

Public Works and Infrastructure Committee

Deputy City Manager Cluster B
John Livey

January 6, 2015

Presentation Outline

- Committee Overview
- Divisions Reporting to PWI
- Key Services

Committee Overview

- Mandate and scope of the Committee
 - The Public Works and Infrastructure Committee's primary focus is on infrastructure, with a mandate to monitor, and make recommendations on Toronto's infrastructure needs and services

Divisions Reporting to PWI



Engineering & Construction Services
Michael D'Andrea, Executive Director



Solid Waste Management Services
Beth Goodger, General Manager



Toronto Water
Lou Di Gironimo, General Manager



Transportation Services
Steve Buckley, General Manager



Solid Waste Management Services

Beth Goodger, General Manager

Program Map

Solid Waste Management Services

To be a leader in providing innovative waste management services to residents, businesses and visitors within the City of Toronto in an efficient, effective and courteous manner, creating environmental sustainability, promoting diversion and maintaining a clean city.

City Beautification

To provide collection services within the public realm to all residents and visitors city-wide to support a clean city.

- Litter Pick-up
- Parks Bins
- Public Realm
- Special Events

Collection & Transfer

To provide effective and efficient solid waste collection services to residents, businesses, visitors and ABCCs of the City of Toronto.

- Green Bin
- Bulky
- Garbage
- Municipal Hazardous & Special Waste
- Recyclables
- Leaf & Yard Waste

Processing & Transport

To provide effective and environmentally safe processing and transport services for the City of Toronto's solid waste.

- Green Bin
- Bulky
- Garbage
- Municipal Hazardous & Special Waste
- Recyclables
- Leaf & Yard Waste
- Sales Revenue

Residual Management

To provide effective, efficient and environmentally sound management of residual waste.

- Green Lane
- Energy Generation
- Perpetual Care

Education & Enforcement

To effectively communicate to the residents, businesses, visitors and ABCCs on how to participate in the City's waste management programs and to encourage diversion.

- Bylaw Enforcement
- Environment Days
- Promotion & Education

Program Highlights

- Approximately 1 million tonnes of material annually to manage
- 70% waste diversion target
 - 53% in 2013
 - 54% projected for 2014
 - **55% projected for 2015**
- Over \$600 million in assets
- Landfill capacity to 2029 based on current diversion rates

Solid Waste Client Base

- Approximately 461,500 single unit homes
- 422,000 multi-unit homes
- 14,000 small commercial/institutional
- 8,000 street litter & recycle bins / 6,000 parks bins / 1,000 special events per year
- City Agencies, Boards, Commissions and Corporations
- Private commercial and industrial waste accepted at Transfer Stations and Landfill

Volume Based Utility

- Introduced in 2008
- Rate based on volume of waste container/bin
 - Billing via utility bill, with rebate from the Tax Budget
- Unlimited diversion services included in rate
- Reviewing options for a sustainable utility

Solid Waste Management Services

Key Staff



Beth Goodger
General Manager



Rob Orpin
Director, Collections &
Litter Operations



Derek Angove
Director, Processing &
Resource Management



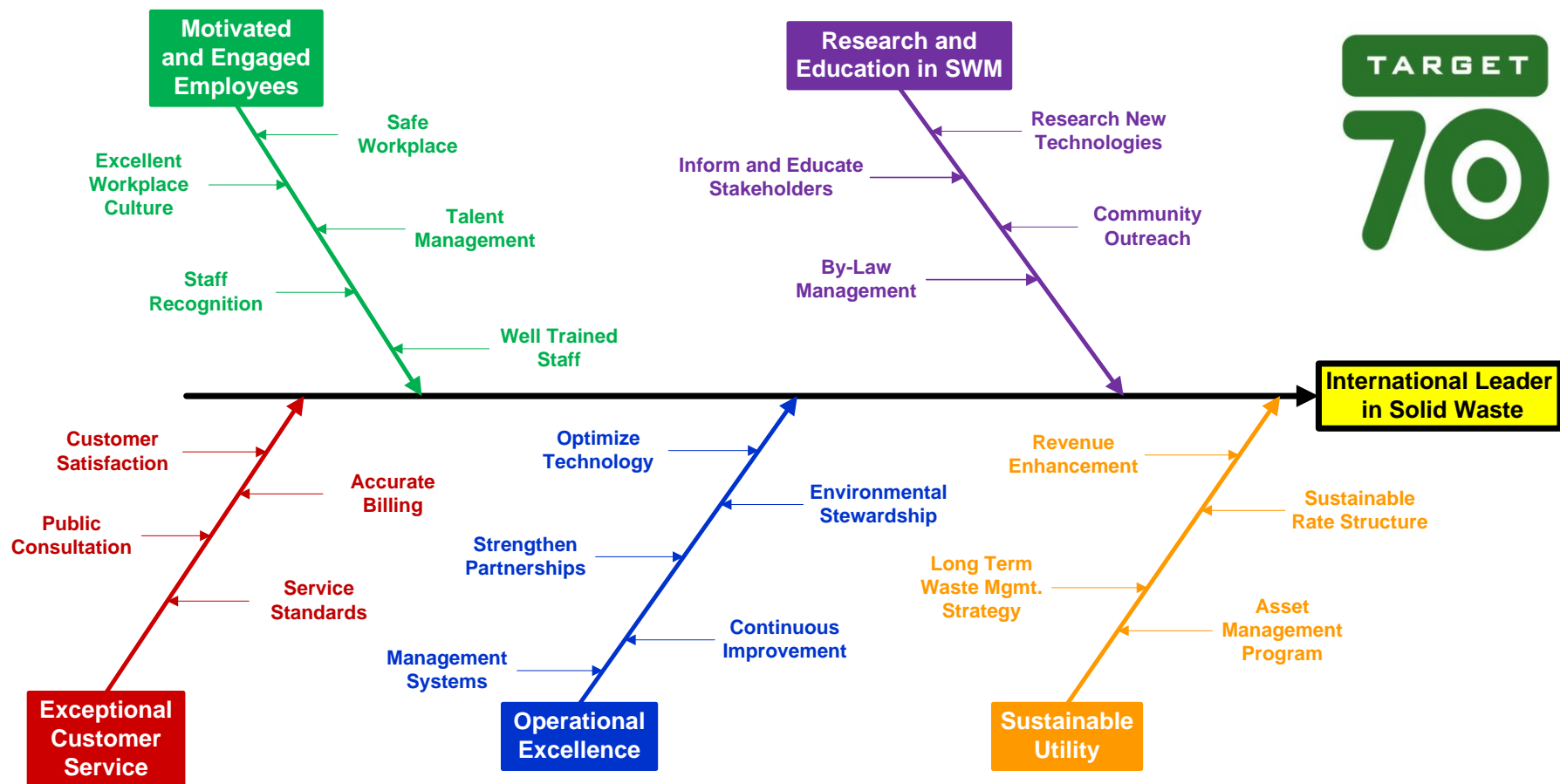
Carlyle Khan
Director, Infrastructure
Development & Asset
Management



