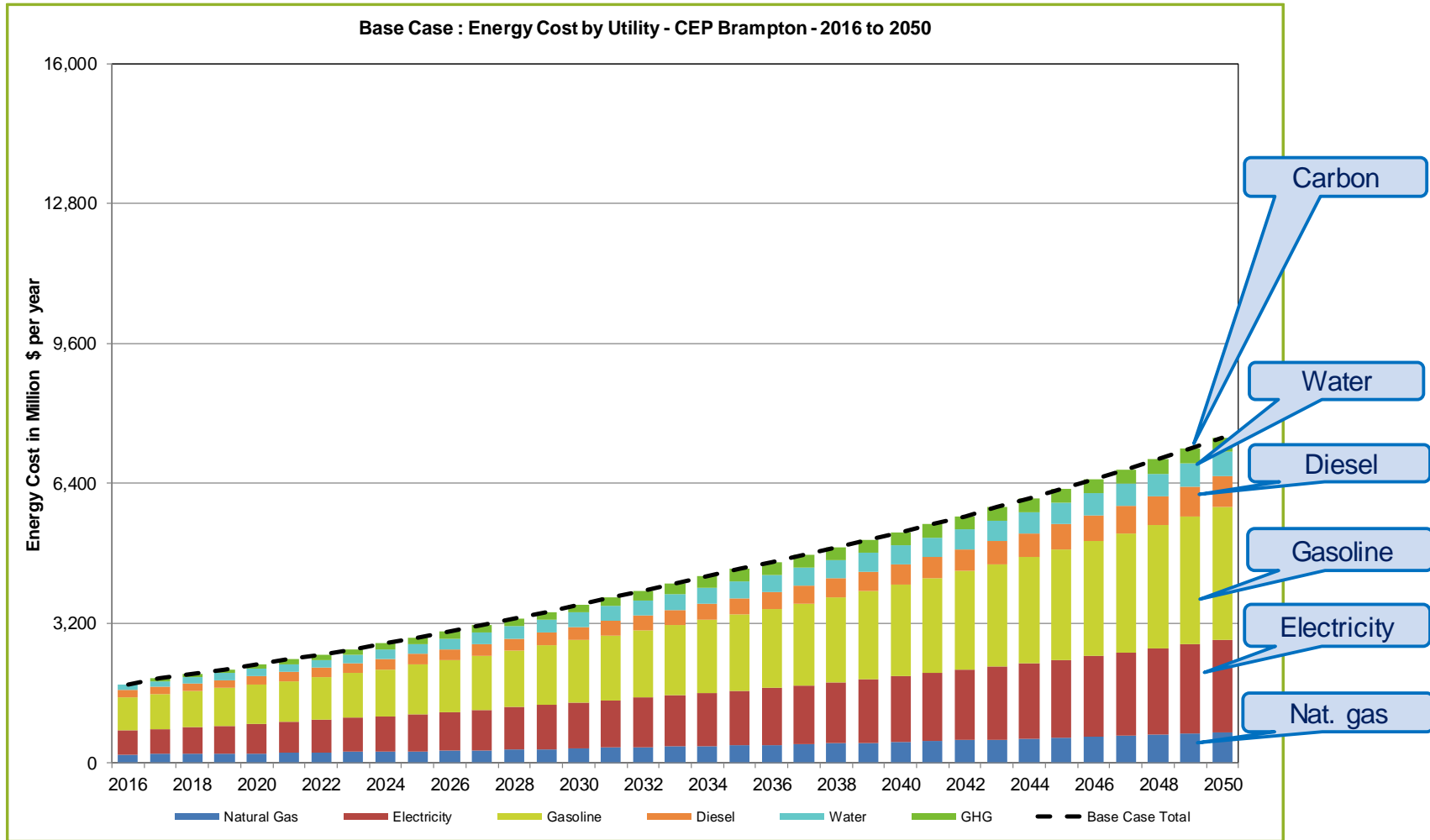
2050 CoB CEP Base Case

Energy Cost Balance ~ \$7,500 Million



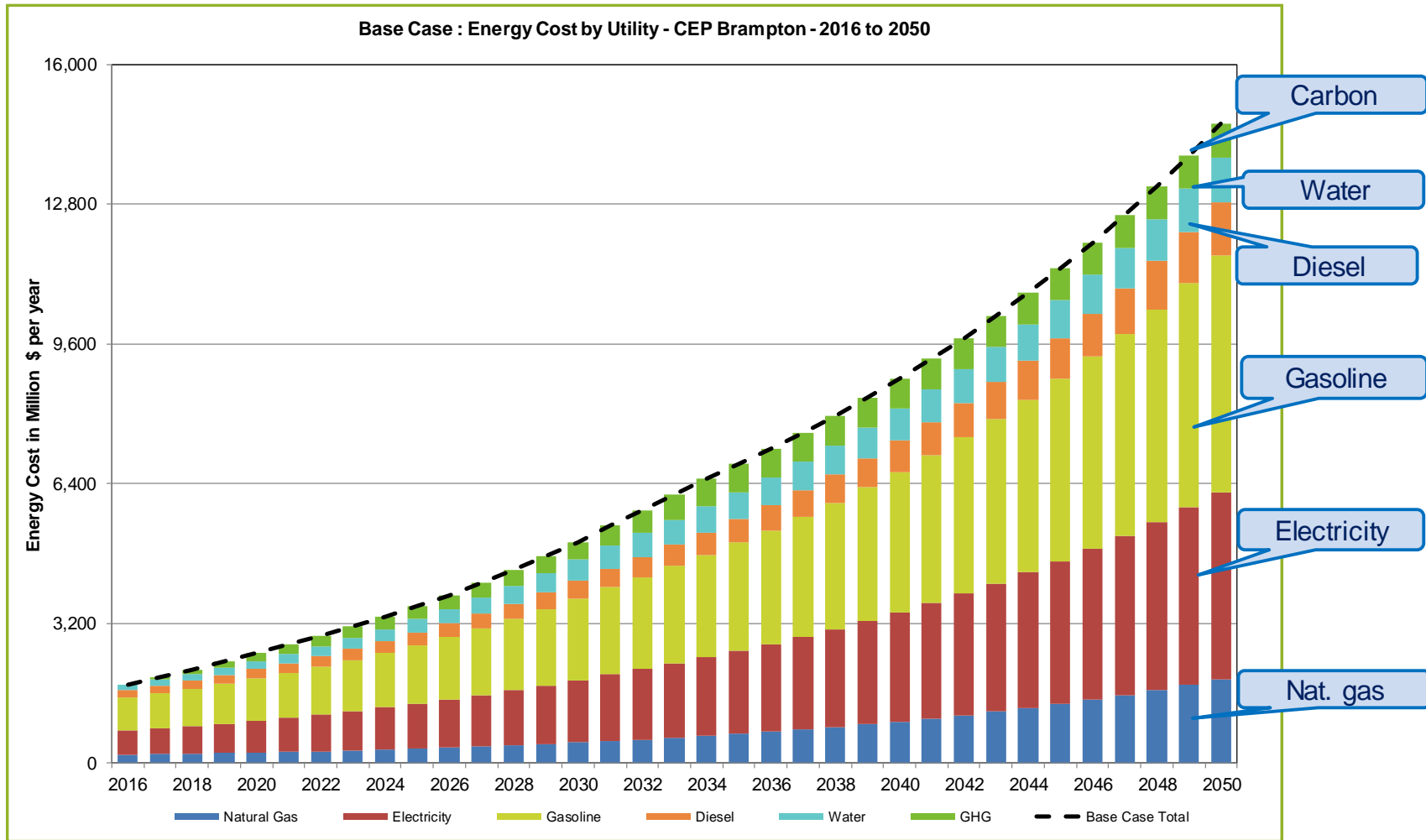
Brampton Base Case to 2050

Utility Cost – Lower Range



