
Energy from Waste Towards Sustainable Waste Management

Presentation to Environmental
Services Committee
January 19, 2011

Erin Mahoney
Commissioner Environmental Services



Environmental Services Committee January 19, 2011

Slide 1

Agenda

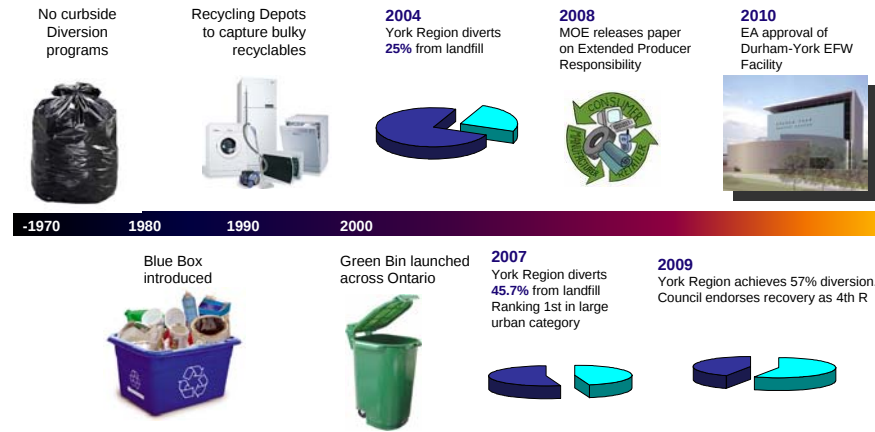
- ❑ Advancing Toward Sustainable Waste Management
- ❑ Role of EFW – Globally and Locally
- ❑ Highlights of EFW Project
- ❑ Background
- ❑ Current Status
- ❑ Next Steps



Environmental Services Committee January 19, 2011

Slide 2

Advancing Toward Sustainable Waste Management



Continuous Improvement in Waste Diversion

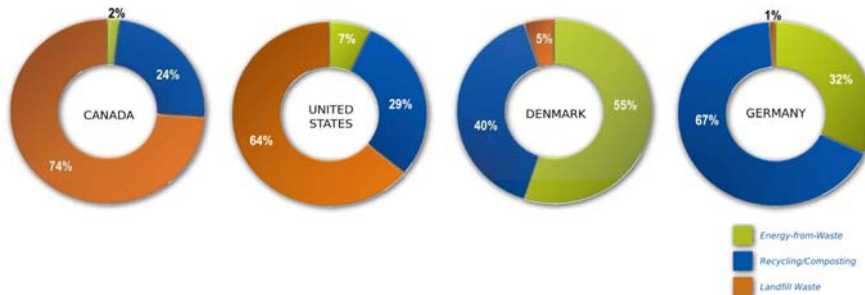


Environmental Services Committee January 19, 2011

Slide 3

Waste Management in North America Compared with Europe

EFW technology used extensively worldwide



EFW Technology Widely Accepted Internationally in Achieving Waste Diversion Targets



