

# Metro Plant Solids Management Improvements Facility Plan



August 30, 2018 Public Hearing



# Welcome

## Wendy Wulff

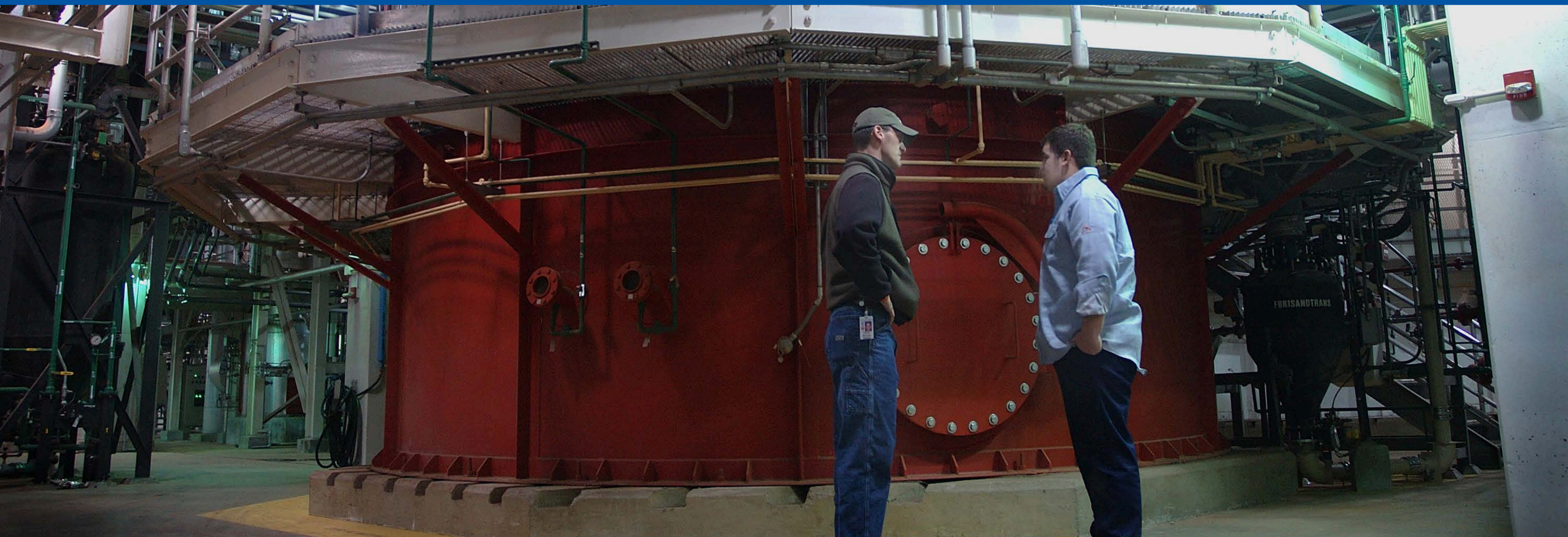
Metropolitan Council Member – District 16



# Public Hearing Objectives



**Share information and receive comments on the  
Metro Plant Solids Management Improvements Facility Plan**



# Public Hearing Agenda



Open House

15 Min

Boards



Presentation

30 Min

- Overview
- Existing Facilities
- Alternative Evaluation
- Recommended Plan
- Summary



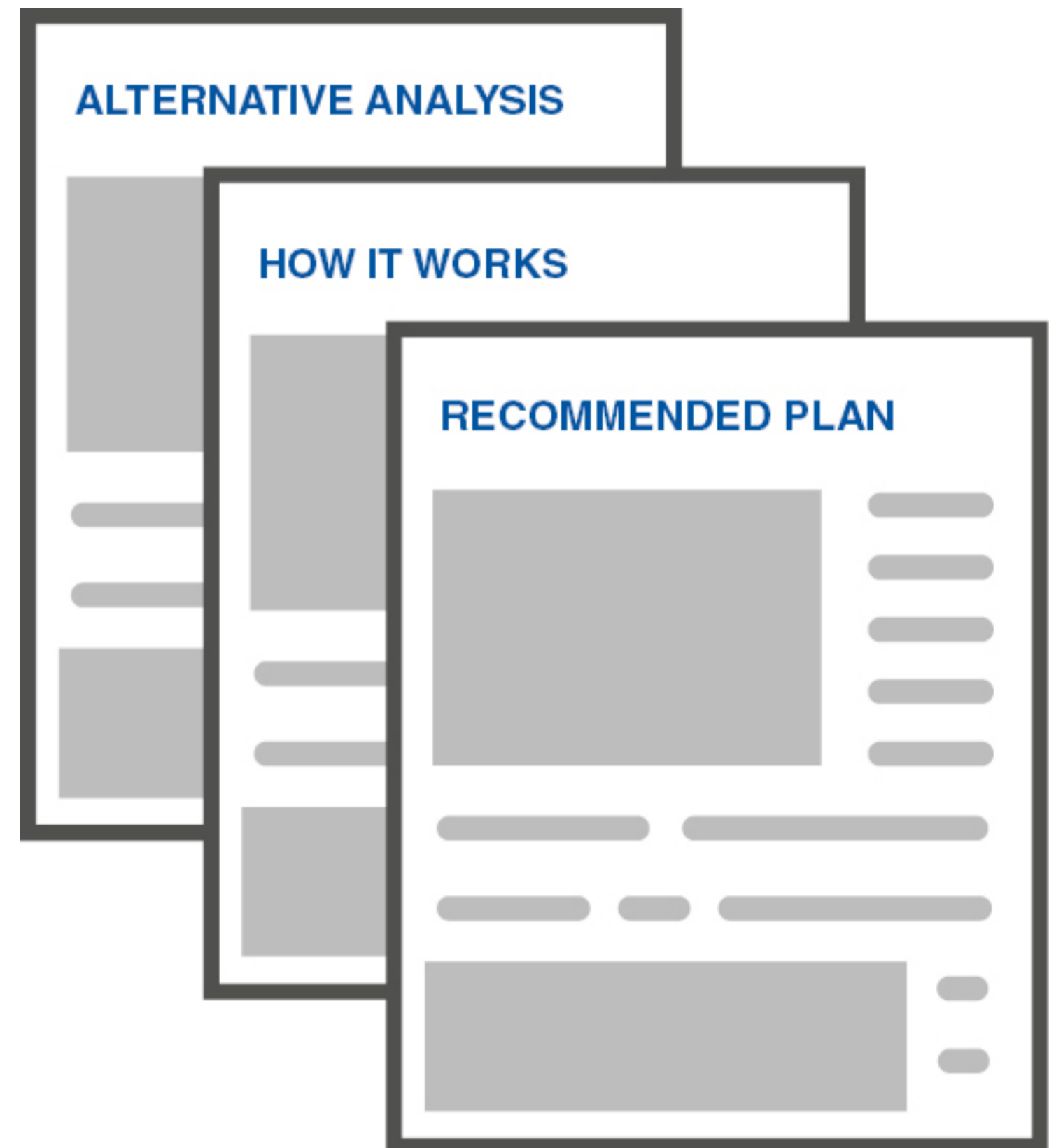
Comments

30 Min



Open House

15 Min



# Overview

**Jeannine Clancy**  
Assistant General Manager

# Environmental Services



Protects public health and safety



Protects the environment



Fosters the economic growth of the region

## WHO WE SERVE

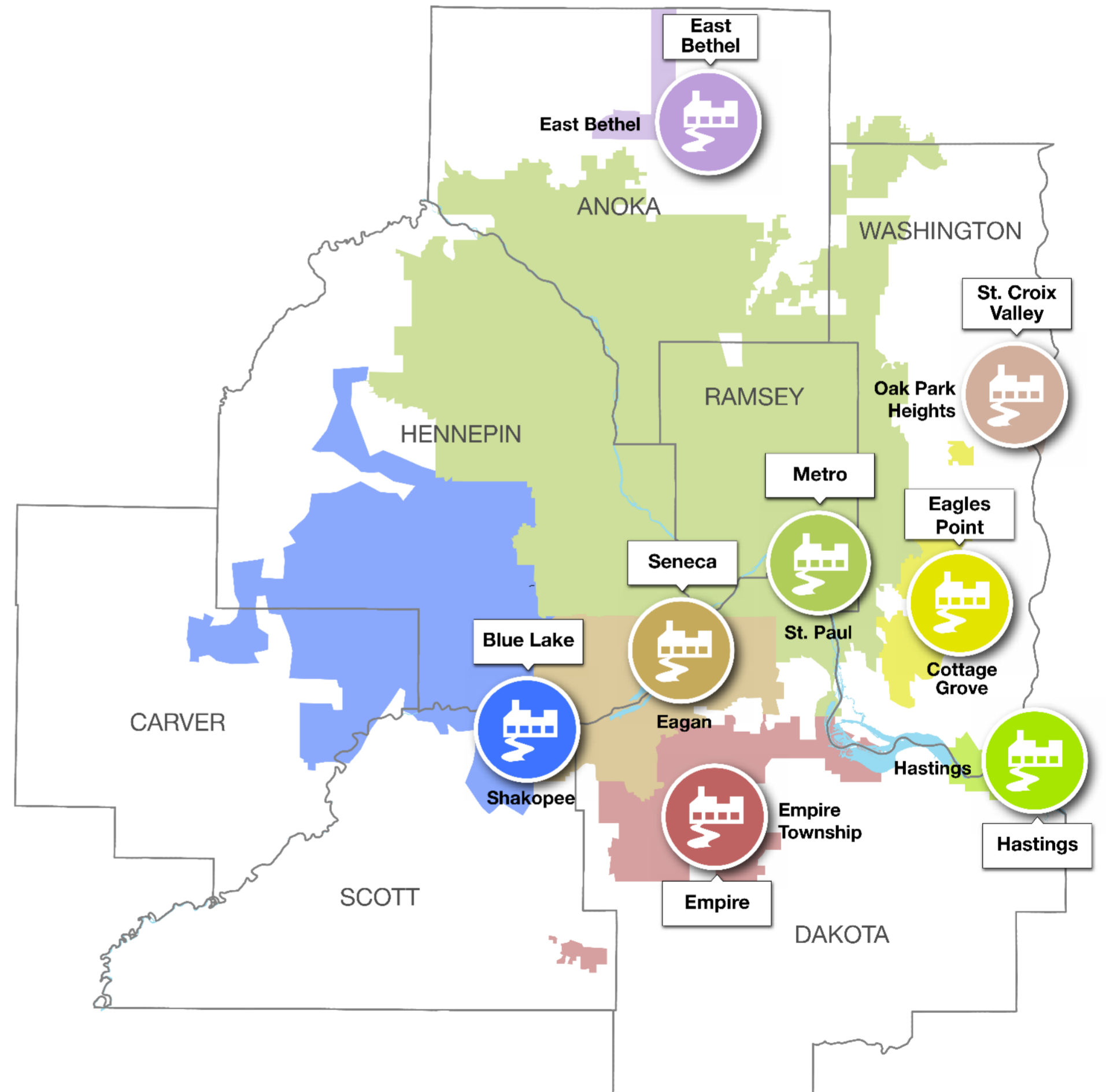
7-county Twin Cities Metro Area  
109 communities  
2,600,000 people

