



Energy Action Plan Executive Summary

In May 2021, Denver Zoo entered into a collaboration with Xcel Energy through the Partners in Energy program to take action on Denver Zoo's energy and climate-related sustainability objectives. To support development of this plan, Partners in Energy facilitated two workshops with an Energy Action Team and provided extensive data collection and analysis support. The Energy Action Team was composed of representatives from Denver Zoo's staff, vendors, and Xcel Energy. In parallel with the Partners in Energy planning effort, Denver Zoo commissioned a solar feasibility study to assess on-site solar potential and participated in Xcel Energy's Strategic Energy Management (SEM) program to identify energy efficiency measures. This Energy Action Plan contains Denver Zoo's energy vision, goals, baseline energy use, focus areas, and strategies along with roadmaps to achieve our energy goals.

Vision and Guiding Principles





Denver Zoo will help build a thriving future for wildlife and our communities by mitigating and offsetting carbon emissions associated with energy and fuel use - through energy efficiency, renewable energy, and transportation electrification. Denver Zoo will also use our campus to raise energy awareness.

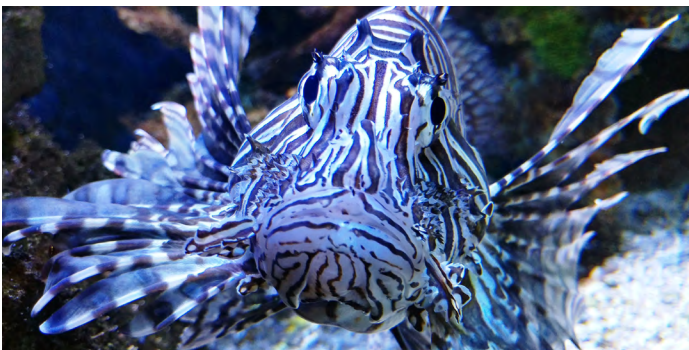
Denver Zoo is committed to using the following guiding principles in energy action:

- Lead as a zoo-based conservation organization
- Maintain levels of service for animals and visitors
- Invest in energy action to achieve Denver Zoo's goals
- Lead in sustainability action to directly support local, state, and global climate goals
- Build successful and supportive relationships with utility service providers and the community
- Use Denver Zoo's campus to showcase science-based technologies

Focus Areas, Strategies, and Goals

Denver Zoo will take energy action in four areas: energy efficiency, carbon-free energy supplies, innovation and education, and transportation electrification. Table 1 summarizes Denver Zoo's strategies and goals for each focus area.

Focus Area	Strategies	Goals
 1: Energy Efficiency	1-1: <i>Existing Buildings</i> 1-2: <i>New Buildings</i>	Reduce campus-wide electricity and natural gas usage by 25% by 2025, compared to 2018 baseline
 2: Carbon-Free Energy	2-1: <i>On-Site Solar</i> 2-2: <i>Solar Subscriptions</i>	Generate solar electricity on campus that represents 10% of Denver Zoo's electricity usage Achieve 100% carbon-free electricity by 2030
 3: Innovation & Education	3-1: <i>Energy Innovations</i> 3-2: <i>Energy Education</i>	Increase the number of energy innovation and education projects initiated each year
 4: Transportation Electrification	4-1: <i>Light Duty</i> 4-2: <i>Equipment</i>	Achieve 100% light duty fleet electrification by 2030 Achieve 100% fleet electrification by 2040

