



Net Zero for Free: How one utility did it

County Sanitary Engineers Association of Ohio

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Columbus, OH

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Frederick Winchester Service Authority Plant Overview

- 2010 - \$50M upgrade to ENR to meet Chesapeake Bay requirements
- 12.6 MGD design, 8.0 MGD average, 16.0 MGD peak
- Permitted for monthly averages of 7.1 mg/l BOD; 10 mg/l TSS, 3.0 mg/l Ammonia, 0.197 mg/l total phosphorus annual average



Design Loads

Parameter	Influent (mg/l / lbs/d)
TSS	158 / 16,603
CBOD	169 / 17,759
TKN	25.7 / 2,704
Ammonia	14 / 1,473
Total P	4.6 / 484

Frederick-Winchester Service Authority



Needs

- Lime stabilized sludge
- Frame Press dewatering
- Centrifugal blowers, oversized
- No DO control on aeration
- HVAC issues in main building
- Escalating costs for chemicals & electricity



Goals of the Project

1. Accomplish Critical Facility Renewal Needs
2. Leverage Treatment Plant as Economic Development Tool
3. Generate New Stream of Revenue to Utility
4. Improve Sustainability and Resiliency of Plant

Direction?

- Option A
 - Rehab only
- Option B
 - Green energy facility
 - Anaerobic digestion w/HSW co-digestion
 - Power generation

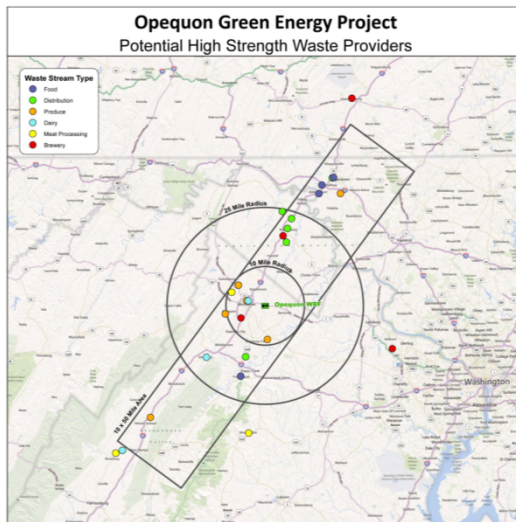
Economics

- \$44.8M Project Cost
- \$3M annual debt service payment
- \$500k energy savings
- \$600k chemical savings
- \$230k landfill savings
- \$1,200k budgeted capital
- \$3M annual payment

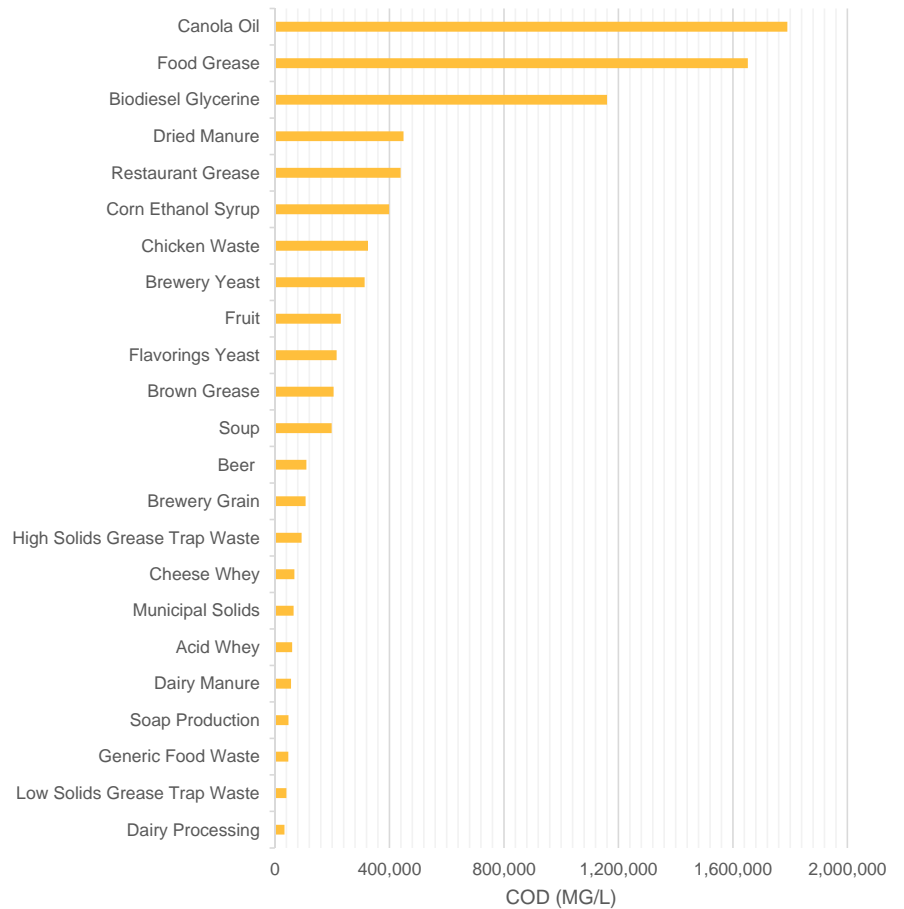
Conclusion: \$470k in new revenue needed annually

