

working for clean rivers

**Columbia Boulevard Wastewater Treatment Plant
Renewable Natural Gas Project**

Senate Interim Committee on Environment and Natural Resources,
September 25, 2018
Paul Suto, P.E., Principal Engineer

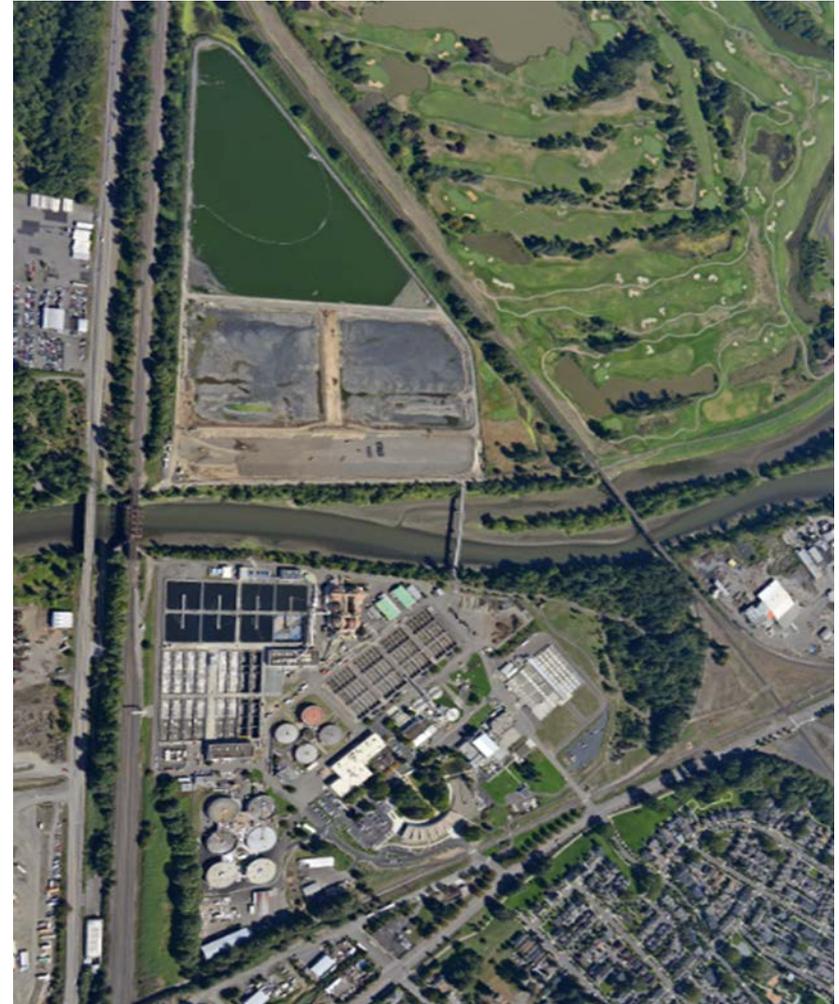


ENVIRONMENTAL SERVICES
CITY OF PORTLAND

NICK FISH, COMMISSIONER
MICHAEL JORDAN, DIRECTOR

Columbia Blvd Wastewater Treatment Plant Highlights

- Serves population over 600,000
- Started up 1952
- Average dry weather flow of 60 – 70 Million Gallons per Day (mgd)
- Peak wet weather flow capacity of 450 mgd
- Currently produces about 1.6 million cubic feet of biogas daily



History of Biogas Use at the Plant

- Built in 1952, CBWTP has been using biogas to heat the digesters and administration building
- In 2008 – Added cogeneration for electricity and heat production

