

| LEED Daylight Report

Prepared by: 

Dated: October 13, 2023

LEED Requirements

LEED v4 and v4.1 have established thresholds for sDA and ASE. These are based on per required room type, defined as regularly occupied spaces, as well as averages for regularly occupied spaces across the whole building.

The LEED threshold requires a minimum of 40% of the floor area meet the sDA_{300/50%} goal to achieve the daylight credit.

For any regularly occupied spaces with ASE_{1000,250} greater than 10% of the area, identify how the space is designed to address glare.

LEED Points are awarded according to Table 1. While related points are important for LEED credits should the project pursue certification, these thresholds are not necessarily bidirectional indicators. In some cases, higher or lower levels may be acceptable, particularly depending on the area or coverage of these levels, as well as the nature of the program.

LEED Thresholds

	Building Area %	LEED Points & Requirements
	> 40%	1
sDA	> 50%	2
	> 75%	3
ASE	< 10%	Establish glare reduction measures for compliance

Basis of Study

The base design assessed was extracted from the REVIT model from ████████ architects in August 2023. The basic plan and features of the design are shown on the following pages. Surface light reflectance values (LRV) represent ceilings and walls with white paint, and light-colored floors. Visual light transmittance represents clear glazing, and the blinds represent a mid-level view-preserving material.

The climate data was gathered from TMY data from ████████ Airport, approximately 5 miles (8 kilometers) distance away from the project site. To address the microclimactic conditions of the site area, which lies in a valley with a higher level of overcast than the more coastal location of the TMY data collection site, this data was then post-processed to increase overcast conditions by 15%.

Approach

Climate Studio

The daylight performance was simulated using Climate Studio in Rhino, a program that runs the highly validated Radiance calculation as its simulation engine. Climate Studio is able to simulate annual climate metrics that demonstrate the daylight performance over the entire year given the hourly sun angles and sky conditions of a particular geographic location. The performance of all annual hours are summed up into one number which reflects the percentage of time in which the design is meeting the daylight criteria.

Metrics

The two annual metrics used to measure performance. sDA and ASE are defined in IES standard LM-83-12 and used as the basis for the LEEDv4.1 daylight credit.

Spatial Daylight Autonomy (sDA)

Daylight autonomy (DA) is the percentage of annual occupied hours (between 8 AM and 6 PM) that a particular sensor node in the space achieves a illumination target of 300 lux. The sDA refers to the percentage of regularly occupied floor area that achieves 50% DA or greater. LEED sets the threshold of a minimum of 55% of floor area meeting sDA_{300/50%}.

Annual Sunlight Exposure (ASE)

The ASE is percentage of floor area that experiences direct sunlight of 1000 lux or greater for more than 250 hours a year during occupied hours. Although ASE is not directly a glare metric, it has been demonstrated to be a good proxy to indicate the potential for visual discomfort.

Parameters

Grid Spacing

The model simulates 2’ grid spacing.

VLT

The VLT value modeled is 0.62, the project’s basis of design.

LEED Summary

ID	Description	Area (sf)	sDA %	ASE %
100	Office	279.4	0.0	0.0
101	Office	152.9	6.7	0.0
102	Retail 4	868.4	48.8	22.1
103	Retail 3	1,189.2	87.6	9.6
104	Exhibit/Reception	1,974.1	86.9	6.1
105	Retail 1	1,008.7	99.6	12.8
106	Retail 2	1,464.3	94.9	6.6
200	Workshop 1	1,369.2	21.3	14.6
300	Retail 5	1,108.8	82.5	37.1
301	Workshop 2	1,190.1	51.9	5.2
302	Retail 6	687.5	71.4	11.8
600	Studio	1,245.9	23.2	16.3
601	Event Space	4,334.2	68.0	13.6
602	Lounge	275.5	21.9	0.0
603	Learning	893.7	40.7	0.0
604	Kitchen	1,000.5	0.0	0.0
605	Studio	1,276.3	24.6	15.7
606	Studio	999.8	38.6	16.2
607	Studio	999.8	38.6	14.5
Average sDA300/50% value			56.6	
ASE1000,250 is 10% or less for all regularly occupied spaces				No
EP: Each regularly occupied space has sDA300/50% value of at least 55%			No	
Total LEED Points				2

