

Organics to Energy Program Clean Fuel Initiative for Tacoma

City of Tacoma

Environmental Services Department

**Study Session
December 5, 2017**



Agenda

- Issue
- Overview
- Business Plan
- Project Benefits



Issue

- Fossil based fuels are the leading contributor of carbon affecting our climate
- Diesel fuel prices are volatile and are predicted to rise
- Wastewater treatment produces methane which can be a cleaner burning fuel



Converting the flare gas alone would yield enough CNG to equal nearly 450 gallons of diesel per day.

Overview

From *Waste Management* to *Resource Management*

- Design and build a facility to convert Central Treatment Plant (CTP) biogas (methane) into Renewable Natural Gas (RNG).
- RNG can be used for vehicle fuel in the form of Compressed Natural Gas (CNG).
- Can replace fossil fuel in fleet vehicles with a renewable, cleaner fuel.



Converting CTP biogas to RNG would:

- Greenhouse Gas Emissions Reduction:



788

tons per year

- Carbon Reduction Equivalents



324,000 gallons of diesel not burned per year



215 acres planted



76 homes removed from the grid



151 trucks removed from the road

... and generate revenue

- Natural Gas Sales per BTU
- Low Carbon Fuel Standard (LCFS) Credits
- Renewable Identification Number (RIN) Credits

Revenue Elements of Biogas		
Item	MMBTU	DGE
BTU Value	\$ 3.57	\$ 0.46
Low Carbon Fuel Standard	\$ 2.18	\$ 0.28
Renewable Identification Number	\$ 23.45	\$ 3.01
Total	\$ 29.20	\$ 3.75

What is a RIN?

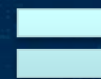
- “Renewable Identification Number”
- RINs are the “currency” of the EPA Renewable Fuel Standard program
- RINs are a tradable commodity; therefore the price fluctuates
- Goal is to increase use of renewable fuels in transportation over time
- RINs must be purchased by “Obligated Parties” like oil producers, refiners and importers

What is a RIN? (continued)

- Each RIN is tied to a specific amount of qualified renewable fuel used in transportation
- EPA sets renewable fuel volume requirements for each year
- Our proposal using Wastewater and Transportation related transactions take advantage of the “Cellulosic” RIN category (most valuable)

Business Plan

- Environmental Services Department (ESD) produces Renewable Natural Gas (RNG) using biogas from wastewater treatment
- ESD contracts with broker to sell RNG and RINs for use as Transportation Fuel
- ESD receives RNG commodity value plus 75% of RIN value