Vincent Sferrazza
Director, Policy,
Planning & Support

SWMS Strategic Framework

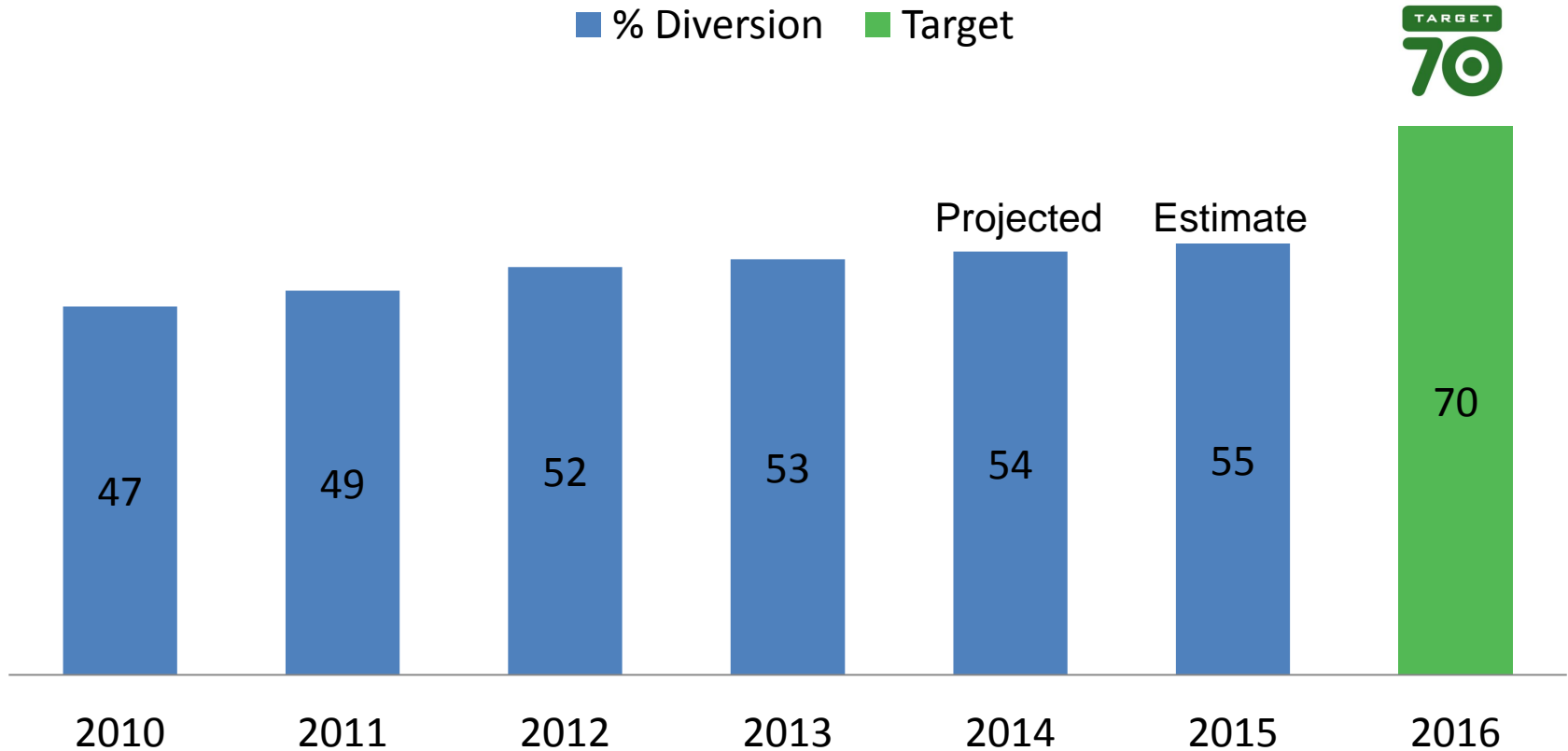
2013 - 2018



Residential Diversion Rate

% Diversion from landfill

■ % Diversion ■ Target



2014 Achievements

- Ice Storm Debris Management Lead
- Introduced 4 year Phase-In of Harmonized Rates & Fees
- Launched Long Term Waste Management Strategy
- Continued Green Bin roll out to Multi-Residential properties
- Disco Road Organic Processing Facility commissioned
- Contract Awards – District 1 Curbside Collection & Recycling Processing Capacity
- Talent Management Program to develop staff
- Blue Box Funding Arbitration

2015 and Beyond

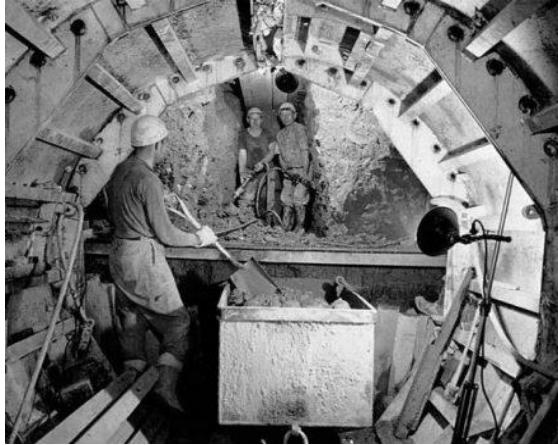
- Focus on Improving Customer Service
- Increasing Waste Diversion – Focus on Multi-Residential
- Next generation Green Bin
- Increasing processing capacity for Green Bin materials
- Develop an Asset Management Framework and Program
- Disco Road Biogas Utilization Project

2015 and Beyond

- Development of Long Term Waste Management Strategy
 - Guide the Division's Program for the next 30 to 50 years
 - Review potential options for the diversion, disposal and potential energy recovery from all waste streams
- Sustainable rate structure & 10 year forecast
 - Review of rate model
 - Cost projections from the Waste Strategy

2015 Committee Reports

- Long Term Waste Management Strategy
 - Q1 & Q2 Progress Reports, Final report in fall
- Contract Awards:
 - City-Wide Front-End Containerized Collection
 - Design, Build, Operate & Maintain Dufferin Organics Facility
 - Next Generation Green Bin – 18 Month rollout beginning Fall 2015
- Review of Collection Services East of Yonge Street (Districts 3 & 4)
- Relocation Options for Commissioner Street Transfer Station



Toronto Water

Lou Di Gironimo, General Manager

Program Overview

- Serve 3.4 million residents and businesses in Toronto, and portions of York and Peel
- Over \$28.2 billion in infrastructure (replacement value)
- Operates many facilities 24 hours per day, 365 days per year
- Infrastructure renewal and state of good repair supported by multi-year business plan
- Program is 100% rate-supported and no reliance on the property tax base to support Toronto Water operating and capital budgets



