

2022 Development Charges Update

Development Charges Advisory
Committee

October 21, 2021



Halton.ca  311



Agenda

1. Water/Wastewater and Transportation Review (2023 to 2031)
2. Gross Cost to DC Recoverable Costs
 - Water/Wastewater
 - Transportation
3. DC Calculation

1. Water/Wastewater and Transportation Review (2023 to 2031)

Overview

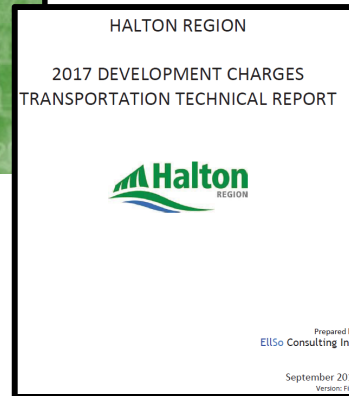
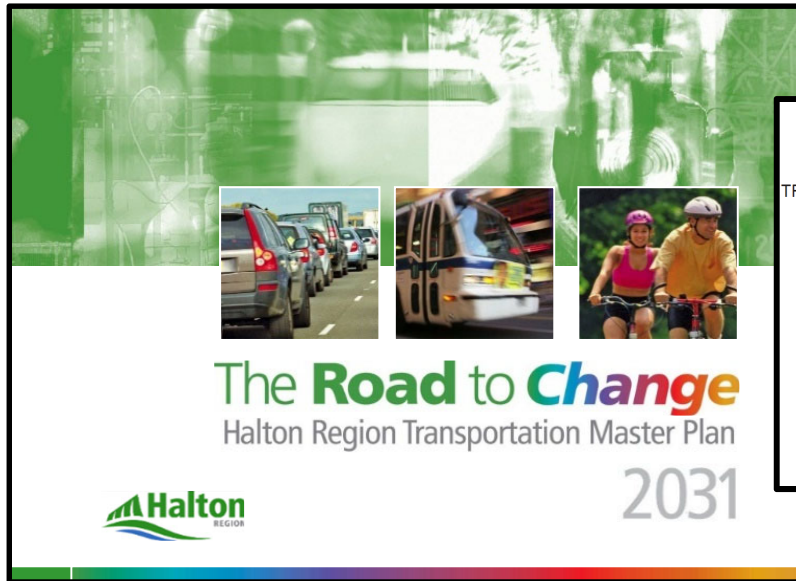
- DC Technical Reports: Objective and Basis of Analysis and Technical Review
- Water/Wastewater Technical Review
- Transportation Technical Review

Objective

Update to the 2017 DC, as per FN02-21/PW04-21:

- Development Charges Technical Reports that provide the basis for developing costs and capital implementation plans for transportation and water/wastewater projects to service population and employment growth across Halton Region (2023 – 2031)
- Halton Region Best Planning Estimates (BPE) to 2031 were used as the basis for growth projections, as approved in 2011 as per Staff Report LPS54-11
- BPEs to 2051 are being developed for the IGMS/Regional Official Plan Amendment and will be assessed through upcoming Integrated Master Plans and subsequent DC Update

Basis of Analysis



Basis of Technical Review

- Transportation and Water/Wastewater capital programs generally align with the 2017 DC Bylaw Update
- Methodology aligns with 2017 DC Bylaw Update, including design criteria, factors such as project contingencies, and project splits
- Primarily focused on updating project costs (2022\$) to reflect current unit rates and recent construction tenders
- Base year for program is 2023

Project Costing Approach

Project capital costs were adjusted for the 2022 DC Program using the following approach:

- Where projects have advanced, cost estimates from Municipal Class Environmental Assessment (MCEA) Studies, Peel-led studies, scoping studies or preliminary/detailed design were applied throughout the 2023 to 2031 capital forecast
- The majority of the projects in the 2023-2031 program were costed using the same methodology as was used in the 2017 DC Technical Study
- Unit Costs for Master Plan costed projects only (formerly referred to as Benchmarked projects) were based on recent regional data and construction tenders, and tenders from neighbouring municipalities

WATER/ WASTEWATER TECHNICAL REVIEW



Water/Wastewater Technical Review Results

Results of the Technical Review were incorporated into the 2022 DC Technical Report. The main outcomes were:

- Water and wastewater per capita design criteria updated in 2017 DC Technical Report used for 2022 DC Update
- Calibrated hydraulic models used to confirm and validate capital implementation plans
- Potential to revise wastewater flow diversion strategy for Georgetown.
 - Identified through a separate study.
 - 2022 DC Technical Study outlines the financial/infrastructure requirements of the closure strategy.
 - Overall strategy to be re-confirmed through the next Master Plan.

