Brown Drake ZPS installation

Overview

Status: Completed

Project Lead: Zach Platsis

Description

This project will install Zone Presence Sensors on the fume hoods in Brown and Drake. This will allow the Hood control system to set back the air flow during periods when the hood is not being used. The reduction in airflow results in electric and thermal energy savings via reduction in the amount of conditioned air that must be supplied to the room. This project has been vetted by EHS for safety of airflow reductions. Data collected during this project will also provide useful information for the development of future fume hood airflow reduction projects.

Project Types

Building Heating, Ventilation, Air Conditioning (HVAC) Fume hoods

Campus/Site

Newark Campus

Facilities		
Name	Туре	Gross Floor Area
Brown Lab	Laboratory	126500 Sq. Ft.
Drake Hall	Laboratory	55500 Sq. Ft.

Proposed Cost: \$ 115,000.00

Timeline

Project	Install Start	Actual Install	Lifespan
Approved	Date	Complete Date	
2016-12-12	2016-12-12	2017-04-30	10 years

Resources Tracked

Resource	Units	Cost x Unit	Annual Savings
Electricity	kWh	\$0.10	142,000 kWh
Natural Gas	MMBtu	\$6.64	1,365 MMBtu

Measurement and Verification Methodology

Performance

Savings Over Time

	AVERAGE ANNUAL		LIFE OF PROJECT
FINANCIAL SAVINGS (\$)	22,883	121,689	228,833
ENERGY SAVINGS (MMBTU)	1,850	9,835	18,495
EMISSIONS ABATED (MTCO ₂ E)	152.3	819.7	1,532.8

Financial Metrics

SIMPLE PAYBACK PERIOD (YEARS) 3.81	LOAN REPAYMENT PERIOD (YEARS) 3.81	LIFETIME RETURN ON INVESTMENT (ROI) 162.8%
annual roi 16.3%	NET PRESENT VALUE (NPV) \$ 89,742.28	INTERNAL RATE OF RETURN (IRR) 23.08%

UNIT COST PER MTCO₂E ABATED

\$ 56.81

Project Transactions

Transaction Type	Date	Amount
Expenditure TRI-M GROUP LLC - TRI-N	2017-07-21 1 GROUP LLC	-\$65,692.00
Expenditure TRI-M GROUP LLC - TRI-N	2017-08-23 1 group llc	-\$4,601.20
Expenditure TRI-M GROUP LLC - TRI-N	2017-09-22 1 group LLC	-\$2,061.40
Expenditure TRI-M GROUP LLC - TRI-N	2017-10-24 1 group llc	-\$6,018.71
Expenditure TRI-M GROUP LLC - TRI-N	2017-11-30 1 group llc	-\$8,708.16
Loan Repayment	2018-06-20	\$ 10,212.00
Loan Repayment	2019-06-19	\$ 19,217.00

Summary

Project cost

\$87,081.47

(Options from the International Performance Measurement & Verification Protocol)

Option A: Retrofit Isolation with Key Parameter Measurement

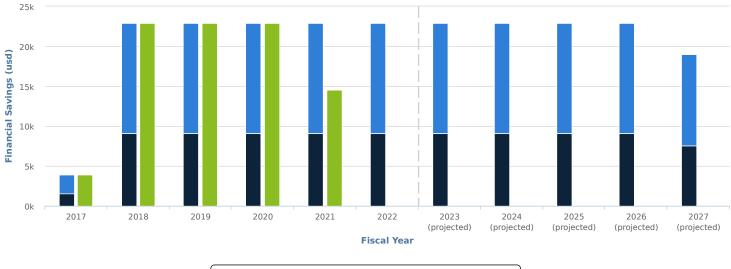
More details about measurement and verification methodology: Brown and Drake labs are equipped with building level sub-metering of Electric, Steam, and Chilled water. The measured values will be compared before and after the project

Annual Tracking Data

Adjusted project cost to be repaid	\$87,081.47
Current amount owed on loan	\$ 57,652.47

Annual Hacki	ing Data					
DATE	SAVED FUEL PRICE (\$/MMBTU)	ENERGY SAVED (MMBTU)	ANNUAL FINANCIAL SAVINGS (\$)	ANNUAL PAYBACK INTO GRF (\$)	CUMULATIVE PAYBACK INTO GRF (\$)	MONEY OWED BACK TO GRF (\$)
2017-04-30	0.0000	0	(87,081.47)	0.00	0.00	87,081.47
2017-06-30	12.3726	314	3,887.03	3,887.03	3,887.03	83,194.44
2018-06-30	12.3726	1,850	22,883.34	22,883.34	26,770.37	60,311.10
2019-06-30	12.3726	1,850	22,883.34	22,883.34	49,653.71	37,427.76
2020-06-30	12.3726	1,850	22,883.34	22,883.34	72,537.05	14,544.42
2021-06-30	12.3726	1,850	22,883.34	14,544.42	87,081.47	0.00
2022-06-30	12.3726	1,850	22,883.34	0.00	87,081.47	0.00
2023-06-30	12.3726	1,850	22,883.34	0.00	87,081.47	0.00
2024-06-30	12.3726	1,850	22,883.34	0.00	87,081.47	0.00
2025-06-30	12.3726	1,850	22,883.34	0.00	87,081.47	0.00
2026-06-30	12.3726	1,850	22,883.34	0.00	87,081.47	0.00
2027-04-29	12.3726	1,535	18,996.31	0.00	87,081.47	0.00
Total Realized	-	9,835	121,689	87,081	-	-
Average	12.3726	1,850	22,883	-	-	-
Total Realized and Projected	-	18,495	228,833	87,081	-	-

Brown Drake ZPS installation : Financial Savings Over Time



📕 Electricity (usd) 📕 Natural Gas (usd) 📒 Annual Payback (usd)