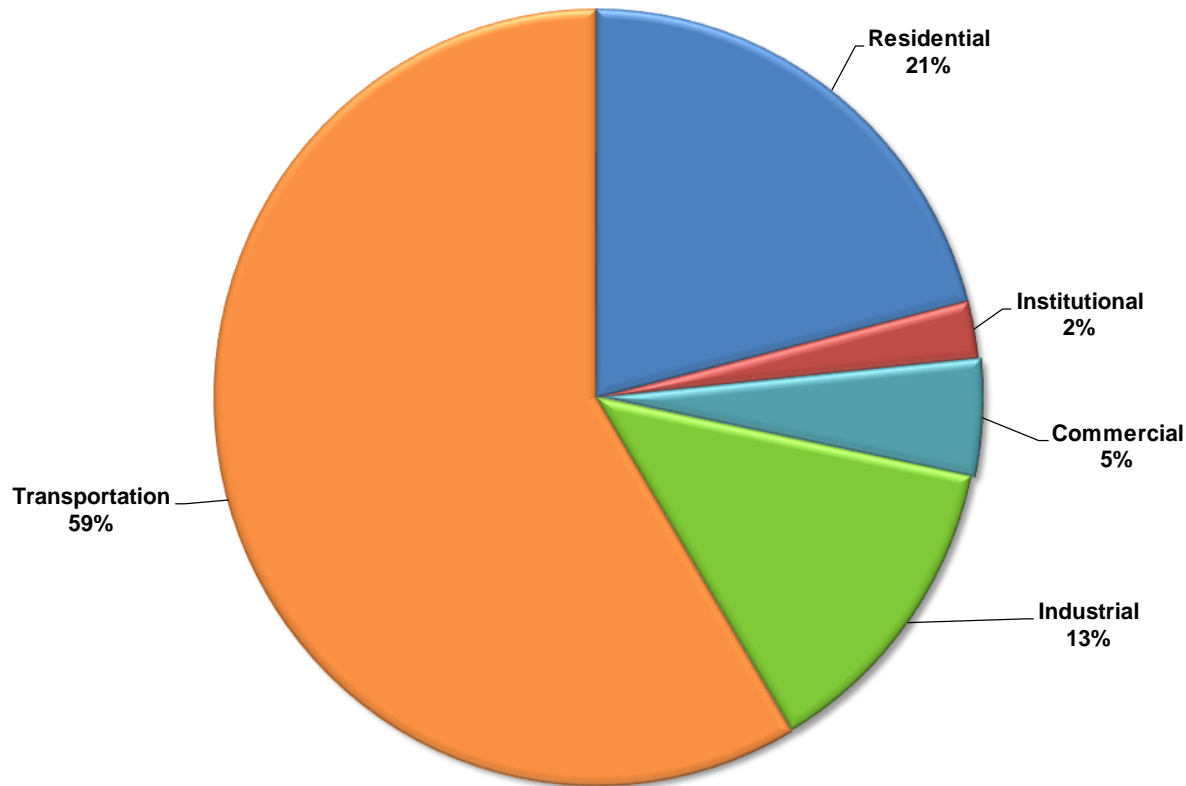
Brampton Base Case to 2050

Utility Cost – Higher Range



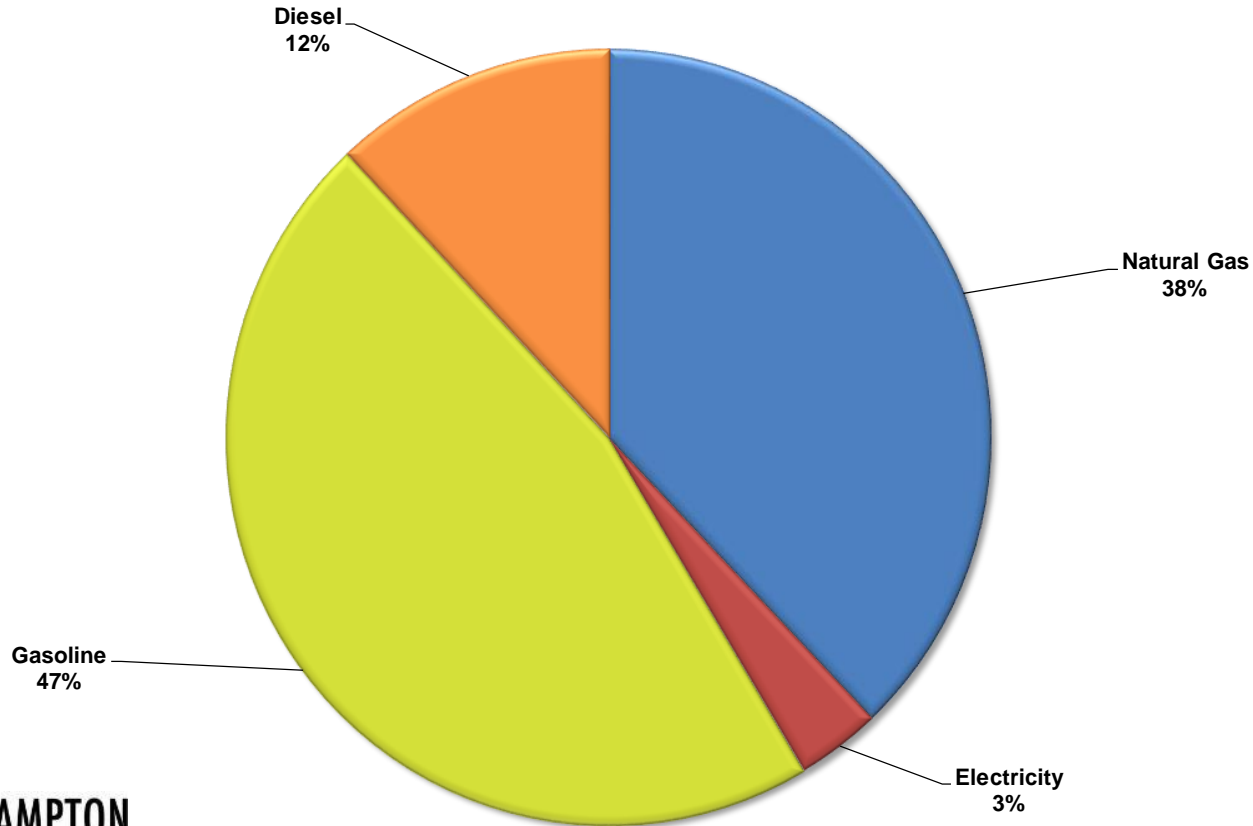
City of Brampton CEP 2016 Baseline *Emissions (Sector) ~ 3.5 M tonnes*