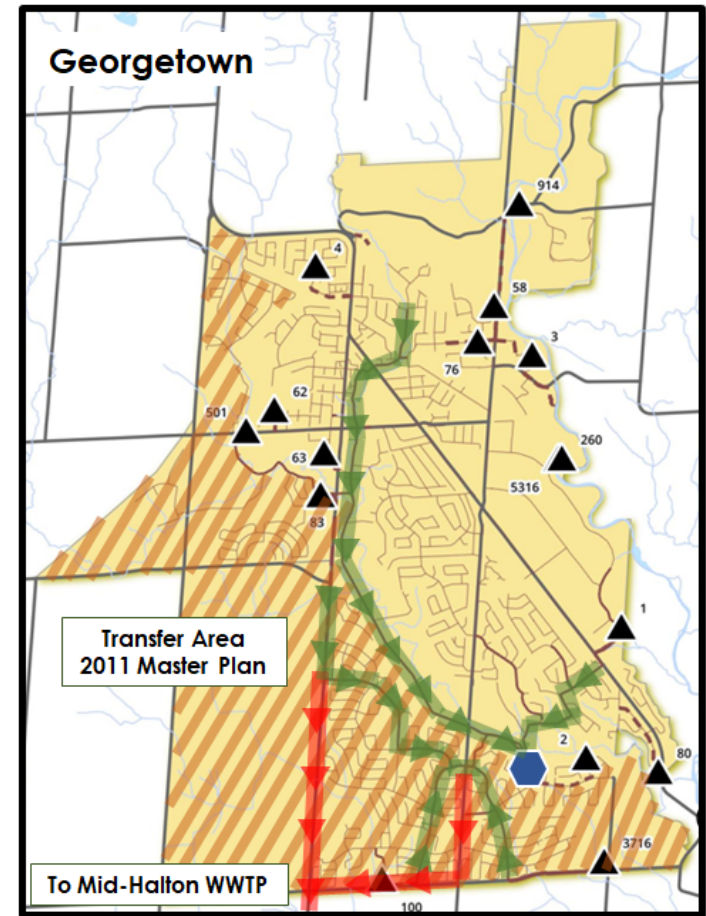
Revised Georgetown Wastewater Servicing Strategy - Decommission Georgetown WWTP

2011 Master Plan Transfer Strategy:

- Partial flow diversion from Georgetown WWTP to Mid-Halton WWTP (Oakville).
- Remaining customers (generally north of Silver Creek) remain serviced by Georgetown WWTP.

Servicing Strategy Revised:

- Divert all Georgetown WWTP flow to Mid-Halton in the 2025 timeframe (concurrent with lake-based transfer of service) to minimize impacts on operation post-transfer:
 - Odour generation at low flows.
 - Loss of redundancy to accommodate storm events.



Revised Georgetown Wastewater Servicing Strategy - Decommission Georgetown WWTP

- Project scope impacted by the decommissioning of the Georgetown WWTP in the 2023-2031 capital program:

Region IPFS ID	Project Description	Scope Change
6581	1500 mm WWM on 5th Line from Britannia Rd to Lower Base Line (MIL)	Size changed from 1350mm to 1500mm
6582	1500 mm WWM on Lower Base Line from 5th Line to 4th Line (MIL)	Size changed from 1350mm to 1500mm
7528	North WWPS expansion of 2,000 L/s at Mid-Halton WWTP (OAK)	Capacity expansion changed from 1200L/s to 2000 L/s
8034	2350 L/s WWPS at Lower Base Line and 4th Line (MIL)	Capacity changed from 1805L/s to 2350 L/s

- Benefit to Existing (BTE) calculations for impacted infrastructure updated to reflect the revised servicing strategy:
 - Projects listed above.
 - Mid-Halton WWTP expansion (ID8159).
 - Forcemains from the Lower Base Line Pump Station (ID8035).



