



**Westminster**  
**Public Schools**

Where Education is Personal



# ENERGY MANAGEMENT PLAN



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# INTRODUCTION

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According to the U.S. Department of Energy, nationally, K-12 schools spend more than \$6 billion a year on energy. For most districts, energy costs are second only to salaries, exceeding the cost of supplies and books. The good news, it is estimated that at least a quarter of all energy costs could be saved through smarter energy management. Additionally, energy is one of the few expenses that can be decreased without negatively impacting classroom instruction.

Colorado is ranked number 7 on a 2020 report of the most and least energy-efficient states. According to the report, Colorado is collectively ranked fourth for home energy efficiency, 18<sup>th</sup> for vehicle fuel efficiency, and 12<sup>th</sup> for transportation efficiency. Governor Polis believes the state can do better and has issued a *Roadmap to 100% Renewable Energy by 2040 and Bold Climate Action*, calling for zero emission vehicles, moving towards zero emission buildings, expansion of renewable energy, and a promotion of energy efficiency.

Westminster Public Schools is a leader in school reform. Our competency based system has upended the traditional educational model and has provided a viable alternative to school districts across the nation as they tackle the challenges faced by outdated school structures and antiquated accountability systems. We also believe we can, and should, be a leader in energy conservation and management. Protecting Colorado's way of life means doing our part to effectively manage our natural resources with an eye to the future.

The Westminster Public Schools' Energy Management Plan is our response to the growing need for energy and environmental stewardship. It provides a roadmap for planning and decision-making as we develop strategies to improve the overall energy efficiency of our operations.

Supporting energy efficiency and sustainability is a long term journey but one well worth the trip.

## EXECUTIVE SUMMARY

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During the 2022-2023 fiscal year, a power, water and gas power, (PWG) team will develop an energy management plan for Westminster Public Schools (WPS). The team is a diverse group of more than 13 WPS employees that met on multiple occasions to develop an energy management vision and set goals in three main focus areas: **power, water and gas**. The outcome of this undertaking, the energy management plan, will guide the district in the development and integration of energy management practices into the district's culture and future.



## VISION STATEMENT

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Ongoing energy management through environmental stewardship and education leaves a smaller carbon footprint in our community and the world.

