

# CH4 Energy Cayuga Regional Digester

Wayne Bishop  
CH4 Energy  
May 17, 2016

# The Company CH4 Energy

- CH4 Energy was established in 2007
- 100% owned by Wayne Bishop – President
- Devoted the past 8-years developing anaerobic digestion technology, both HSAD and LSAD
- Over 25-years developing energy projects, oil and gas, conventional power and renewable energy



# Cayuga Regional Digester

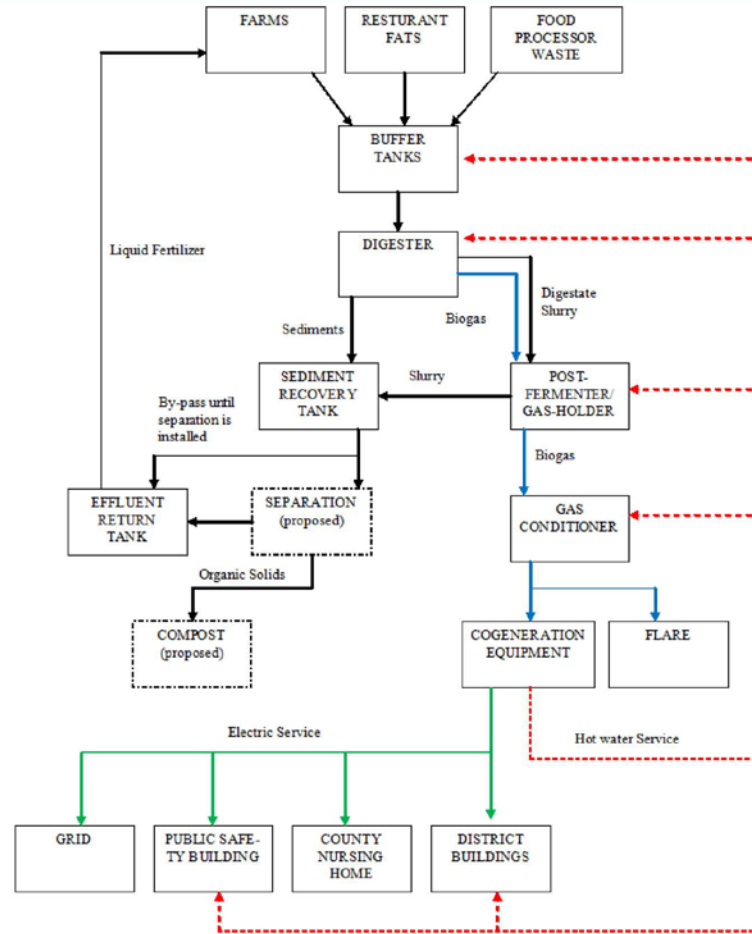
- Cayuga NY
- Low Solids Anaerobic Digestion Technology
- 45,000 TPY
- Manure and Food Waste Feedstock's
- 630kW Genset
- Micro Grid
- Remote Net Meter
- Digestate Management





