

NORTHEAST DIGESTION ROUNDTABLE 2020

Quarterly webinars to share technical operations experiences and advance best practices regarding anaerobic digestion in the Northeast



INSTRUCTIONS

NEDR # 16: Anaerobic Digester/Biogas Project Funding Opportunities

Presented by:

Sarah Deslauriers, Carollo Engineers, Inc.
Dave Baran, Quasar Energy Group

Click to see list of participants

More controls & settings

Ask questions / chat

Leave meeting / Exit

Audio control & details

Waiting for the host...

Call by phone

Dial:

United States - Hartford

+1.860.970.0010

Conference ID:

236-940-048

Problems dialing in?

This box pops up when you click the audio control. Pick a phone number & dial in, entering the conference ID.

Agenda

- Resource Recovery at POTWs
- Federal and State Level Funding
- Public Private Partnership Funding



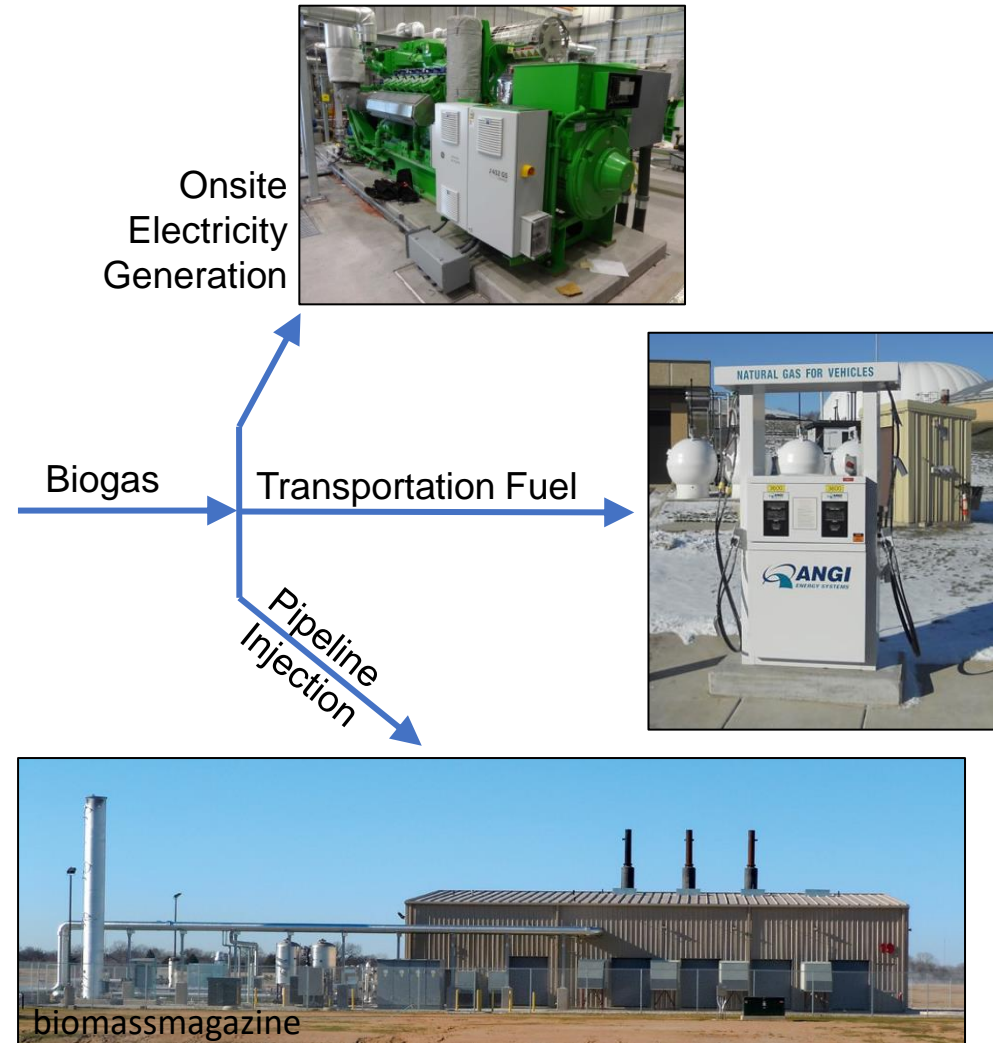
Wastewater treatment plants recover resources and generate renewable resources

- Renewable biogas replaces fossil fuel-based electricity/fuel
- Recovered biosolids replace synthetic fertilizer
- Recycled water replaces potable water use



