

Denton ISD
Utilities Cost and Usage Report
Mid-Year – (July 2012 through December, 2012)

Executive Summary

- 1) The total utility cost for the July 2012-December 2012 period, decreased by \$193,125 (5.1%) compared to the prior year. 19.5% of this decrease is due to decreased rates in electricity, natural gas and irrigation. Other factors for this decrease include; decrease in electricity, gas and water usage due to a (21.5%) decrease in the cooling degree days, a (12.6%) decrease in heating degree days and a (53%) increase in the rainfall.
- 2) The utility usage for the July 2012-December 2012 period compared to the prior year is as follows:
 - a) Electric usage decreased by 2.5%
 - b) Natural gas usage decreased by 12.0%
 - c) Domestic water usage decreased by 15.3%
 - d) Irrigation usage decreased by 1.0%
- 3) Utility rates decreased for electricity, natural gas and irrigation, resulting in a decrease in cost of \$37,690.
 - a) Electric unit cost decreased by 1.6%.
 - b) Natural gas unit cost decreased by 4.3%.
 - c) Domestic water unit cost increased by 9.0%.
 - d) Irrigation water unit decreased by 3.9%.
- 4) Weather
 - a) There was a 21.5% decrease in the number of cooling degree days, and a 12.6% decrease in heating degree days.
 - b) Rainfall in this period increased by 3.05 inches.

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Utility Costs Comparison to Prior Year

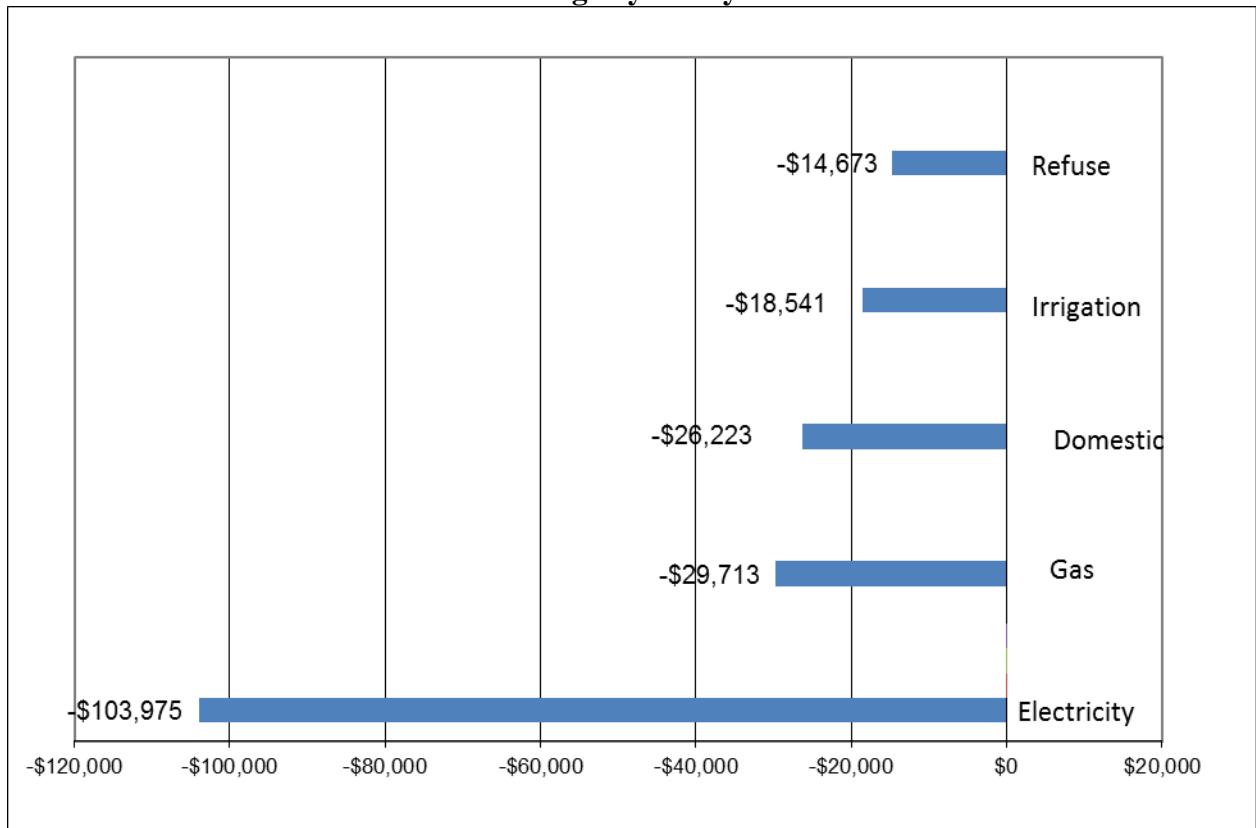
The total utility cost decreased by \$193,125. Table 1 and Figure 1 provide a cost breakdown by category.