R.C. Harris Water Treatment Plant



Ashbridges Bay Wastewater Treatment Plant

Program Overview

WASTEWATER/STORMWATER

\$19.1 Billion

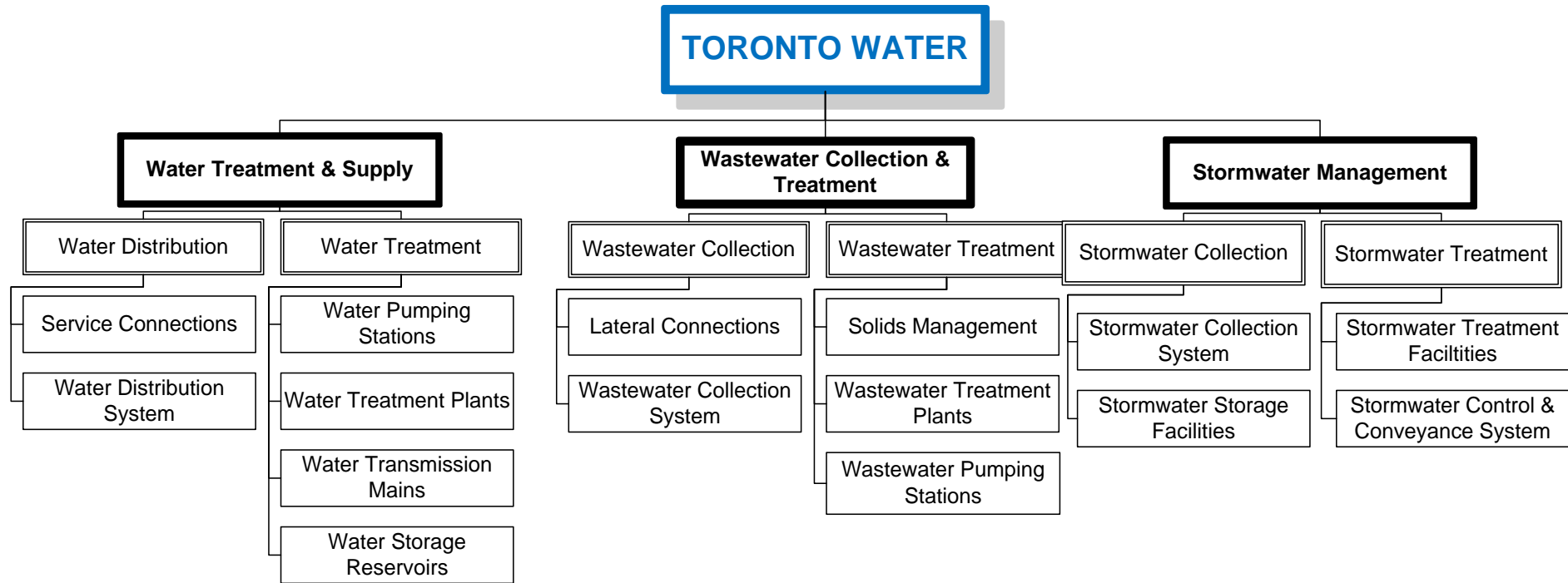
- 4 wastewater treatment plants
- 5 storage and detention tanks
- 3,930 km of sanitary, 1,511km of combined and 396 km of trunk sewer
- 4,954 km of storm sewers and 546 km of roadside ditches
- 151,485 maintenance holes
- 463,300 sewer service connections
- 82 wastewater pumping stations
- 371 km of watercourses, 89 stormwater management ponds
- 2,300 outfalls & 165,662 catchbasins

WATER

\$9.1 Billion

- 4 water filtration plants
- 10 reservoirs and 4 elevated storage tanks
- 5,466 km of distribution watermain and 548 km of trunk watermain
- 60,933 valves and 40,817 hydrants
- 470,202 water service connections, plus York Region (population served 600,000)
- 18 water pumping stations

Program Map



Program Challenges

- **Basement Flooding Protection:** Significant investment required to manage basement flooding issues across the city.
- **Long-term Financial Stability:** Existing 10-year financial plan relies primarily on successive water rate increases to fund continued infrastructure investment and conform with pay-as-you-go financing strategy.
- **Declining water consumption:** Downward trend over the last decade, despite population growth. Anticipate base water consumption will continue to decrease by 1% each year until 2015.
- **Aging Infrastructure and Capital Renewal Rates:** Need to spend \$600 million per year for water/wastewater treatment plants and facilities.
- **Strict Regulatory Control & Oversight:** Water and wastewater industry continues to experience increased legislative and regulatory reform impacting both operating and capital budgets.

Program Challenges

- **Maintaining stable operating costs:** Continue to find efficiencies while ensuring legislative compliance.
- **Managing the continuous increase in costs from internal and external sources:** Increase in personnel costs, service providers, materials and supplies due to inflation (electricity, chemicals, parts and machinery).
- **Operating Impact of Completed Capital Projects:** New equipment requires additional resources.
- **Ongoing service priorities:** Ensuring efficient and effective response to customer service demands.



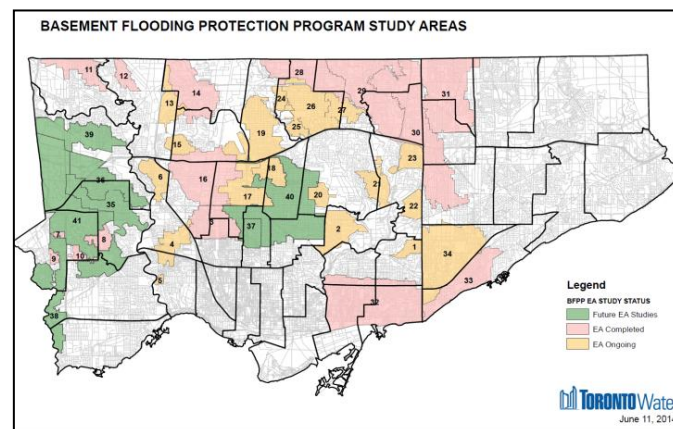
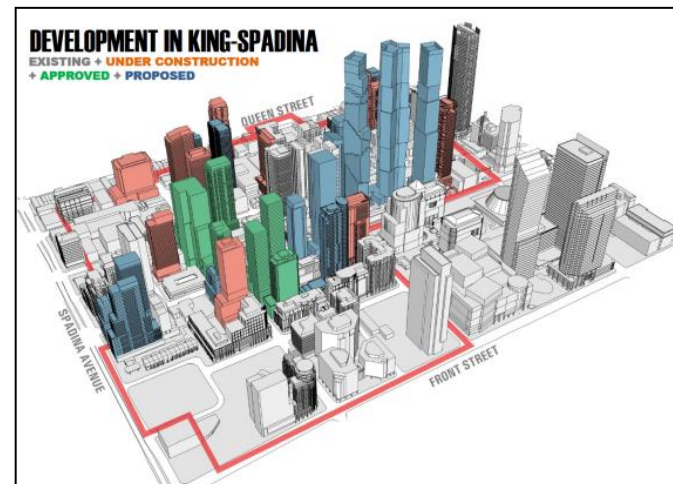
F. J. Horgan Water Treatment Plant



Humber Wastewater Treatment Plant

Program Challenges

- **Forecasting & Meeting Future Growth:** Condo development in the downtown core and along transit corridors
- **State of Good Repair Backlog:** The 2013 year-end renewal backlog was \$1.6 billion reflecting 5.8 per cent of asset value.
- **Extreme Weather Events:** Significant investment required to manage basement flooding and Wet Weather Flow projects, most recently from the July 8, 2013 storm which exceeded a 1 in 100 year rainfall in the west end of the City
- **Construction Congestion:** Mitigating disruption through coordination, use of trenchless technologies



Work Plan

Major Initiatives:

1. Completion of major capital projects

- 40 km of watermain replacement; 45 km of structural watermain lining; 14 km of sewer replacement; 70 km of sewer rehabilitation
- R.C. Harris Water Treatment Plant Building Envelope Rehabilitation
- R. L. Clark Water Treatment Plant Mechanical Upgrades
- Completion of Milliken Pumping Station and Reservoir
- Completion of Dufferin Reservoir Extension
- Ashbridges Bay Wastewater Treatment Plant upgrades including “D” building, dewatering and digester
- Highland Creek Wastewater Treatment Plant WAS upgrades
- Humber Treatment Plant headhouse upgrades
- Completion of Coxwell Sanitary Trunk Sewer Bypass

Work Plan

Major Initiatives:

2. Basement Flooding Protection Program – EA Studies

- EA studies for 25 of 41 basement flooding study areas have been completed; Eight EA studies will be completed in 2015
- Eight new EA studies (Areas 34-41) will begin in 2015
- Creating an additional 26 new study areas (2016-2028)

Work Plan

Major Initiatives:

3. Water Meter Program

- 475,000 meters to be installed in all homes and businesses 2010-2015
- The WMP is currently ahead of schedule. By the end of 2014, over 450,000 (95%) of 474,000 water customers will be upgraded to new automated water meter
- The forecasted cost to complete the Neptune contract is \$186 million. This is approximately \$33 million below budget due to lower than expected commodity and labour prices.
- By converting flat rate customers, installing more accurate technology, and eliminating the need for staff to take manual readings, the program is estimated to realize \$34.4 million in revenue recovery and operational efficiencies per year.

Work Plan

Major Initiatives:

4. Corrosion Control Program

- As part of the City's lead mitigation strategy, corrosion control facilities have been installed at all 4 water treatment plants; phosphate is now being added to the drinking water treatment process

Toronto Water

Key Staff



General Manager
Lou Di Gironimo



District Operations
Director
Mario Crognale



Operational Support
Director
Richard Noehammer



**Water Treatment &
Supply**
Director
Larry Korson



**Water Infrastructure
Management**
Director
Graham Harding



**Business
Operations
Management**
Director
Lawson Oates



**Wastewater
Treatment**
Director
Frank Quarisa



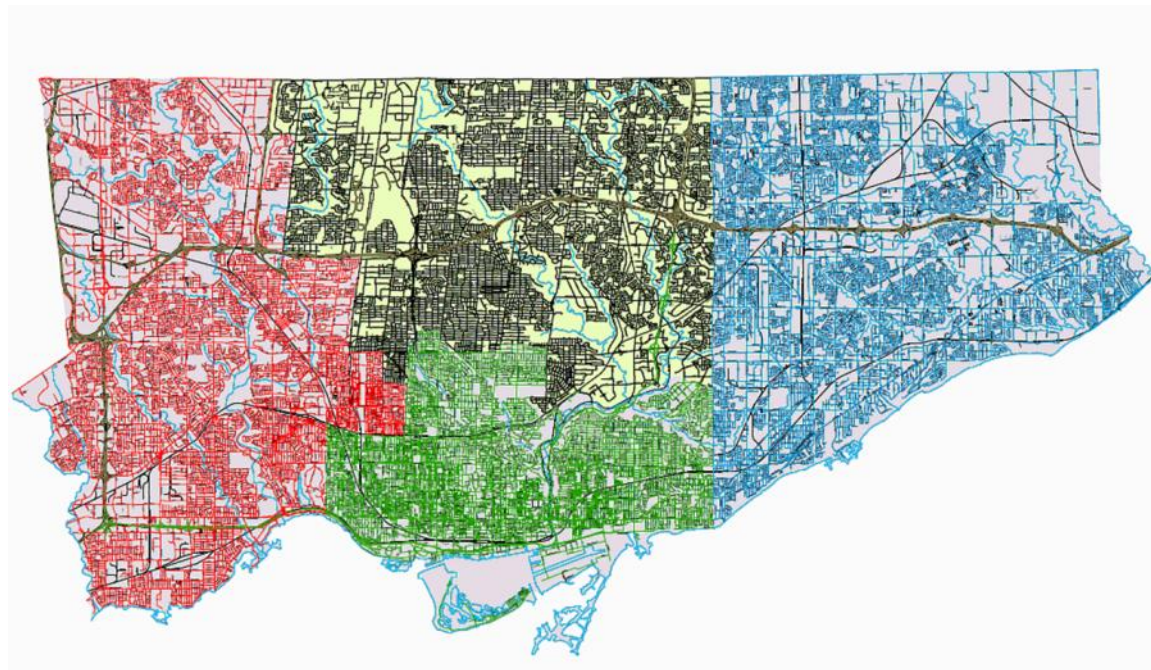
Transportation Services

Steve Buckley, General Manager

Transportation Services

Our Assets

- 5,600 km of roads
- 7,950 km of sidewalks
- 110 km of bike lanes
- 170 km of bike trails
- 140 km of bike routes
- 600 bridges and culverts
- 2,200 traffic signals
- 400 flashing beacons
- 500 pedestrian crossings
- 1,000,000 signs
- 4,100 bus shelters
- 9,000 pieces of street furniture



\$12B in assets; \$20B replacement cost

Transportation Services

Key Staff



Stephen Buckley
General Manager



Elyse Parker
Director
Public Realm



John Mende
Director
Transportation
Infrastructure
Management



Myles Currie
Director
Traffic
Management
Centre



Steven Kodama
District Director
Etobicoke York



Jacqueline White
District Director
North York

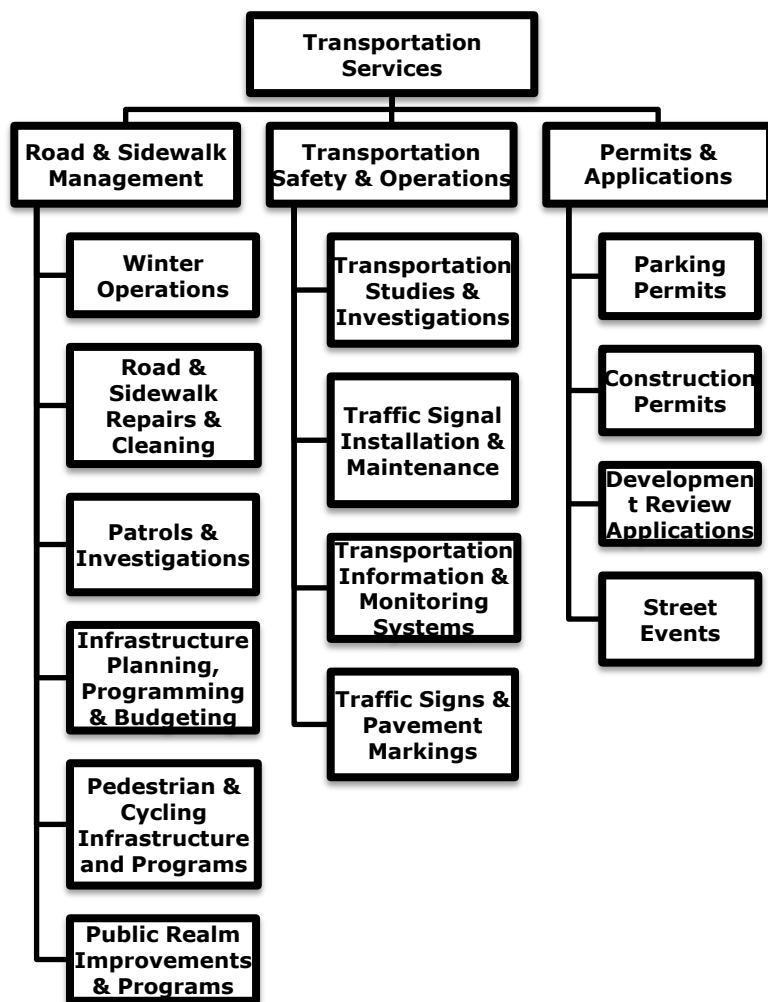


Trevor Tenn
District Director
Scarborough



Kyp Perikleous
District Director
Toronto and
East York

Program Map



Transportation Services:

- Plans and manages the year-round maintenance of the City's transportation network – road, expressways, sidewalks, boulevards, cycling, bridge and public laneways
- Minimizes the City's liability and costly repairs over the transportation asset lifecycle
- Advances sustainable transportation options to support the Official Plan
- Delivers infrastructure enhancements that substantially contribute to a beautiful and functional public realm
- Monitors, analyzes and manages the City's transportation network to facilitate safe and efficient public movement and property access through technologically advanced systems
- Manages activities within the public right-of-way

2014 Achievements

- Completed safety enhancements at over 80% of pedestrian crossovers
- Ran the “Stay Alert, Stay Safe” campaign
- Piloted ten fixed-location speed-watch signs
- Completed 22.7km of on-road bicycle facilities
- Increased parking fines
- Modified peak-hour clearance times in the Downtown and along King St. West
- Piloted twelve courier loading zones
- Modernized the Transportation Operations Centre
- Developed and initiated the deployment of an arterial camera program
- Installed 3,700 street furniture elements
- Completed 13 murals, 6 underpass murals, and artwork on 50 traffic control cabinets
- Implemented state-of-good repair program for major road works, from \$40M to \$70M annually
- Awarded 185 km of road rehabilitation work, up 54% from 2013
- Initiated a pilot for immediate restoration of sidewalks
- Worked with Toronto Hydro to develop LED streetlighting standards and initiated an LED pilot
- Approved winter maintenance enhancements for key pedestrian areas and key cycling routes
- Repaired over 350,000 potholes

Our “Public” Focus Area

Safety

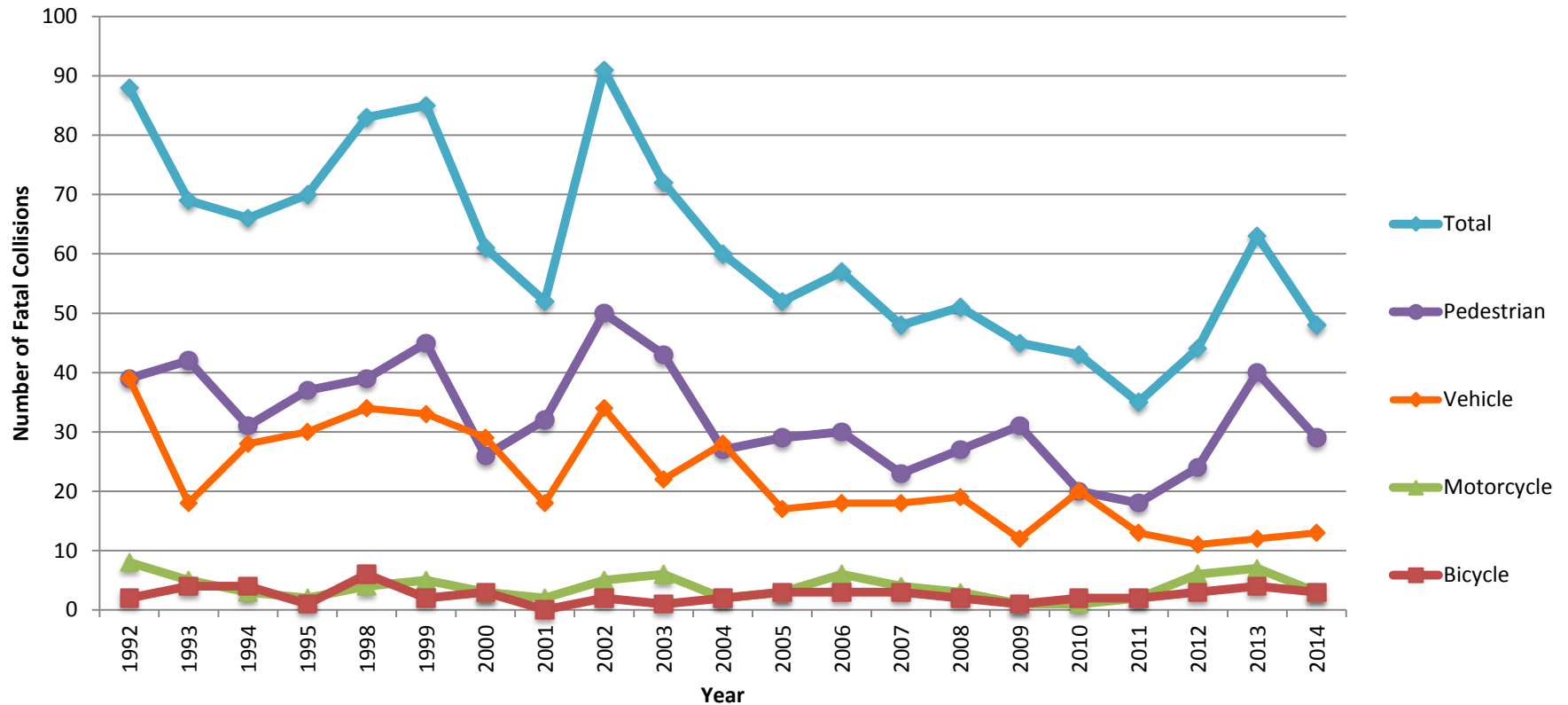
Mobility

Liveable
Streets

Quality
Infrastructure

Safety

Annual Traffic Related Fatalities



Safety

2015 Initiatives

- Complete the Integrated Traffic Safety Study
- Issue a new Red Light Camera contract
- Update Transportation Services' Emergency Plan
- Update the climate change risk assessment

Mobility

2015 Initiatives

- Develop AODA guidelines and standards for the public realm
- Review the City's boulevard enclosure fees
- Develop a new On-street Bicycle Implementation Plan
- Accelerated the corridor re-timing program
- Upgrade the Road Closure Reporting System
- Revisit peak-hour clearance times on Queen, Dundas and College
- Initiate a pilot for next generation of adaptive signals
- Pilot the use of "smart work zones"
- Develop a curbside management strategy
- Develop a strategy for modernizing our Transit Signal Priority system
- Expand the arterial camera deployment
- Initiate a plan for an Advanced Traveller Information System