2023 – 2031 PROGRAM COSTS WATER/WASTEWATER



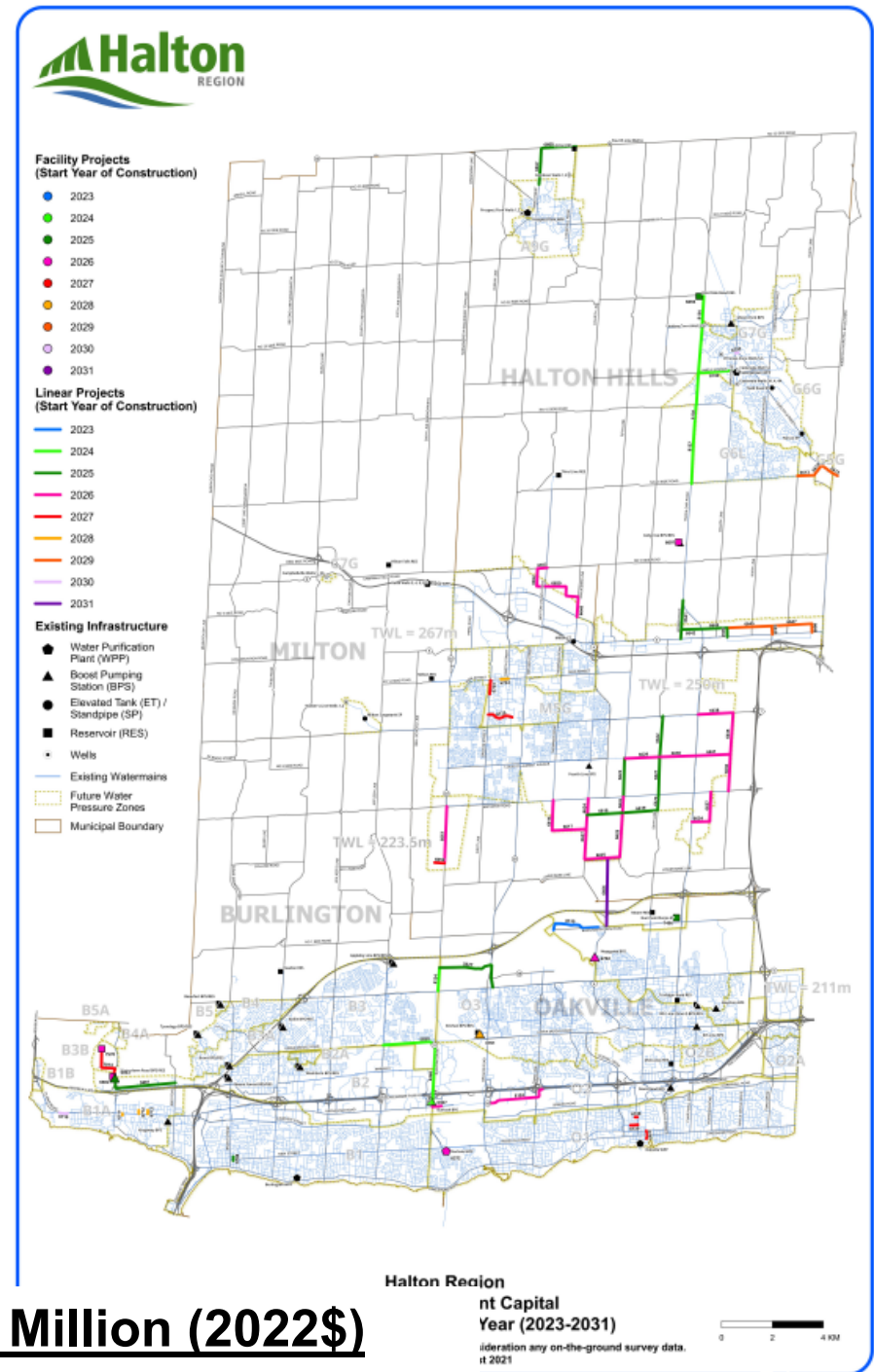
Water Capital Program (2023 to 2031)

Water Capital Program

- There are a total of **80** projects:
 - 6 Capacity projects
 - 61 Greenfield projects
 - 13 Built Boundary projects

Significant Water Projects:

- Construction of Burloak WPP Phase 2 Expansion from 55 to 165 ML/d
- Expansion of Kitchen Zone O3 Pumping Station
- Burloak Pumping Station Phase 1 and watermains to Upper Middle
- Zone 6 Lake base Storage at 22 Sideroad and watermain
- Expansion of Ashgrove Reservoir
- Wyecroft Connection Completed



Overall Water Capital Program ~\$562 Million (2022\$)

Wastewater Capital Program (2023 to 2031)

