



Energy Conservation Measures

January 2013





Summary of Opportunities

- Exterior Lighting Fixture Retrofit
- Heating Boiler and Hot Water Heater Replacement
- Intelligent Irrigation Controls
- HVAC System Retrofit
- Enhanced Freeze Protection

Annual Savings \$199,510

Cost \$2,130,185

Effective Payback 7.2 years



Exterior Lighting Fixture Retrofit

Replace selected fixtures with long-life LED fixtures

- **Electric cost savings**
- **Reduces maintenance costs**
- **Partially funded through the Denton Municipal Electric Incentive program**



Heating Boiler and Hot Water Heater Replacement

Replace heating boilers at Crownover MS, Hodge ES, McMath MS, McNair ES & Strickland MS

Replace hot water heaters at Crownover MS & Hodge ES

- **Existing boilers and hot water heaters have met or exceeded their service life**
- **Natural Gas cost savings**
- **Major maintenance cost avoidance**



Intelligent Irrigation Controls

Continue with the district's aggressive moves to manage its fastest increasing utility cost

This project will complete this strategy across the district

- **Water cost savings for the district**
- **Clean water savings for the community**
- **Maintenance savings, quickly detect, locate and fix the leaks**



HVAC System Retrofit – Guyer HS

Separate the Athletic Offices in the main building from the large central chilled water system

This will allow these small areas to be cooled without running the entire building system (similar to RHS and DHS)

- **Electric cost savings**
- **Run Time / Maintenance saving on central chiller plant**



Enhanced Freeze Protection

Reprogram all chilled water systems throughout the district for more precise operation in freezing conditions.

- **Electric cost savings**
- **Better protection for the equipment**



Current Status of Utility Cost

Utility conservation programs have allowed the district to keep an almost flat total utility budget over the last six years even with enormous growth:

- FY 2005-2006 \$6.96 million**
- FY 2011-2012 \$7.11 million**

Middle School #7 will increase annual utility spend by \$200K-\$300K

Implementation of these new saving recommendations will allow the district to continue its efforts to maintain the total utility budget without increases, exclusive of any large un-anticipated rate increases.



Project Pro-Forma

Denton Independent School District

Conservation Measure	Investment	Year 1 Savings	Rebates (1)	Capital Avoidance (2)	Simple Payback	Effective Payback 10 years	Annual Escalation Rates
Intelligent Irrigation	\$1,210,980	\$117,349			10.3	8.2	Energy cost 3.00%
Boiler Replacements	\$542,685	\$23,420		\$379,880	7.0	6.0	Water cost 5.00%
Exterior Lighting Retrofit	\$335,606	\$50,718	\$20,000		6.2	5.4	
Guyer HS - HVAC Retrofit	\$31,119	\$5,523			5.6	4.9	
Districtwide Freeze Protection	\$9,795	\$0					
Total Initial Project Costs	\$2,130,185						
Capital Required	\$2,130,185	\$197,010	\$20,000	\$379,880	8.8	7.2	

Pro-forma	Year										TOTAL
	1	2	3	4	5	6	7	8	9	10	
Water Savings	\$117,349	\$123,217	\$129,378	\$135,847	\$142,639	\$149,771	\$157,259	\$165,122	\$173,378	\$182,047	\$1,476,007
Energy Savings	\$79,661	\$82,051	\$84,513	\$87,048	\$89,659	\$92,349	\$95,120	\$97,973	\$100,912	\$103,940	\$913,226
Total Project Savings	\$197,010	\$205,268	\$213,890	\$222,894	\$232,298	\$242,120	\$252,379	\$263,095	\$274,291	\$285,987	\$2,389,233
Capital Required	\$2,130,185										
Rebates and Capital Avoidance	\$399,880										
Annual Cash Flow	(\$1,533,295)	\$205,268	\$213,890	\$222,894	\$232,298	\$242,120	\$252,379	\$263,095	\$274,291	\$285,987	\$658,928
Cumulative cash flow	(\$1,533,295)	(\$1,328,027)	(\$1,114,137)	(\$891,242)	(\$658,944)	(\$416,824)	(\$164,445)	\$98,650	\$372,941	\$658,928	

NOTES

- 1 Estimated rebates from Denton Municipal Electric for the lighting retrofit.
- 2 Estimate of the replacement cost for standard efficiency boilers and hot water heaters, like for like at the schools proposed.