CEP Brampton - GHG Emissions by Sector - 2016



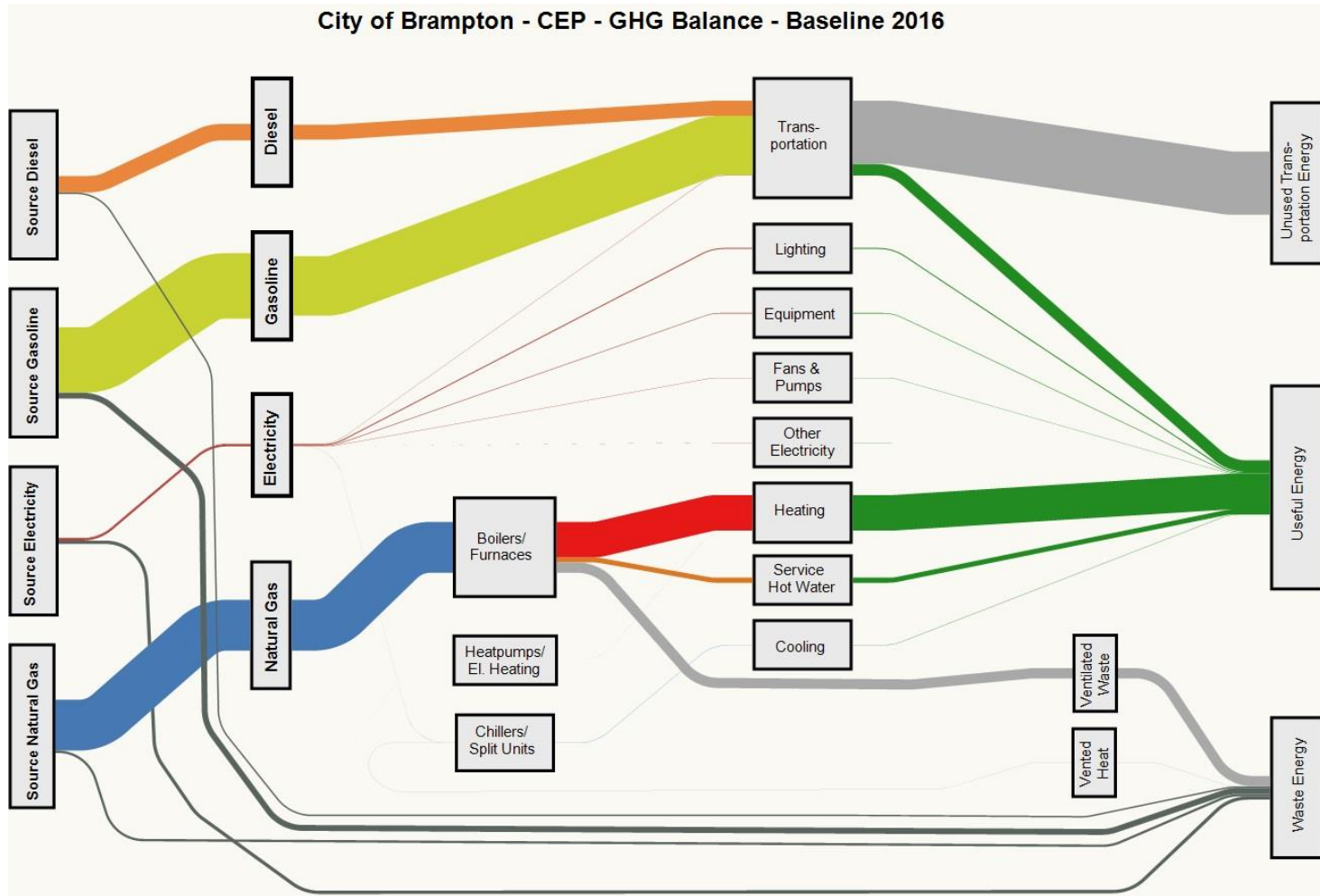
City of Brampton CEP 2016 Baseline *Emissions (Utility) ~ 3.5 M tonnes*

