

# Charlottesville City Schools

2020 Energy and Water Performance Report Presentation



**Energy & Water  
Management Program**

City of Charlottesville



# City of Charlottesville Energy and Water Management Program

- ▶ Improve facility performance by optimizing how we use energy and water.
- ▶ Monitor and manage energy and water usage at over 70 municipal sites (including school facilities)
- ▶ Energy and Water Management Team





## Resolution for Charlottesville City Schools Energy and Water Performance

*Whereas*, Charlottesville City Schools are committed to personal and academic excellence and preparing all current and future students to be engaged citizens who make contributions to the well-being of their community, including the natural environment; and

*Whereas*, building energy use is a major expense and emitter of greenhouse gases contributing to air pollution and climate change; and

*Whereas*, actions that reduce negative climate and air quality impacts and increase energy efficiencies will also lead to a cleaner environment and a better quality of life for both students and community members; and

*Whereas*, renewable power installations, energy savings initiatives, and fuel-efficient transportation provide an educational opportunity for students and employees for everyday teaching and learning; and

*Whereas*, through practices and partnerships, Charlottesville City Schools strives for optimized energy and water efficiency while balancing equity, economic, and environmental impacts; and

*Whereas*, Charlottesville City Schools has been deliberate and proactive in implementing environmental improvement measures in school operations and taking actions that reduce resource consumption and associated greenhouse gas emissions, including:

- Implementation of a Guaranteed Energy Savings Performance Contract in 2007 to provide energy efficiency and infrastructure upgrades to three schools
- Certification by U.S. Environmental Protection Agency as ENERGY STAR® for seven of nine schools in 2009
- Installation of solar photovoltaic systems on Charlottesville High School and Lugo-McGinness Academy
- Honored by U.S. Department of Education in 2016 with Green Ribbon Schools District Sustainability Award; and

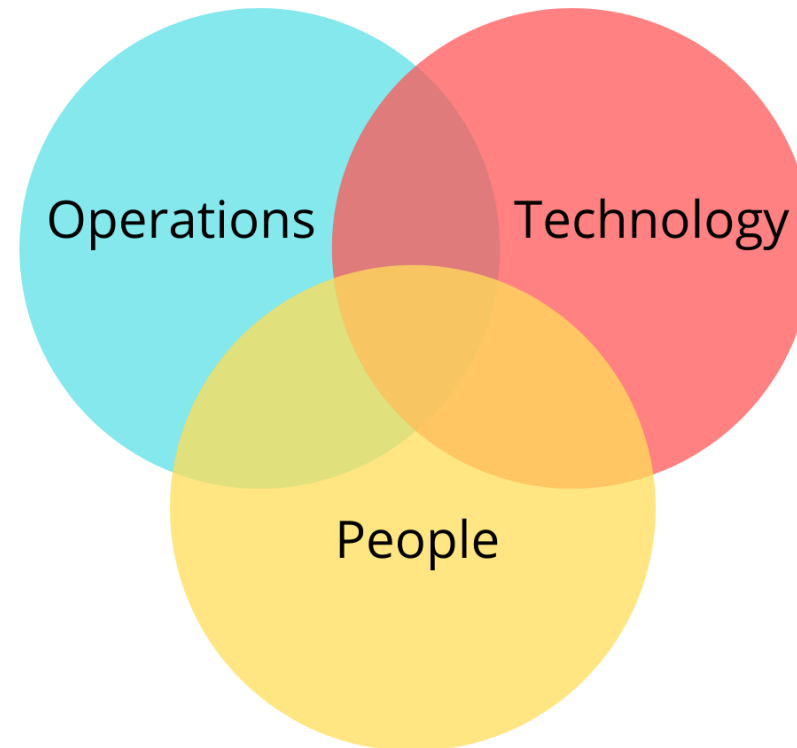
*Whereas*, pursuing energy improvements and cleaner sources of energy is in line with City goals, values, and commitments on climate protection that acknowledge local and global implications; and  
*Whereas*, Charlottesville City Schools aims to reflect and support the goals of the community it serves.

