

CO-DIGESTION OF COMMERCIAL FOG & FOOD WASTE AT A MUNICIPAL WWTP

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Des Moines WRF

- Serve a population of ~500,000
- Treat 60 MGD
- Generate ~40% of our own electricity



FOG Program

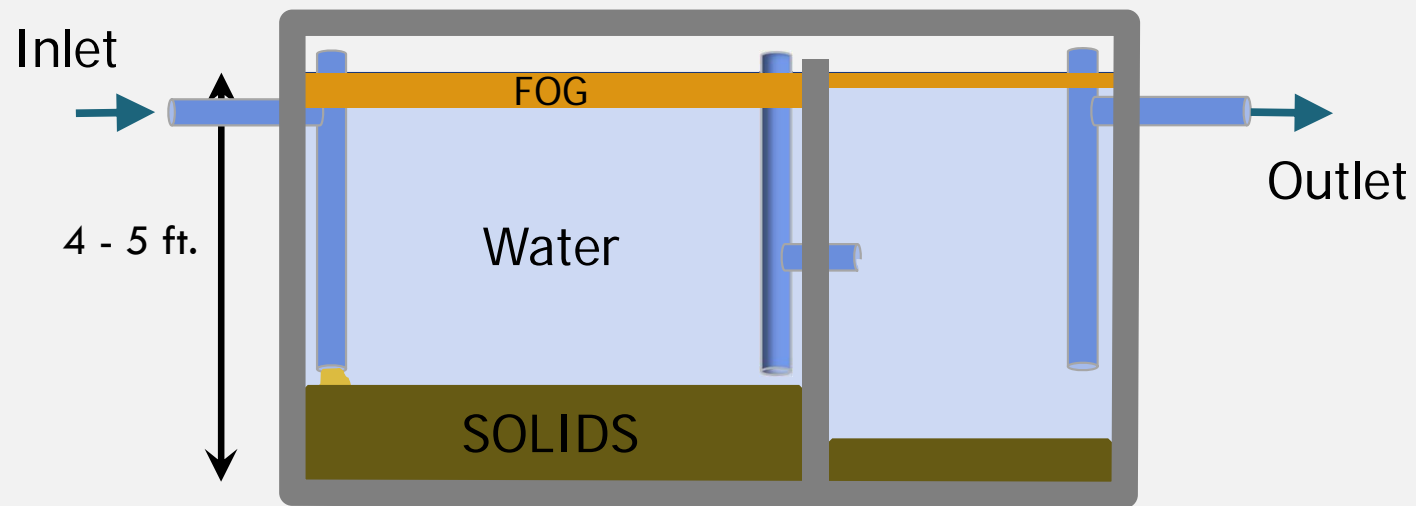


- WRA established FOG program in 2006
- 2000 FSEs in Des Moines Metro Area
- 800 grease interceptors
 - 1.2 million gallons of pretreatment capacity
 - Quarterly clean out estimate (25% rule):
 - 300,000+ gal of **FOG** & **food solids**
- 700 grease traps