Biogas provides multiple uses and benefits

- Offsets purchase of fossil fuel-based electricity and transportation fuel
- Reliable, renewable energy/fuel source
- Biogenic source of greenhouse gas (GHG) emissions (i.e., reduces fossil based GHGs)

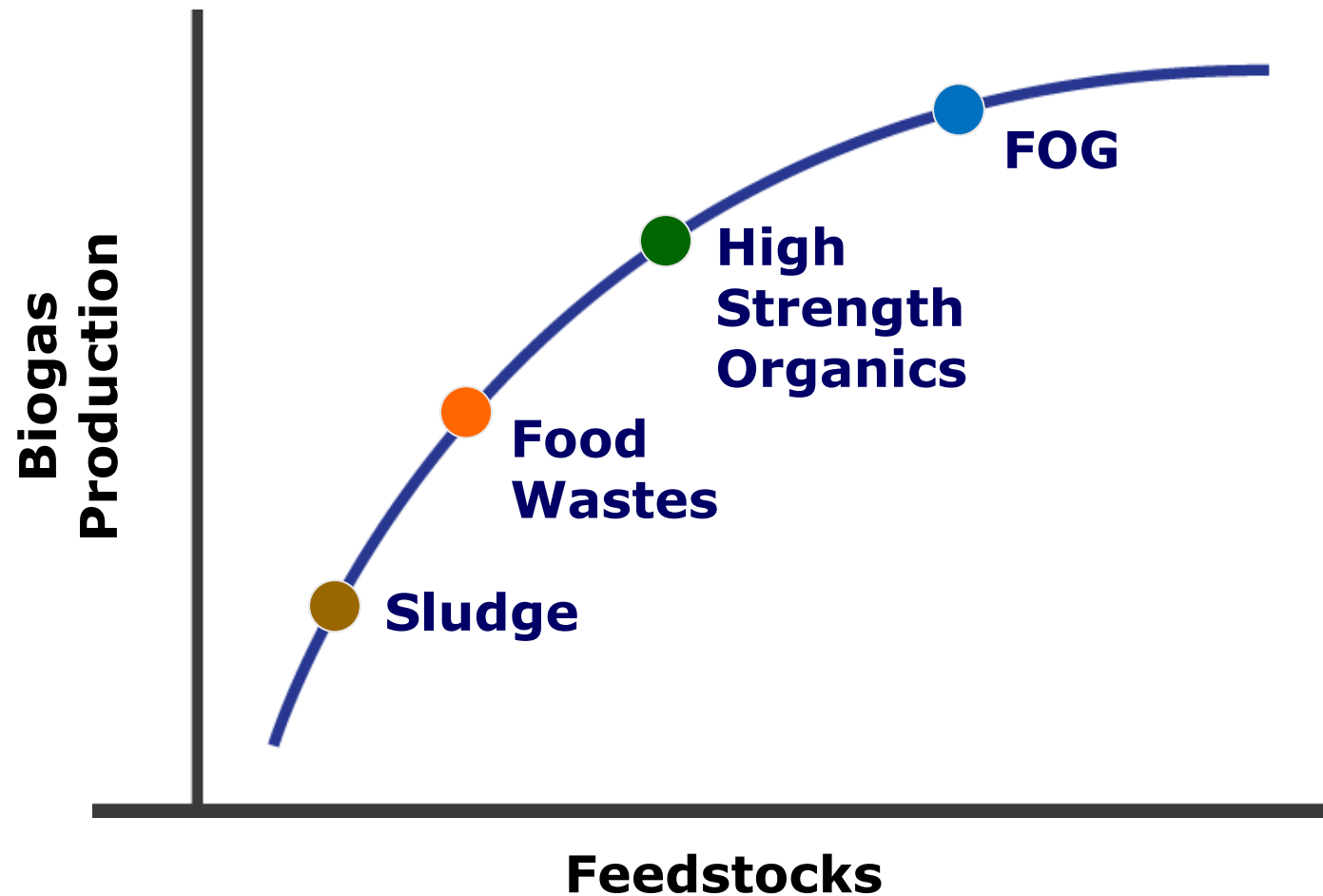


Land application of biosolids also provides multiple benefits

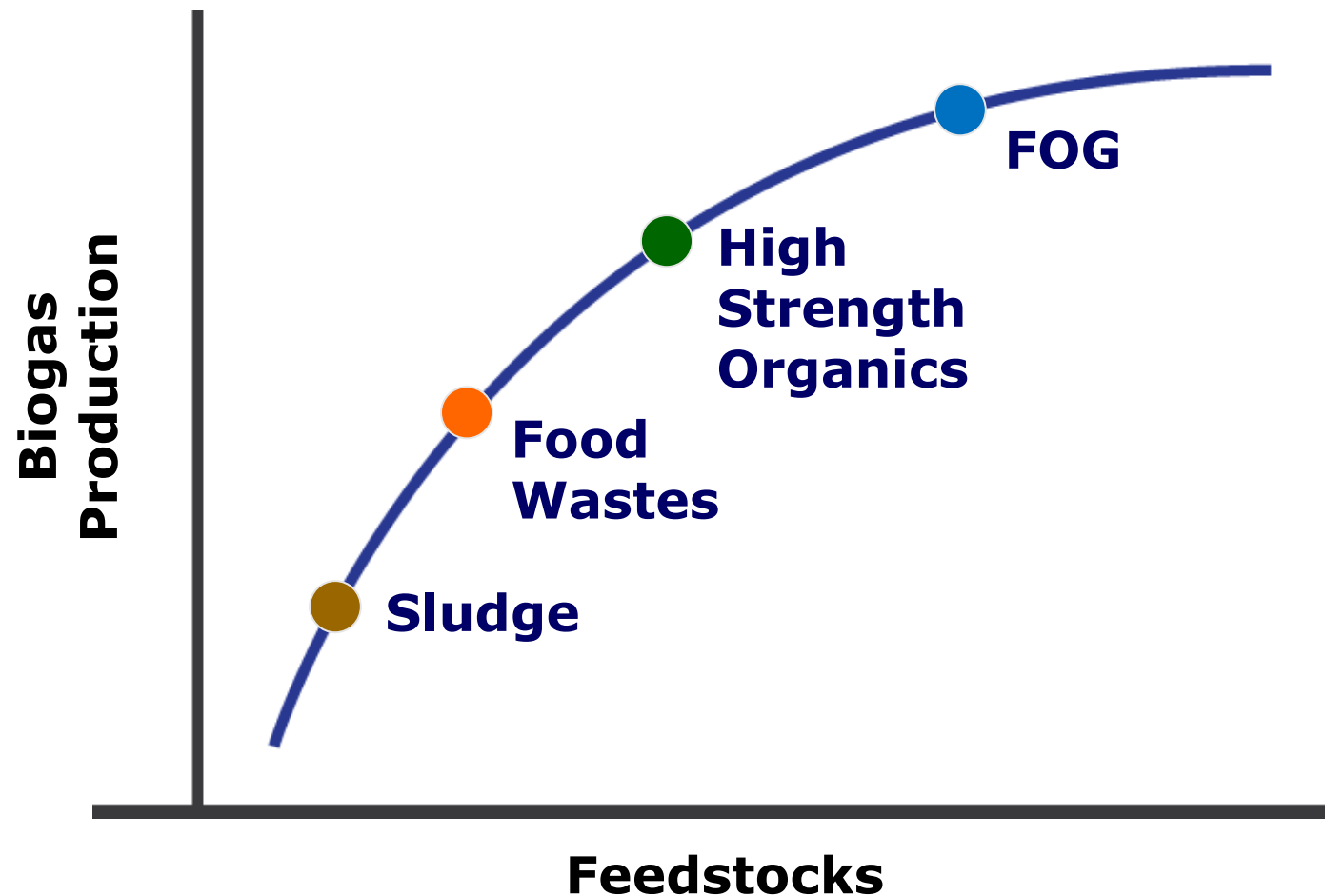
- Offsets inorganic fertilizer production/use
- Increases soil carbon content and stability
- Increases water retention capacity
- Increases nutrient use efficiency
- Sequesters carbon in the soil below
- Increase crop yield



Co-digesting additional organic feedstock increases biogas production



Co-digesting additional organic feedstock increases biogas production



Waste Bans/Organic Recycling Mandates

- Connecticut
- Massachusetts
- Rhode Island
- Vermont
- California
- New York City
- Austin
- Portland
- Seattle
- Other states and cities developing legislation or regulations

Federal/State funding incentives available for anaerobic digestion and biogas utilization projects