# Energy and Water Management and CCS Partnership

- ▶ 2019 Resolution for Charlottesville City Schools Energy and Water Performance
- ▶ Monthly meetings with EWMT representatives and CCS administration to discuss general school performance and education initiatives
- ▶ Quarterly meetings with each CCS Principal to discuss each school's performance (virtual updates since COVID)

# Annual Energy and Water Performance Report

- ▶ **2019 Report-** Inaugural report which includes more detail and establishes a baseline of information and data
- ▶ **2020 Report-** Focuses on 2020 performance and actions
  - ▶ COVID-19 is addressed often in this report
- ▶ **Report Outline**
  - ▶ Actions
    - ▶ Operations
    - ▶ Technology
    - ▶ People (Behavior)
  - ▶ Performance



*Reports & Interactive Dashboards Available on Website:  
[Charlottesville.gov/EnergyWater](https://www.charlottesville.gov/energywater)*

# Operations

- ▶ COVID-19 Operation Changes
- ▶ EWMT and Monthly Meetings with CCS Administration
- ▶ Utility Tracking & Investigation
- ▶ HVAC Schedules & Communication
  
- ▶ Strategies Planned and 2021 Outlook



# Technology

- ▶ Impacts of COVID-19
- ▶ Utility Tracking Software and Data Analysis/Visualization Tools
- ▶ LED Lighting: Buford Middle School
- ▶ HVAC Equipment Replacement: Walker Upper Elementary and Clark Elementary
- ▶ BAS Upgrade: Venable (2021)
- ▶ Project Rebate Programs
- ▶ Energy Saving Performance Contract
- ▶ Strategies Planned and 2021 Outlook



# People (Behavior)

- ▶ 2020 Education Campaigns
  - ▶ Spring 2020: Reduce our Energy and Water Waste
  - ▶ Summer 2020: Keep Going- Summertime Savings!
  - ▶ Fall 2020: New School Year, New Commitment to Save Energy and Water
  - ▶ Winter 2020: Pick an Action, Do an Action!
- ▶ Employee Outreach- space heater PSA
- ▶ Better Business Challenge
- ▶ Working with Green BACON
- ▶ Strategies Planned and 2021 Outlook



CHARLOTTESVILLE CITY SCHOOLS  
**ENERGY & WATER MANAGEMENT PROGRAM**

**REDUCE ENERGY WASTE**  
Make sure to **close outside doors** behind you and **tell an adult if a door is left propped open.**

Our cooled and heated air can escape through open doors to the outside.

This will help reduce our energy footprint by keeping temperature controlled air inside our school.

**REDUCE WATER WASTE**  
Fill up your **reusable water bottle with tap water** instead of buying single use plastic bottles.

It takes about 3 liters of water to package 1 liter of plastic single-use bottled water

**REMEMBER: If you see a water leak or an open exterior door, report it!**

The City of Charlottesville Energy and Water Management Program is here to help reduce your school's energy and water footprint. Each season, we will focus on new energy and water conservation strategies, education and tips!

