

Analyzing Occupants Experience on the Perimeter

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Atelier Ten



A legacy of positive change

We are an international team of environmental design consultants and lighting designers focused on delivering sustainability to the planned and built environment.



Environmental Design Consultants + Lighting Designers
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How We Define Occupants Experience on the Perimeter and Why it is Important

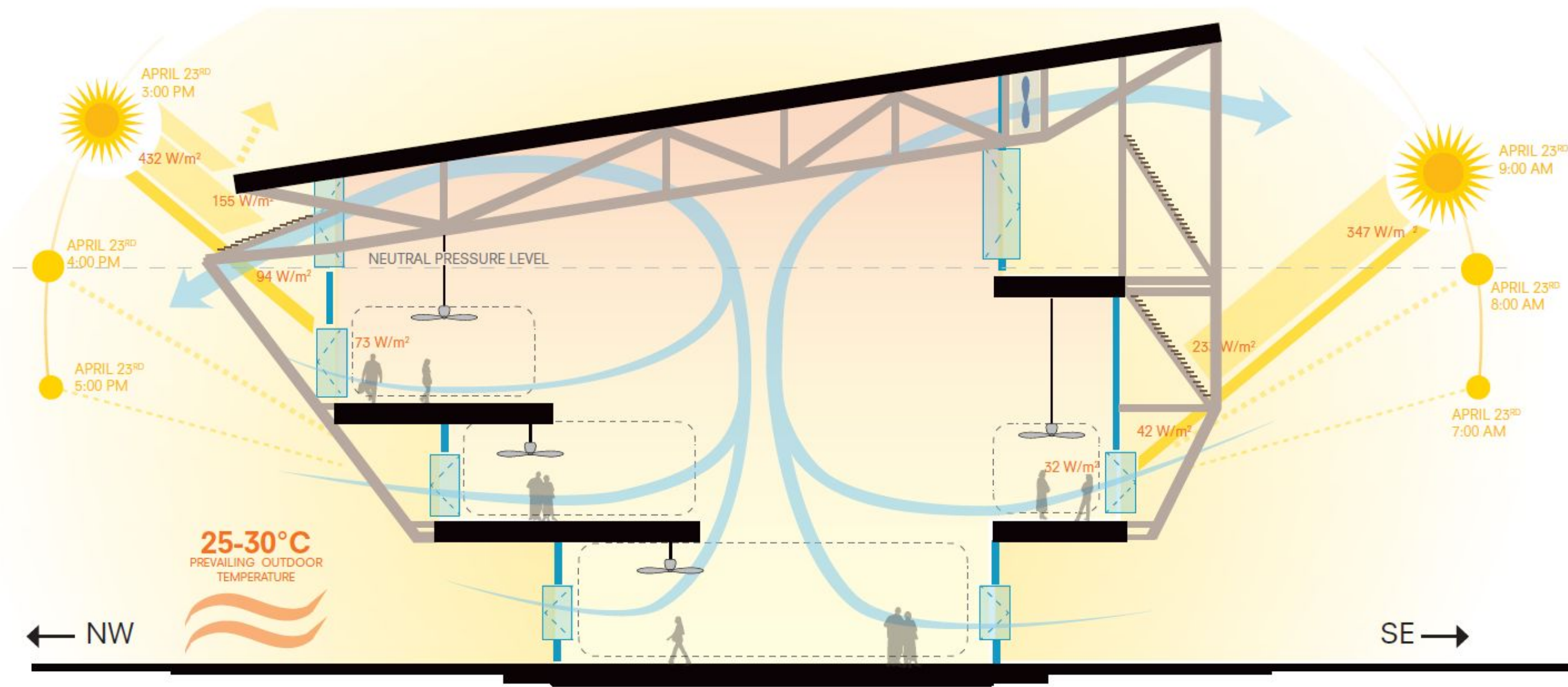


Occupants Experiences on the Perimeter:

- Glare (Direct Sunlight & Overall Brightness)
- Useful Daylight Availability
- Thermal Comfort (Solar Radiation & Draft)
- Controllability / Adaptability



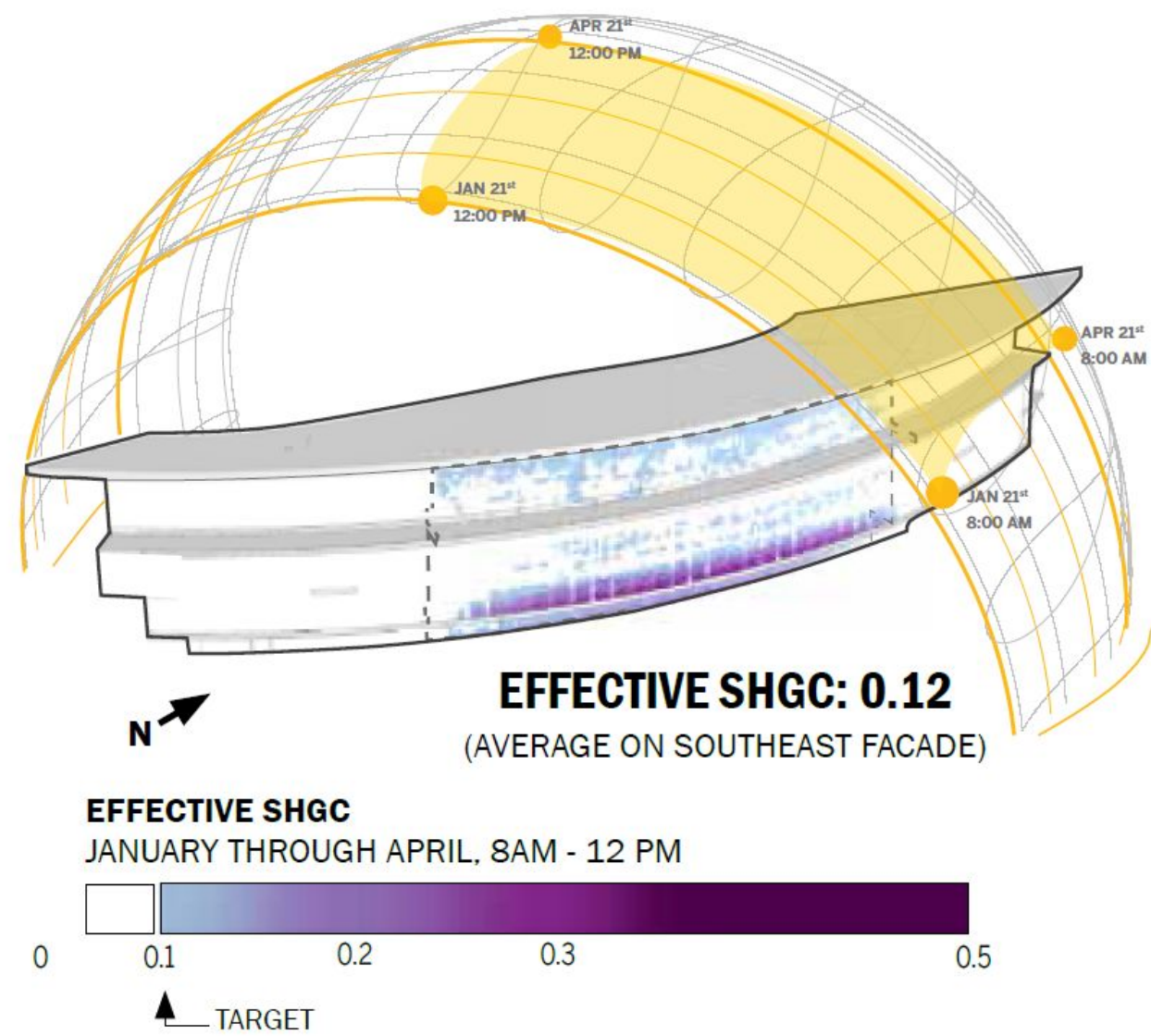
Precedent Perimeter Comfort Study



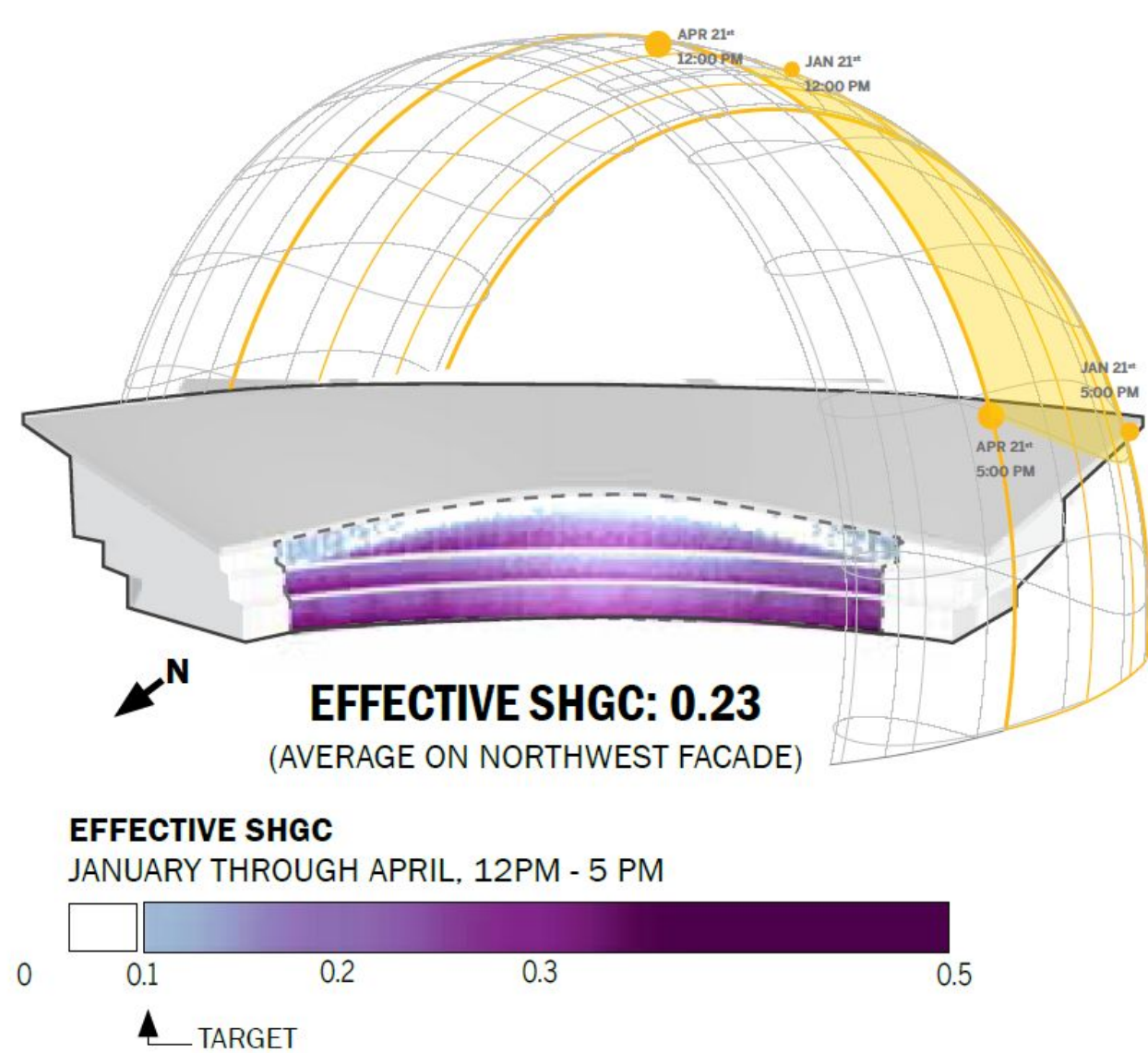
FORUM ENVIRONMENTAL SECTION EXPLORING THE RELATIONSHIP BETWEEN OPERABLE GLAZING AREA, EXTERNAL SHADING, AND DESIRED AIRFLOW PATH

