



**FREESTATE
FARMS**

- ✧ Advanced composting
- ✧ Renewable energy
- ✧ Organic food production

Project Update: Prince William County Integrated Organics Processing Facility

Metropolitan Washington Council of Governments
Recycling Committee

September 20, 2018

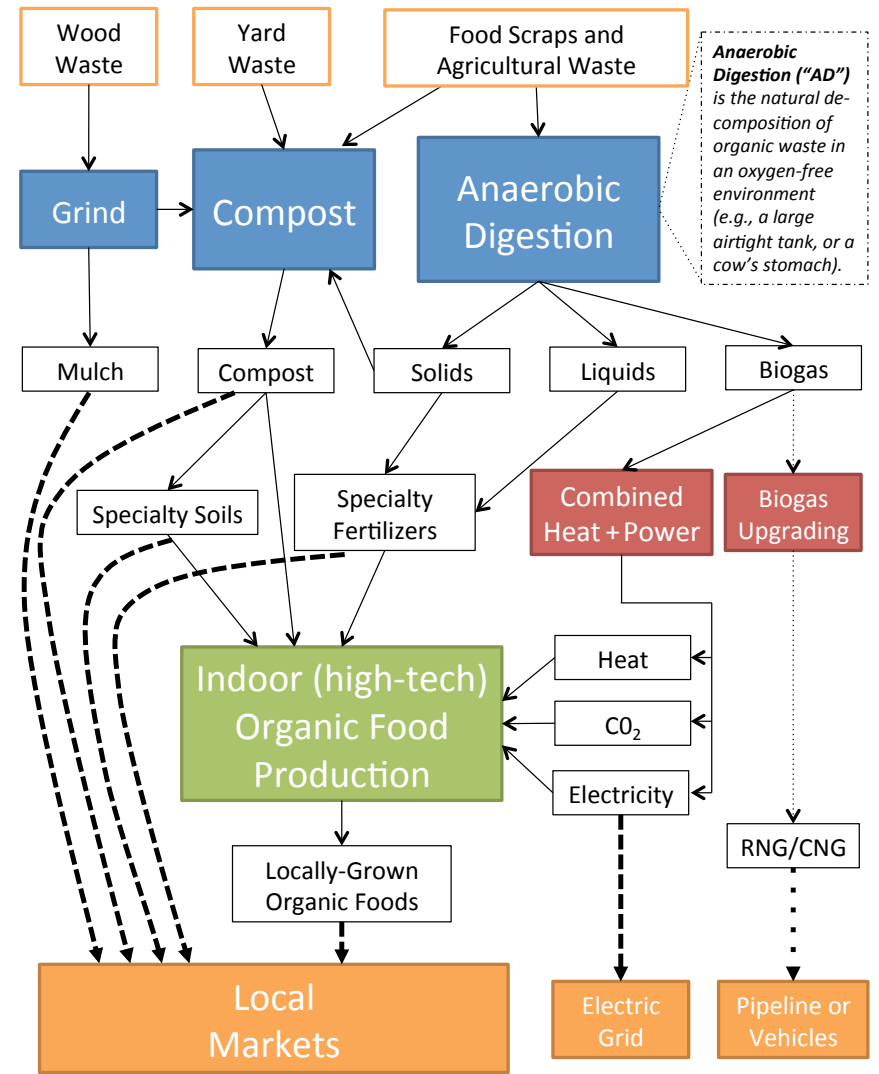
Introduction and Process



Introduction to Freestate Farms:

Freestate Farms LLC delivers full-cycle sustainable solutions to its local community partners by developing, owning, and operating integrated facilities for organic waste processing, generation of renewable energy, and indoor organic food production.

Presently developing its first facility through a public-private partnership with Prince William County, Freestate Farms is starting to bring sustainable waste management, baseload renewable energy, nutrient rich compost and natural fertilizer products, as well as fresh locally-grown organic produce to the Metropolitan DC Region.



