



Challenges & Opportunities with Organic Processing

*Waste Management Association of BC
Annual Conference*

February 23, 2023



| Veolia - Canada's Largest Environmental Service Provider

A leader in **water**, **waste** and **energy** management solutions to support an ecological transformation in communities and industries across Canada.



≡ WATER

The world's leading provider of water services and technologies: from treating and recycling water and wastewater for cities, to recovering valuable resources for industry.



♻️ WASTE

Responsible and sustainable management of hazardous and non-hazardous waste: including collection and treatment to recycling, often leading to the final recovery of waste as materials or energy.



⚡ ENERGY

Sustainable energy solutions and consulting services, supporting the economic growth of municipal, commercial and industrial clients while also reducing their carbon footprint.

| Presence in Canada

500

employees in
Canada

7 Offices

2 Manuf. Facilities

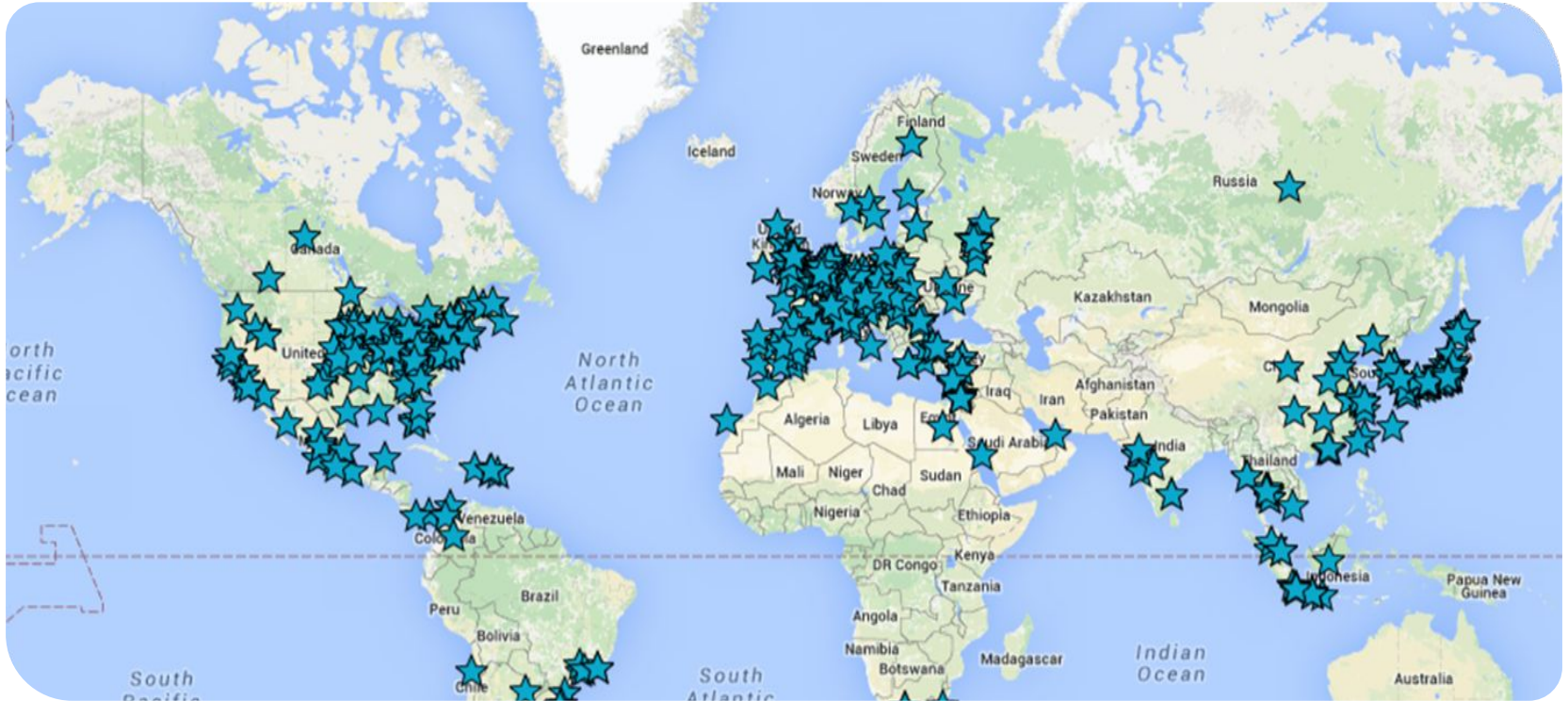
1 R&D Centre

3,000+

Operation sites



Global Anaerobic Digestion Operations



| Canadian Anaerobic Digestion Operations

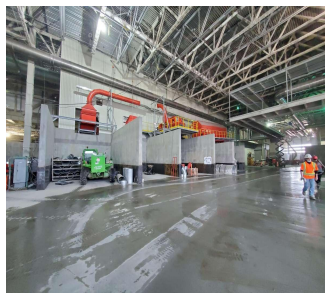


Toronto

Veolia operates and manages the City of Toronto's Disco Road 75,000 TPY AD facility. The facility has been operating since 2014 without odour or operational issues.

Biogas generated at the facility:

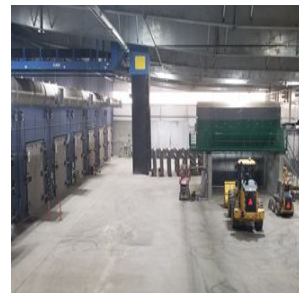
- Planned upgraded into RNG
- 2,000 t/year of GHG emissions avoided



Montreal

Veolia to design-build and operate the City of Montreal's 50,000 TPY composting facility (CSTL)

- Wet AD
- Tunnel composting for SSO (inclusive of green waste) and digestate from BEST
- Commissioning in 2023



Edmonton

Veolia operates and maintains the City of Edmonton's 40,000 TPY High Solid AD facility. The facility has been operating since 2021 without odour or other operational issues

- Production of up to 1.6 MWh electricity
- Batch AD process



Montreal