Precedent Perimeter Comfort Study

SOUTHEAST FACADE - EFFECTIVE SOLAR HEAT COEFFICIENT

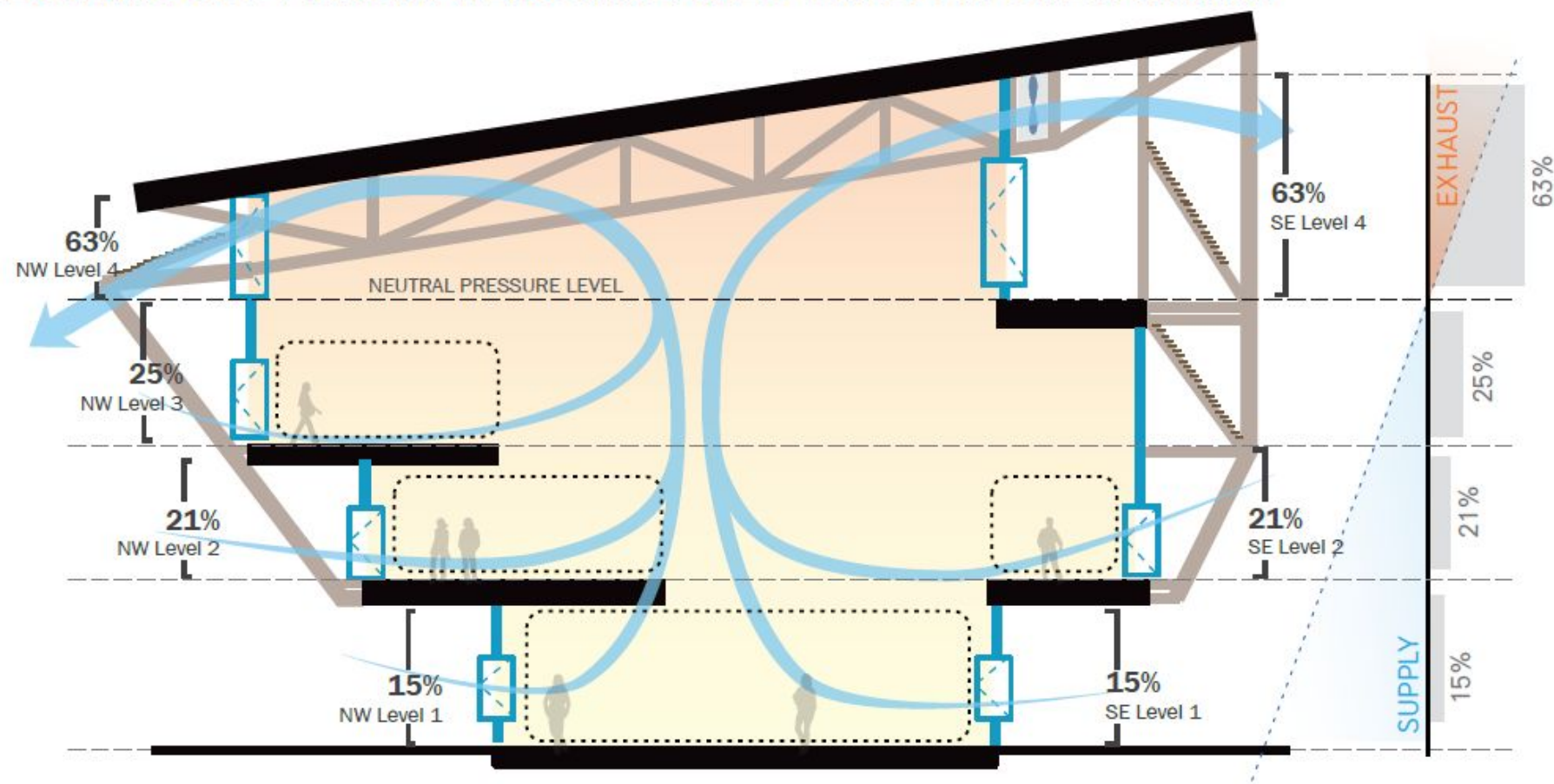


SOUTHEAST FACADE - EFFECTIVE SOLAR HEAT COEFFICIENT

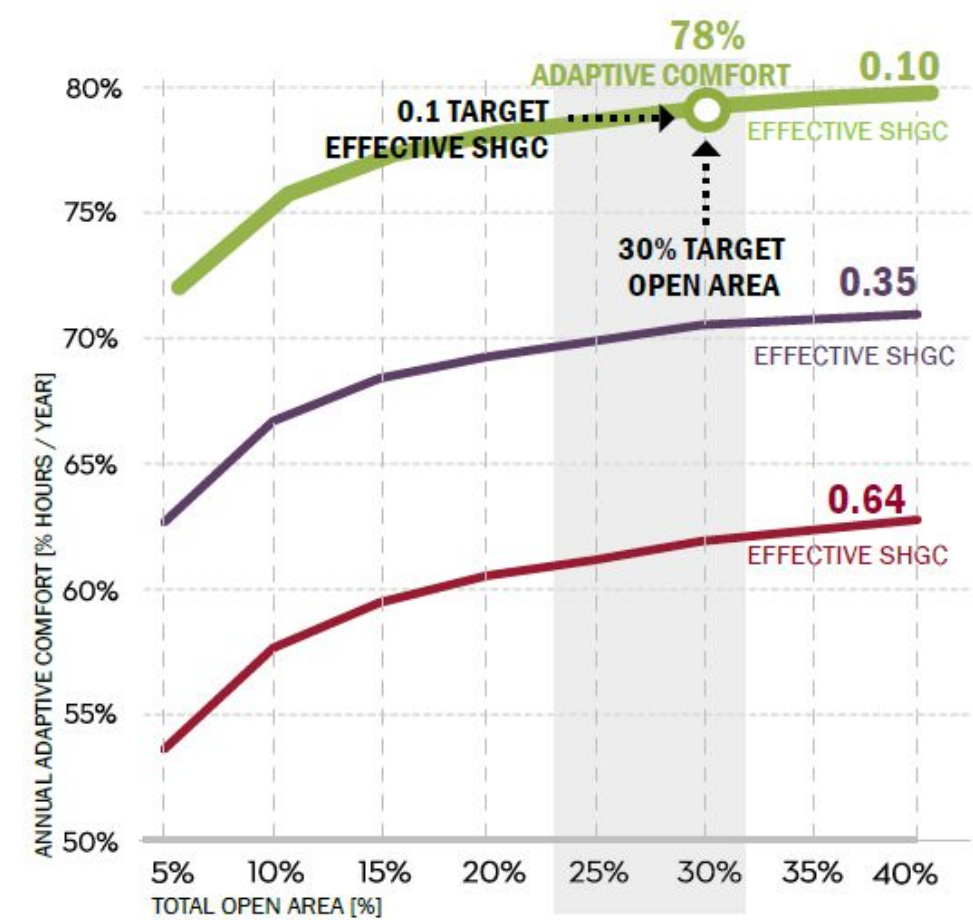


Precedent Perimeter Comfort Study

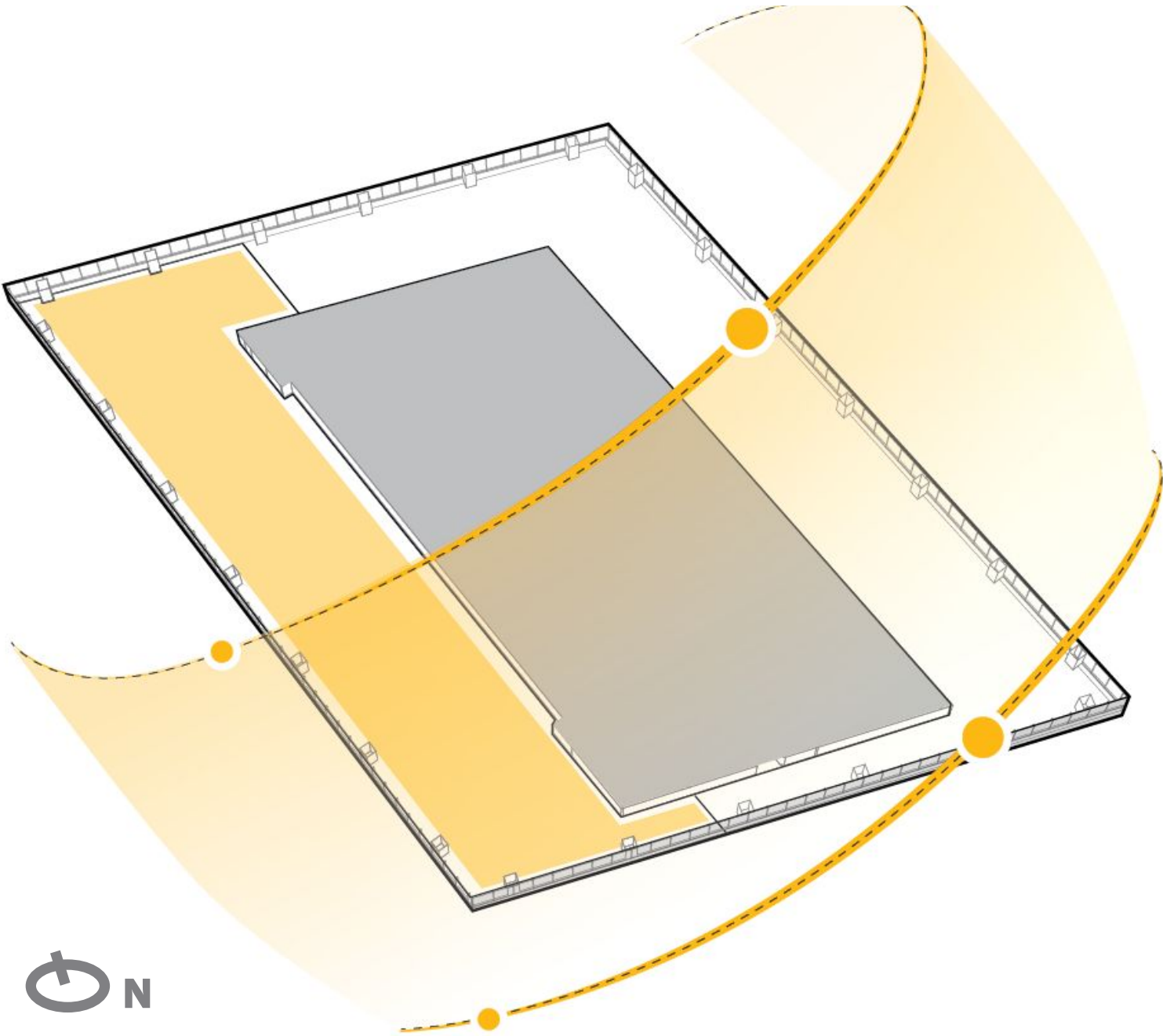
LONGHOUSE FORUM: RECOMMENDED WINDOW OPEN AREAS



SHGC AND AIRFLOW SENSITIVITY ANALYSIS



NYC Office Fit Out Study



TYPICAL FLOOR
Open office area oriented to the West

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VISUAL COMFORT AT WORK SURFACE

Provide Useful Daylight on the Worksurfaces (300-3,000 lux for at least 50% of the year)