Key sDA300/50% value under 55%
ASE1000,250 is greater than 10%
neither conditions meet thresholds

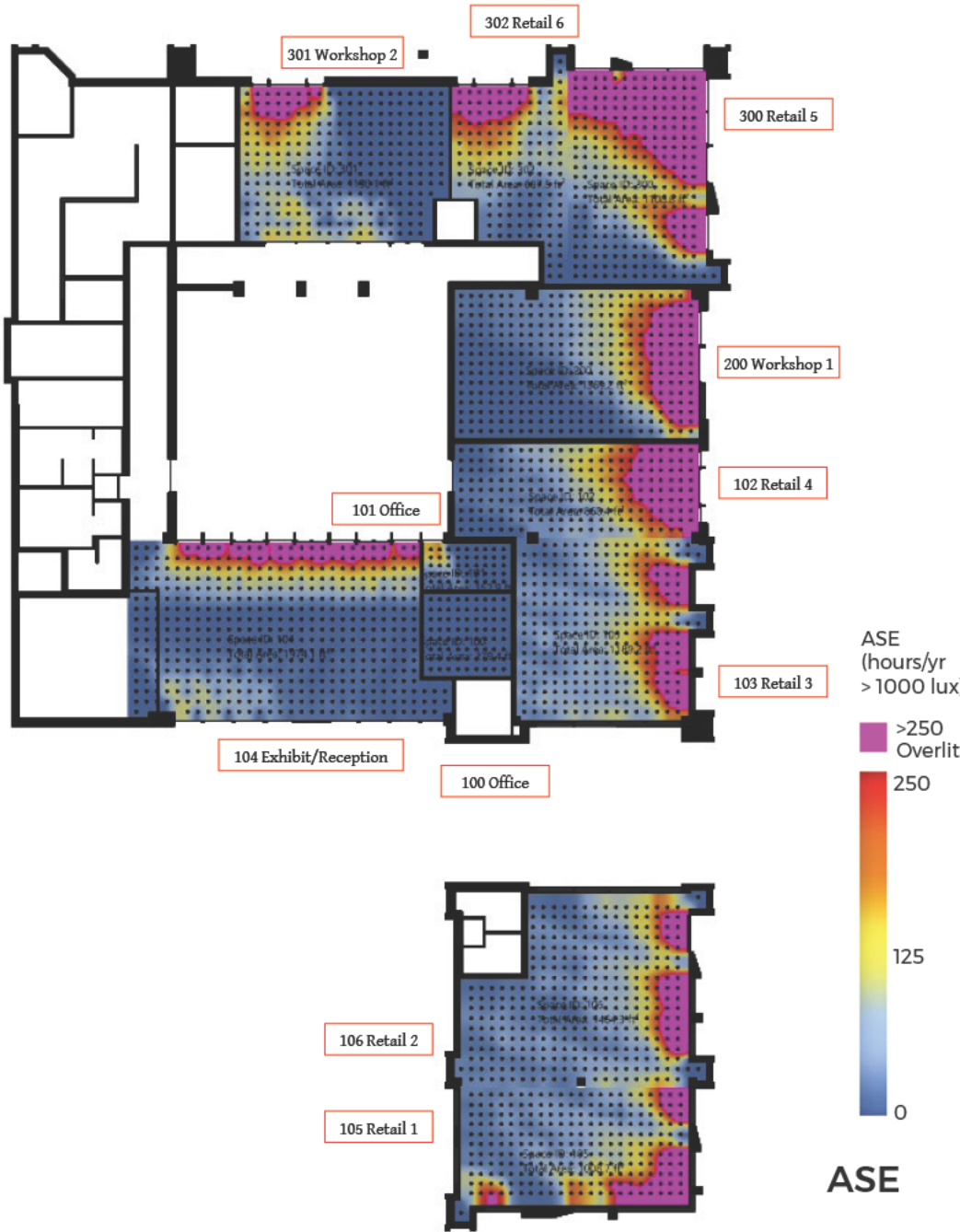
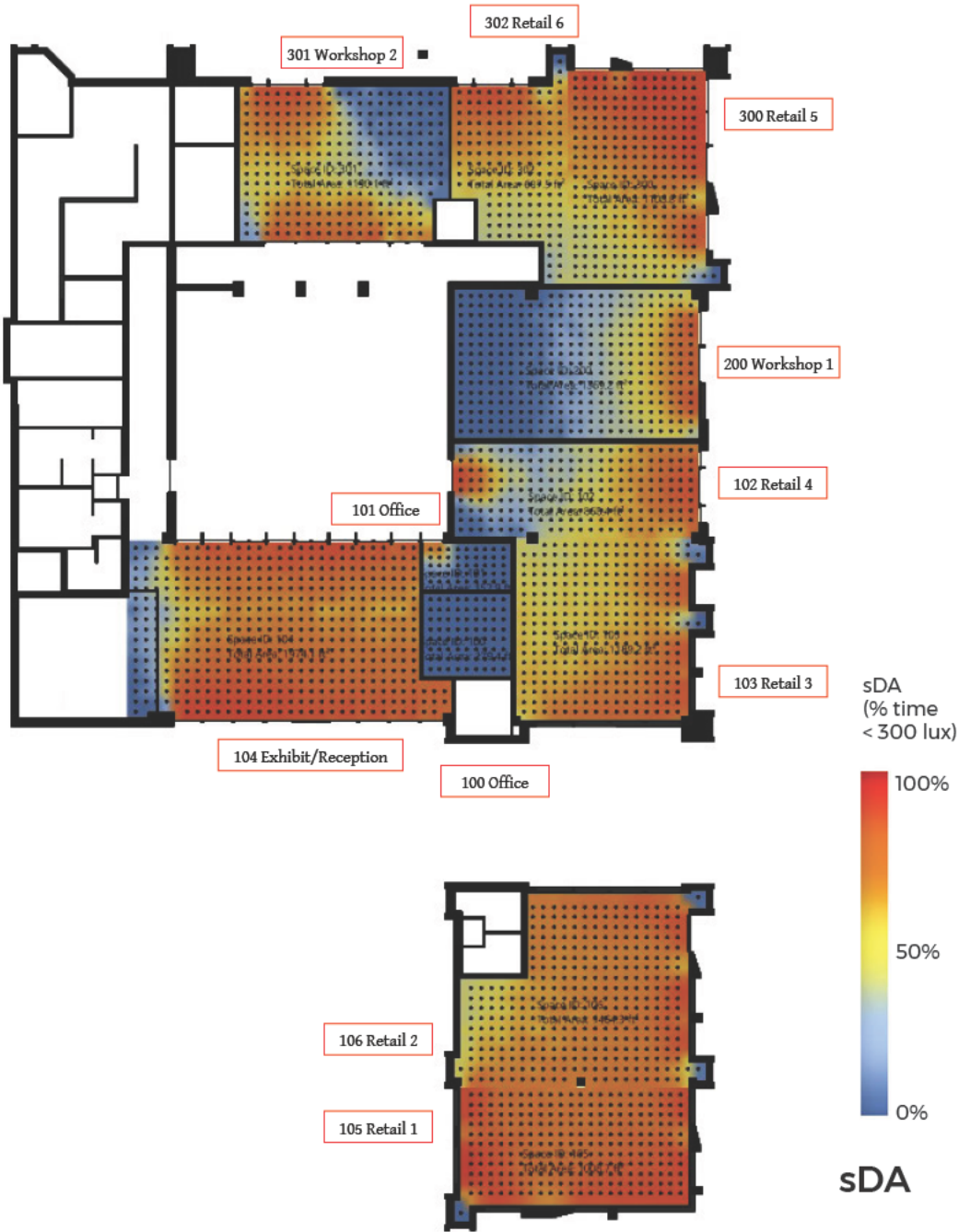
2