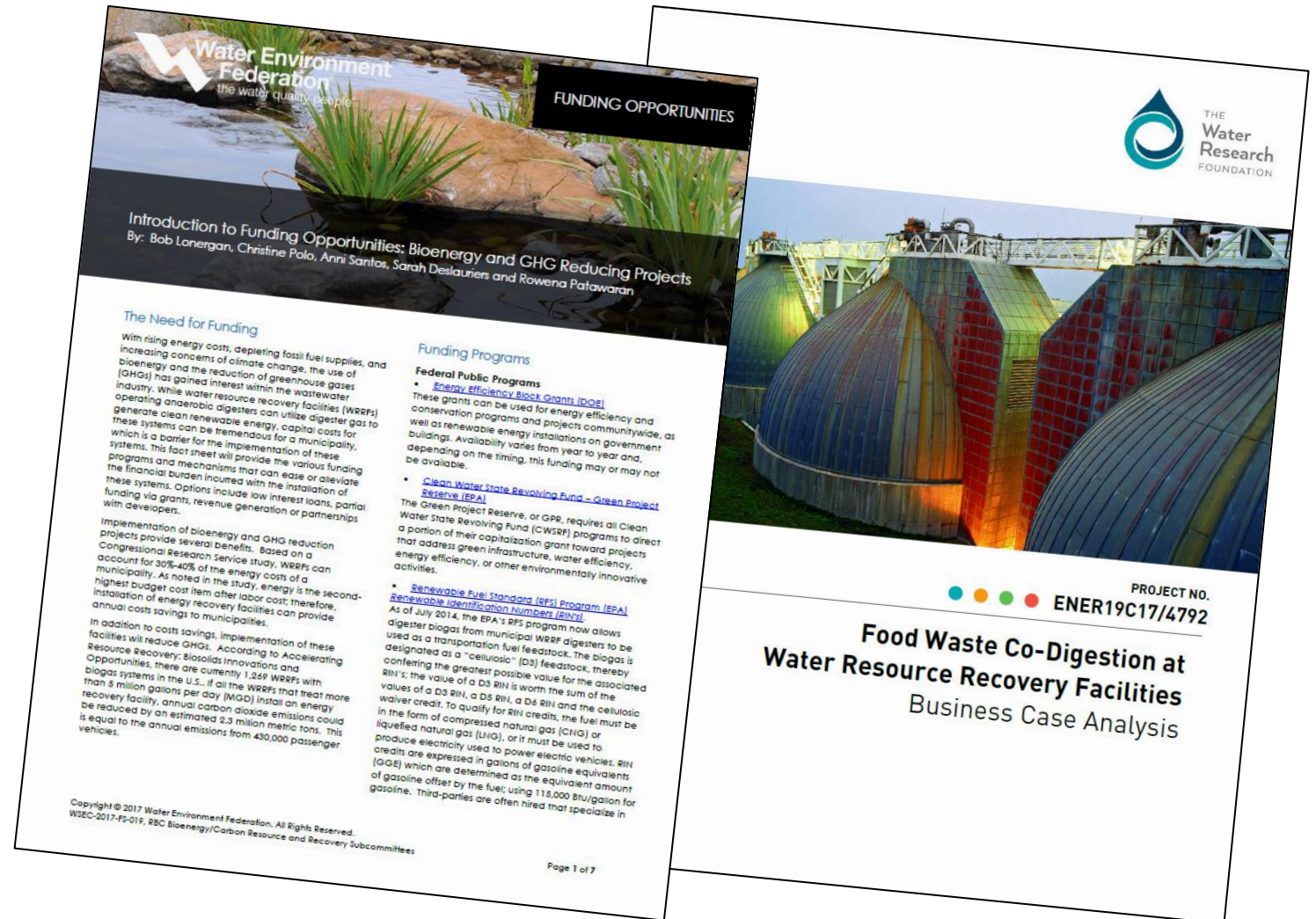
- Pre-Digestion: Receiving and pre-processing equipment
- Digestion: Rehab or build new
- Post-Digestion: Dewatering and biogas utilization/destruction equipment



Federal funding incentives available for anaerobic digestion and biogas utilization projects

Federal

- DOE Energy Efficiency & Renewable Energy Grants
- EPA Clean Water State Revolving Fund – Green Project Reserve
- EPA Water Infrastructure Finance & Innovation Act
- USDA Rural Energy for America Program
- EPA Renewable Fuel Standard



DOE Energy Efficiency & Renewable Energy Grants

- Administering Organization and Link: [DOE](#)
- Project Type: bioenergy systems
- \$ Amount: Varies (\$100,000's to \$1M's)
- Grant Information:
 - Available to municipalities, partnerships of municipalities w/ private entities
 - Must be located in the U.S.
 - Grants for a percentage of total eligible project costs
 - Terms are described in the funding opportunity announcements