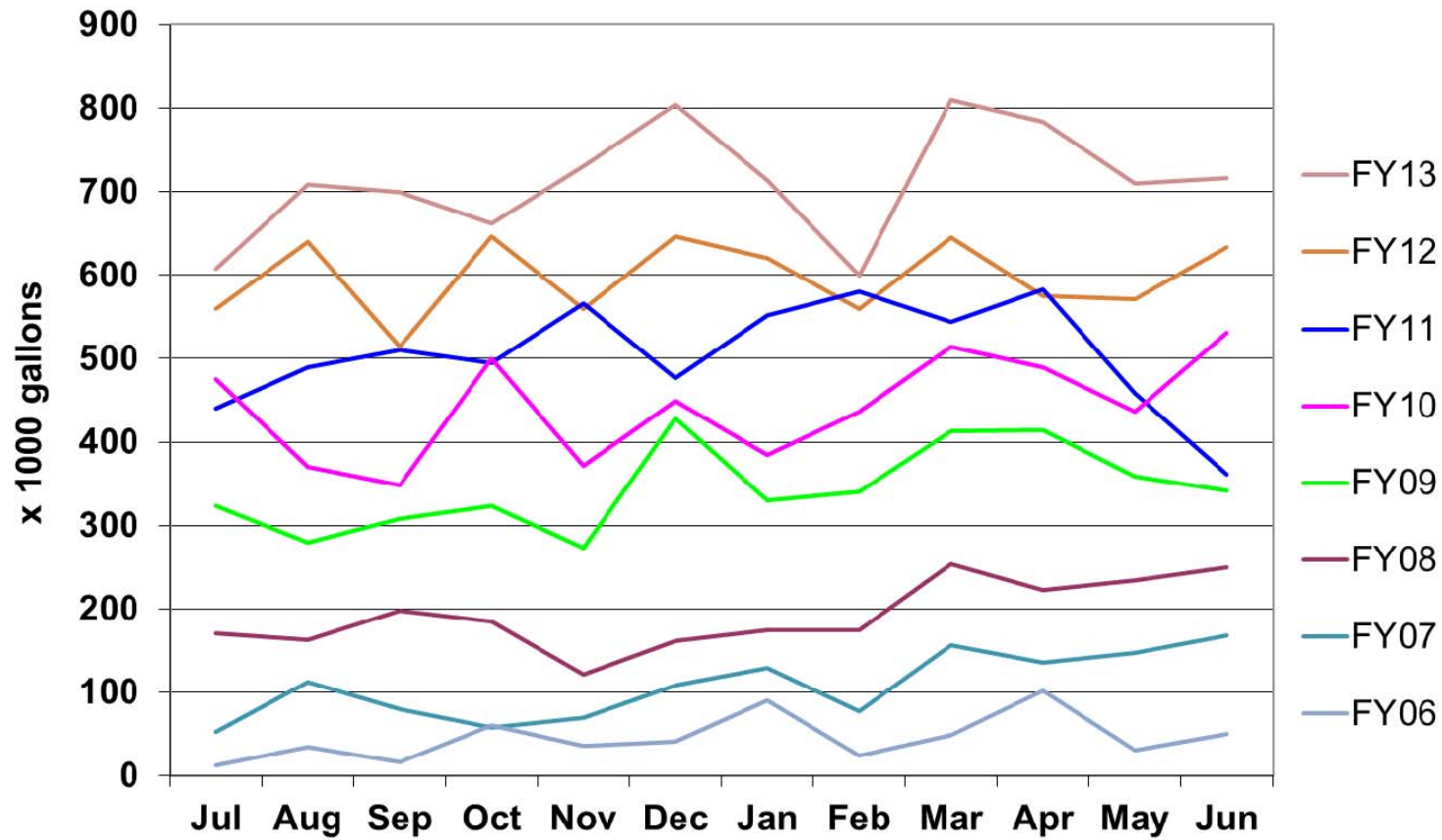


Mainly food
solids (75%)