# Process Flow Diagram

Cayuga County Regional Digester



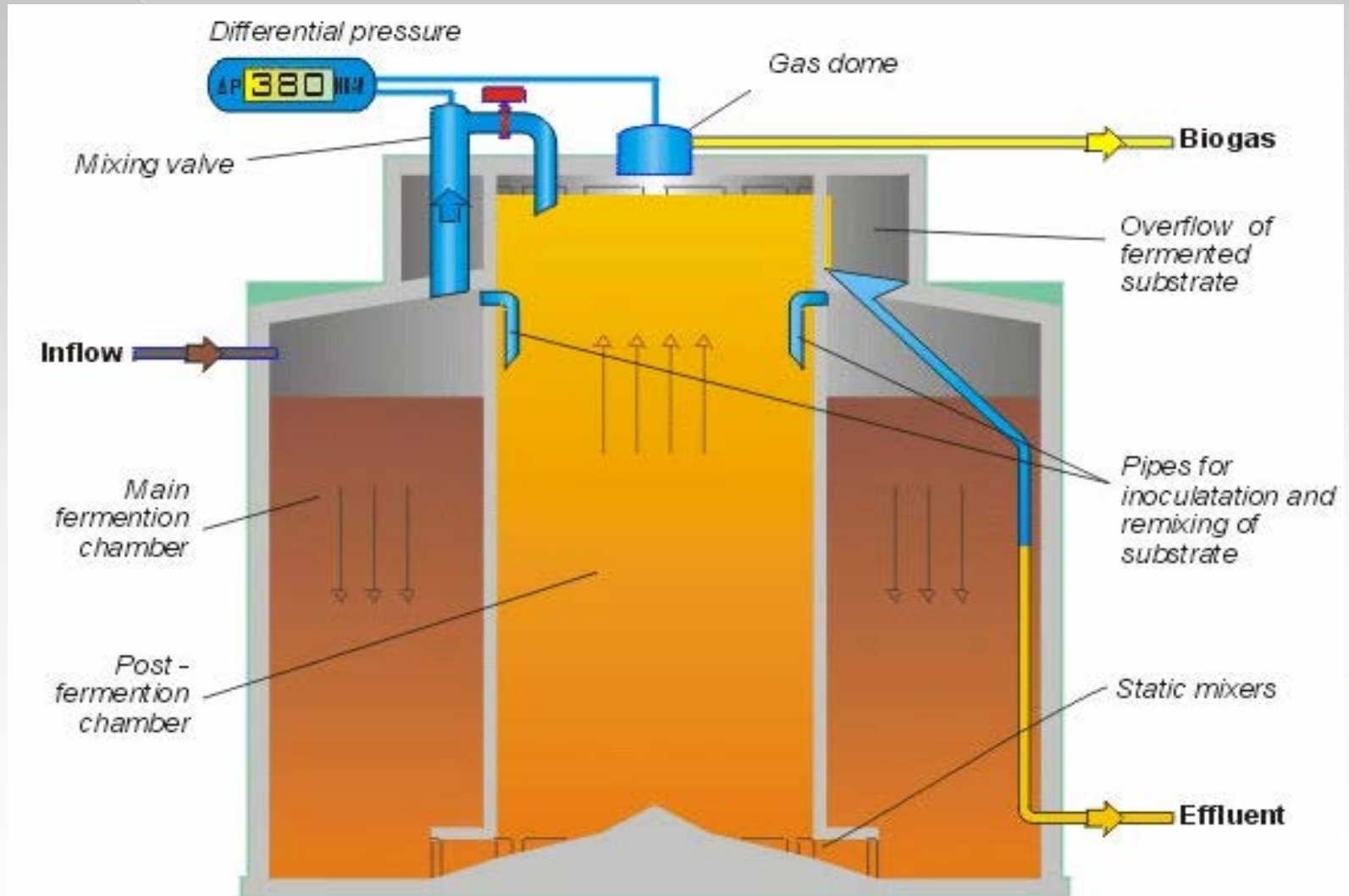
# Cayuga Digester Feedstocks

- Manure →
  - > 35,000 gallons/Day
- Food Waste →
  - > 8,500 gallons/Day
- Brown Grease →
  - > 1,200 gallons/Day
- 2-Dairies
  - approximately 2,500 lactating cows
- Pre-consumer food waste – fruit
- Local Restaurants