\$\$\$\$

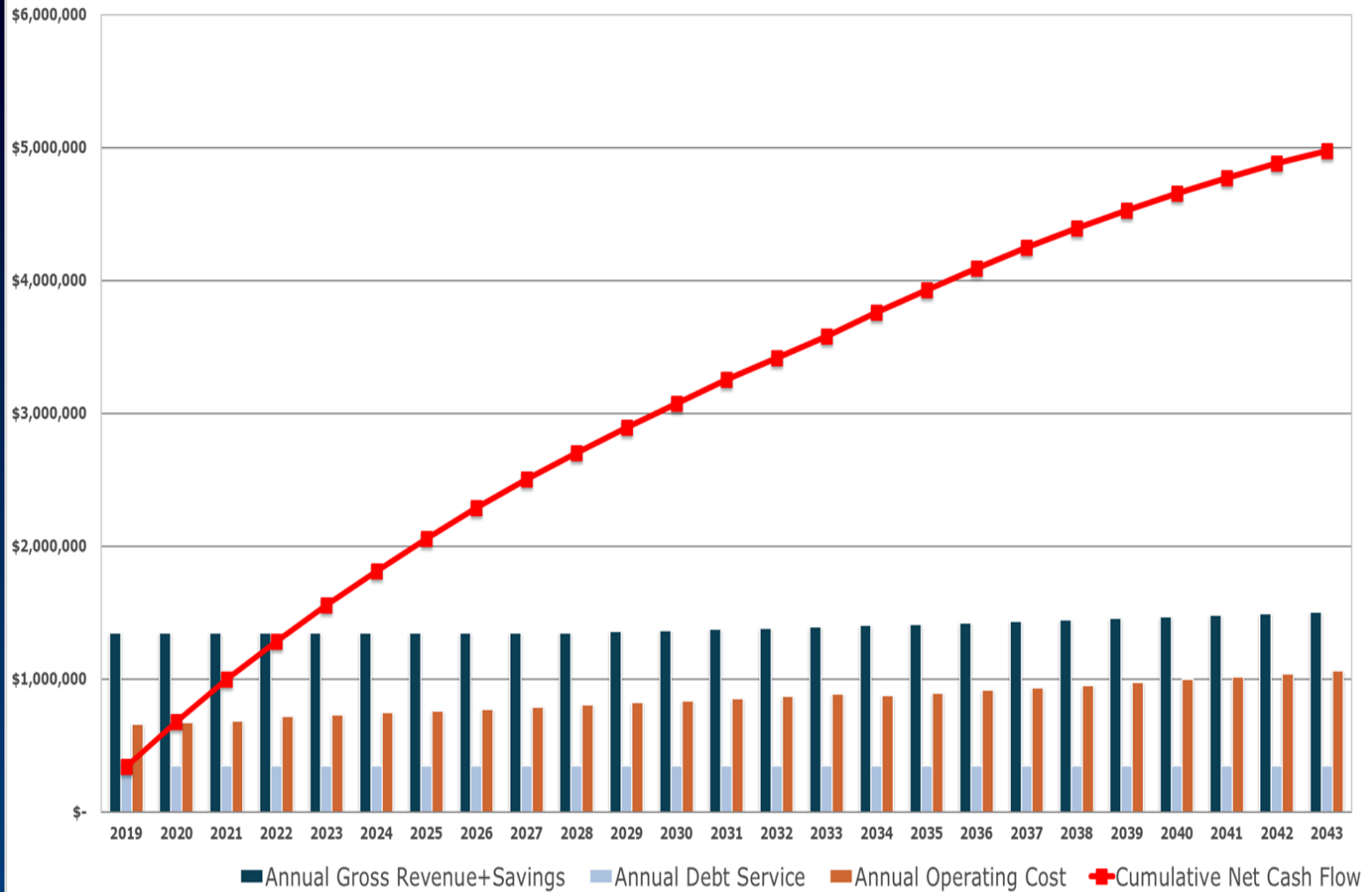
Project Financials

- Project Cost: \$7.96 M
 - Includes gas production facility, upgrade to digester mixers, connection to Puget Sound Energy pipeline for gas transportation, and lighting improvements.
- Grants and Rebates: \$450 K
- First Year Net Gas and RIN Revenue: \$730 K
- Positive cash flow through financing period (includes internal City costs)

Project Guarantees

- Proposed use of Energy Savings Performance Contract (ESPC). RCW 39.35A
 - Project cost will not exceed guaranteed maximum price
 - Guaranteed energy savings and energy generation
 - Guaranteed performance of systems as designed and installed

ANNUAL AND CUMULATIVE CASH FLOWS



Risks

The project financial returns are based on the current regulatory environment. These rule are subject to legislative and regulatory changes (potentially in 2022).