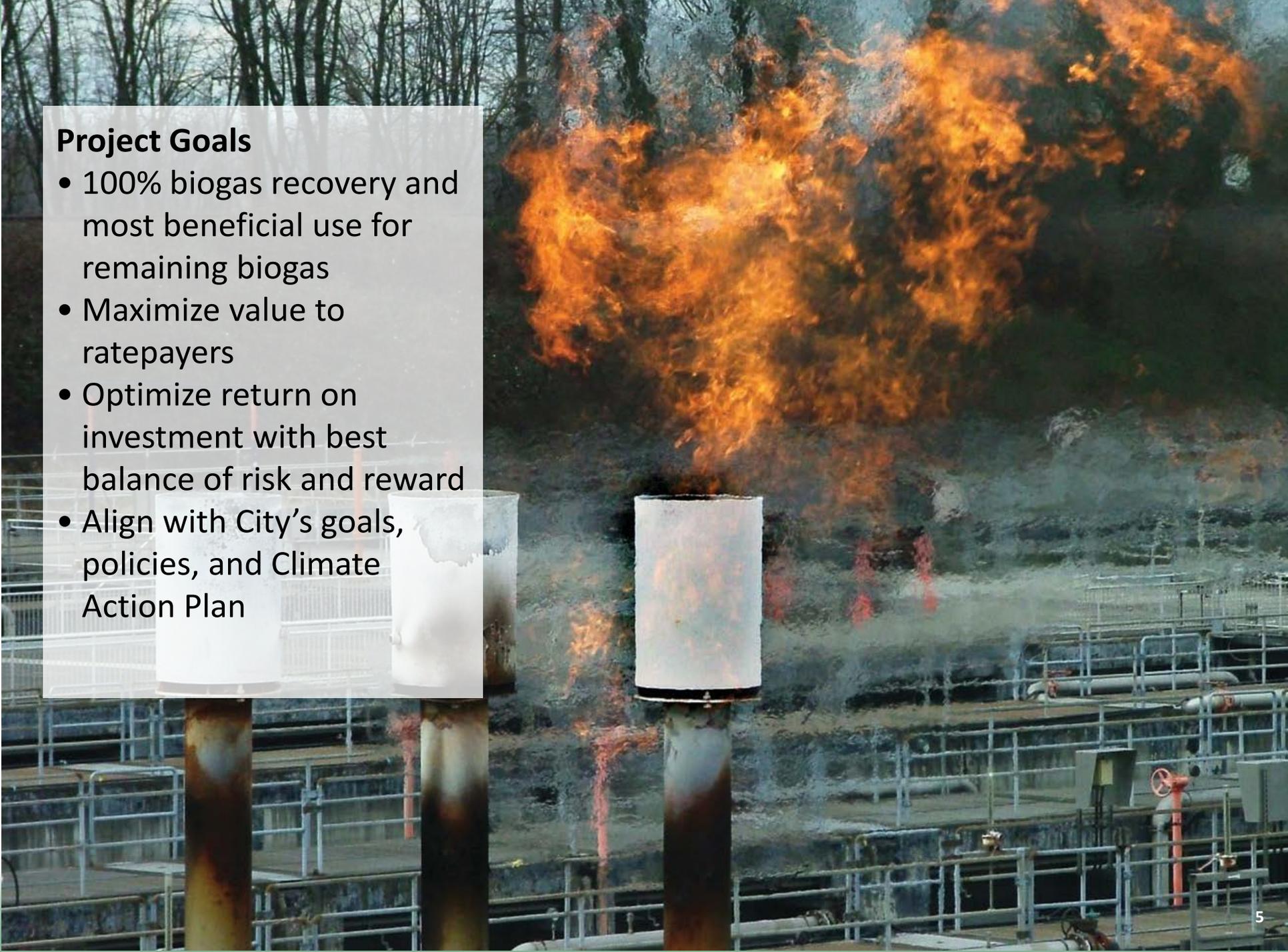


Cogeneration Engines



Project Goals

- 100% biogas recovery and most beneficial use for remaining biogas
- Maximize value to ratepayers
- Optimize return on investment with best balance of risk and reward
- Align with City's goals, policies, and Climate Action Plan



Alternative Evaluation (Using Triple-Bottom Line Approach)

