



DENTON INDEPENDENT  
SCHOOL DISTRICT



## Semi-Annual UTILITY Report - July to Dec. 2020

Paul Andress – Executive Director of Operations – DISD

Angela Alfonso – Utility Specialist – DISD

Arnoldo Villarreal – Project Manager – TD

Bob Wilken, CEM – Account Manager – TD

Brian Lillard – SVP Facilities – Executive Account Manager - TD

Brandon Hoke, PE – Engineering - TD

# Utility Performance Trends



\* Estimated

Comparison by Utility 6 month period actuals

	July 2019 - Dec 2019	July 2020 - Dec 2020	% Change	Cost Change (\$)
Electric	\$3,060,412	\$2,681,167	-12%	(\$379,245)
Gas	\$149,975	\$146,560	-2%	(\$3,415)
Irrigation Water	\$356,027	\$350,953	-1%	(\$5,075)
Potable, Sewer & Storm Water	\$440,676	\$490,598	11%	\$49,921
Refuse	\$430,584	\$381,731	-11%	(\$48,854)
<b>Total</b>	<b>\$4,437,675</b>	<b>\$4,051,008</b>	<b>-8.71%</b>	<b>(\$386,667)</b>

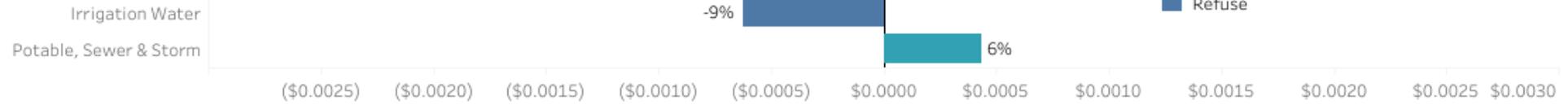
# All Schools Energy Performance Change Compared To Last Year