PLEASE RECYCLE THIS POSTER

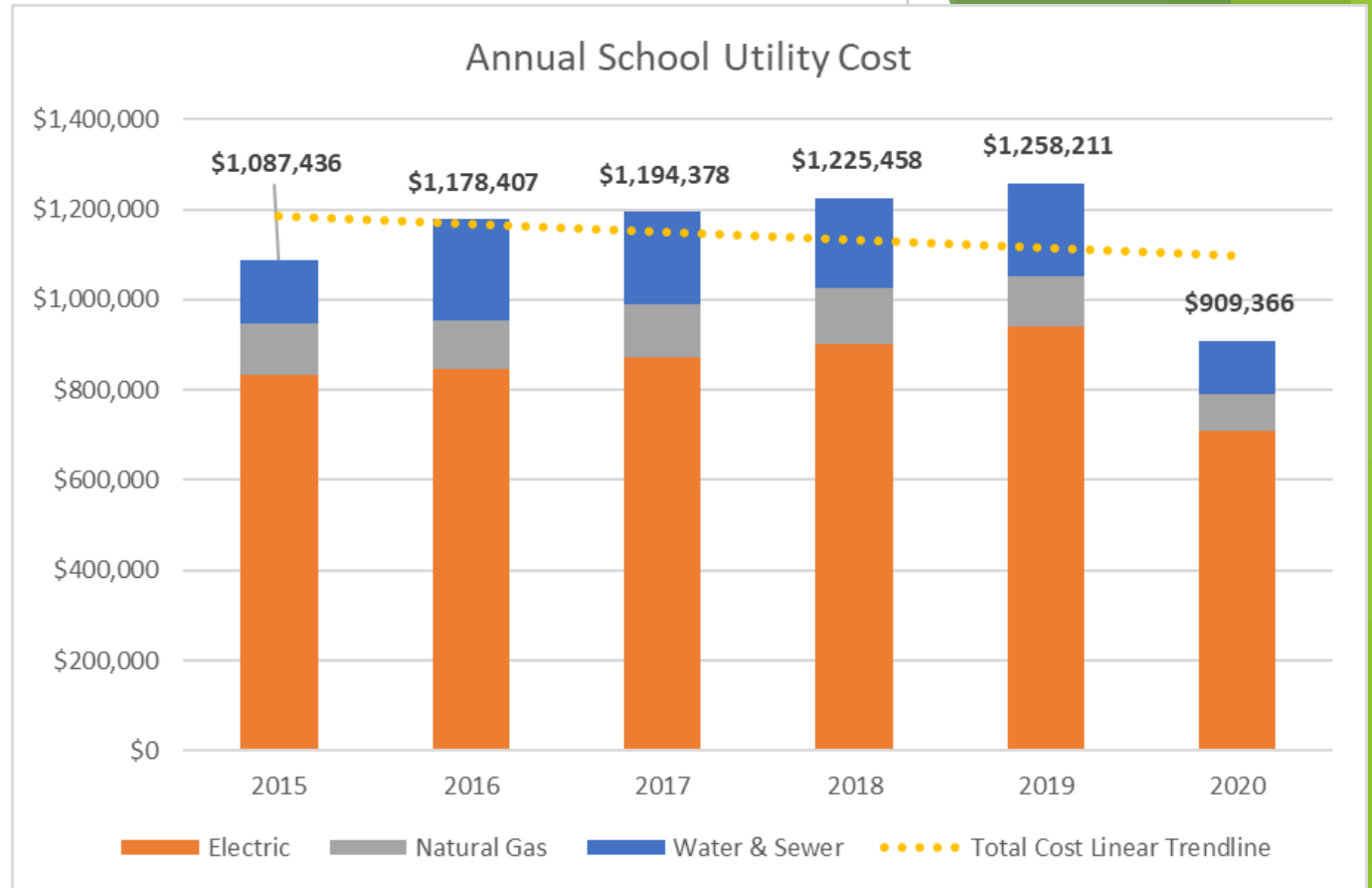
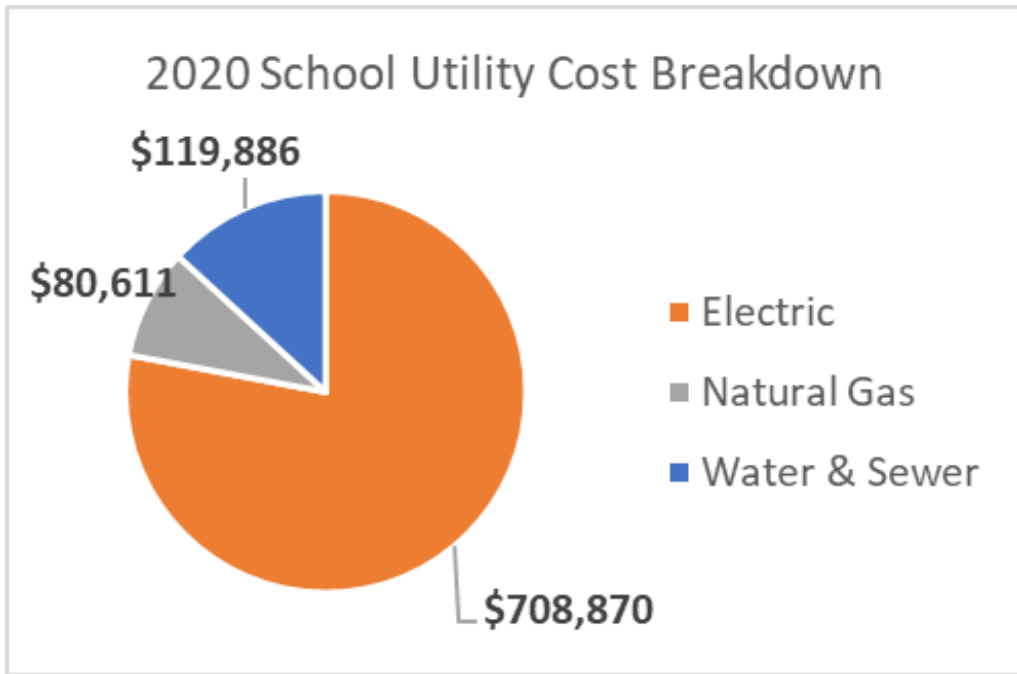
# Performance

