
MT2030
CLIMATE
SUMMIT
SUN VALLEY 26
PRESENTED BY TORUS

ELEVATION
AT CANYONS VILLAGE

A case study in sustainability, efficiency and environmental impact in the luxury resort market

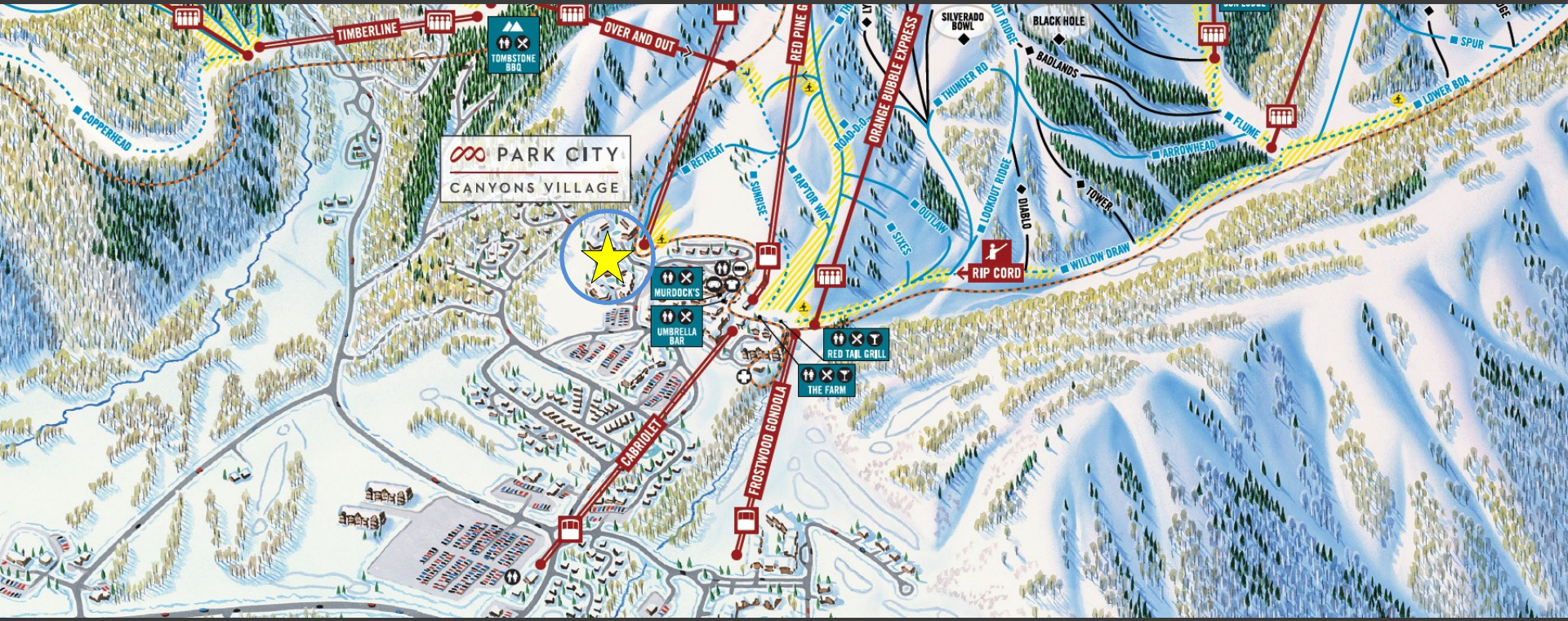
CP COLUMBUS PACIFIC DEVELOPMENT