Veolia to design-build and operate the City of Montreal's 60,000 TPY AD facility (BEST)

- Wet AD
- Commissioning in 2023
- Biogas conversion to bio-methane, injected into grid

| Presentation Overview

01 Market Trends
& Drivers

02 Market
By-Products

03 Feedstocks

04 Processing
Technologies

05 Project Delivery
Models

| Market Trends & Drivers



Municipal

- Larger and more complex projects
- Shift in generation of food waste - single to multi-family residences
- Increase in compostable & biodegradable products
- Move to AD: costs, environmental and operational concerns
- Co-digestion or co-location at WWTP
- Rise of merchant capacity



Commercial

- Waste as valued by-product
- Leveraging existing & future infrastructure
- ESG goals - tied to operational performance



Financial

- Nascent industry
- Challenge of de-risking projects
- Energy companies incenting biogas and RNG
- US Inflation Reduction Act

| Market By-Products



| Feedstocks

- Municipal and or commercial source separated organics
- Commingled organics
- Depackaging, product destruction
- Volume and composition
- Carbon intensity



| Processing Technologies



Project Delivery Models

How to 'Build Back Better' with public-private partnerships

P3 Partners

Edmonton - Analysis
The good, the bad and the money: What more P3s could mean for Alberta
 Premier Kenney says province will be 'very aggressive' in pursuing public-private partnerships
 Stephanie Dubois · CBC News · Posted: May 20, 2019 6:00 AM MT | Last Updated: May 20, 2019



Report calls B.C. P3s a 'costly mistake'

P3s Cost B.C. Taxpayers \$3.7B More Than Public Infrastructure

Risk Transfer

Champlain Bridge P3: biased advice, bad math

Performance Guarantees

Project Delivery

Risky business: As some major contractors pull back from P3s, others embrace the approach

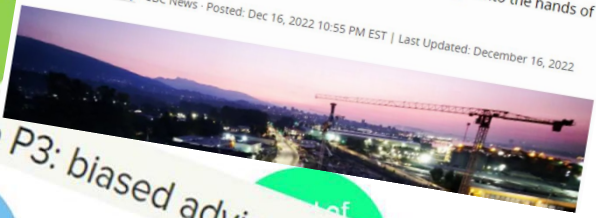
Most public-private partnership contracts are for design-build, fixed-budget, fixed-schedule work that... and others say is just too risky to guarantee profit.