## OUR FACILITIES

8 wastewater treatment plants  
610 miles of interceptors  
250 million gallons per day (avg)

## OUR ORGANIZATION

600+ employees  
\$7 billion in valued assets  
\$140 million / yr capital program

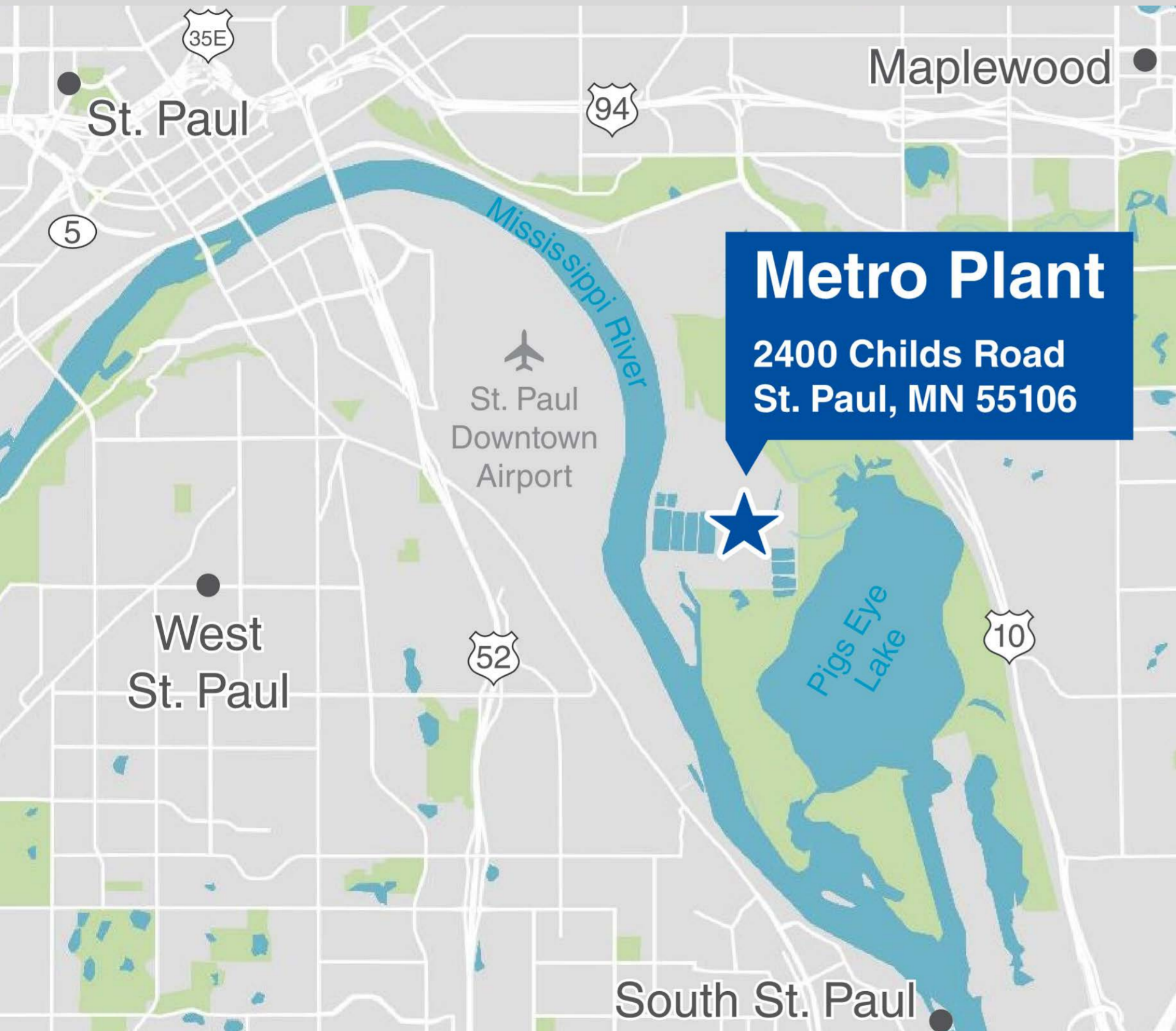


# Project Overview Video



# Project Location

*The Metro Plant is located southeast of downtown Saint Paul.*



## Metro Plant

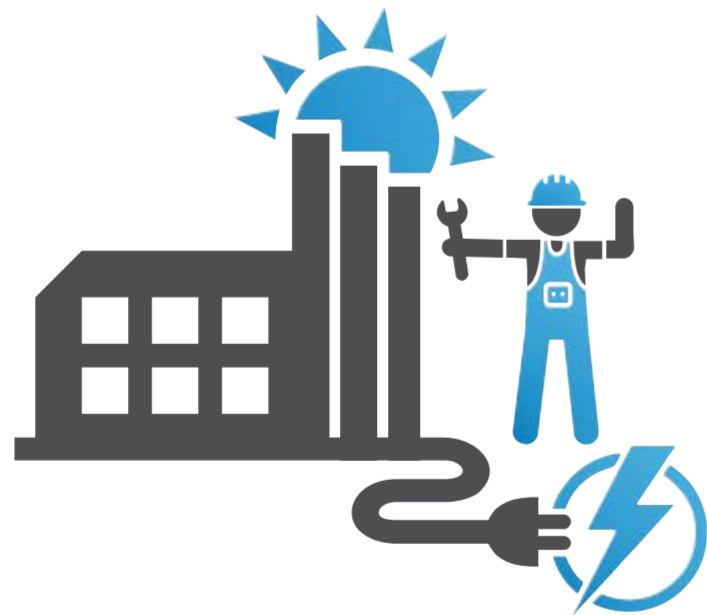
- Treats 180 million gallons of wastewater every day for 66 communities
- Processes 850 wet tons of wastewater solids every day for 73 communities.

*The Metro Plant processes 75% of the region's wastewater solids including solids from four other treatment plants.*

