

# Creating Energy & Protecting the Environment

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# SMALL AGENCY WITH A LARGE MISSION

The mission of the Maryland Energy Administration is to promote affordable, reliable, cleaner energy for the benefit of all Marylanders.

# ANIMAL WASTE TO ENERGY



**Why Pursue Animal  
Waste to Energy  
Technology in Maryland?**

**The impact of agriculture on Maryland's economy amounts to \$8.25 billion annually. Approximately half of this amount is due to livestock production.**

An aerial photograph of a rural farmstead. In the foreground, there are several large, brown, tilled fields. A cluster of farm buildings, including a prominent red barn and several smaller houses, is situated in the middle ground. A road winds through the property. In the background, a line of white wind turbines stands against a clear blue sky. Beyond the turbines, a large body of water, likely a bay or lake, is visible under a bright, clear sky.

# The Potential for Nutrient Runoff From Animal Operations Can be Curtailed While Providing an Alternate Revenue Source for the Farmer



A photograph of a brown cow with horns standing in a lush green field. The cow is looking directly at the camera. The text "WHY NOW?" is overlaid in large white letters across the middle of the image.

# WHY NOW?

# DRIVERS



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An aerial photograph of a river winding through a rural landscape with green and brown agricultural fields. A large white text overlay is centered on the image.

# TOTAL MAXIMUM DAILY LOAD TMDL



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# The Phosphorus Management Tool PMT

# The Renewable Energy Portfolio Standard RPS



# The Energy Administration Works with The Department of Agriculture to Help Accomplish This Goal



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# The MEA Animal Waste to Energy Program



**In Fiscal Year 2019 MEA has Made up  
to \$6M dollars Available to Assist in  
the Development of New On-Farm and  
Community Facilities**

# MEA has Currently Funded Five Projects in the State

PASSION LED US HERE

# Case Study

## Planet Found Energy Development, LLC



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## The Host Farm – Millennium Farm Worcester County, MD



## The AD + NCS Facility



# PFED's Patent-Pending Combined AD + NCS Process



## Introduction of Material

PFED's Combined AD + NCS fundamentally alters traditional manure management practices after poultry litter is delivered to covered storage. As opposed to allowing a slow composting process, PFED's system undertakes daily removal, energy production, and nutrient capture on the stockpiled litter.



## Automation & Verification



## Products

### Biogas

Biogas is captured as part of the anaerobic digestion process. It is the result of microbial processes and is primarily composed of methane, the chief constituent of natural gas. Like natural gas, it can be used to produce electricity, heat and refrigeration, or it can be upgraded to serve as a renewable fuel equivalent to compressed natural gas (CNG).



# Products

## High N:P Field Amendment

PFED's Field Amendment is a stable, peat-like mulch with a 4:1 – 6:1 nitrogen to phosphorus ratio. It is designed for application onto farm fields, and can be broadcast in exactly the same way (and with the same equipment) as poultry litter.

### Advantages

- High N:P Ratio compared to poultry litter (5:1 instead of 1:1)
- Very low odor (comparable to finished compost)
- Minimal nitrogen loss due to volatilization
- Low pathogenicity



# Products



## High N:P Potting Soil

PFED's potting soil is a stable, ultra-absorbent organic mix with an 8:1 – 10:1 nitrogen to phosphorus ratio. It can be used as a standalone media or mixed into mulch or existing soils to provide additional nutrients and water holding capacity.

## Advantages

**High 9:1 N:P Ratio.** Better suited to plant nutrient needs than general 1:1:1 N:P:K plant food and fertilizers.

**Water retention**

**Earthy odor**

**High levels of micronutrients important to plants such as sulphur and calcium**



# Products

## Phosphorus Fertilizer

PFED's phosphorus fertilizer was designed to be competitive with traditional P-based products on the market. It is 6% total phosphorus by dry weight, which is complemented by lower levels of plant-available nitrogen, potassium and other essential micronutrients.

### Advantages

Low moisture content

Equals or exceeds other P-based fertilizer products





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