CEP Brampton - GHG Emissions by Utility - 2016

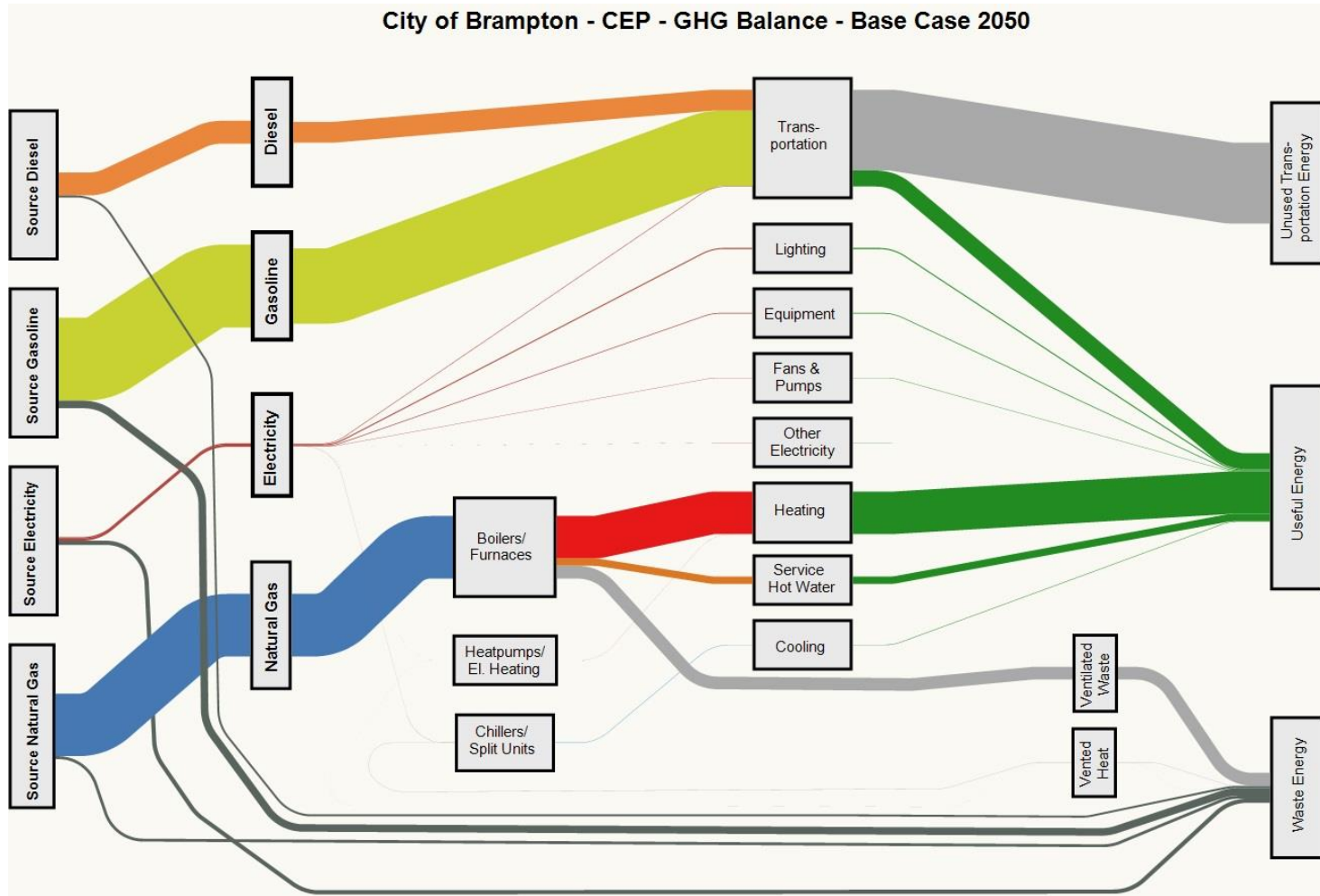


2016 CoB CEP Baseline

GHG Balance ~ 3.5 M tonnes

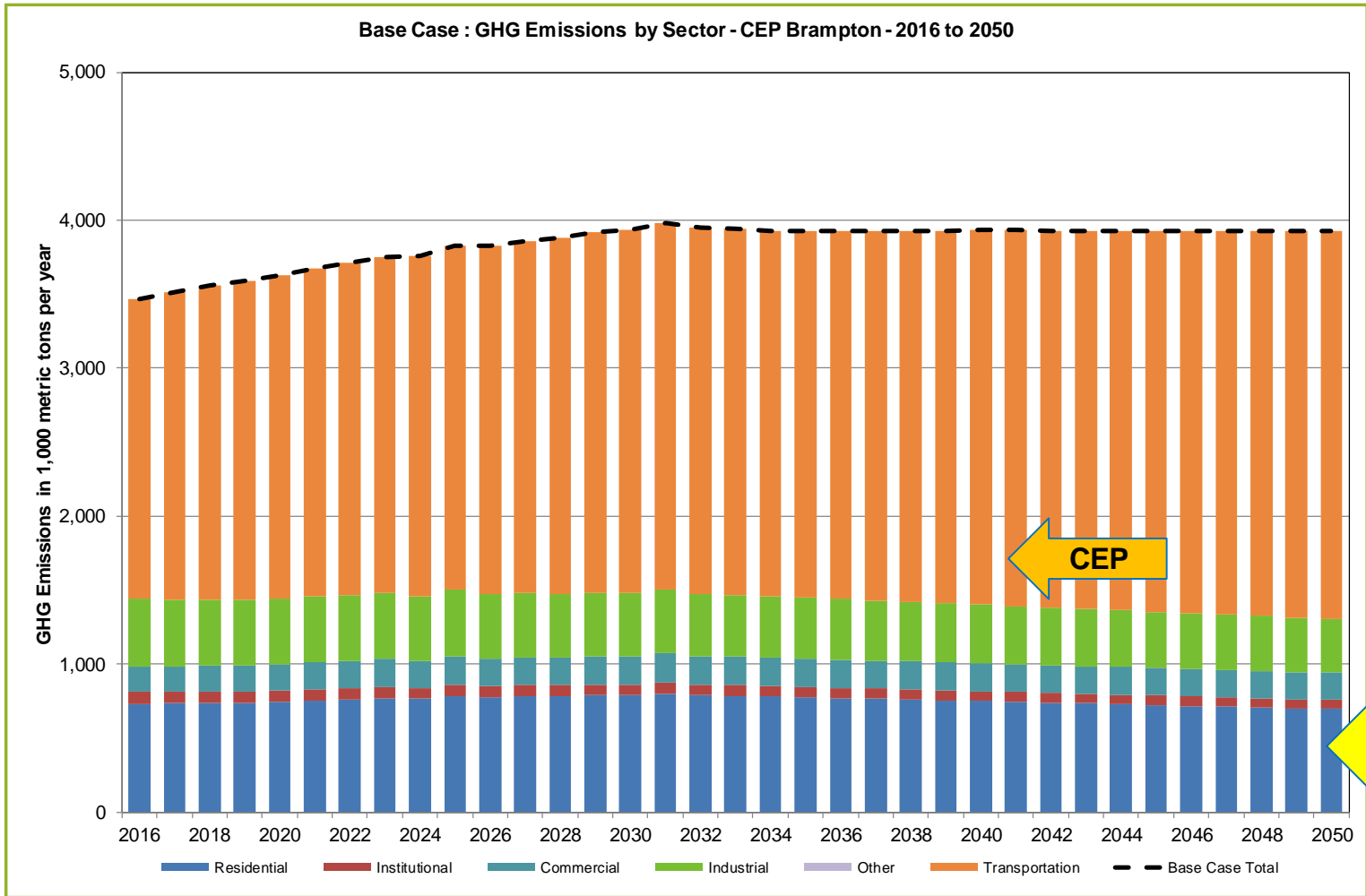


2050 CoB CEP Base Case GHG Balance ~ 3.9 M tonnes



Base Case to 2050

Emissions Goals - CEP & Federal



2016 and Business-as-Usual to 2050

Summary 1

- Current GHG per capita about twice best-practice community globally
- Current Homes & Buildings about 50% less efficient than global benchmarks
- Water use per home about 5% above Ontario, 40% higher than Newmarket and 75% higher than Germany
- Transportation more than half cost and emissions