Table 1

Category	2011	2012	% change	Cost Change 2011 to 2012
Electric	\$2,562,293	\$2,458,318	-4.1%	-\$103,975
Gas	\$187,916	\$158,203	-15.8%	-\$29,713
Domestic Water	\$341,118	\$314,895	-7.7%	-\$26,223
Irrigation	\$417,422	\$398,881	-4.4%	-\$18,541
Refuse	\$313,122	\$298,449	-4.7%	-\$14,673
Total	\$3,821,871	\$3,628,746	-5.1%	-\$193,125

Note: The changes in the cost of utilities contributed to a decrease in cost. See tables 3 and 4 for a detailed breakdown.

Figure 1
Cost Change by Utility



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Utility Cost Comparison by Facility

Table 2 represents the total utility cost by facility per SqFt for the last 6 months for Energy and Water.

Table 2

Site	Sq Ft	Energy Cost per Sq Ft	Domestic Water Cost per Sq Ft	Irrigation Cost per Sq Ft
Denton High School	527,073	\$0.57	\$0.04	\$0.02
Guyer High School	418,700	\$0.49	\$0.07	\$0.06
Ryan High School	416,316	\$0.56	\$0.05	\$0.12
Calhoun Middle School	234,406	\$0.45	\$0.02	\$0.03
Strickland Middle School	192,267	\$0.53	\$0.02	\$0.07
Harpool Middle School	161,327	\$0.57	\$0.02	\$0.15
Navo Middle School	161,327	\$0.57	\$0.04	\$0.25
Crownover Middle School	161,200	\$0.57	\$0.04	\$0.13
McMath Middle School	154,486	\$0.69	\$0.03	\$0.10
Advanced Technology Center	120,700	\$0.66	\$0.04	\$0.19
Rayzor Elementary School	97,261	\$0.49	\$0.09	N/A
Cross Oaks Elementary	88,231	\$0.43	\$0.06	N/A
Wilson Elementary School	87,719	\$0.49	\$0.05	\$0.04
Lee Elementary School	85,592	\$0.59	\$0.07	\$0.12
Hodge Elementary School	83,175	\$0.64	\$0.05	\$0.09
McNair Elementary School	83,175	\$0.68	\$0.05	\$0.08
Blanton Elementary School	80,344	\$0.57	\$0.03	\$0.21
L.A. Nelson Elementary	80,334	\$0.67	\$0.04	\$0.01
Olive Stephens Elementary School	80,334	\$0.61	\$0.06	\$0.05
Paloma Creek Elementary	80,334	\$0.60	\$0.04	\$0.10
Savannah Elementary School	80,334	\$0.48	\$0.03	\$0.12
Rivera Elementary School	79,990	\$0.64	\$0.05	\$0.03
Hawk Elementary School	79,115	\$0.44	\$0.08	\$0.18
Borman Elementary School	78,952	\$0.54	\$0.09	N/A
Providence Elementary School	78,949	\$0.48	\$0.05	\$0.06
C.H. Collins Athletic Complex	78,059	\$0.70	\$0.42	\$0.24
E.P. Rayzor Elementary School	77,725	\$0.51	\$0.04	\$0.11
Pecan Creek Elementary School	77,725	\$0.50	\$0.05	\$0.02
W.S. Ryan Elementary School	77,725	\$0.55	\$0.04	\$0.16
Ginnings Elementary School	77,331	\$0.62	\$0.09	N/A
Evers Park Elementary School	75,511	\$0.67	\$0.10	\$0.05
Houston Elementary	70,559	\$0.58	\$0.05	\$0.08
Central Services	66,408	\$0.53	\$0.93	\$0.03
Gonzalez School For Young Children	60,391	\$0.34	\$0.03	\$0.14
Service Center Annex	59,048	\$0.49	\$0.04	\$0.04
Ann Windle School for Young Children	41,200	\$0.72	\$0.07	\$0.25
Lester Davis School	32,563	\$0.36	\$0.06	N/A
Fred Moore High School	28,487	\$0.57	\$0.05	\$0.03
Technology Bldg	16,173	\$2.40	\$0.07	N/A
Transportation Facility	12,800	\$0.76	\$0.15	N/A
Virginia Gallian Child Dev. Ctr.	8,218	\$0.71	\$0.07	N/A
Special Ed Services	6,528	\$0.87	\$0.06	N/A
District Totals	4,658,092	\$0.56	\$0.07	\$0.09