Environmental Services Committee January 19, 2011

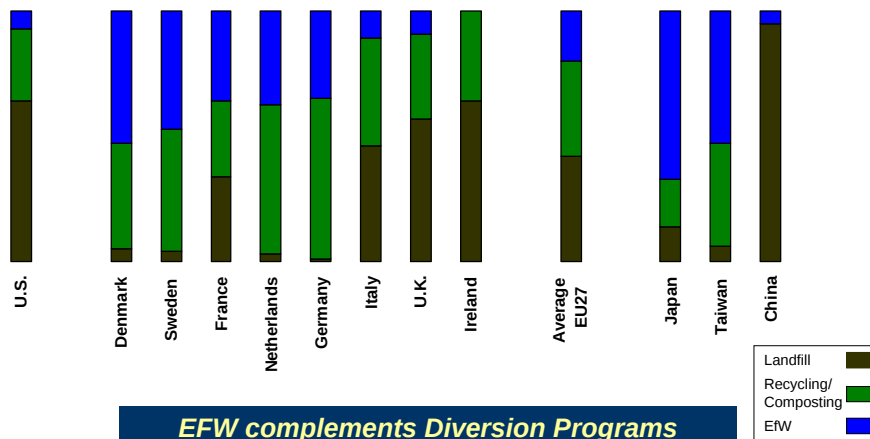
Slide 4

EFW Role in Global Waste Management

EFW 0.2 billion tons

Recycling 0.5 billion tons

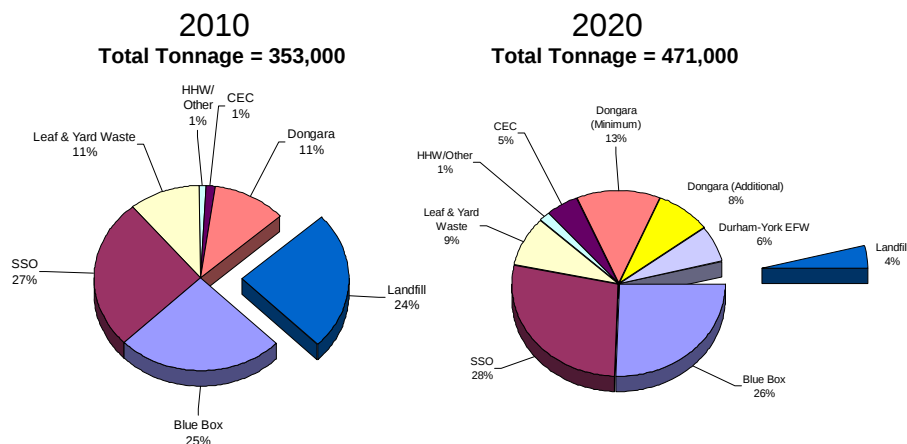
Landfill 1.0 billion tons



Environmental Services Committee January 19, 2011

Slide 5

Projected Diversion from Landfill



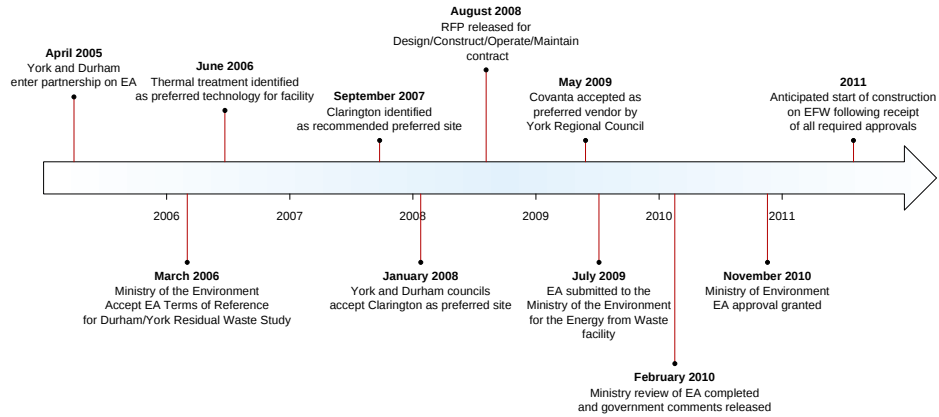
System Can Achieve Over 90% Diversion From Landfill Over Long Term



Environmental Services Committee January 19, 2011

Slide 6

EFW Timeline and Key Achievements to Date



Commercial Operation In Year 2014



Environmental Services Committee January 19, 2011

Slide 7

Covanta Experience

- ❑ World's largest Energy-from-Waste operator
- ❑ 65 power generation assets including 45 EFW facilities (4,000+ employees)
- ❑ Full-service approach to facility permitting
- ❑ More EFW permitting, design, and construction experience than any other firm in North America



Lee County EFW, Ft Myers, FL

Largest Provider Of EFW Services In North America



Environmental Services Committee January 19, 2011

Slide 8

Covanta Construction Today

North America

- ❑ 600 TPD, \$115M Lee County, FL EfW Facility Expansion – Construction Complete October 2007
- ❑ 600 TPD, \$125M Hillsborough, FL EfW Facility Expansion – Construction Completed in 2009
- ❑ 900 TPD, \$300M Honolulu, HI EfW Facility Expansion – Started in 2009



HPOWER Expansion Project

Europe

- ❑ 1,700 TPD, \$350M (\$EU) Dublin, Ireland – Started in Dec 2009

Asia

- ❑ 1200 TPD and 300 TPD, \$100+M, Chengdu, China and Taixing, China – Started Q4, 2009