# Project Need



**Preserve Existing Wastewater Treatment Plant Infrastructure**



**Serve Regional Population Growth**

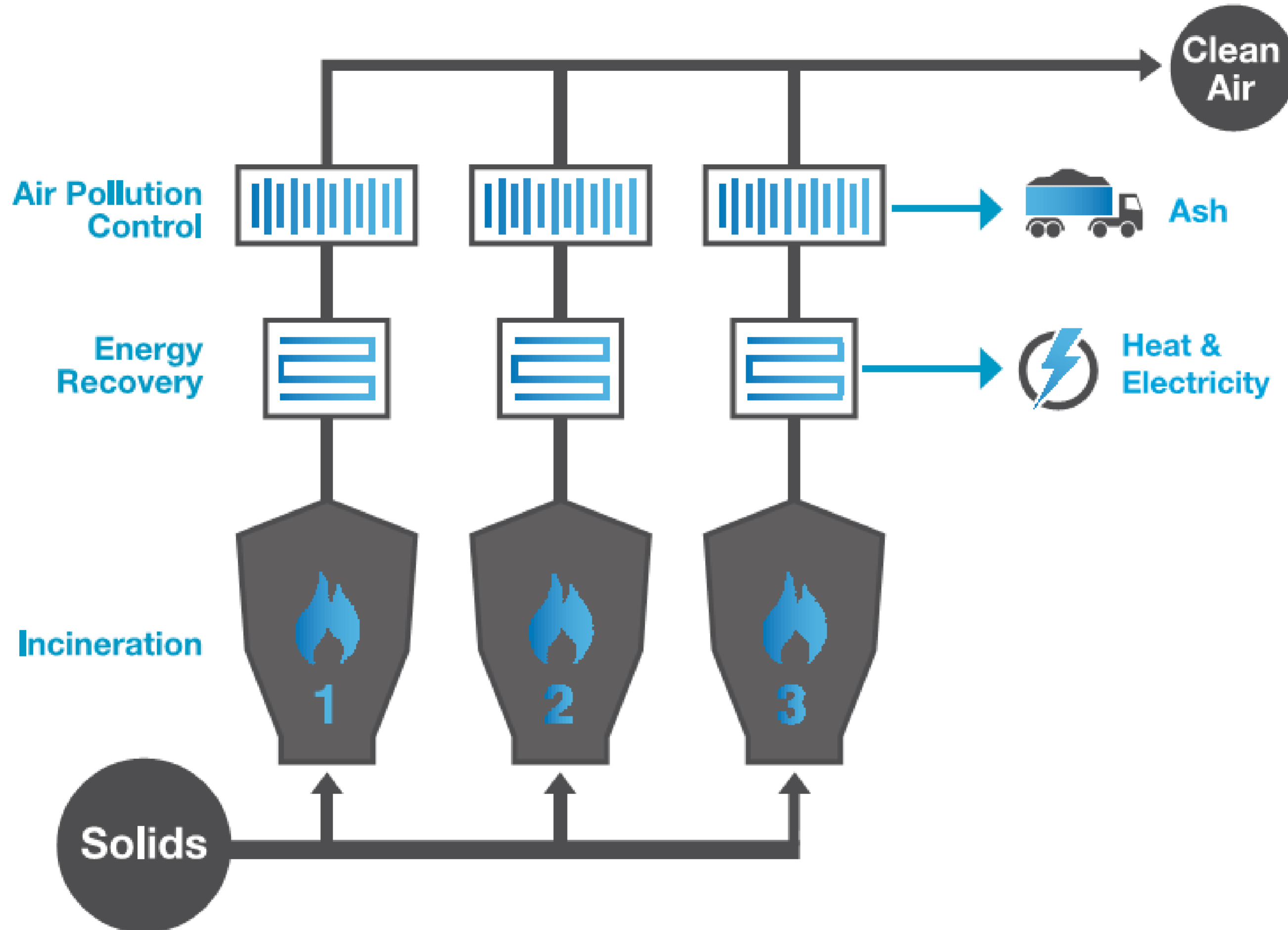


***Adding Solids Processing Capacity at the Metro Plant is Important for the Region.***

# Existing Facilities

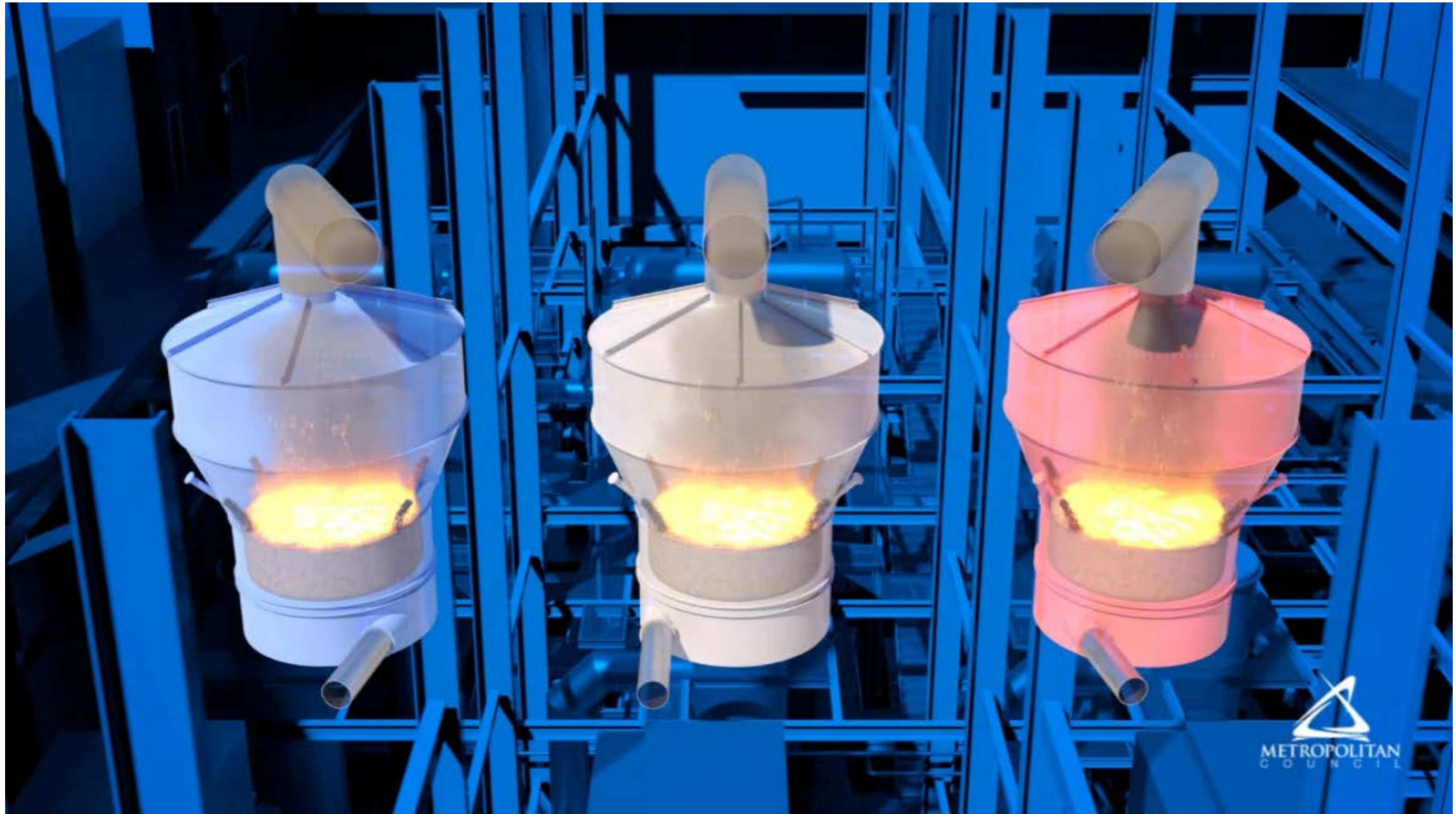
**Stephen Norton**  
Senior Engineer

# Existing System

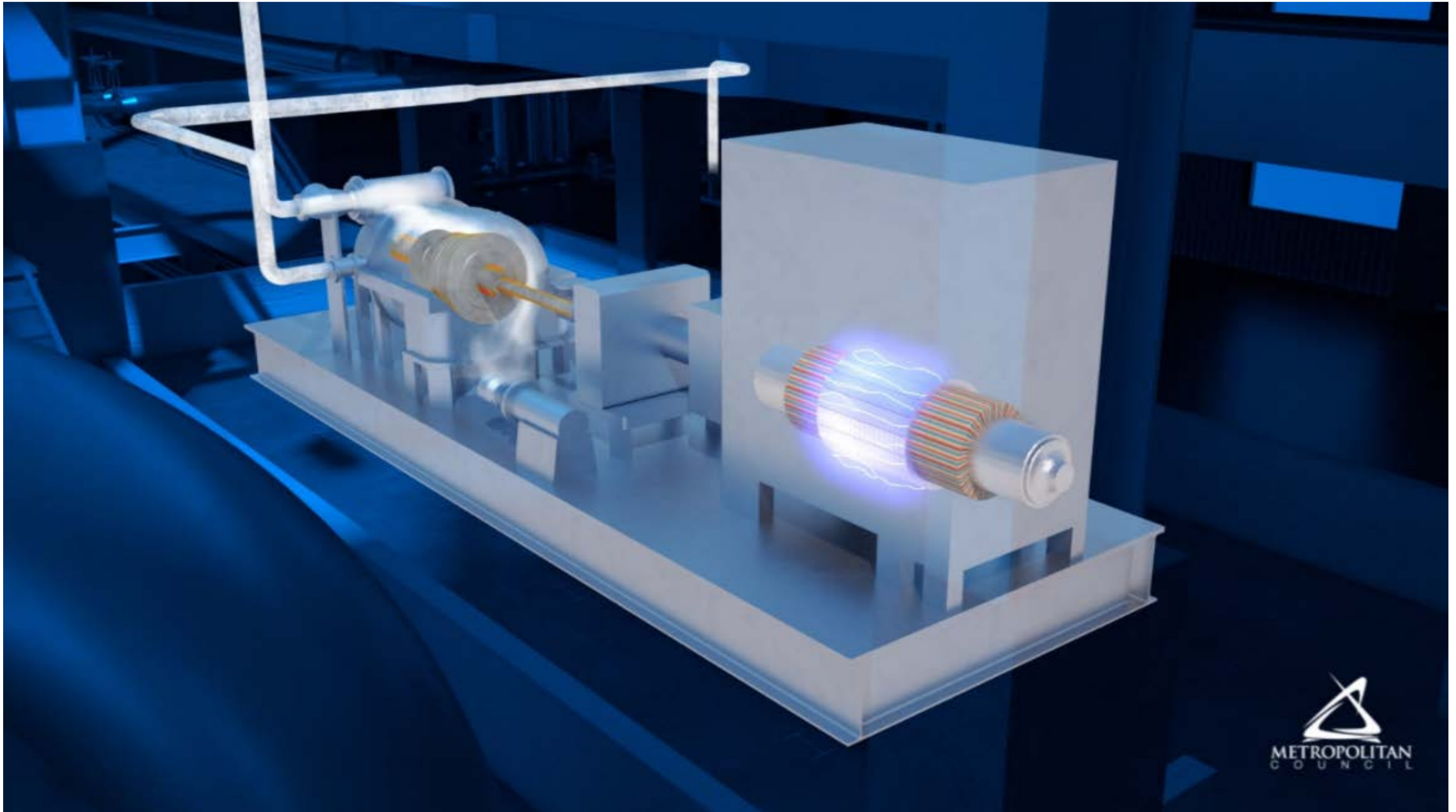


*The Metro Plant has one of the most advanced and highest performing incineration systems in the country.*