Avoid Excessive Illuminance and Direct Sunlight on the work surfaces and Monitor (target <700 lux on a display)



GLARE

Avoid Orientations and Workstation Placement where Vertical Illuminance is Above 2,700 lux



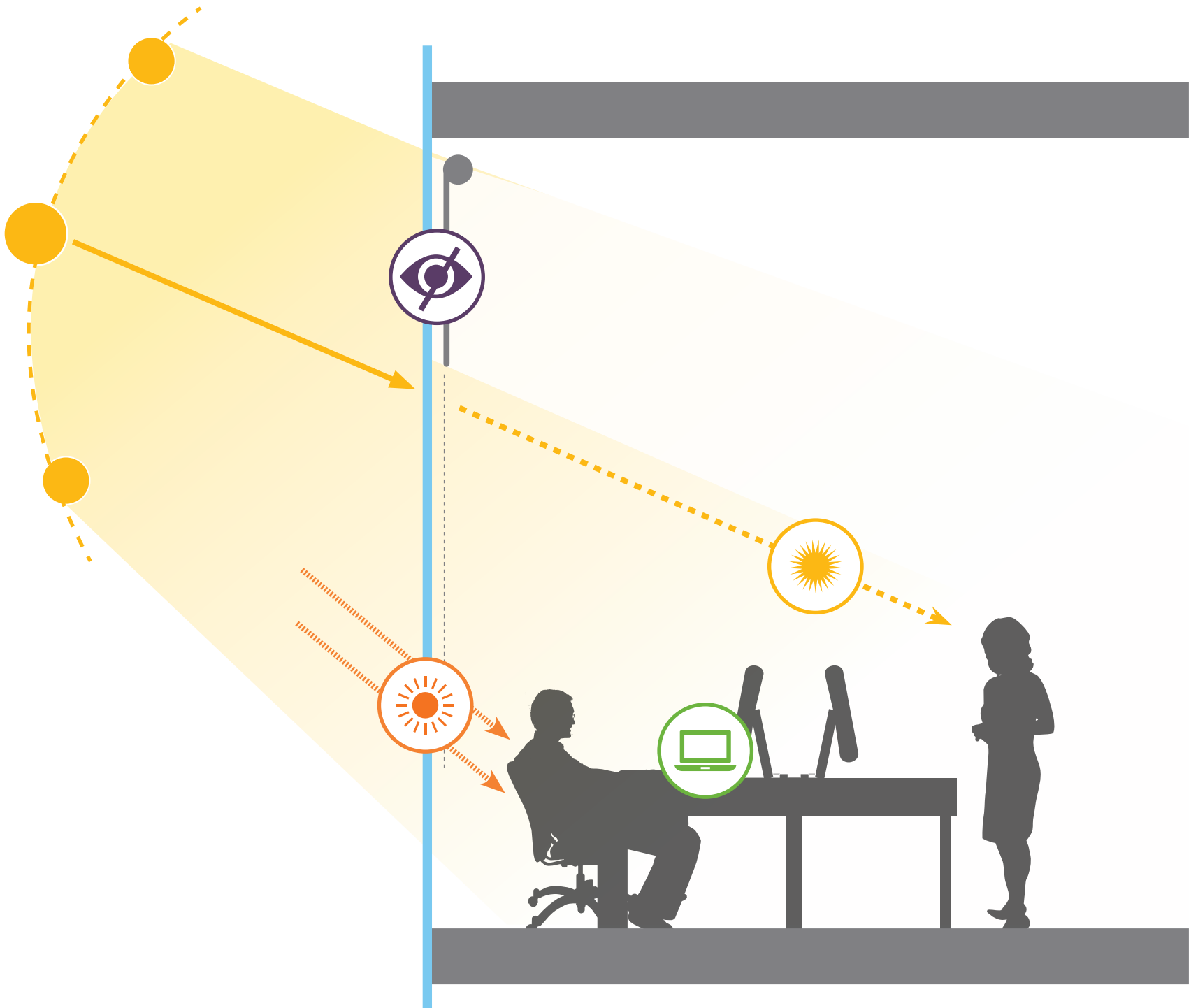
THERMAL COMFORT

Avoid Workstations in the Areas with Direct Sunlight



VIEWS AVAILABILITY

Design to Reduce Amount of Hours When the Blinds Will be Drawn Down



NYC Office Fit Out Study



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THERMAL COMFORT

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VIEWS AVAILABILITY

Design to Reduce Amount of Hours When the Blinds Will be Drawn Down

BUFFER ZONE ON PERIMETER

Leave Overlit Exposed to the direct Sunlight Perimeter Zone for Transition area , Temporary Work stations and lounges

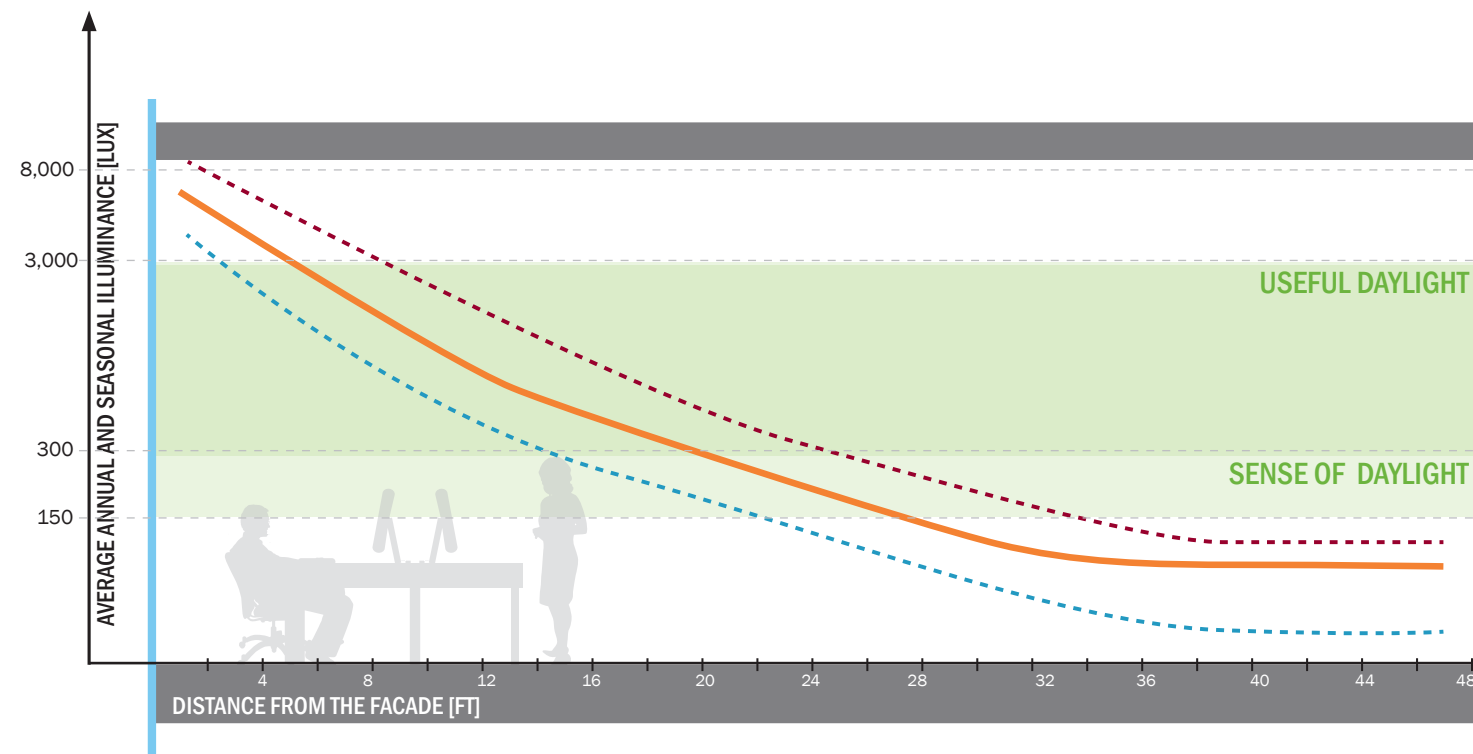
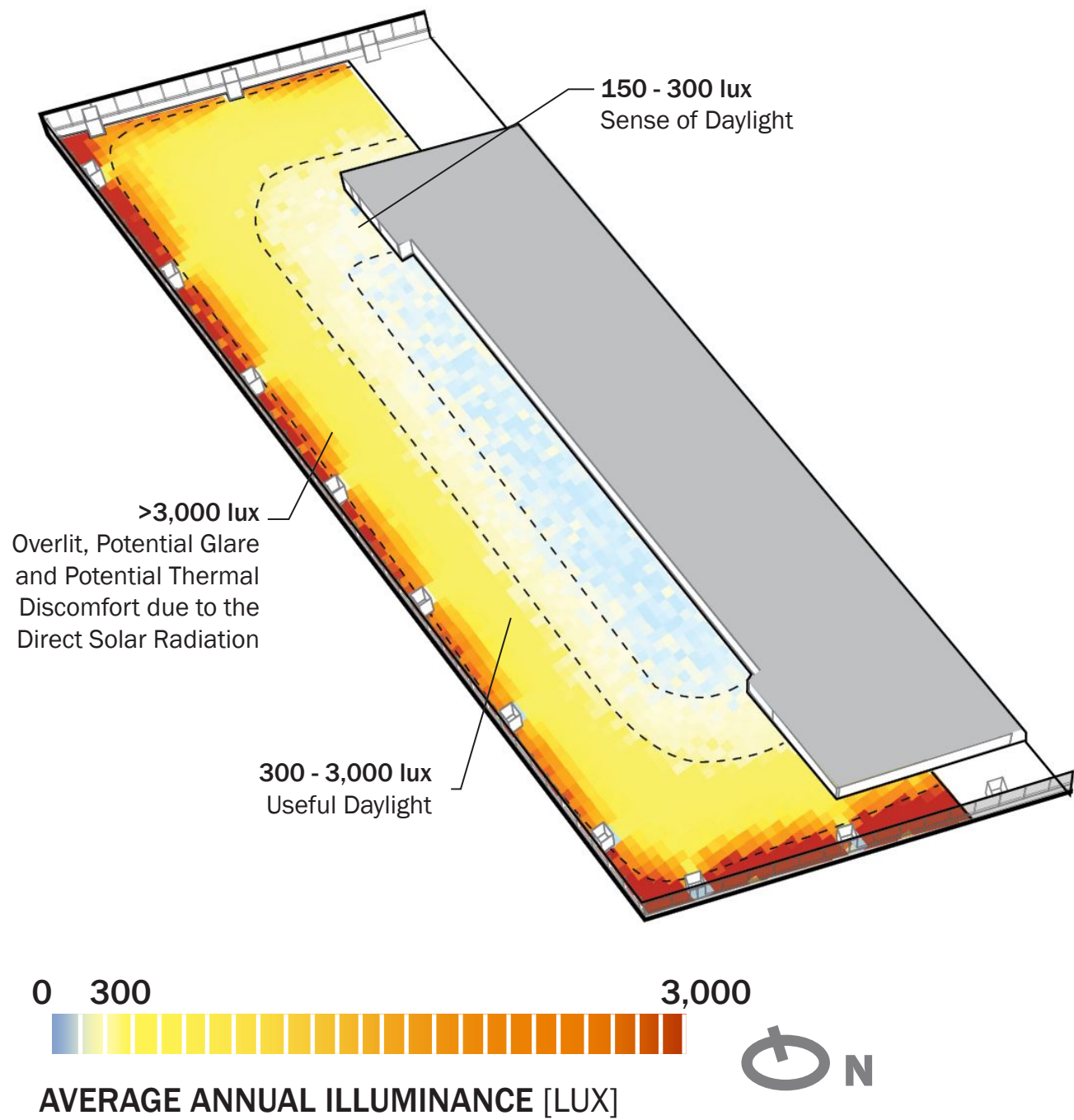
WORKSTATION LAYOUT