- ▶ General Goal:  
2% reduction in utility consumption each year
- ▶ Impact of COVID-19
- ▶ Energy Use Intensity
- ▶ ENERGY STAR Score

Schools	Year Built	Gross Floor Area (sq. ft.)	2019 Energy Use Intensity (kBtu/sq.ft.)	2020 Energy Use Intensity (kBtu/sq.ft.)	2019 ENERGY STAR Score (1-100)	2020 ENERGY STAR Score (1-100)
Buford Middle School	1965	110,650	51.3	36.9	44	67
Burnley-Moran Elementary School	1955	51,158	54.2	42.7	64	76
Charlottesville High School	1974	285,700	55.6	42.8	58	75
Clark Elementary School	1930	54,021	63.4	46.1	41	65
Greenbrier Elementary School	1930/59	46,750	56.8	43.8	60	76
Jackson-Via Elementary School	1951	66,600	52.9	37.1	56	79
Johnson Elementary School	1955	54,655	52.5	38.1	65	86
Lugo-McGinness Academy	2014	6,830	42.6	32.3	89	97
Venable Elementary School	1925/51	61,720	53.1	42.1	55	69
Venable Elementary School Annex	1925/51	1,200	180.1	127.8	3	10
Walker Upper Elementary School	1965	106,700	55.8	48.7	34	42



# Performance- Cost



- ▶ Total 2020 Utility Cost: \$909,366
- ▶ Estimated 2020 Utility Savings: \$348,843

