

# DUPONT PIONEER

JOHNSTON



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## COMPANY BACKGROUND

DuPont Pioneer ([www.pioneer.com](http://www.pioneer.com)), headquartered in Des Moines, Iowa, is the world's leading developer and supplier of plant genetics, providing high-quality seeds to farmers in more than 90 countries. Pioneer provides agronomic support and services to help increase farmer productivity and profitability and strives to develop sustainable agricultural systems for people everywhere.

## PROJECT BACKGROUND

Research and production at Pioneer's operations in Johnston, Iowa, generate approximately two million pounds of discard corn products, which must be incinerated in accordance with state regulations and company policy. Pioneer's discard seed is currently transported to two locations that burn Pioneer's agricultural waste with other fuels in order to provide heat for their operations. Pioneer's objective is to bring the incineration process in house, utilizing its corn seed and cobs for fuel in a biomass boiler.

## INCENTIVES TO CHANGE

Transportation and incineration of agricultural waste costs Pioneer approximately \$90,000 annually, a figure that could be greatly reduced if much of the incineration process were kept on campus. Utilizing the corn as a fuel would also help Pioneer to reduce energy consumption and utility costs, providing even greater savings and environmental benefits. DuPont Pioneer considers environmental stewardship to be a Core Value and is always looking for ways to benefit the environment while simultaneously improving operations.

## RESULTS

**Corn Boiler:** With approximately two million pounds of corn seed and corn cobs at its disposal every year, Pioneer has the capacity to offset over 3.5 million kilowatt-hours of energy by utilizing a three million BTU per hour corn boiler to supplement the load on the existing boiler system at the company's new greenhouse expansion. By bringing the entire discard disposal process in house, Pioneer would also see significant savings in the cost of incineration, as it has relied on several outside parties to incinerate discard in the past. By utilizing all of the available cobs and seed, it is estimated that the cost and environmental impact of 52

semi-truck loads would be diverted, entirely eliminating the incineration needs of some facilities and leaving others with only one or two loads per year. Because implementation of the corn boiler would allow Pioneer to have a greatly reduced dependence on the practices and procedures of outside parties, the project mitigates risk in both the handling of regulated seed and unpredictable disposal fees.

Necessary equipment purchases, process changes and project site layouts were developed in collaboration with Pioneer leadership. Seed generated outside of the heating season can be stored in a 500 ton hopper connected directly to the corn boiler. Facilities would be able to divert loads of discard at either reduced cost or no cost to the on-campus boiler site at the greenhouses. Process changes would involve new storage and transportation practices, as well as the installation and usage of specialized machinery for removing seeds from storage packets and grinding dried corn cobs down to a pellet-like size. Employees would be trained in the operation of this machinery, in addition to receiving additional education on what can be used as fuel, what must still be sent to external incinerators and what can be discarded in more conventional waste streams or recycled.

## CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN METRIC TONS

TOTAL FOR ALL SECTORS							
CO <sub>2</sub>	SO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CFC	NO <sub>x</sub>	VOC	PM <sub>10</sub>
1,243.90	6.71	46.63	0.62	15.25	3.19	0.10	0.17



**Replace Incandescent Light Bulbs:** Lighting audits were performed throughout facilities on Pioneer’s main campus to identify areas where energy usage could be reduced by upgrading lighting fixtures to lower wattage lamps. More than 275 incandescent bulbs were identified in conference rooms with power ratings from 65 to 100 watts. These bulbs have since been replaced with more efficient, longer lasting 11 watt LED lamps. This upgrade will offset over 13,000 kilowatt-hours per year and will greatly reduce the annual cost and number of replacement bulbs needed, as well as maintenance time and costs.

**Replace 42 Watt CFLs:** Higher wattage compact fluorescent lamps were also targeted in the lighting audits. It is estimated that Pioneer could further offset maintenance and utilities costs if 164 42-watt CFLs in Pioneer’s hallways and dining areas were upgraded. By replacing these lamps with 9-watt LED fixtures, Pioneer could reduce lighting energy usage by another 23,500 kilowatt-hours.



PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
CORN BOILER	\$214,929	3.5 MILLION KWH 967 TONS	RECOMMENDED
REPLACE INCANDESCENT LIGHT BULBS	\$1,007	13,609 KWH	IMPLEMENTED
REPLACE 42 WATT CFLS	\$2,253	23,564 KWH	IN PROGRESS