RESULTS LEVEL 1

ID	Description	Area (sf)	sDA %	ASE %
100	Office	279.4	0.0	0.0
101	Office	152.9	6.7	0.0
102	Retail 4	868.4	48.8	22.1
103	Retail 3	1,189.2	87.6	9.6
104	Exhibit/Reception	1,974.1	86.9	6.1
105	Retail 1	1,008.7	99.6	12.8
106	Retail 2	1,464.3	94.9	6.6
200	Workshop 1	1,369.2	21.3	14.6
300	Retail 5	1,108.8	82.5	37.1
301	Workshop 2	1,190.1	51.9	5.2
302	Retail 6	687.5	71.4	11.8

Key sDA300/50% value under 55%
ASE1000,250 is greater than 10%
neither conditions meet thresholds



RESULTS LEVEL 2

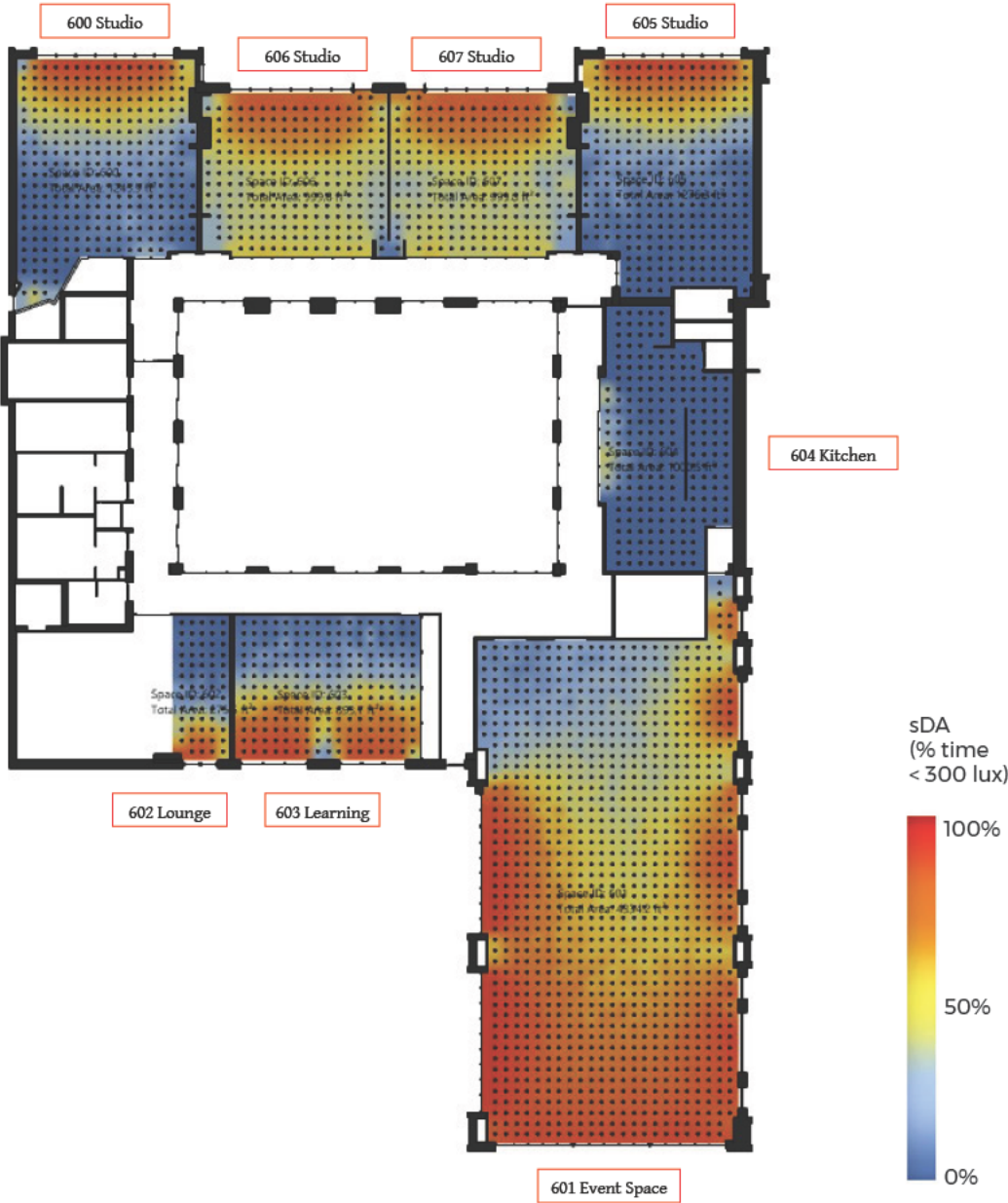
ID	Description	Area (sf)	sDA %	ASE %
600	Studio	1,245.9	23.2	16.3
601	Event Space	4,334.2	68.0	13.6
602	Lounge	275.5	21.9	0.0
603	Learning	893.7	40.7	0.0
604	Kitchen	1,000.5	0.0	0.0
605	Studio	1,276.3	24.6	15.7
606	Studio	999.8	38.6	16.2
607	Studio	999.8	38.6	14.5

