8.SUSTAINABILITY DESIGN GUIDELINES

1. PARK CITY SUSTAINABILITY
2. ENERGY EFFICIENCY
3. DESIGN STRATEGIES

The Sustainability Guidelines for the Park City Base Area Lot Redevelopment respond to local energy and environmental issues as it relates to the built environment. The guidelines found herein this document are meant to include suggestions on performance indicators and to inform decision on best practice. It is meant to be flexible to accommodate any proposals for change.

PARK CITY SUSTAINABILITY

Park City, as a leader in sustainability, has made North America's most ambitious climate goals: to be net-zero carbon and run on 100% renewable electricity for city operations by 2022, and for the whole community by 2032 through Resolution 28-2017. The framework of Resolution 28-2017 outlines verification pathways that new buildings and facilities constructed using municipal funds can follow to minimize environmental impacts. The Resolution recommends the following:

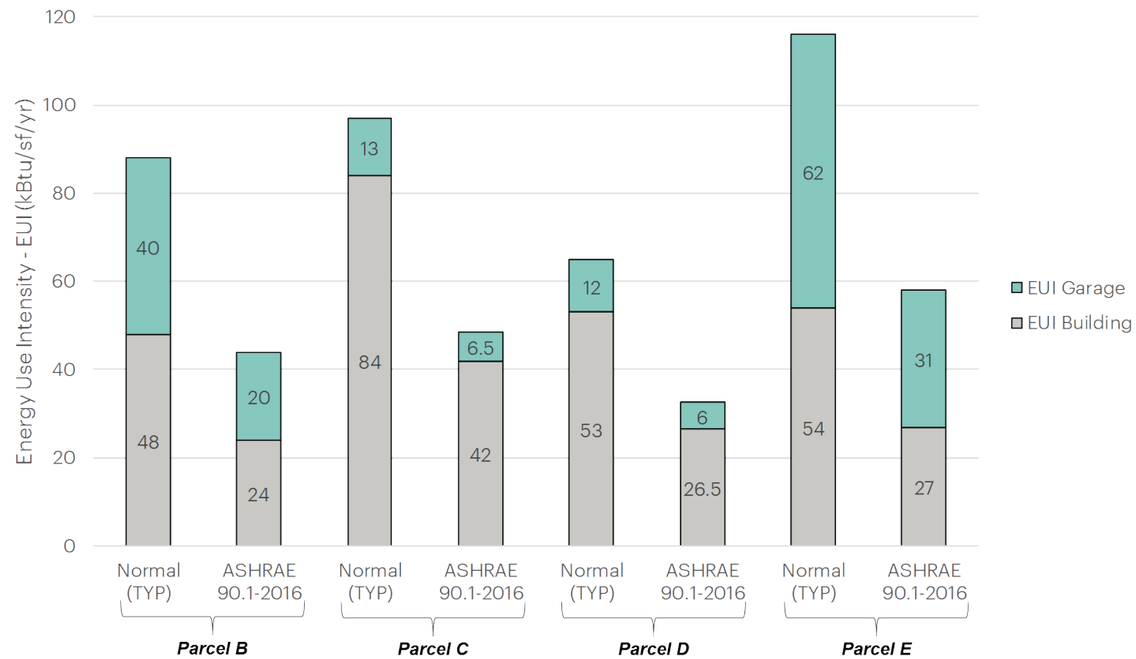
- Integrate performance evaluations beginning in design process.
- Measure for one-year post-occupancy to ensure building performance alignment to green building standard.
- Requires renewable energy to be produced on site to cover the facility's annual need (no off-site credits).
- Capturing efficiencies, to leads to significant financial savings over the lifetime of the facility by engaging Energy Modelers and Commissioning Agents.
- Verification pathways include International Living Future Institute's Energy Petal certification; a score of zero on the Zero Energy Performance Index; and Passive House certification.

By adopting this resolution, Park City has made it clear that sustainability is a priority. While private development is not subject to the requirements of Resolution 28-2017, it must nonetheless make and attain sustainable goals in order to reach alignment with the City and community.

