

FRONTIER NATURAL PRODUCTS COOPERATIVE

COMPANY BACKGROUND

Frontier Natural Products Co-op specializes in natural and organic products. Frontier's products are found in natural products stores and specialty shops throughout the United States and Canada. By offering easy access to high-quality, competitively priced choices that are both environmentally friendly and socially responsible, Frontier seeks to lead the way in bringing nature — and peace of mind — to customers.

As the world's largest global supplier of organic herbs and spices, Frontier holds a leadership position, not only in the marketplace, but also in the effort to convert food producers to sustainable farming and production practices. Their work is driven by the belief that fostering environmental responsibility is crucial to the world's future.



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PROJECT BACKGROUND

Frontier Natural Products Co-op has achieved ongoing benefits by partnering with Pollution Prevention Services. In 2006, a program engineer conducted a lighting survey for the Norway site that produced large financial savings and improved efficiency. This year, at the Norway site, Frontier conducted a comprehensive survey of the operations equipment and machinery, including compressors, to detect the causes of high peak demand during normal, day-to-day operations.

INCENTIVES TO CHANGE

After finishing phases I and II of the lighting retrofit projects during the 2007 fiscal year, Frontier began to

look for other opportunities to improve efficiency. Frontier decided to undertake an assessment of its operating equipment after consulting with the energy provider and Pollution Prevention Program Services about kWh trends.

RESULTS

HVAC: HVAC is used widely throughout the facility and accounts for approximately 40 percent of total electrical usage. There are 16 rooftop HVAC units controlled individually on buildings 5, 6 and 7 at the plant. Frontier must maintain an environment of 65 degrees Fahrenheit and 65 percent relative humidity for food products. A previous survey of the newest warehouse concluded that there was an overcapacity of HVAC. However, each rooftop unit is controlled individually, and is run only as needed. Roughly 60 percent of the HVAC rooftop units are running on buildings 5, 6 and 7 at any point in time. When they begin to fall behind, others turn on to maintain the required temperature. It is recommended that ice storage be used to reduce the cooling load of

air conditioning units during peak hours. Ice storage units will divert 95 percent of the cooling load to lower-emitting, less costly off peak hours.

Compressors: Frontier uses compressed air for many small processes throughout the facility. Compressor usage accounts for 6 percent to 14 percent of the production's electrical cost. Equipment cycling can cause an increase in compressor inefficiencies if the required volume is not stored close to the area of use. It is recommended that 5 gallons of storage be used for every cfm of air generated. Air system maintenance and usage is difficult to control, resulting in approximately 25 percent loss to

leaks, 25 percent used marginally and 50 percent used beneficially. An ongoing compressed air leak program is recommended and could save Frontier a large amount of energy in the future.

Motors: The production areas consist of many electric motors ranging from 40 horsepower down to fractions of horsepower. The majority of the larger motors ranging from 10 horsepower to 30 horsepower are in processing. These motors, while still running as rated, are older motors. It is recommended that the older motors be replaced with new, premium efficiency motors. Each motor would increase efficiency by three percent.



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	0.86
CO	0.088
NOX	0.409
VOC	0.014
PM	0.021

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	158.963
CH4	5.977
N2O	0.080
CFCs	1.955

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
ICE-ENERGY PER UNIT	\$4,100 (6 MONTHS USE)	6,615 KWH DIVERTED	RECOMMENDED
COMPRESSOR: AIR STORAGE	\$8,200	93,100.8 KWH	RECOMMENDED