Prince William County's Driving Forces and Project Background



Driving Forces behind Project



- Stagnated recycling rates (County recycling rate has hovered around 37% since 2006)
- Desire to implement mandatory county-wide yard waste recycling program
- Large regional demand for food waste processing infrastructure



Project Background


- | | |
|--------------------|--|
| Spring 2009 | PWC began internal discussions about enhanced organic waste processing opportunities and technologies |
| Winter 2011 | PWC began pilot program to accept Cat 1 pre-consumer plant-based food scraps |
| Summer 2012 | PWC began accepting pre-consumer plant-based food scraps under amended PBR |
| Fall 2013 | PWC issued RFP for organic waste management project |
| Winter 2015 | PWC Board of Supervisors approved the Development Services Agreement with Freestate for the purpose of granting Freestate the right to develop, own, and operate its proposed integrated organic waste processing, renewable energy, and indoor organic food production facility at the County's existing composting facility. |



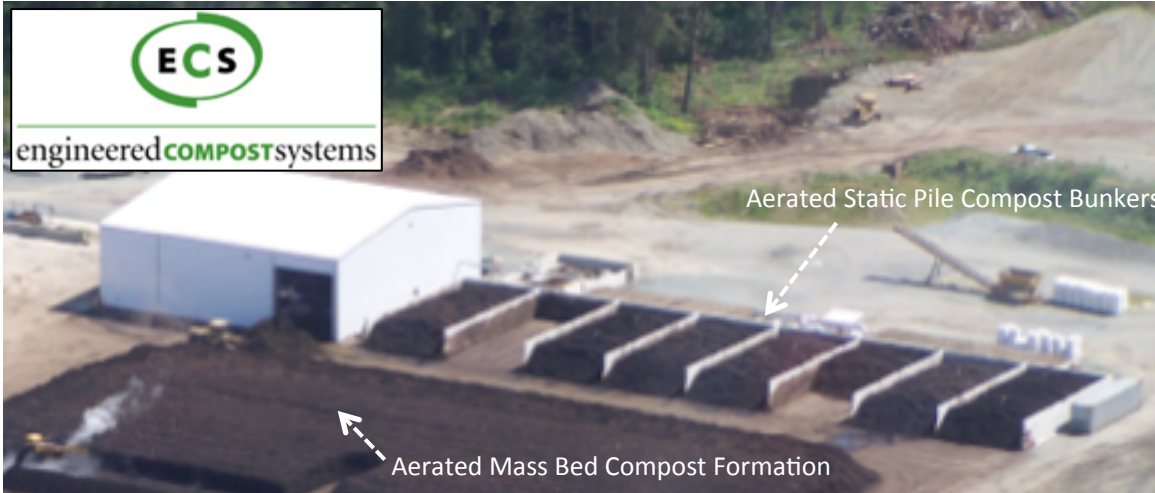
The Agreement includes a 20-year term dated from the commencement of new operations, as well as two five-year extension terms (upon mutual agreement),

Key Project Information



Phase 1	<ul style="list-style-type: none">✓ Expansion of throughput capacity from 35,000 tpy of yard and wood waste (via traditional composting/mulching) to 88,000 tpy of food, yard, and wood waste (via advanced aerated composting and mulching)✓ Permitted for and capable of handling up to 20,000 tons per year of mixed post-consumer food waste	
Phase 2	<ul style="list-style-type: none">✓ Additional 84,000 tons per year food waste via anaerobic digestion✓ Installation of 1 MW biogas-fueled combined heat and power (CHP) generator to provide electricity and heat for the facility, with excess electricity sold to grid✓ Additional biogas likely to be cleaned and injected into natural gas pipeline✓ Controlled environment agriculture (CEA) in repurposed shipping containers with CO₂ injection for increased yields	