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Utility Unit Cost Comparison

Table 3 lists the average unit cost for electricity, natural gas, water and irrigation.

Table 3
Utility Unit Cost Comparison

Utility	2011	2012	Change	% Change
Electric, \$/kwh	\$0.093735	\$0.092229	-\$0.001506	-1.6%
Gas, \$ per Therm	\$0.715753	\$0.684838	-\$0.030915	-4.3%
Water-Dom, \$/CCF	\$8.610395	\$9.381648	\$0.771253	9.0%
Water-Irrig, \$/CCF	\$3.768435	\$3.620530	-\$0.147905	-3.9%

Table 4 details the impact of the unit cost change on the cost of electricity, natural gas and water.

Table 4
Utility Cost Comparison

Category	2012 Use	2012 Cost Calculated with Current Unit Cost	2012 Cost Calculated on 2011 Unit Cost	Cost Difference
Electric (kWh)	26,654,536	\$2,458,318	\$2,498,458	-\$40,140
Gas (Therm)	231,008	\$158,203	\$165,345	-\$7,142
Dom Water (CCF)	33,565	\$314,895	\$289,008	\$25,887
Irrig Water (CCF)	110,172	\$398,881	\$415,176	-\$16,295
Total:		\$3,330,297	\$3,367,987	-\$37,690

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Energy and Water Use Comparison by Facility

Table 5 represents the total energy and water use by facility per SqFt for the last 6 months.

Table 5

Site	Sq Ft	Energy kBtu per Sq Ft	Domestic Water CCF per Sq Ft	Irrigation Water CCF per Sq Ft
Denton High School	527,073	25.3	0.005	0.005
Guyer High School	418,700	22.3	0.007	0.019
Ryan High School	416,316	27.7	0.008	0.035
Calhoun Middle School	234,406	19.5	0.002	0.009
Strickland Middle School	192,267	24.2	0.003	0.021
Harpool Middle School	161,327	26.3	0.003	0.054
Navo Middle School	161,327	29.9	0.004	0.035
Crownover Middle School	161,200	25.9	0.004	0.026
McMath Middle School	154,486	31.6	0.004	0.030
Advanced Technology Center	120,700	28.1	0.002	0.056
Rayzor Elementary School	97,261	19.3	0.014	N/A
Cross Oaks Elementary	88,231	18.4	0.008	N/A
Wilson Elementary School	87,719	18.4	0.008	0.012
Lee Elementary School	85,592	25.4	0.011	0.036
Hodge Elementary School	83,175	25.2	0.007	0.021
McNair Elementary School	83,175	28.1	0.007	0.021
Blanton Elementary School	80,344	23.4	0.006	0.078
L.A. Nelson Elementary	80,334	24.7	0.018	0.001
Olive Stephens Elementary School	80,334	24.0	0.004	0.005
Paloma Creek Elementary	80,334	24.3	0.007	0.040
Savannah Elementary School	80,334	19.1	0.004	0.052
Rivera Elementary School	79,990	30.2	0.007	0.008
Hawk Elementary School	79,115	19.0	0.008	0.034
Borman Elementary School	78,952	21.3	0.015	N/A
Providence Elementary School	78,949	19.5	0.011	0.026
C.H. Collins Athletic Complex	78,059	15.5	0.034	0.062
E.P. Rayzor Elementary School	77,725	31.4	0.007	0.041
Pecan Creek Elementary School	77,725	18.8	0.007	0.006
W.S. Ryan Elementary School	77,725	20.6	0.005	0.047
Ginnings Elementary School	77,331	25.7	0.016	N/A
Evers Park Elementary School	75,511	30.1	0.017	0.013
Houston Elementary	70,559	22.4	0.006	0.022
Central Services	66,408	20.2	0.004	0.007
Gonzalez School For Young Children	60,391	13.6	0.003	0.041
Service Center Annex	59,048	22.2	0.006	0.012
Ann Windle School for Young Children	41,200	27.9	0.010	0.075
Lester Davis School	32,563	14.5	0.007	N/A
Fred Moore High School	28,487	22.7	0.007	0.007
Technology Bldg	16,173	103.1	0.010	N/A
Transportation Facility	12,800	43.4	0.021	N/A
Virginia Gallian Child Dev. Ctr.	8,218	26.0	0.007	N/A
Special Ed Services	6,528	32.6	0.002	N/A