# Performance- Usage

*2020 Usage & Percent Change from 2019 to 2020*

Electric

7,264,136 kWh

23% ↓

Natural Gas

10,978,692 cf

12% ↓

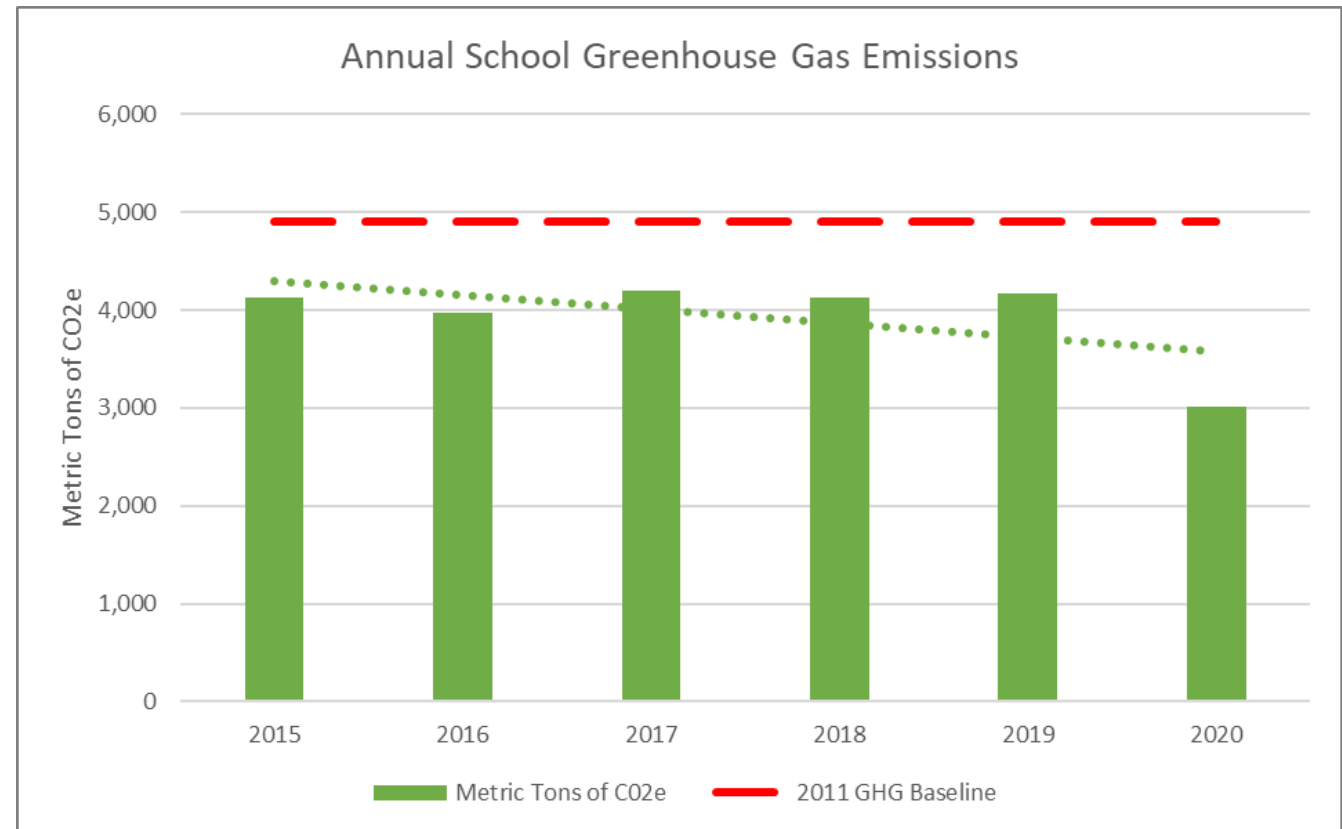
Water

826,431 cf

44% ↓

# Performance- Greenhouse Gas Emissions

- ▶ 28.0% decline in GHG emissions in 2020
- ▶ GHG Emissions by Fuel Type
  - ▶ 81.6% Electricity
  - ▶ 18.4% Natural Gas
- ▶ Anticipate GHG emissions may increase once a more “normal” operations resumes



# Performance- 2021 Outlook

- ▶ Continued COVID-19 impacts to performance and operations
  - ▶ Combined with watchful tracking when facilities start to open up to identify issues quickly
- ▶ Alignment with the Climate Action Plan once established by the City
- ▶ Solar
- ▶ Energy Saving Performance Contract

Thank You for  
Your Time

Contact:

[EnergyWaterTeam@Charlottesville.gov](mailto:EnergyWaterTeam@Charlottesville.gov)

Follow us on social media:

Instagram: [@CvilleGreenCity](#)

Facebook

[@CvilleWaterConservation](#)

[@CvilleGreenCity](#)

Twitter: [@CvillePW](#)

[Charlottesvilleschools.org/Conservation](http://Charlottesvilleschools.org/Conservation)