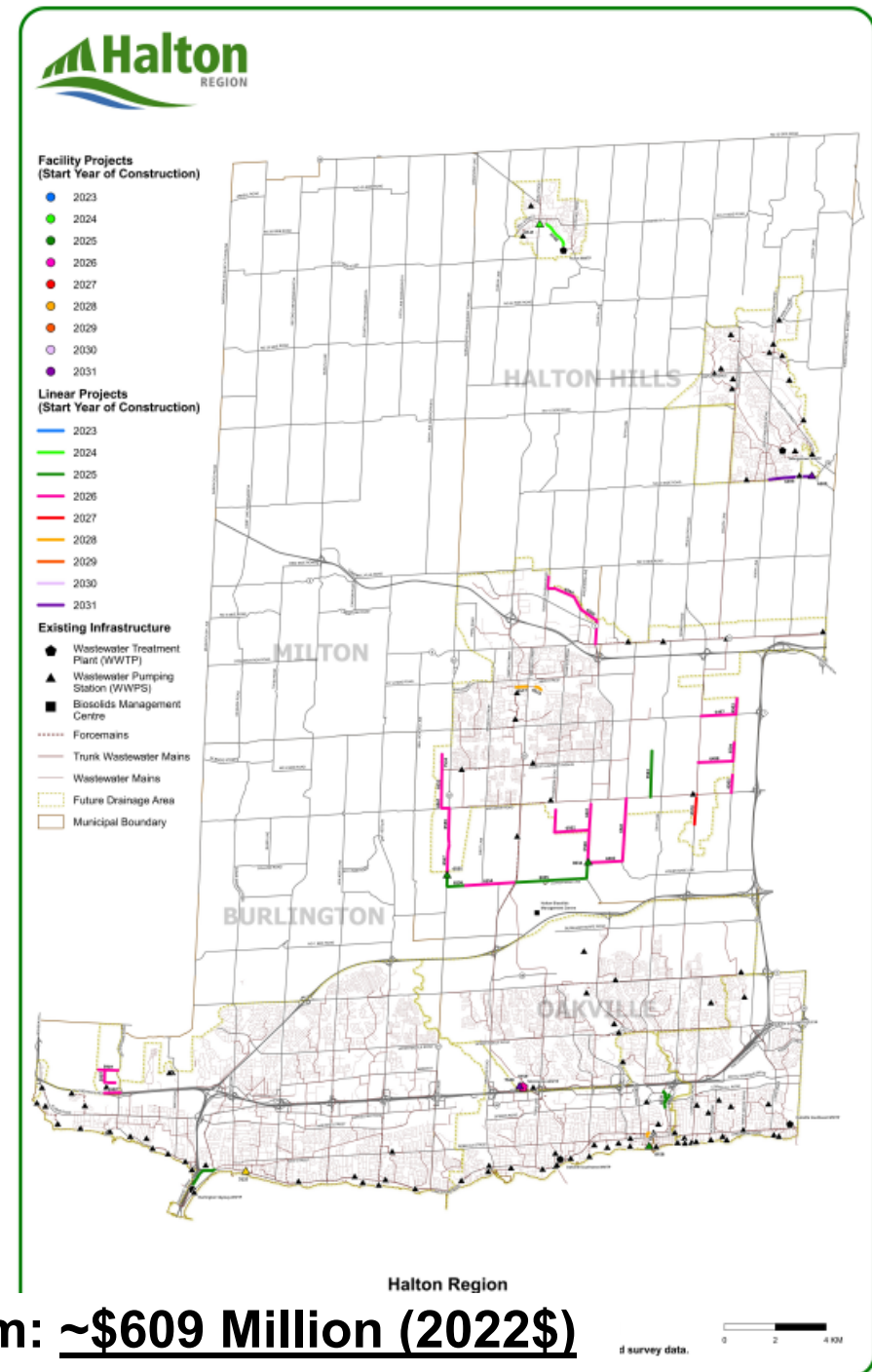
Wastewater Capital Program

- There are a total of **44** projects:
 - 8 Capacity projects
 - 27 Greenfield projects
 - 9 Built Boundary projects

Significant Wastewater Projects:

- Mid-Halton WWTP Expansion from 125 ML/d to 175 ML/d. Design and Construction
- New inlet to Skyway WWTP
- Expansion of North WWPS
- New WWPS and forcemain at Lower Base Line and 4th Line
- New trunk sewers from Britannia to Lower Base Line

Overall **Wastewater** Capital Program: ~\$609 Million (2022\$)



2023-2031 Cost Comparison

Water/Wastewater Costs 2023 to 2031	Per 2022 Technical Report	Per 2017 Development Charges Background Study	Change
Total Program Cost (\$millions)	\$1,171	\$620	\$551
Drivers for Increase:			
Revised Cost Estimate	\$148	To reflect current unit rates (including land acquisition).	
Municipal Class Environmental Assessment Study/Design	\$52	To reflect the results of Municipal Class Environmental Assessments Studies and Detailed Design.	
Scope Changes	\$128	To reflect current unit rates and upsizing to accommodate the decommissioning of the Georgetown Wastewater Treatment Plant. This category also includes the scope change associated with the Burnhamthorpe Water Tower (water program).	
Reprogramming	\$223	To reflect updated costs for projects previously identified for 2017 to 2022, which have been moved to this program.	
TOTAL Change	\$551		



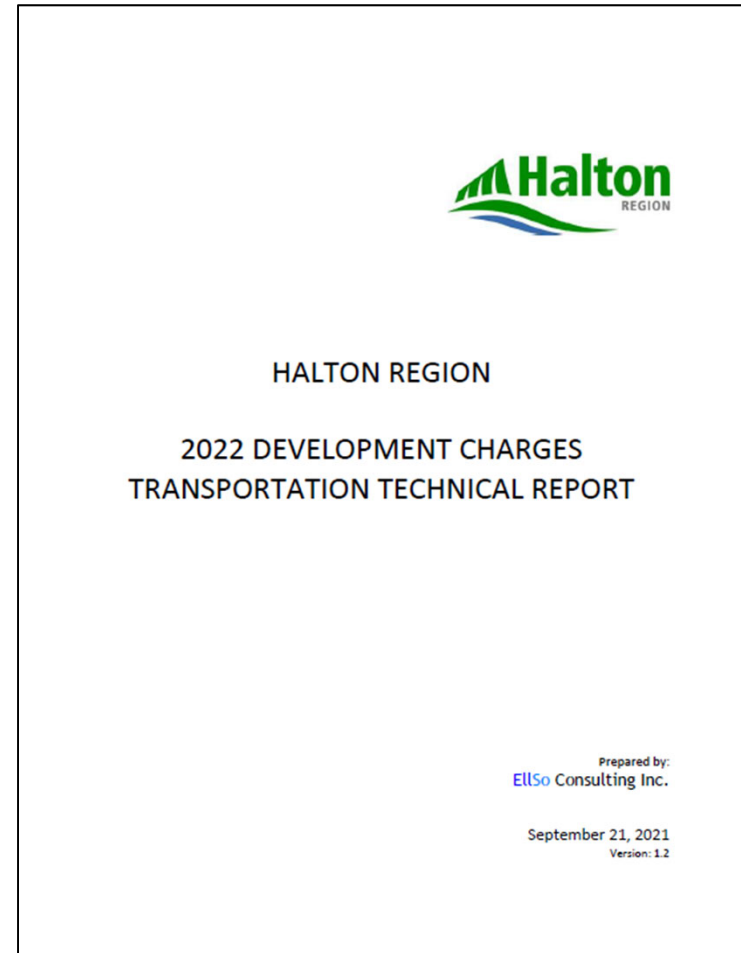
TRANSPORTATION TECHNICAL REVIEW



Transportation Technical Review

Technical Review of the transportation network and projects per the 2011 TMP was completed by:

- Updating the transportation demand forecasting model with current travel pattern characteristics (2016 TTS & 2016 Census).
- Validating the long-range Transportation Capital Implementation Plan to 2031.
- Updating project costing, including:
 - land unit rates using market-based information which were applied to the historical land use categories set out in the 2012 Development Charge Technical Study;
 - apportioning of the capital costs by Growth/Non-Growth and Residential/Non-Residential shares.



Review Results

The results of the Technical Review were incorporated into the 2022 Development Charges Transportation Technical Report. The main outcomes were:

- Updated travel forecasting outputs resulted in no change in capital project needs.
- Minor Reprogramming of Transportation Capital Projects.
- Updated Capital Project Costs, including apportioning of the capital costs by Growth/Non-Growth and Residential/Non-Residential shares.
- No increase in Level of Service, Quantity and Quality by 2031.

Transportation Project Reprogramming

2022 Development Charges Transportation Technical Study:

- includes projects from the 2020 Allocation Program that were reprogrammed to post-2022
- reviewed the program and phasing of projects from 2023 to 2031 holistically with a focus on timing and sequential delivery of projects across each corridor

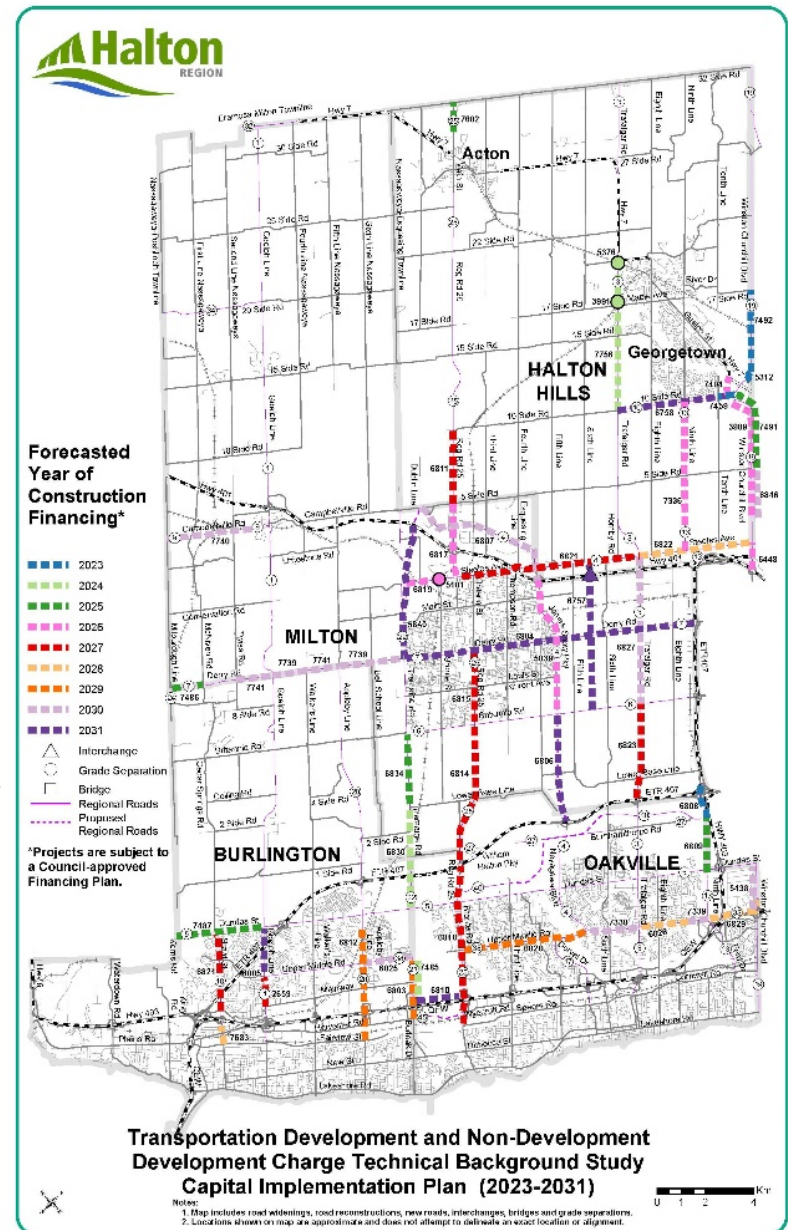
2023 – 2031 PROGRAM COSTS TRANSPORTATION



Transportation Capital Program (2023 to 2031)

Significant Transportation Projects (2023-2031) include:

