

Calgary



SWANA Northern Lights Chapter Conference

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Session 3C: Letting Nature Finish the Work: Compost

Composting Facility Expansion

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Agenda

1. Green Cart Program
2. Current Facility – Aerobic Composting
3. Future Facility - Anaerobic Digestion
4. Project Team
5. Anaerobic Digestion Technology
6. Progress and Timelines
7. Questions





Green Cart Program



Composting facility began operation in 2017



100,000 tonnes / year organics design capacity



Volumes higher than anticipated



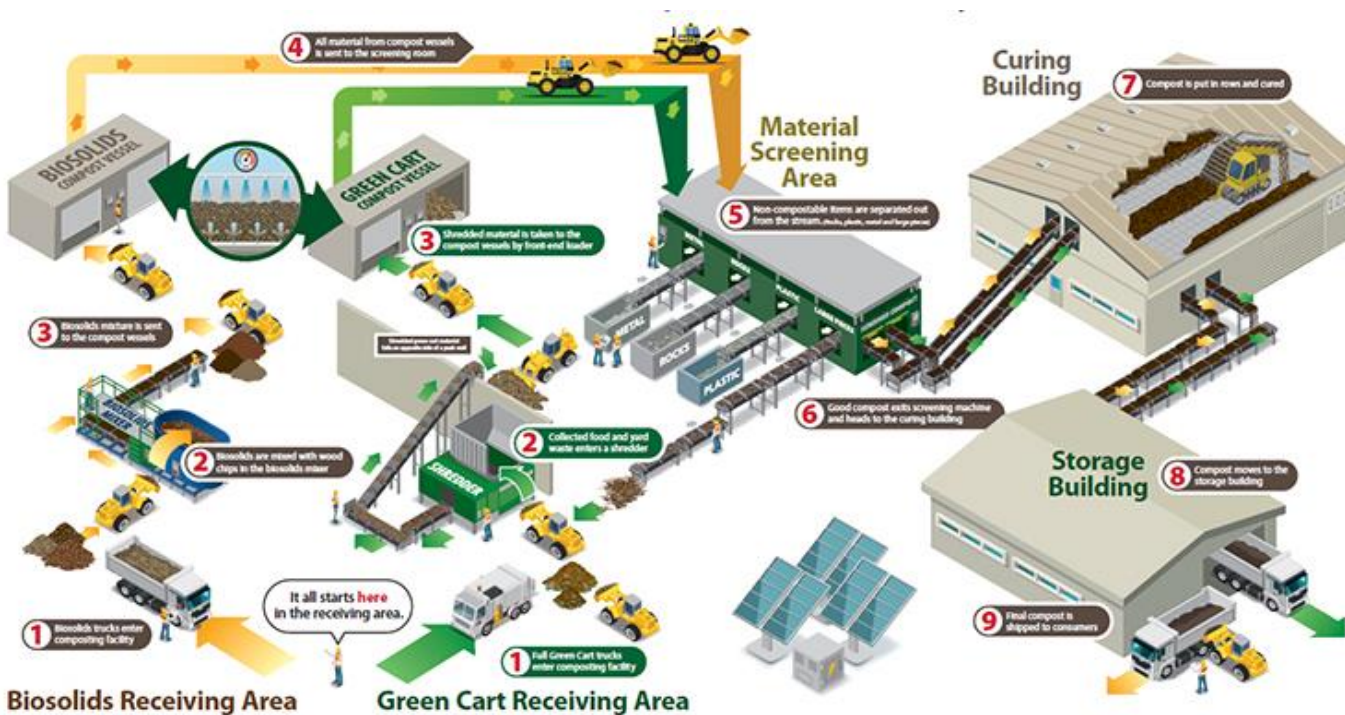
Facility contingency capacity fully used



Facility expansion approved by City Council



Calgary Composting Facility - Current Aerobic Composting



The Calgary Composting Facility is one of the largest of its kind (indoor composting vessel) in Canada.



Designed to process approximately 145,000 tonnes combined green cart and wet tonnes biosolids annually



The Green Cart Program provides service to over 365,000 households.