Strategic Element No.01: Aerated Static Pile Composting

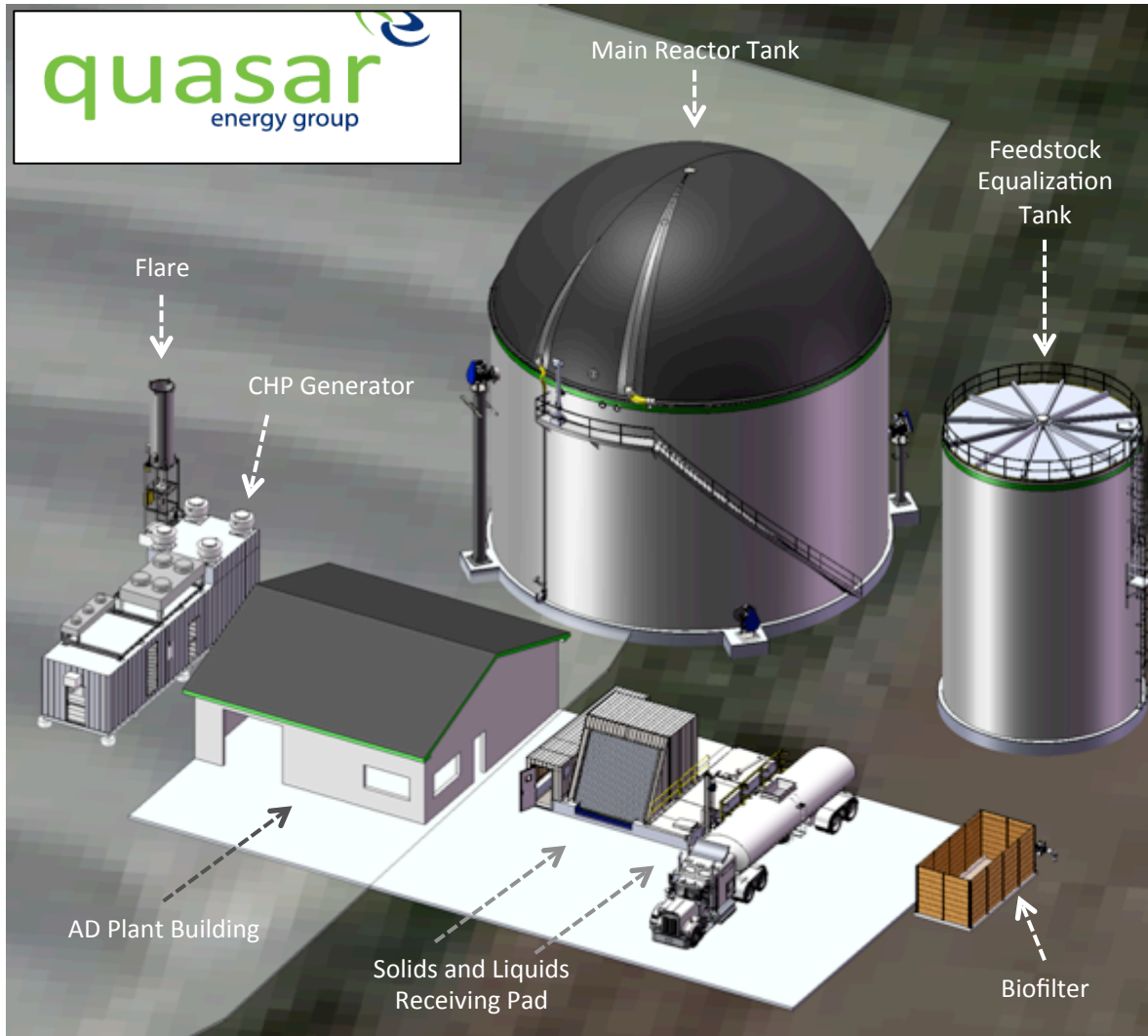


The foundational strategic element of the Freestate Farms system is advanced composting, and we have chosen to partner with **Engineered Compost Systems** of Seattle, Washington for our initial project in Prince William County.

ECS's in-house engineering and design expertise has been well proven at the 30+ sites across the U.S. where its systems are presently in operation, with many more under construction and development.

ECS's systems include intelligent process control and reliable environmental protections in the production of top quality compost products that conform to health and safety regulations and also meet the U.S. Composting Council's Seal of Testing Assurance (STA) Standards. 5

