

Five Star Sustainable

Adams 12 Five Star Schools // Sustainability Report

Winter 2018

Thunder Vista P-8: A New Approach

A major component of the 2016 Bond Program was to construct a new school in the Anthem neighborhood of Broomfield. This project came to life in August 2018, with the opening of our newest and most efficiently designed building, Thunder Vista P-8. As a new model for designing our learning spaces, multiple energy efficiency measures were utilized and a target Energy Use Intensity for the school was set at roughly 26 kBtu/sq. ft. Energy Use Intensity (EUI) is a measure of a building's total energy used, standardized against the footprint of the building, which allows for comparing the average efficiency of a high school to that of an elementary, which are clearly different sizes but generally have similar uses.



The current average EUI for the district is 67.8 kBtu/sq. ft. with a range of 42.4-98.8 kBtu/sq. ft. (for schools). Thunder Vista will also be the district's first CHPS Verified school. The [Collaborative for High Performance Schools](#) (CHPS) is a national program focused on improving student performance through well-designed, operated and maintained K-12 facilities. Efficiency measures include all LED lighting, water-wise landscaping and a heating and cooling system the uses the earth as a heat exchanger. We are all excited to see how efficiently this building performs!

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Energy and Sustainability is responsible for managing utility use and for promoting social, economic and environmental sustainability for the district. Efforts include installing more energy efficient equipment, managing our water consumption, tracking our bus fleet fuel use and engaging our students to be better stewards of the environment.

We're taking steps to "go green." That means our schools and district departments are working to be wise stewards of our resources. Learn how we are being sustainably smart – and how you can do your part.

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Adams 12
Five Star Schools

Fiscal Year 2017-2018 Utilities & Sustainability Benchmark

The process of benchmarking involves establishing a baseline for something you are interested in tracking over time and then comparing recent performance to that historic baseline. For the utilities and sustainability metrics established by the district, a three-year baseline was set for Fiscal Years (FY) 2014-2016. We are then able to compare our performance for each following fiscal year to that baseline period. A few exceptions to this exist:

- Total water use is compared on a calendar year basis, due to the watering season falling within fiscal years during the months of May-September. So while the baseline is still the three-year average, the current benchmark is for the 2017 calendar year.
- No historic data was available for student engagement or waste diversion rate during the three-year baseline period, so those baselines are a one-year period of FY 2016-2017. The first benchmark then is the past school year, FY 2017-2018.

Below is the FY 2017-2018 benchmark data (2017 for total water use) on how the district performed, as well as the utilities cost benchmark for the same periods.

FY 2017-2018 UTILITIES PERFORMANCE BENCHMARK

Parameter	Period	Performance	% Change
 Electricity Use (kWh/yr)	3-Year Baseline FY 2017-2018	38,131,315 39,689,899	3.93%
 Natural Gas Use (therm/yr)	3-Year Baseline FY 2017-2018	1,638,595 1,706,186	3.96%
 Energy Use Intensity (kBtu/sq. ft.) ¹	3-Year Baseline FY 2017-2018	65.2 67.8	3.95%
 Renewable Energy Offset (%)	3-Year Baseline FY 2017-2018	6.4% 6.4%	0%
 Bus Fleet Fuel Efficiency (gal/VMT)	3-Year Baseline FY 2017-2018	5.4 5.6	2.86%
 Total Water Use ² (kGal/yr)	3-Year Baseline 2017	220,117 200,074	-10.02%
 Student Engagement (# Green Teams)	FY 2016-2017 FY 2017-2018	29 21	-38.10%
 Waste Diversion Rate ³ (%)	FY 2016-2017 FY 2017-2018	16.9% 19.0%	10.82%

¹ Energy Use Intensity (EUI) is a method for comparing different building types by standardizing their total energy use by square feet of building space and weather normalizing that information. A lower EUI is a more efficient building.

² Total Water Use Benchmark based on calendar year due to watering season.

³ Missing diversion data for much of school district for April-June 2018 due to switching waste haulers.



Fiscal Year 2017-2018 Sustainability Management Plan Goals Progress

During the 2016-2017 Fiscal Year, a Sustainability Planning Committee was convened to produce the first sustainability plan for Adams 12 Five Star Schools. The outcome of this undertaking, the sustainability management plan (SMP), is guiding the Five Star District's development and integration of sustainable practices into the district's culture through fiscal year 2020. Throughout each year, several goals are being pursued that will help the district have a smaller environmental footprint in our communities while also fostering greater engagement on sustainability topics from our students and staff. The beginning of each school year will be an opportunity to look back on the prior year and see how well we progressed toward those goals. Below is a table capturing our sustainability efforts through June 2018.

There were also six goals set for the past fiscal year for which we were not able to make any progress. These were identified as being either infeasible with current resources, of low priority based on cost/benefit analysis, or simply too complex to address in one fiscal year. While these goals remain as desired targets for the district, additional personnel and/or resources will be needed for success on these items.