Functioning Grease Interceptor

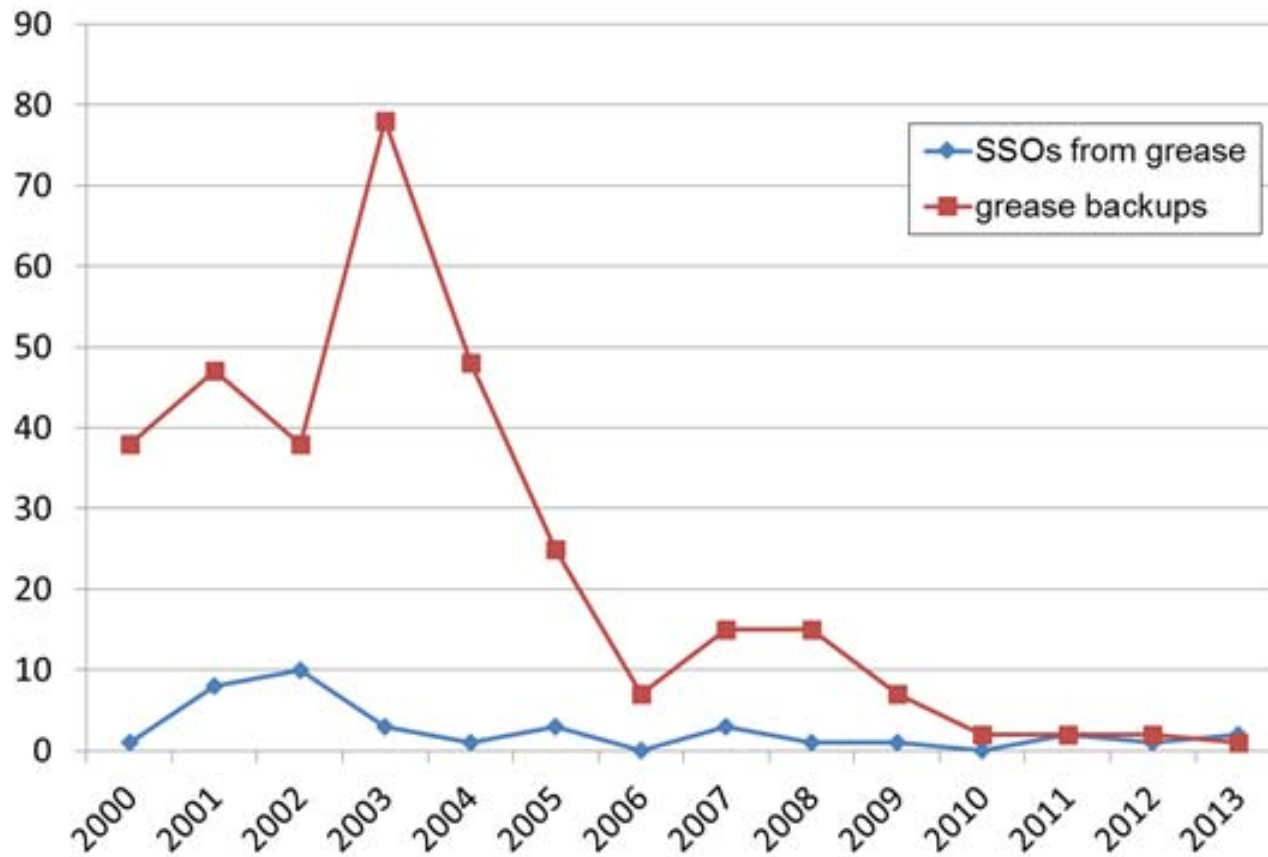


Grease Trap / Interceptor Waste Hauled to WRF*



* FOG, food solids,
& grey water combined

Number of Backups and Sanitary Sewer Overflows Caused by Grease



Out of the sewers



Into our digesters

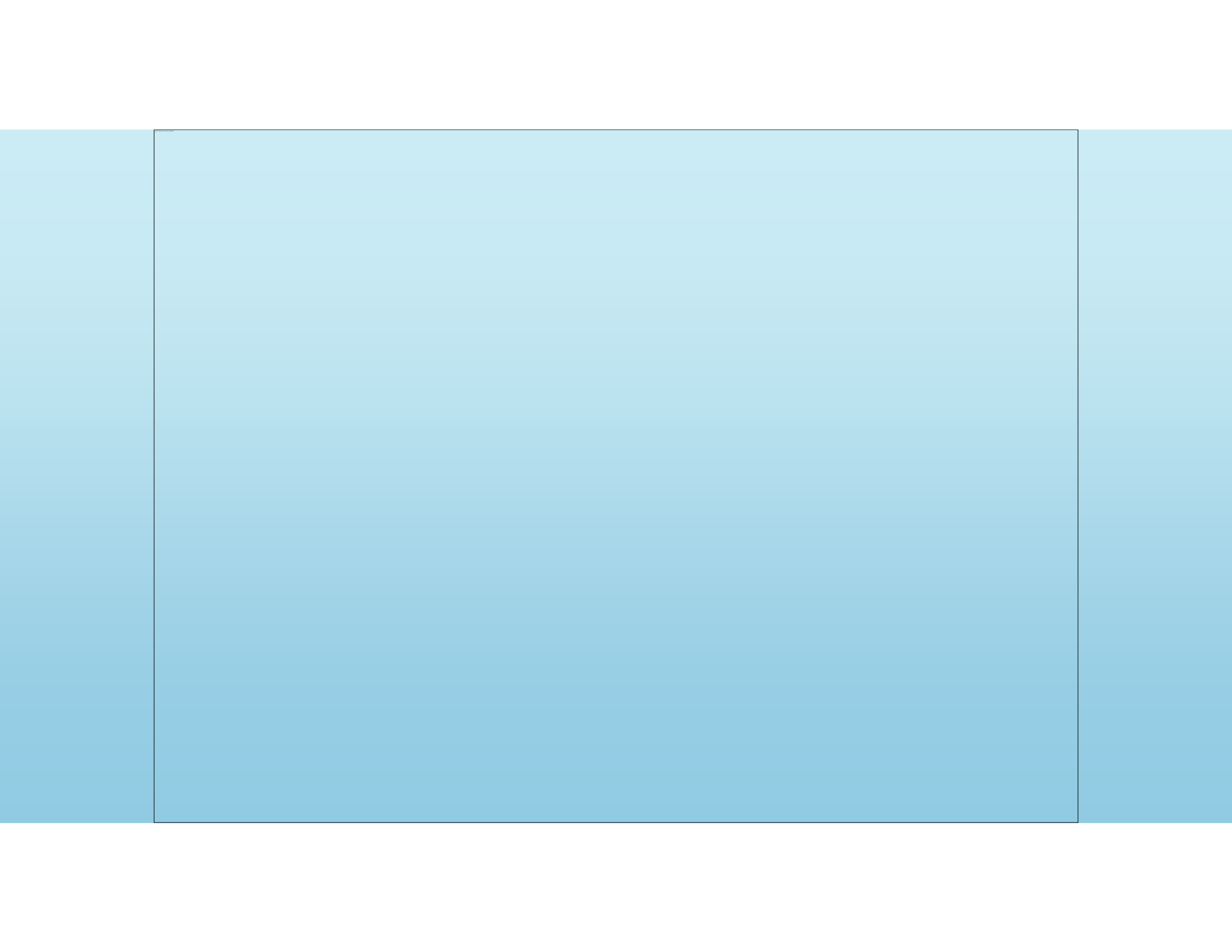
Benefits of FOG Program

- Keeps FOG out of collection system
- Better for public & environmental health
 - Fewer sewer blockages, backups, & SSOs
 - Less time and \$ spent on dealing with blockages
- Increased biogas production (via hauled waste)
- Uniform feedstock material
 - Heterogeneous chemical mixture; no single-type food wastes to cause upsets
- Generates revenue from hauled waste tipping fees
- Significantly reduced FOG disposal rates at digesters (benefit to waste generator)
 - Reduced rates subsidize the cost of trap / interceptor cleanouts











Turn Opportunity into Renewable Energy!

- Over 30 million tons of food waste sent to landfills annually
 - 18% of municipal waste
 - Difficult to timely capture methane at landfills
 - 2nd largest anthropogenic source of methane in the U.S.
- Food waste has 3x more methane potential than biosolids
 - **120 m³ gas/ton** (biosolids) vs. **376 m³ gas/ton** (food waste)
- EPA: If 50% of food waste was anaerobically digested, enough electricity could be generated to power over 2.5 million homes each year
- Des Moines WRF generates enough electricity to power over 1200 homes annually
 - 13,600,000 kWh generated in 2013

Issues We Deal With

- Waste Haulers
 - Training
 - Licensing
 - Management (scaling / transaction errors, etc.)
- Trash in interceptors
 - Likely bigger problem for food waste collection programs
- Pumpable / flowable waste
 - Foods scraps must be ground up
 - < 1/2 inch diameter
- Infrastructure maintenance
 - Scales, hauled waste tank, inorganic solids



(Example)



Trash in private yellow grease collection bin



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Questions?

Des Moines Metro WRF

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