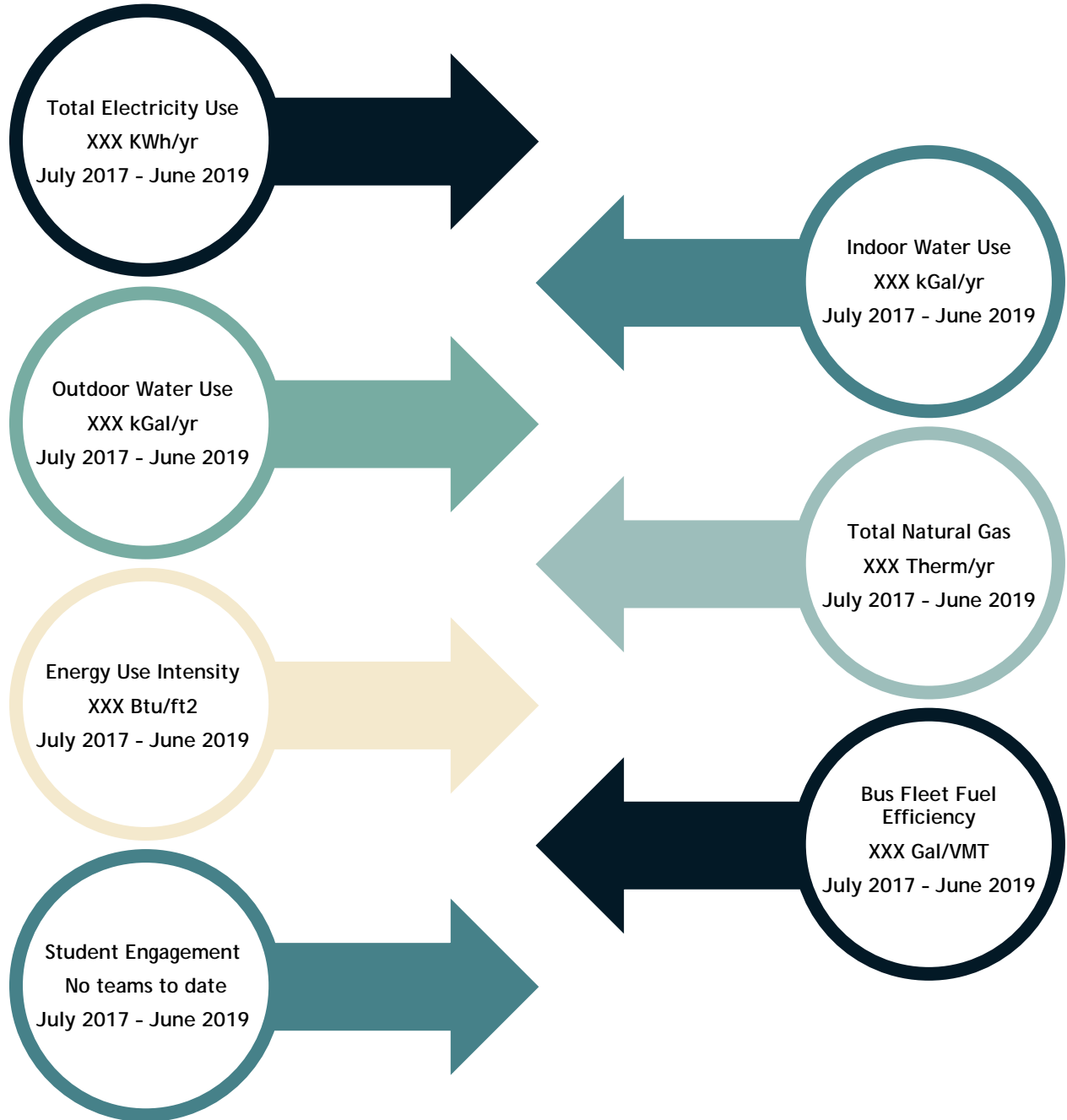
### WPS CORE ENERGY PRINCIPLES

- A strategic approach to innovative ideas and practices in energy conservation
- Cost-effective energy efficiency for financial stability
- Maximum efficiency in project recommendations
- Excellence in management of our energy consumption

# WESTMINSTER PUBLIC SCHOOLS - THEN AND NOW

THEN: "YOU CAN'T MONITOR WHAT YOU DON'T MEASURE"

Past trends provide a context for future actions and decisions. A baseline inventory of energy consumption has been used in the plan development allowing us to establish benchmarks and priorities in our strategic initiatives. Below are the current metrics and respective baseline periods identified:



## We're Already Making Progress: Where We Are Today

WPS has made significant progress in recent years toward a more cost-effective energy management system. We have made great strides in reducing consumption of power, water, and gas while moving towards more clean energy options.

### A District in Transition

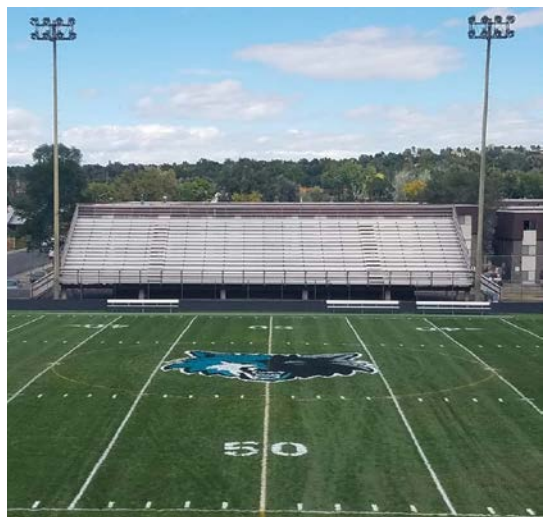
**Power:** While electricity rates have steadily increased over the past several years, we have been able to offset a portion of the increase through improved efficiencies across the district. Installing LED lighting has had an immediate impact on electricity costs and is one of our largest cost containment initiatives. After completion of the construction projects in August 2021, WPS has eight buildings with 100% LED and, the remainder of the buildings have partial LED retrofits. Other projects resulting in decreased electricity usage have been: Implementation of a uniform Building Management System (BMS) that allow the ability to centrally control all of the heating and cooling systems throughout the district. Installation of Variable Frequency Drives (VFDs) on larger heating and cooling equipment that enables the electric motors to operate at less than full speed—a 25% reduction in motor speed could result in a decrease of energy consumption by nearly 60%.