ALTERNATIVE

1

Cogeneration
Expansion
without
Biogas
Storage

ALTERNATIVE

2

Cogeneration
Expansion
with
Biogas
Storage

ALTERNATIVE

3

Biogas
Treatment
for
Vehicle Use

ALTERNATIVE

4

Biogas
Treatment
for Sale to
Industry/
Pipeline
Injection

ALTERNATIVE

5

Biogas
Used in
Biosolids
Drying



Selected Alternative

Biogas treatment to produce Renewable Natural Gas (RNG) for vehicle use

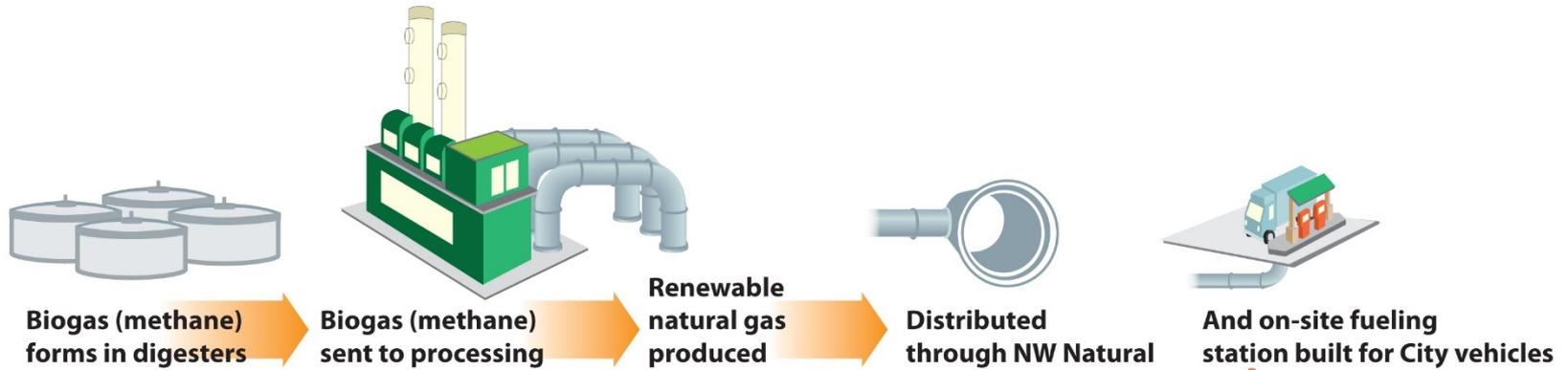
- Highest financial benefits
- Highest social and environmental benefits in displacing dirty diesel fuel



