



# Utility Management Report Full-Year Audit Jul 2015 – Jun 2016

## Energy Audit Team

Paul Andress, Executive Director of Operations - DISD

Angela Alfonso, Utility Specialist - DISD

Matthew Merchant, Student Intern - DISD

Justin Claybrook, Energy Engineer - TD

Orland Hilliard, Account Manager - TD

Bob Wilken, Executive Account Manager - TD



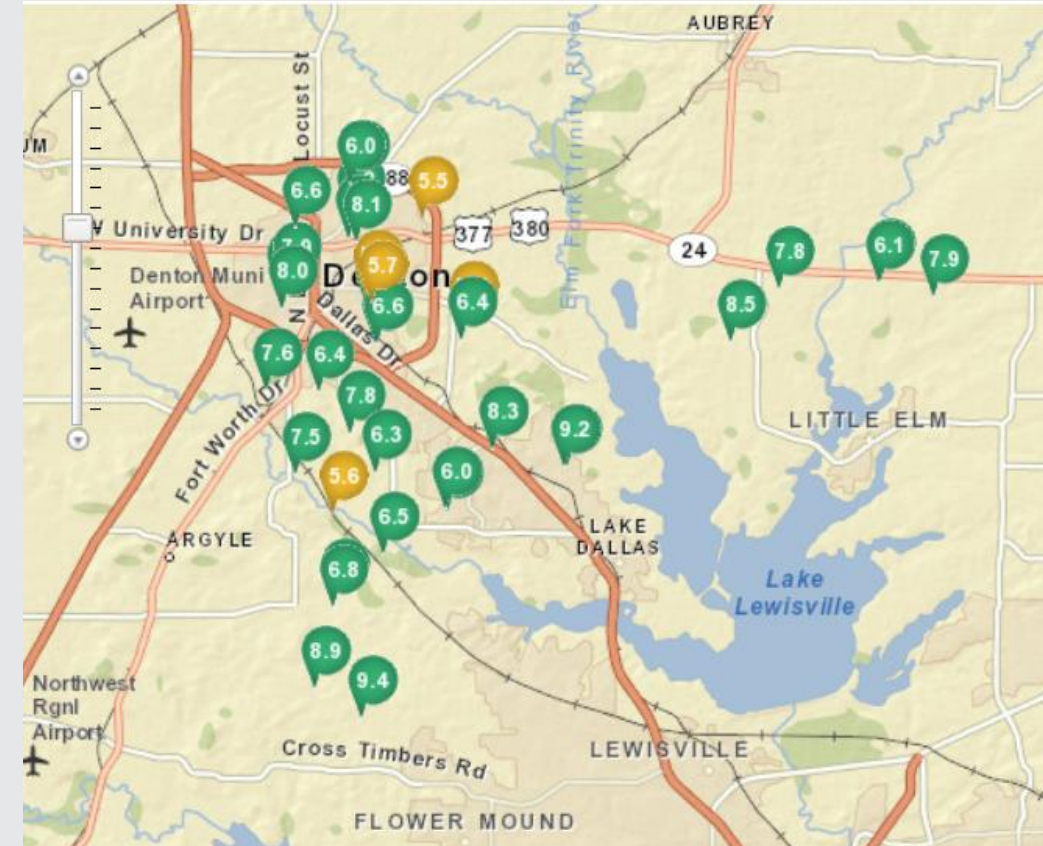
# Summary of Utility Cost and Usage

| Utility                             | Base Year<br>(2005-2006) | FY 2011-<br>2012 | FY 2012-<br>2013 | FY 2013-<br>2014 | FY 2014-<br>2015 | FY 2015-<br>2016 |
|-------------------------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|
| Total Utility Cost                  | \$6,957,534              | \$7,114,894      | \$6,806,387      | \$7,422,598      | \$7,440,670      | \$7,939,463      |
| Total Energy Mmbtu<br>(Gas & Elect) | 213,131                  | 235,792          | 235,623          | 253,248          | 239,547          | 224,055          |
| Total District SqFt                 | 3,553,417                | 4,660,667        | 4,761,856        | 4,943,330        | 5,032,004        | 5,032,004        |
| <b>Total Cost/SqFt</b>              | <b>\$1.96</b>            | <b>\$1.53</b>    | <b>\$1.43</b>    | <b>\$1.50</b>    | <b>\$1.48</b>    | <b>\$1.58</b>    |
| <b>Energy Use Index<br/>kBtu/SF</b> | <b>60.0</b>              | <b>50.3</b>      | <b>49.5</b>      | <b>51.2</b>      | <b>47.6</b>      | <b>44.5</b>      |