Liveable Streets

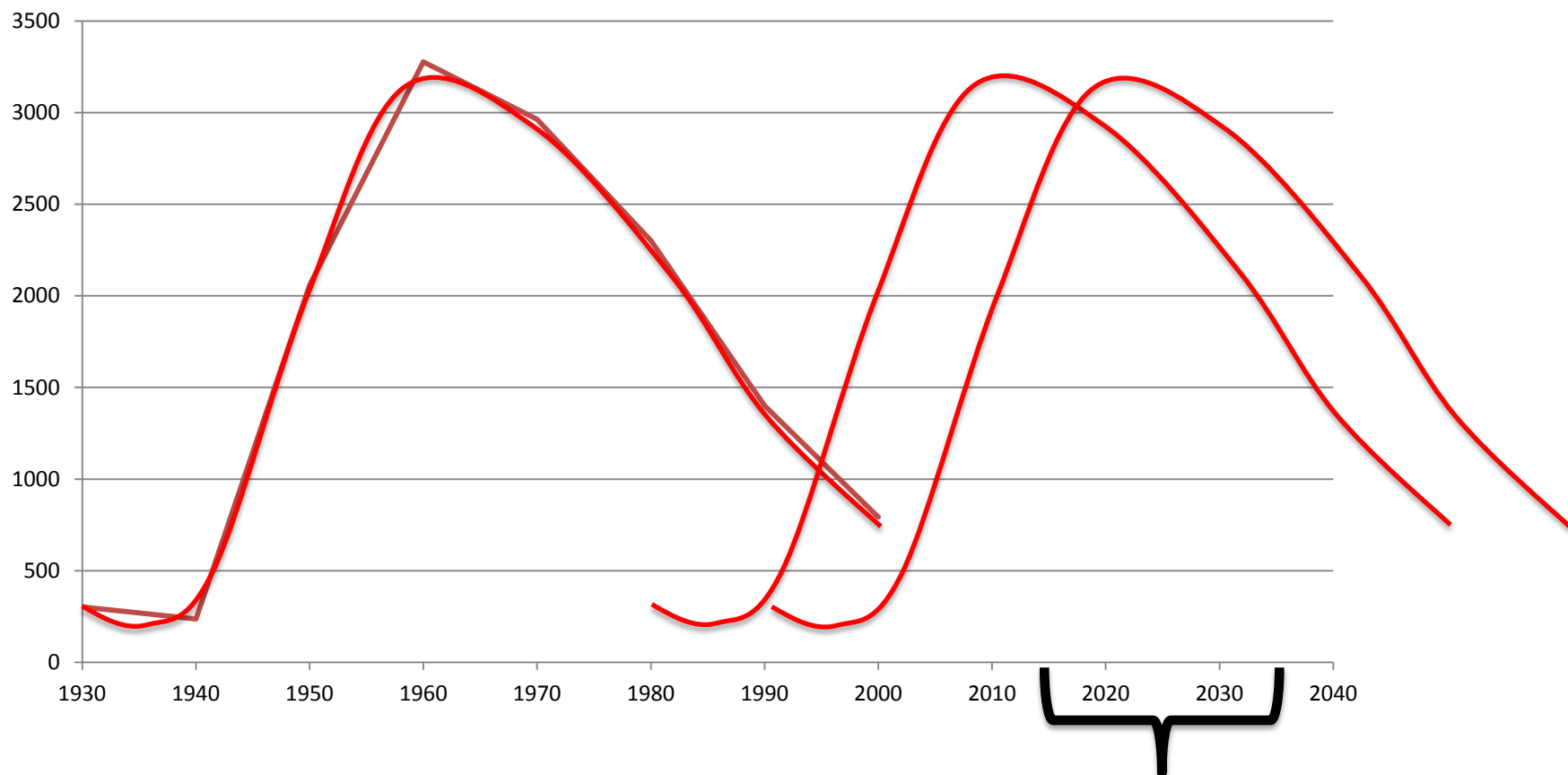
2015 Initiatives

- Continue review of Transportation Services design standards
- Finalize Complete Streets guidelines
- Continue roll-out of the street furniture contract
- Evaluate and improve the guidelines for “parklets”
- Update the boulevard café guidelines
- Launch the City’s wayfinding project in advance of Pan Am



Quality Infrastructure

Lane-Kilometers Constructed by Decade



Year is based on date from last construction/reconstruction activity; Data source: Municipal Pavement Management Application (MPMA) 2012 data.

Quality Infrastructure

2015 Initiatives

- Continue to improve capital delivery rates for Transportation projects
- Continued implementation of cycling facilitates
- Conduct a review to improve road repairs, resurfacing and reconstruction
- Evaluate pilot for immediate restoration of sidewalks, and consider future applications
- Initiate an inventory of the City's publicly-owned retaining wall
- Work with Toronto Water on advancing "green streets" projects

Key Challenges for 2015

- Wave of eligible retirees (Leaders of Tomorrow)
- Pan Am Games
- Continued competing pressure for the public right-of-way
- Continued improvements in how we manage lane closures
- Improved coordination of construction and special events
- Financial pressure of accelerating construction projects



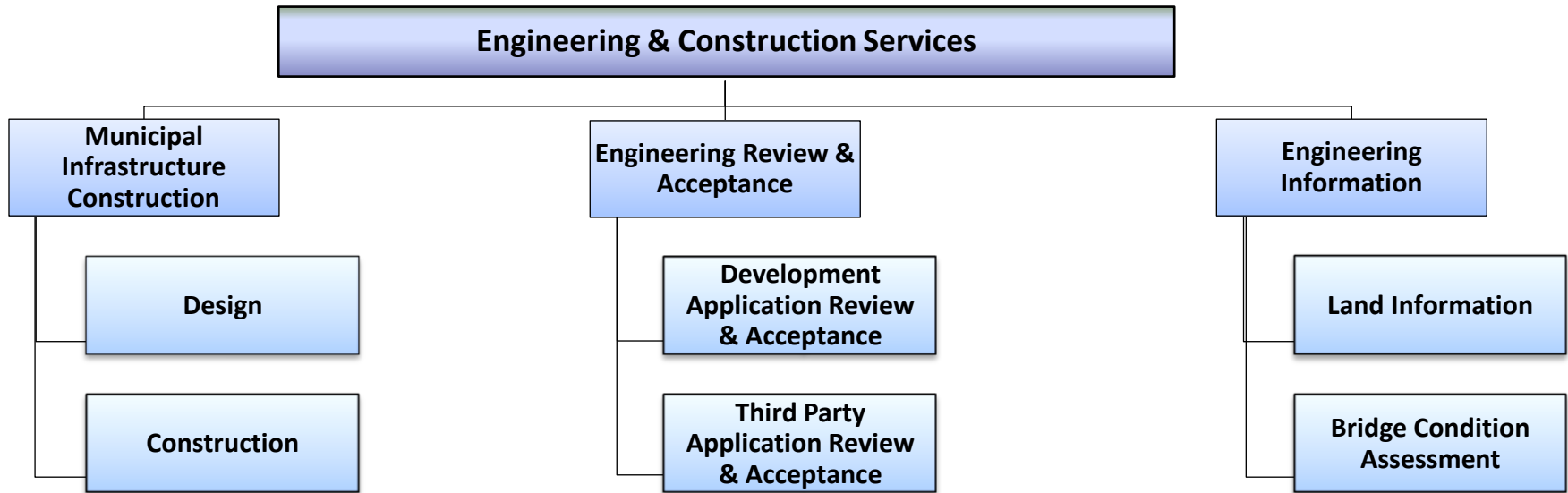
Engineering & Construction Services

Michael D'Andrea, Executive Director

Engineering & Construction Services (ECS) Background

- What we do
 - Create safe and sustainable municipal infrastructure
 - Complete condition assessments and rehabilitation planning for bridges and the Gardiner Expressway
 - Provide engineering design and construction services to in-house clients:
 - ✓ Transportation Services
 - ✓ Toronto Water
 - ✓ Solid Waste Management Services
 - ✓ TTC
- How?
 - 530+ professional/technical staff provide:
 - Project Management
 - Engineering Design
 - Engineering Surveys
 - Construction Inspection