Orient Workstations and Seating to Avoid Occupants Glare and Direct / Excessive Daylight on the Work Surfaces

BLINDS OPERATION

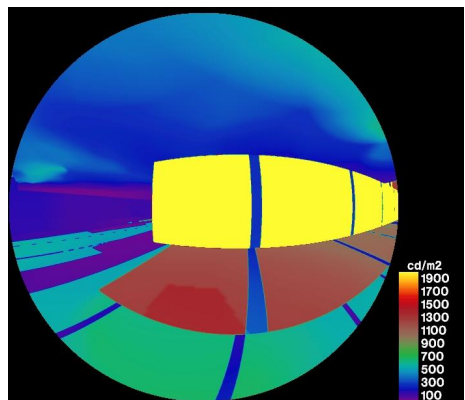
Automated Interior Shades to Take Maximum Advantage of the Daylight

NYC Office Fit Out Study

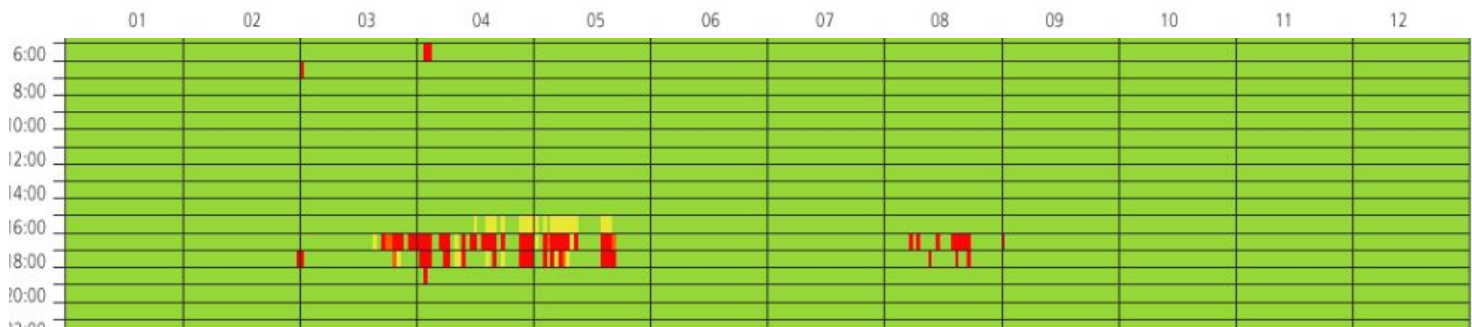


ANNUAL AND SEASONAL FALL-OFF GRAPH [WEST FACADE]

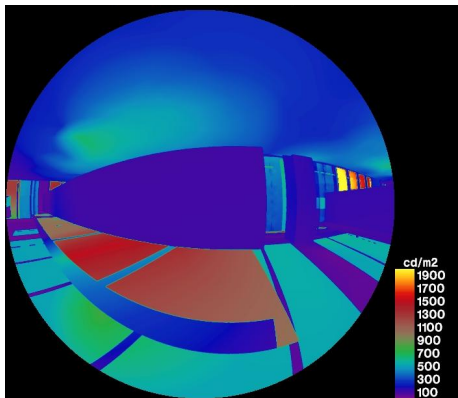
NYC Office Fit Out Study



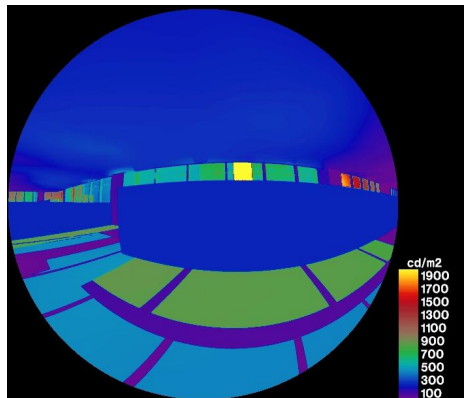
DGP 42% Disturbing Glare
4/21 6:00 PM



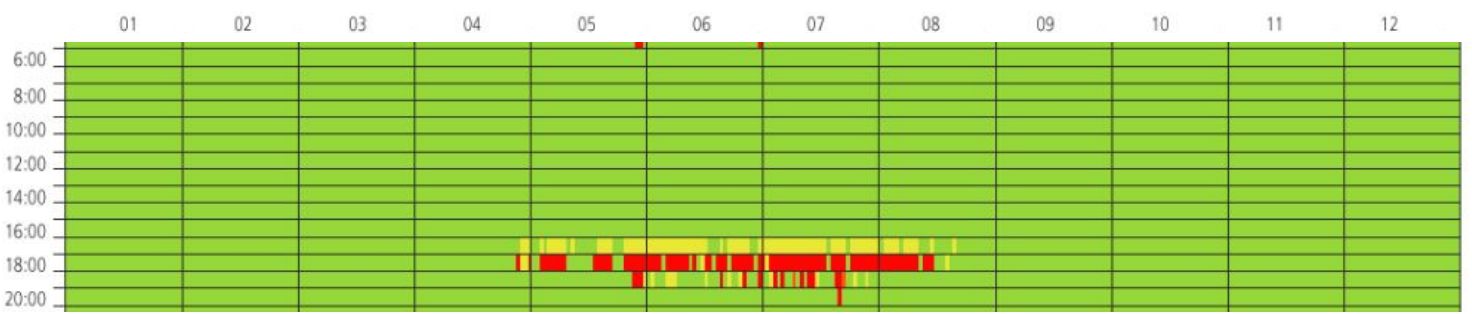
Potential glare from 4pm to 7pm March through May



DGP 24% Imperceptible
6/21 6:00 PM

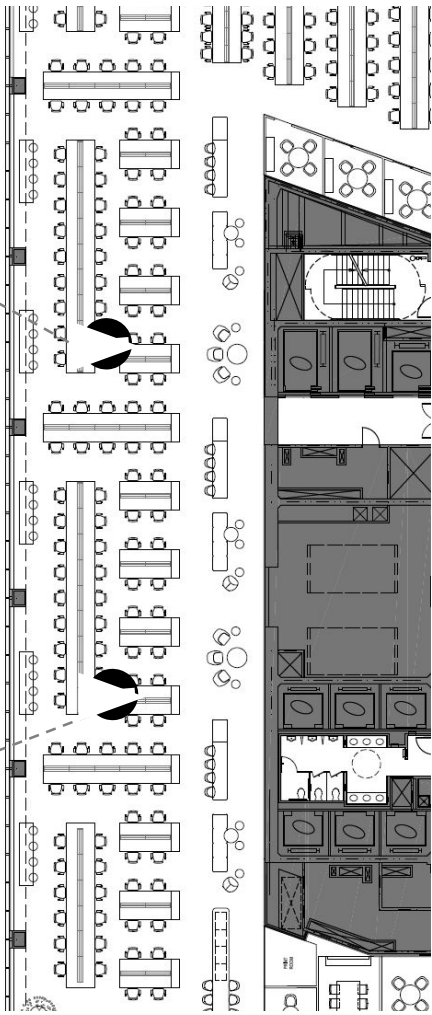


DGP 100% Intolerable
6/21 6:00 PM

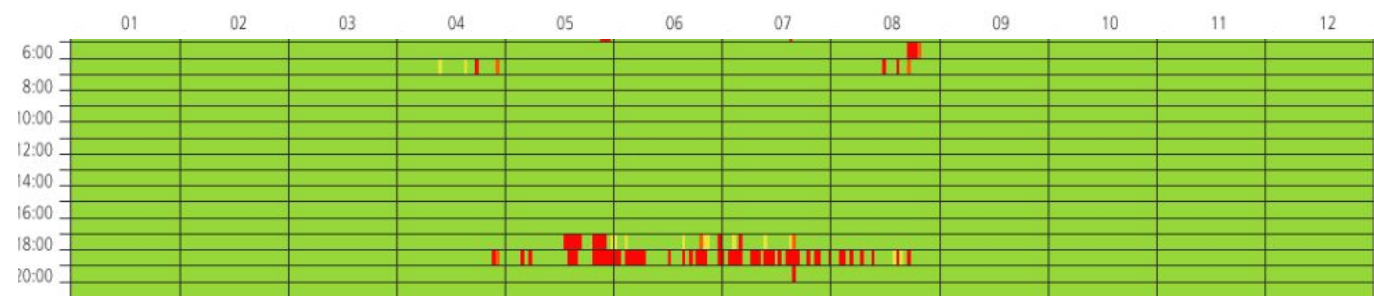


Potential glare from 6pm to 7pm April through August

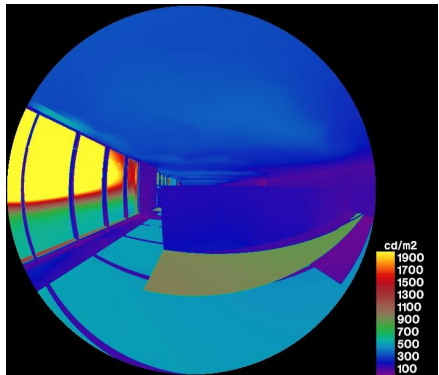
intolerable glare, DGP ≥ .45 disturbing glare, .45 > DGP ≥ .4 perceptible glare, .4 > DGP ≥ .35 imperceptible glare, .35 > DGP



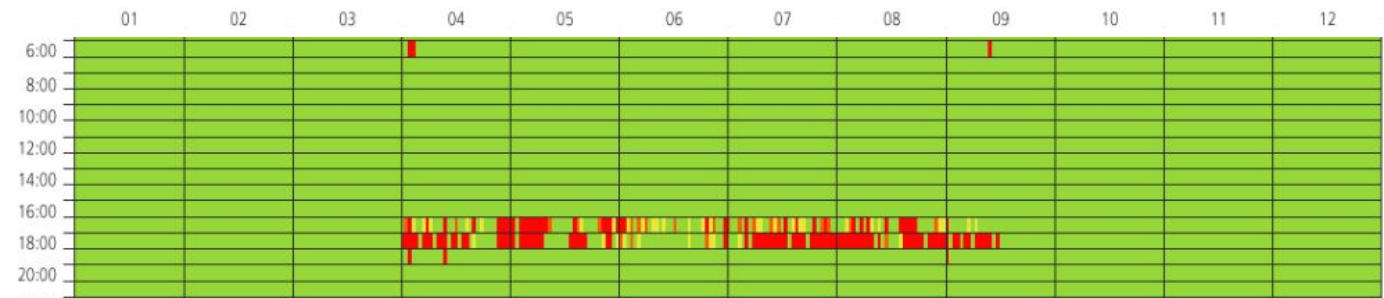
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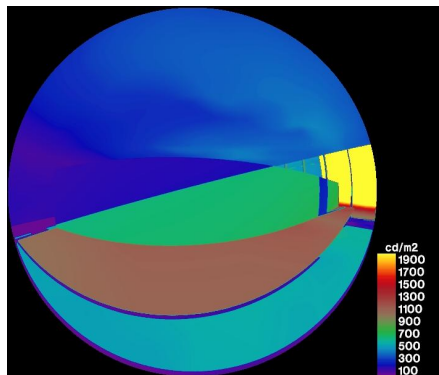
Potential glare from 6pm to 7pm May through August