EPA Clean Water State Revolving Fund – Green Project Reserve



- Administering Organization and Link: [EPA](#)
- Project Type: Projects that address green infrastructure, water efficiency, energy efficiency, or other environmentally innovative activities.
- \$ Amount: Up to 100% of the total project cost
- Loan Information:
 - Low interest financing
 - Using a priority scoring system for project selection
 - Offering partial funding to large projects
 - Reimbursing constructions costs incur prior to approval of financing under limited conditions

EPA Water Infrastructure Finance & Innovation Act



- Administering Organization and Link: [EPA](#)
- Project Type: water and wastewater infrastructure projects, including energy efficiency projects
- \$ Amount:
 - Minimum project size for small communities (population of 25,000 or less) - \$5 M
 - Minimum project size for large communities - \$20 M
 - Maximum portion of eligible project costs - 49%
- Loan Information:
 - Total federal assistance may not exceed 80% of a project's eligible costs
 - Maximum final maturity date from substantial completion - 35 years
 - Maximum time that repayment may be deferred after substantial completion of the project - 5 years
 - Interest rate is equal to or greater than the U.S. Treasury rate of a similar maturity at date of closing
 - Local, state, tribal, and federal government entities, partnerships and joint ventures, corporations and trusts

Rural Energy for America Program (REAP)



Committed to the future of rural communities.

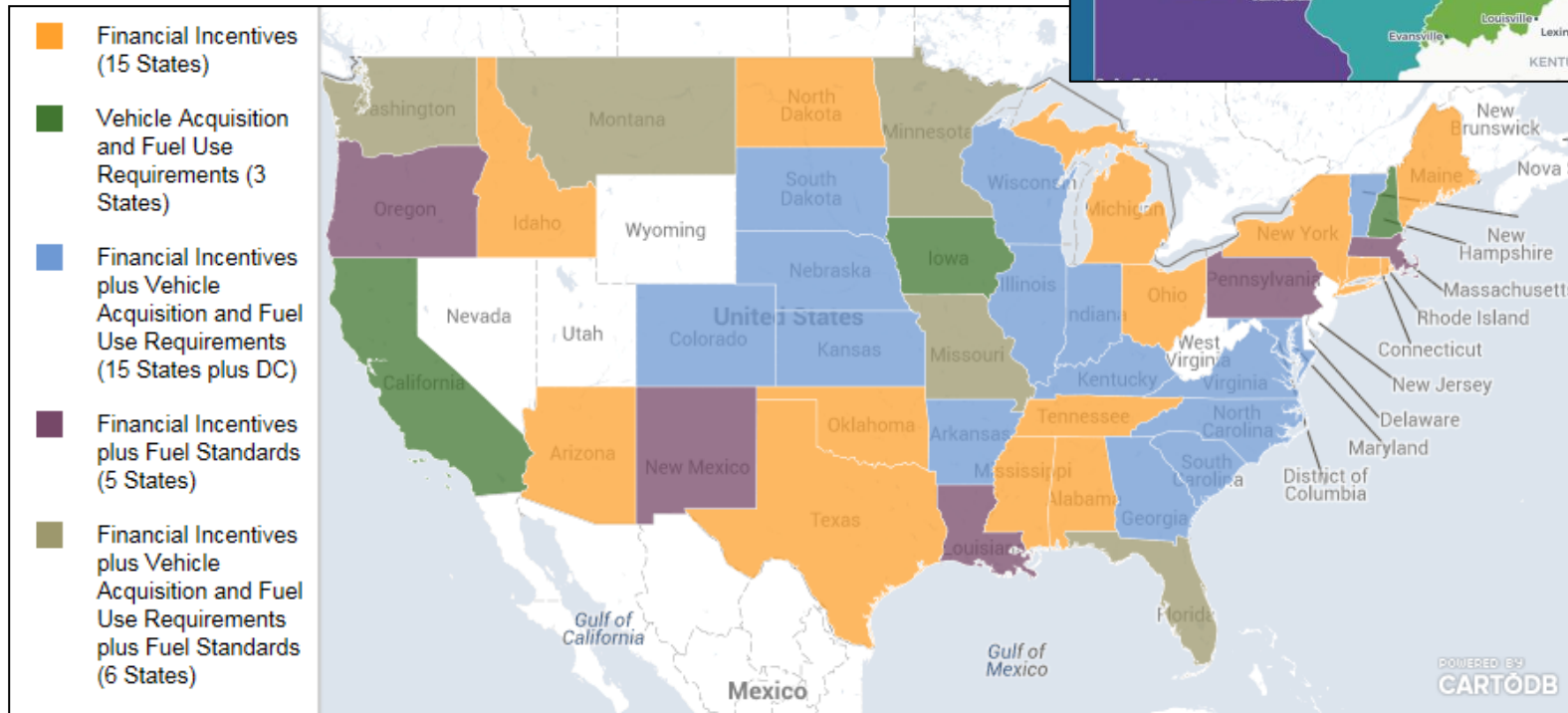
- Administering Organization and Link: [USDA](#)
- Project Type: renewable energy systems, including AD
- \$ amount: Maximum \$500K grant, \$25M loan guarantee
- Grant/Loan information:
 - Grants and loans only available for private sector small businesses
 - Must be located in a rural area ([property eligibility](#))
 - Grants for up to 25% of total eligible project costs
 - Loans for up to 75% of total eligible project costs
 - Loan rates and terms negotiated with lender and subject to USDA approval