# Introducing Energy Print

## New Utility Bill Management Service

- Web based service, no local licenses needed
  - Quick access to data from anywhere
- Utility data input managed and performed by Energy Print
  - Improved accuracy
  - Saves district staff measureable time
- 90 day improvement in time from billing to utilizing data
  - Closer to real time analysis and correction of problems
  - Ability to provide reports to staff and the board much sooner
- On-board dashboard, alerts and diagnostic tools
- Ranking of buildings against Energy Star and Energy Print data base



# Introducing Energy Print

Denton Independent School District ▾

## Portfolio Rank

PREVIOUS  
12 MO

CURRENT  
12 MO

IMPROVEMENT  
RANK

EnergyPrint Rank ?

7.5

7.2

5.7

## Portfolio Snapshot

Energy Type: All ▾

| UNITS          | PREVIOUS<br>12 MO | CURRENT<br>12 MO | % CHANGE |
|----------------|-------------------|------------------|----------|
| Cost/SF        | \$1.16            | \$1.12           | -2.8% ↓  |
| Consumption/SF | 48                | 44               | -7.6% ↓  |
| Carbon/SF      | 16.05             | 15.56            | -3.0% ↓  |

## Portfolio Info ?

42 of 42 Properties Current Through 09/2016

Annual Energy Cost \$5,678,415.41

Square Footage 5,053,408

## Properties

Metric: Cost ▾

[View All](#)

| Name ▾                       | Cost ▾ | % Change ▾ | SF ▾    |
|------------------------------|--------|------------|---------|
| Adkins Elementary (#22)      | \$0.61 | -14.7% ↓   | 88,674  |
| Ann Windle SFYC              | \$1.76 | 15.0% ↑    | 41,200  |
| ATC (Advanced Technology Cer | \$1.36 | -0.1% ↓    | 120,700 |
| Blanton Elementary (#19)     | \$1.11 | -8.5% ↓    | 80,344  |
| Borman Elementary            | \$1.26 | 7.1% ↑     | 78,952  |

# Analysis By Utility Type (12 mo)

## Audit Period

### Electricity

- Effective rate increased **1%** ↑
- Consumption increased by 0.1%
- **12%** more cooling degree days ↑
- Net increase in dollars of **\$66,750** ↑

### Natural Gas

- Effective rate decreased by **12%** ↓
- Consumption decreased by **27%** ↓
- **30%** less heating degree days ↓
- Net decrease in dollars of **-\$160,487** ↓

## Current Trend

### Portfolio Snapshot

Energy Type

| UNITS          | PREVIOUS<br>12 MO | CURRENT<br>12 MO | % CHANGE |
|----------------|-------------------|------------------|----------|
| Cost/SF        | \$1.06            | \$1.06           | -0.3% ↓  |
| Consumption/SF | 33                | 33               | -0.6% ↓  |
| Carbon/SF      | 14.33             | 14.25            | -0.6% ↓  |

### Portfolio Snapshot

Energy Type

| UNITS          | PREVIOUS<br>12 MO | CURRENT<br>12 MO | % CHANGE |
|----------------|-------------------|------------------|----------|
| Cost/SF        | \$0.09            | \$0.06           | -31.7% ↓ |
| Consumption/SF | 15                | 11               | -23.7% ↓ |
| Carbon/SF      | 1.72              | 1.31             | -23.7% ↓ |

# Analysis By Utility Type

## Domestic Water

- Domestic effective rate increased **12%** ↑
- Domestic consumption increased **5%** ↑
- Domestic net increase in dollars of **\$117,297** ↑

## Irrigation Water

- Irrigation effective rate decreased **12%** ↓
- Irrigation consumption increased **79%** ↑
  - Rainfall down 4.7" Jul-Sep over 11.6mil sf = 36,000kGal or \$210k
- Irrigation net increase in dollars of **\$194,784** ↑