# Receiving & Digestate System

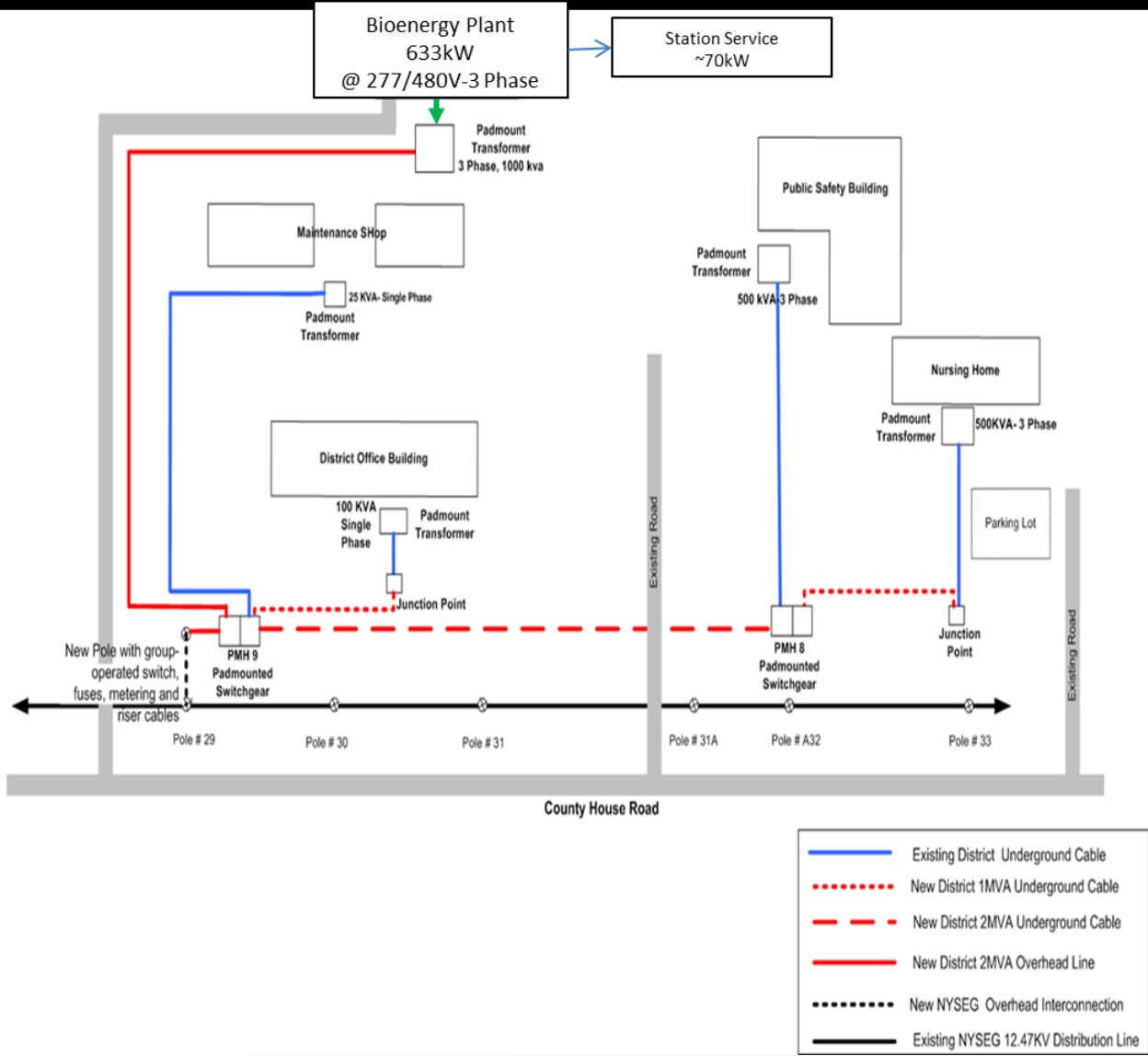


# Schematic of a hydraulic mix reactor





# Electrical Power Distribution



## Pro's

&

## Con's

- Recovered stranded asset
- Avoided 2-4 year greenfield development process
- Cash flow within months
- Low entry fee to market
- Control system issues
- Mechanical problems
  - › Piping, heat ex. pumps
- Electrical problems
  - › Switch Gear/MCC
- Digester was improperly shutdown
- H<sub>2</sub>S scrubber issues
  - › Contaminated with manure

# Current Status

- Recommissioning Efforts are underway
- CHP online and producing power and heat (natural gas)
- Mechanical, Electrical and Control Engineers on site (Germany)
- Brining in manure for commissioning
- Digester heat profile uneven
  - › Working through issues as we speak
- Expected to reach full load by the end of June