# Water and Refuse Performance Change Compared To Last Year

- Irrigation Water
- Potable, Sewer & Storm
- Rainfall
- Refuse

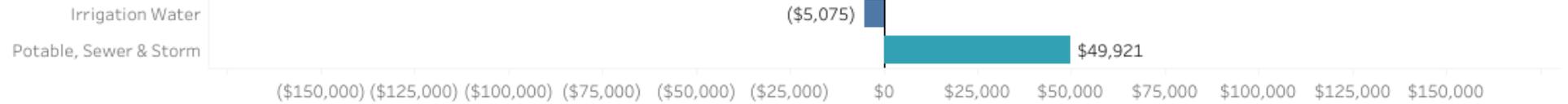
## Effective Rate



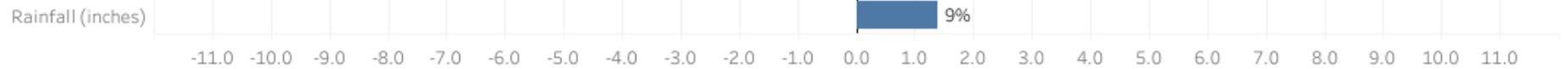
## Consumption



## Cost



## Rainfall

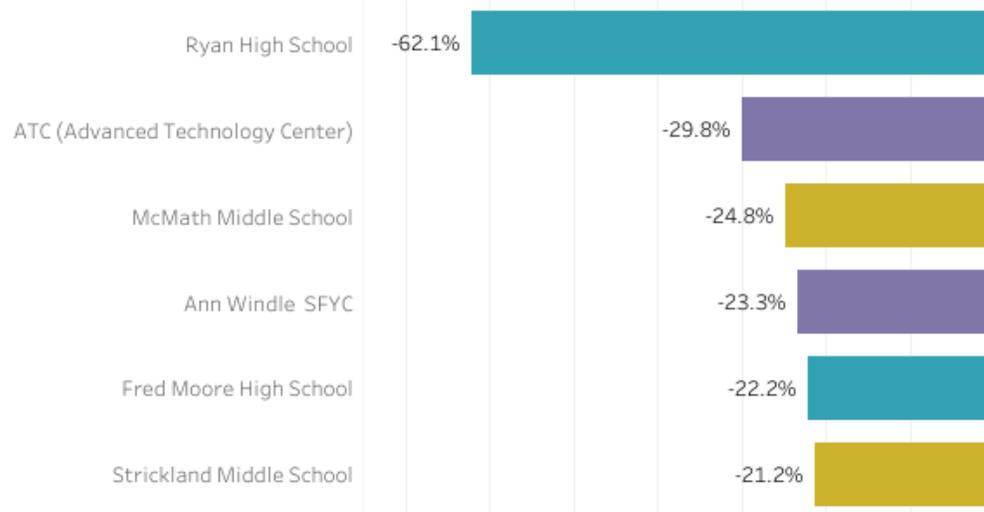


## Refuse



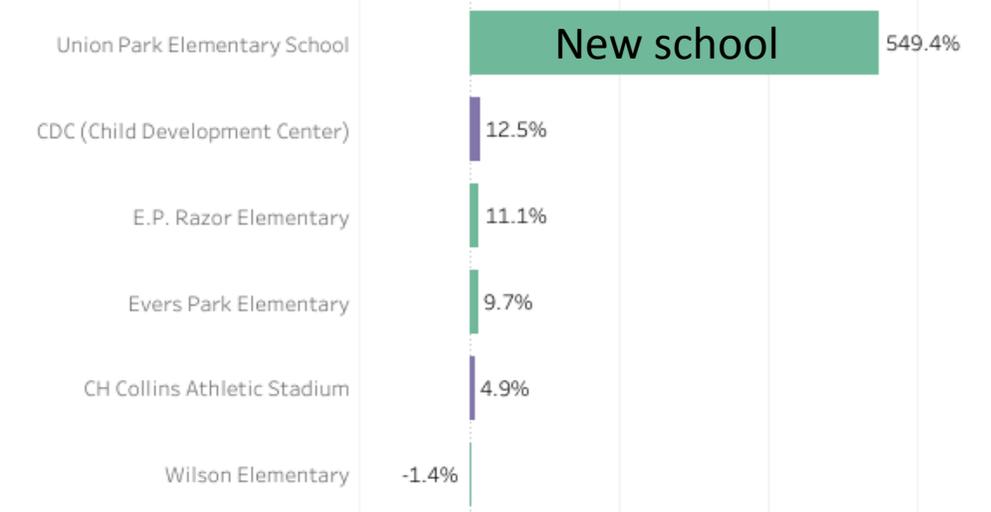