Market Study for Hauled Waste

- What is good vs. bad
- How do you secure long term?
- What do hauler's want?



High Strength Waste



2014



2017





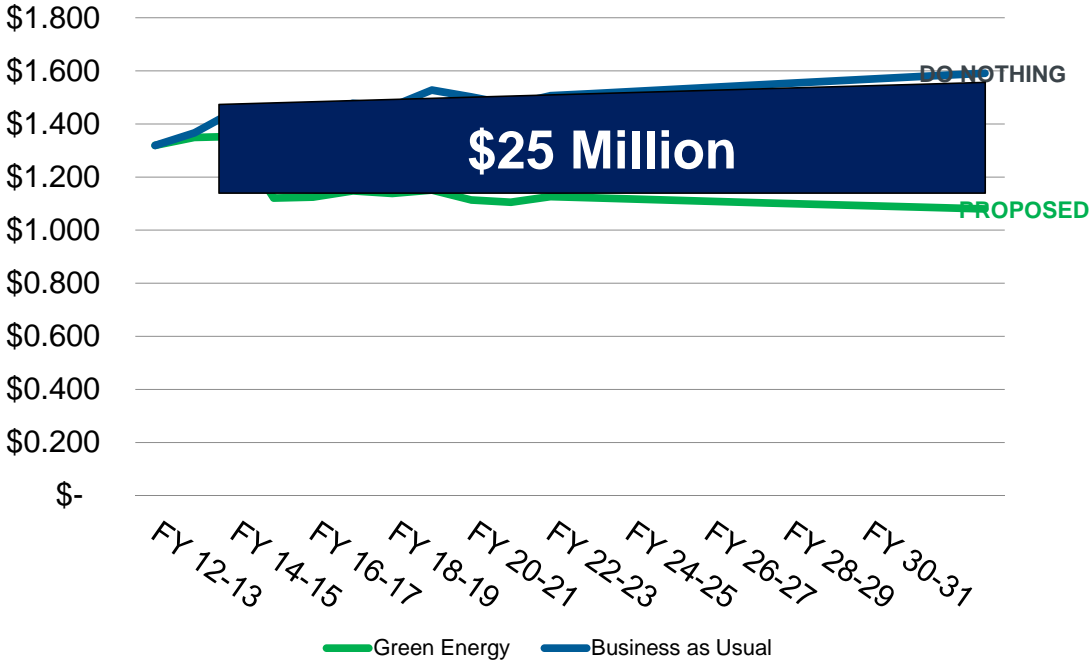








FWSA – Impact on Rates