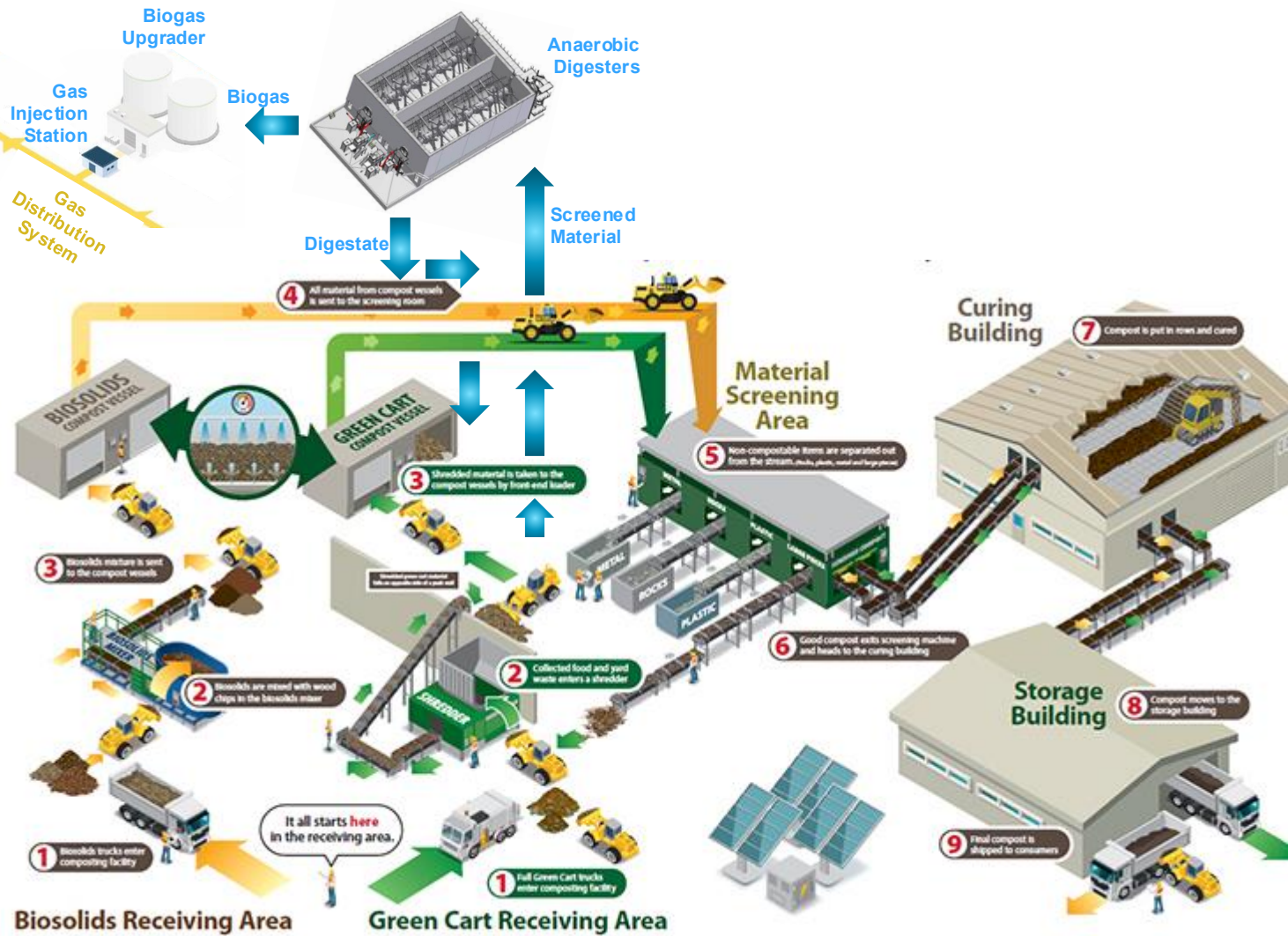
Approximately 60 days to produce nutrient rich compost



Advanced removal of non-organic contamination and organics that are compostable, but not yet fully broken.



