

working for clean rivers



Columbia Boulevard Wastewater Treatment Plant Renewable Natural Gas Facility Project

Council Agenda Items #370, 371, 372 | APRIL 19, 2017

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ENVIRONMENTAL SERVICES
CITY OF PORTLAND

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Biogas to Renewable Natural Gas Project Update



- What are biogas and RNG?
- Historical highlights of biogas use at CBWTP
- Project key elements
 - RNG production
 - Fueling station
 - Interconnection to NW Natural Distribution Network
- Financials and Schedule
- Benefits

What are Biogas and Renewable Natural Gas ?

- Biogas (60+% methane)
- Produced during the solids treatment process at the plant
- Tiny bacteria convert the solids from wastewater to methane gas, carbon dioxide, and trace compounds
- Biogas is converted to renewable methane or renewable natural gas (RNG)



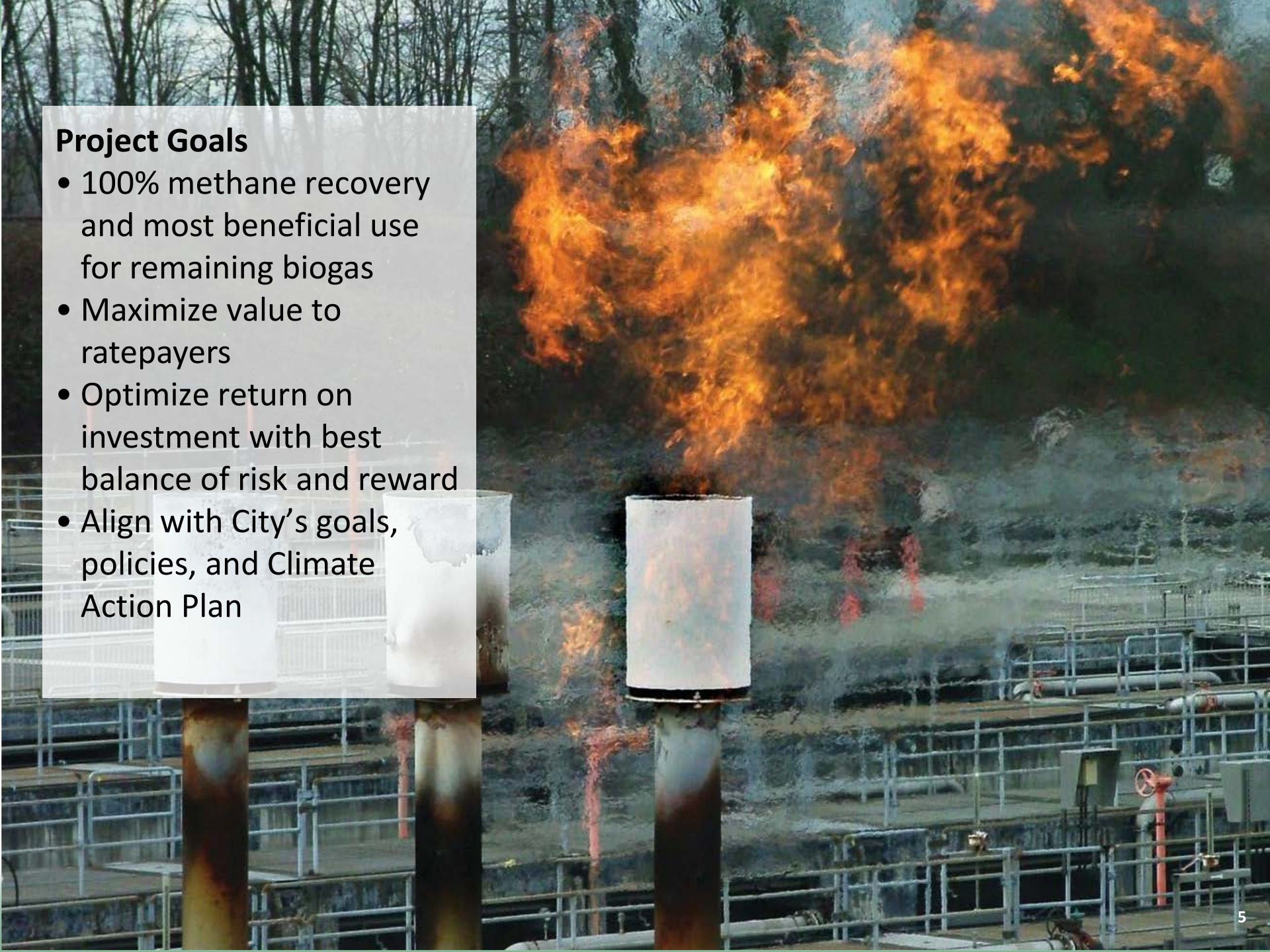
History of biogas use at CBWTP

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

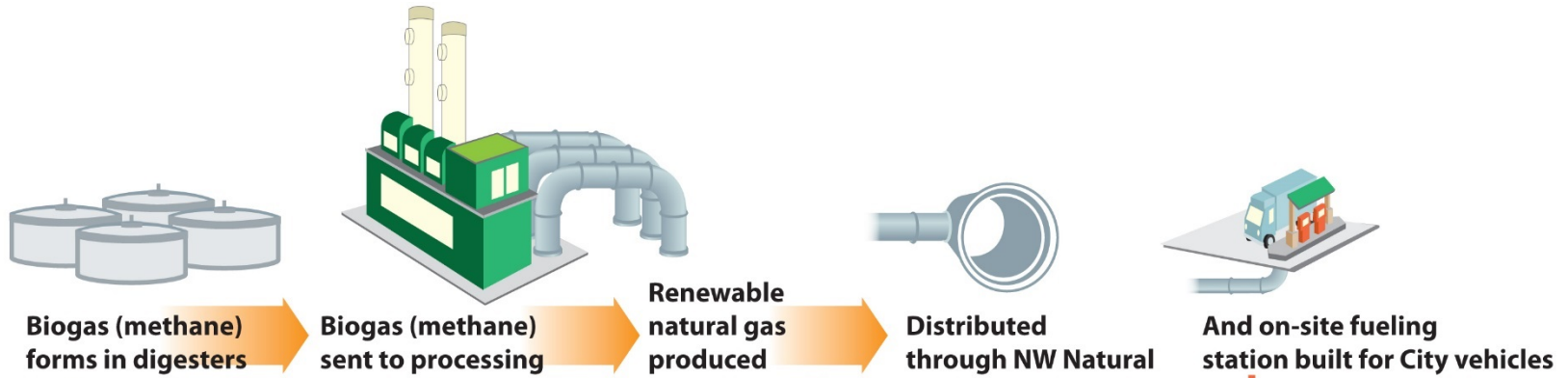