# Electric - Top Performers

## Largest % Decrease in Usage



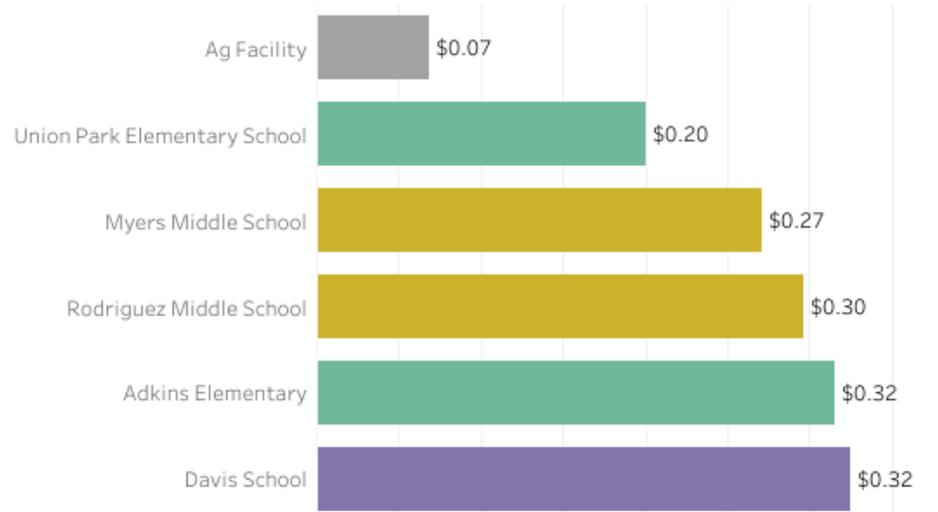
# Opportunities

## Highest % Increase in Usage

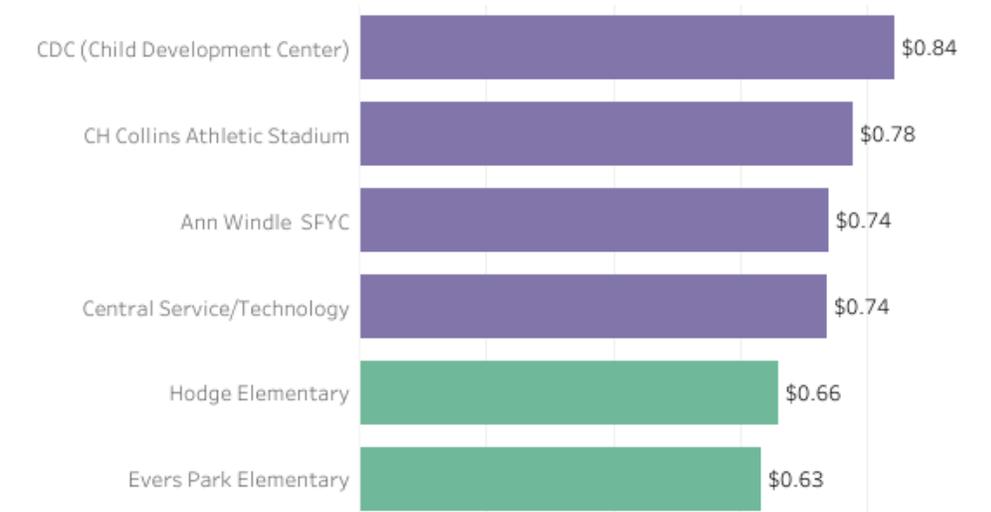


- Auxiliary ■
- Elementary Schools ■
- Middle Schools ■
- High Schools ■

## Lowest Cost per SqFt

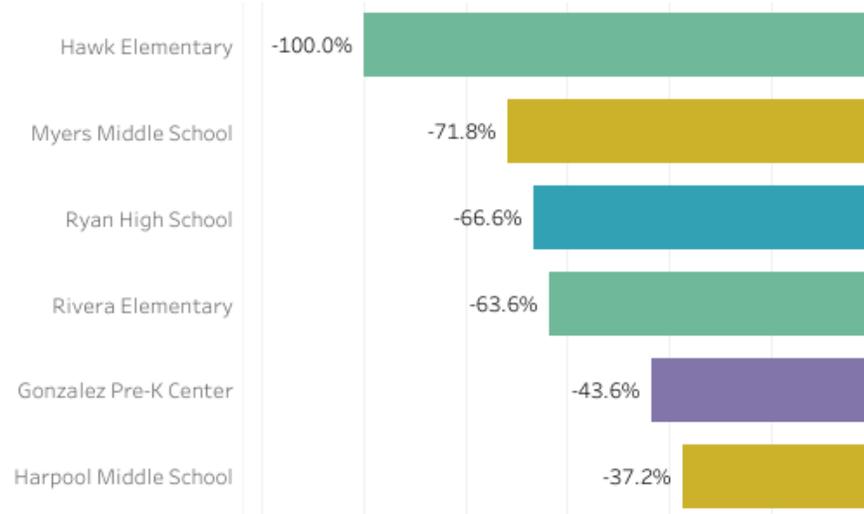


## Highest Cost per SqFt

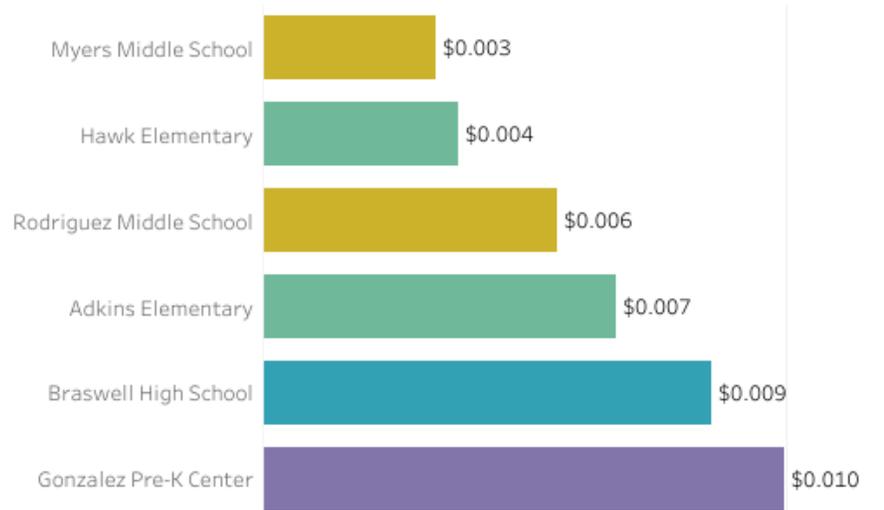


