StormFisher

GENERATECAPITAL

P3 Partnership Models for Organics Processing Infrastructure in California

Alternative Technology Advisory Sub-Committee

LA County Solid Waste Management

March 21st, 2019

Agenda

- Introduction/Background
- Organic Waste Processing Types
- StormFisher Experience with P3s
- Assessment of Key Project Aspects
  - Feedstock
  - Siting
  - Energy Offtake
  - Digestate Management
  - Financing
- Public Private Partnership Options
- Delivery Methods/Business Models
- Possible Funding Approach/Project Levers
- Project Phases/Risk Mitigation
- Policy Measures and Existing Infrastructure
- Question/Answer

StormFisher BIOGAS

StormFisher operates a 2.8MW biogas plant reference plant in London, Ontario offering organic waste disposal services

OVERVIEW

StormFisher offers a reliable, environmentally sustainable solution for organic waste from food processors, food retailers, municipalities, and waste haulers. StormFisher processes up to 100,000 tonnes of local organic waste streams per year and turns it into renewable energy and organic fertilizer. StormFisher developed, constructed and operates the facility.

Acceptable wastes:

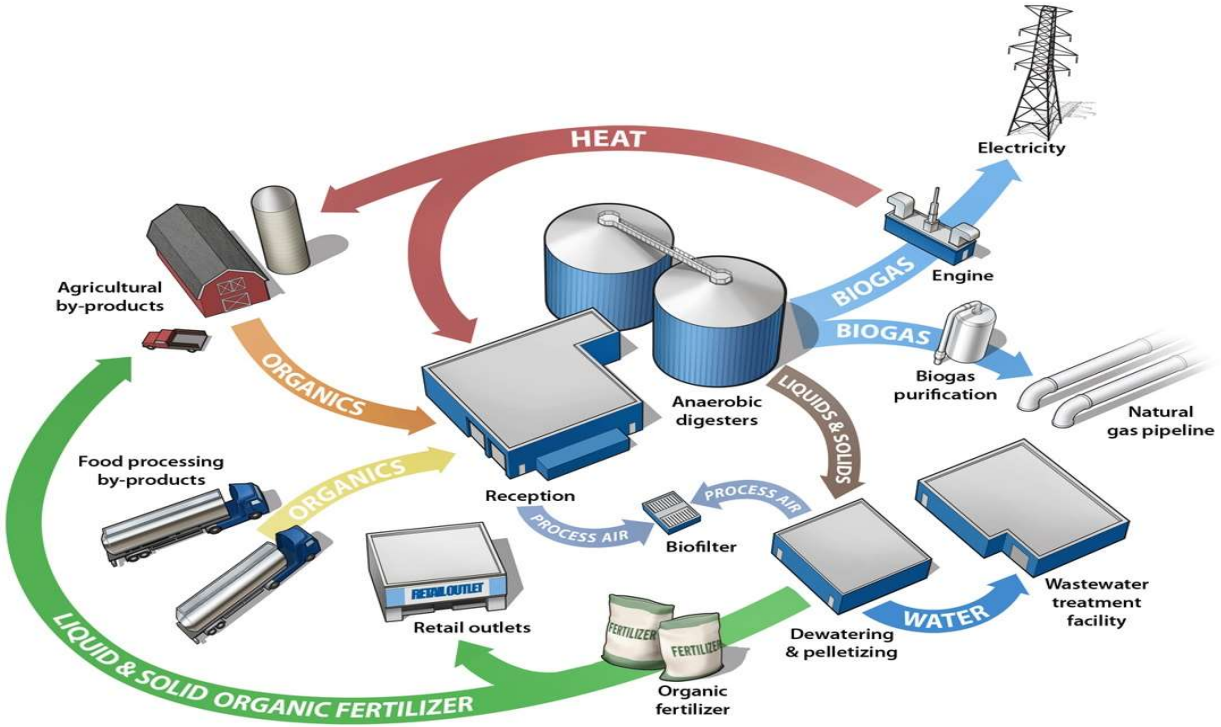
- Food processor – vegetables, meat, grains, dairy
- Restaurant (grease trap, food scraps)
- Institutional waste (cafeterias, campuses, etc.)
- Food distribution center waste
- Grocery store waste
- Packaged food
- Liquid organic waste (DAF, sludges)
- Beverage waste

Located 3mins off the 401 in London, Ontario and are open 24hrs/day, 6 days/week with no seasonal variability

StormFisher BIOGAS

StormFisher's biogas plant converts organic waste received into renewable energy (electricity and RNG) and fertilizer