ECS Program Map



Municipal Infrastructure and Design

To provide engineering and project management services to internal clients (Toronto Water, Transportation Services, Solid Waste Management Services) for the construction of new and upgraded infrastructure including:

- Roads & Bridges
- Sewers & Watermains
- Stormwater Management Facilities
- Water and Wastewater Treatment Facilities
- Solid Waste Management Facilities

Engineering Review and Acceptance

To provide engineering review and acceptance services to external clients:

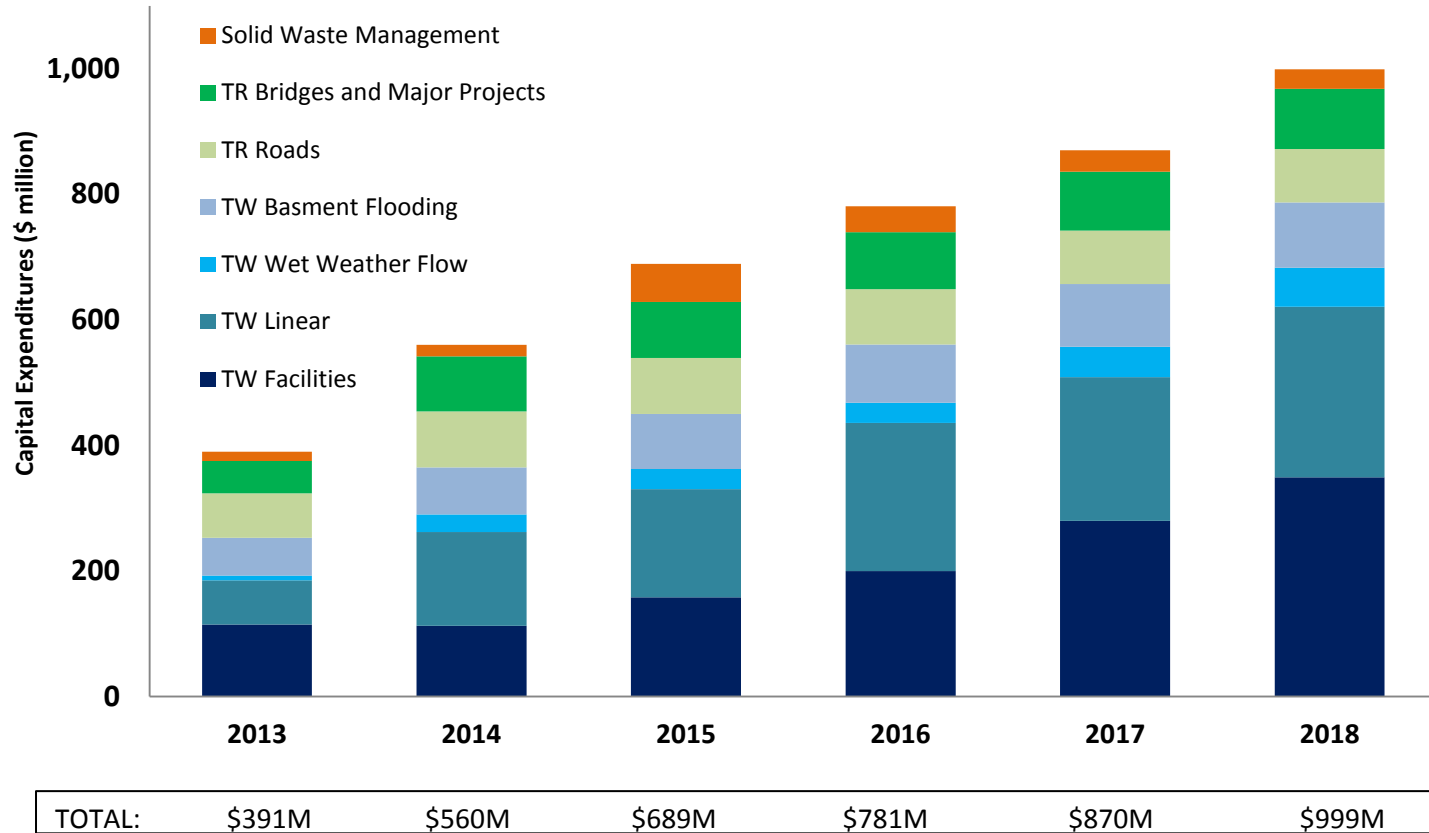
- development industry
- utility companies
- public agencies

Engineering Information

To establish and maintain effective technical and data support to the various business units across the division and cluster involved in managing and building the City's infrastructure

Municipal Infrastructure Construction Forecasted Growth

2013 Actuals, 2014 Projected Actuals & 2015 to 2018 Budgets for
Projects to be Delivered by ECS, by Program Areas



Engineering & Construction Services

Key Staff



Michael D'Andrea
Executive Director
Engineering & Construction Services



Judy Tse
Engineering Review



John Kelly
Design & Construction
Linear Underground
Infrastructure



Bill De Angelis
Design & Construction
Major Infrastructure



Frank Clarizio
Design & Construction
Transportation
Infrastructure



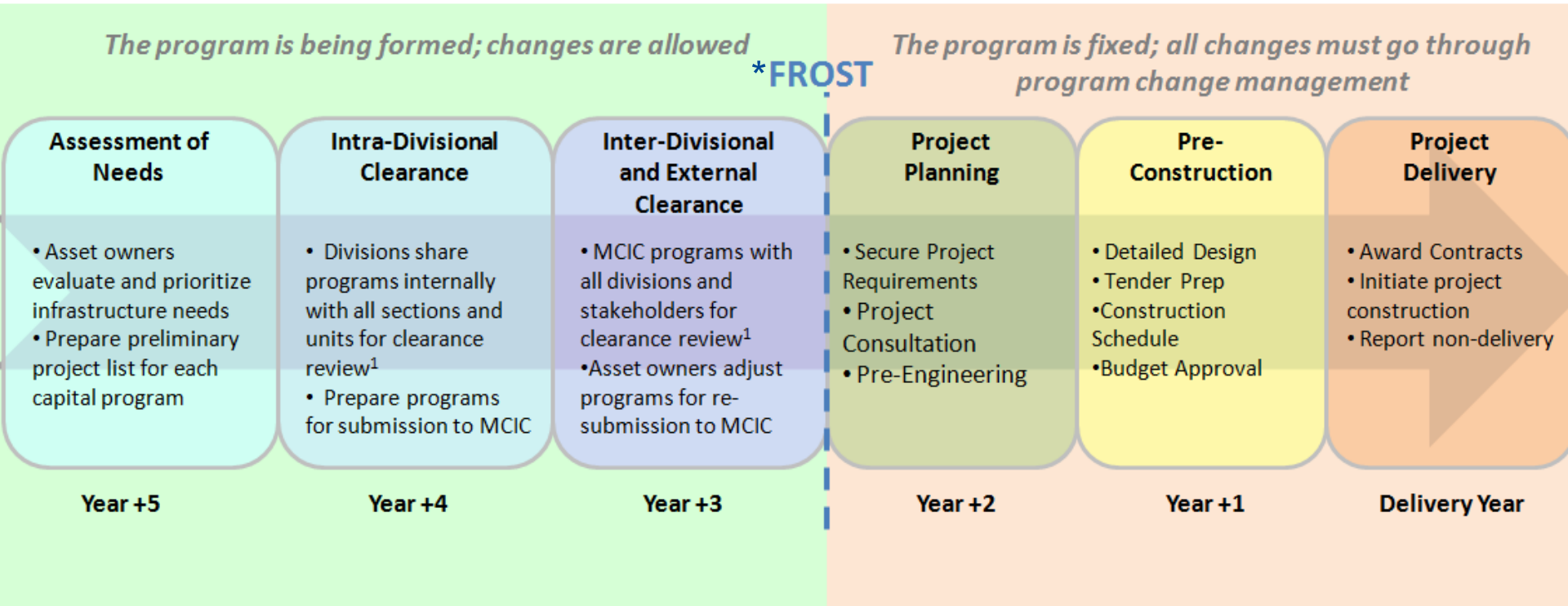
Shirley Wilson
Engineering Support
Services