- **"5 1/2 Line"** - New six lane road from Britannia Road to Steeles Avenue and Interchange at Highway 401
- **Derry Road** - Widening from four to six lanes from Tremaine Road to Highway 407
- **North Service Road** - New four lanes from Burloak Drive to Bronte Road
- **James Snow Parkway** - Widening from four to six lanes from Highway 401 to Tremaine Road
- **Tremaine Road** - Widening from four to six lanes from Highway 401 to Derry Road
- **James Snow Parkway** - New six lane road from Highway 407 to Britannia Road
- **Bronte Road** - Widening from four to six lanes from Speers Road to Highway 407
- **Steeles Avenue** - Widening from four to six lanes from Regional Road 25 to Trafalgar Road
- **Trafalgar Road** - Widening from four to six lanes from Britannia Road to Steeles Avenue
- **Appleby Line** - Widening from four to six lanes from Fairview Street to Taywood Drive
- **The Transportation Development and Non-Development Capital Program ~ \$2.44B (2022\$)**



2023-2031 Cost Comparison

Transportation Costs 2023 to 2031	Per 2022 Technical Report	Per 2017 Development Charges Background Study	Change
Total Program Cost (\$millions)	\$2,441	\$1,267	\$1,174
Drivers for Increase:			
Revised Cost Estimate	\$508	To reflect current unit rates (including land acquisition).	
Municipal Class Environmental Assessment Study/Design	\$7	To reflect the results of Municipal Class Environmental Assessments Studies and Detailed Design.	
Peel Region Projects (Winston Churchill Boulevard)	\$16	Updated project costs for Halton's Share of road improvements.	
Reprogramming	\$509	To reflect updated costs for projects previously identified for 2017 to 2022, which have been moved to this program.	
Non-Growth	\$134		
TOTAL Change	\$1,174		



3. Gross Cost to DC Recoverable Costs

Gross Cost to DC Recoverable Cost Water and Wastewater (\$000's)

Category	Gross Cost 2023-2031	Less		Net Growth	Residential	Non Residential
		Non-Growth (BTE)	Post Period Benefit			
Capacity						
Treatment/Plants	\$ 322,715	\$ 65,054	\$ 24,549	\$ 233,112	\$ 177,166	\$ 55,946
Pumping Stations/Reservoir	75,507	47,425	-	28,082	21,342	6,740
Major Trunk	32,137	29,887	-	2,250	1,710	540
Studies	6,280	-	-	6,280	4,780	1,500
Sub-total	\$ 436,639	\$ 142,366	\$ 24,549	\$ 269,724	\$ 204,998	\$ 64,726
Other Distribut'n & Collect'n	734,180	44,742	46,888	642,550	469,640	172,910
Total	\$ 1,170,819	\$ 187,108	\$ 71,437	\$ 912,274	\$ 674,638	\$ 237,636

Gross Cost to DC Recoverable Cost Water and Wastewater (\$millions)

Service	Residential Share				Non-residential Share			
	Capacity	Distrb'n /Collct'n - Greenfield	Distrb'n /Collct'n - Built bndry	Total	Capacity	Distrb'n /Collct'n - Greenfield	Distrb'n /Collct'n - Built bndry	Total
Water	\$ 139.8	\$ 226.8	\$ 7.3	\$ 373.9	\$ 44.1	\$ 83.9	\$ 1.5	\$ 129.5
Wastewater	65.2	213.5	22.1	300.8	20.6	83.0	4.5	108.1
Total	\$ 205.0	\$ 440.3	\$ 29.4	\$ 674.6	\$ 64.7	\$ 166.9	\$ 6.0	\$ 237.6

*may not add due to rounding

Water/Wastewater Cost Allocations

Benefit to Existing

- Principles applied to calculating Benefit to Existing (BTE) are consistent with the 2017 DC.
- BTE considers benefits to existing service areas by growth driven projects. These growth projects may also:
 - Address existing deficiencies in the system;
 - Provide redundancy/security of supply;
 - Provide additional capacity required for existing users;
- **Total BTE equal to ~\$187 M (~16% of total cost)**

Water/Wastewater Cost Allocations

Post Period Benefit

- Principles applied to allocating Post Period Benefit (PPB) are consistent with the 2017 Development Charges Background Study.
- PPB considers:
 - Additional cost to install oversized infrastructure (linear, pumping storage, treatment) that will provide capacity for growth beyond 2031.
- **Total PPB equal to ~\$71 M (~6% of total cost)**

Water Cost Allocation Res vs. Non-Res Share

	Incremental (Pop/Emp) Growth	Projected Increase in Water Demand (2021 to 2031) (ML/D)	2022 DC Bylaw Update Percentage
Capacity			
Region-Wide			
Residential	129,788	65.3	76%
Non-Residential	48,556	20.8	24%
Total	178,344	86.1	100%
Distribution			
Greenfield			
Residential	85,983	43.3	73%
Non-Residential	38,248	16.4	27%
Total	124,231	59.6	100%
Built Boundary			
Residential	43,805	22.1	83%
Non-Residential	10,308	4.4	17%
Total	54,113	26.5	100%