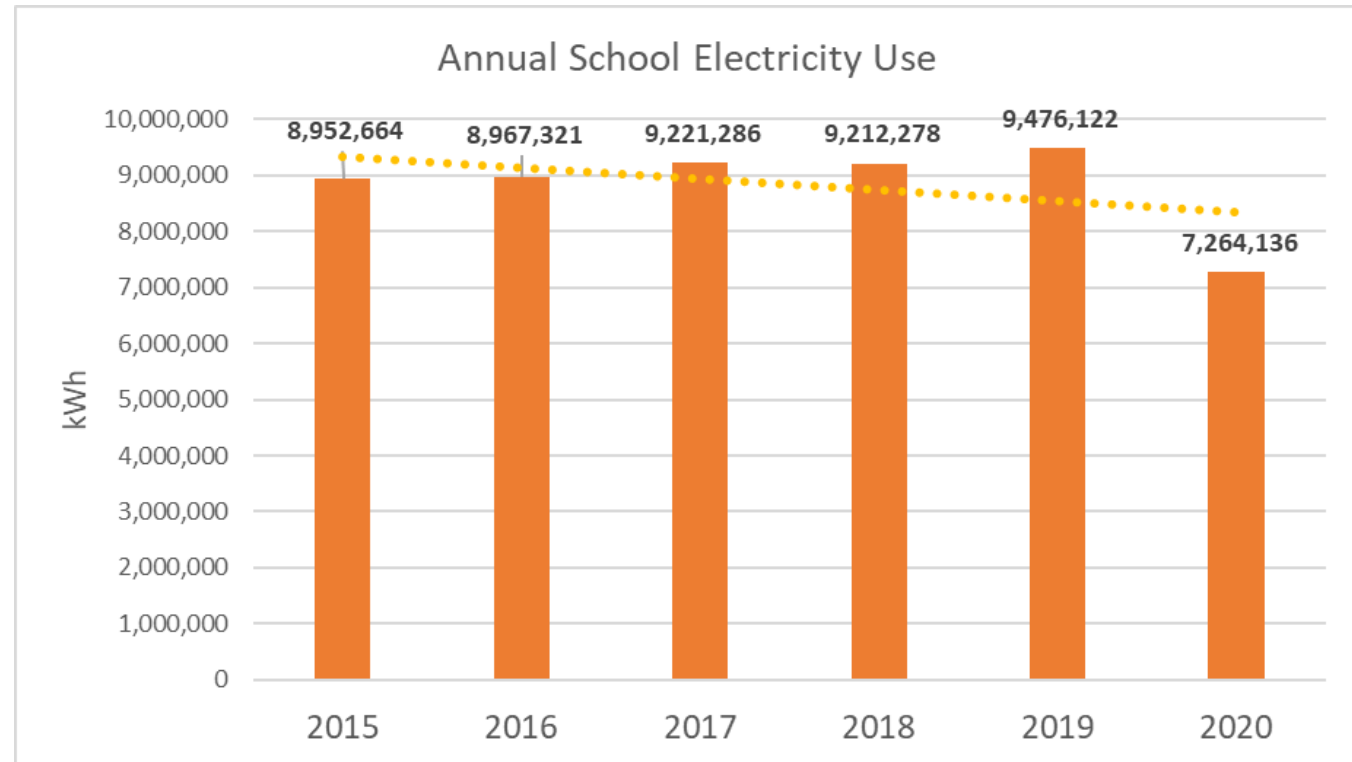
[Charlottesville.gov/EnergyWater](http://Charlottesville.gov/EnergyWater)

Additional information on  
performance by utility

The right side of the slide features a decorative graphic composed of several overlapping, semi-transparent green triangles and polygons. The colors range from a light, pale green to a dark, forest green. The shapes are arranged in a way that creates a sense of depth and movement, with some shapes appearing to be in front of others. The overall effect is a modern, abstract design element.