Strategic Element No.02: Anaerobic Digestion and CHP

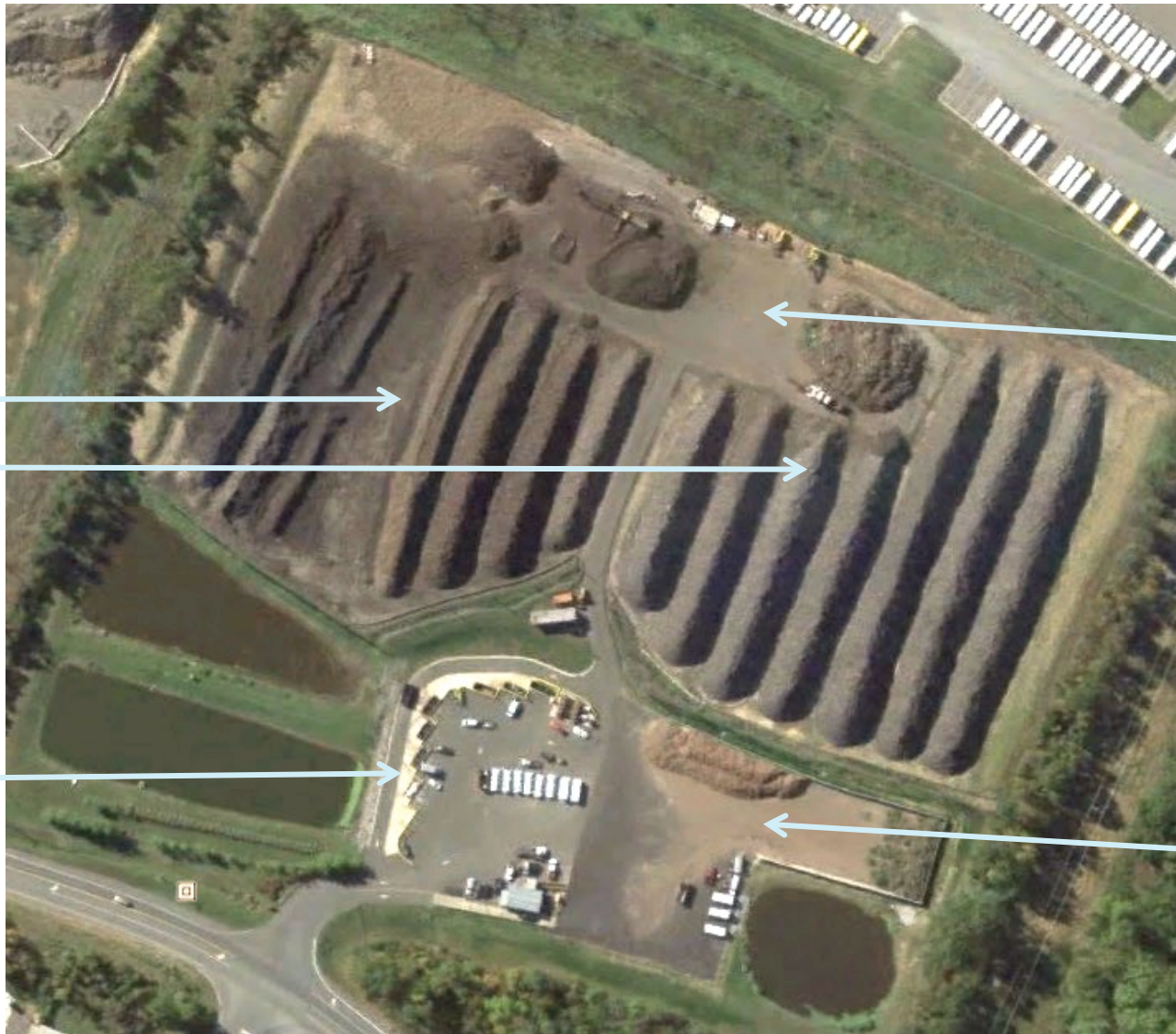


The core strategic element of the Freestate Farms system is the anaerobic digester, and we have chosen to partner with **quasar energy group** of Cleveland, Ohio for our initial project in Prince William County.

Capitalizing on its proven digester design, in-house engineering, and construction capabilities, quasar has successfully constructed 13 facilities presently operating in the United States, with numerous other facilities in different stages of development and construction.

quasar specializes in scalable and replicable continuously stirred tank reactor anaerobic digester systems that are designed to meet applicable environmental regulations.

Current Operation Balls Ford Site – Manassas, VA



**Traditional
Windrows
(turned
every few
weeks)**

**Citizen
Convenience
Center**

**Commercial
Yard Waste
Receiving
Pad:
Grinding
and
Screening**

**Resident
Brush
Receiving
Pad:
Grinding**

Future Operation Integrated Freestate Site Plan



Future Operation Site Views



Benefits of the Freestate – PWC Public Private Partnership



Benefits to Prince William County

- Long term solution for yard- and food-waste management, which make up 30% of incoming tipped material, and thus extending the life of the County landfill by 10-15 years.
- Increased overall recycling levels through wider range and greater capacity of organic waste processing.
- Optimization of existing asset — same site, with over 3x the processing capacity, and increased variety and volumes of sustainably generated products.
- Donated compost/mulch to County-based non-profits and discounts for County agencies.
- Receive annual profit sharing payment and portion of proceeds from sales of environmental attributes (e.g., renewable energy credits, carbon offset credits, etc.)
- Collaboration with County K-12 schools — organic waste division policies/practices at schools, and educational space and opportunities at the integrated full-circle Freestate site.

Benefits to Freestate

- Site control; use of amenities
- 20-year term and two 5-year renewals
- Payment for “County Material” and policy allowing residents and businesses to tip for free
- Permitting support – local and state
- Public support and public relations assistance
- Ongoing operations and second ancillary location
- Reservoir of knowledge, information, and relationships/introductions
- Assistance with tax-exempt financing



Thank You!

Chief Executive
Douglas Ross

www.freestatefarmsva.com