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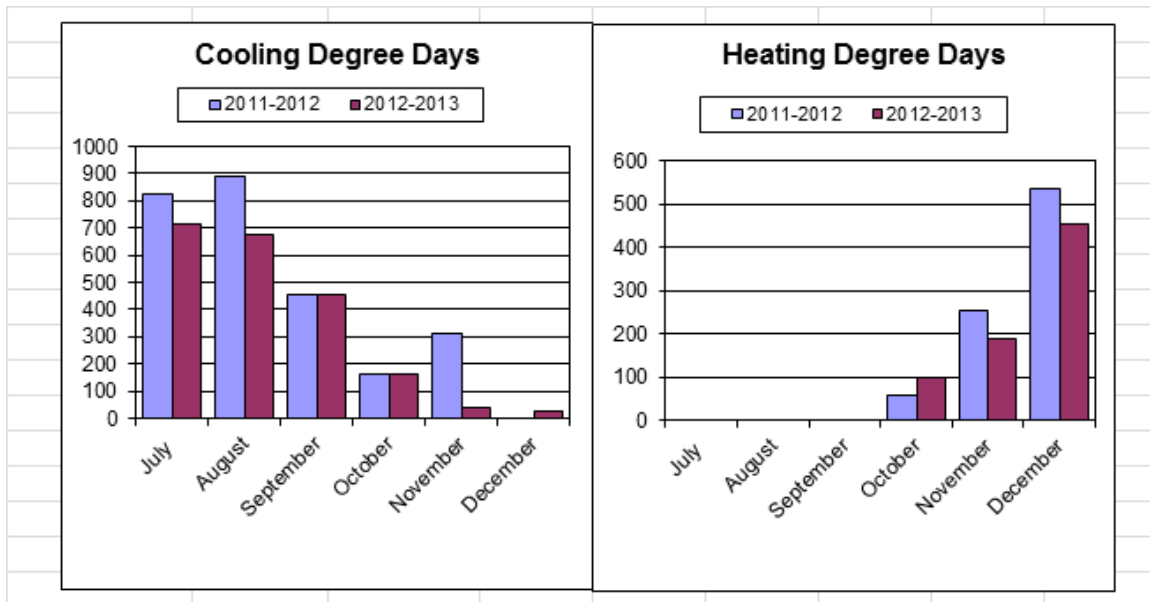
Weather Comparison to Prior Year

There was a 21.5% decrease in the number of cooling degree days, and a 12.6% decrease in heating degree days. Rainfall over the period increased 13.3 (70%) inches from the prior year.

Table 7
Weather Data

	Cooling Degree Days		Heating Degree Days	
	2011-2012	2012-2013	2011-2012	2012-2013
July	828	713	0	0
August	887	675	0	0
September	457	457	0	0
October	166	166	59	98
November	312	40	253	190
December	0	28	535	452
Six Months Total	2,650	2,079	847	740
%Change	-21.5%		-12.6%	

Figure 5



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Table 8
Rainfall Data

	Rainfall (in.)	
	2011-2012	2012-2013
July	0.09	0.78
August	0.96	3.19
September	0.66	1.75
October	3.12	1.02
November	0.86	0.05
December	0	1.95
6 Mo. Total	5.69	8.74
%Change	53.6%	

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Energy Cost and Use Historical Trends