2016 and Business-as-Usual to 2050

Summary 2

- Population increase about 51%
- Jobs increase by about 73%
- Energy cost increases between 315% and 720%
- 2050 emissions more than ten times Federal goals
- City leadership committed to sustainable & competitive growth
- Many sustainability elements in planning

“Living the Mosaic” Word Search Results

Word/Phrase	#	Comment
Energy resilience	4	Vision and “Institute for Sustainable Brampton”
District energy	1	Uptown only
Renewable energy	1	Institute area of activity
Alternative energy options	1	Neighbourhood audit element
Climate Change	2	Vision and resilience context
Sustainable	29	Used in multiple contexts (<5 energy context)
Efficiency	0	
Combined heat and power	0	
Distributed generation	0	
Net-Zero	1	Greenfield Neighbourhood guidance
Green	2	57 total – 2 in energy context
Solar, wind, bio..... Etc.	2	Uptown solar only
Emissions	0	
Utility, thermal ...	0	

Energy Indirectly Referenced

Cost-Effective Energy & Climate Mitigation

Loading Order Prioritization

- Increase Energy efficiency
- Maximize Heat Recovery
- Extend and Integrate Energy Distribution
- Maximize Clean & Renewable Energy Supply

Developing Integrated CEP Scenarios

Elements for CEP Solution Simulation

- Efficiency of existing homes
- Efficiency of existing C&I buildings
- Efficiency of existing industry
- New construction efficiency
- Net-Zero Emissions Neighbourhoods
- Mixed-use Urban Densification
- District Energy areas
- Renewable electricity generation
- Transportation efficiency and mix

City of Brampton

Community Energy & Emissions Reduction Plan

7. Engagement Process

- a) Presentation of Engagement Process –Role of the Task Force

City of Brampton

Community Energy & Emissions Reduction Plan

Engagement Plan – Goals and Objectives

To involve a broad cross-section of community stakeholders and the public in the process of developing the City of Brampton's Community Energy and Emissions Reduction Plan.

- Meaningful Engagement
- Buy-in, including the approval of the Plan by the City Council
- Capacity Building
- Empowerment

City of Brampton

Community Energy & Emissions Reduction Plan

Engagement Plan - Design Objectives

- Design for implementation by building municipal and community capacity
- Promote a data-informed process
- Meet the needs of incremental and transformational thinkers throughout the process
- Keep the Mayor and Councillors informed of the process and all engagement activities
- Involve Communications early in planning
- Engage a diverse cross-section of the community
- Respect stakeholder time
- Use stakeholder-appropriate engagement activities
- Ensure accessibility
- Plan for flexibility
- Measure outcomes and impact

City of Brampton

Community Energy & Emissions Reduction Plan

Engagement Plan – Stakeholder Identification

Identification

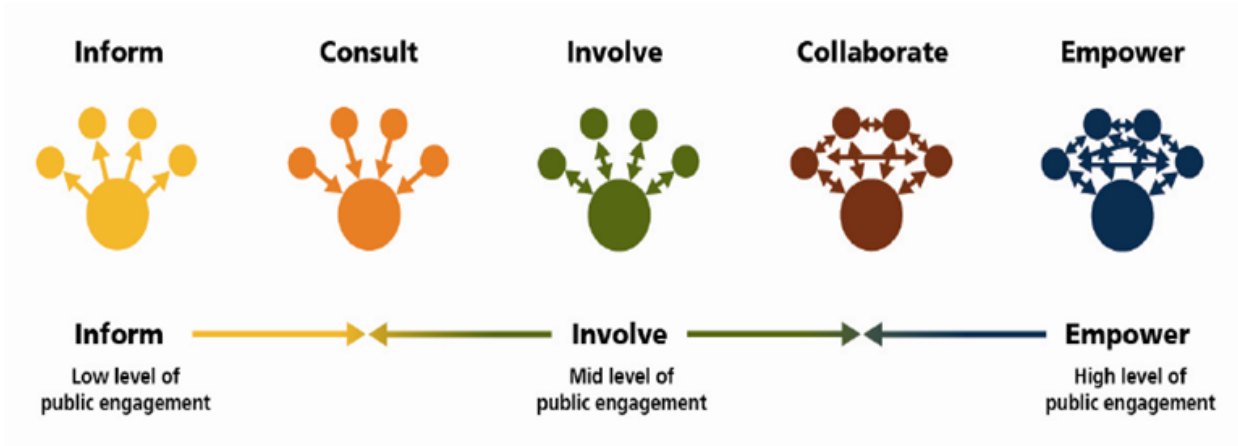
- Geographic boundaries
- Communities of interest
- Scope of consultation
- Impact of decision
- History of area
- History of issue

Categories

- Rights-holders
- Stakeholders
 - Decision-makers and regulators
 - Transactors
 - Active interests
 - Audiences
- Capacity-holders
 - Status-holders
 - Social-capacity holders
 - Knowledge-holders
 - Interest-holders

City of Brampton *Community Energy & Emissions Reduction Plan*

Engagement Plan – Levels of Engagement



Planning Process

Implementation Process

City of Brampton Community Energy & Emissions Reduction Plan

Engagement Plan – Data Informs Activities

CONCEPTUAL ENGAGEMENT FRAMEWORK	1. Confirm scope		2. Estimate Baseline		3. Develop CEP Framing Goals		AMS1		AMS2		AMS3		AMS4		AMS5		AMS6		AMS7		AMS8	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
POTENTIAL LEVELS OF ENGAGEMENT																						
Inform	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Consult	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Involve	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Collaborate														✓	✓							
Empower																						✓
ENGAGEMENT CHANNELS																						
Project Management Team	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipal Divisions	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Council	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community Task Force	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Target Networks	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Public	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

City of Brampton

Community Energy & Emissions Reduction Plan

Engagement Channels and Current Activity

- Council (3)
 - In progress
- Community Task Force (5)
 - Underway
- Target Networks (TBD)
 - Nordic Cities
- Public (3)
 - Survey
 - Web, Communique
- Municipal Divisions (3)
 - In development

City of Brampton

Community Energy & Emissions Reduction Plan

Engagement Plan – Communications

- Designed to support the CEERP's Engagement Plan and provide additional opportunities to inform stakeholders and the public about the CEERP process and its outputs.
- The outputs of the Analytical Process will inform the development and implementation of the Communication Plan
- Mapping and Visualization tools provided by Sheridan will support the implementation of the CEERP Engagement and Communication Plans.
- It is anticipated that the Communications Plan will include, at a minimum:
 - *E-newsletters*
 - *Facebook*
 - *Fact sheets*
 - *FAQs*
 - *Twitter*
 - *Website*
 - *Digital Screens*
 - *News releases*
 - *Posters*