## Refuse

- Net increase in dollars of **\$134,449** ↑



# Total Cost Comparison By Utility

| Utility               | 12 Months          |                    | % Change  | Cost Change (\$) |
|-----------------------|--------------------|--------------------|-----------|------------------|
|                       | FY 2014-2015       | FY 2015-2016       |           |                  |
| Electric              | \$5,274,877        | \$5,341,627        | 1%        | \$66,750         |
| Gas                   | \$477,724          | \$317,237          | -34%      | -\$160,487       |
| Irrigation            | \$366,392          | \$561,176          | 53%       | \$194,784        |
| Dom/Sewer/Storm Water | *\$688,025         | \$805,322          | 17%       | \$117,297        |
| Refuse                | \$779,652          | \$914,101          | 17%       | \$134,449        |
| <b>Total</b>          | <b>\$7,586,670</b> | <b>\$7,939,463</b> | <b>5%</b> | <b>\$352,793</b> |

\*This figure was revised from \$542,000 to include Storm Water charges

# High School Gas-Elect Cost/Sf

Denton ISD - High Schools

PROPERTY SNAPSHOT WEATHER SNAPSHOT PROPERTY INFO

| Name                     | Current Through | Cost /SF | Cost % Change | Consumption /SF | Consumption % Change | Carbon /SF | Carbon % Change |
|--------------------------|-----------------|----------|---------------|-----------------|----------------------|------------|-----------------|
| Fred Moore High School * | 08/2016         | \$1.25   | -0.4% ↓       | 45.31           | -8.1% ↓              | 16.59      | 2.8% ↑          |
| Guyer High School        | 08/2016         | \$1.15   | 0.9% ↑        | 49.50           | 4.0% ↑               | 16.44      | 2.1% ↑          |
| Ryan High School *       | 08/2016         | \$1.15   | -6.9% ↓       | 49.35           | -14.7% ↓             | 17.15      | -7.1% ↓         |
| Denton High School ⚠     | 08/2016         | \$1.02   | -1.1% ↓       | 39.31           | -8.0% ↓              | 13.94      | -2.1% ↓         |

\*Revised Electric Rate Class



# Middle School Gas-Elect Cost/Sf

Denton ISD - Middle Schools

PROPERTY SNAPSHOT

WEATHER SNAPSHOT

PROPERTY INFO

| Name                         | Current Through | Cost /SF | Cost % Change | Consumption /SF | Consumption % Change | Carbon /SF | Carbon % Change |
|------------------------------|-----------------|----------|---------------|-----------------|----------------------|------------|-----------------|
| McMath Middle School *       | 08/2016         | \$1.32   | 3.4% ↑        | 49.43           | -8.7% ↓              | 16.99      | -2.1% ↓         |
| Crownover Middle School ⚠    | 09/2016         | \$1.20   | -7.2% ↓       | 53.00           | -11.7% ↓             | 18.20      | -6.2% ↓         |
| Strickland Middle School *   | 08/2016         | \$1.20   | 6.4% ↑        | 52.77           | -1.1% ↓              | 16.34      | 1.5% ↑          |
| Navo Middle School ⚠         | 09/2016         | \$1.15   | -5.9% ↓       | 55.47           | -2.1% ↓              | 18.50      | 3.1% ↑          |
| Harpool Middle School (#6) ⚠ | 09/2016         | \$1.10   | -10.9% ↓      | 52.41           | -6.2% ↓              | 18.00      | 0.2% ↑          |
| Calhoun Middle School ⚠ *    | 08/2016         | \$0.97   | -4.2% ↓       | 36.83           | -16.7% ↓             | 12.84      | -8.9% ↓         |
| Myers Middle School ⚠        | 09/2016         | \$0.64   | 1.6% ↑        | 23.23           | 2.7% ↑               | 9.37       | 1.4% ↑          |