**Water:** No resource is as vital to the West's urban centers, agriculture, industry, recreation, and environmental preservation as water. In recent years, water has become one our most costly utilities, behind only electricity in annual expenditure. Projects that have helped reduce the overall use of water include: installation of Environmental Protection Agency WaterSense® labeled, low-flow products for all new fixtures and end-of-life replacements. We have also replaced all our flush valves over the years from a 3 GPF to 1.25 GPF for all urinals and water closets (toilets). In that same time frame we have replaced all our faucets to low flow or add aerators to reduce the water flow to .05 GPM.

We are also focused on water consumption outside our buildings. We have engaged a landscape architect to help with environmental designs that reduce water hungry turf areas and replace them with plants and features better suited to our semi-arid climate.

We will put together a long term plan to reduce the area of irrigated turf by installing synthetic turf fields where applicable, drastically reducing the amount of water required for those spaces. We will plan upgrades to the central irrigation systems and components utilized across the district for managing and reducing the irrigation water use, which accounts for roughly 90% of the total water use across the district. The district increased the overall amount of natural turf in 2021 by 20+ acres.

We will also focus in reducing the overall natural turf in the district by 10-15% by the 2024-2025 school year and by the 2026-2027 school year reduce the overall natural turf areas by 20-25% from the current areas as of the 2022-2023 school year. This will be



a significant change to our school sites and will require funding however, we know the savings in resources will pay for the investment. The savings will come from labor hour reduction from maintenance, equipment, and fuel savings as well.

We propose a plan to create a Resource Specialist by the 2022-2023 school year to focus on improving and maintaining all our resource systems across the District, long range planning and staff/student behavioral trainings and communication. Their salary will be paid by the savings across the district in the reduction of energy and water use.

**Natural Gas:** Most of the natural gas consumed in the district is used for heating our buildings, heating domestic water and kitchen equipment. Efforts to reduce our consumption of natural gas include incorporating technical guidelines requiring any boiler for building heat or domestic water heating to be high efficiency (>90 percent) units. Design considerations were incorporated in all our heating and cooling projects over the past eight years to ensure the proper equipment is specified and installed in all our buildings. We have also replaced boilers at four other schools for a total of 32 boilers over the past few years. We have replaced 15 water heaters to high efficiency in that same time frame.

**Renewable Energy:** Utilization of renewable energy may allow for both cost savings to the district, as well as offsetting our total energy use and reducing our carbon footprint. Sources of renewable energy could be solar array panels, wind or generators. This process if the District decided to go in this direction would be a new venture for us. Our team will look into options and possible partnerships over the next couple years and propose a recommendation to the district leadership team by 2023-2024 school year.

**Transportation:** Fuel efficiency in our bus and maintenance vehicle fleet are an important



component of energy sustainability. By removing our older buses and replacing them with newer models that meet stricter fuel efficiency and emissions standards we gain fuel economy and reduce gaseous and particulate emissions. Under our current replacement cycle plan, we will be able to remove all older buses by the 2024-2025 school year. In addition to the fuel savings, adhering to stricter emission standards allows us to reduce our greenhouse gas inventory.

Starting in January 2022 - August 2022, the district teamed up with Xcel Energy and Sawatch Labs to develop an electric vehicle (EV) plan, to move forward with replacing vehicles of diesel, buses, and gas vehicles, and installing charging stations. Sawatch Labs and Xcel Energy will assist WPS in assessing vehicles to determine if a vehicle's driving needs could be met with an electric vehicle. The goal is to support the development of fleet electrification, assess charging stations, and estimate the cost of infrastructure installation. This low- or no-cost program is available to fleets in Xcel Energy's Colorado territory.

We will be collecting data on all bus and transit fleet to determine the best direction moving forward for the replacement of vehicles to EV. This data will provide Xcel Energy information that will allow them to verify that there is enough infrastructure in place to provide power required to support all of the equipment necessary for total EV retrofit of district fleet vehicles.

Commencing August 2022, the goal is to begin the construction of all infrastructure and charging stations for EV at the Auxiliary Department, including 20 busses and 17 transit vans.