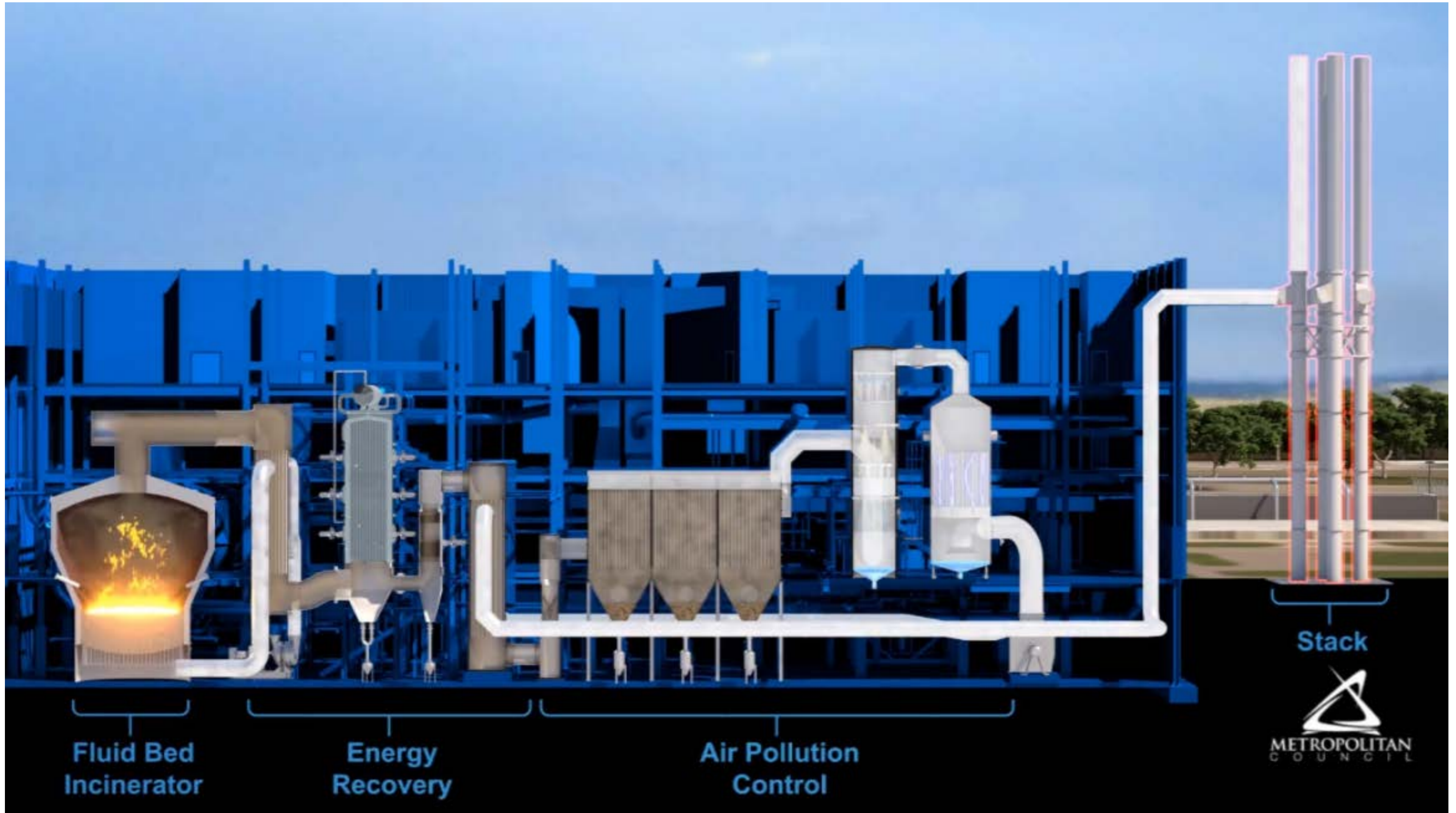
# Incineration Video



# Energy Recovery Video

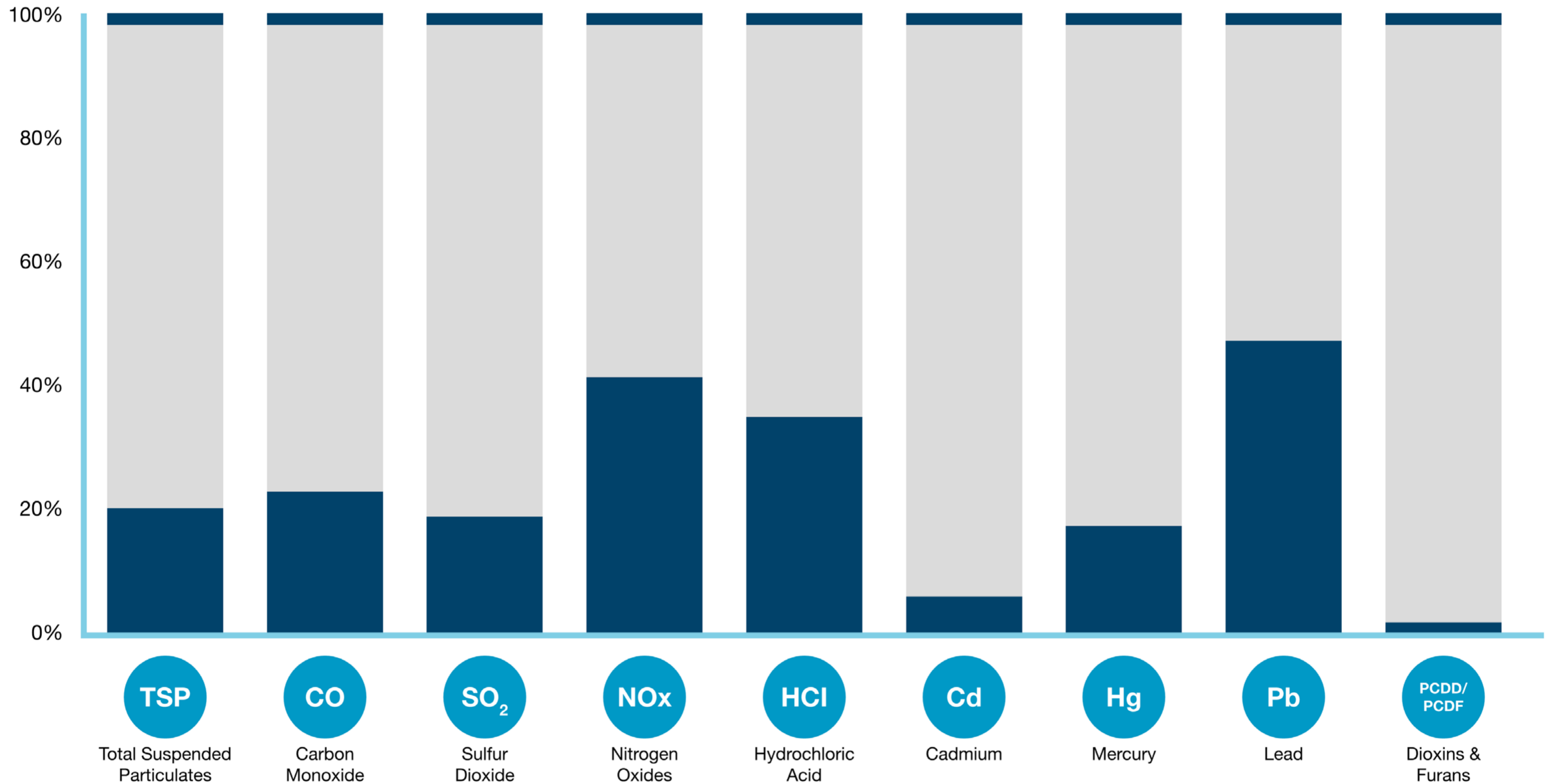


# Air Pollution Control Video



# Exceptional Air Quality

## Metro Plant Incinerator Performance Compared to EPA Emission Standards for New Fluidized Bed Incinerators



***The existing incinerators meet federal emission standards for existing and new fluidized bed incinerators.***

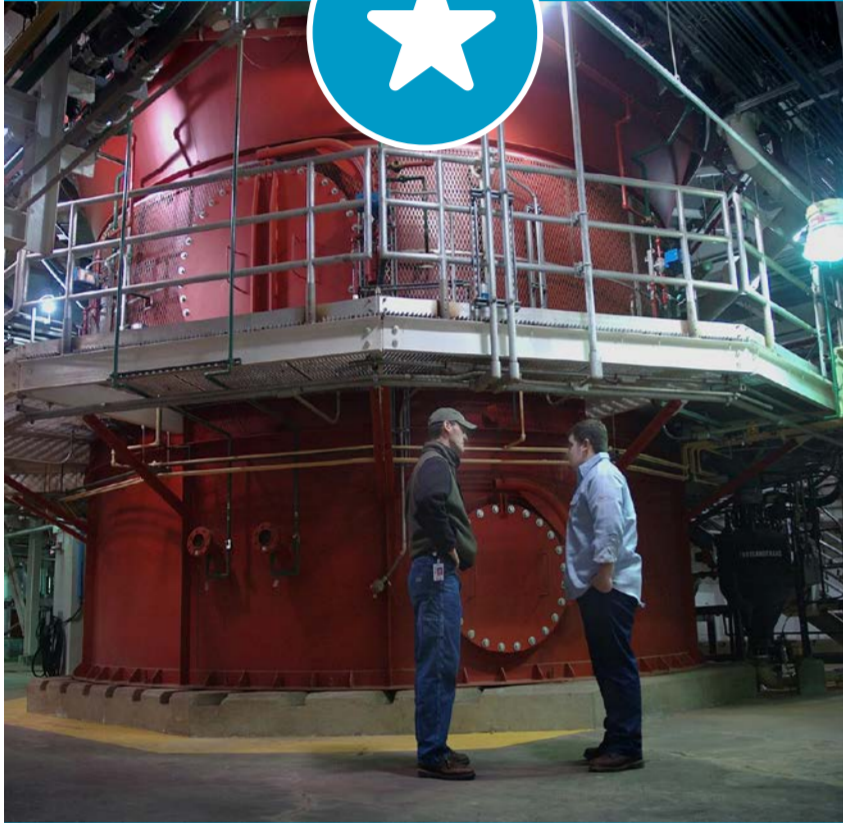
# Alternatives Evaluation & Recommended Plan