\*Revised Electric Rate Class




































# Elementary School Gas-Elect Cost/Sf

Denton ISD - Elementary Schools

PROPERTY SNAPSHOT















































WEATHER SNAPSHOT

PROPERTY INFO

| Name  | Current Through | Cost /SF | Cost % Change   | Consumption /SF | Consumption % Change   | Carbon /SF | Carbon % Change   |
|---|-----------------|----------|---|-----------------|--|------------|---|
| Nelson Elementary            | 08/2016         | \$1.53   | 0.2%     | 50.27           | -4.2%     | 19.32      | -0.4%    |
| Hodge Elementary  *          | 08/2016         | \$1.45   | 3.4%     | 57.58           | -5.1%     | 19.46      | -0.2%    |
| McNair Elementary   | 08/2016         | \$1.40   | 0.6%     | 56.07           | -0.8%     | 18.31      | 1.2%     |
| Lee Elementary *  | 08/2016         | \$1.34   | -1.4%    | 56.08           | -10.3%    | 18.49      | -5.8%    |
| Evers Park Elementary *   | 08/2016         | \$1.33   | 2.9%     | 51.83           | -6.9%     | 17.12      | -4.8%    |
| Ryan Elementary              | 08/2016         | \$1.31   | 2.2%     | 41.29           | -4.5%     | 15.46      | -0.5%    |
| Rivera Elementary *   | 08/2016         | \$1.27   | -3.4%    | 48.28           | -17.4%    | 16.27      | -11.0%   |
| Ginnings Elementary *   | 08/2016         | \$1.26   | 8.4%   | 46.32           | -7.1%   | 15.71      | 1.0%   |
| Borman Elementary  *       | 08/2016         | \$1.22   | 3.3%   | 40.49           | -10.6%  | 14.77      | -5.6%  |
| Stephens Elementary (#20)  | 09/2016         | \$1.22   | -2.7%  | 47.05           | -10.5%  | 17.83      | -3.5%  |

\*Revised Electric Rate Class

# Elementary School Gas-Elect Cost/Sf

| Name  | Current Through | Cost /SF | Cost % Change  | Consumption /SF | Consumption % Change   | Carbon /SF | Carbon % Change   |
|---|-----------------|----------|--|-----------------|--|------------|---|
| Hawk Elementary                | 09/2016         | \$1.20   | -4.6%     | 46.58           | -9.8%     | 17.58      | -5.5%    |
| Houston Elementary  *          | 08/2016         | \$1.16   | 5.7%      | 38.66           | -17.1%    | 12.61      | -11.6%   |
| Paloma Creek Elementary        | 09/2016         | \$1.16   | -11.5%    | 52.51           | -0.7%     | 19.02      | -0.0%    |
| Wilson Elementary *   | 08/2016         | \$1.16   | 8.7%      | 36.13           | -8.6%     | 13.15      | -3.6%    |
| Blanton Elementary (#19)       | 09/2016         | \$1.11   | -9.8%     | 49.80           | -2.8%     | 17.96      | 1.2%     |
| Pecan Creek Elementary  *      | 08/2016         | \$1.06   | 9.6%      | 34.25           | -3.5%     | 12.91      | 1.5%     |
| Rayzor Elementary   | 08/2016         | \$1.01   | -6.9%     | 37.56           | -14.0%    | 13.19      | -8.0%    |
| Savannah Elementary            | 09/2016         | \$0.92   | -12.2%    | 39.60           | -5.7%     | 14.91      | -1.3%    |
| Providence Elementary        | 09/2016         | \$0.89   | -16.3%  | 38.54           | -9.0%   | 14.42      | -6.2%  |
| Cross Oaks Elementary (#21)  | 09/2016         | \$0.82   | -12.9%  | 33.32           | 1.6%    | 13.34      | 0.1%   |
| Eugenia Elementary           | 09/2016         | \$0.79   | -15.9%  | 30.54           | -10.5%  | 10.84      | -7.9%  |
| Adkins Elementary (#22)      | 09/2016         | \$0.61   | -17.8%  | 22.92           | -8.9%   | 9.13       | -8.4%  |



# Other Bldg - Gas-Elect Cost/Sf

Denton ISD - Other

PROPERTY SNAPSHOT

WEATHER SNAPSHOT

PROPERTY INFO

| Name                                     | Current Through | Cost /SF | Cost % Change | Consumption /SF | Consumption % Change | Carbon /SF | Carbon % Change |
|--|-----------------|----------|---------------|-----------------|----------------------|------------|-----------------|
| Ann Windle SFYC ⚠️ *                     | 09/2016         | \$1.76   | 15.0% ↑       | 55.09           | -4.7% ↓              | 19.05      | 0.3% ↑          |
| CDC (Child Development Center) ⚠️        | 09/2016         | \$1.50   | -2.6% ↓       | 58.25           | 17.0% ↑              | 23.68      | 26.1% ↑         |
| CH Collins Athletic Stadium ⚠️           | 10/2016         | \$1.41   | -5.9% ↓       | 31.98           | -20.7% ↓             | 12.78      | -19.9% ↓        |
| Central Service                          | 09/2016         | \$1.37   | -6.0% ↓       | 49.76           | -9.7% ↓              | 19.41      | -6.0% ↓         |
| ATC (Advanced Technology Center) ⚠️      | 10/2016         | \$1.36   | -0.1% ↓       | 52.91           | -9.8% ↓              | 17.95      | -1.5% ↓         |
| PDC (Professional Development Center) ⚠️ | 10/2016         | \$1.19   | -4.2% ↓       | 43.07           | -5.4% ↓              | 16.01      | -1.3% ↓         |
| Gonzalez Pre-K Center                    | 10/2016         | \$0.87   | -5.8% ↓       | 30.72           | -7.8% ↓              | 11.99      | -9.0% ↓         |
| Service Center Annex                     | 09/2016         | \$0.84   | -2.2% ↓       | 37.42           | -17.0% ↓             | 11.72      | -4.6% ↓         |
| Davis School                             | 09/2016         | \$0.73   | -5.9% ↓       | 27.80           | -13.5% ↓             | 9.31       | -7.0% ↓         |