MOUNTAIN PACIFIC CONSTRUCTION

ELLIOTT WORKGROUP

ELEVATION

CP



35min	400ft	7300ac	450mi
FROM SLC AIRPORT	FROM NEW SUNRISE GONDOLA	OF SKIABLE TERRAIN	TRAIL NETWORK



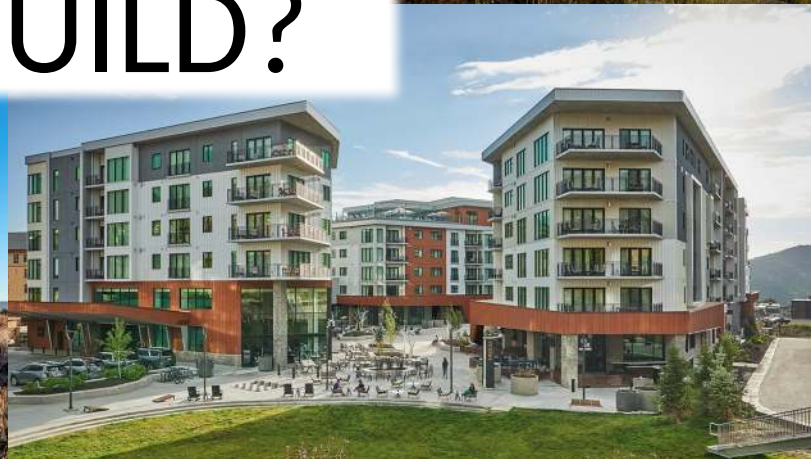


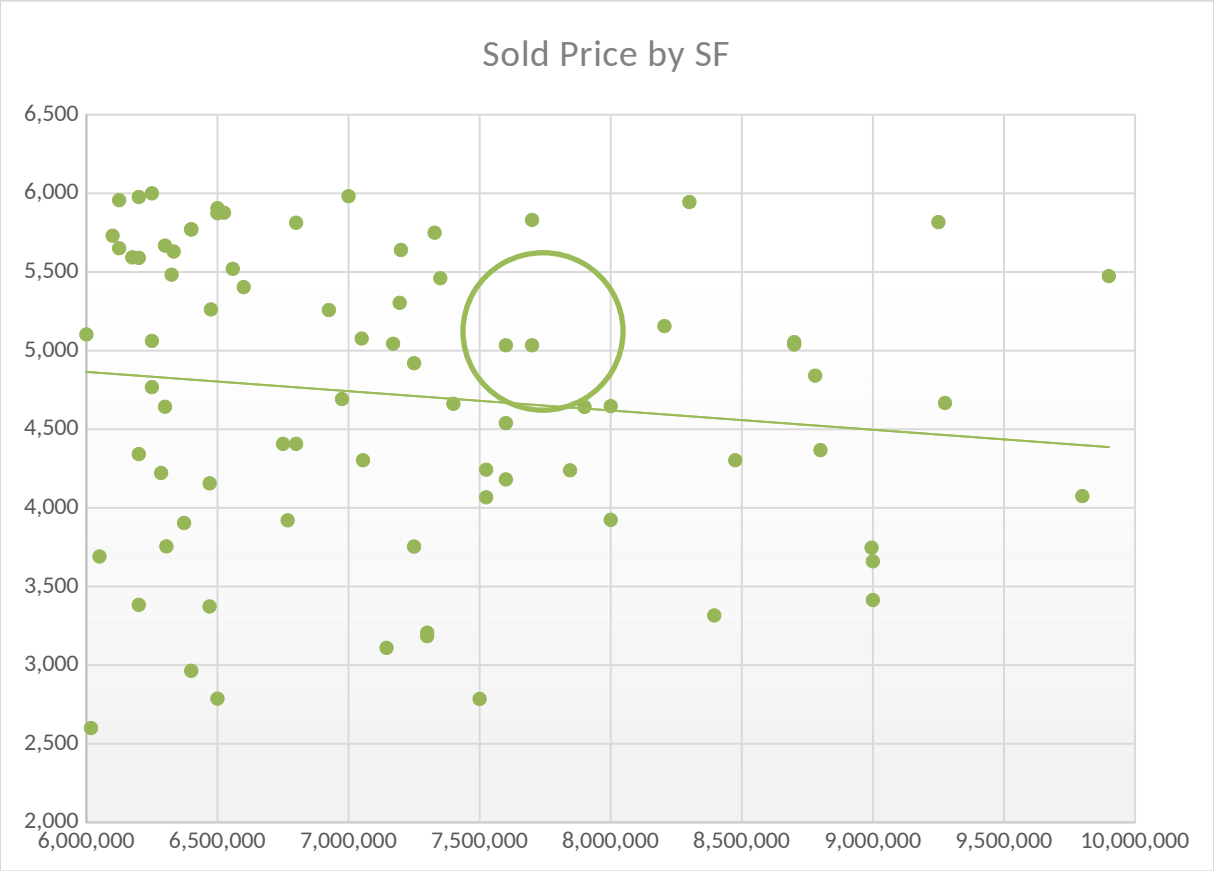


WHAT TO BUILD?