Calgary Composting Facility - Future Aerobic Composting with Anaerobic Digestion



Increase capacity of Source Separated Organics (SSO) processing to 160,000 tonnes / year



In vessel processing time will be reduced to approximately 14 days



Generate a minimum of 140,000 GJ/year biogas



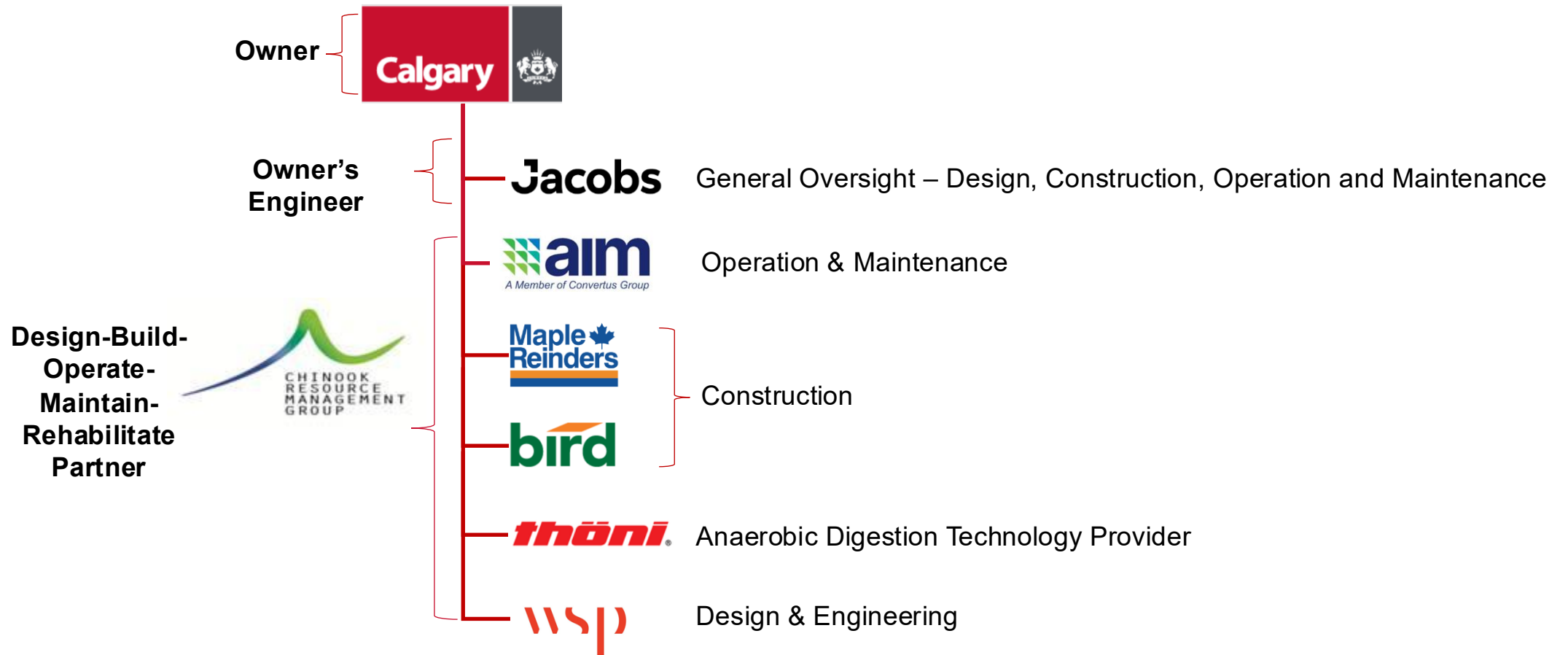
Generate revenue from biogas/Renewable Natural Gas via offtake agreement



Composting Facility Expansion using Anaerobic Digestion (AD) technology



Project Team



- Thöni Plugflow Anaerobic Digestion (AD) Technology
 - Best when feedstocks are **35% to 45% solids or higher** – complements our existing Green Cart Source Separated Organics (SSO) Material Composition
 - AD occurs in vessels enclosed by concrete tunnels
 - Retention time of approximately 21 days – flexibility to adjust as required
- Biogas is created and will be piped to Gas Upgrading (RNG); Storage and Injection Distribution Pipeline Partner
- AD Digestate then mixes with existing facility aerobic composting process (+/- 14 days)
- All other existing facility processing and operating models continue as-is