ENERGY EFFICIENCY

Energy efficiency requires that a whole building performance targets are established and that takes into account the intended use, occupancy, operations, plug loads, and other energy demands. Establishing an energy efficiency target early in the design process ensures that the goal is achieved throughout the design and life cycle of the building. To best inform design decisions, the predicted Energy Use Intensity (pEUI) is used to describe modeled site energy. This provides a means to facilitate comparative analysis to benchmark the performance of a design to buildings in a similar geographic locations, accounting for both climate and available fuel and energy sources. The pEUI is a measurement that describes a building's annual site energy consumption relative to the building's gross square footage. It is an expression of the total annual amount of all energy sources (typically in kBtu, normalized unit of energy) consumed on-site either metered or as a comparative average. Site EUI contains a mixture of what is called primary energy (i.e., a raw fuel like natural gas) and secondary energy (i.e., a converted product like electricity or district steam).

The Energy Use Intensity for the development is understood as EUI-100 kBtu/sf/yr for the baseline with a target of EUI-30 kBtu/sf/yr. The target represents an energy reduction of 70% (by applying minimum energy efficiency for the design and construction of buildings and structures energy code, a 50% code equivalent reduction can be achieved). Rules governing the energy efficiency for the design and construction of buildings and structures, in the State of Utah, are those contained in the International Energy Conservation Code, 2018 edition, (with reference to ASHRAE Energy Standard for Buildings Except Low-Rise Residential Buildings, ANSI/ASHRAE/IESNA Standard 90.1-2016). The "Normal" Energy Use Intensity (EUI) is compared to that of an equivalent building design, energy code compliant (dependent on the development parcel program and phasing).Capturing efficiencies early in the design process by engaging Energy Modelers and Commissioning Agents will lead to a higher performing project and significant lifetime financial savings.



PARCEL ENERGY USE COMPARISON (BASELINE)

Metric	Design Project	Design Target*	Median Property*
ENERGY STAR score (1-100)	Not Available	Not Available	50
Source EUI (kBtu/ft²)	90.8	53.6	89.3
Site EUI (kBtu/ft²)	51.9	30.6	51.0
Source Energy Use (kBtu)	110,750,856.8	65,347,806.7	108,913,011.2
Site Energy Use (kBtu)	63,286,200.2	37,341,599.2	62,235,998.6
Energy Cost ($)	932,794.77	550,389.30	917,315.50
Total GHG Emissions (Metric Tons CO2e)	4,222.4	2,491.4	4,152.4

PORTFOLIO MANAGER METRICS COMPARISON (PLACEHOLDER)

Portfolio Manager will be used for the development to document predicted building performance (benchmarked against U.S. National energy use intensity references) and track/account for whole-building energy use to support post-occupancy data collection requirement.

DESIGN STRATEGIES

1. Integrated Design: Use a collaborative, integrated planning and design process that establishes performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and life-cycle of the building
2. Commissioning: Employ commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met.
3. Energy Efficiency: Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands.
4. On-Site Renewable Energy: Integrate life-cycle cost effective on-site renewable energy systems.
5. Measurement and Verification: Ensure that building level metering is sufficient enough to track and continuously optimize building performance.
6. Indoor Water: Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building. Specify EPA's WaterSense-labeled products or other water conserving products, where available. The installation of water meters is encouraged to allow for the management of water use during occupancy.
7. Outdoor Water: Use water efficient landscape and irrigation strategies, such as water reuse, recycling, and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities). The installation of water meters for locations with significant outdoor water use is encouraged.
8. Storm water: Employ design and construction strategies that reduce storm water runoff and discharges of polluted water off-site.
9. Ventilation and Thermal Comfort: Meet ASHRAE Standard 55, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality.
10. Moisture control: Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.
11. Daylighting: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 75 percent of all space occupied for critical visual tasks. Provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.
12. Low-Emitting Materials: Specify materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.
13. District Energy Systems: Provide for local production and distribution of thermal energy (network) for heating and cooling to maximize efficiency.
14. LED Lighting: Provide an all-LED lighting design to reduce electrical load and consumption.