# Benefits of AD

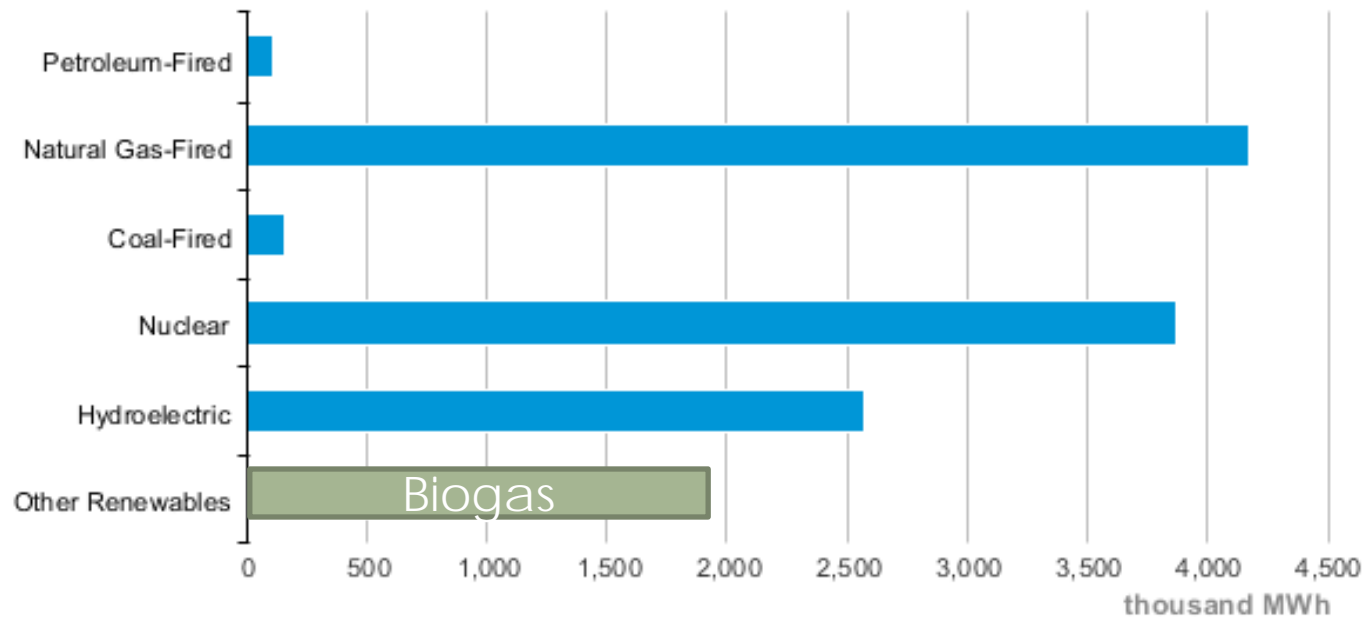
- Generation
  - > Base loaded
  - > Load Following
  - > Peaking
- Complements other renewables such as
  - > Wind and Solar
- Removes GhG's from our atmosphere
- Provides organic fertilizers
- Generate Renewable Energy from organic waste

# NY is a promising State for AD

- NY Needs more organic recover systems to handle waste volumes
- Dairy biogas 80MW
- WWTP 50MW
- Regional Digesters 80MW – 100MW
- Total MW potential 230MW
- Total MWh 1,914

# NY Electricity Generation

New York Net Electricity Generation by Source, Jan. 2016



Source: Energy Information Administration, Electric Power Monthly



# What can you do to help the industry?

- NYSERDA
  - > Grants
- CES/REV/CDG
  - > Revamp to include 20-Year PPA's
  - > Bundled with Carbon and REC's
- Community Disturbed Generation
- Net Energy Metering
- Remote Net Metering
  - > To restrictive
    - Farm based
    - Manure only
    - Property has to owned, leased or rented under same entity
    - 20 or more participants

# Questions and Answers



Wayne Bishop  
CH4 Energy  
661-378-4555  
[Wayne.bishop@ch4energy.co](mailto:Wayne.bishop@ch4energy.co)