Wastewater Cost Allocation

Res vs. Non-Res Share

	Incremental (Pop/Emp) Growth	Projected Increase in Wastewater Generation (2021 to 2031) (ML/D)	2022 DC Bylaw Update Percentage
Capacity			
Region-Wide			
Residential	129,788	46.7	76%
Non-Residential	48,556	15.1	24%
Total	178,344	61.8	100%
Distribution			
Greenfield			
Residential	85,983	31.0	72%
Non-Residential	38,248	11.9	28%
Total	124,231	42.8	100%
Built Boundary			
Residential	43,805	15.8	83%
Non-Residential	10,308	3.2	17%
Total	54,113	19.0	100%

Transportation Capital Cost (\$ 000's)

Category	Gross Cost 2023 - 2031	Less:		Net Cost	Res.	Non Res
		Non-Growth (BTE)	Post Planning Period			
Road Reconstruction	\$ 47,140	\$ 41,835	\$ -	\$ 5,305	\$ 3,396	\$ 1,909
Road Widening	1,402,344	162,067	143,910	1,096,367	701,677	394,690
Reconstruction with Widening	288,312	39,224	7,803	241,285	154,419	86,866
New Alignment	448,565	7,339	86,293	354,933	227,158	127,775
Structures/Grade Separation	74,369	7,250	-	67,119	42,955	24,164
Studies/Other	180,349	142,320	-	38,029	24,332	13,697
Total	\$ 2,441,079	\$ 400,035	\$ 238,006	\$ 1,803,038	\$ 1,153,937	\$ 649,101

Transportation Cost Allocations

Benefit to Existing

- Principles applied to calculating Benefit to Existing (BTE) are consistent with the 2012 & 2017 DC Study
- Benefit to Existing in road widening with reconstruction considers:
 - Residual value in existing roads, as determined under PSAB (Road widening/reconstruction)
 - Safety benefit at railway grade separations
 - Enhanced service by new intersection signals and studies
- Total BTE amounts to \$400M (16% of gross cost)

Transportation Cost Allocations

Benefit to Existing (\$ Millions) Continued

Road Widening

ID	6804	
Description	Derry Road - Widening from 4 to 6 lanes from Tremaine Road to Highway 407	
Construction Year	2031	
Project Cost (\$M)		\$ 132.21

BTE Calculation:

BTE of Resurfacing on Existing Lanes			
(1)	Project Length (km)	12.2	
(2)	Mill & Pave Benchmark - \$M/km	\$ 1.40	
(3)	Resurfacing Cost (1)x(2)		\$ 17.08
(4)	Net Book Value of Asset	\$ 68.32	
(5)	Residual Value in Construction Year	\$ 34.16	
(6)	BTE % - (1)-(5)/(4)		50%
(7)	Existing Pavement Value and Deduction (3)x(6)		\$ 8.54
BTE of Other Component			
(8)	Intersection & Existing Signal Modifications	\$ 8.52	
(9)	Intersection & Existing Signal Modifications - BTE %	50%	
(10)	BTE (8)x (9)		\$ 4.26
(11)	Off Road Active Transportation	\$ 3.39	
(12)	Active Transportation - BTE%	10%	
(13)	BTE (11)x(12)		\$ 0.34
Total BTE (7)+(10)+(13)			<u>\$ 13.14</u>
BTE % Over Total Project Cost			<u>10%</u>



Transportation Cost Allocations

Post Period Benefit

- Allocation method of Post Period remains unchanged from the 2008 / 2012 / 2017 DC Studies
- Post Period Benefit considers:
 - Capacity that will benefit growth beyond 2031
 - Volume over Capacity ratio to determine the excess capacity created by road improvements in the last five years of planning horizon (2026 - 2031)
- Total Post Period Benefit cost amounts to \$238M (10% of gross cost)



Post-Planning Period Capacity

- Transportation Example Calculation:
 - Project “A”: road widening starting 2029
 - From model runs for 2031:
 - road link v/c = 0.75
 - v/c on the associated screenline = 0.85
 - Road is operating better than Screenline
 - Therefore have excess capacity at road level
 - The deduction applied to Project “A” per Equation 12 in report is 12%:

$$\frac{0.85 - 0.75}{0.85} \times 100 = 12\%$$

Transportation Cost Allocations

Res vs. Non-Res Share

Category	BPE			Demand	
	2021 (pop, empl)	2031 (pop, empl)	2021-2031 Growth (pop, empl)	Trips	%
Residential	624,094	752,53	128,443	74,423	64
Non Residential	327,683	390,000	49,430	43,229	36
Total:				117,652	100

Retail/ Non-Retail Trip Rate

(1) Category	(2) Rate ¹	(3) Transit/ Pass- By Trip Reduction	(4) Net Rate (Auto) (100%-3) x (2)	(5) Category Weight ²	(6) Trip Gen. X GFA Weight (4x5)
Retail					
Retail Trade (eg. Shopping Centre)	4.50	10%	4.05	48%	1.93
Finance & Insurance (eg. Bank and Financial Office)	3.48	13%	3.03	11%	0.35
Entertainment/Recreation (eg. Cinemas, fitness, recreation)	6.40	0%	6.40	7%	0.45
Food Services (eg. Restaurant, fast food)	19.53	54%	8.94	22%	1.99
Other Services (eg. auto care/personal services)	4.06	4%	3.88	12%	0.45
Total Retail					5.17
Non-Retail					
Industrial (eg. Light, Warehouse, Manufacturing)	0.90	0%	0.89	91%	0.82
Institutional (eg. Schools, Community centres, hospitals, place of worship)	3.26	21%	2.58	1%	0.03
Office (eg. general office, medical office)	2.05	16%	1.73	7%	0.13
Accommodation (eg. hotel/motel)	0.76	0%	0.76	0%	0.00
Total Non-Retail					0.98