# Gas - Top Performers

## Largest % Decrease in Usage



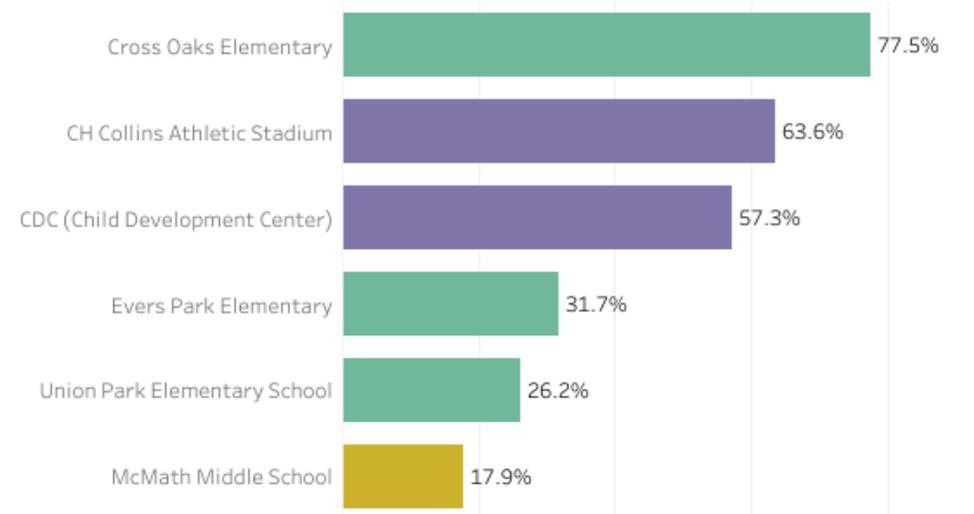
## Lowest Cost per SqFt



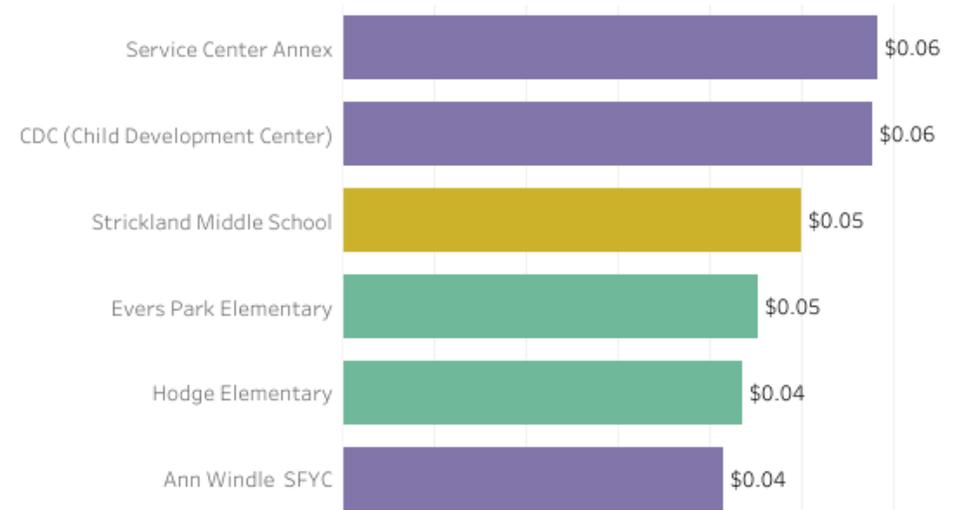
# Opportunities

- Auxiliary ■
- Elementary Schools ■
- Middle Schools ■
- High Schools ■

## Highest % Increase in Usage

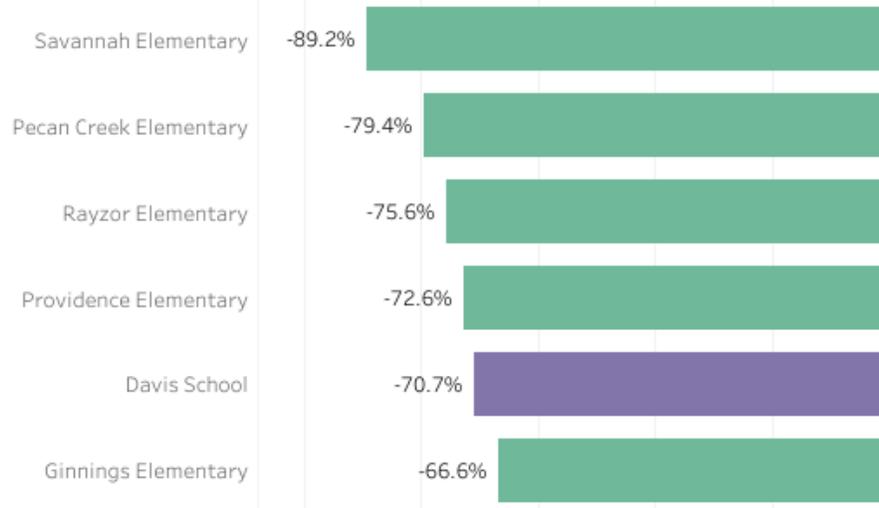


## Highest Cost per SqFt

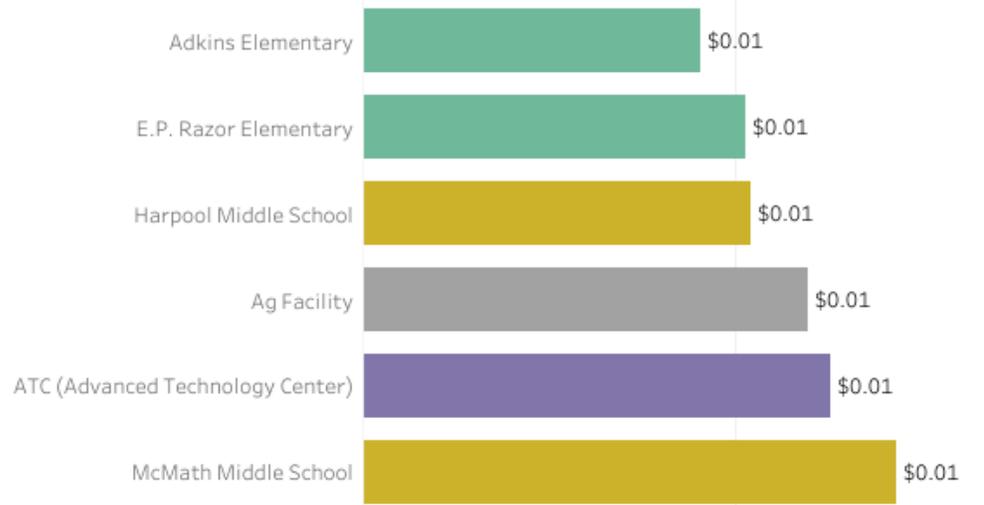