\*Revised Electric Rate Class

# Energy Print – Property Alerts

## Property Alerts

Close

| Date ▲     | Description ▼   | Reason                  |
|------------|---|-------------------------|
| 09/01/2016 | <b>McMath Middle School</b><br><b>Insight</b><br>Investigate Potential Cause(s) of Annual Gas Cost/SF down 35%  | <a href="#">Resolve</a> |
| 09/01/2016 | <b>Cross Oaks Elementary (#21)</b><br><b>Insight</b><br>Investigate Potential Cause(s) of Annual Gas Consumption/SF up 31%                            | <a href="#">Resolve</a> |
| 09/01/2016 | <b>Stephens Elementary (#20)</b><br><b>Insight</b><br>Investigate Potential Cause(s) of Annualized Weather-Normalized Heating Consumption/SF down 19% | <a href="#">Resolve</a> |
| 09/01/2016 | <b>Strickland Middle School</b><br><b>Insight</b><br>Investigate Potential Cause(s) of Annualized Weather-Normalized Heating Consumption/SF up 29%    | <a href="#">Resolve</a> |



# Energy Print – Deep Dive

## Strickland Middle School

Profile



Property Profile

Energy Star

Weather Profile

Water Profile

Cost Avoidance

Property current through 10/2016

### Property Rank

PREVIOUS  
12 MO

CURRENT  
12 MO

IMPROVEMENT  
RANK

EnergyPrint Rank

6.6

6.4

5.4

### Property Info

Address

324 E. Windsor  
Denton, TX [View Map](#)

Annual Energy Cost

\$234,646.71

Square Footage

194,571

Year Built

1971

Primary Use

Education - K-12 School

Primary Construction Type

Brick & Mortar

### Property Snapshot

Energy Type:

| UNITS          | PREVIOUS<br>12 MO | CURRENT<br>12 MO | % CHANGE |
|----------------|-------------------|------------------|----------|
| Cost/SF        | \$1.14            | \$1.21           | 5.9%     |
| Consumption/SF | 55                | 51               | -7.1%    |
| Carbon/SF      | 16.36             | 16.04            | -1.9%    |