EPA Renewable Fuel Standard



- Administering Organization and Link: [EPA](#)
- Project Type: POTW anaerobic digestion of sludge, biogas capture and utilization as transportation fuel
- \$ Amount: credit based on amount of biogas generated and demand
- Credit Information:
 - Biogas is designated as a “cellulosic” (D3) feedstock, thereby conferring the highest possible value for the associated renewable identification number (RIN)
 - RIN credits are expressed in gallons of gasoline equivalents (GGE) which are determined as the equivalent amount of gasoline offset by the fuel
 - Biogas must be in the form of compressed natural gas (CNG) or liquefied natural gas (LNG), or must be used to produce electricity to power electric vehicles
 - Value of the D3 credit varies based on demand

State funding incentives available for anaerobic digestion and biogas utilization projects



<https://www.c2es.org/document/renewable-and-alternate-energy-portfolio-standards/>

Public Private Partnership Project Funding

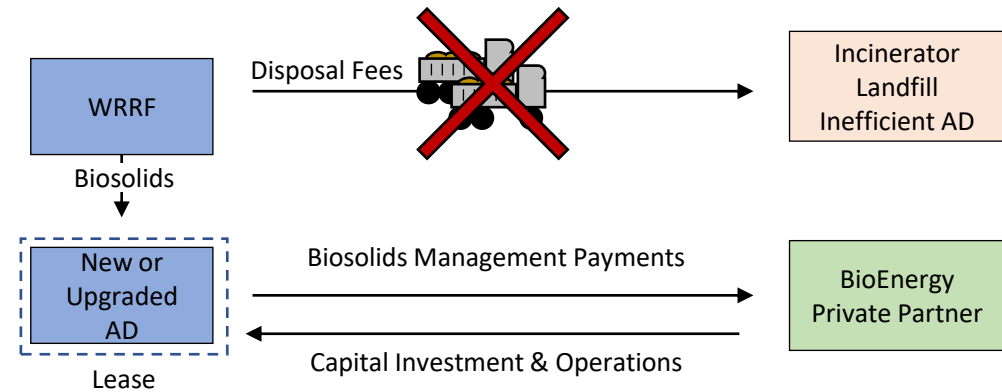
- Alternative to publically funded projects
- May be attractive when municipal funds are consumed by other projects for regulatory compliance
- Private sector expertise and resources can be utilized to fully monetize project attributes
- Myriad of project structures and options that can be negotiated by both parties to manage risks and share project benefits

Requirements for (Most) Projects

- Sufficient scale. Projects are best suited for 10+ MGD facilities with project economics improving with larger flows
- Long term contracts. Private investors will be looking for a minimum of 10 years to recoup their investments, 20 years often preferred
- Viable procurement pathway. Most states and local municipalities allow for public private partnerships but confirm with law director
- Existing assets or project sites. Projects that can leverage existing equipment or available land will improve economics and schedule

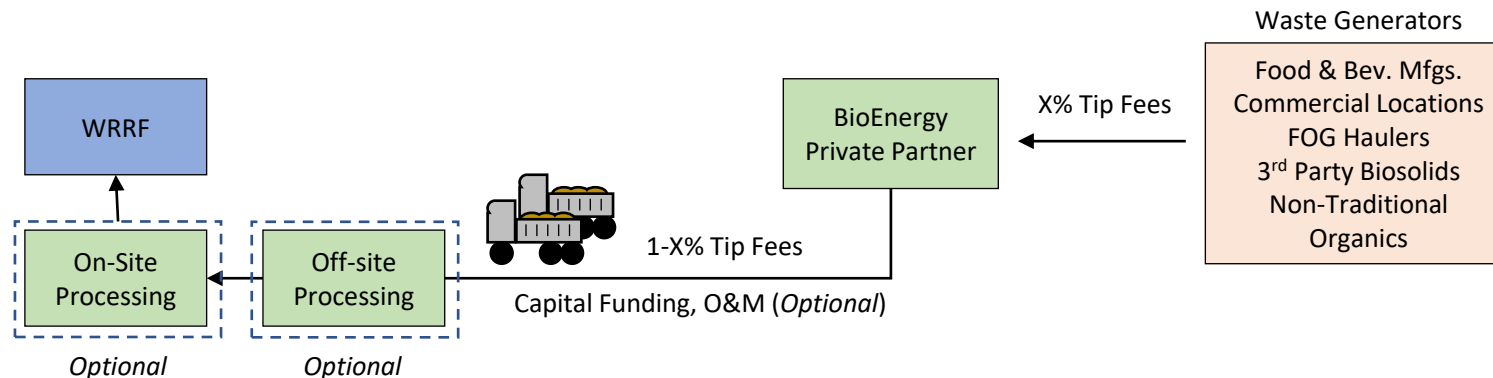
PPP Funding: Biosolids Management Services

