



MEETING SUSTAINABILITY GOALS & PRESERVING FAMILY FARMS



40% OF AMERICA'S WASTE IS COMPRISED OF ORGANIC MATERIALS

FARM POWERED FOOD WASTE RECYCLING

PROCESS
WASTE



FATS, OILS,
GREASE



WASH
WATER



PACKAGED
WASTE



DISCARDED FOOD
Front of House



DISCARDED FOOD
Back of House



Vanguard Renewables Co-digestion – Developers, Owners, Operators

FARM POWERED SUSTAINABILITY



- Institutionally funded by mission-driven investors seeking to impact climate change by:
 - Capturing latent methane in animal manure/reducing GHG emissions
 - Removing food waste from landfills
 - Producing renewable natural gas (RNG) or renewable electricity
- Vertically integrated anaerobic digestion company that builds, owns and operates all its projects
- 5 operating co-digestion facilities/9 permitting or under construction in NY/VT/CO/GA
- Largest organics recycler in the Northeast with capacity to process 500 tons per day of food waste and 120 tons per day of manure
- Works on recycling food waste with leading food manufacturers, retailers and institutions like: Unilever, Coca Cola and Whole Foods Markets
- Pipeline of D3 and D5 projects across the US
- Strategic Alliances with Dominion Energy and the Dairy Farmers of America



2018 ORGANICS RECYCLER OF THE YEAR

2016 PROJECT OF THE YEAR - BARSTOW'S LONGVIEW FARM, HADLEY, MA

2019 LONGEVITY AWARD - JORDAN DAIRY FARMS, RUTLAND, MA

2019 UP-AND-COMING AWARD - GOODRICH FARM, SALISBURY, VT

Farm Size and Location Defines the type AD

FARM POWERED FOOD WASTE RECYCLING



Co-Digestion RNG Project Development

Feedstock: Animal Manure (<30%) & Food waste (>70%)

Target Geographies: Proximate to Major Metropolitan Areas

Herd Size: 250 – 2,500 Milking Head

Vanguard sees the opportunity to expand the Farm Powered Food Waste Recycling Program across the nation.

Manure-Only RNG Project Development

Feedstock: Animal Manure (100%)

Target Geographies: Any Farm Community

Herd Size: 2,500 Milking Head and up

Vanguard has entered into a Joint Venture with Dominion Energy to build own and operate a multi-state fleet of manure-only digesters

Where Can Unusable Food Waste Go?