Active in Construction of EFW Facilities Worldwide



Environmental Services Committee January 19, 2011

Slide 9

Durham York Energy from Waste Facility

- ❑ Proven technology processes 140,000 tonnes/year
- ❑ Power Purchase Agreement with the Province at 8 cents/kWh
- ❑ Covanta Energy to Design, Build and Operate facility
- ❑ Creates 800 jobs during construction and 44+ jobs during plant operation
- ❑ Generates 14 megawatts of renewable energy—enough to power 10,000 homes
- ❑ Diverting thousands of tonnes of metals and reducing CO₂ emissions over life of project



Preliminary Architectural Rendering of EFW facility

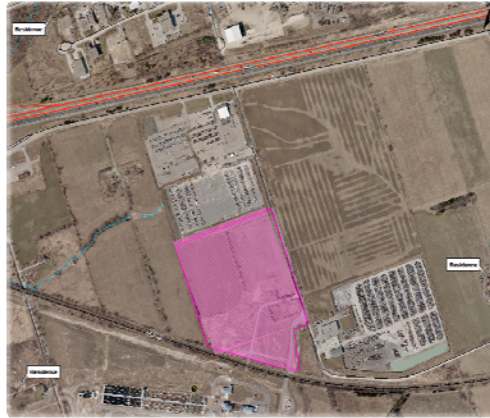
First EFW Facility Approved in Ontario in 22 Years



Environmental Services Committee January 19, 2011

Slide 10

Compatible Land Uses Surround Clarington Site



- ❑ Wastewater Treatment Plant
- ❑ Business Park
- ❑ Light Industrial Park
- ❑ Green Space

Site Selected Through Comprehensive Environmental Assessment And Public Consultation Process



Environmental Services Committee January 19, 2011

Slide 11

Comprehensive EA Approval Conditions

- ❑ Stringent air emissions requirements amongst toughest in the world
- ❑ Monitoring requirements (noise, odour, air, water)
- ❑ Public reporting requirements regarding emissions, performance and complaints resolution
- ❑ Public Advisory Committee for assured community involvement
- ❑ Restrictions on service area
- ❑ Acceptance of waste only after diversion efforts exhausted
- ❑ Annual third party audits
- ❑ Daily site inspections



25 Conditions cover wide spectrum of consultation and implementation activities



Environmental Services Committee January 19, 2011

Slide 12

Air Emissions Operational Requirements

Parameter	Operational Requirement	Reference Facility
Particulate Matter	9 mg/Rm ³	Bristol, Alexandria
Cadmium	7 µg/Rm ³	Bristol, Alexandria, Onondaga
Lead	50 µg/Rm ³	Alexandria, Onondaga
Mercury	15 µg/Rm ³	Bristol, Alexandria, Onondaga
Dioxins and Furans	60 pg/Rm ³	Bristol, Alexandria, Onondaga
Hydrochloric Acid	9 mg/Rm ³	Bristol, Alexandria, Onondaga

Air Emissions Operational Requirements

Parameter	Operational Requirement	Reference Facility
Sulphur Dioxide	35 mg/Rm ³	Bristol, Alexandria
Nitrogen Oxides	121 mg/Rm ³	Bristol
Carbon Monoxide	35 ppm _{dv} (40 mg/Rm ³)	Bristol
Opacity	10% (6 min avg)	Bristol, Alexandria, Onondaga
Opacity	5% (2 hr avg)	Multi-Day testing at Bristol indicated compliance can be achieved
Organic Matter	50 ppm _{dv} (33 mg/Rm ³)	Multi-Day testing at Bristol indicated compliance can be achieved

Highlights of Co-Owners Agreement

- ❑ Durham 78.6% (110,000 tonnes), York 21.4% (30,000 tonnes)
- ❑ 50/50 cost sharing of site property and land for Host Community Agreement commitments
- ❑ Cost effective oversizing of selected components to accommodate future expansion
- ❑ Regions to compensate each other if minimum tonnage commitments not fulfilled



***Revenues and Base Facility Costs Shared
in Proportion to Capacity Ownership***



Environmental Services Committee January 19, 2011

Slide 15

York Region Total Project Budget Authority

EFW Facility Construction	\$54,300,000
Host Community Agreement	\$3,400,000
Owner's Consultant	\$1,500,000
Purchase 50% of Site Property	\$2,000,000
Oversizing	\$5,100,000
MOE Conditions of Approval	\$2,000,000
Total Capital Budget Authority	\$68,300,000

