ZOETIS

CHARLES CITY

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COMPANY PROFILE
Zoetis is a global company known for its support of the animal health industry. The company is dedicated to delivering quality animal health products including medicines, vaccines and diagnostic products to veterinarians, farmers and pet owners who raise and care for animals. The Charles City, Iowa, facility specializes in poultry, but also produces products for cattle, swine, horses, and companion animals such as dogs and cats. Zoetis' mission statement is "To build on a six-decade history and singular focus on animal health to bring customers quality products, services and a commitment to their businesses."

PROJECT BACKGROUND
The primary goals of this project were to identify potential energy savings for the Research and Administration Building on Zoetis' campus and to complete a feasibility study for renewable energy sources to provide power for the chillers. The Research and Administration Building was built in 1969 and required an assessment to identify opportunities for energy efficiency upgrades. Due to the large number of original windows, it was suspected that significant energy losses were occurring through the building envelope. Zoetis consumes a large quantity of energy to operate production and supporting facilities and is exploring renewable energy sources to help meet sustainability goals.

INCENTIVES TO CHANGE
As a world leader, Zoetis strives to set an example for responsible production practices and environmental sustainability. Energy conservation is one of the main emphasis areas for continuous improvement that will have both environmental and economic benefits. Improving the energy efficiency of the Research and Administration building envelope could reduce the total energy consumed at Zoetis' Charles City facility. Additionally, moving to renewable sources of energy would reduce their reliance on grid energy and improve company sustainability.

RESULTS
Retrofit Windows: An energy audit including an infrared survey was conducted and showed that significant heat transfer is occurring through windows in the Research and Administration building. These windows are wood-framed, single-pane glass windows and are original to the 1968 construction of the building. Windows compose about 60% of the exterior shell of this building and excessive heat transfer between the interior and exterior of the building result in higher heating and cooling requirements to maintain a comfortable temperature for employees. Several window companies were invited to assess and prepare quotes for window upgrades. Upgrading the windows to double pane glass windows filled with argon and metal framing results in an increase of thermal resistance by a factor of 10.

To accomplish this, a four phase program was suggested. The building would be split into four parts based on the room numbers. This helps to break such a large project into manageable segments. Using the room number system will help make it easy to clarify which parts go with which phase. As a result of window upgrades, heating and cooling costs for the Research and Administration Building could be significantly reduced. In addition to economic benefits, Zoetis' employees would enjoy a more comfortable working environment.

Alternative Energy: The Charles City facility consumes a large amount of energy to operate and the majority of power consumption goes to the chillers. A renewable energy system sized for the chillers was explored, but it was found that a larger scale renewable energy system would be a more economical option and would likely be necessary for the project to be a cost effective option at Zoetis. A major constraint that applies to a project this large is that the utility company permits only one megawatt of electricity for net metering. If more than one megawatt is needed then the savings are nearly halved, so appropriately sizing the system is important. Once the amount of energy usage was determined, the intern researched wind and solar technologies, as they typically offer the best return for Iowa companies. Incentives and tax credits available for wind and for solar were compared as well as the price per kilowatt of each. Several vendors were contacted to obtain official bids for the project in order to establish a realistic base line and compare the feasibility of solar versus wind.

There are many different types, sizes, and qualities of solar panels and wind turbines. It was determined from the project analysis that the most cost effective course of action is to pursue a 289 kilowatt solar array energy system to offset energy consumption at select buildings on Zoetis' campus. By beginning implementation of alternative energy to supply select buildings, the project could be scaled up to any system size to offset more of the overall cost of electricity. Starting with the 289 kilowatt system creates a good baseline on price that is large enough to achieve a low dollar per watt of installed power but is still able to be scaled up to help meet Zoetis' energy needs. This scale up is possible with the same payback period up to the point of reaching the net metering cap. To move forward with implementation, a thorough review of project feasibility would need to be completed followed by a budgetary review and pre-planning conversations with the solar firm.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
RETROFIT WINDOWS	$124,314	2,400,000 kWh	RECOMMENDED
ALTERNATIVE ENERGY	$32,333	340,998 kWh	RECOMMENDED