FARM POWERED SUSTAINABILITY



LandFill



Compost



Anaerobic
Digester

How Farm Powered® Organic Closed Loop Works

FARM POWERED SUSTAINABILITY



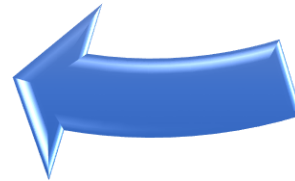
Farm



Manufacturer



Consumer



Digester



How Farm Powered® Anaerobic Digestion Works

FARM POWERED SUSTAINABILITY



INPUTS



**Food Waste or Food and Beverage Process Wastewater
and
Cow Manure**



FARM-BASED ANAEROBIC DIGESTION



OUTPUTS



**Renewable Natural Gas or Electricity =
Carbon Neutrality**



**Heat For
The Farm**



**Chemical-free,
Fertilizer to Increase
Crop Yields**



**Greenhouse
Gas Emissions
Reduction**

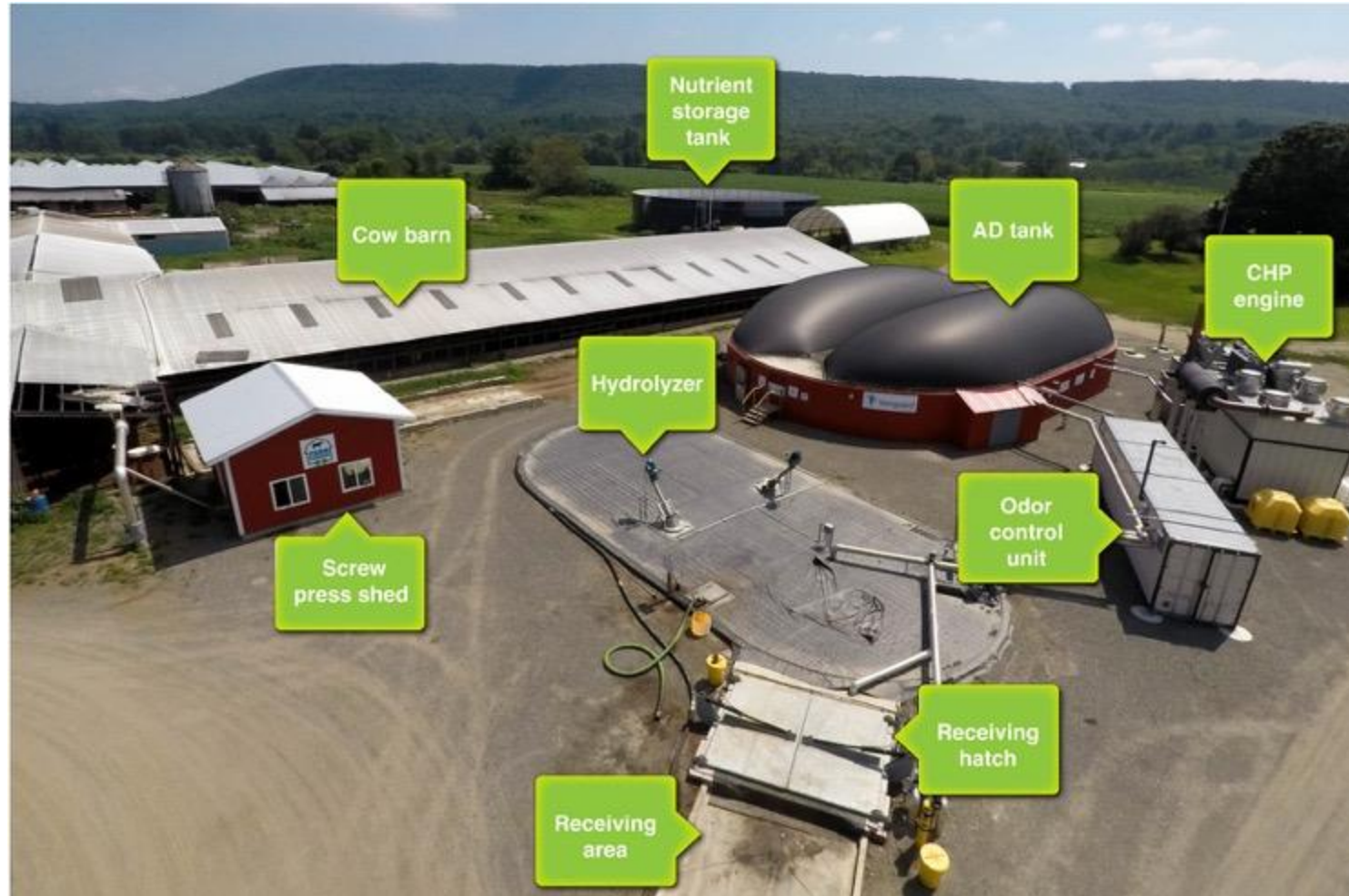
We work with farms to assess best fit based on a standard set of criteria:

- Farm practices
- Size of herd/Farm land available
- Proximity to food waste sources
- Farmer succession plan
- Local disposal fees for food waste
- Proximity to electricity & natural gas infrastructure
- Permitting, siting, design, and development issues
- Commitment to sustainable farm practices