- Biosolids management is outsourced to a private party via a long term contract in exchange for a capital investment in upgraded or new AD
- Biogas sales revenue share or discounted electric can be included as part of the agreement



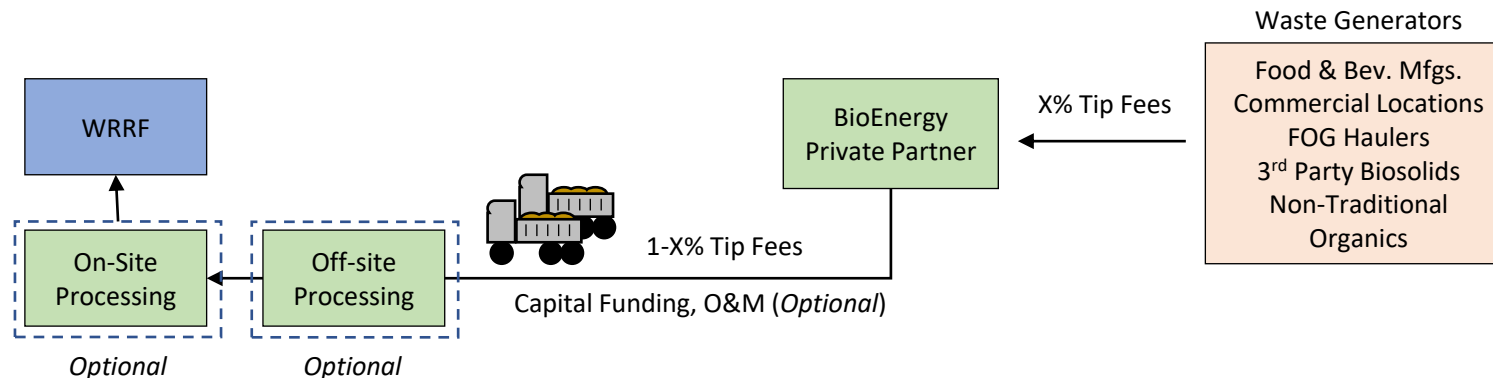
PPP Funding: Co-Digestion Feedstock Sourcing

- Private party can provide funding for receiving stations, AD upgrades and source co-digestion materials for facilities with excess capacity
- Revenue share on tip co-digestion material tip fees and increased biogas production can help fund investments or future upgrades



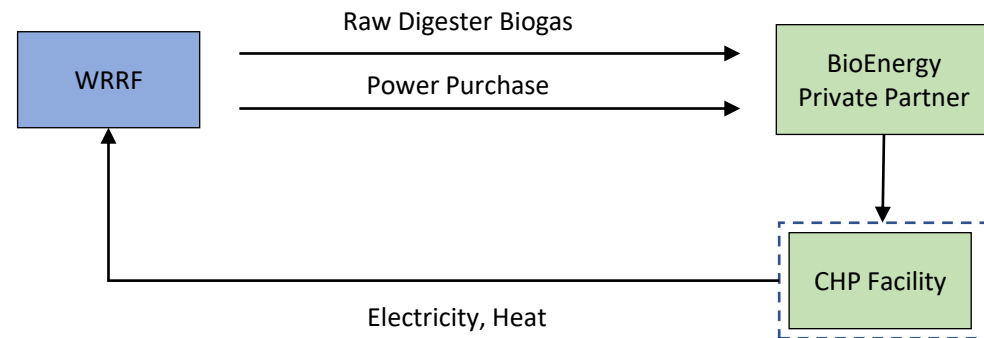
PPP Funding: Co-Digestion Feedstock Sourcing