Sold Price by SF
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
6,000,000
6,500,000
7,000,000
7,500,000
8,000,000
8,500,000
9,000,000
9,500,000
10,000,000

ELEVATION

CP











5	7	4846	2
BEDROOMS	BATHROOMS	SQUARE FEET	CAR GARAGE

DESIGN CONSIDERATIONS

Solar Orientation
Wind
PV Solar
Water Usage / Native Landscaping
Local / Regional Material Sources
Energy Star
EPA AirPLUS
Electric appliances
Super-Insulated Continuous Envelope
Heat Recovery / Whole House Ventilation
High Performance Windows
Liquid Air Barriers
Construction Recycling
HERS Target: 42

et al: not an exhaustive list

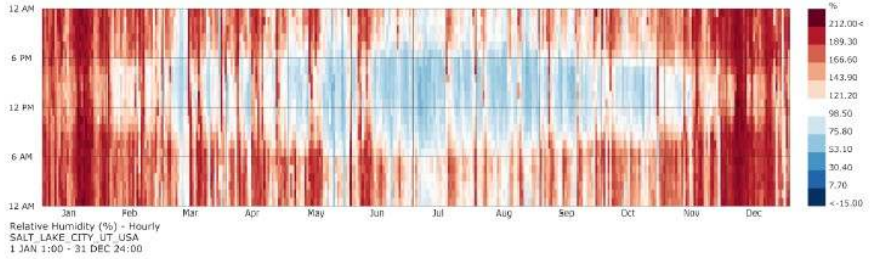
CERTIFICATION GOALS

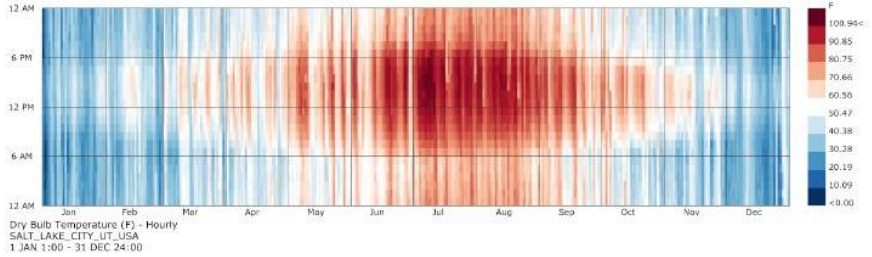
Pre-Construction
Parametric Study

PARAMETRIC STUDY HIGHLIGHTS

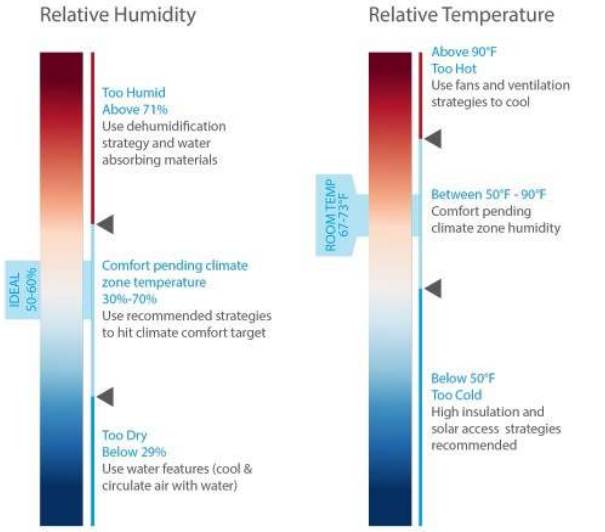
CLIMATE ANALYSIS

RELATIVE TEMPERATURE & HUMIDITY





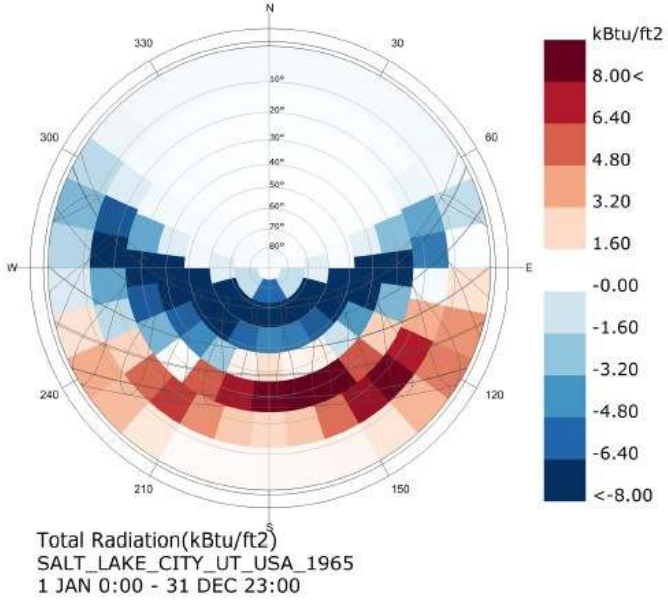
This graph shows the outdoor comfort in Park City using the yearly range of temperatures and humidities.



PARAMETRIC STUDY HIGHLIGHTS

CLIMATE ANALYSIS

RADIATION BENEFIT