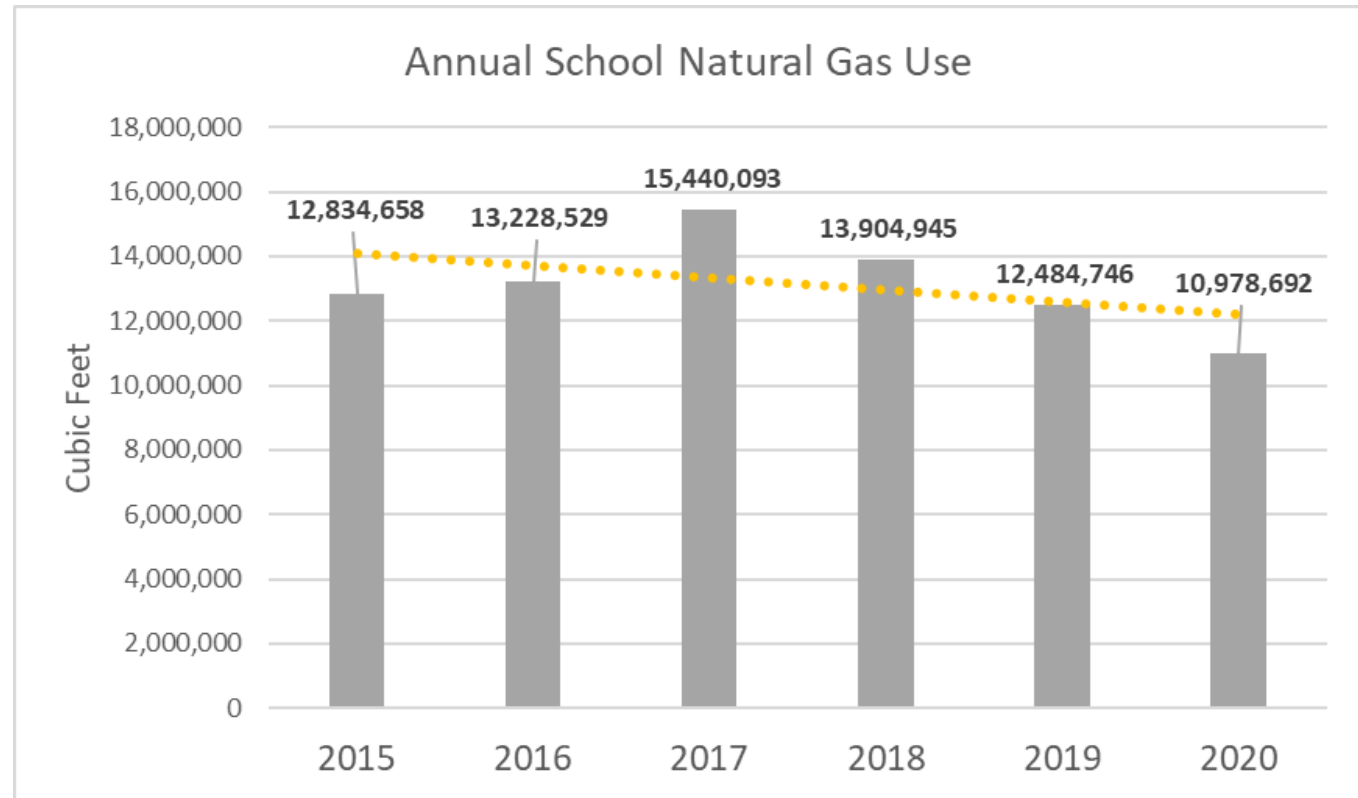
# Performance- Electricity

- ▶ 23.2% drop in usage and 24.5% drop in cost (comparing 2020 to 2019)
- ▶ Every school saw at least a 13% drop in electricity usage (compared to 2019)
- ▶ Largest savings seen in April and May