Source: Clean Energy



Pipeline Injection for Transporting RNG

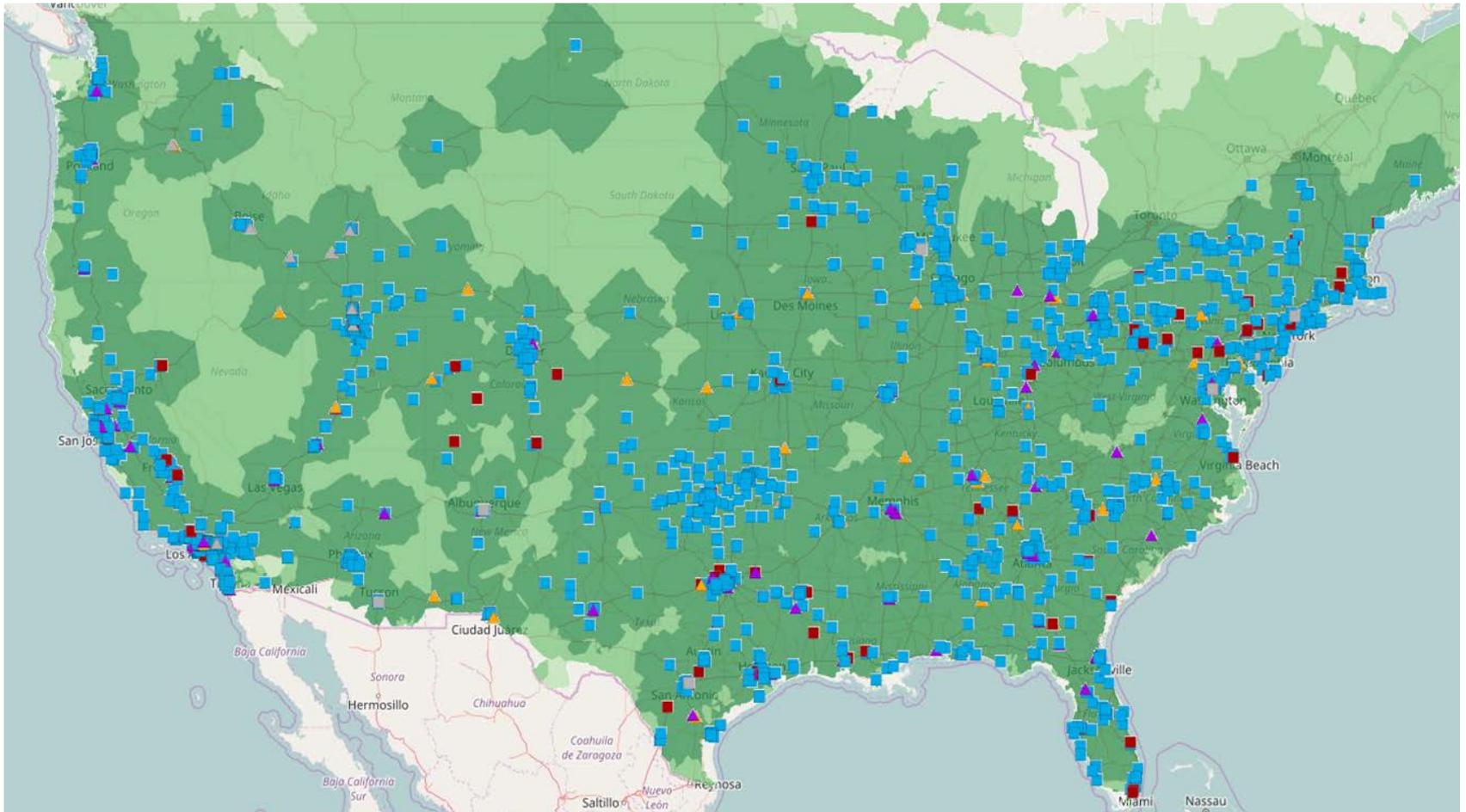


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FOR ILLUSTRATION ONLY.



Map of CNG Fueling Stations in the U.S.



Source: NGV America



RNG Production Technology



Source: Greenlane Biogas



NWN Monitoring (Interconnection) Facility

- To be located on-site for monitoring RNG quality before the pipeline injection
- NW Natural to design, build, operate and maintain during the term of the agreement, with the City of Portland to pay the costs



Source: Fortis BC (example)



On-Site Fueling Station

- Built in partnership with NW Natural
- Consists of compressor, storage tanks and fuel dispensers
- Use for City Fleet or contractor vehicles with operation on site



Why RNG?



City of Portland Environmental Services
Columbia Boulevard Wastewater Treatment Plant

100% Waste Methane Recovery

CUT

21,000 tons

OF CLIMATE-CHANGING EMISSIONS/YEAR

ADD

\$3 million

IN ANNUAL REVENUE

REPLACE ENOUGH DIESEL TO POWER

154 garbage trucks

FOR A YEAR

@BESPortland



Plan for Increasing Biogas-Food Waste



Food Waste Project Overview

- Metro Region is implementing policies to divert food scraps from landfills for beneficial use
- City of Portland contracting with Waste Management to process food scraps
- Offsets natural gas purchase costs and also generates a tipping fee
- Planned to be operational in early 2020



Thank you!

Questions?