City of Brampton

Community Energy & Emissions Reduction Plan

■ Next Steps

- *Task Force to trial survey before making more broadly available*
- *Branding – Tag Line and Logo*

■ Next Meeting

- *Initial survey results*
- *Tag line and logo options*

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8. Communication

- *Community Communiqué*

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9. Next Meeting

- *Meeting Schedule*

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Engagement	General Topics	Format/Tools	Provisional Date
Task Force #1	Overview of CEERP process (scope), CEERP Relationship to Urban Planning, CTF Charter and Governance Role, Draft Framing Goals, Baseline, Base Case, Engagement Strategy	Presentation Q&A Working Meeting	March 28, 2019
Task Force #2	Scenarios and Options	Mapping Charrette Working Meeting	May 22, 2019
Task Force #3	Preliminary Recommendations	Presentation Q&A Working Meeting	Week of June 24, 2019
Task Force #4	Final Draft Recommendations Ongoing Governance Role	Presentation Q&A Working Meeting	Week of September 9, 2019
Task Force #5	Final Draft CEERP	Presentation Q&A	Week of October 21, 2019

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10. Adjourn

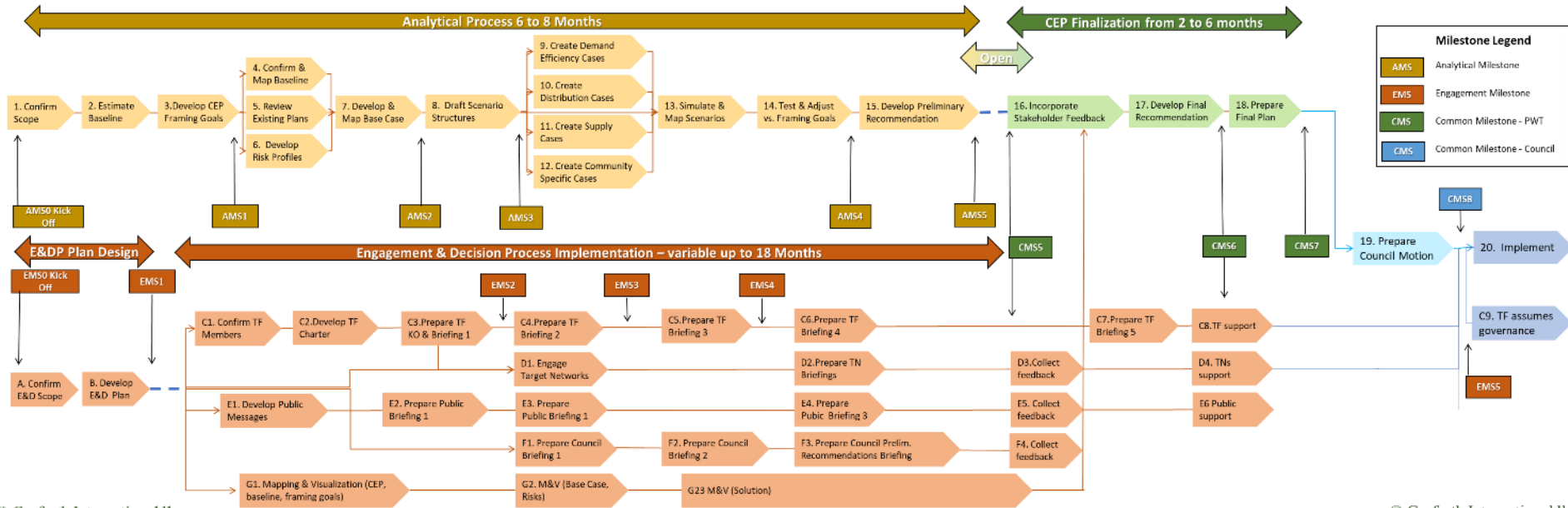
THANK YOU
And
GOOD NIGHT



Miscellaneous Back-up Slides

Adjusted CEP Process Overview

Detailed Generic Process Map



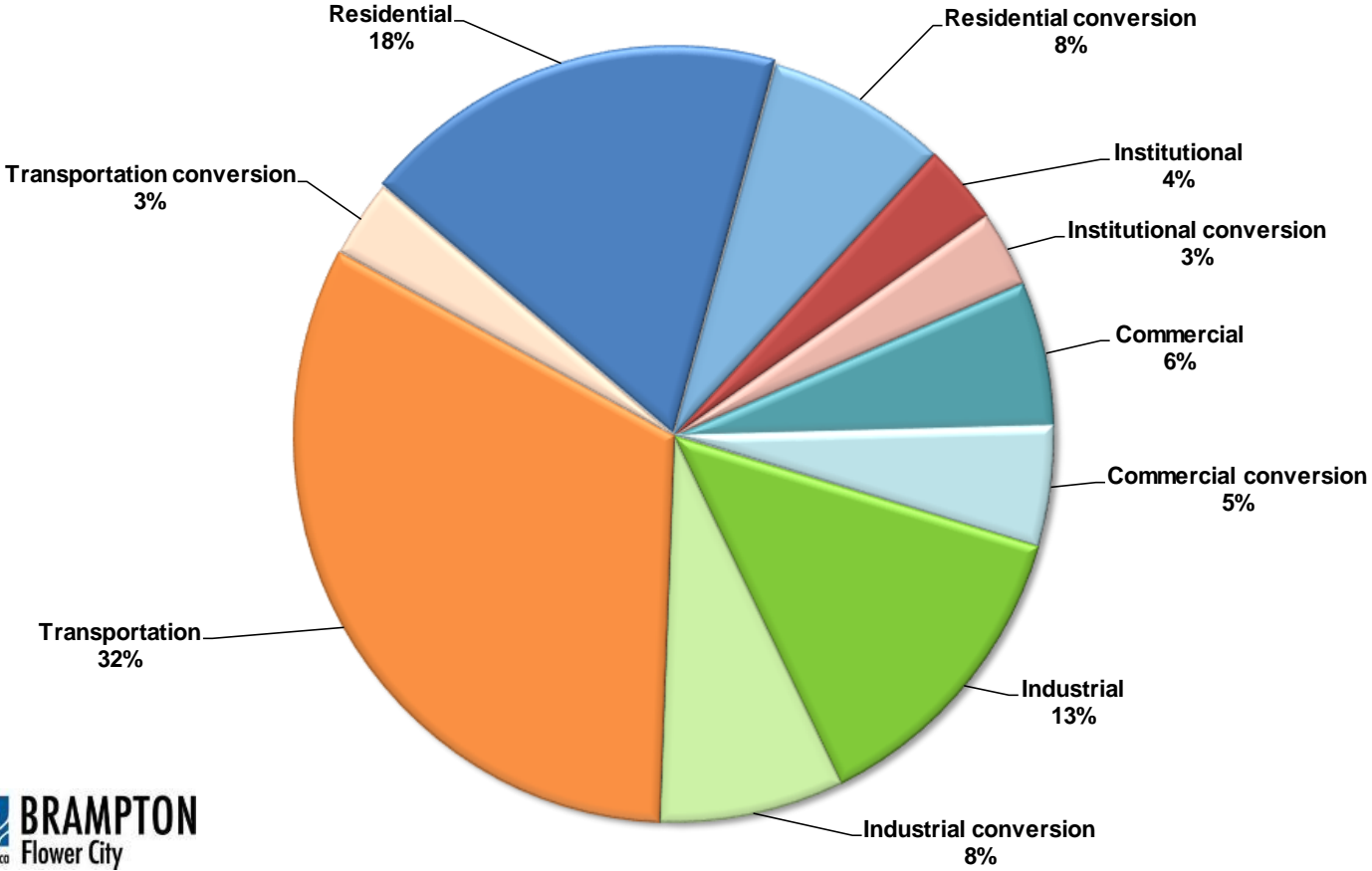
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City of Brampton CEP 2016 Baseline

