

NORTH POLICE HVAC ENERGY EFFICIENCY UPGRADE

The North Police District's HVAC system is one of the most energy inefficient systems based on an analysis done by Facilities Management, and

Below shows energy costs for the North Police Station compared to the West Police Station, which shows that the North Police Station uses more or about the same amount of energy as the West Police Station even though it is a lot smaller. North Police Station is 7,790 square feet, while West Police Station is 12,740 square feet, and

Month	2006	2006	2007	2007	2008	2008
	North	West	North	West	North	West
January	2,627.16	5,366.37	2,732.08	2,616.52	2,701.47	1,393.25
February	2,783.65	2,602.12	2,440.63	3,319.64	2,690.28	3,298.39
March	2,649.06	2,192.79	2,717.94	2,657.26	2,409.68	2,974.53
April	2,736.13	1,871.18	2,052.32	2,336.81	1,946.55	2,588.13
May	2,941.32	2,170.28	2,294.75	2,270.33	2,006.53	2,420.95
June	2,599.33	2,563.69		2,294.19	2,444.66	2,903.68
July	3,556.28	2,644.67	5,249.03	2,392.48	4,320.21	2,627.35
August	3,842.85	2,585.48	2,837.75	2,748.02	3,952.16	2,324.61
September	2,587.81	1,121.01	2,222.48	2,008.77	4,170.42	1,682.12
October	2,175.19	1,802.41	2,139.52	1,991.82		
November	1,844.45	2,061.47	2,083.04	2,392.66		
December	2,366.01	2,481.18	2,580.82	2,679.08		
Total	32,709.24	29,462.65	29,350.36	29,707.58	26,641.96	22,213.01

There has also been periodic maintenance problems with the HVAC system at North Police and,

Facilities Management has already replaced the boiler, added on HVAC controls, and hired an engineering firm to design a new HVAC system throughout the building. The last step, is to replace the inefficient constant volume heating and cooling system and with a much more efficient variable volume system with an air-to-air heat exchanger and,

The energy savings for this overall project as estimated by the engineering firm to be:

	<u>Electrical</u>	<u>Natural Gas</u>	<u>Energy Costs</u>
1. VAV conversion	41,000 KWH/yr	-	\$ 4,100/yr
2. Heat Recovery	2,270 KWH/yr	4100 Therms/yr	\$ 4,130/yr
3. VAV Reheat	-	2000 Therms/yr	\$ 2,000/yr
4. Economizer	11,100 KWH/yr	-	\$ 1,100/yr
5. Boiler Replacement	-	1160 Therms/yr	\$ 1,160/yr
6. VS hot water pumping	4,300 KWH/yr	-	\$ 430/yr
Total	58,670 KWH/r	7,260 Therms/yr	\$ 12,920/yr

Based on: natural gas = \$1.00/Therm electricity = \$0.10/KWH

This estimate is results in a 24% natural gas savings and 47% electrical savings from the 2003 billing.

The engineering firm estimates the cost for the North Police HVAC Energy Efficiency Upgrade Public Works project to be \$185,000 plus contingency and,

The Madison Police Departments remaining budget authority for this project is approximately \$85,000 and,

Facilities Management feels that the engineering firm's estimate is high considering the economic climate and downturn in the construction industry and wishes to advertise this project but may need to return to the Common Council with a resolution to award a contract for this project and amend the 2009 Capital Budget for the Madison Police Department.