Farm Powered Anaerobic Digester Integrated at a Farm

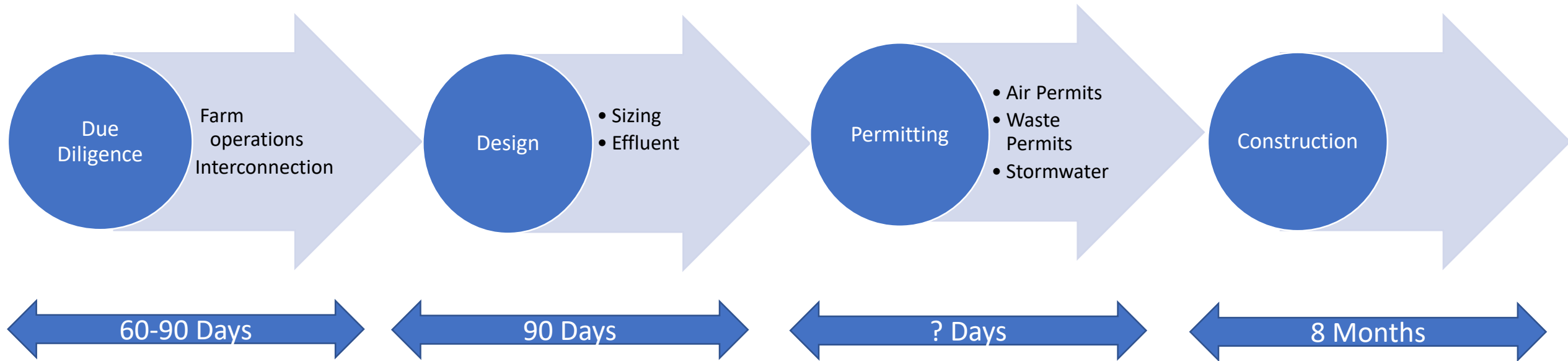
FARM POWERED FOOD WASTE RECYCLING



Bar-Way Farm, Deerfield, MA 1 MW Anaerobic Digester

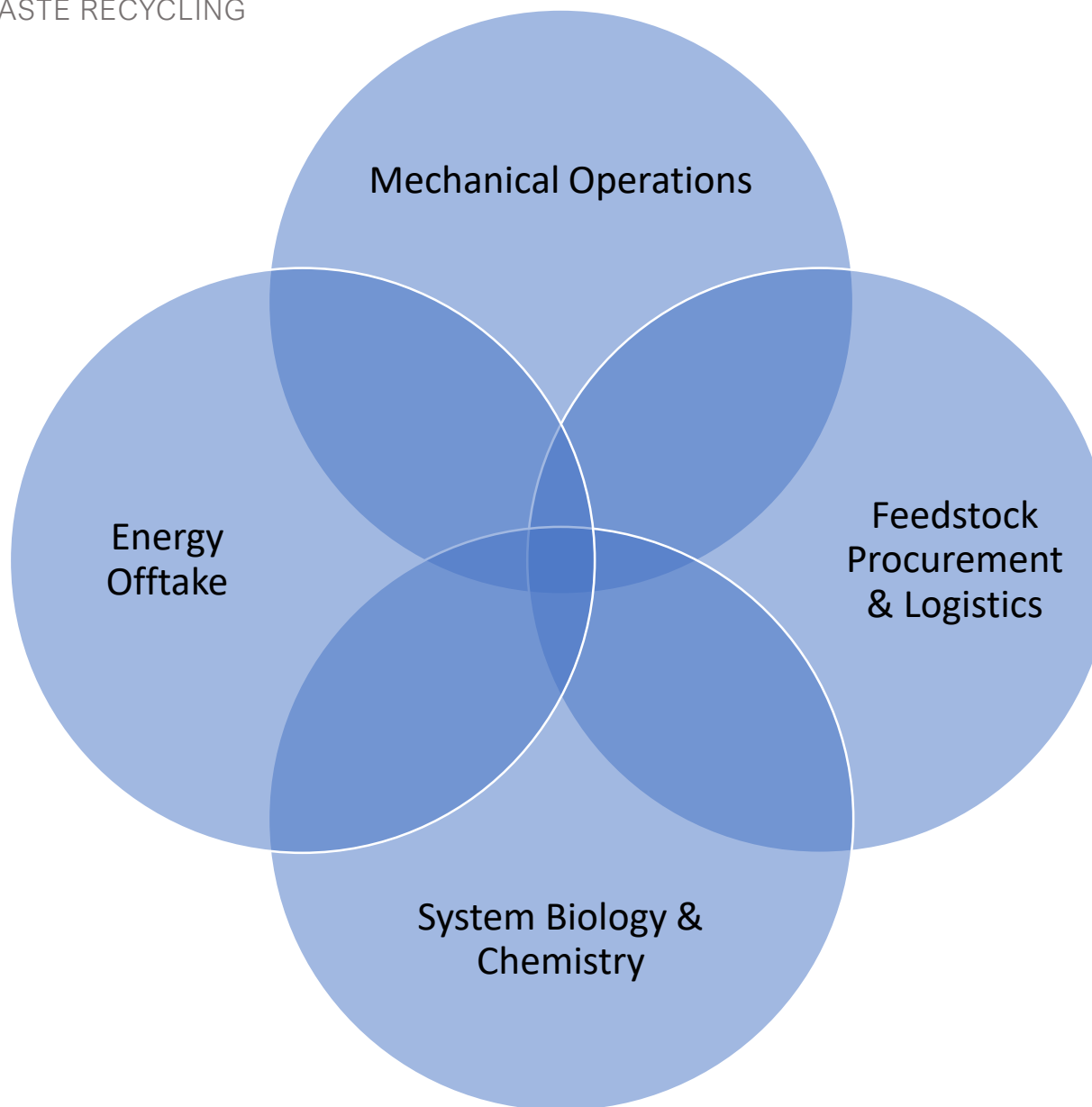
Time Frames for Digester Development

FARM POWERED FOOD WASTE RECYCLING



System Operation Requires Professional Team

FARM POWERED FOOD WASTE RECYCLING



Stakeholder Benefits with Vanguard and Farm Powered RNG

FARM POWERED SUSTAINABILITY



Farm Benefits

- Provides monthly rental income
- Sequesters all methane emissions
- Reduces farm odor
- Enhances manure/nutrient management
- Increases crop yields with enhanced organic fertilizer

Community Benefits

- Sustains family farms and open space agricultural land
- Produces Renewable Natural Gas
- Increases local jobs and private investment
- Provides 24/7/365 Independent gas supply
- Recycles local food waste

Important Take Aways

FARM POWERED SUSTAINABILITY



- The Anaerobic Digester has to be a good fit for the farm
- Digesters are dynamic systems
- Engage regulatory community early in the process
- Engage and educate the community of food waste producers
- **Choose a partner that has the:**
 - **Capital to complete the project**
 - **Commitment and experience with Family Farms**
 - **History with the regulatory process of digester permitting**
 - **Experience in all phases of system operation and maintenance**





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