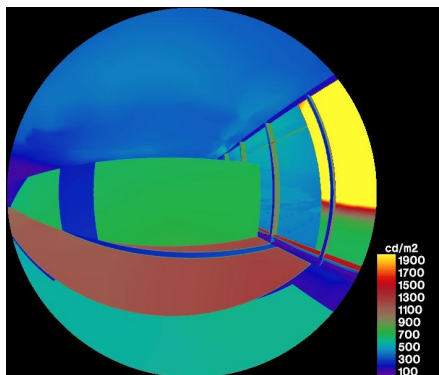
DGP 59% Intolerable Glare
6/21 6:00 PM



Potential glare from 4pm to 7pm April through September



DGP 27% Imperceptible
6/21 6:00 PM

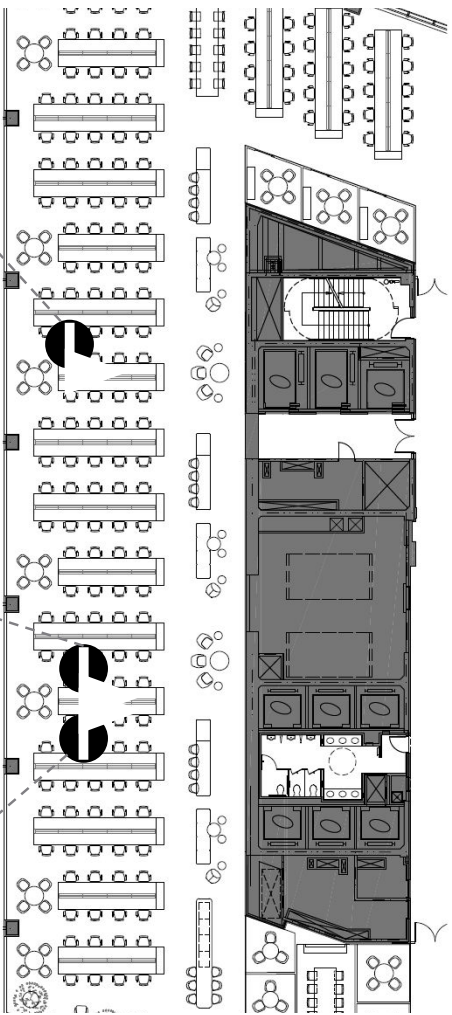


DGP 45% Intolerable Glare
6/21 6:00 PM

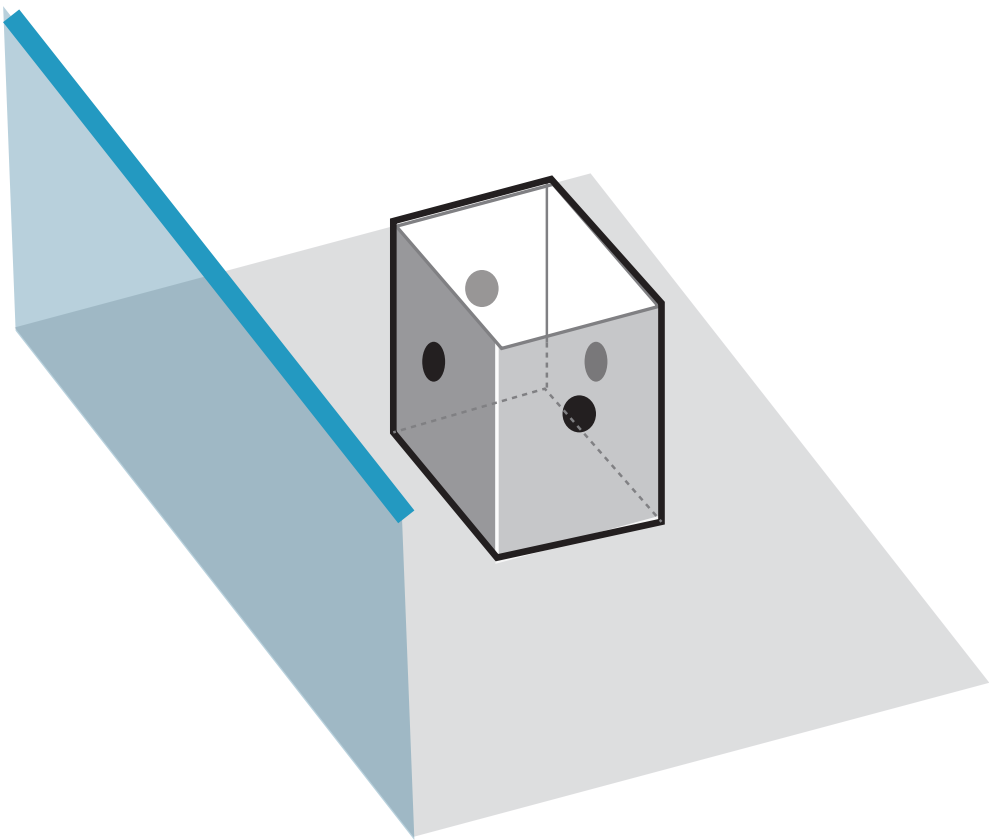


Potential glare from 5pm to 7pm May through August

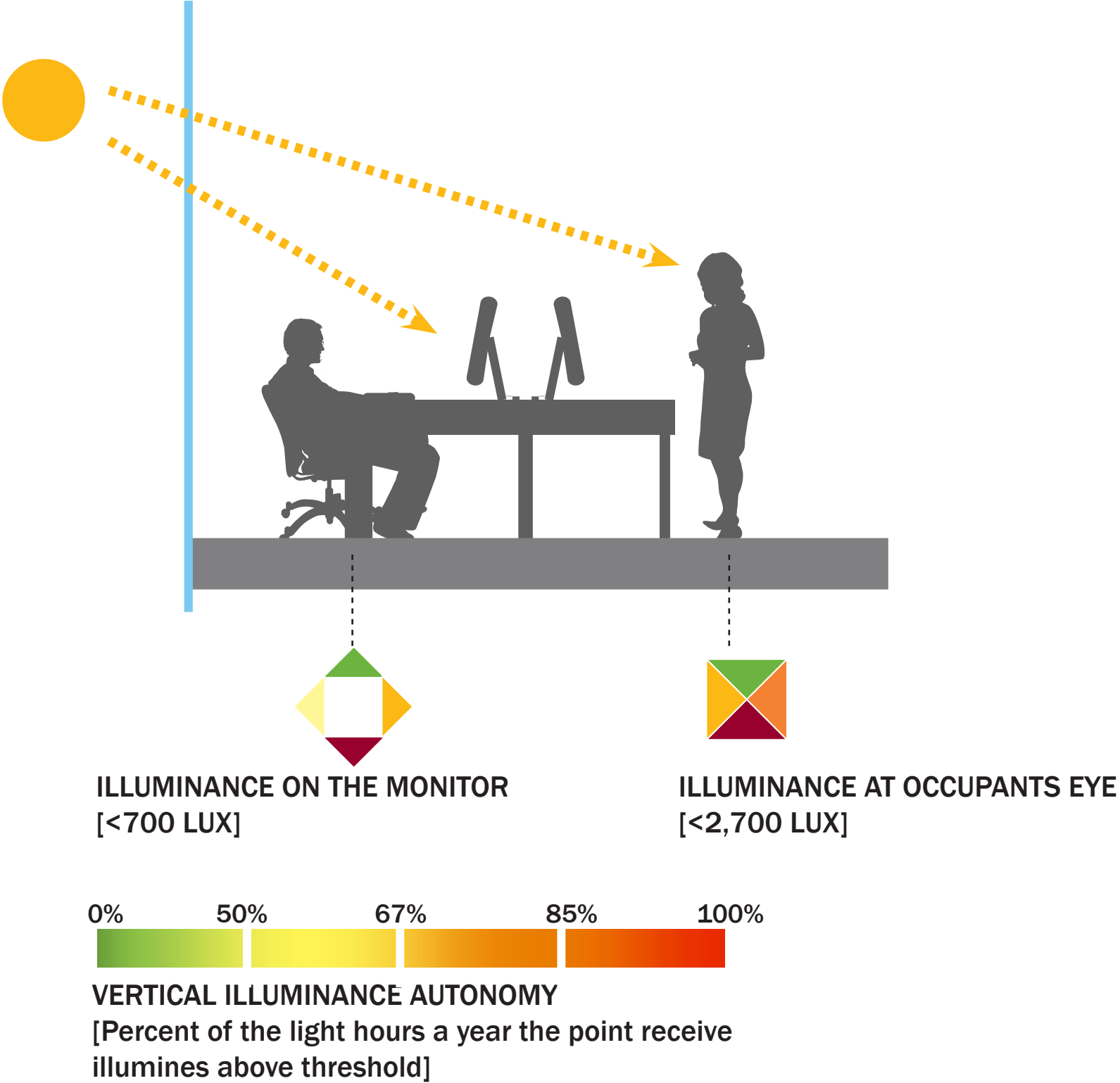
■ intolerable glare, DGP ≥ .45 ■ disturbing glare, .45 > DGP ≥ .4 ■ perceptible glare, .4 > DGP ≥ .35 ■ imperceptible glare, .35 > DGP



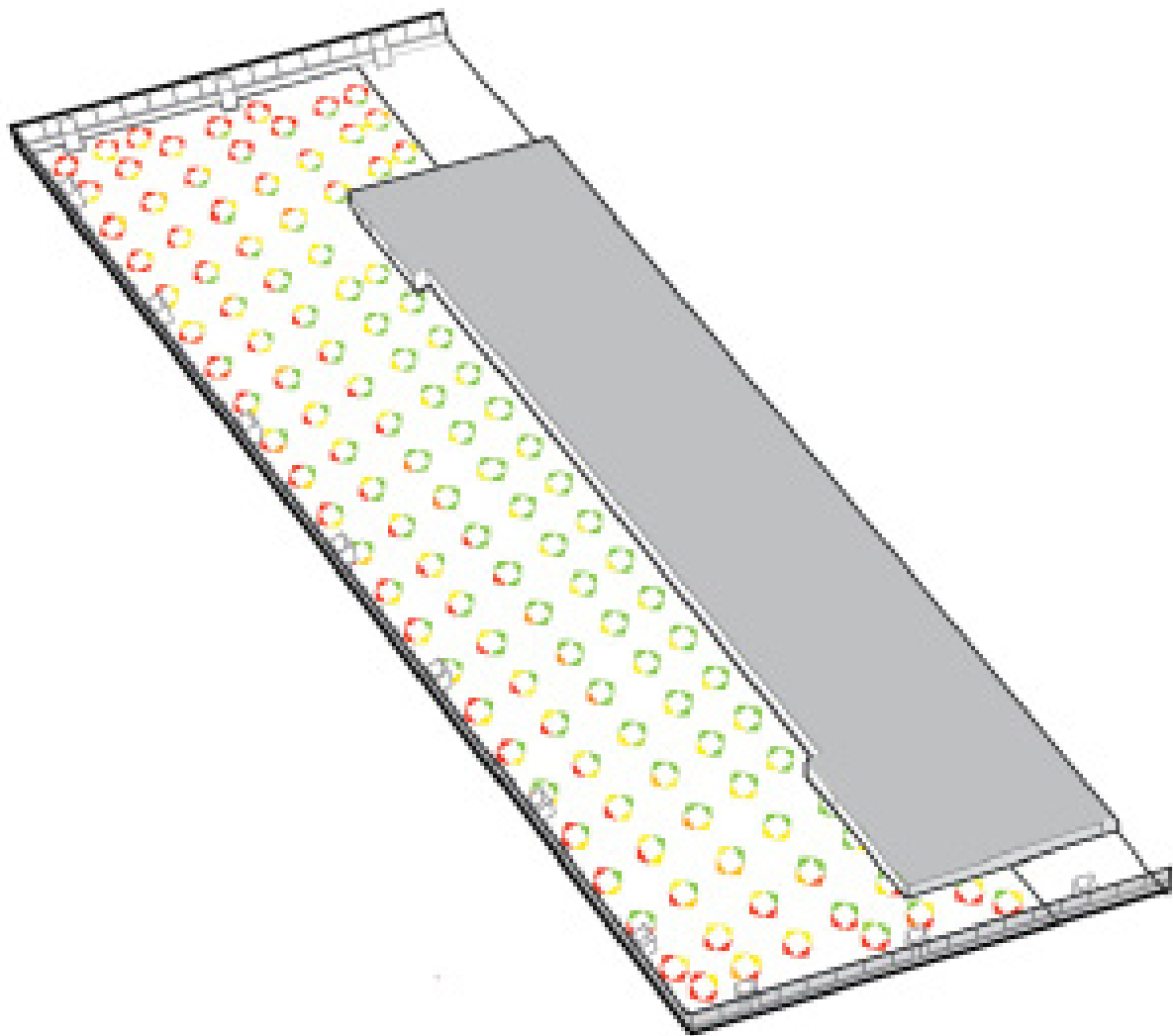
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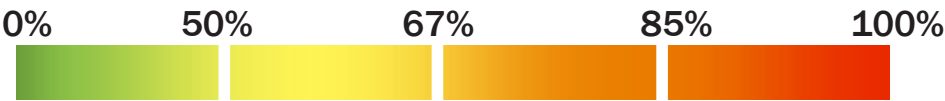
WORKSTATION ORIENTATION SENSITIVITY STUDY



