

PERDUE FARMS, INC.

Renewable Energy Project Cromwell, Kentucky



Business Confidential

WHO WE ARE

- × Medium size fresh poultry processing plant
- × Ready to cook - retail tray pack
- × Ohio County, Kentucky
- × 1,200 associates
- × We operate our own water and wastewater plants onsite
- × Very active cross functional internal “Green Team”
- × We have operated the digester for 4+years and the CHP engine 3+ years (18,000 run hours)

OUR RENEWABLE FUEL

- × Process waste water from the process operation
 - + Our waste products and DAF fat is sold to a renderer
 - + Our rinse and wash water, tiny fat and protein particles, blood and limited manure are all delivered by gravity to the digestion process
 - + No Class A waste
- × Anaerobic Digester (covered pond)
 - + Converts organic waste into +75% methane & Co products
 - + Reduces the organic loading (COD) 95%
 - + Further treated water is returned to our river water source

2010 - PRE - PROJECT



Business Confidential

2010 DIGESTER COVER



Business Confidential

DIGESTER COVER



Business Confidential

DIGESTER METRICS

- × 3 Acre anaerobic pond
- × 15 million gallon water capacity
- × 7 – 10 day water retention time
- × 7+ days of gas storage available
- × Operates close to surface water temperature
 - + Max 80 degrees in summer
 - + Would fall to 50 degrees in winter

GENERATOR (AUGUST 2011) INSTALLATION



Business Confidential

999 kw Engine

GRID CONNECTED



Business Confidential

RENEWABLE ENERGY PROJECT

- ✘ Biogas capture has substantial “green” effect
 - + 52,000 tons of equivalent CO₂ removed annually
 - + Free Fuel !!! 51,000 mmbtu annually !!!
- ✘ The system energy efficiency (CHP) is 82%
- ✘ 5,321 Mwh produced annually (19% of present needs)
 - + We are food limited and have engine hours available (cold months)
 - + The river water temperature drives amount of gas generated
- ✘ The waste heat recovered (4mm btu’s/hr) is used to make hot water for operations (about 20% of annual needs, nearly 100% in summer months).
- ✘ The engine has been used to keep the plant online during utility shutdowns

WHY CHP ???

× Environmental

- + 2 -3 magnitude better emission destruction than a flare or boiler
- + Boiler & water heaters require full biogas scrubbing
 - × Carbon Dioxide removal (absorption with methane loss)
 - × H₂S Treatment (w methane loss)
 - × Temperature and moisture adjustments

× Advantages

- + Better system efficiency than boilers - heaters
- + Heat and fuel needs matched biogas availability
- + Highest economic return
- + Long term PPA available (TVA has been a tremendous partner !)

**“IF IT SMELLS,
IT BURNS”**

**BURN WITH
CHP !**

Business Confidential



QUESTIONS ?