**Rene Heflin**

**Plant Engineering Manager**

# Alternative Analysis

## Alternative 1



**Fourth  
Incinerator**

## Alternative 2



**Digest /  
Incinerate**

## Alternative 3



**Digest / Dry /  
Sell Product**

## Alternative 4

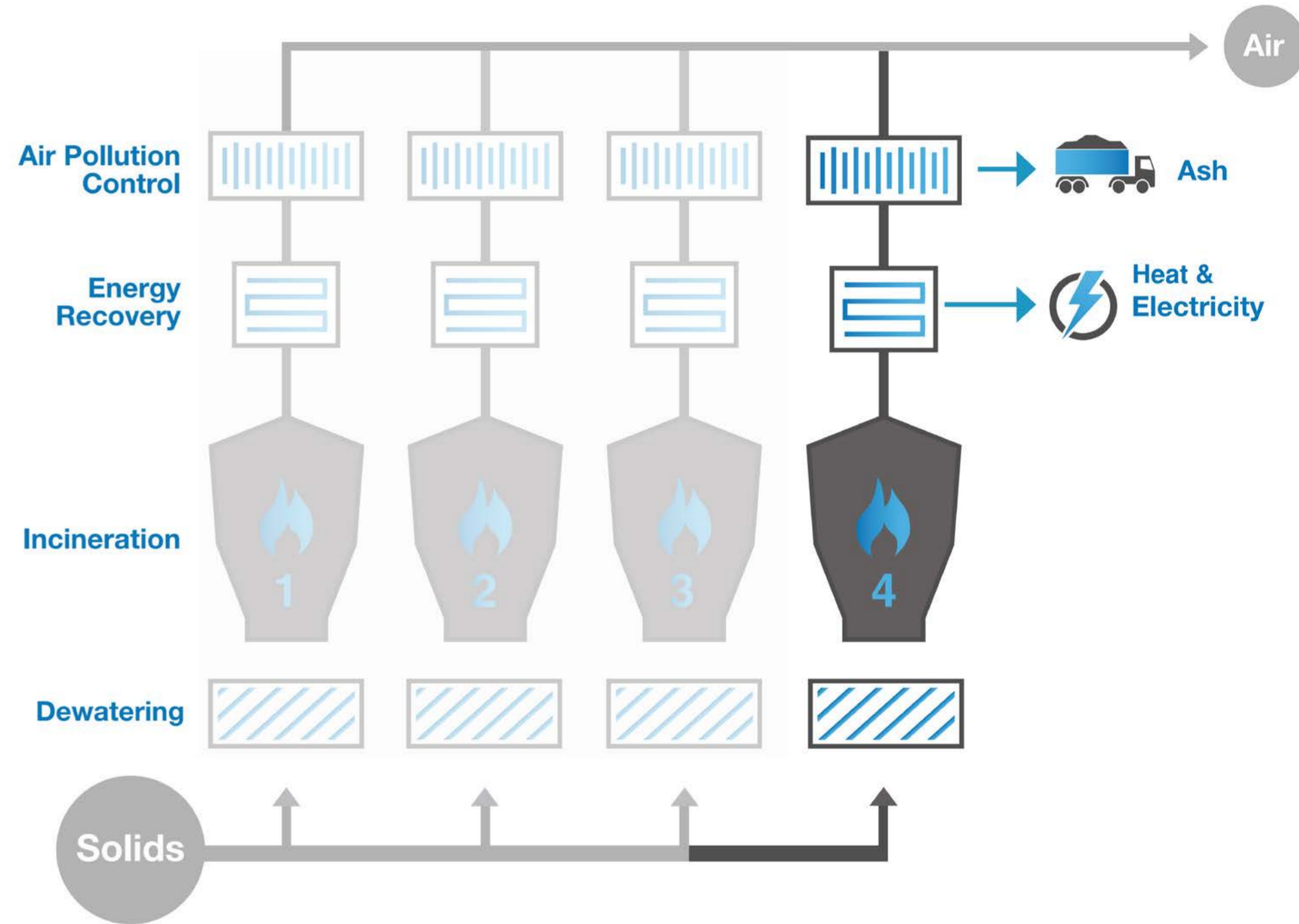
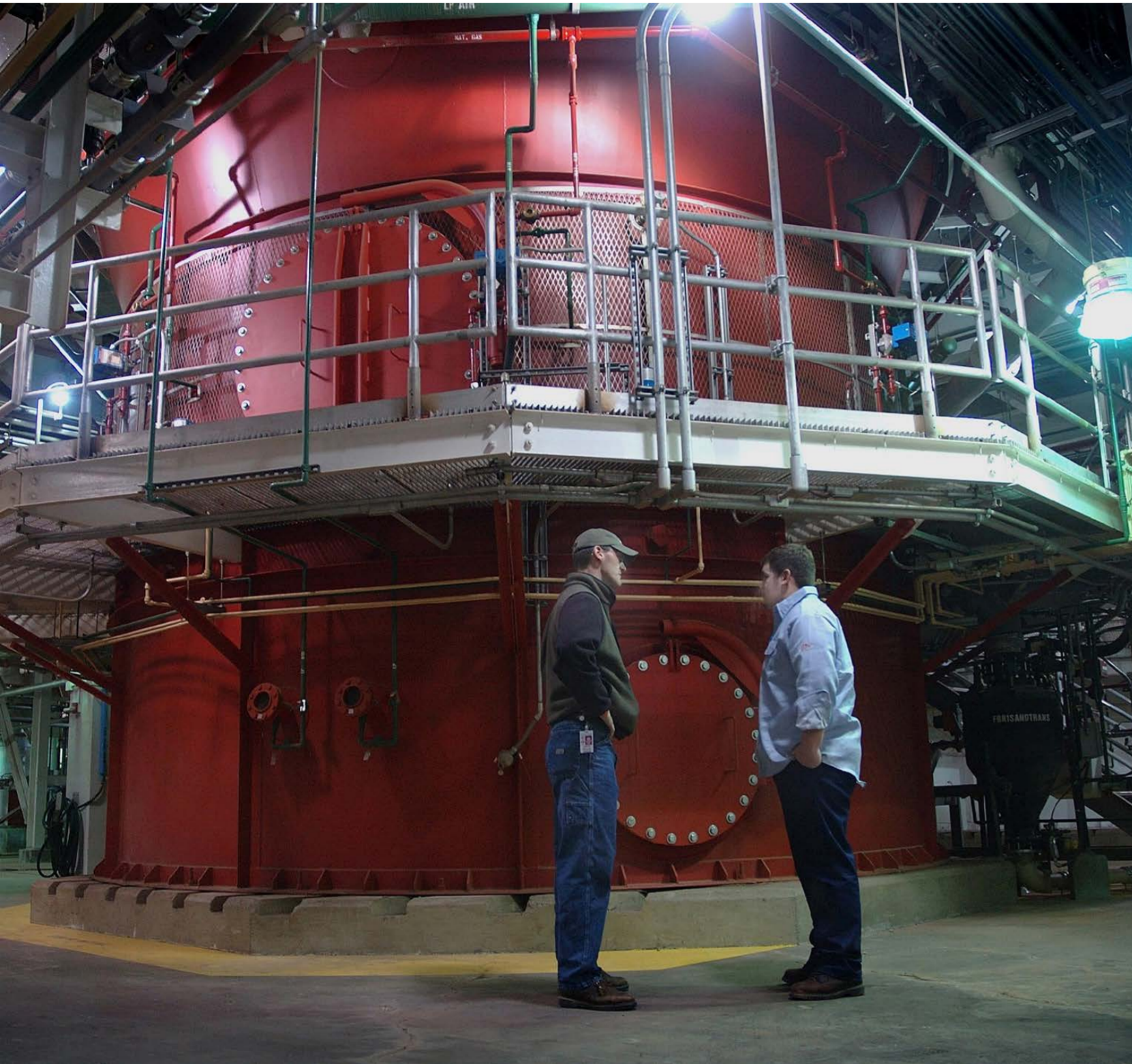