Key

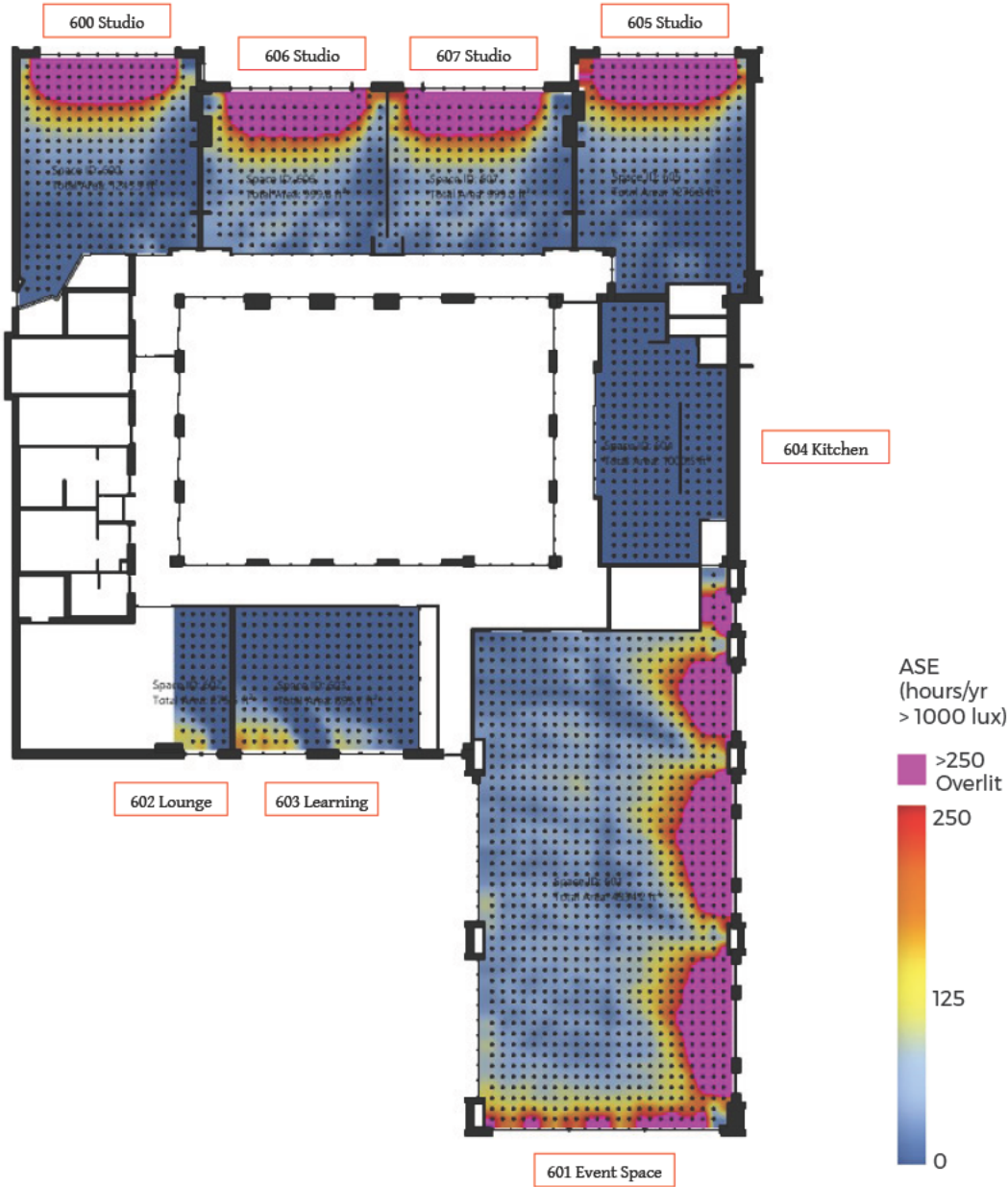
sDA300/50% value under 55%

ASE1000,250 is greater than 10%

neither conditions meet thresholds



sDA



ASE