Customer Source Energy – 92M GJ

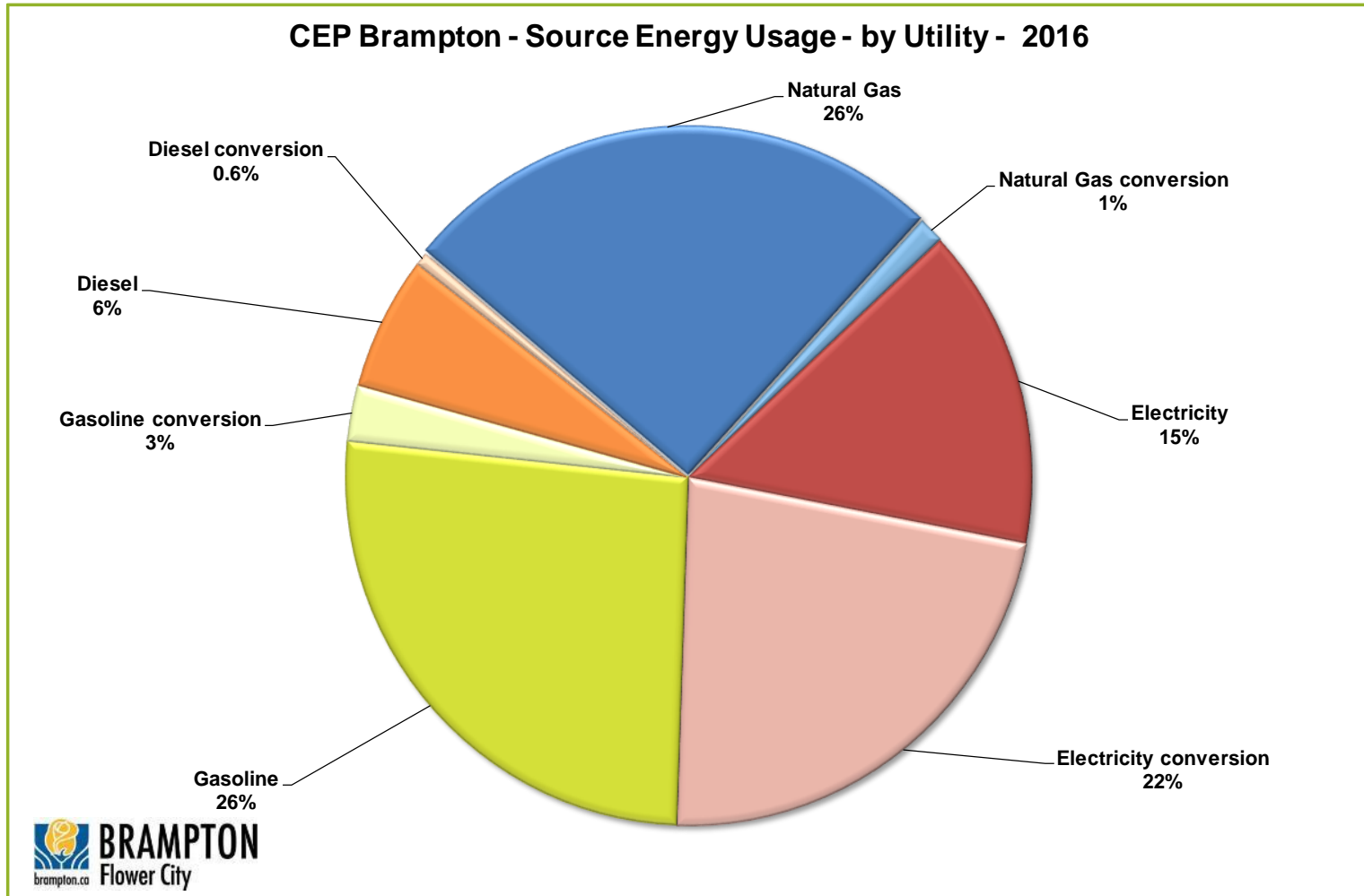
CEP Brampton - Source Energy Usage - by Sector 2016