**Digest / Land  
Apply Cake**



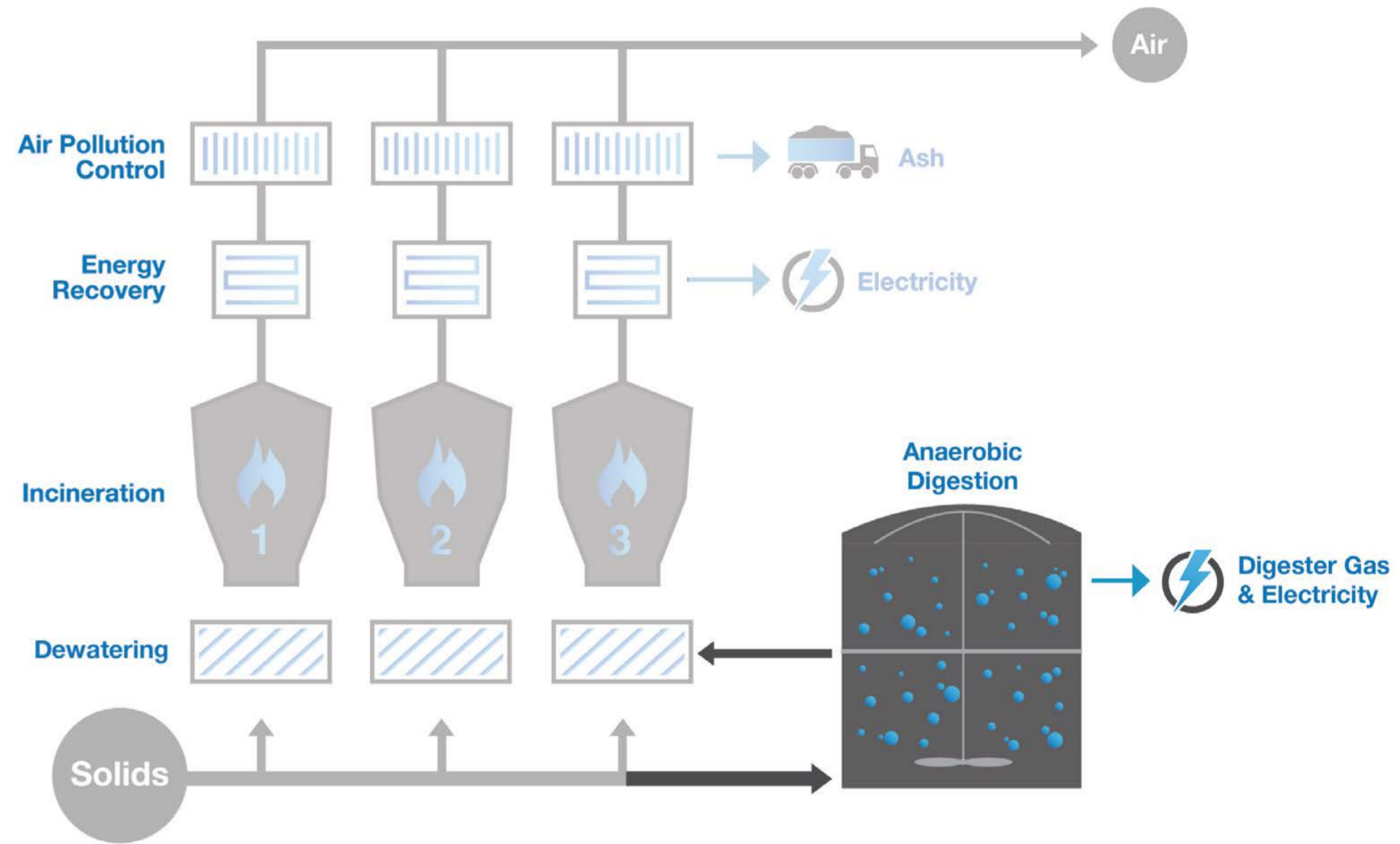
***Adding a fourth incinerator is the recommended alternative.***

# Alternative 1: Fourth Incinerator



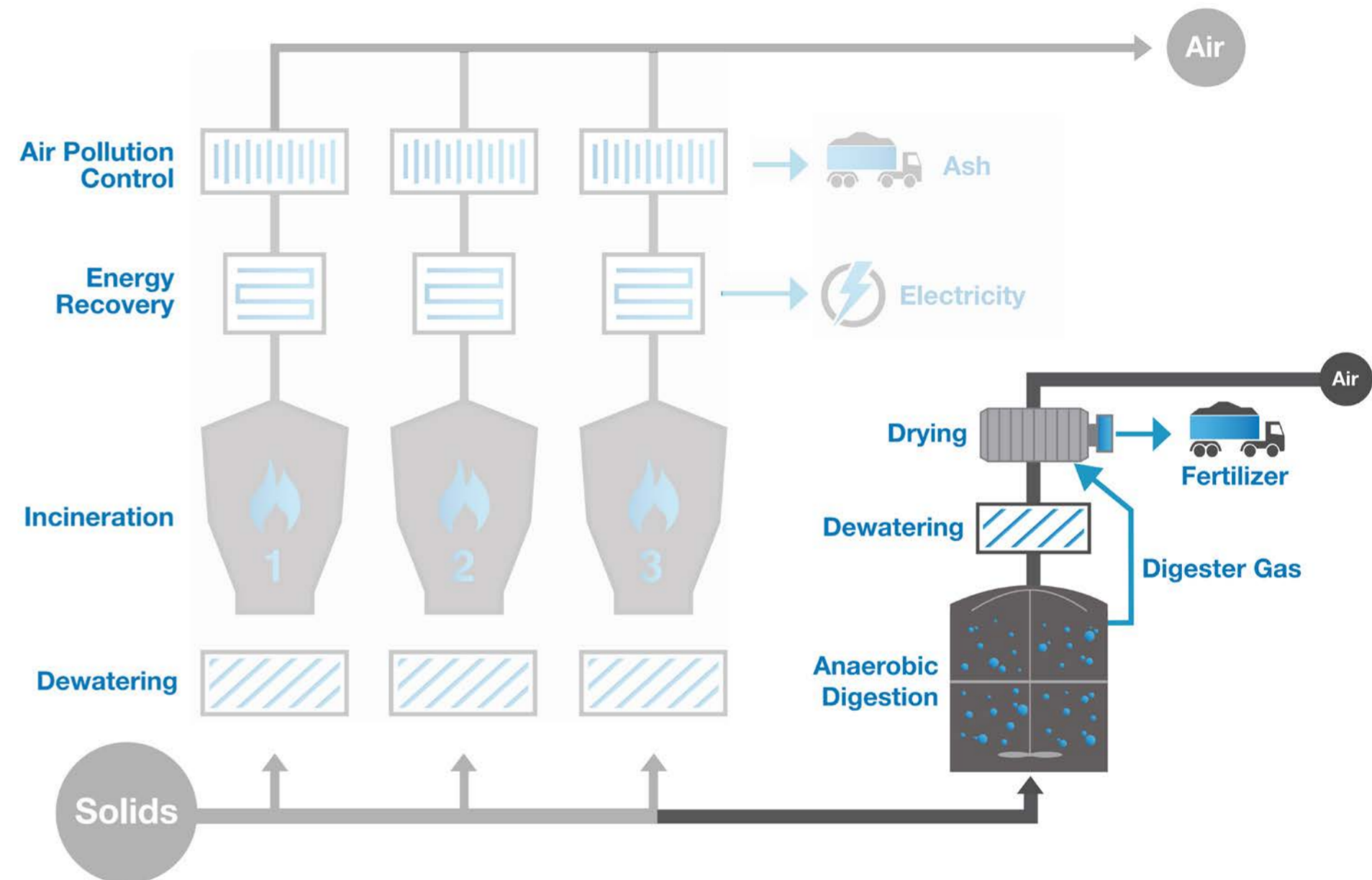
***A fourth incinerator with energy recovery and air pollution control equipment similar and parallel to the existing incinerators.***

# Alternative 2: Digest / Incinerate



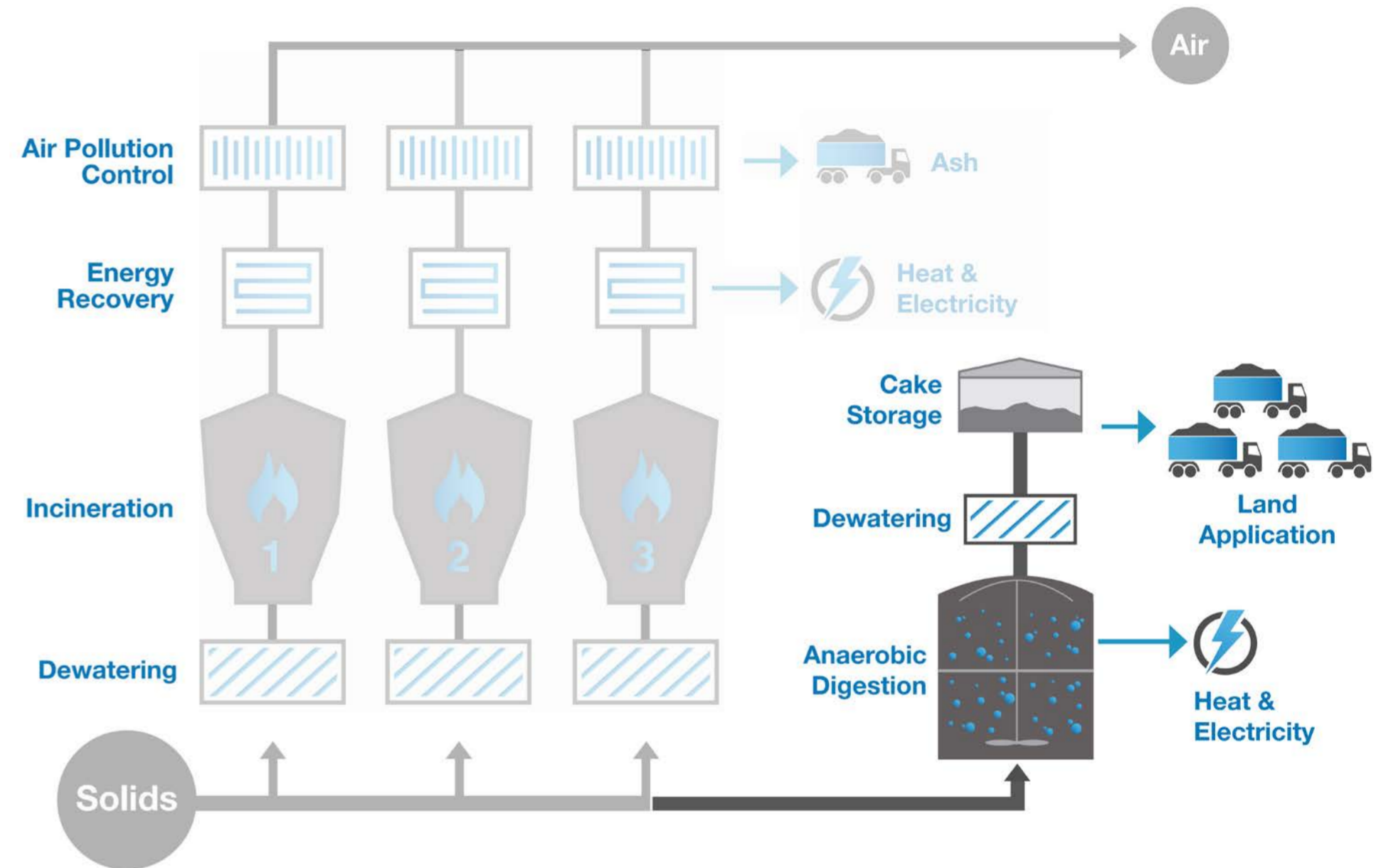
**Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dewatered and fed to the existing incineration process.**