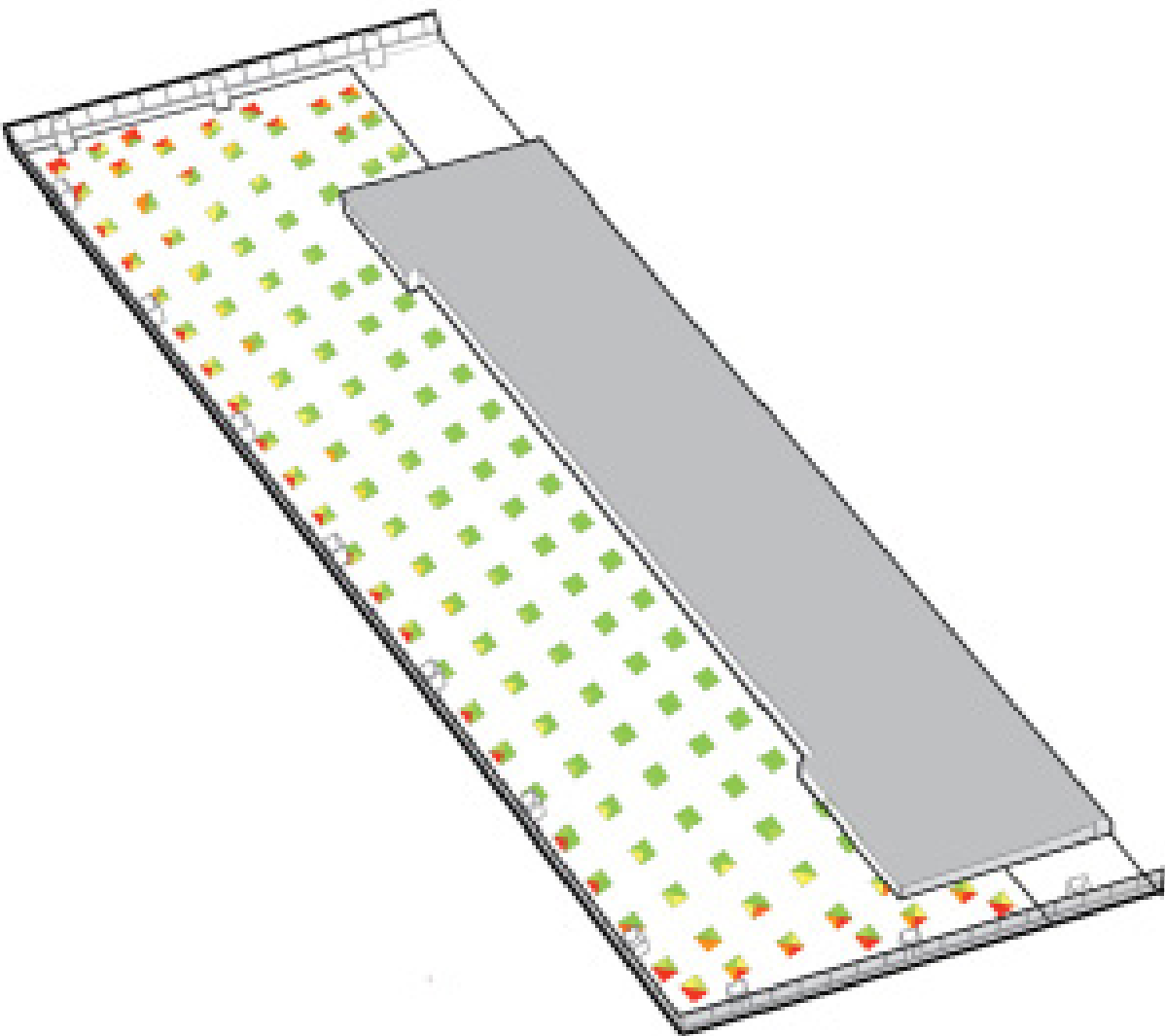
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MONITOR VISIBILITY [>700 LUX]



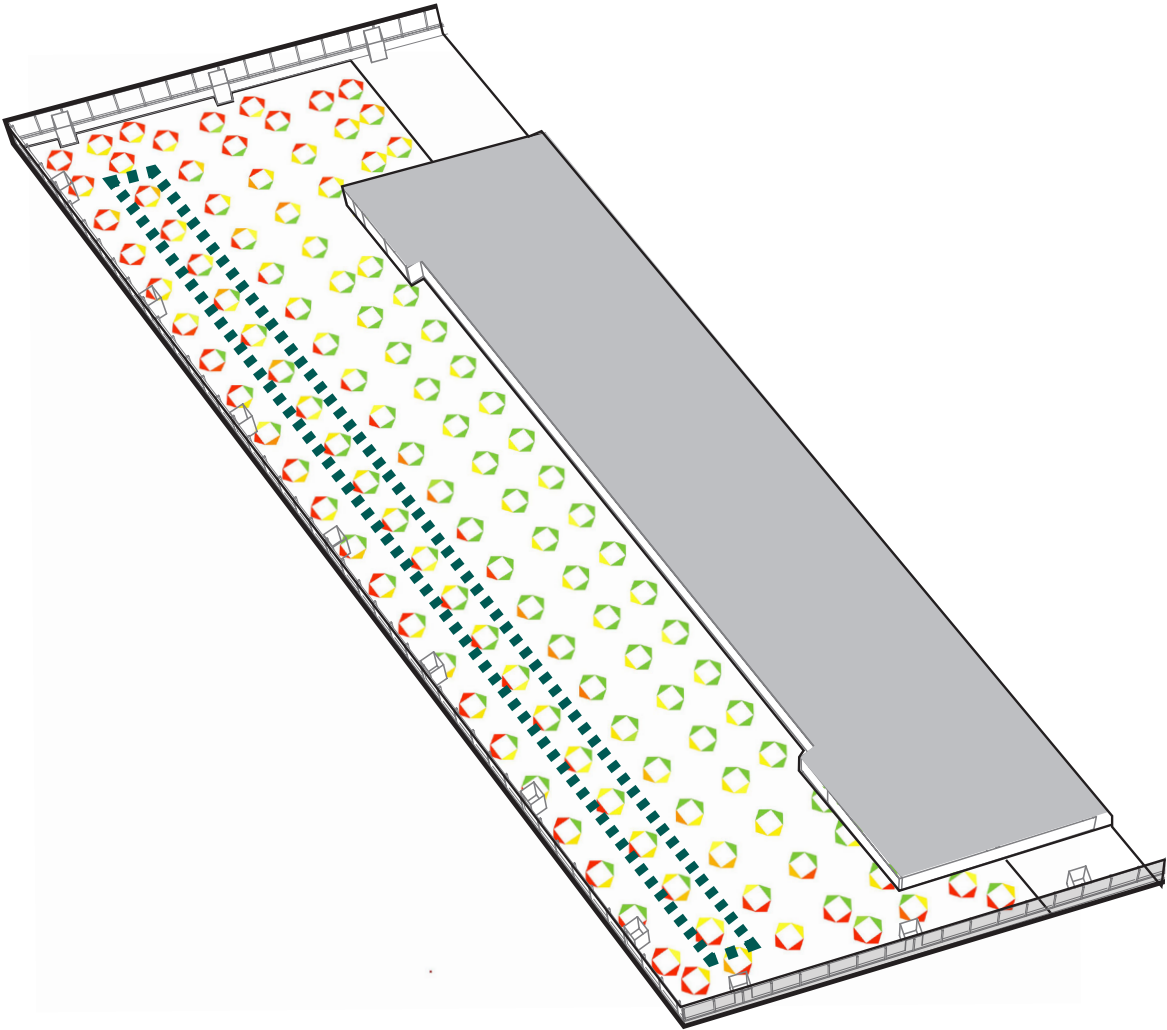
Vertical Illuminance Autonomy
[Percent of the light hours a year the point receive
illuminance above threshold]



POTENTIAL GLARE [$>2,700$ LUX]



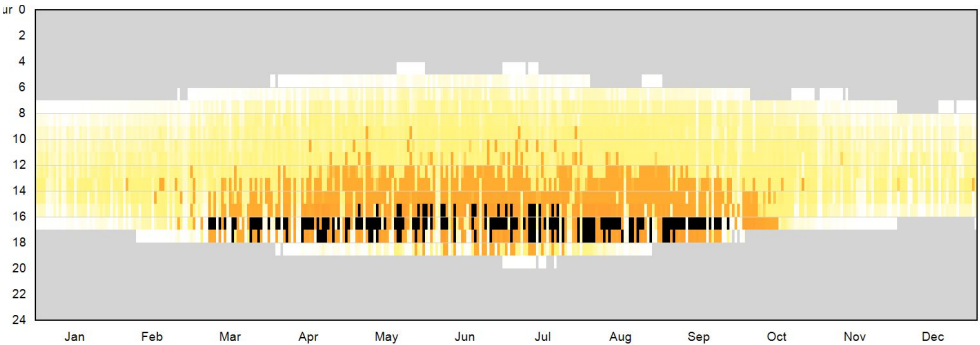
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TEST POINTS LOCATION 