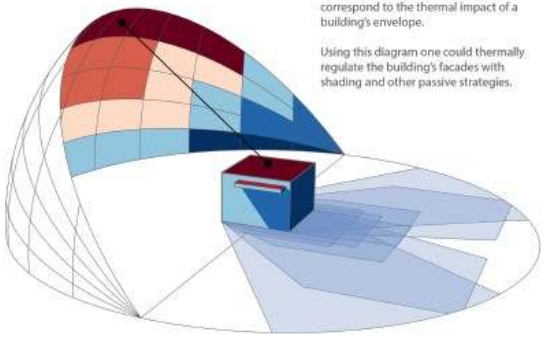
55% Daylight

Spatial Daylight Autonomy (sDA) describes the percentage of floor area that receives at least 300 lux for at least 50% of the annual occupied hours.

10% Glare

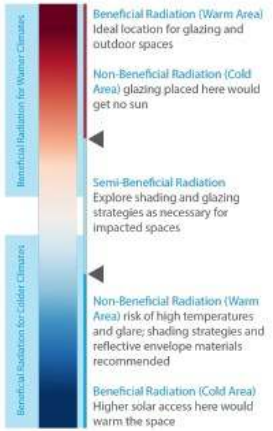
Annual Solar Exposure (ASE) refers to the percentage of space that receives too much direct sunlight (1000 Lux or more for at least 250 occupied hours per year), which can cause glare or increased cooling loads.

Understanding Radiation Benefit



Panels of the solar radiation dome correspond to the thermal impact of a building's envelope.

Using this diagram one could thermally regulate the building's facades with shading and other passive strategies.



Beneficial Radiation (Warm Area) Ideal location for glazing and outdoor spaces

Non-Beneficial Radiation (Cold Area) glazing placed here would get no sun

Semi-Beneficial Radiation Explore shading and glazing strategies as necessary for impacted spaces

Non-Beneficial Radiation (Warm Area) risk of high temperatures and glare; shading strategies and reflective envelope materials recommended