- Biogas power generation systems provide a clean energy alternative that maximizes the value of food wastes by harnessing its methane content while also recapturing and returning valuable nutrients as an organic fertilizer
- Canada's biogas potential from agriculture, landfill gas, waste water treatment and organic wastes have the potential to reduce Canada's emissions by 37.5 million tonnes CO_2e, equivalent to taking 7.5 million cars off Canadian roads



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Plant Overview – Construction & Operation & Turn Around

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Anaerobic Digestion Process Types

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Composting Process Types

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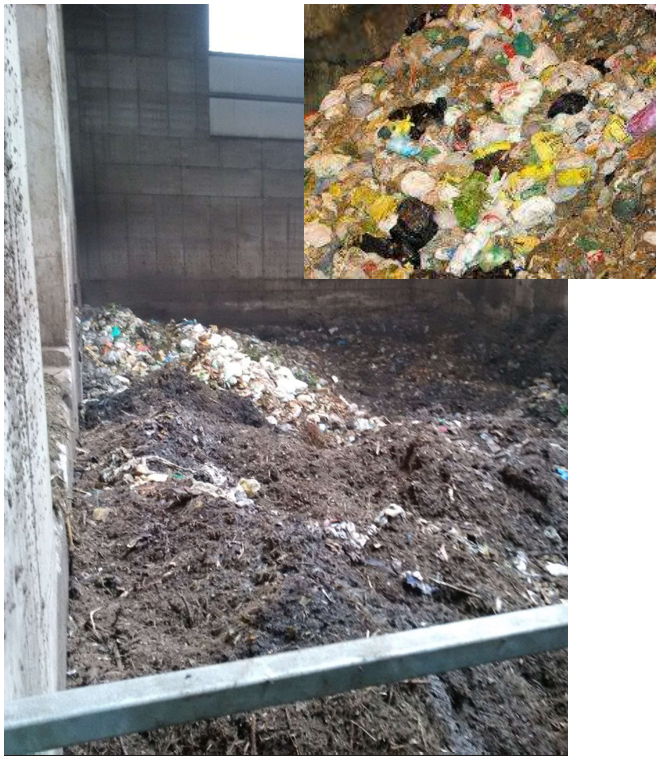
StormFisher Experience with P3s (Successful & Unsuccessful)

- Harvest Power Orlando Facility with Reedy Creek Improvement District
  - DBOOM over 20 years
  - Lease, Feedstock Supply, Liquid Effluent, Power Purchase Agreement
- East Bay MUD WWTP Facility in Oakland
  - DBOOM RFP for pre-processing/digestate management of SSO to allow for digestion of organic slurry in excess capacity at WWTP
- Harvest Power Richmond Facility/Surrey Biofuels RFP
  - DBOOM AD facility at compost facility with material supply of green and food waste
  - Follow on municipal solicitation for DBOM for Surrey
- City of Calgary P3 Composting
  - Large scale composting RFP for biosolids and green waste
  - P3 with DBOM over 20 years
  - Extensive security measures and specific design requirements
- Town of Bourne LFG and Co-Located Biogas RFP
  - DBOOM over 20 years
  - Would have been responsible for feedstock supply and PPA
- Other P3 solicitations including Ontario, Quebec, and California for organics processing infrastructure (i.e. Halifax, Sonoma, Montreal)

Feedstock

- Feedstock will be the ultimate driver in many design, development and commercial contracting decisions
- Given the long lead time to developing and constructing organics processing infrastructure, clarity on feedstock and contractual obligations needs to be flushed out which includes, but is not limited to;
  - Quality at delivery
  - Ramp up schedule
  - Contract type – put or pay, exclusivity, etc..
  - Specifications
  - Maximum and minimum volumes
  - Delivery method (type of truck, frequency, load out method, etc.)
  - Other organics that can be addressed



Need to clearly identify feedstocks that are under your control, currently being collected and current costs for management to address type of project delivery

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Types of Organic Waste Streams

Tote Swap Program

Mixed Grocery

Packaged Goods (Skids)

Green Waste with Food Waste

Liquids

Source Separated Organics

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Assessment of Key Project Aspects - Siting

- Siting of organics processing facilities can occur on one of the following locations:
  - Landfills
  - Transfer Stations
  - Material Recovery Facilities
  - Wastewater Treatment Plants
  - Greenfield/Brownfields
- In order to site an organics processing facility, it will need access to the following:
  - Heaviest Industrial Zoning
  - 5-10+ acres
  - Water & Sanitary Sewer
  - Utilities (electricity, and natural gas a nice to have)
  - Truck traffic – current and expandable
- Zoning/Local Engagement
  - Still a challenge due to NIMBYism

Need to ensure that land is locked down and environmental assessment work is finalized

Assessment of Key Project Aspects – Energy Offtake

- Biogas can be utilized in two main ways:
  - Electricity Production
  - Renewable Natural Gas (RNG)/Compressed Natural Gas (CNG)
- RNG/CNG can either be injected into gas pipeline or compressed for vehicle fuel on site. This is the most promising outlet for biogas in the future.