Figure 6

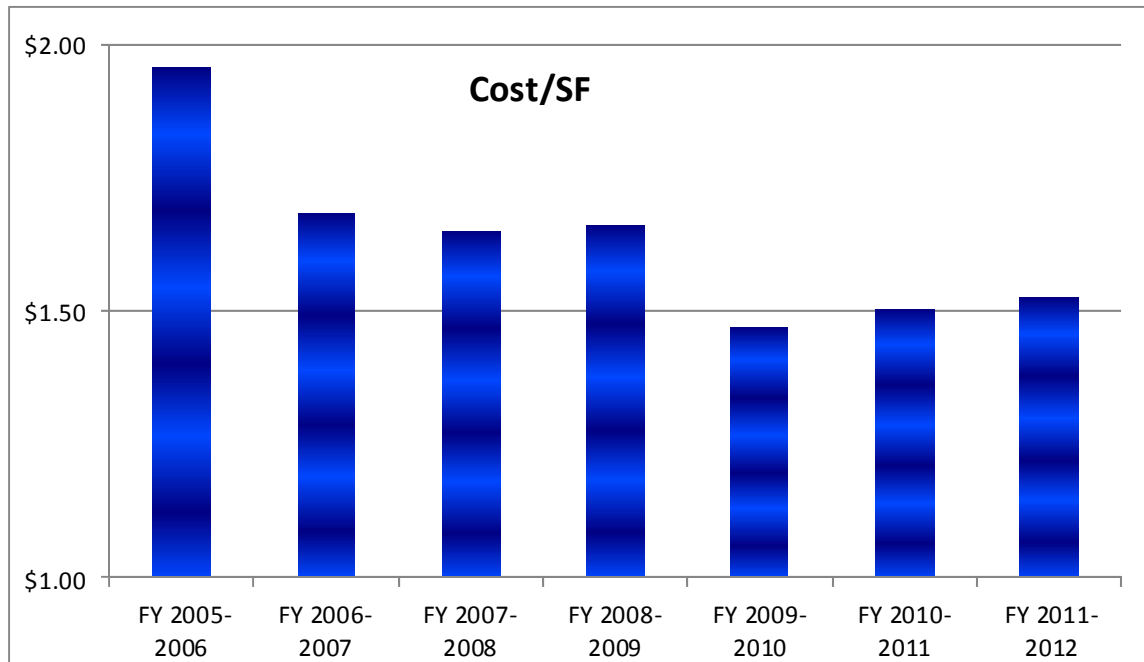
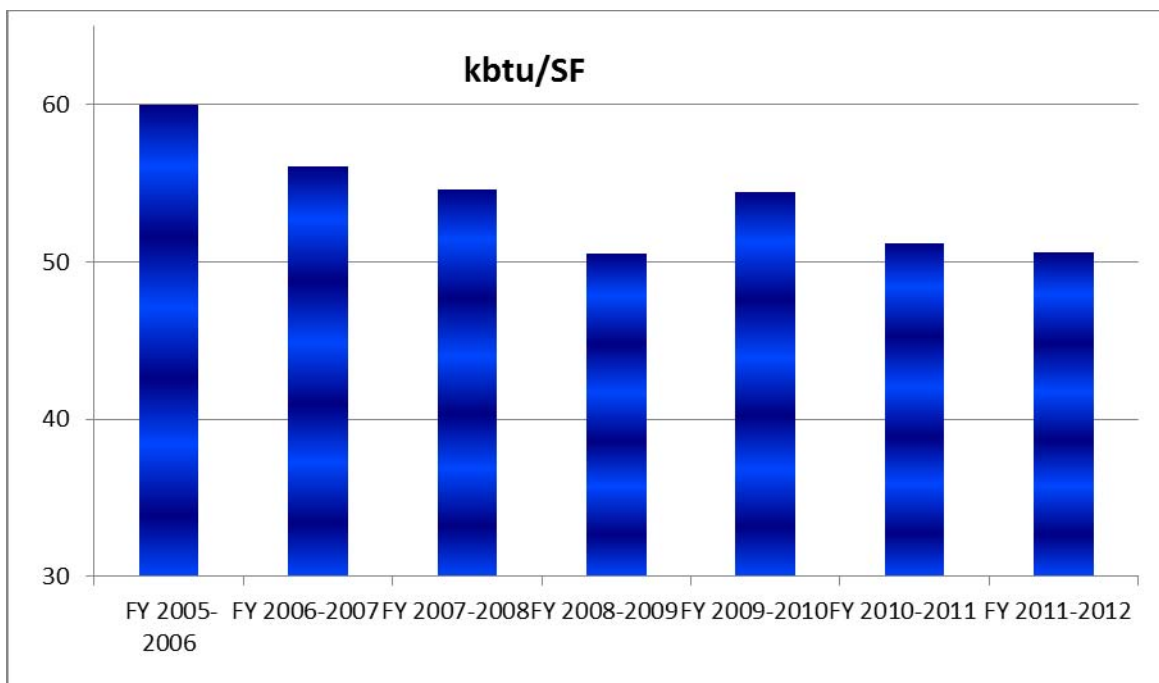