\$\$ Paid by

British Columbia
Coquitlam leadership involved in legal battle between Metro Vancouver and wastewater contractor



Petition alleges city manager had confidential information that got into the hands of company suing Metro Van
 Justin McElroy · CBC News · Posted: Dec 16, 2022 10:55 PM EST | Last Updated: December 16, 2022



| Collaborative Contracting

- Anaerobic digestion or other waste infrastructure projects becoming larger and more complex
 - Market moved from EGAP (everything goes to plan) to VUCA (volatility, uncertainty, complexity and ambiguity)
 - Local govts left with substandard facilities, increased financial and legal risks, cost escalations, interruptions in delivery
- Collaborative contracting allows City to:
 - Eliminate, mitigate and or allocate project risks to the appropriate party
 - Select the best partners, technologies, financial models, etc.
 - Influence revenue streams (tip fees, biogas, compostable products)
 - Encourage innovation (digitization & AI) to build resilient infrastructure
 - Focus on target versus fixed pricing
 - Deliver efficient and effective municipal environment infrastructure project
- Enhances the City's reputation in municipal fiscal responsibility

Traditional DBOM vs Collaborative Contracting Models

Traditional DBOM

OPERATE IN SILOS

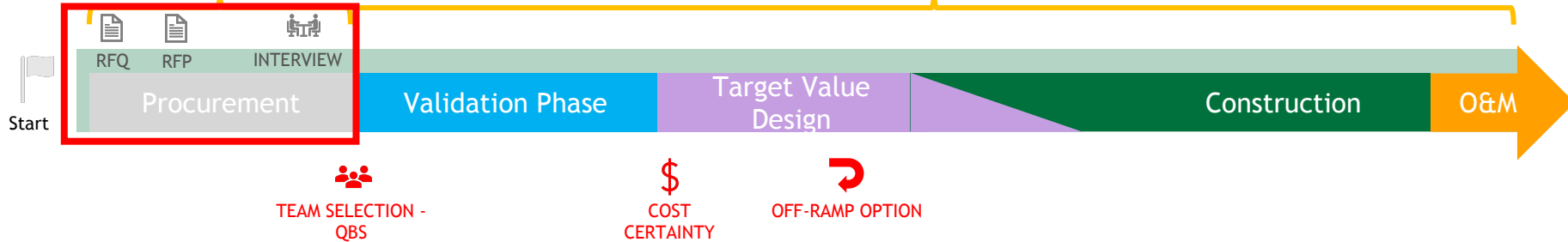
OPERATE COLLABORATIVELY (?)