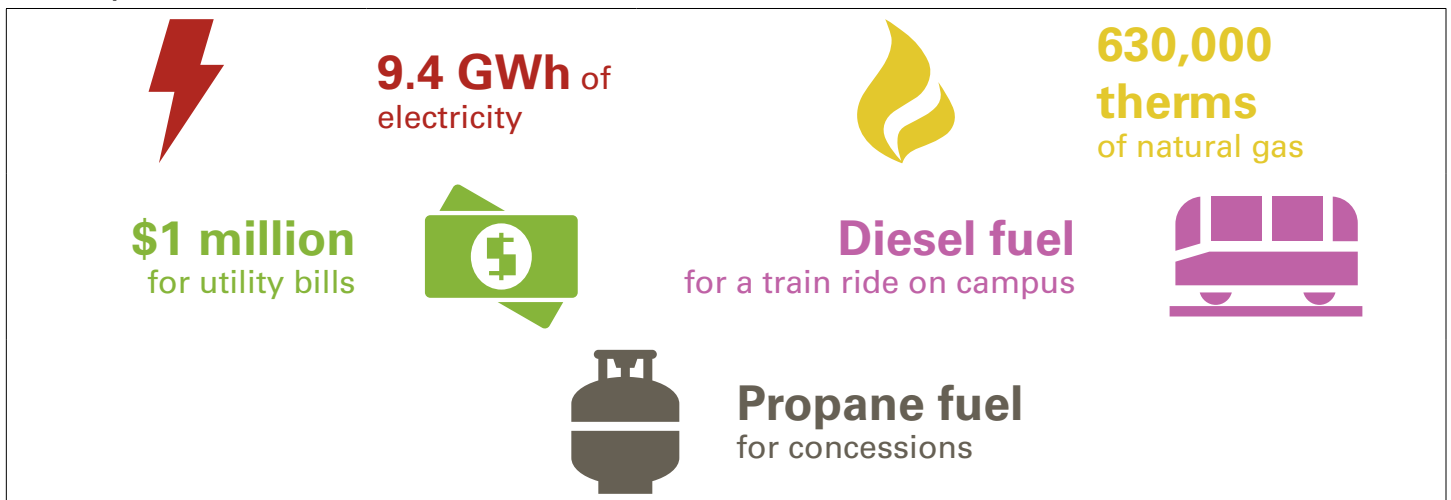


Baseline

Denver Zoo's energy baseline was assessed for the year 2018. **Denver Zoo is housed on an 84-acre campus that includes:** (Denver Zoo, 2019)



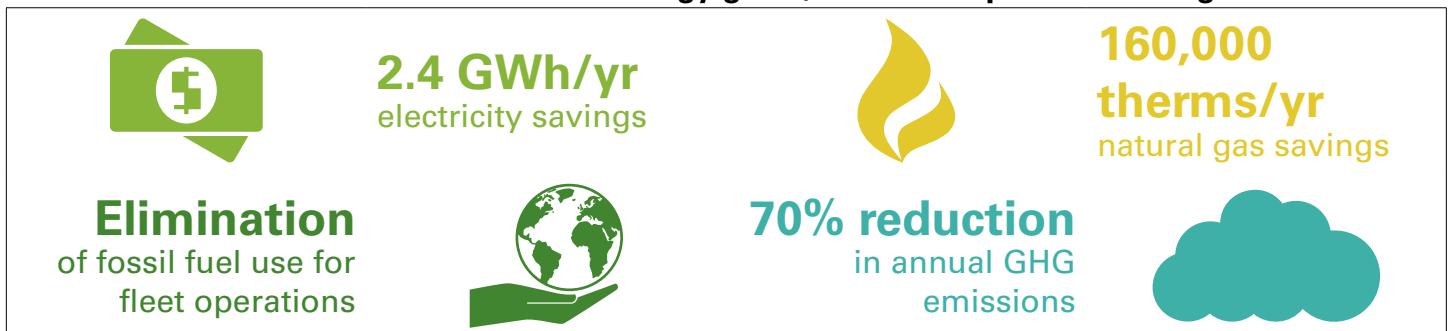
In 2018, Denver Zoo used:



This energy use is associated with greenhouse gas (GHG) emissions in the amount of **8,600 metrics tons of carbon dioxide equivalent (MT CO₂e)**. This magnitude of GHG emissions is comparable to the annual amount of energy used in **1,100 homes**, the amount of coal it would take to fill **47 railcars**, or **20,000 barrels of oil**¹.

Plan Impact





When Denver Zoo achieves our defined energy goals, we will reap the following benefits:



¹Equivalences were calculated using the U.S. Environmental Protection Agency's [Greenhouse Gas Equivalencies Calculator](#).

Critical Issues

As Denver Zoo works toward achieving our energy goals, we are working to identify and address barriers. Critical issues that have been identified to date are summarized in Table 2.

Focus Area	Critical Issues
 1: Energy Efficiency	<ul style="list-style-type: none">• Identifying sufficient energy efficiency projects to achieve a 25% energy reduction over the 2018 baseline.• Making adequate investments in energy efficiency upgrades to impact annual energy use.• Implementing energy efficiency projects quickly enough to meet the 2025 goal year.• Codifying energy efficiency specifications to guide new development and equipment selection.• Ensuring new development performs as efficiently as was designed.
 2: Carbon-Free Energy	<ul style="list-style-type: none">• Staying on track with funding and implementing identified on-site solar projects.• Following City and County of Denver’s guidance on achieving renewable electricity goals through long-term contracts.• Monitoring approval and utilizing programs from Xcel Energy’s 2022-2025 Renewable Energy Plan.
 3: Innovation & Education	<ul style="list-style-type: none">• Better defining the drivers, priorities, and outcomes for this focus area.• Working around a lack of electric vehicle models offered by Toyota, which limits Denver Zoo’s ability to showcase EVs.
 4: Transportation Electrification	<ul style="list-style-type: none">• Ensuring electric vehicle performance meets operational needs.• Monitoring if adequate market offerings are available to electrify equipment units and utilizing programs offered by Xcel Energy.

Plan Implementation

Denver Zoo, Xcel Energy, and the Energy Action Team will work together through Partners in Energy to implement this plan, overcome identified barriers, and achieve Denver Zoo’s energy goals. The implementation phase of Partners in Energy will extend a minimum of 18-months.