# Potable Water - Top Performers

## Largest % Decrease in Usage



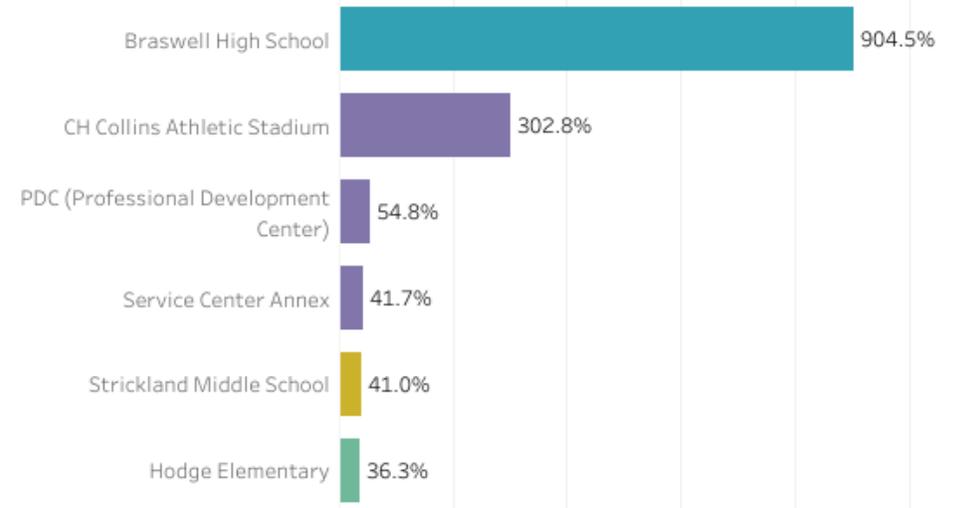
## Lowest Cost per SqFt



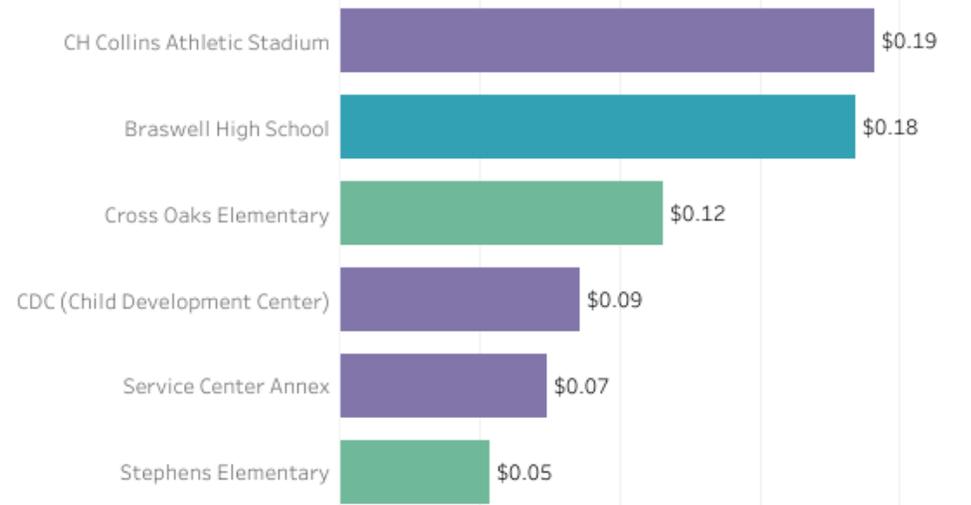
# Opportunities

- Auxiliary ■
- Elementary Schools ■
- Middle Schools ■
- High Schools ■

## Highest % Increase in Usage

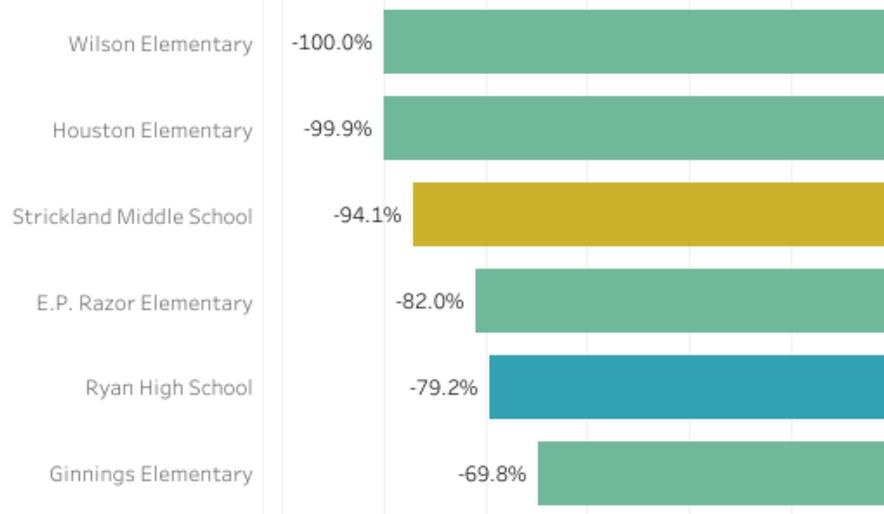