# Alternative 3: Digest / Dry / Sell



***Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dried to a pellet type product and offered for sale.***

# Alternative 4: Digest / Land Apply



***Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dewatered and land applied.***

# Summary Cost Table



Cost	Alt 1: Fourth Incinerator	Alt 2: Digest / Incinerate	Alt 3: Digest / Dry / Sell	Alt 4: Digest / Land Apply
Capital Present Worth	\$99M	\$169M	\$189M	\$248M
O&M Present Worth	\$18M	\$65M	\$90M	\$77M
Total Present Worth	\$117M	\$234M	\$279M	\$325M

***The fourth incinerator cost 50% less to construct, operate and maintain than the next lowest cost alternative.***



**Air Emissions**



**Energy Recovery**



**GHG Emissions**



**Nutrient Recovery**



***The fourth incinerator was found to be the most sustainable alternative.***

# Community Impact



**Air Quality**



**Odors**



**Offsite Land Impacts**

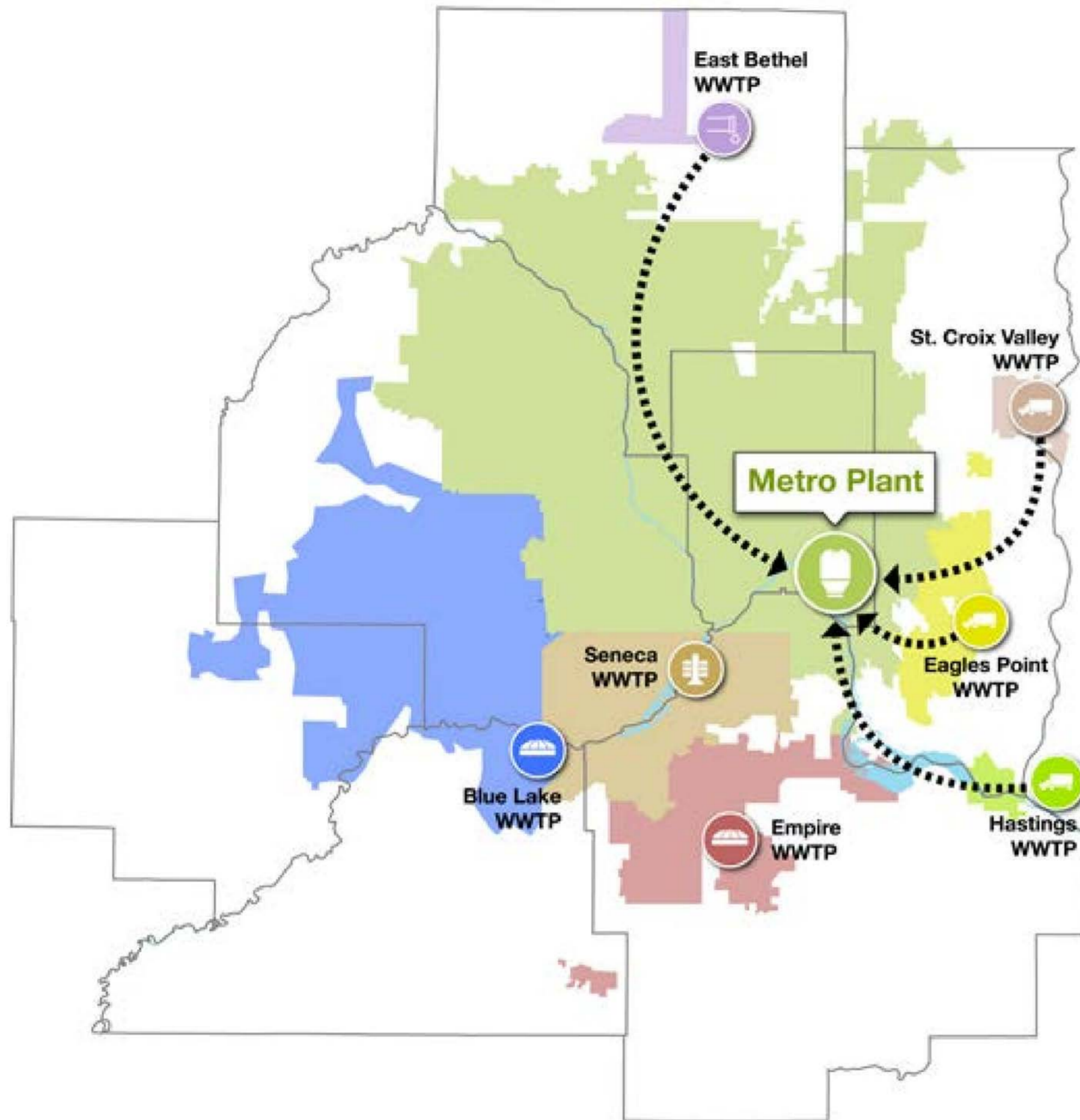


**Trucking**



***A fourth incinerator provides the lowest impact to surrounding communities.***

# Reliability



- **Fourth incinerator allows Metro to backup other MCES facilities**
- **Fourth incinerator provides continuity of operations**

***A fourth incinerator allows Metro to perform renewals and preserve existing infrastructure.***

# Fourth Incinerator

**Cake  
Receiving**

**Dewatering**

**Fourth  
Incinerator**

**Energy  
Recovery**

**Air Pollution  
Control**

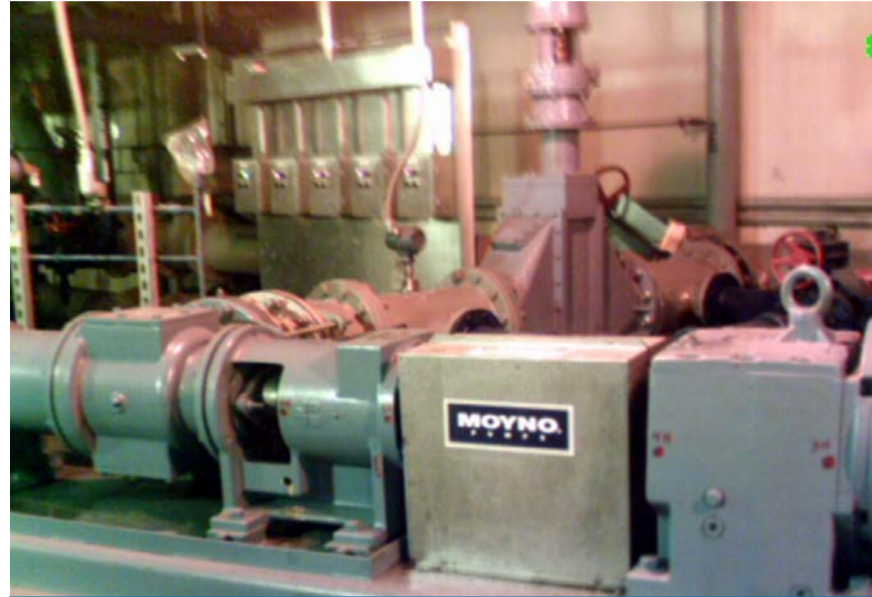


# Fourth Incinerator Cost Estimate

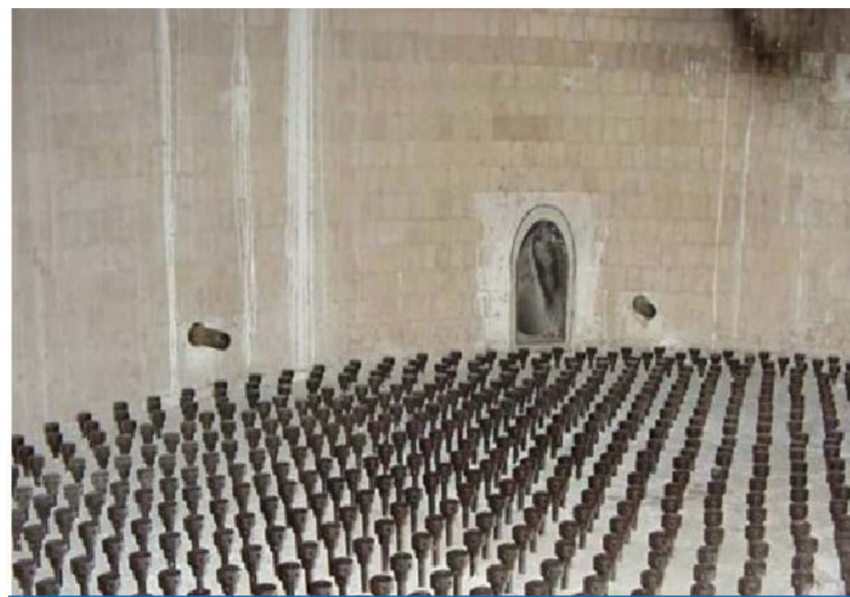


Item	Costs
Mobilization / General	\$7.7M
Site Work / Building	\$31.8M
Cake Receiving	\$1.9M
Dewatering	\$5.8M
Incineration	\$29.6
Energy Recovery	\$8.1M
Air Pollution Control	\$11.3M
Contingencies	\$28.9M
Engineering	\$25.0M
<b>Total</b>	<b>\$150.1M</b>