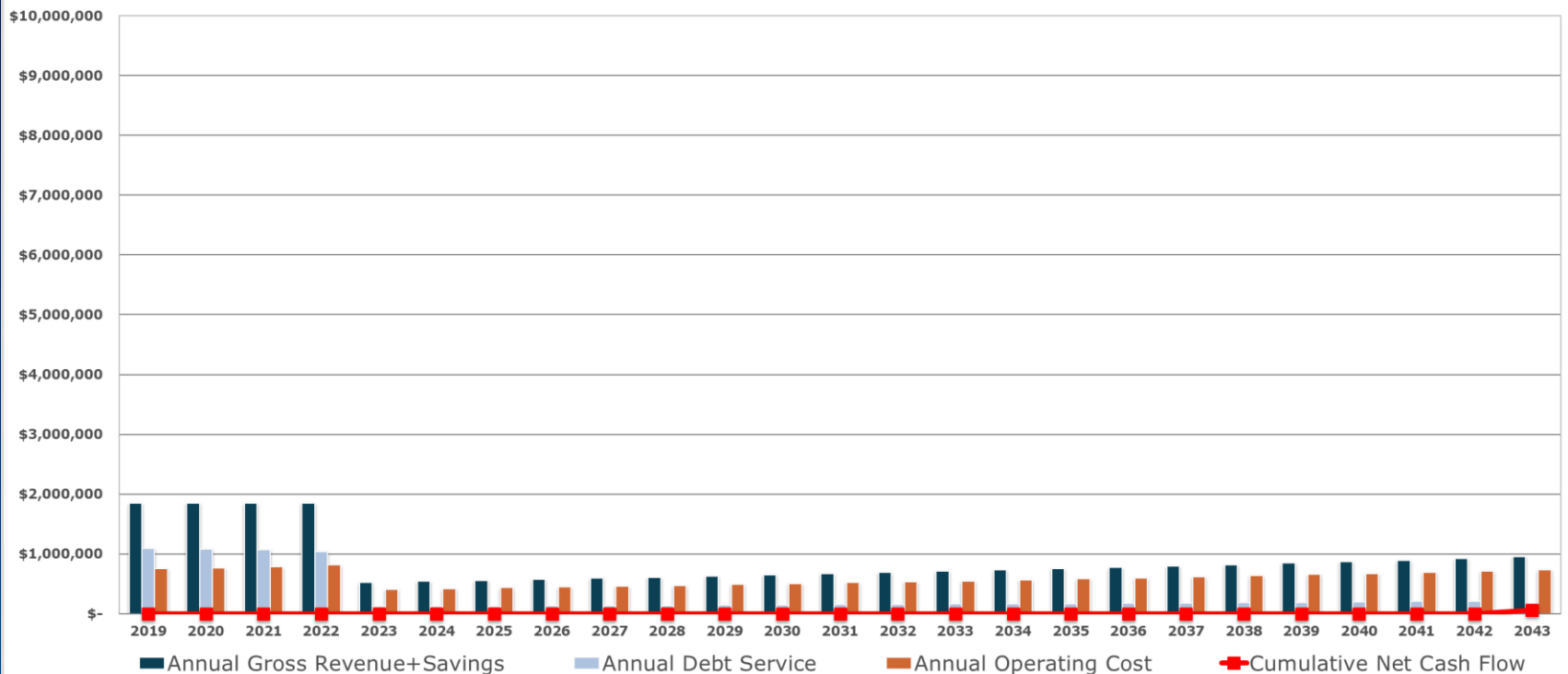


Flexibility to Adapt to Risks

- Equipment is geared to be modular and can turn-up or down based on demand
- PSE pipeline allows for scale of gas production
- Putting the gas into PSE pipeline allows transportation of gas nearly anywhere in the U.S.
- Even if RIN values go to zero, the project supports itself through sale of gas. The system can scale back to meet appropriate demand