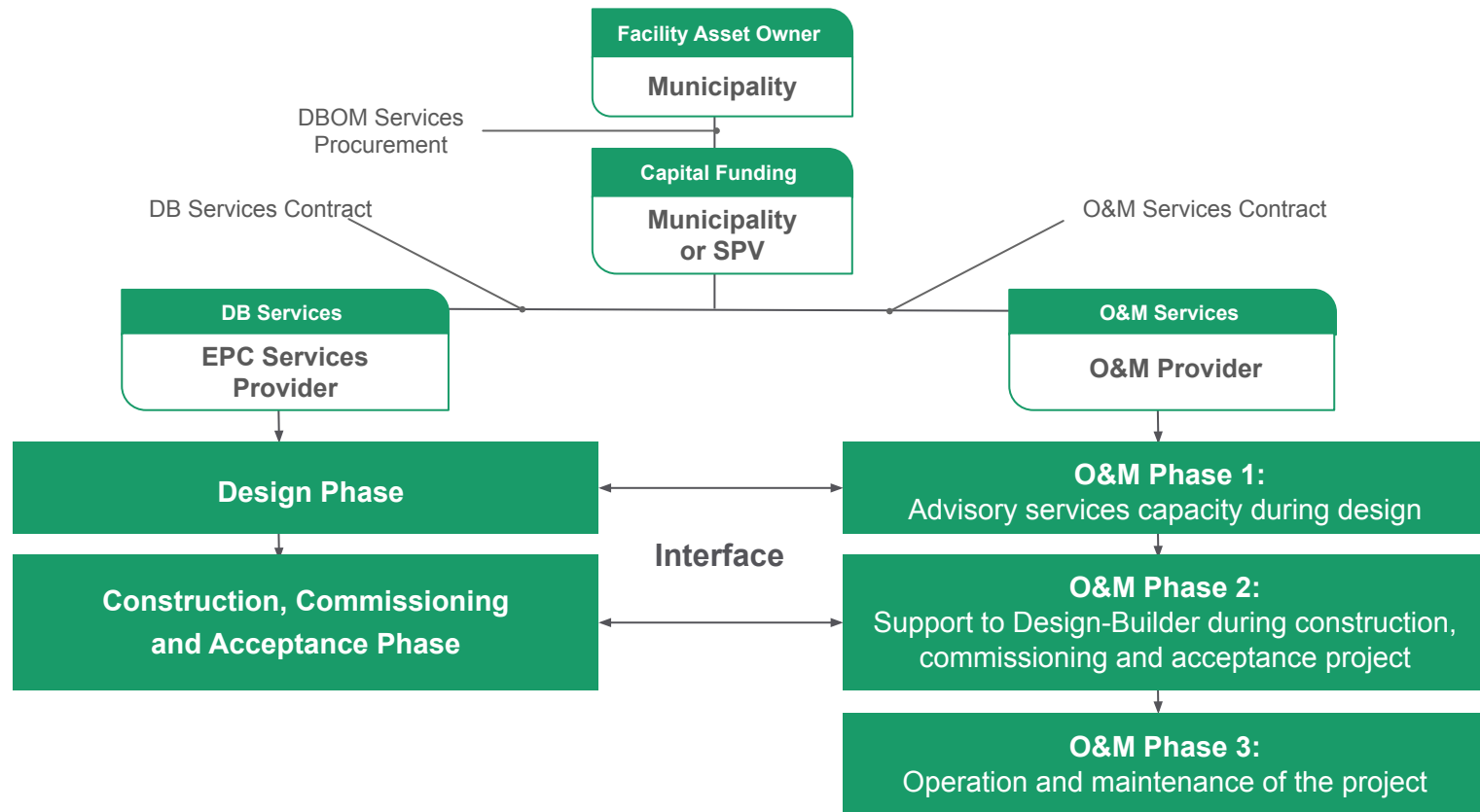
Collaborative Procurement

OPERATE IN SILOS

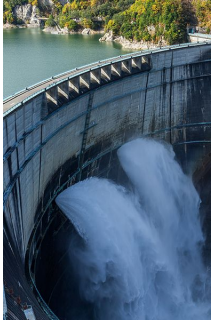
OWNER, DB and O&M OPERATE COLLABORATIVELY



Progressive Design, Build & Operate Model



| Collaborative Contracting Projects



Otto Holden Hydroelectric Power Station Overhaul

- **\$30M**
- Completed in 2020
- Mattawa, ON



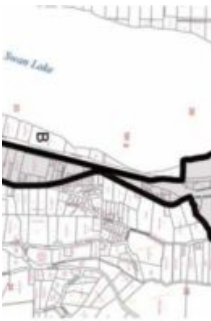
Lloydminster Wastewater Treatment Facility

- **\$81.5M**
- Under construction
- Lloydminster, SK



CNL Adv. Nuclear Materials Research Centre

- **\$513M**
- Under design, construction ongoing
- Chalk River, ON



Okanagan Indian Band Water Distribution

- **\$10M**
- Validated, under construction 2022
- Vernon, BC



North Okanagan Wastewater Recovery Program

- **\$35M**
- In validation, construction 2022
- Vernon, BC



Food & Beverage Facility (IPD)

