



Michael Heimbach, Sustainability Manager  
Public Works Department

Eric Neihaus, Engineer IV  
GRU

**Renewable Energy Study**  
**Reusable Fuels**

January 12, 2021  
Item #810811

# Informational Purposes Only

These slides contain information on waste streams and their possible potential as a fuel source. The ability of GRU to use waste streams as a fuel source in any existing or future electrical generation unit would require in-depth environmental, technological, and financial study. GRU does not have funds budgeted for electrical generation based on waste streams. These slides are for informational purposes only and are not indicative of any plans for electrical generation.

# Sustainability Goals



**Zero Waste by 2040**  
**90% of Total**



**Net Zero Emissions**  
**by 2045**

# Strategic Plan

## Goal 2: Sustainable Community

*"Building bright futures for all"*

### Objectives

1. Increase the acreage of natural/conservation lands
2. **Increase the City's use of renewable resources with the goal of 100% by 2045 or sooner**
3. Have more neighborhoods on city sewer system, fewer number of failing septic systems
4. **Enhance well-designed water, wastewater and *electric systems* operating in an environmentally responsible manner**
5. **Pursue zero waste goal**
6. **Reduce the city organization's carbon footprint by 25% to achieve the climate change goal**



# Strategic Plan (Continued)

- Zero Waste Plan **Phase 3** "Consider the Use of Waste-to-Energy to Address Difficult to Recover Materials and Waste Streams"
- City Commission **Action Agenda 2021-2022**  
Management in Progress, Waste-to-Energy Study and Funding



# Assumptions



- There Will Always Be Hard to Recycle Waste Streams
- Landfills Create Significant Amounts of GHG
- Markets for Recyclables Fluctuate
- GHG Emissions to Ship Recyclables Long Distances May Be Greater than Creating a Local Fuel
- Recovered Fuels Have Been Dependably Used at Other Power Plants as a Renewable Fuel Source\*

\*GRU's ability to potentially use recovered fuel in future or existing generation units will need further study

# Traditional Waste to Energy

Solid Waste Facilities

## Mass Burn

Garbage is mixed to burn and create energy in a Waste-to-Energy facility



## Refuse Derived Fuel (RDF)

Recyclables (metals) and larger items removed from waste stream to create a homogeneous fuel in a Waste-to-Energy facility



# Energy Facility Focused Fuel



## Solid Recovered Fuel (SRF)

- Creates Fuels with ~75% of Energy Content of Coal
- Non-Hazardous Secondary Material - "non-waste fuel" -EPA
- Considered a renewable fuel by the State of Florida
- Not Considered a form of Incineration-EPA
- Removes metals, some plastics, etc.
- Could Potentially Provide GRU with a Renewable Fuel for Future or Existing Generation Units (Though This Will Require Further Study)
- Other Markets Exist Locally (e.g. Cement Manufacturers)



# Dual Stream Recycling Processing Opportunities

- Systems are Capable of Separately Handling Dual Stream Recycling
- Zero Waste Plan Strategy: Conduct Operational Analysis of Current Material Recovery Facilities (MRF) to Ensure High Performance Rates that Support Zero Waste



# Financial Considerations

## Seed Capital

Public / Public Private / Private

## Business Model Revenues

- Tipping Fees
- Metal recycling
- Biogas from Food Waste
- Sale of Electricity

## Commitment

Long-term Commitment Necessary for Investment

- Waste Stream with a minimum tonnage (put or pay)
- Energy Purchases: minimum rate and amount

\*GRU's ability to potentially use recovered fuel in future or existing generation units would need further study

# Renewable Energy and Recycling

- Current facilities remove approximately 30% of waste stream as recyclables
- Food waste diversion is possible. Separately or with sludge.
- If all of Alachua County's waste (180,000 tons per year) could be processed into recoverable fuel, it could displace ~8% of fossil fuels (though this would likely require a new generation unit dedicated to this fuel)\*

\*GRU's ability to potentially use recovered fuel in future or existing generation units would need further study

## Consultant Report

- Analysis looked at processing regional MSW
- Results: Volume Available, Break- Even Tipping Fee Too Low



\*GRU's ability to potentially use recovered fuel in future or existing generation units would need further study

## Next Actions

- In-Depth Look at Financial Projections
- Detailed Survey of SRF Facilities
- Determine Minimum Level of Waste for a Facility
- Understand Regulatory Requirements

# Thank You.