Depending on the terms of the offtake agreement including price and term, the type of P3 and the financing will vary considerably

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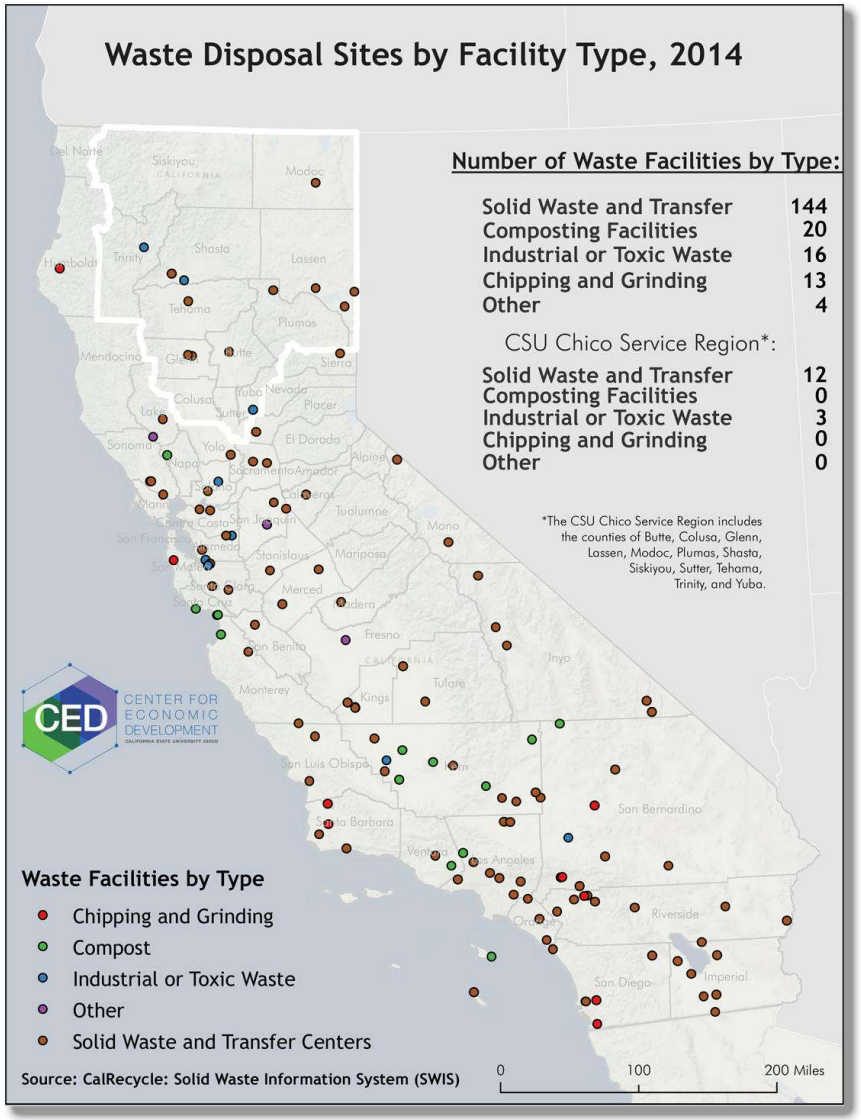
Assessment of Existing Infrastructure – California



- Most composting sites are windrow with some ASPs taking in primarily green waste and agricultural materials
- Purpose built food waste digestion facilities are limited but a combination of low solids and high solids due to the waste streams that are being serviced
- Co-Digestion at WWTPs is playing a significant role with EBMUD taking in large volumes of industrial organics and LACSD taking in food waste slurry while many others are considering it
- Co-Digestion at Farms has been limited due to logistics and nutrient related issues
- Pre-Processing at Transfer Stations and MRFs is starting to occur but disposal/processing sites for the slurry are limited at the current time; however WWTPs can play a larger role in this

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Assessment of Key Project Aspects - Digestate Management