May not add due to rounding

¹ Derived from Institute of Transportatoin Engineers Trip Generation Manual

² Weighting derived from Halton Region Employment Survey

Retail/ Non-Retail Splits

	(1)	(2)	(3)	(4)
Category	Sq. Ft	Peak Trip Rates	Peak Trips (1) x (2)	% Trips
Retail	6,281,583	5.17	32,461,889	27%
Non-Retail	88,834,161	0.98	86,787,941	73%
Total	95,115,744		119,249,830	100%

3. DC Calculation

W/WW Calculation Inputs (\$000's)

Costs	Residential	Non-Residential	Comments
Reserve Fund Balance	\$ (0)	\$ -	Projected 2021 year-end balances
Unfunded Capital Costs	75,304	93,492	Remaining expenditures in the 2012 and 2020 Allocation program
2012 Allocation Front End Payment	(31,685)		Front end payment for from remaining expenditures in 2012 Allocation program
Internal Debt	-	287,469	Regional Interim Financing to be recovered up to 2021
External Debt Charges	83,476	38,739	Outstanding debt charge for projects proceeded or approved up to 2021 (e.g. Sinking fund for employment land servicing, Skyway WWTP)
DC Credits	-	5,237	Remaining DC credits relating to S. 14 of the DC Act and developer up-front financing provided under CS-52-03.
Oversizing - Historic	10,736	6,001	Oversizing costs carried from previous DC Studies
Net Growth Cost	674,638	237,636	
Interest/Inflation	(948)	24,127	Assumed 2.0% inflation, 3.0% interest
Total	\$ 811,520	\$ 692,700	

W/WW DC's

Summary of Calculation Results - Per SDE

Service	As of April 1, 2021		New Calculated		Difference	
	Greenfield	Built Boundary	Greenfield	Built Boundary	Greenfield	Built Boundary
Water	\$ 8,689	\$ 3,144	\$ 12,276	\$ 4,503	\$ 3,587	\$ 1,360
Wastewater	10,276	4,535	17,261	5,718	6,985	1,182
Total	\$ 18,965	\$ 7,679	\$ 29,537	\$ 10,221	\$ 10,571	\$ 2,542

*may not add due to rounding

Summary of Calculation Results - Per Sq. Ft

Service	As of April 1, 2021		New Calculated		Difference	
	Greenfield	Built Boundary	Greenfield	Built Boundary	Greenfield	Built Boundary
Water	\$ 3.166	\$ 1.229	\$ 3.897	\$ 1.340	\$ 0.731	\$ 0.111
Wastewater	4.060	2.004	5.245	2.053	1.185	0.049
Total	\$ 7.226	\$ 3.233	\$ 9.142	\$ 3.393	\$ 1.916	\$ 0.160

*may not add due to rounding



Roads Calculation Inputs (\$000's)

Costs	Residential	Non-Residential	Comments
Reserve Fund Balance	\$ (9)	\$ 0	Projected 2021 year-end balances
Unfunded Capital Costs	84,647	47,436	Remaining expenditures in the 2020 Allocation program
Internal Debt	-	327,970	Regional Interim Financing to be recovered up to 2021
DC Credits	-	145	Remaining DC credits relating to S. 14 of the DC Act.
Oversizing - Historic	2,374	1,726	Oversizing costs carried from previous DC Studies
Net Growth Cost	1,153,937	649,101	
Interest/Inflation	(6,690)	25,554	Assumed 2.0% inflation, 3.0% interest
Total	\$ 1,234,260	\$ 1,051,931	

Roads DC's

Summary of Calculation Results - Per SDE

Service	As of April 1, 2021	New Calculated	Difference
Roads	\$ 19,284	\$ 30,366	11,081

*may not add due to rounding

Summary of Calculation Results - Per Sq. Ft

Service	As of April 1, 2021		New Calculated		Difference	
	Non-Retail	Retail	Non-Retail	Retail	Non-Retail	Retail
Roads	\$ 5.978	\$ 30.279	\$ 8.585	\$ 46.049	\$ 2.607	\$ 15.770

*may not add due to rounding

Retail/ Non-Retail Splits

	(1)	(2)	(3)	(4)	(5)	(6)
Category	Sq. Ft	Peak Trip Rates	Peak Trips (1) x (2)	% Trips	Revenue (Uninflated) (Total Revenues x (4))	\$DC (5) / (1)
Retail	6,281,583	5.17	32,461,889	27%	\$ 286,354,033	\$ 45.59
Non-Retail	88,834,161	0.98	86,787,941	73%	765,577,033	\$ 8.62
Total	95,115,744		119,249,830	100%	\$ 1,051,931,066	

Thank you Questions?