This same replacement cycle will be ongoing, and the goal is to replace 20 busses within five to seven years. Our goal for year one is to order three EV busses. Xcel Energy will grant the district a one-time \$275K for one bus. Typically, EV busses run \$350K each. As of today, the district has ordered one EV transit van.

**Waste:** Reducing the amount of waste that goes to the landfill is another area of environmental stewardship we are addressing. Waste diversion through warehouse operations is in place with multiple waste diversion streams including co-mingled recycling, book and furniture auctioning, metal recycling and hazardous waste management already in place. Working on topics such as recycling, composting, community service projects, school gardens, energy challenges and environmental education, may create opportunities to provide students with long term benefits for our community to recycle and preserve our resources. We also think there will be opportunities to use outside groups and businesses to help with educating staff and students along the way. There may be opportunities for grants to support long range planning that will have some, one time impacts.

**Student/Staff Engagement:** Student and Staff engagement on sustainability efforts is new to WPS Schools. Working on topics such as recycling, composting, community service projects, school gardens, energy challenges and environmental education. Moving forward we will have the opportunities to educate students, staff and the community to recycle and preserve our resources. There will be opportunities to use outside groups and business to help with this process educating staff and students along the way, with opportunities for grants to support long range planning that will have some one time budget impacts.

## THE FUTURE AND BEYOND

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### SMART GOALS FOR THE FUTURE

The following section is organized by the five focus areas of this Energy Management Plan: **Power, Water, Natural Gas, Waste, and Student and Staff Engagement**. Each focus area has multiple SMART Goals, detailing specific actions that the district will strive toward during the timeframe associated with each goal. SMART goals are defined for this document as Specific, Measurable, Accountable, Realistic and Time bound.



### POWER



1. Develop electricity challenge open to all schools, to occur once per school year beginning with the 2022-2023 school year through the 2025-2026 school year.
2. Reduce districtwide electricity usage (KWh/yr) by 10% from July 2023 to July 2024; baseline July 2017 to June 2019.
3. Reduce districtwide electricity usage (KWh/yr) by 20% from July 2024 to July 2025; baseline July 2017 to June 2019.
4. Discuss solar opportunities associated with the Career and Technical Education (CTE) department to install one row of solar panels each school year as a learning opportunity through the CTE program beginning fall 2023.

## NATURAL GAS

1. Conduct a building envelope R-Factor audit (roofs, walls, windows/doors) for a third of district facilities by June 2023.
2. Amend district technical guidelines to standardize tankless domestic water heaters beginning summer 2022.
3. Continue district technical guidelines standardize natural gas fired boilers with average fuel use efficiency of 90 percent or greater.
4. Develop standard heating and cooling ranges for specific months of the year to reduce energy consumption by summer of 2022 to implement for the 2022-2023 school year.

## ENERGY USE INTENSITY

1. Reduce building specific Energy Use Intensity (EUI) from July 2023-June 2024 baseline by June 2022, as follows:
  - a. Elementary schools by 10%.
  - b. Middle schools by 10%.
  - c. High schools by 10%.
  - d. Support Facilities by 15%.
2. Conduct energy audit of 10 buildings with highest EUI from July 2022-June 2023 baseline to identify greatest opportunities for energy reductions starting June 2023.
3. Create sustainability report cards on a school-by-school basis to include electricity, natural gas and water use. Report cards will be released early each school year, covering data for the previous school year, beginning with the 2022-2023 school year and continuing through the 2025-2026 school year.



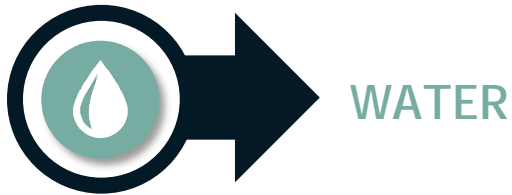
## RENEWABLE ENERGY

1. Our team will look into options for renewable energy over the next couple years and propose a recommendation to the district leadership team by 2023-2024 school year.

## TRANSPORTATION

1. Develop districtwide idling guide lines for buses and maintenance vehicle fleet to minimize idling; provide training and guidance to all bus drivers and maintenance vehicle drivers at the beginning of the 2022-2023 school year.
2. Establish bus fleet and white fleet idling-time baselines of one year from July 2022-June 2023.