- AD facilities produce a large amount of high-strength liquid that requires wastewater treatment before discharge or must be stored and land applied
- This material poses nutrient loading concerns to wastewater plants who may be limited on the amount of nutrients (typically nitrogen and phosphorous) they are allowed to discharge. They may require large fees to treat liquids
- In the case of land application, need to address the costs for transport, storage as well as focus on the nutrients and salts that are going to need to be addressed
- We can deploy technologies to remove phosphorous and nitrogen from our wastewater to lessen our impact on wastewater plants or land application however it requires additional costs
- Post-digestion material can be processed in various ways to create marketable end product (typically solid/liquid separation). There are two basic options:
    - Compost
    - Fertilizer
- Fertilizer can be produced more easily on an urban site but requires large amount of heat (exhaust heat from engines)
- Compost requires larger footprint and amendment with green waste to ensure proper C:N ratios
- Both products have a use in the agricultural and consumer markets; however contamination on the inbound material needs to addressed and the impact of OMRI requirements for some customers causes concerns

Assessment of Key Project Aspects - Financing

- Various public financing approaches are available:
  - Grants
  - Low Interest Loans
  - Sales Tax Exemptions
  - Property Tax Abatements
  - Accelerated Depreciation
  - Bonds
  - Investment Tax Credits/Production Tax Credits
  - New Market Tax Credits
- Private financing approaches include:
  - Equity from focused funds and stakeholders
  - Traditional debt
- Two areas that cause challenges currently:
  - Development Capital
  - Land Option Agreements
- Security Measures
  - Liquidated Damages/Performance Guarantees
  - Holdbacks/Bonding/Letters of Credit

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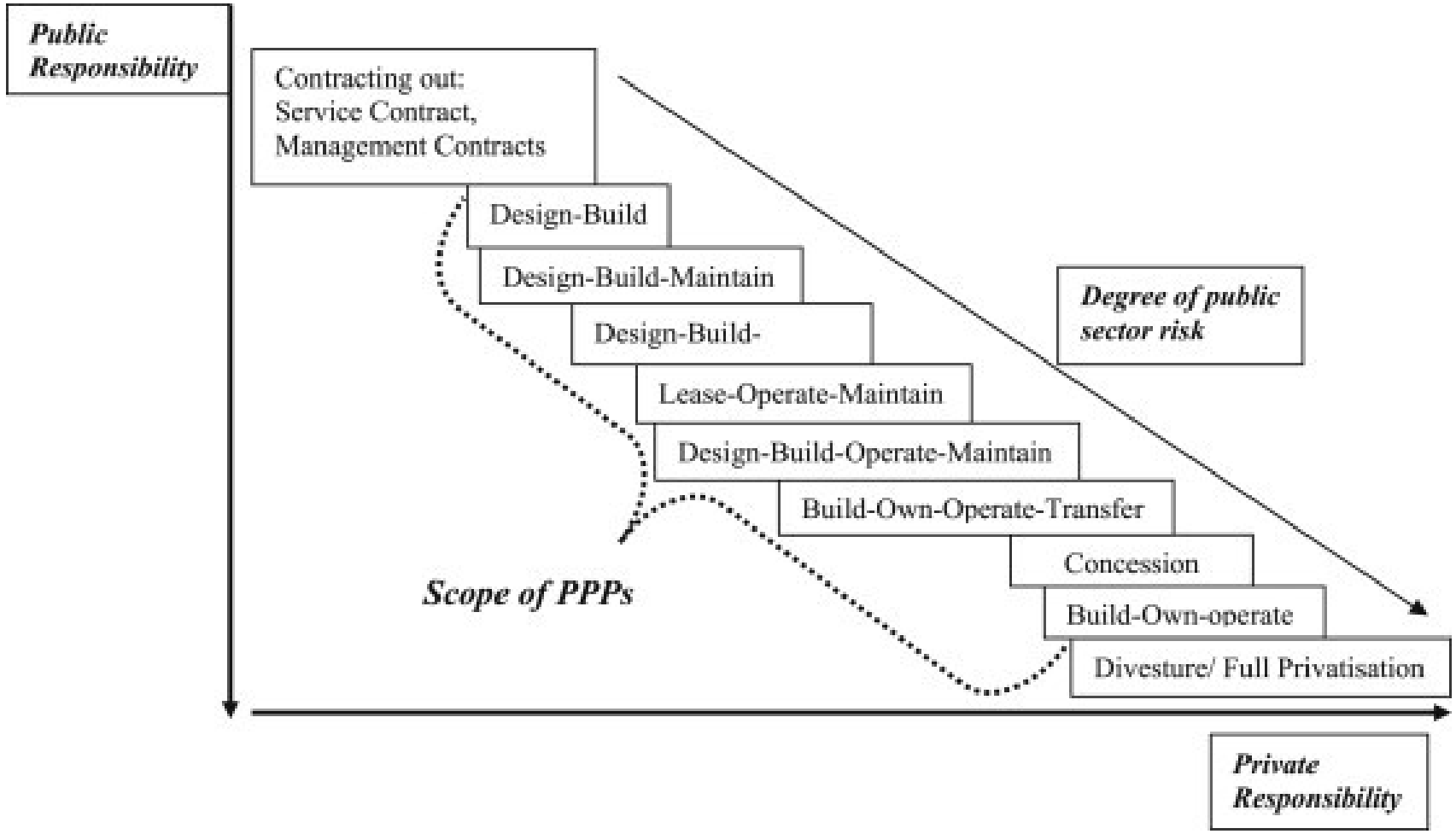
Public Private Partnerships