Environmental Leadership and Investment in Sustainability



Environmental Services Committee January 19, 2011

Slide 16

EFW Operating Financial Summary

Gross Annual Operating Costs	\$14,665,000
Electricity Revenue	(\$8,590,400)
Recovered Metal Revenue	(\$258,825)
Net Annual Operating Cost	\$5,815,775
Net Operating Cost per tonne (2009 Dollars)	\$41.54

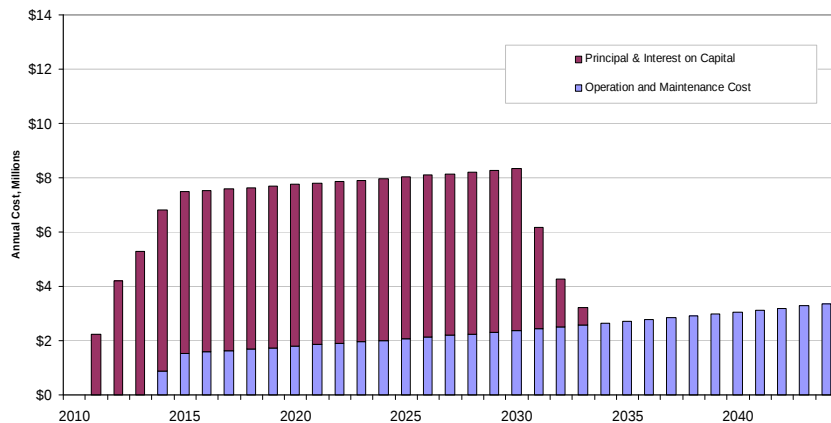
Facility Revenue Reduces Operating Cost By 60%



Environmental Services Committee January 19, 2011

Slide 17

York's share of Capital Investment, Debt Repayment and Operating Cost



Operation And Maintenance Fee Includes 25% For Preventative Maintenance And Major Component Replacement



Council December 16, 2010

Slide 16

Comparison of Waste Management Cost Projections

Waste Management Option (Unit Costs 2010 to 2035)	2010 Tonnes	2020 Tonnes (During Capital Repayment)		2035 Tonnes (After Capital Repayment)	
		Without EFW	With EFW	Without EFW	With EFW
Blue Box (\$24 to \$40/tonne)	89,000	121,000	121,000	150,000	150,000
Source Separated Organics (\$154 to \$253/tonne)	92,000	130,000	130,000	162,000	162,000
Leaf and Yard Waste (\$67 to \$110/tonne)	39,000	41,000	41,000	51,000	51,000
HHW and Other (\$604 to \$991/tonne)	4,000	7,000	7,000	9,000	9,000
CEC Diversion (\$153 to \$251/tonne)	4,000	24,000	24,000	24,000	24,000
Waste to Landfill (\$96 to \$157/tonne)	85,000	88,000	58,000	122,000	92,000
Waste to Dongara (\$123 to \$202/tonne)	40,000	60,000	60,000	60,000	60,000
Waste to Durham-York EFW (NA, \$312 to \$154/tonne)	0	0	30,000	0	30,000
Projected Annual Waste Management Cost	\$35,000,000	\$60,000,000	\$66,000,000	\$99,000,000	\$99,000,000
Blended Unit Cost Per Tonne	\$99	\$127	\$140	\$171	\$171
Annual Taxpayer Impact per Household	\$123	\$158	\$174	\$200	\$200

*Assumes future extension of existing waste disposal contracts

**Investment in EFW Provides Diversification
at No Additional Long-Term Cost**



Environmental Services Committee January 19, 2011

Slide 19

EFW is Key Part of Diverse Sustainable Waste Management System

- ❑ Reduce our annual greenhouse gas emissions
- ❑ Increases diversion from landfill post 2014
- ❑ Generate enough electricity to power 10,000 homes
- ❑ Recover additional metals not captured by our blue box program
- ❑ Provide a local, publicly owned, long-term waste resource recovery solution



Positions York as Leader In Sustainable Waste Management



Environmental Services Committee January 19, 2011

Slide 20