- **\$300M**
- Under design, construction 2022-2023
- BC



Questions & Discussion

Contact Information

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Appendix



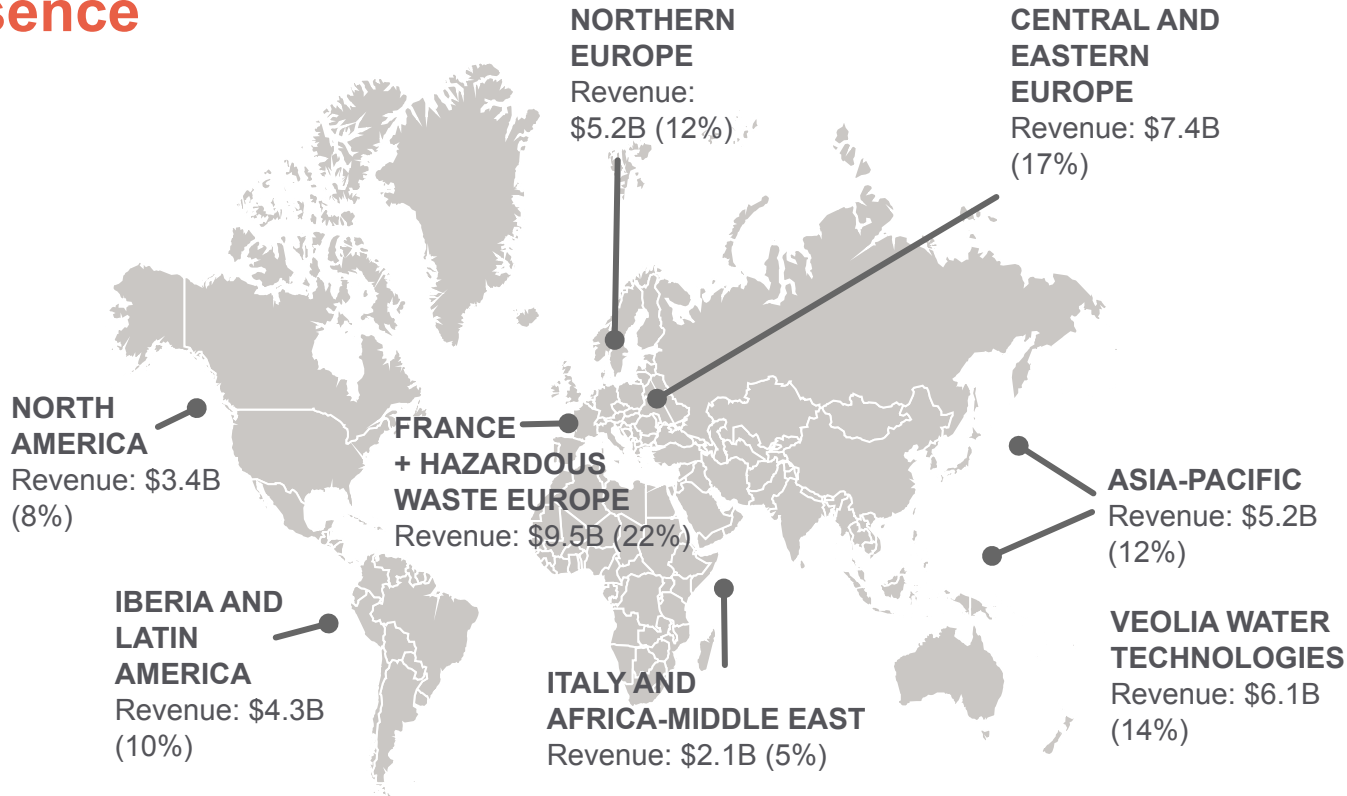
Global Presence

\$43.4B

Worldwide Revenue

220,000

Employees Worldwide



WATER

We **treat and monitor** water quality at each stage in its cycle: from extraction of the **natural resource** through to its discharge back into the natural environment.

We **innovate** to reduce the amount of resource extracted and to encourage cities and industry to **recycle and reuse** water.

North America



2.2 BGD
wastewater treatment
capacity managed



1.3 BGD
water treatment
capacity managed



28.6 million
people served with water
and wastewater services



15
water utilities
owned and operated



WASTE

We **specialize** in liquid and solid, non-hazardous and hazardous waste management.

Our **expertise** covers the entire waste life cycle, from collection to disposal and recycling, often leading to the final **recovery of waste as materials or energy**.

North America



750K tons
of hazardous waste
managed



302K tons
of waste processed for
beneficial reuse



40M lbs
of lighting and electronic
waste recycled



2M tons
of sulfuric acid
regenerated, on-spec
and on-time



ENERGY

Veolia is a leading operator and developer of energy efficient solutions. As the world's first energy services company, Veolia employs 50,000 personnel in 35 countries who are fully **focused** on energy **efficiency** and environmental sustainability.

As an **expert** in energy services, we support the economic growth of **municipal, commercial and industrial** clients, while also reducing their environmental footprint.

North America



40+
industrial facilities
managed



20,000+
meters contracted for
utility data management



\$1.5 billion
annual utility billings
under management



105 BCF
natural gas procurement
managed