Beneficial Radiation (Cold Area) Higher solar access here would warm the space



Shade Devices for Outdoor Spaces

Heavily Insulated and Sealed Exterior Envelope

PV Solar Arrays on All Available Roof Areas

On-Site Retention for Water Conservation / Runoff

Locally-Sourced Materials



Direct Gain for Winter Heat Storage

High-Performance Windows

Deep Overhang to Reduce Summer Solar Gain

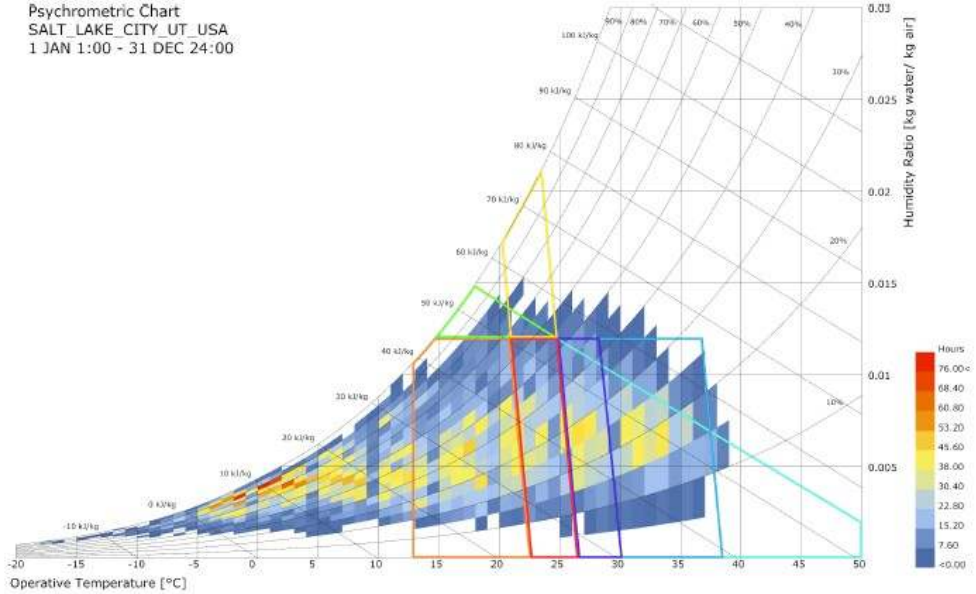
Occupancy Sensors for Lighting and HVAC

Locally-Sourced Materials

PARAMETRIC STUDY HIGHLIGHTS

CLIMATE ANALYSIS

PSYCHROMETRIC CHART



7.07 % COMFORT - NO PASSIVE STRATEGIES

Impact of Passive Strategies

% of additional comfort - higher is better

11.50 % EVAPORATIVE COOLING

6.07 % THERMAL MASS + NIGHT VENTILATION

5.78 % OCCUPANT USE OF FANS

24.65 % INTERNAL HEAT GAIN

0.37 % DESICCANT DEHUMIDIFICATION

0.16 % DEHUMIDIFICATION

This chart shows the relationship between dry bulb, humidity ratio, and enthalpy. The polygons overlaid on the chart represent different strategies to increase comfort. Based on ASHRAE 55-2013 under standard conditions.



Super-High Efficiency HVAC with ERV

Cross-Ventilation and Indirect/Side Daylighting

Custom-Designed Vent Stack to Recover Exhaust Heat

Lighting Controls and High-Efficiency Custom Lighting



Continuous Flow Fresh Air Return System

Custom Recycled Strand Cabinetry / No-VOC Stains

All Electric Appliances















KEY TAKEAWAYS

phius	Airtight Building Envelope 0.11 U-Value Windows	Continuous Insulation ERV/HRV + Continuous Ventilation
NGBS GREEN CERTIFIED	Lot Design Resource Efficiency	Construction Practices Water Distribution
ZERO ENERGY READY HOME	PV Solar – 30.24kWh EV Ready	Overall Energy Efficiency Indoor Air Quality
U.S. GREEN BUILDING COUNCIL USGBC	Water Efficiency Indoor Environmental Quality	Construction Materials Total Energy Usage

LEED SCORECARD

Location and Transportation
Walk Score – 11 / Bike Score – 6
Little Access to Fixed-Route Transit

Water Efficiency
293,508 gal/yr vs 1,026,430 required by code – 71% reduction
100% Native plant species

Energy Usage
HERS Score: 39 vs Target: 42
38% below Energy Budget

Materials and Resources
33,354 lbs total waste
2,310 lbs recycled (~7%)

Indoor Environmental Quality
EPA airPLUS certified
Enhanced Ventilation Systems



CERTIFIED
40 - 49 POINTS



SILVER
50 - 59 POINTS



GOLD
60 - 79 POINTS



PLATINIUM
80+ POINTS

72 Points Verified

79 Points Planned



Thank You!

TONY TYLER

COLUMBUS PACIFIC DEVELOPMENT

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