At Least 27% Conversion Losses

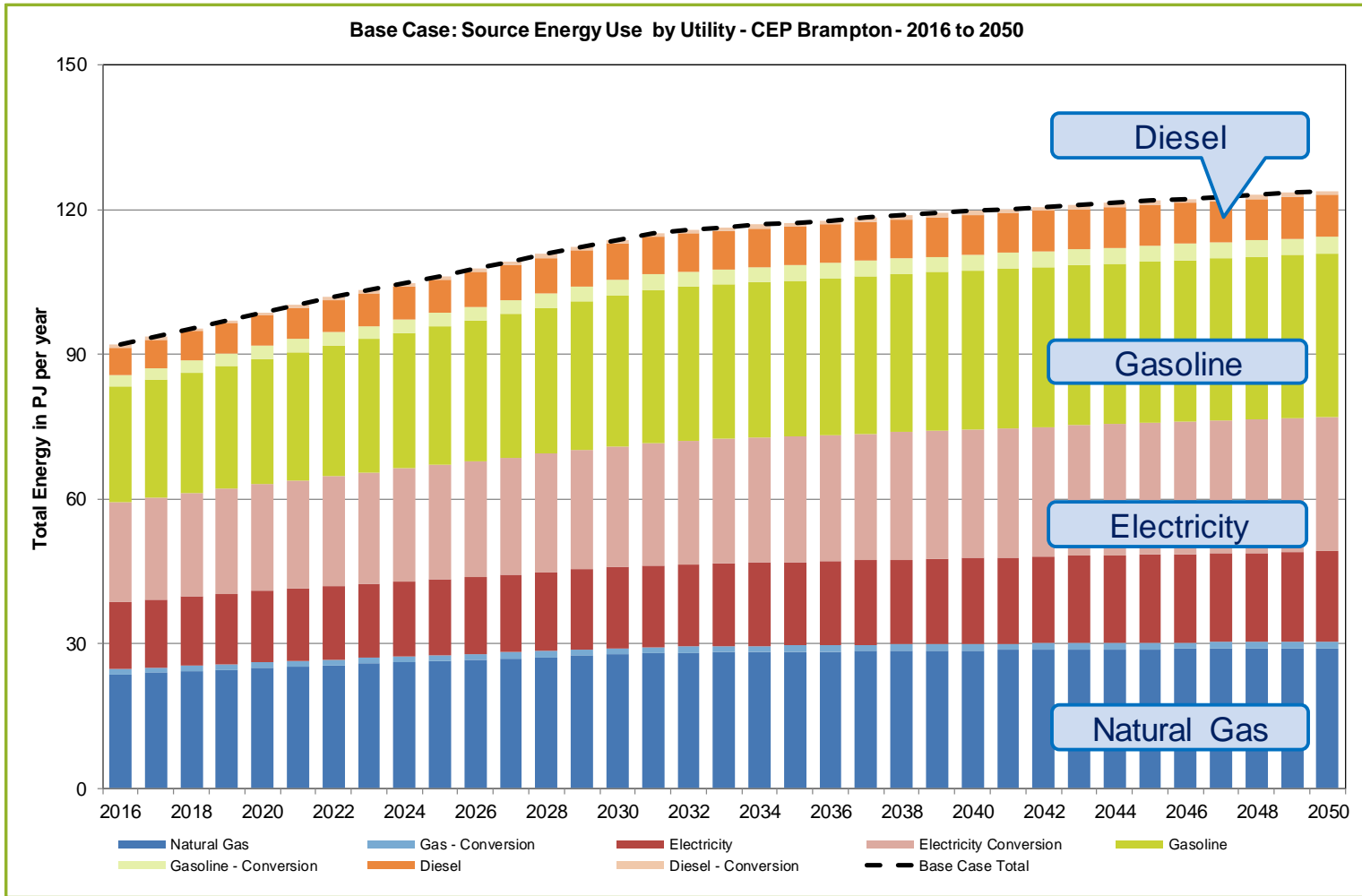
Sheridan | Get Creative

City of Brampton CEP 2016 Baseline *Utility Source Energy Use – 92M GJ*



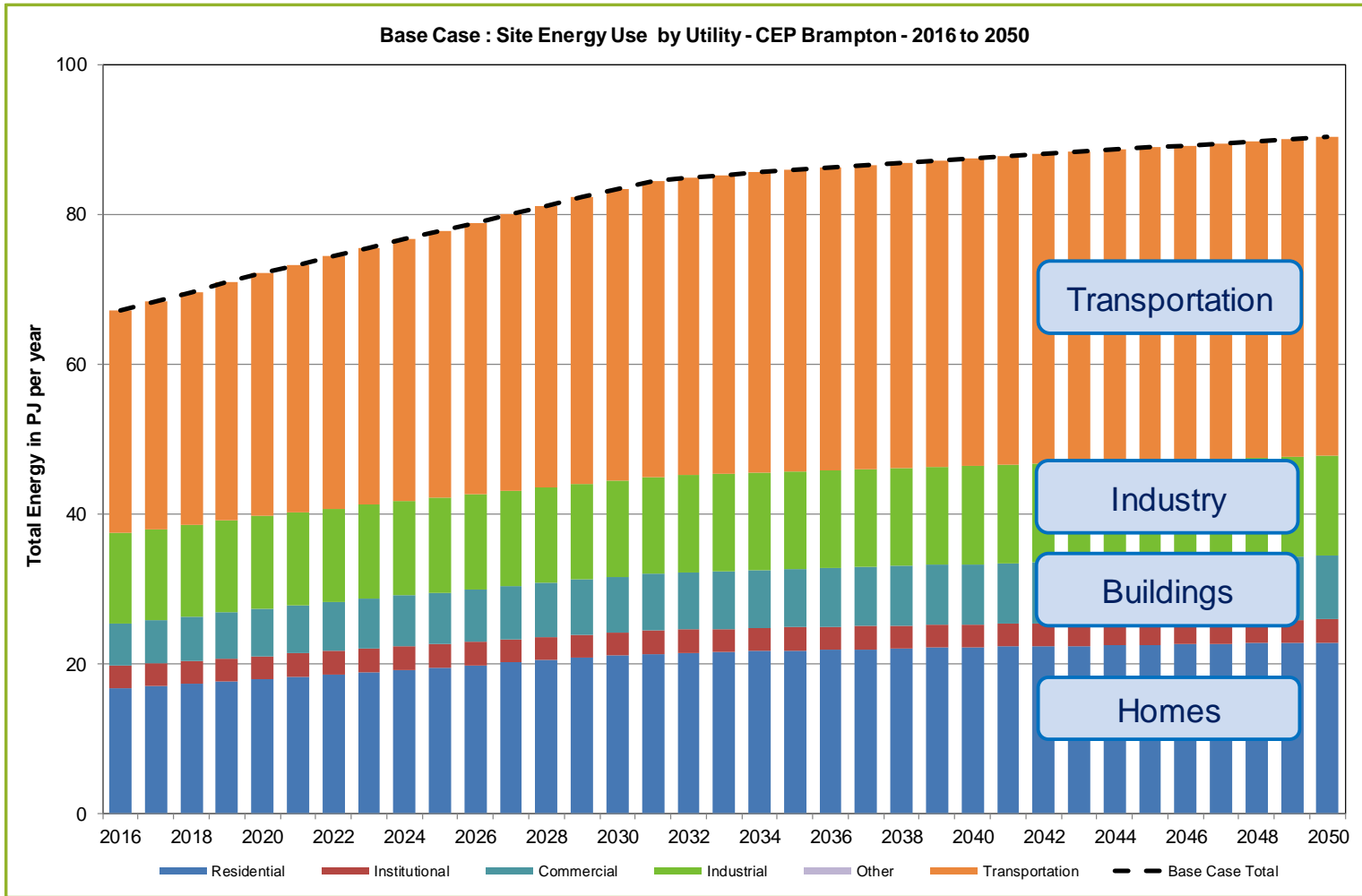
Brampton Base Case to 2050

Source Energy Use by Utility



Brampton Base Case to 2050

Site Energy Use by Sector



Brampton Base Case to 2050

Site Energy Use by Utility