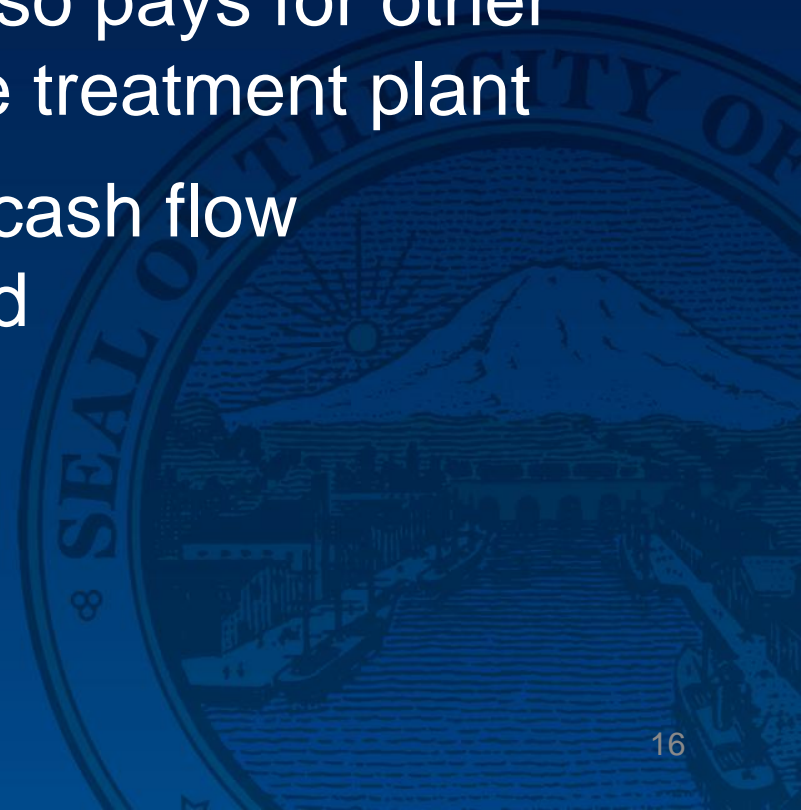
Break-even Financing Cash Flow

ANNUAL AND CUMULATIVE CASH FLOWS - ALTERNATE SCENARIO



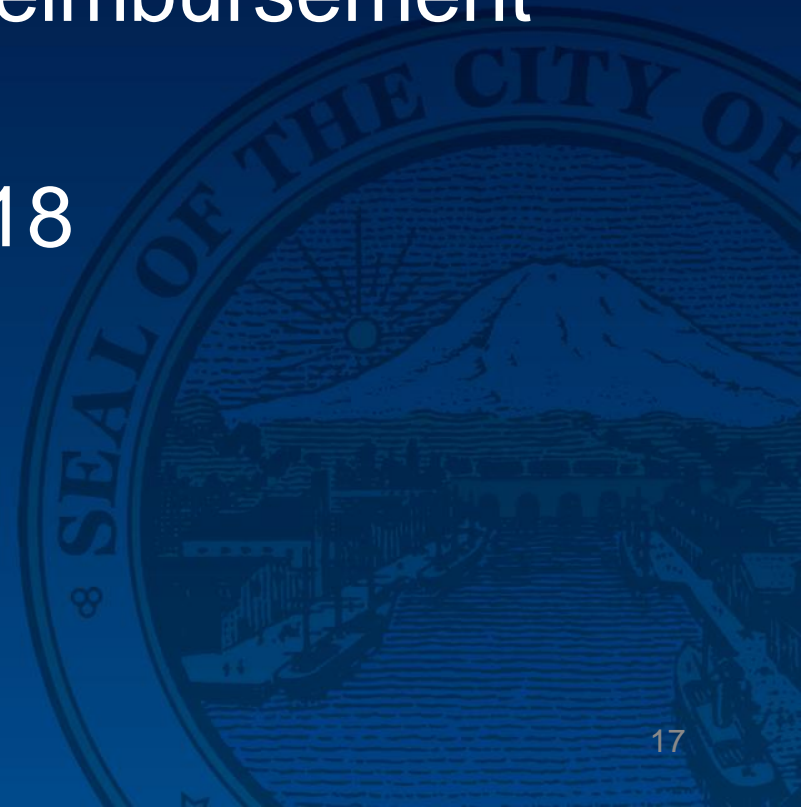
Additional Benefits

- 80% reduction in biogas (methane) flaring
- Removes 788 tons of carbon per year (151 trucks)
- Project pays for itself, and also pays for other energy saving projects at the treatment plant
- Project maintains a positive cash flow throughout the finance period

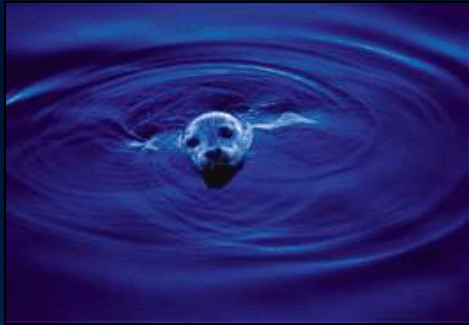


What's next?

- Agreements with project partners (McKinstry, Puget Sound Energy, and IGI)
- Bring agreements and Reimbursement Resolution to Council
- Begin construction in 2018



Questions?



James Parvey

jparvey@cityoftacoma.org

