

CUYAHOGA COUNTY MUNICIPAL ENERGY PROGRAM

ASHRAE Level II Energy Audits

Scope of Work:

As part of the American Recovery and Reinvestment Act of 2009, The Cuyahoga County Board of Commissioners received a grant through the U.S. Department of Energy for improving energy efficiency and energy conservation of public buildings in Cuyahoga County. This initiative was referred to as the Cuyahoga County Municipal Energy Program (CCMEP). Varo Engineers, Inc. (VE) was contracted to perform energy audits for seven of the municipalities as part of this program.

VE's scope of work was to conduct site visits, identify space and equipment, analyze data and submit a final audit report for 69 facilities (approximately 611,389 sq ft.). Structure types included office buildings, police and fire stations, community centers, banquet halls, service garages, storage buildings, pools, parks, pump stations, ice rink, and street/traffic lighting.

Process:

Audits were performed to ASHRAE Level II Energy Audit standards. An audit walkdown was performed at each facility by a Certified Energy Manager (C.E.M.). During the walk down, data was collected to create an energy profile of each building. All major energy using equipment was cataloged (lighting, air handling units, water heaters, etc.). Observations were made pertaining to the building envelope (materials of construction for windows, roof, insulation, etc.) Municipality personnel were interviewed to determine building usage schedule, existing energy usage (temperature setbacks, HVAC usage, etc.), and energy concerns.

Two years of utility bills were utilized to create data for the analysis of building energy usage. The data was used to determine the Energy Utilization Index (annual energy use in kBtu/ft²/yr) and Cost Index (\$/ft²/yr) for total building energy use. This information was used to compare the buildings to regional averages to determine an ultimate target for energy use and cost. Billing data was also used to determine incremental energy costs for the municipality (\$/kWh electric, \$/MCF gas) and compare them to regional standards.

Energy Conservation Measures (ECMs) were identified based on observations during the walk down and with input from the building occupants and maintenance personnel. Recommendations were made for interior and exterior lighting, building envelope, HVAC systems, domestic hot water, utility pumps, and other energy using systems as applicable, including water usage reduction. Several communities showed electric billing rates

comparable to local residential rates but high for commercial rates. It was recommended that these municipalities negotiate a new rate with the local utility, which could mean savings of more than 20% per year in rate change alone.

For all ECMs, a predicted yearly savings and cost to implement was provided to determine payback periods.

The final audit report also highlighted financing options to implement the recommended ECM's; including government grants and tariffs, and utility company rebates that are available.

Summary:

Cumulative total for all audit recommendations projected a savings of over \$1.9 million dollars for the seven municipalities at an average payback period of less than 10 years. The following summary table shows the savings resulting from energy cost reduction and ECM recommendations. A Value Added feature to each report was the completion of lighting rebate forms. This encouraged and expedited the implementation of lighting upgrades for these communities to begin to realize the energy and money savings found as the result of the audit.

CUYAHOGA COUNTY MUNICIPAL ENERGY PROGRAM SUMMARY								
A	B	C	D	E	F	G	H	I
Client	SAVINGS FROM BILLING REDUCTION	RECOMMENDATION SAVINGS/YR (BUILDINGS)	INSTALLATION COST (BUILDINGS)	PAYBACK (BUILDINGS) (D/C)	RECOMMENDATION SAVINGS/YR (INCL STREET/TRAFFIC LIGHTING)	INSTALLATION COST (INCL STREET/TRAFFIC LIGHTING)	PAYBACK (TOTAL) (G/F)	TONS CO ₂ REDUCED /YR
Maple Heights	\$110,000	\$101,124	\$376,875	3.73	\$463,458	\$3,434,533	7.41	1457
Bratenahl Village	\$1,000	\$13,133	\$241,286	18.37	\$45,715	\$574,286	12.56	228
Woodmere Village	\$1,800	\$6,714	\$45,589	6.79	\$12,043	\$101,089	8.39	64
Bay Village	\$90,000	\$39,400	\$229,600	5.83	\$39,400	\$229,600	5.83	253
Walton Hills Village	\$15,000	\$48,900	\$330,900	6.77	\$74,200	\$661,600	8.92	375
Oakwood Village	\$0	\$27,800	\$202,000	7.27	\$288,900	\$3,931,800	13.61	692
Rocky River	\$220,000	\$111,842	\$804,000	7.19	\$547,242	\$7,082,600	12.94	1805
TOTAL	\$437,800	\$348,913	\$2,230,250	6.4	\$1,470,958	\$16,015,508	10.9	4874

For more information regarding this project, please contact us at (614) 459-0424.

Submitted by:

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