3. Retire and replace three diesel buses with new buses each year to ensure the most efficient buses are in our fleet with a 10 year rotation by 2025-2026 school year.



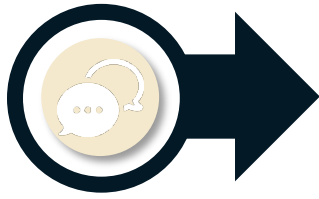
## WATER

1. Convert one athletic field from bluegrass to artificial turf, by August of 2024.
2. Decrease per occupant indoor water use by 10% from July 2022-June 2023.
3. Convert 25% of current non-playfield, irrigated areas to non-irrigated areas by June 2025.
4. Upgrade central irrigation control system to most current version of existing system by August 2026.
5. Reduce districtwide water use from July 2017-June 2019 baseline as follows:
  - a. 5% by December 2023.
  - b. 10% by end of October 2024.
  - c. 15% by end of October 2025.



## WASTE MANAGEMENT

1. Establish a waste diversion rate baseline from July 2022 through June 2023.
2. Develop cafeteria/classroom recycling program by 2022 audit baseline by June 2020.
3. Develop guidelines for schools interested in participating in composting by 2023-2024 school year.
4. Improve waste management education by end of the 2023-2024 fiscal year as follows:
  - a. Create guidance document/training tools.
  - b. Field trips for schools and Custodians.
  - c. Increase marketing campaign.
5. Increase districtwide diversion rate as follows:
  - a. 5% by June 2025.
  - b. 10% by June 2026.
  - c. 15% by June 2027.
6. Establish baseline for existing purchasing practices of "green" products by end of fiscal year 2025.



## STUDENT & COMMUNITY ENGAGEMENT

### STUDENT & COMMUNITY ENGAGEMENT

1. Survey all schools once per year from 2022 through 2026 to collect the following information:
  - a. Do they have an active green team/environmental club?
  - b. How many students participate?
  - c. What “green” activities are they currently doing?
  - d. Do they have a student leader?
  - e. What “green” activities are they interested in doing?
2. Get at least ten schools to host a zero-waste lunch once per school year beginning fall 2023 and continuing through spring 2026.
3. Develop a problem based learning project to baseline waste diversion rate to occur during the 2024-2025 school year.



4. Create a districtwide zero-waste network to include green teams/environmental clubs and community partners for launch at the end of the 2024-2025 school year.

5. 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 2023-2024 school year through the 2026-2027 school year.

## BEYOND THE GOALS

As a first effort toward a sustainability road map, this energy management plan identifies short term targets the committee feels will reduce the school district’s impact on the environment and improve the learning atmosphere for our students. These goals may not capture the entire breadth and depth of sustainability work throughout the district. The following section details those areas not specifically covered by one of the preceding goals, but of strong interest to the district.

### MATERIALS MANAGEMENT

Reducing the amount of waste Westminster Public Schools sends to the landfill is a clear priority of this EMP. Further impacting those reductions beyond traditional recycling and composting however, will require consideration of the materials and products we source. Reducing the volume of non-recyclable and non-compostable materials, as well as simply reducing the total

amount of packing and other aspects of our operations that lead to waste are important components of a larger materials management program.

Additionally, the cleaning products, pest management products and other consumable items can have a large impact on our local and regional environmental health. Moving toward less abrasive chemicals and more responsibly sourced products will further our efforts to minimize negative impacts on our communities and to protect the health of our students and staff.

## ACKNOWLEDGEMENTS

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### THANK YOU!

Westminster Public Schools sustainability personnel want to sincerely thank everyone involved in the development of this document, and the hard work that went into make this EMP a success. Critical to those efforts were the individuals who came to each committee meeting, voted on the materials produced and/or helped review and finalize this document for release to the public.

#### **Westminster Public Schools**

##### *Facilities*

*Dr. James Duffy, Facilities*

*Don Ciancio, Facilities*

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##### *Procurement*

*Eric Hodges, Procurement*

*Robert Newell, Materials Management*

#### **External Partners**

*Melanie Gavin, Xcel Energy*

*City of Westminster Water*

*Crestview Water*

*Shannon Oliver, Adams District 12  
Hal Corin, Jefferson County Public Schools  
CASDEM*

*As well as anyone who may have been missed, helped behind the scenes and/or was supportive in spirit!*