## Highest Cost per SqFt



# Irrigation Water - Top Performers

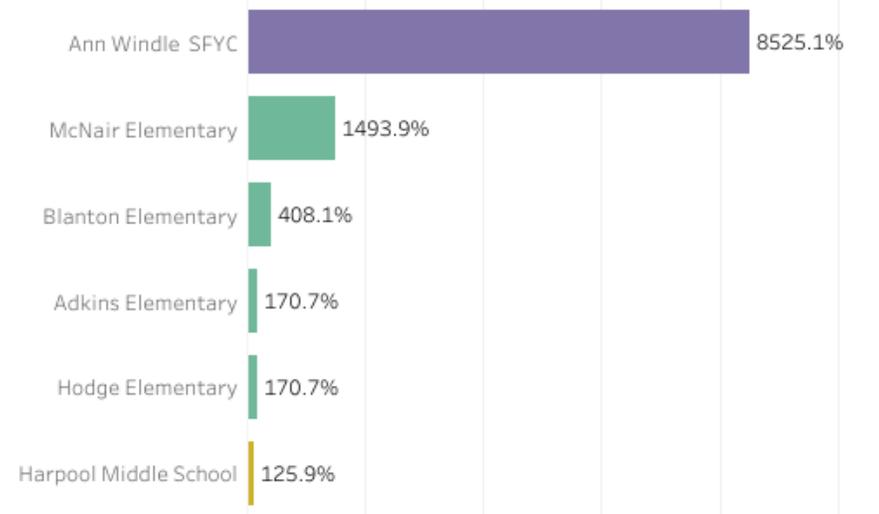
## Largest % Decrease in Usage



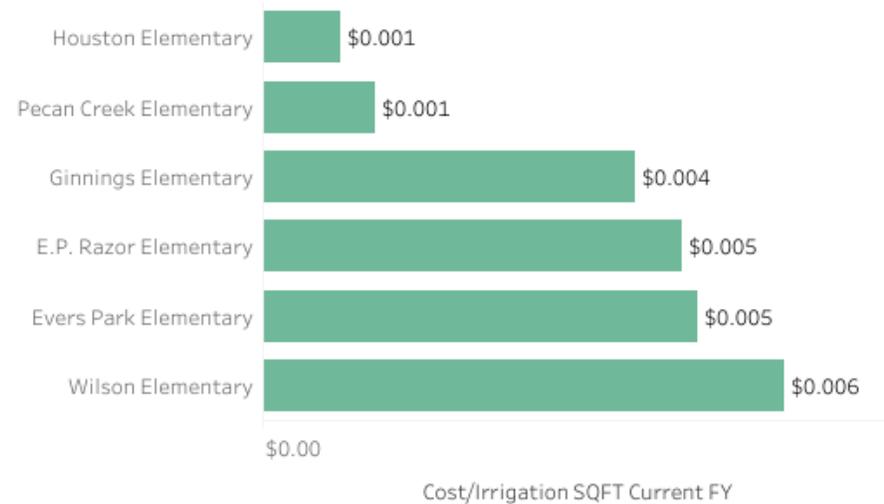
# Opportunities

- Auxiliary ■
- Elementary Schools ■
- Middle Schools ■
- High Schools ■

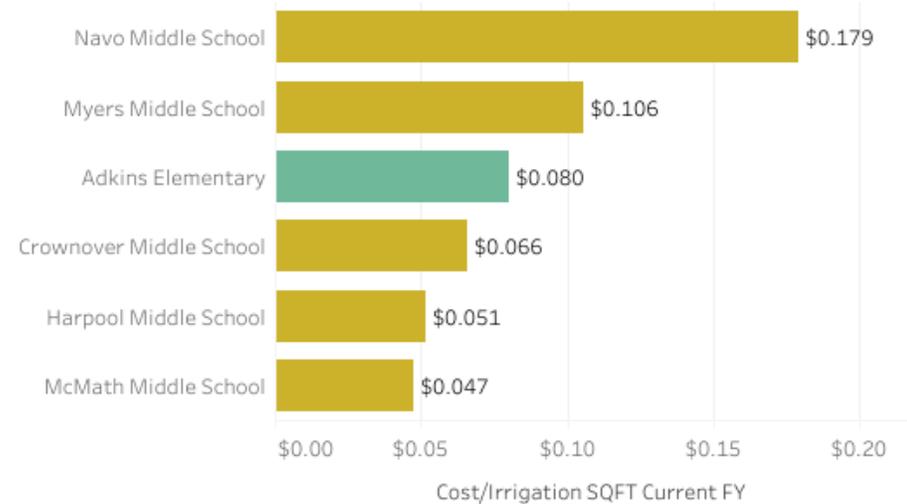
## Highest % Increase in Usage



## Lowest Cost per SqFt

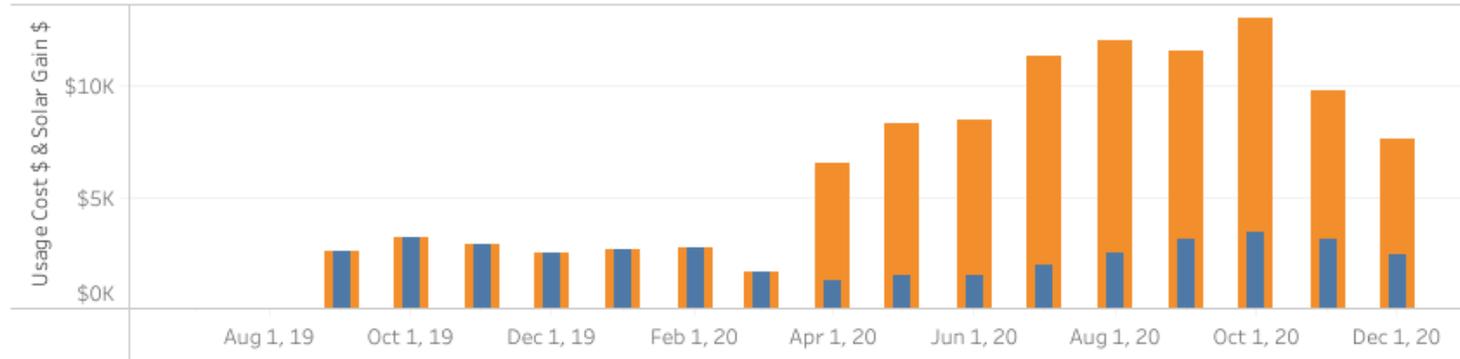