- Private party can provide funding for receiving stations, AD upgrades and source co-digestion materials for facilities with excess capacity
- Revenue share on tip co-digestion material tip fees and increased biogas production can help fund investments or future upgrades



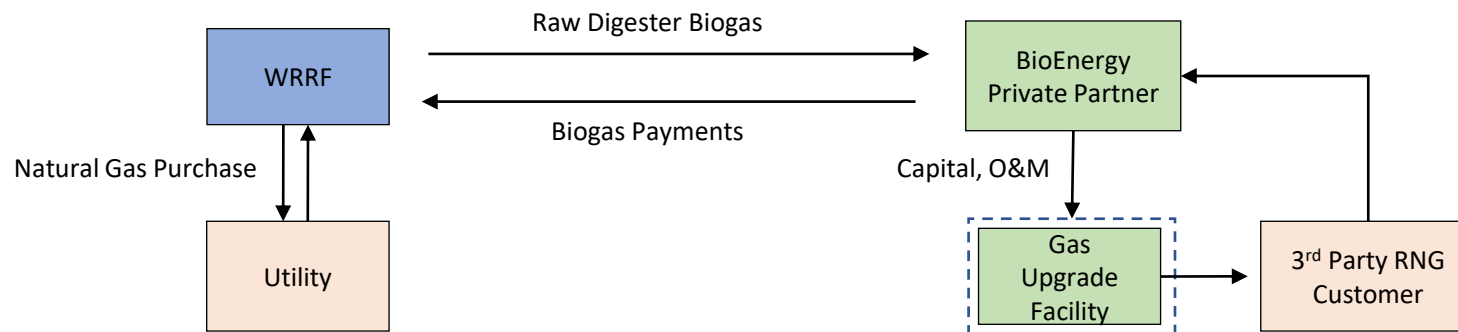
PPP Funding: Biogas Use Power Purchase Agreements (PPAs)

- Unused or excess biogas can be utilized in a combined heat and power (CHP) system financed by a private party
- Long term agreement to buy back heat and power from the CHP, generally at a savings compared to utility purchase



PPP Funding: Biogas Monetization as RNG

- Biogas can be sold to a private party over a long term agreement, who will then invest in equipment to clean the biogas to pipeline quality renewable natural gas (RNG)
- Private party will then sell RNG to third party customers, typically as a transportation fuel, depending on the agreement revenue can be shared with the municipality



Thank You!!

Questions?

Dave Baran – davidbaran.db@gmail.com

Sarah Deslauriers, PE, ENV SP – sdeslauriers@carollo.com

Low Carbon Fuel Standard - CARB



- Administering Organization and Link (e.g., CA): [CARB](#)
- Project Type: POTW mesophilic anaerobic digestion of sludge, FOG (fats, oils, and grease), food waste, and other high strength waste, biogas capture and utilization as transportation fuel
- \$ Amount: credit based on amount of biogas generated and demand
- Credit Information:
 - Each metric ton of carbon dioxide equivalent emission from vehicle fuel that is offset represents one LCFS credit
 - Biogas must be in the form of compressed natural gas (CNG) or liquefied natural gas (LNG), or must be used to produce electricity to power electric vehicles
 - Value of the credit varies based on demand

Alternative and Renewable Fuel and Vehicle Technology Program - CEC



- Administering Organization and Link (e.g., CA): [CEC](#)
- Project Type: transportation and transportation fuel projects
 - Support achieving goals toward climate change, petroleum reduction, adoption of zero-emission vehicles, and improving air quality.
 - Development of technologies to produce fuels from a variety of raw materials, as well as fueling infrastructure for alternative fuels
- \$ Amount: \$1 M's toward capital costs, will not cover total project costs
- Grant Information:
 - Discretion of CEC to distribute funds (\$1-3 M per project)
 - Shovel-ready projects

Waste Diversion/GHG Reduction Program - CalRecycle



- Administering Organization and Link (e.g., CA): [CalRecycle](https://www.calrecycle.ca.gov)
- Project Type: projects that implement or expand organics processing (e.g., composting or anaerobic digestion)
- \$ Amount: Up to \$3 M
- Grant and Loan Programs Information:
 - Applicants must demonstrate the project increases the quantity of organics (green waste, food waste) newly diverted from landfills and reduce GHG emissions.
 - Renovation/rehabilitation projects are allowed, such as installation of a larger, more efficient engine able to accept an incremental increase in food waste feedstock.
 - Completion of project design and CEQA documentation, show that with completion of project there is commitment to process additional organics that are currently landfilled (e.g., document the quantity of additional organics to be processed).