Ridgewood New Jersey an Energy Positive - Cash Positive
Wastewater Treatment Plant
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Village of Ridgewood WWTP

- 5 MGD design
- 2.2 MGD
- Conventional Activated Sludge
- Nitrification
- Sludge thickened and sent to Digestion
Village of Ridgewood AD-Codigestion

- Co-thickening
- Primary and Secondary Digesters
- Mesophilic
Village of Ridgewood FOG receiving

- Started Operation in February 2013
- 10,000 gallons
- Screening
- Heated
- Mixed
Village of Ridgewood Gen Set

- 240 kW
- CHP to heat digesters
- No ORC
Village of Ridgewood Gas Storage

- Double Membrane
- OK
Ridgewood Green Responsible Management Entity (RGRME) is providing the following on a turnkey basis:

- Host utility risk mitigation
- Increase in methane produced and therefore heat and power production
- Alternative energy sources to achieve Positive Net Energy
- Reduce cost of energy for operations
- Increase revenues to the Village
Village of Ridgewood Biogas Production

![Graph](image-url)
Ridgewood WWTP Energy Balance No-CHP

- Gas Flaring
- No Renewable Energy
- Higher Energy Costs
- Subject to Energy Price Risk
- Less Resilient
Ridgewood WWTP Energy Balance CHP

- Increased Sustainability
- About 30% External Power offset
- Some Reduction in Energy Costs
- Reduction in Energy Price Risk
- Enhanced Resiliency
AD Monitoring and Control

- Control for Power tracking
- Control for Power export
- On-Line Monitoring Biogas, pH, Alkalinity, VFA
- Interactive Decision Support Tool for Feed Scheduling
Beyond SCADA – Monitoring and Automatic Control
Achieving Energy Neutrality

100% of Plant Electric Demand Offset by CHP

Aeration Control Started

Gas Consumed by Engine

FOG feed

Plant Energy Demand

Utility Energy Use

Generated Energy

1/3/2014 00:00 1/7/2014 00:00 1/11/2014 00:00 1/15/2014 00:00 1/19/2014 00:00 1/23/2014 00:00 1/27/2014 00:00 1/31/2014 00:00

Generated Energy

Utility Energy Use

Power Supplied by Utility

Plant Power Usage

Power Supplied by CHP

BIOGAS FLOWRATE AND FOG ADDITION FOR JANUARY 2014
Energy Positive Operation

- Minimize Operations Disturbance - Maximize Power Production
Ridgewood WWTP Energy Balance Codigestion

- Increased Sustainability
- 100% External Power Offset
- Lower Energy Costs
- Reduction in Energy Price Risk
- Enhanced Resiliency
Conclusions

• Successful PPP.
  – Increased Revenues,
  – Reduced Energy Costs,
  – Locked price of energy
  – Increased Resiliency
  – Increased Sustainability

• Self-Generated Power not enough for Energy Neutrality

• Codigestion Successfully Achieved Energy Positive Operation
CONTACT INFORMATION

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