15%
Potential Glare

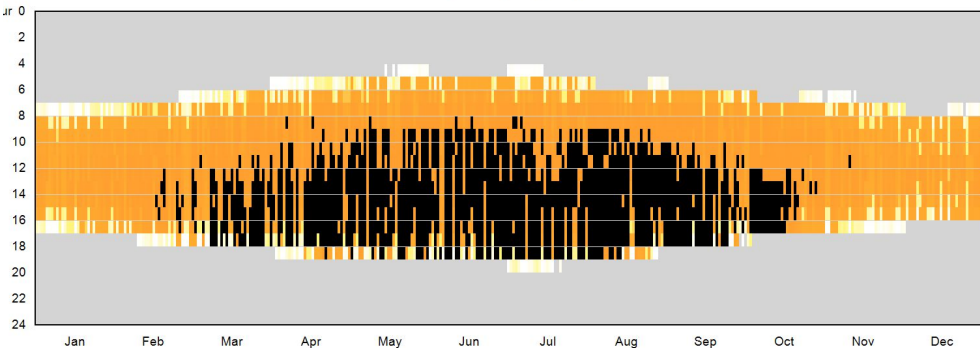
40%
Overlit Monitors



AVERAGE HOURLY ILLUMINANCE - South Orientation

32%
Potential Glare

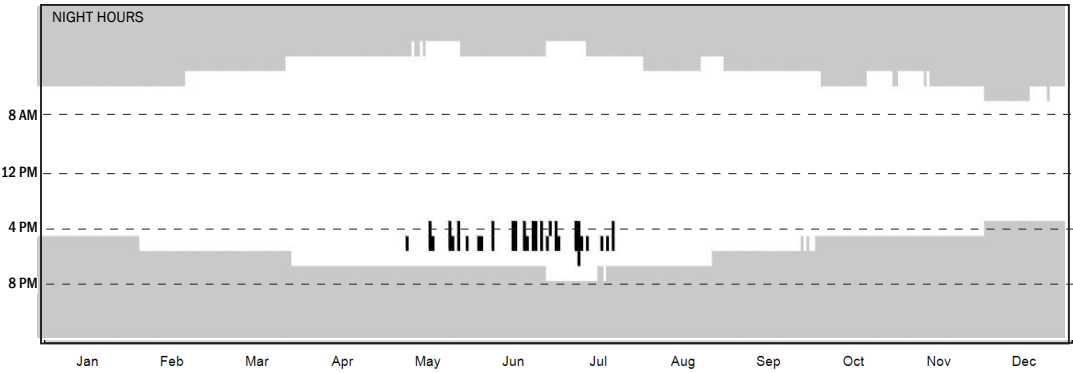
70%
Overlit Monitors



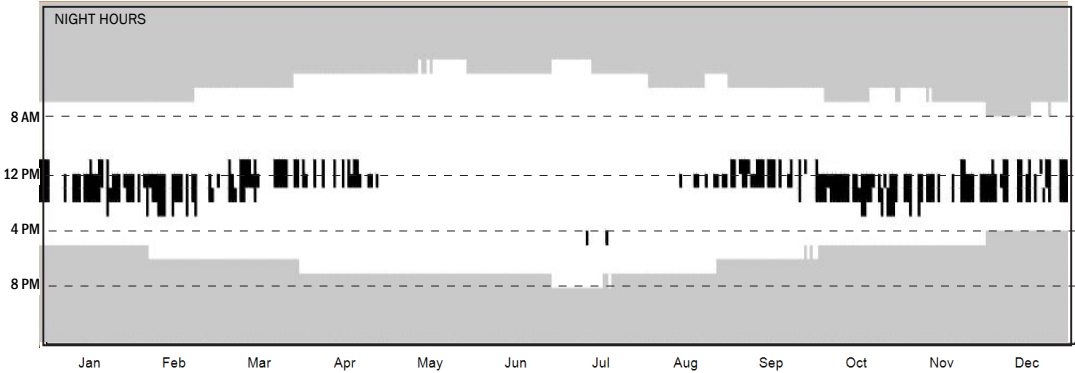
AVERAGE HOURLY ILLUMINANCE - West Orientation



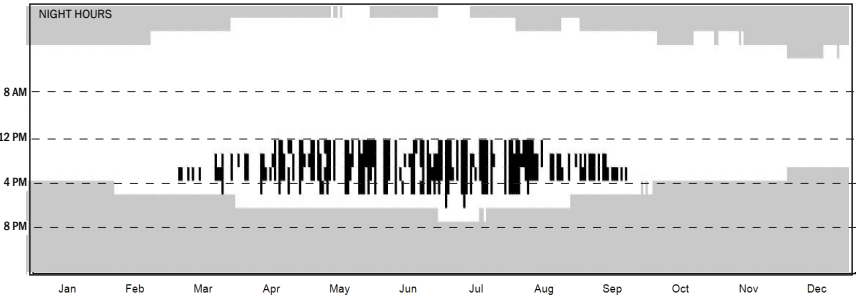
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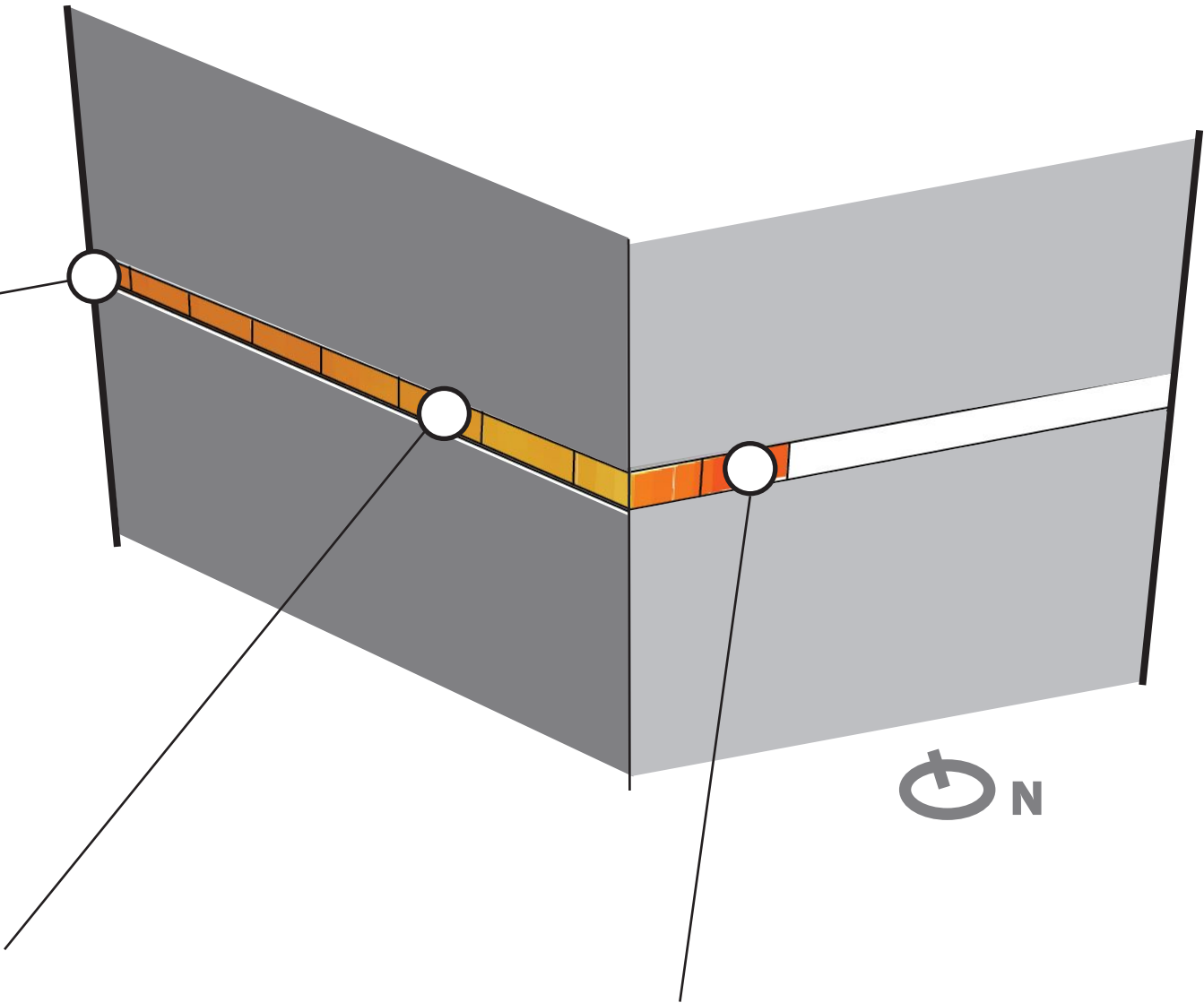
SHADES SCHEDULES WEST WINDOW