Project Goals

- 100% methane 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



Pipeline Injection for Transporting RNG

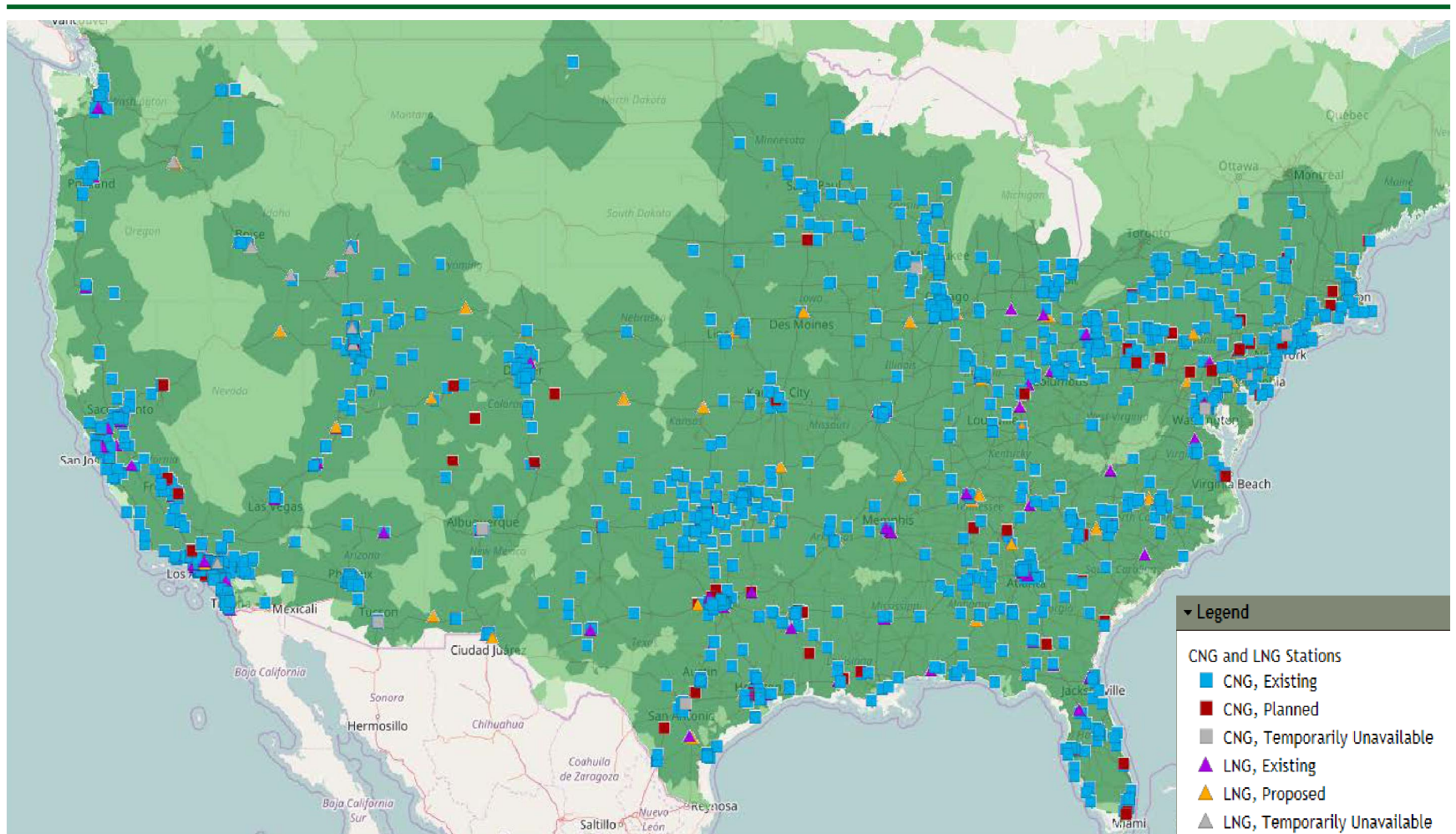


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FOR ILLUSTRATION ONLY.



Map of CNG Fueling Stations in the U.S.



Source: NGVAmerica





**Columbia Boulevard
Wastewater Treatment Plant
Campus**

Existing Northwest Natural Main

**Future
Northwest Natural
Receipt Facility**

**Northwest
Natural**

**Custody
Transfer**

**Environmental
Services**

**Future
Production
Facility
Renewable
Natural Gas**

Existing fuel station

**Future Fuel Station
Renewable Compressed
Natural Gas**

Biogas (Methane) to Renewable Natural Gas Facilities

COLUMBIA SLOUGH



RNG Production Technology - Item 370



Source: Greenlane Biogas



On-Site RCNG Fueling Station – Item 371

- Consists of compressor, storage tanks and fuel dispensers
- Use for City Fleet or contractor vehicles with operation on site
- Enter Schedule H agreement with NWN to design, build and maintain
- ODOE AVFI Tax credit available



Source: GE CNG-IN-A-BOX



NWN Monitoring Facility- Item 372

- Located on CBWTP site for monitoring RNG quality before the pipeline injection
- NW Natural to design, build, operate and maintain during the term of the agreement, with BES to pay the costs over time



Source: Fortis BC



Financials

Previous Approved Council Items \$1.29 M

Ordinances 370-372:

- RNG Facility Construction (370) \$9 M
- NWN Interconnection (372) \$1.05 M
- RCNG Fueling Station* (371) \$1.94 M
- Total Construction \$12 M
- Total Project Costs \$15.5 M

Projected Revenue:

\$3,000,000 to \$10,000,000 annually

ODOE AVFI Tax Credit: (\$300K estimate)

Projected Payback: 4 to 8 years



Schedule

RNG Production Facility

- Solicit Construction Bids May 2017
- Notice to Proceed (NTP) Sept 2017
- Complete Dec 2018

Fueling Station Complete Dec 2017

Interconnection Facility Complete Dec 2018



Thank you.



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

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