- In 1996, Infrastructure Financing Act allowed P3s for local government agencies
- Allows the authority and flexibility to utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, operate, or any combination, thereof, fee-producing infrastructure facilities (refuse disposal, energy production, municipal improvements)
- The facilities can then be leased for up to 35 years but be deemed to be public property with reverting to the government agency at no charge at the end of the lease
- Governmental agency can select a contractor using a “competitive negotiations process”, rather than a tradition hard-bid or RFP
- Primary criteria for selection:
  - Demonstrated competence and qualifications
  - Fair and reasonable prices to the end users
  - Process shall NOT require competitive bidding
  - Prohibits unlawful activities (rebates, kickbacks)
- Another option is the ESCO model in California which can be done related to energy savings for the various utilities

Types of Delivery Methods/Business Models



Possible Financing Approach/Discussion on Other Financing Levers

- Debt to Equity Ratios
  - Depends on financing sources
  - Private would be 50-100% debt to equity
- Mix of Public/Private Financing
  - Development of RFI/RFP – Public
  - Development of Design-Build – Private
  - Construction Financing/Ownership – Public
  - Ops Contract/Output Management – Private
- Need to assess further impacts of federal and state policies
  - Income taxes
  - 100% expensing
  - ITC/PTCs
  - Private activity bonds (10% private business involvement)
  - Opportunity zones
  - RMDZs
  - Sales tax exemptions
  - Property tax abatements and possible possessory interest

Phases of the Project/Risk Mitigation

- Each phase of the project needs to be well thought through and discussed internally within the organization and with external stakeholders
- Needs assessment of expertise that the public entity needs throughout the process should be done before going out with RFI/RFQ and these third parties should be included in the drafting of the RFI/RFQ
- Project team needs to finalize the goals of the project/problem that is trying to be solve prior to the RFI/RFQ and ask the industry for innovative/creative ideas on how to address the project/problem
- In the RFP stage, draft contracts should be included and bonding should be requested to ensure that parties are financially capable and focused on moving the project forward

Critical Next Steps to Encourage Organics Processing Infrastructure Investment

- Policies to provide predictable waste streams and economics through Organics Feedstock Diversion
  - Mandates/Bans as Organics Landfill Bans to assure certainty of supply with proper enforcement
  - Franchising Waste Collection reduces truck traffic and provides certainty for municipalities on costs for processing and establish pricing for the development of infrastructure

- Policies to Provide Attractive Sites
  - Enable co-location with Waste Water Treatment Plants (WWTPs) and landfills which would reduce land acquisition costs, disposal costs, property taxes and disposal costs
  - Provide tax incentives for Heavy Zoned Lands and Brownfields that could support projects
  - Allowance for non-abatement requirements on existing engines in the region
  - Mandate utilization of biogas at WWTPs and landfills
  - Provide property tax abatements for bioenergy projects
  - Streamline Permitting (Air, Waste)

Critical Next Steps to Encourage Organics Processing Infrastructure Investment

- Market Demand for Energy Off-Take at Predictable Prices over Financing Period
  - Establish pricing certainty in energy offtake over 15-20 year period
  - Streamline interconnection process to reduce time and costs (grid and pipeline)
  - Provide reduced electricity rates for covering parasitic load (wholesale pricing)
  - Ability to permit/utilize engines in certain regions
  - Implementation of Renewable Gas Standard to facilitate RNG/CNG projects
  - Promote biogas as a cleaner alternative to fossil fuels. Push for expanded natural gas vehicle fleet, increasing ability to market CRNG for transport fuel

- Policies for By-Products Management
  - Ordinances for organic based fertilizer/amendments using in-state materials
  - Prescribed use of by-products by state agencies and municipal purchasers

- Project Bankability at Reasonable Cost of Capital
  - Carbon Monetization
    - Stability/Price Certainty on RINS/LCFS credits

Question/Answer

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