Challenges and Results



Linear Motion Mixing Issues



Grinder Woes





Gas Holder: major leak

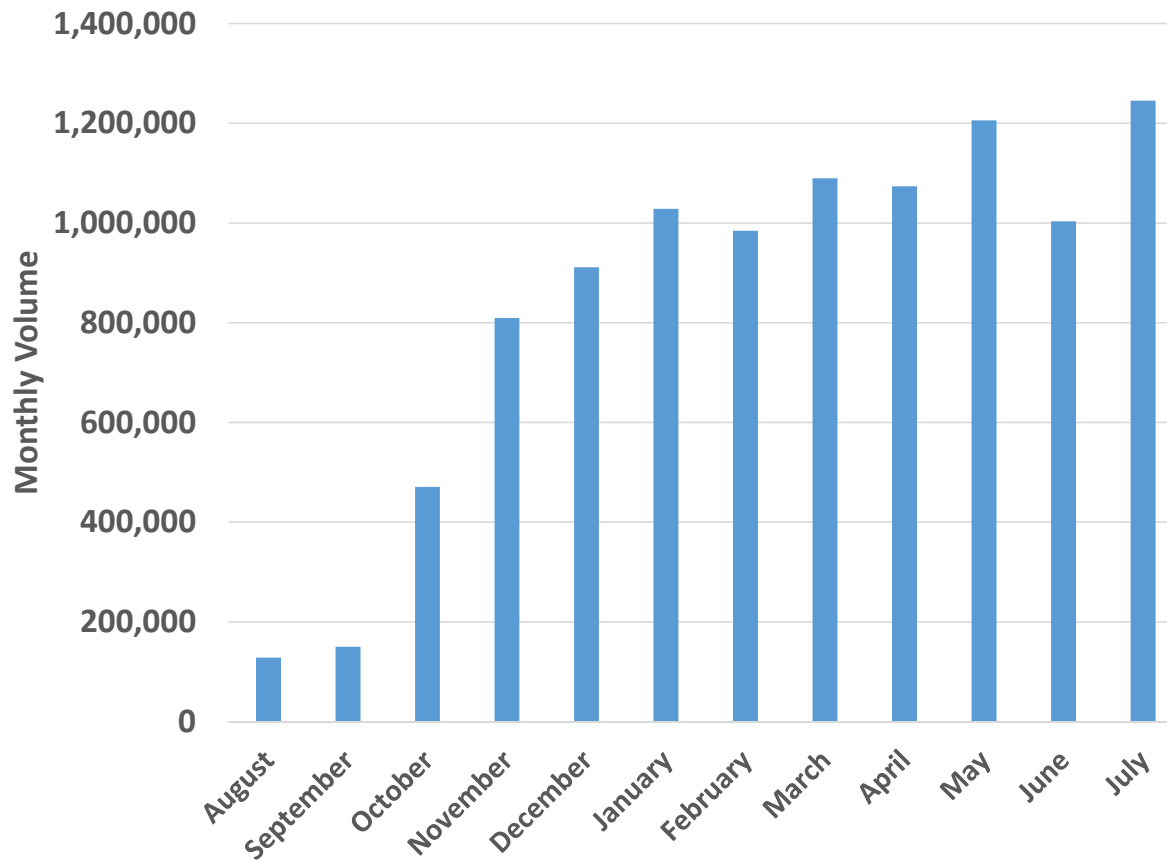




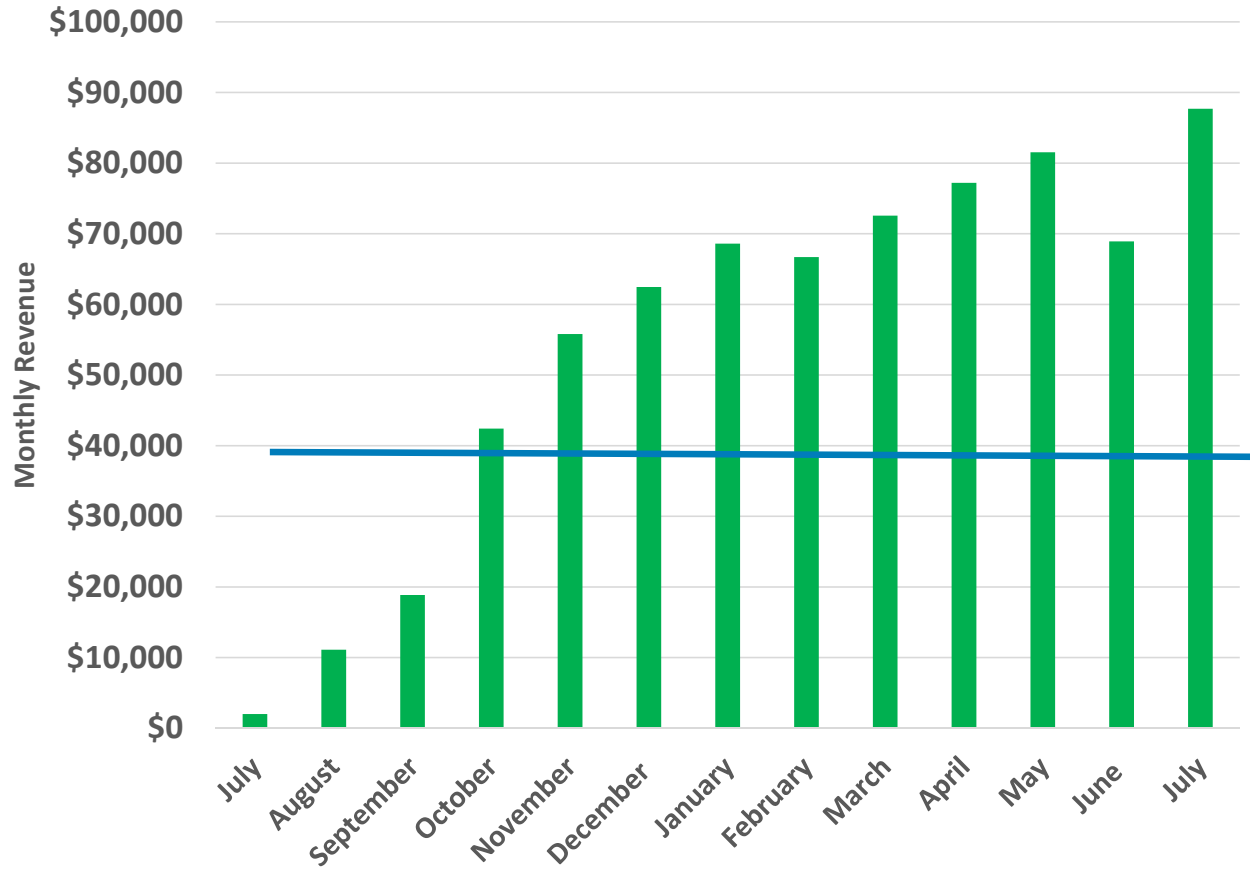


Results (So Far)