## Highest Cost per SqFt



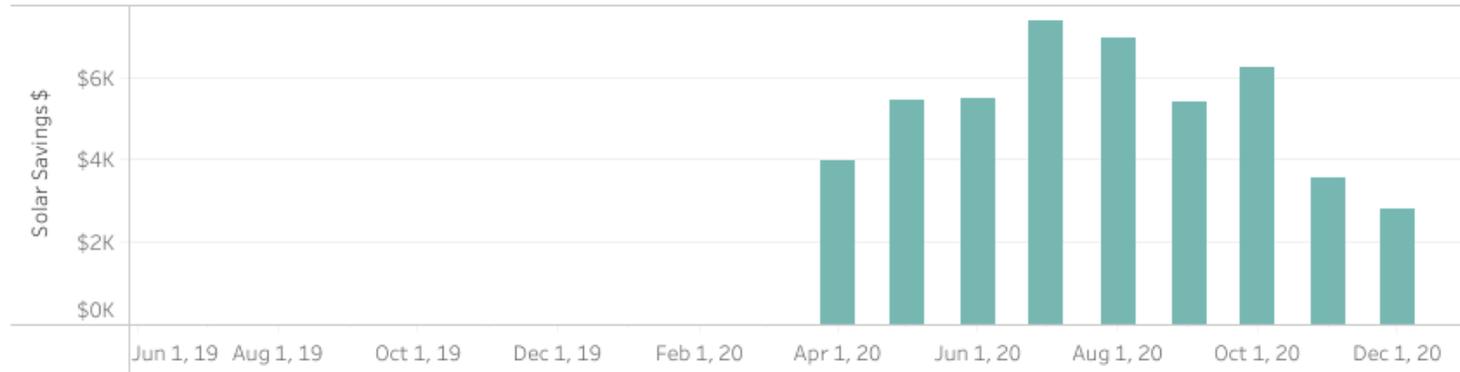
# Solar Panel Project - Union Park Elementary School

## What you would have paid \$



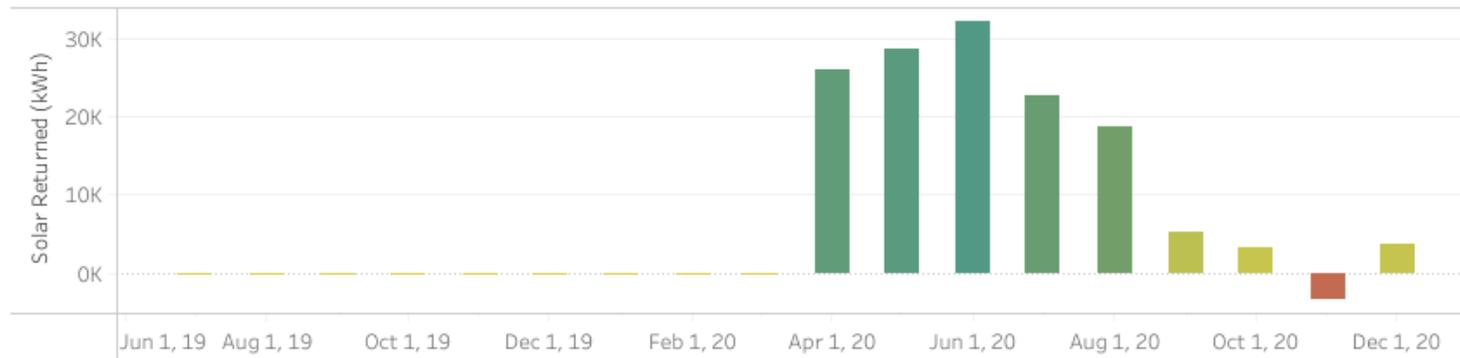
	Usage Cost \$	Solar Gains \$
12/1/2020	\$2,388	\$5,193
11/1/2020	\$3,122	\$6,689
10/1/2020	\$3,401	\$9,620
9/1/2020	\$3,087	\$8,492
8/1/2020	\$2,521	\$9,489
7/1/2020	\$1,976	\$9,352