Figure 7



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Diary

2005-2006

- Calhoun Middle School – Added 15, 150 square feet in January 2006.
- McNair Elementary School – Added DDC Temperature controls and replaced chiller.
- Hodge Elementary School – Added DDC Temperature controls and replaced chiller.

2006-2007

- Ryan HS – Added 10,000 square feet of classroom space.
 - Includes 5 PRTU E/G.
- New sites opened this year:
 - Savannah ES
 - Navo MS
 - Advanced Technical Center
- Three utility accounts were closed in the second quarter:
 - Rayzor ES – Denton Municipal Utilities – Acct #4240617-00
 - Served a ball field that is no longer in use.
 - Guyer HS – Denton Municipal Utilities – Acct #5570526-02
 - Only billed solid waste. Solid waste now billed on Acct #4290608-01 with rest of utilities.
 - Savannah ES – IESI – Acct #004036438
 - 30 yard roll off container no longer on campus.
- Six utility accounts were opened in the fourth quarter:
 - Paloma Creek ES :
 - CoServ – Acct #0000276200 – Electricity and Natural Gas
 - IESI – Acct #004040591 – Refuse
 - Mustang – Acct #010420 000 – Water
 - Mustang – Acct #010421 000 – Water
 - Mustang – Acct #010422 000 – Water
 - Mustang – Acct #010423 000 – Water

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2007-2008

- Summer School was held at the following schools in 2007:
 - Strickland JH
 - Borman ES
 - Hodge ES
 - Lee ES
 - Davis School
- 3 utility accounts were opened in the first quarter:
 - LA Nelson ES:
 - Denton Municipal Utilities – Acct #4350025-01 – Electricity, Water, and Refuse
 - Denton Municipal Utilities – Acct #5580203-00 – Refuse
 - Atmos Energy – Acct #80-000201127-1750192-0 – Gas
- 2 utility accounts were closed in the second quarter:
 - Strickland MS
 - Denton Municipal Utilities – Acct #4240619-00 – Electricity
 - WS Ryan ES
 - Denton Municipal Utilities – Acct #5580109-00 – Refuse
- The unoccupied section of Fred Moore High School has been occupied by Special Education.
- Hawk Elementary School – a lighting control panel was commissioned in July 2007.
- 2 utility accounts were closed in the fourth quarter:
 - Hodge ES:
 - Denton Municipal Utilities – Acct #4240633-00 – Electricity
 - WS Ryan ES:
 - Denton Municipal Utilities – Acct #5560938-00 – Refuse
- 1 utility account was changed during the fourth quarter:
 - Lee ES
 - Denton Municipal Utilities – Acct #4100967-01 – Electric Service Retired
- 2 electric accounts were switched from TXU to Direct Energy in the fourth quarter:

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- Crownover MS:
 - Closed: TXU Energy – Acct #893-3178-98-3 – Electricity
 - Opened: Direct Energy – Acct #995882921987-RCMS – Electricity
- Hawk ES:
 - Closed: TXU Energy – Acct #972-1384-98-1 – Electricity
 - Opened: Direct Energy – Acct #995882921978-Hawk – Electricity