Municipal Capital Infrastructure Coordination (MCIC)

- Office established in 2008 to:
 - Develop a framework to coordinate capital projects
 - Consolidate 5 and 10 year infrastructure plans Divisions and ABCs
 - Coordinate procedures between City divisions
- Multi-year capital coordination begins at least **five** years before shovels hit the ground:
 - Begins with prioritizing City infrastructure interests (Toronto Water, Transportation Services, BIAs, TTC)
 - Then, aligns City infrastructure projects with utility interests
 - Creates open communication among asset owners
 - Project scheduling is done with consideration of impacts (i.e., traffic disruption, events)
 - Manages T.O. INview



Capital Coordination Process



*FROST = Final Review of Scope and Timing

T.O. INview



T.O. INview (Infrastructure Viewer) – 2014

The T.O. INview application is maintained by the City of Toronto and is provided for general information. All information is subject to change without notice.

[MCIC Web Site](#)

[Contact Us](#)

Search by Name, Address, or Intersection

Legend

- Infrastructure Coordination and Mapping Portal
 - Administrative Boundaries
 - City Construction
 - Transportation Services
 - Road Resurfacing
 - Road Reconstruction
 - New Sidewalk Construction
 - Utility Cut Repair and Road Paving
 - F G Gardiner Expressway
 - Bridge Rehabilitation
 - Street Furniture
 - Transportation Safety and Local Improvement
 - Moratorium
 - Cycling
 - On-Street Bikeway Construction
 - On-Street Bikeway Pavement Marking
 - Bikeway Trail
 - Infrastructure Enhancement
 - Toronto Water
 - Watermain Replacement
 - Watermain Rehabilitation
 - Sewer Replacement
 - Sewer Rehabilitation
 - Stormwater Management
 - Transmission Watermain Program
 - Basement Flooding Work
 - Basement Flooding Work (Site)
 - City Planning

Infrastructure Coordination and Mapping Portal

Transportation Services

1	2	3	4
Project	On-Street Bikeway Construction		
On Street	WELLESLEY ST W		
From Street	HOSKIN AVE		
To Street	YONGE ST		
Project Description	Construction of various cycling infrastructure, including bike lanes, cycle tracks, sharrows and contra-flow lanes.		
Planned Duration	Q2 2014 - Q4 2014		
Owner	Transportation Services		
Contact	Maurizio Barbon, Manager, Engineering and Construction Services, Capital Works Delivery B, Trunk Watermains and Linear		
Telephone Number	416-392-7659		
Email Me	Compose		

ECS Major Construction Projects in 2015

Toronto Water – Linear & Facilities



*Ashbridges Bay
Wastewater
Treatment
Plant*



*Basement Flooding
Protection Program*



Water Upgrades

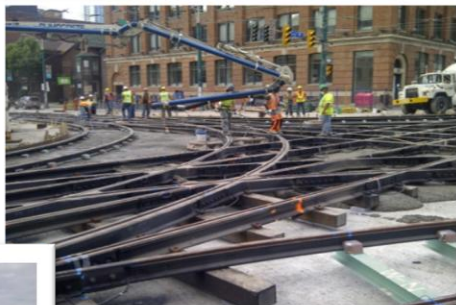
Major Projects for Toronto Water	2015 Forecast
Linear	
Gerrard Street Transmission & Watermain	\$12M
Trunk Sewer Rehabilitation (Various Locations)	\$12M
Watermains: Bayview Avenue, Midland Avenue	\$7M
Basement Flooding Protection Program	\$64M
Water Treatment	
St. Clair Reservoir Rehabilitation	\$7M
R.L. Clark Treatment Plant – Filter Upgrades	\$10M
R.C. Harris Treatment Plant – Process Upgrades	\$3M
Wastewater Treatment	
Ashbridges Bay Treatment Plant – P Building Headhouse	\$25M
Humber Treatment Plant – Odour Control Phase 1	\$15M
Highland Creek Treatment Plant – Biosolids Upgrade	\$10M
Highland Creek Treatment Plant – Odour Control	\$15M

ECS Major Construction Projects in 2015

Transportation & Solid Waste Management



*Gardiner Expressway
West Deck
Replacement*



*Track Reconstruction at
Intersection of Spadina
& King*



Disco Transfer Station SSO

Major Projects for Transportation Services	2015 Forecast
Bridges	
F.G. Gardiner Expressway West Deck Replacement	\$25M
Prince Edward Viaduct substructure repairs	\$11M
Kipling Bridge over Humber River	\$4M
Markham Road over CPR north of Sheppard	\$4M
Major Roads	
Yorkville / Bellair	\$5M
Dufferin Street – Eglinton to Glencairn	\$4M
Eastern Avenue – Knox to Woodfield	\$7M
Highway 427 – Humber to Steeles	\$5M
Six Points Interchange	\$7M

Major Projects for Solid Waste Management	2015 Forecast
Dufferin Transfer Station Organics Processing Facility Expansion	\$3M
Transfer Stations tipping floor rehabilitation	\$6M

Issues, Challenges and Opportunities

Position Our Organization

- Continue to enhance planning and coordination of Multi-year Capital Program with internal and external stakeholders
- Manage construction disruption at project planning and during construction
- Improve communication and relations with the public and businesses before, during and after construction
- Recruit and retain professional staff, promote skills development and succession planning

Innovations

Overnight Work

- Tested an overnight project on Finch Avenue
 - ✓ Work was completed overnight and lanes re-opened every morning for traffic

24/7 Work

- Worked with TTC so watermain connections, concrete repairs, new track and overhead wire installation in major intersections could be completed on a 24/7 schedule
 - ✓ Shorter intersection closure times at Queen & Broadview, Dundas & Spadina, Dundas & Bathurst

Bundling Projects

- Combined and scheduled three separate projects on the west portion of the Gardiner Expressway
 - ✓ Made the most of lane restrictions and staging

Gardiner Expressway

- Council-approved plan to accelerate rehabilitation
 - ✓ Report on procurement options, financing strategies and schedule impacts expected in March 2014

Questions?