# Renewal of Existing Incinerators



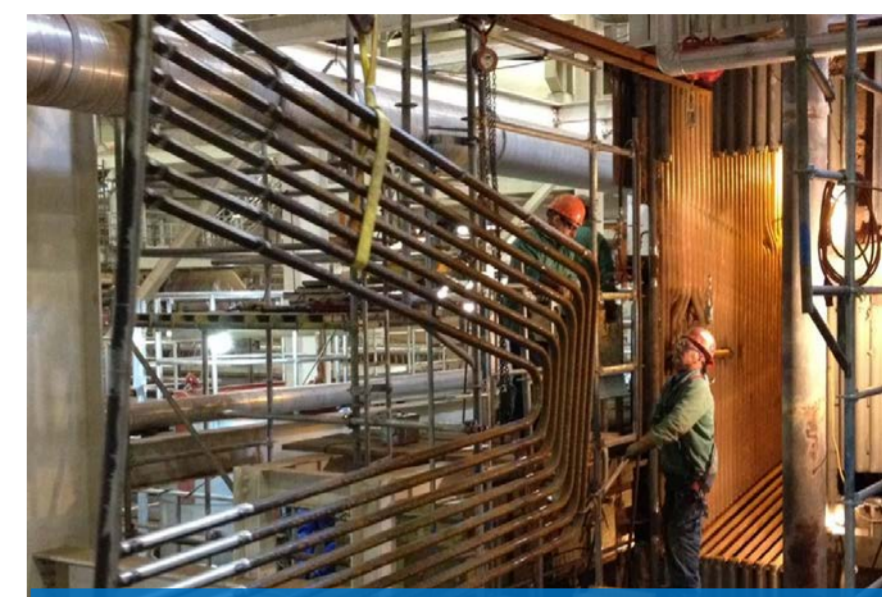
Sludge Storage Pumps



Fluid Bed Reactor



Primary Heat Exchangers



Waste Heat Boilers



Baghouse



Wet ESP



Expansion Joints

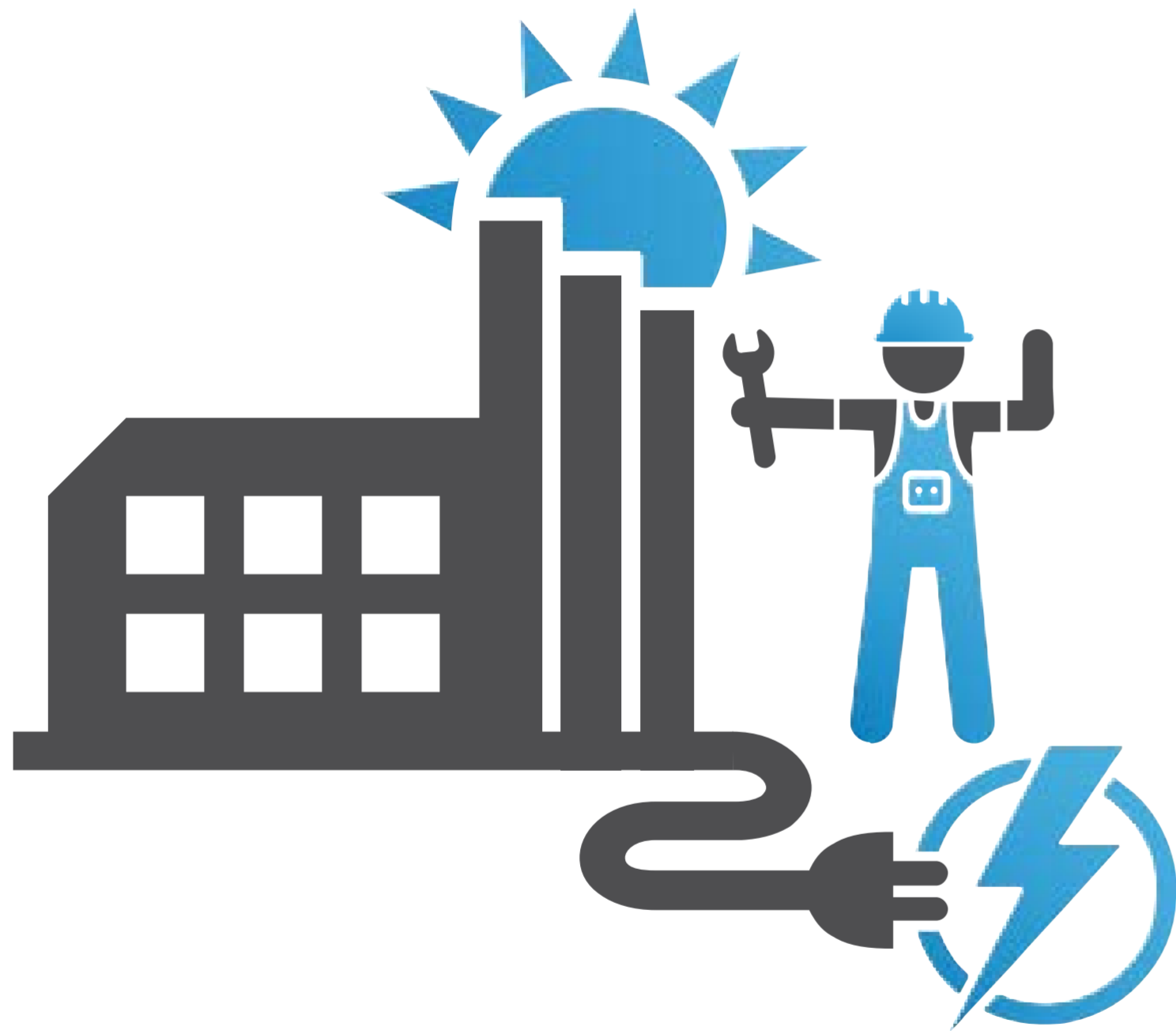


Ash Conveyance

## Estimated Downtime Per Incinerator

Six-months → One-year

# Renewal Cost Estimate



Item	Costs
Mobilization / General	\$1.6M
Sludge Feed	\$2.6M
Incineration	\$4.0M
Energy Recovery	\$7.3M
Air Pollution Control	\$1.9M
Electrical / Instruments	\$1.9M
Contingencies	\$5.8M
Engineering	\$5.0M
<b>Total</b>	<b>\$30.2M</b>

# SUMMARY

**Jeannine Clancy**  
**Assistant General Manager**

# Fourth Incinerator Benefits

The fourth incinerator is the most **cost-effective** and **sustainable** alternative to meet the region's wastewater needs.



It will have the **lowest community impact**, and will improve the **reliability** of the wastewater treatment system.

# Impacts on Rates

## Municipal Wastewater Charge Rate Impact

+ \$0.40 to  
\$145.26/year



MCES charges communities a **wholesale** fee for annual volume



Communities charge businesses/residents a **retail** fee



On average, **60%** of a resident or business's sewer fee is MWC.

## Sewer Availability Charge Rate Impact

+ \$5.27 to  
\$2,485.00/connection

MCES uses SAC to pay a portion of debt service incurred by financing capital improvements



Local governments pay SAC to MCES



Resident/business owner pays SAC + local fees to their local government

*The timing of the fourth incinerator was carefully coordinated with other capital projects to not have a significant impact on rates.*

# Project Schedule

FBR4  
PLANNING

FBR4 PERMITTING &  
DESIGN

FBR4  
CONSTRUCTION

RENEWAL OF  
EXISTING INCINERATORS



COMMISSIONING →



2015

2019

2020

2021

2022

2023

2024

2025

2026

2027



**Facility Plan Adoption in October**

**Design & Permitting  
2019 - 2021**

**Fourth Incinerator Construction  
2021 - 2024**

**Renewal of Existing Incinerators  
2024 - 2027**

***The existing incinerators will be 20 years old in 2025.***

# Providing Feedback



Web

[www.metrocouncil.org/metrosolids](http://www.metrocouncil.org/metrosolids)



Email

[info@metrosolids.com](mailto:info@metrosolids.com)



Voice

**651-691-9124**



Mail

**Metro Solids - MCES  
390 Robert St. North  
Saint Paul, MN 55101**



Receiving Comments

**September 10, 2018**

# Comments