2008-2009

- 20 utility accounts were opened in the first quarter:
 - Blanton ES
 - CoServ – Acct #0000312515 – Electricity, Gas
 - Denton County FWSD#7 – Acct #417 – Water
 - Denton County FWSD#7 – Acct #421 – Water
 - Denton County FWSD#7 – Acct #428 – Water
 - Denton County FWSD#7 – Acct #429 – Water
 - Denton Municipal Utilities – Acct #5580385-00 – Refuse
 - Harpool MS
 - CoServe – Acct #0000314585 – Electricity, Gas
 - Denton County FWSD#7 – Acct #422 – Water
 - Denton County FWSD#7 – Acct #423 – Water
 - Denton County FWSD#7 – Acct #430 – Water
 - Denton County FWSD#7 – Acct #431 – Water
 - Denton Municipal Utilities – Acct #5580387-00 – Refuse
 - Olive Stephens ES
 - Lake Cities Municipal Utility Authority – Acct #4747-00 – Water
 - Lake Cities Municipal Utility Authority – Acct #4791-00 – Water
 - Lake Cities Municipal Utility Authority – Acct #4792-00 – Water
 - Lake Cities Municipal Utility Authority – Acct #4793-00 – Water
 - Lake Cities Municipal Utility Authority – Acct #4794-00 – Water
 - Denton Municipal Utilities – Acct #5580388-00 – Refuse
 - Atmos – Acct #80-000201127-1797665-2 – Gas
 - TXU Energy – Acct #801-7228-98-5 – Electricity

Mechanical and Control Work completed April through October 2008:

- DDC controls were installed on all portable classrooms
- Calhoun Middle School

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- Replace built-up chilled and hot water VAV system serving the Jones / McAllister building with new package rooftop units.
 - Replaced (4) Roof-top package units on the east side of the main building.
 - Replaced (8) Roof-top package units on the west side of the main building.
 - Replaced (13) Roof-top package units on the East building.
 - Replaced the heating boiler in the Main Building.
 - Replaced the domestic hot water heating system in the Jones / McAllister building.
- Central Services
 - Replaced all (14) new split systems.
 - Converted the controls for R-lead to DDC
- Clear Creek
 - Replace eight (8) new rooftop units and added one (1) additional unit.
 - Converted the controls for R-lead to DDC
- Denton High School
 - Replaced (36) Roof-top package units serving the spaces which have been historically called the vocational education area, excluding the cosmetology area.
 - Replaced (1) Roof-top package unit to replace serving the main office area.
 - Replaced the air handlers serving the main space of the auditorium.
 - Replaced the domestic hot water heating system serving the kitchen.
 - Replaced pneumatic controls on all fan-powered VAV boxes with DDC.
- Fred Moore High School
 - Replaced eleven (11) rooftop units.
 - Replaced thirteen (13) split heating and cooling units.
 - Converted the controls for R-lead to DDC
- Rivera Elementary School
 - Replaced four (4) rooftop units.
 - Replaced all fan powered VAV boxes and pneumatic controls with new boxes having DDC controls.
- Ryan High School
 - Replaced the cooling tower.
 - Replaced the domestic hot water heating system.
- Strickland Middle School
 - Replaced the air handling units serving the library and west classroom addition.

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- Replaced the domestic hot water heating system.
- Replaced RTU #21 with a new RTU unit.

Lighting Efficiency Retrofit completed June through August 2008:

- Denton High School – Entire Campus was refit with all T8 lamps and electronic ballasts
- Ryan High School – Entire Campus was refit with all T8 lamps and electronic ballasts
- Elementary Schools Gyms: Replaced HID fixtures with linear fluorescent T8 high bay fixtures.
 - Borman Elementary School
 - EP Rayzor Elementary School
 - Evers Park Elementary School
 - Ginnings Elementary School
 - Hawk Elementary School
 - Houston Elementary School
 - Lee Elementary School
 - Newton Rayzor Elementary School
 - Pecan Creek Elementary School
 - Providence Elementary School
 - Rivera Elementary School
 - Savannah Elementary School
 - Wilson Elementary School
 - WS Ryan Elementary School
- 1 electric account was switched from TXU to Direct Energy in the second quarter:
 - Olive Stephens MS:
 - Closed: TXU Energy – Acct #801-7228-98-5 – Electricity
 - Opened: Direct Energy – Acct #995882925531 – Electricity
- The Energy Cost Adjustment (ECA) was reduced in February from \$0.050 to \$0.042 per kWh.
- Lake Cities Municipal Authority increased their minimum bill from \$25.63 to \$34.26 as of June 15, 2009.
- Irrigation Line found broken and fixed at McNair ES on August 9, 2009.
- Internal bill audits found overbilling at Advanced Technology Center. Credit of \$6,400.43 was applied.