Organics - Monthly Deliveries to FWSA



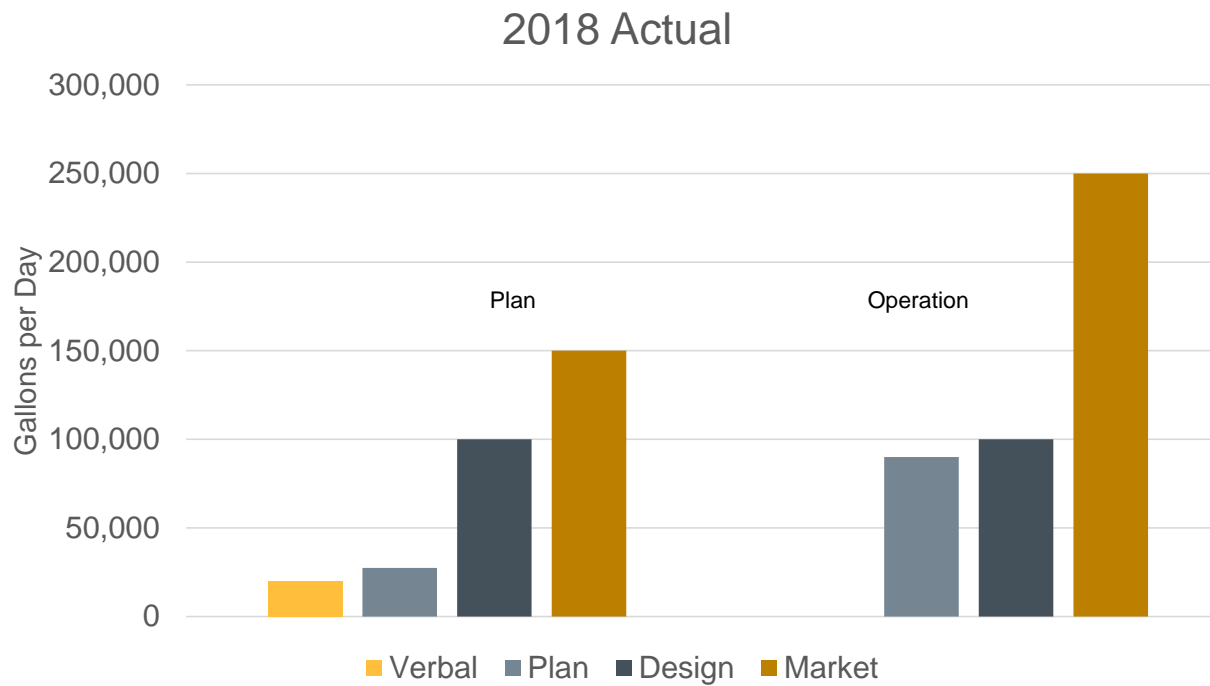
Organics - Monthly Revenue to FWSA



Organics and Contracts

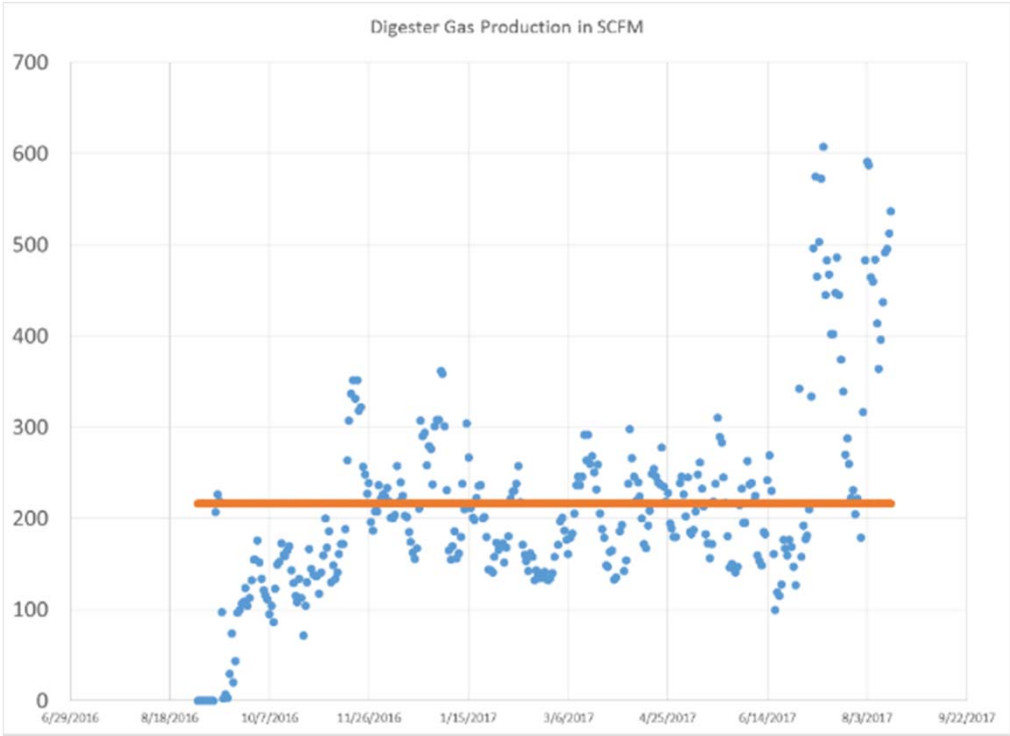
- Grease Trap Waste: 5 contracts
- BioFuels: 2 contracts
- Dairy Waste: 3 contracts
- Poultry: 1 contract (3 pending)

Actual Results (2018)



Conclusion: They believe when they see it.

Biogas Production



Lessons Learned So Far

- Plan Early for the Variables of the Market.
- Don't ask for Certainty, You can't have it.
- The Organics Matters, Not the Provider.
- What Matters More – the Organics or the Truck carrying it?
- The Limiting Factor – Organics In or Biosolids Out?
- This Business is Not for Everybody.



Thank You

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