	% COMPLETE	GOAL
MET OR EXCEEDED GOAL	100%	Electricity: Amend district technical guidelines to include daylight monitoring and vacancy sensors for all new lighting projects conducted beginning summer 2018.
	100%	Electricity: Develop electricity challenge open to all schools, to occur once per school year beginning with the 2017-2018 school year through the 2019-2020 school year.
	100%	Engagement: Survey all schools once per year regarding green teams/environmental clubs from 2017 through 2020.
	100%	Natural Gas: Amend district technical guidelines to standardize on tankless domestic hot water heaters beginning with construction conducted during the 2018-2019 fiscal year.
	100%	Natural Gas: Amend district technical guidelines to standardize on natural gas fired boilers with average fuel use efficiency of 90 percent or greater beginning with construction conducted during the 2018-2019 fiscal year.
	100%	Transportation: Develop districtwide idling guidance for buses and maintenance vehicle fleet to minimize idling; provide training on guidance to all bus drivers and maintenance vehicle drivers at the beginning of the 2017-2018 school year.
	100%	Transportation: Establish bus fleet and white fleet idling-time baselines of one year from July 2017-June 2018.
	100%	Waste Management: Increase number of schools participating in composting by one elementary school, one middle school and one high school by June 2018.
	100%	Water: Develop public outreach materials regarding bluegrass to native seed conversion, for release to the public prior to district spring break 2018.
	100%	Water: Upgrade central irrigation control system to most current version of existing system by June 2018.
		10%
IMPROVED, BUT STILL HAVE WORK TO DO	60%	Energy Use Intensity: Conduct energy audit of 10 buildings with highest EUI from July 2013-June 2016 baseline to identify greatest opportunities for energy reductions by June 2018.
	50%	Water: Convert two athletic fields or playfields per year from bluegrass to artificial turf, beginning June 2018 and continuing through June 2020.
	19%	Waste Management: Increase districtwide diversion rate to 20 percent by June 2018.
DIDN'T MEET GOAL	10%	Engagement: Get at least ten schools to host a zero-waste lunch once per school year beginning fall 2017 and continuing through spring 2020.
	0%	Engagement: Create sustainability report cards on a school-by-school basis to include electricity use, natural gas use, water use, waste diversion and green team metrics. Report cards will be released early each school year, covering data for the previous school year, beginning with the 2017-2018 school year through the 2019-2020 school year.
	0%	Engagement: Create a districtwide reuse network to include green teams/environmental clubs, the warehouse and community partners for launch at the end of the 2017-2018 school year.
	0%	Engagement: Develop a digital badge program to award students and staff for participation in "green" activities. Pilot this program with 5-10 schools that have active green teams during the 17/18 school year, and make the program available for the whole district starting with the 18/19 school year.
	0%	Natural Gas: Conduct a districtwide building envelope R-Factor audit (roofs, walls, windows/doors) by June 2018.
	0%	Transportation: Retire and replace three diesel buses with propane buses per year beginning fiscal year 2018 through fiscal year 2020.
	0%	Waste Management: Establish baseline for existing purchasing practices of "green" products by end of fiscal year 2018.



Greening Up Our Waste Stream

The Five Star District is continuing its efforts to green our waste stream, by increasing the number of schools participating in composting, capturing our waste diversion data more accurately with our new waste hauler, [Alpine Waste & Recycling](#), and getting more schools enrolled in the [Green Up Our Schools](#) program. Waste diversion, captured as a percent of a waste stream that does not go to the landfill, is a metric that the Five Star District is looking to increase across all operations, with a goal of a districtwide diversion rate of 30 percent by June 2019. Our most recent school year yielded a 20.9 percent diversion rate, with four schools participating in the composting pilot. This school year, we've added composting to STEM Lab and have four schools enrolled in the Green Up Our Schools program: Hulstrom K-8 (2nd year), Hunters Glen Elementary, STEM Lab and The Studio School. Additional efforts to increase our waste diversion rate and awareness around waste reduction planned for this school year include:

- Hulstrom K-8 Green Team to tour the [Altogether Recycling Center](#).
- Rocky Top Middle School to capture staff bathroom paper waste in compost stream.
- STEM Lab to host a whole-school compost day.



THE SUSTAINABILITY TEAM

Chris Wilderman

Director of Safe and Sustainable Environments

Chris worked previously for Adams 12 Five Star Schools as the Security Manager before moving to Boulder Valley School District for five years as the Director of Operations, Security and Environmental Services. Eager to return to Five Star Schools, Chris took on the role of Director of Safe and Sustainable Environments in July 2017. He leads the sustainability team, facilities, operations, community use, environmental and security.

Shannon Oliver

Assistant Director of Energy and Sustainability

Shannon began with Five Star Schools in February 2016, with a passion for minimizing the impact we all have on our surrounding environment and protecting our health from the potential negative impacts of a contaminated environment. He has a Bachelor of Science in Environmental Health from Colorado State University and a Master in Public Health—Global Environmental Health from Emory University. Shannon is excited to work with district students and personnel to achieve meaningful reductions in energy and water use, and help improve waste reduction efforts.

Ed Jolly

Energy Engineer

Ed began with Five Star Schools in July 2018 and brings over 17 years of experience in energy management and building operation. He has a Bachelor of Science in Mathematics from Metropolitan State University in Denver. Ed is excited to apply his knowledge and expertise to district operations for energy and cost savings.

Justin Price

Water Resource Specialist

Justin came to the district with prior grounds experience, military service and landscape design experience. He will focus on managing one of Colorado's most precious resources by ensuring our irrigation systems are watering adequately without over watering, as well as by moving toward more sustainable and low-water use landscapes.