# Performance- Natural Gas

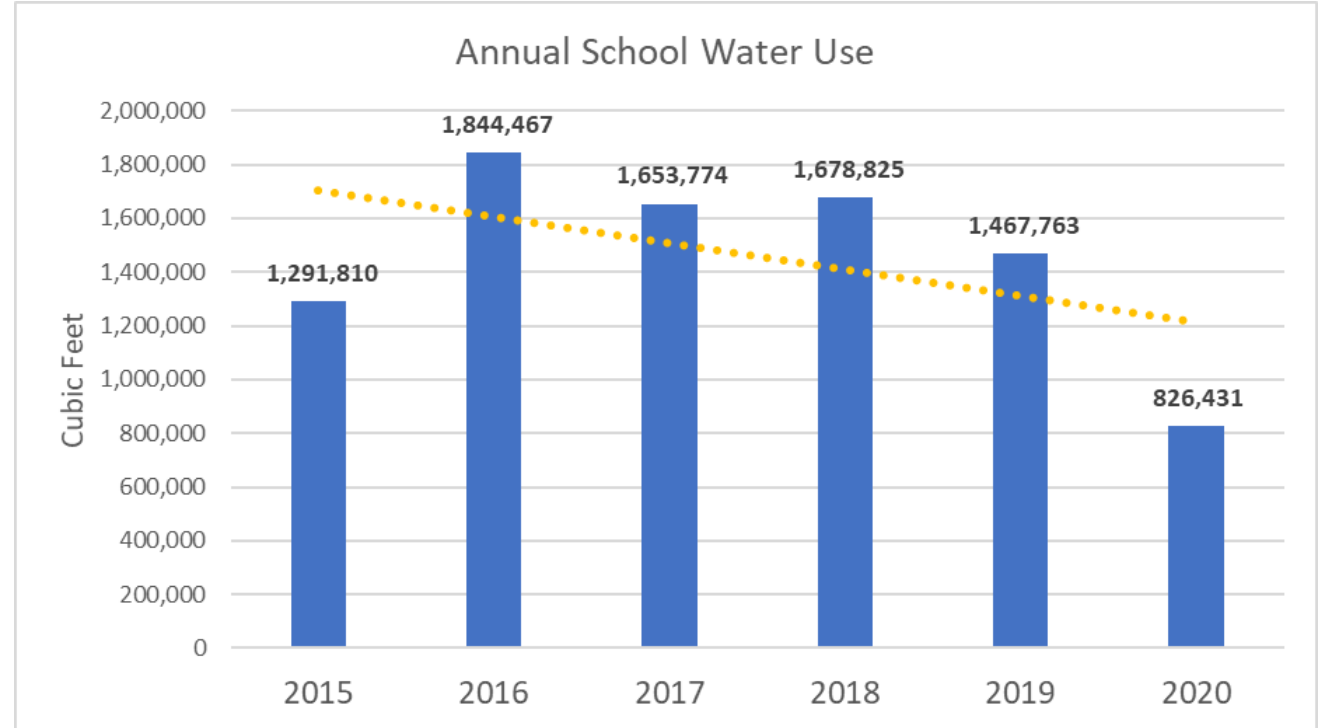
- ▶ 12.1% drop in usage and 28.1% drop in cost (comparing 2020 to 2019)
- ▶ Variability in savings across usage as a result of increased heating need during the winter due to lack of occupancy in schools.





# Performance- Water & Sewer

- ▶ 43.7% drop in usage and 42.1% drop in cost (comparing 2020 to 2019)
- ▶ Every school saw at least a 23% drop in water usage (compared to 2019)
- ▶ Biggest drivers in decline in usage:
  - ▶ Decline in occupancy and direct impacts to domestic daily water usage for things like toilets
  - ▶ Decline in irrigation due to cancelled sports and school activities



# Performance-Cost

- ▶ 2020 Cost Breakdown
  - ▶ Electricity: \$708,870
  - ▶ Natural Gas: \$80,611
  - ▶ Water & Sewer: \$119,886
  - ▶ Total: \$909,366

- ▶ Estimated 2020 Savings
  - ▶ Electricity: \$230,361
  - ▶ Natural Gas: \$31,476
  - ▶ Water & Sewer: \$87,006
  - ▶ Total: \$348,843