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- Job office for new Pre-K center added to Advanced Technology meter as of June 17, 2009.
- Summer School was held at the following schools in 2008:
 - Strickland JH
 - Guyer HS
 - Ginnings ES
 - Lee ES
 - Newton Rayzor ES

2009-2010

Mechanical and Control Work completed in 2009:

Borman

- Controls for (4) RTU with CO₂, temperature and humidity control.
- Controls for (3) Cooling only RTU's
- Controls for (7) Exhaust Fans.

Calhoun

- Controls for (2) RTU's with CO₂, temperature and humidity control.
- Controls for (1) VAV/RTU with all associated points per specs.
- Controls for (2) DX Split systems.
- Controls for (29) Fan Powered VAV boxes.
- Controls for (11) Exhaust Fans.
- Controls for (6) Emergency Exhaust Fans.

DHS

- Controls for (32) RTU's with Combination sensors.
- Controls for (1) VAV/RTU with all associated points per specs.
- Controls for (6) DX Split systems.
- Controls for (12) Fan Powered VAV boxes.
- Controls for (52) Exhaust Fans.

Hodge

- Controls for (12) RTU with CO₂, temperature and humidity control.
- Controls for (1) DX Split systems.
- Controls for (7) Fan Powered VAV boxes.
- Controls for (3) VAV boxes.
- Controls for (7) Exhaust Fans.

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McNair

- Controls for (12) RTU with CO2, temperature and humidity control.
- Controls for (1) DX Split systems.
- Controls for (7) Fan Powered VAV boxes.
- Controls for (3) VAV boxes.
- Controls for (7) Exhaust Fans.

Rayzor

- Controls for (11) RTU with CO2, temperature and humidity control.
- Controls for (3) Cooling only RTU's
- Controls for (7) Exhaust Fans.

RHS

- Controls for (7) RTU's with CO2 and temperature control.
- Controls for (10) RTU's without CO2 control.
- Controls for (2) VAV/RTU with all associated points per specs.
- Controls for (3) DX Split systems.
- Controls for (33) Fan Powered VAV boxes.
- Controls for (15) Exhaust Fans. The rest of them are wired by Div 16 to a wall switch
- or hood switch
- Controls for (3) Emergency Exhaust Fans.

Rivera

- Controls for (9) RTU with CO2, temperature and humidity control.
- Controls for (2) DX Split systems.
- Controls for (7) Fan Powered VAV boxes.
- Controls for (8) Exhaust Fans.
- Summer School is planned to be as held at the following schools in 2010:
 - Strickland JH
 - Denton HS
 - Ginnings ES
 - Lee ES
 - Fred Moore HS

2010-2011

Mechanical and Control Work completed in 2010:

HVAC Controls Upgrade

- Denton High School
- Guyer High School

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Intelligent Irrigation Control

- Guyer High School

Lighting Retrofit and/or Occupancy Sensors and/or Hawkeye Fixtures

- Ann Windle
- Borman
- Calhoun
- Crownover
- EP Rayzor
- Evers Park
- Fred Moore
- Ginnings
- Hodge
- McMath
- McNair
- Navo
- Pecan Creek
- Rayzor
- Rivera
- Ryan Elementary
- Service Center
- Strickland
- Wilson

SF Added Total 187,695:

- Borman 328 SF
- Calhoun 22,651 SF
- Denton HS 32,807 SF
- Hodge 16,175 SF
- McNair 16,175 SF
- Rayzor 8,600 SF
- Rivera 11,890 SF
- Ryan HS 79,069 SF

Other Activities

- Submitted for SECO grant for Strickland Middle School
- Submitted for SECO Cool Schools grant for boiler and chiller replacements at McNair ES, McMath MS, Hodge ES, Guyer HS and Ryan HS

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July 2012-December 2012 Activities

- Investigated the economic viability of retrofitting existing campuses to geothermal HVAC systems
- Continuing discussions with DME to host solar PV projects on District property
- Continuing to explore other energy conservation opportunities to present to the Board