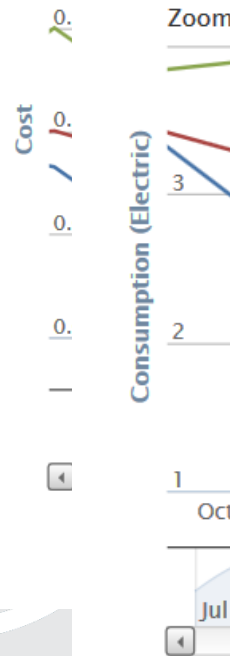
# Energy Print – Deep Dive

## Property Energy Trends

Metric: Cost Energy Type: All

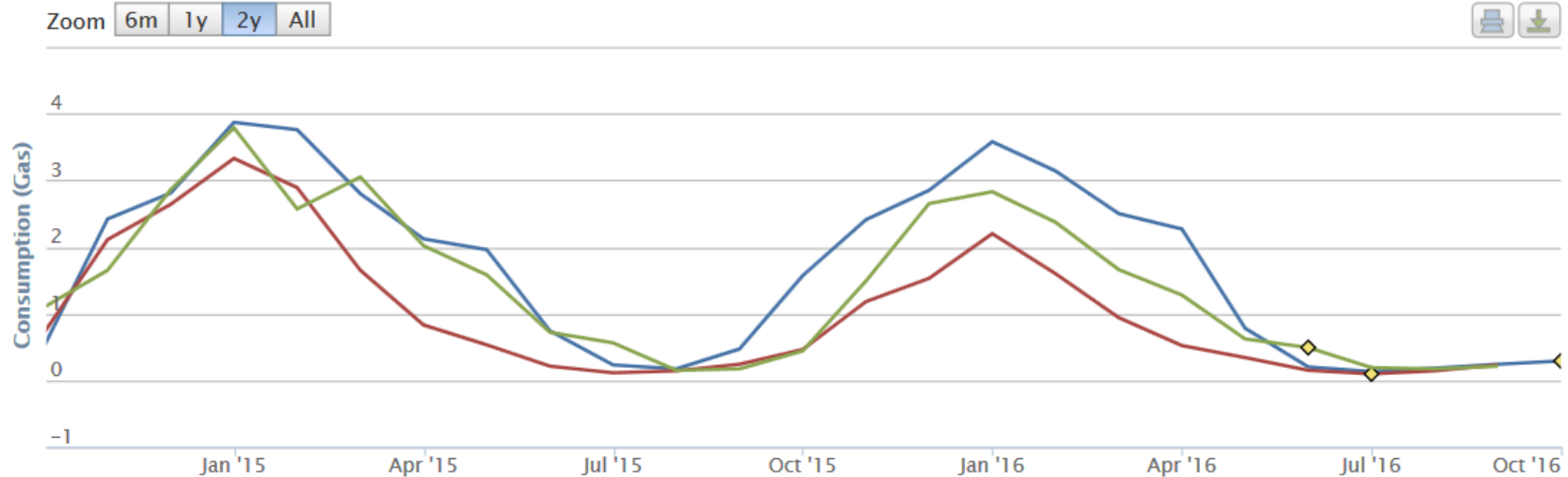
## Property Energy Trends

Metric: Consumption Energy Type: Electric



## Property Energy Trends

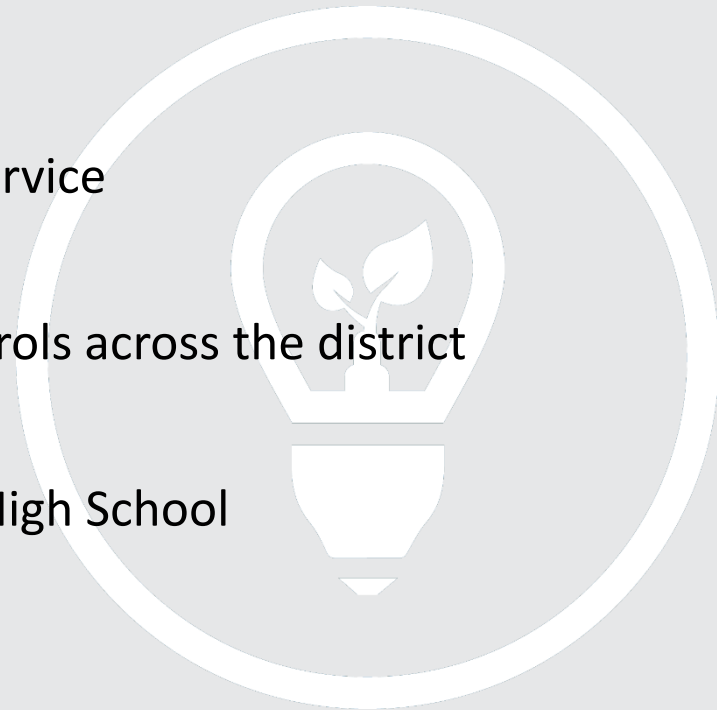
Metric: Consumption Energy Type: Gas



● Strickland Middle School ● Calhoun Middle School ■ Crownover Middle School

# Accomplishments

- BPM Pilot Program Completion
  - Optimized HVAC Unit startup
  - Reduced electric bill demand charges
- Deployment of Energy Print Utility Bill Management Service
  - Replaces outdated in-house software
- RFP in process to finish deploying smart irrigation controls across the district
  - \$117,349 in annual savings
- Energy saving mechanical retrofit in process at Guyer High School
  - \$5,524 in annual savings





# Looking Ahead

- Present audit reports to the board three months closer to audit period in 2017
- Issue RFP for outdoor lighting retrofit
  - \$50,718 in annual electric savings
  - \$20,000 one time rebate
- Petition Denton Municipal Utilities to split up Domestic / Irrigation water accounts
- Planning and budgeting for future energy saving retrofits