## What you Saved \$



	Solar Savings \$
12/1/2020	\$2,805
11/1/2020	\$3,567
10/1/2020	\$6,218
9/1/2020	\$5,406
8/1/2020	\$6,968
7/1/2020	\$7,376

## What you Returned to the Utility - kWh



	Solar Returned (kWh)
12/1/2020	3,662
11/1/2020	-3,410
10/1/2020	3,284
9/1/2020	5,192
8/1/2020	18,657
7/1/2020	22,733

# Solar Panel Project - Union Park Elementary School

Average Savings Per Month:

**\$5,248.22**

Months Running:

**9**

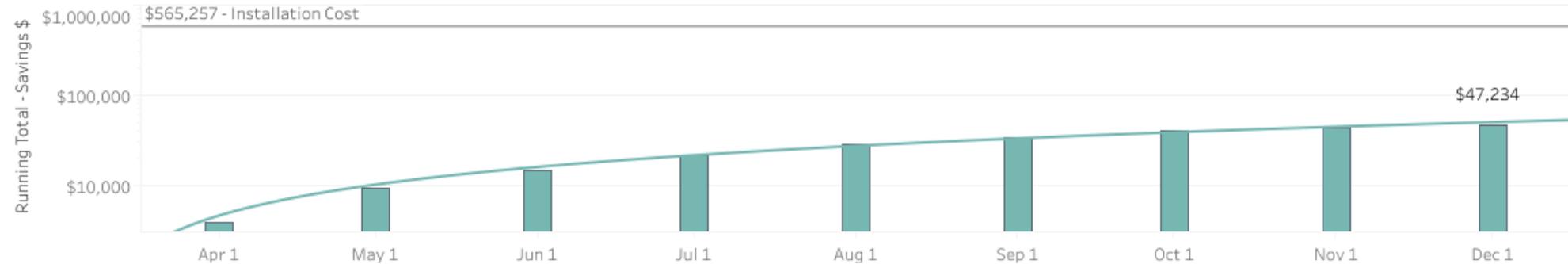
Running Total Savings:

**\$47,234**

Total Months to ROI:

**107.7**

Running Total Savings \$



The Solar Project to Date has had the following Impacts:

*(based on 214,418 kWh running total Solar energy gains)*

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



Generated the same as **26** Homes' Electricity Use in one Year.



Removed **33** Cars Off the Road in one Year.



Reduced Carbon Emissions by **152** Metric Tons of Co2.

## RECENT ACCOMPLISHMENTS - SUMMARY

1. Bi-weekly utility audits have continued to find items as outlined in report.
2. Solar Data at Union Park has been incorporated into report for ongoing tracking.
3. Multiple control and mechanical upgrade & replacement projects completed which will help with utility use.
4. Evaluation of VRF retrofit at Evers, Hodge, and McNair.

# VRF RETROFIT STUDY

## VRF Retrofit

- Cost = \$2,850,000
- Simple ROI = 45 years

## Equipment Changeout + Upgrades

- Cost = \$1,750,000
- Simple ROI = 12.5 years

## Looking Ahead

1. Several additional control and mechanical changeouts (2018 Bond) kicking off.
2. Planning a pilot evaluation of “Clockworks”, an energy oversight software service at Ryan High School.
3. Evaluation of Solar buy back at Wilson Elementary.

# Wilson Elementary Solar Payback

Although Wilson ES is larger and has less solar installed, the first cost along with the higher cost of electricity brings the estimated ROI to a very similar number to what we are seeing at Union Park, roughly 9 years.

WILSON ELEMENTARY SOLAR PAYBACK ESTIMATE								
	AREA(SF)	SOLAR COST	SOLAR \$/SF	SITE \$/KWH	SAVINGS USAGE/SF/MONTH	PROJECTED USAGE SAVINGS/MONTH (KWH)	PROJECTED SAVINGS/MONTH	ESTIMATED ROI
UNION PARK ES	87,770	\$ 565,257.00	\$ 6.44	\$ 0.07	0.53			
WILSON ES	93,584	\$ 321,576.00	\$ 3.44	\$ 0.14		21,344.72	\$ 2,914.81	110.32
	7%	43%	53%	201%		43% APPLIED		
NOTES 1. WILSON IS A LARGER SCHOOL BY 7% 2. THE SOLAR ON WILSON IS SMALLER BY 43% 3. THE RATIO OF SOLAR COST TO SF SHOWS WILSON SHOULD OPERATE AT 53% OF UNION PARK 4. WILSON \$/KWH IS DOUBLE UNION PARK								