Progress To Date & Look Ahead

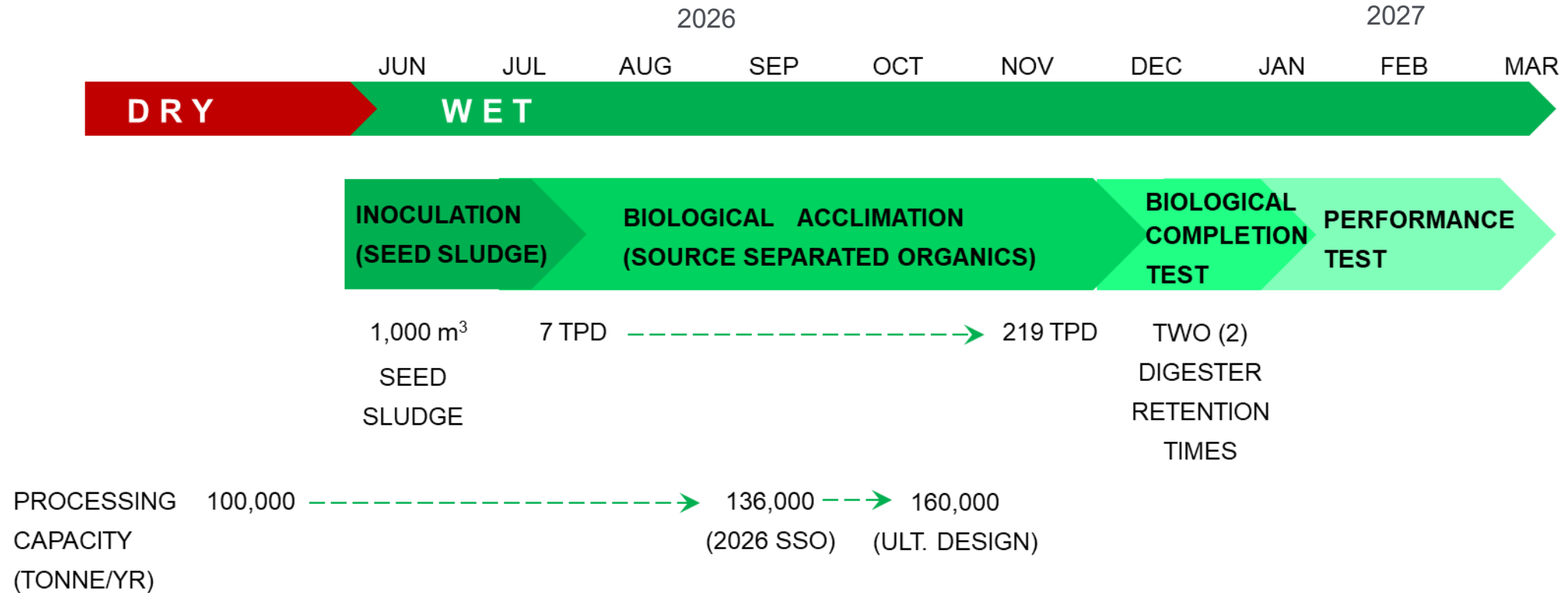
- 2022 Start Design
- 2023 Design Completion
- 2024 Mobilization & Site Preparation
- 2025 Substructures, Superstructures, Digester Shaft Installation
- 2026 Biogas Piping, Screeners, Conveyors HVAC, Electrical Start Commissioning
- 2027 Finish Commissioning Performance Testing Commence Normal Operations
- 2028 Biogas Upgrader Operational*

* Exact timing still being optimized. Flare biogas until upgrading is operational.





Commissioning & Performance Testing



Biogas Upgrading & Injection to Gas Distribution System

- 140,000 GJ / year
- Upgrade to RNG
- Inject into existing ATCO Gas Distribution Network
- Looking for vendors in next 1-3 years to partner with City of Calgary for upgrading



Photo: PurePac Modular Systems



**For more information visit:
<https://www.calgary.ca/waste/residential/how-composting-works>**