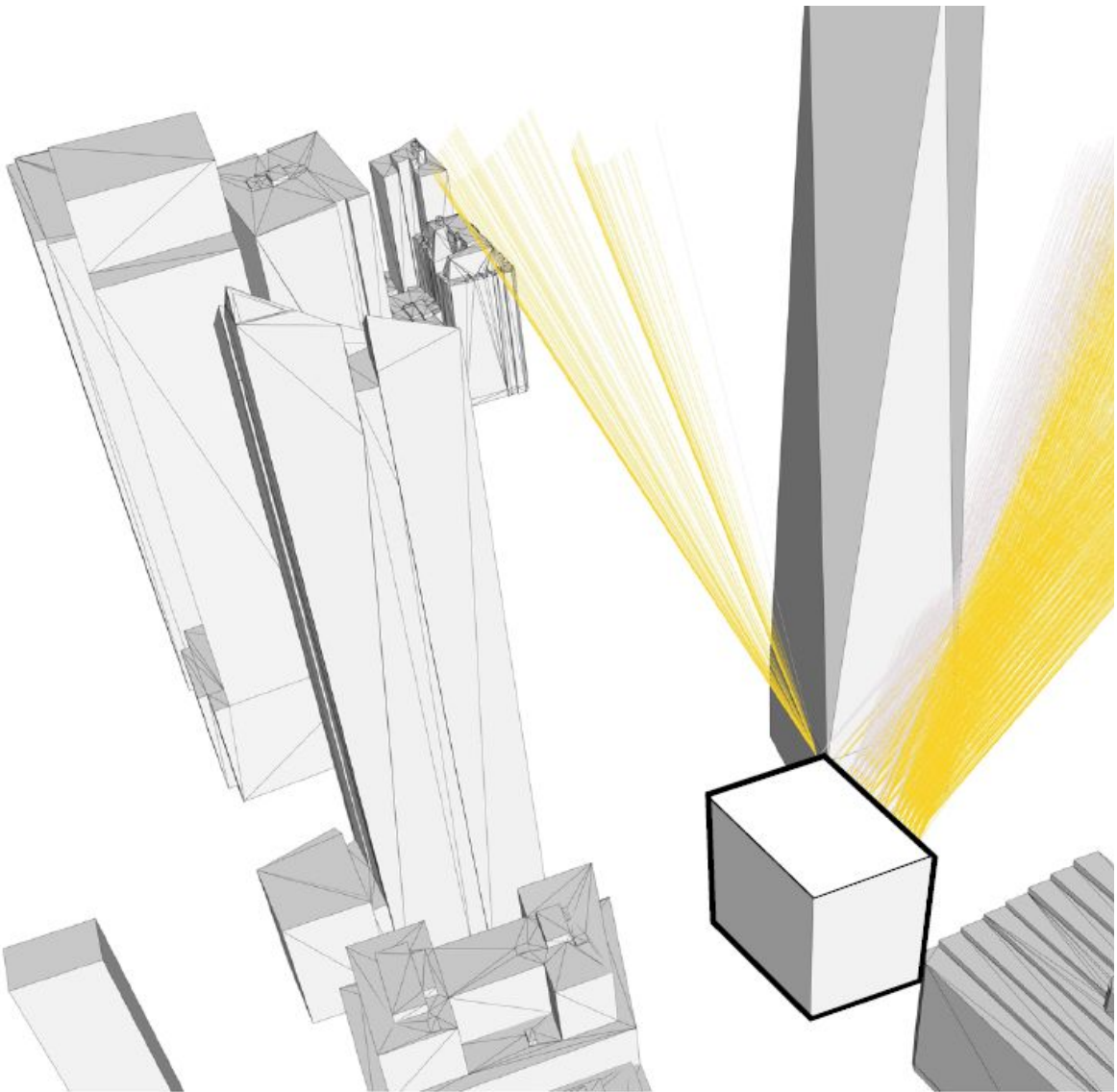
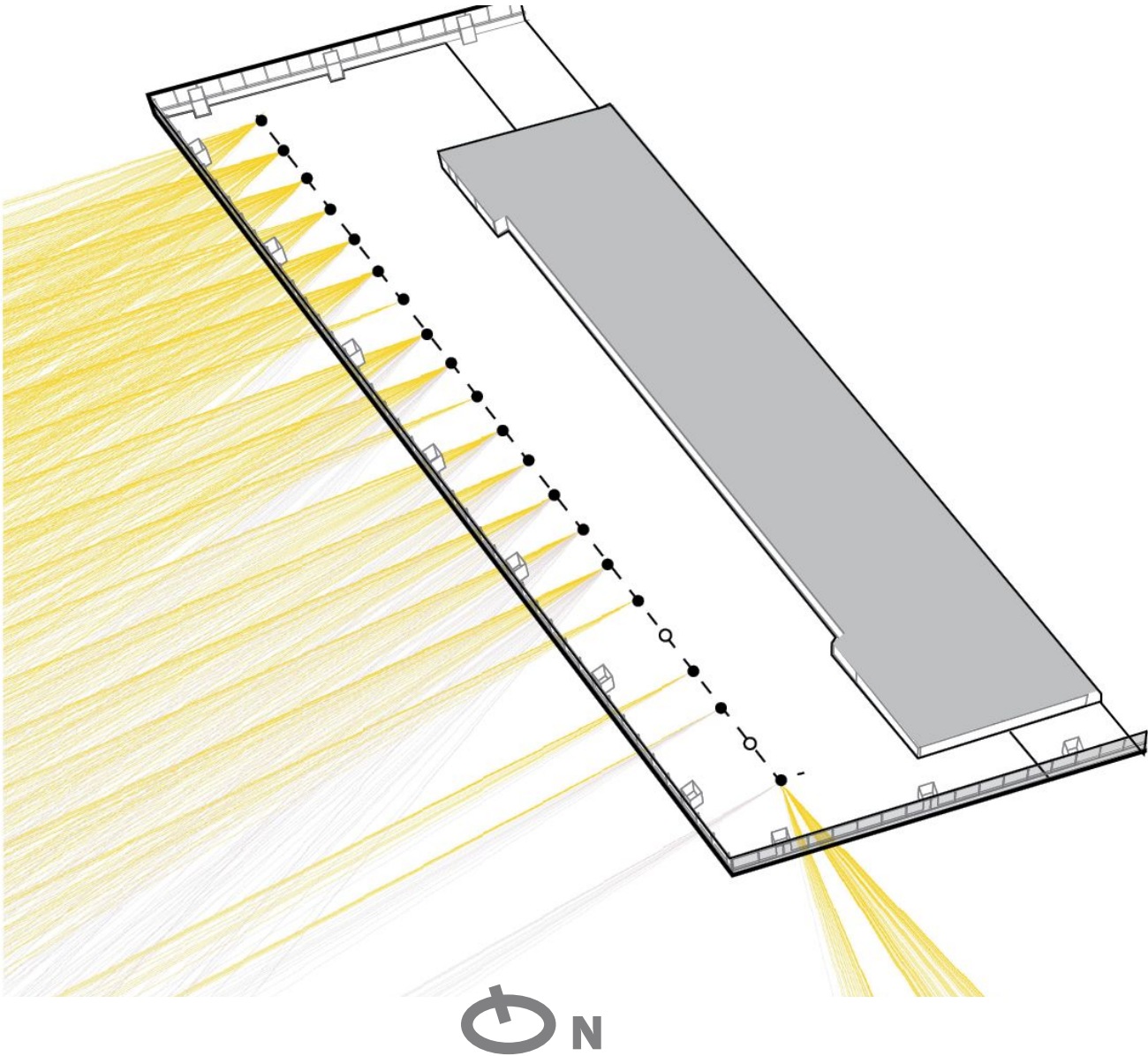
SHADES SCHEDULES WEST WINDOW



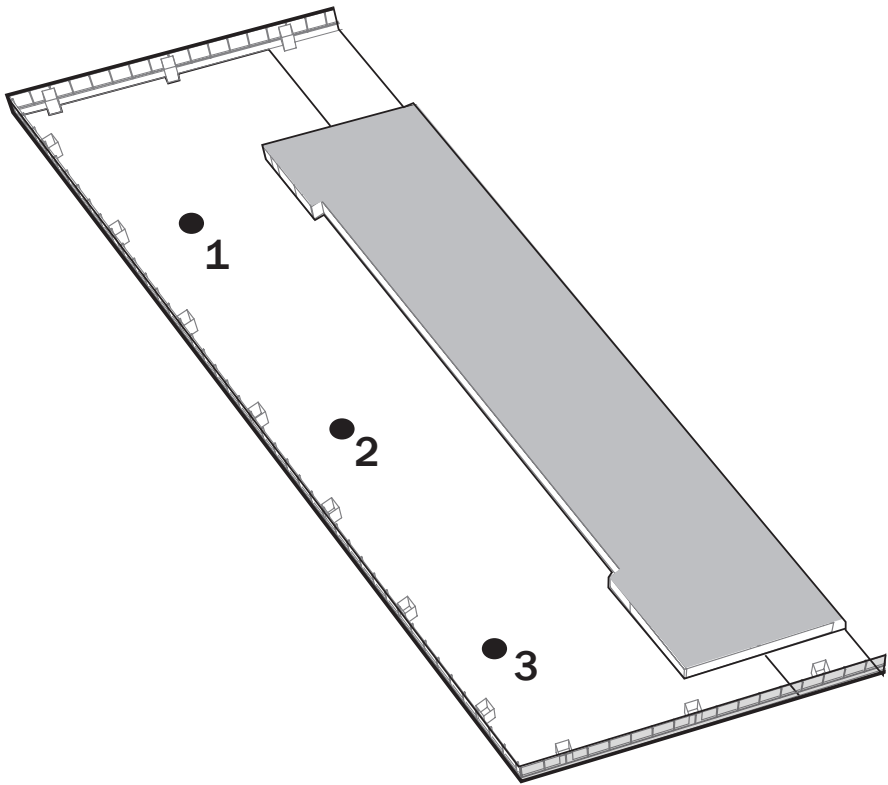
SHADES SCHEDULES SOUTH WINDOW



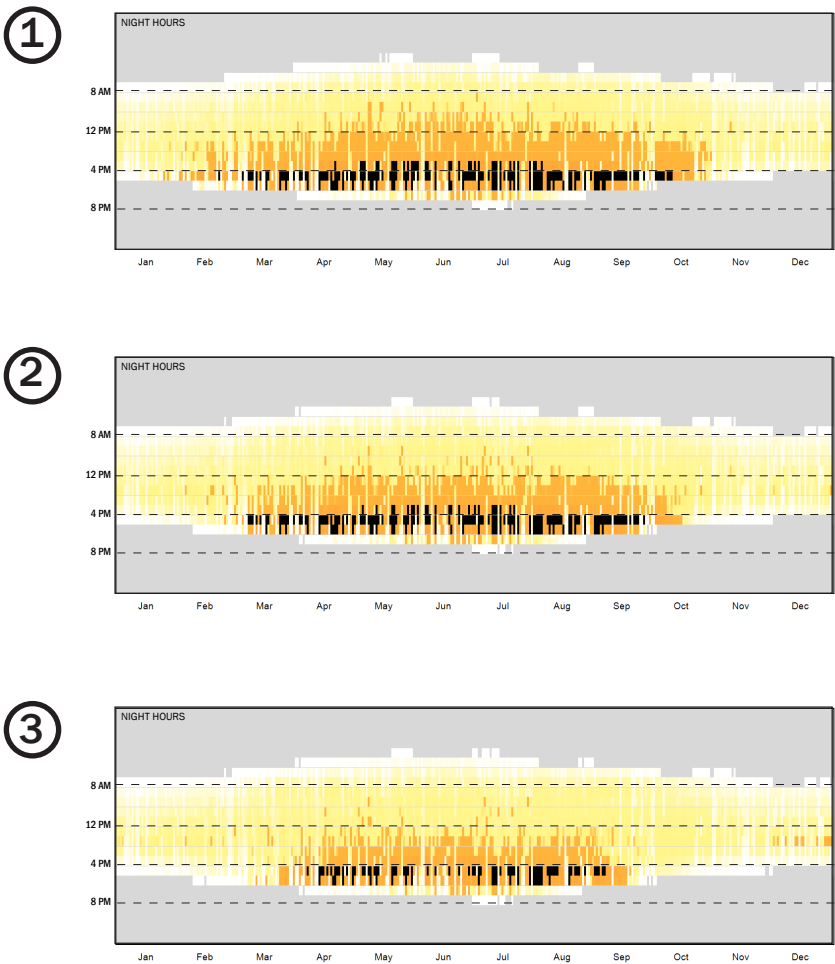
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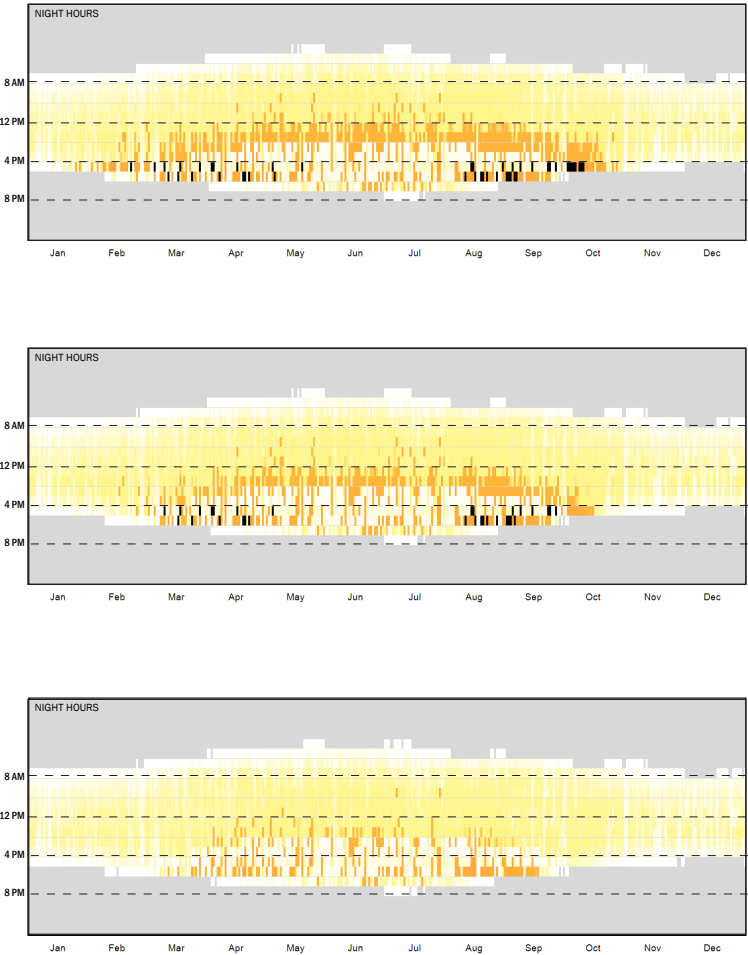
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TEST POINTS LOCATION

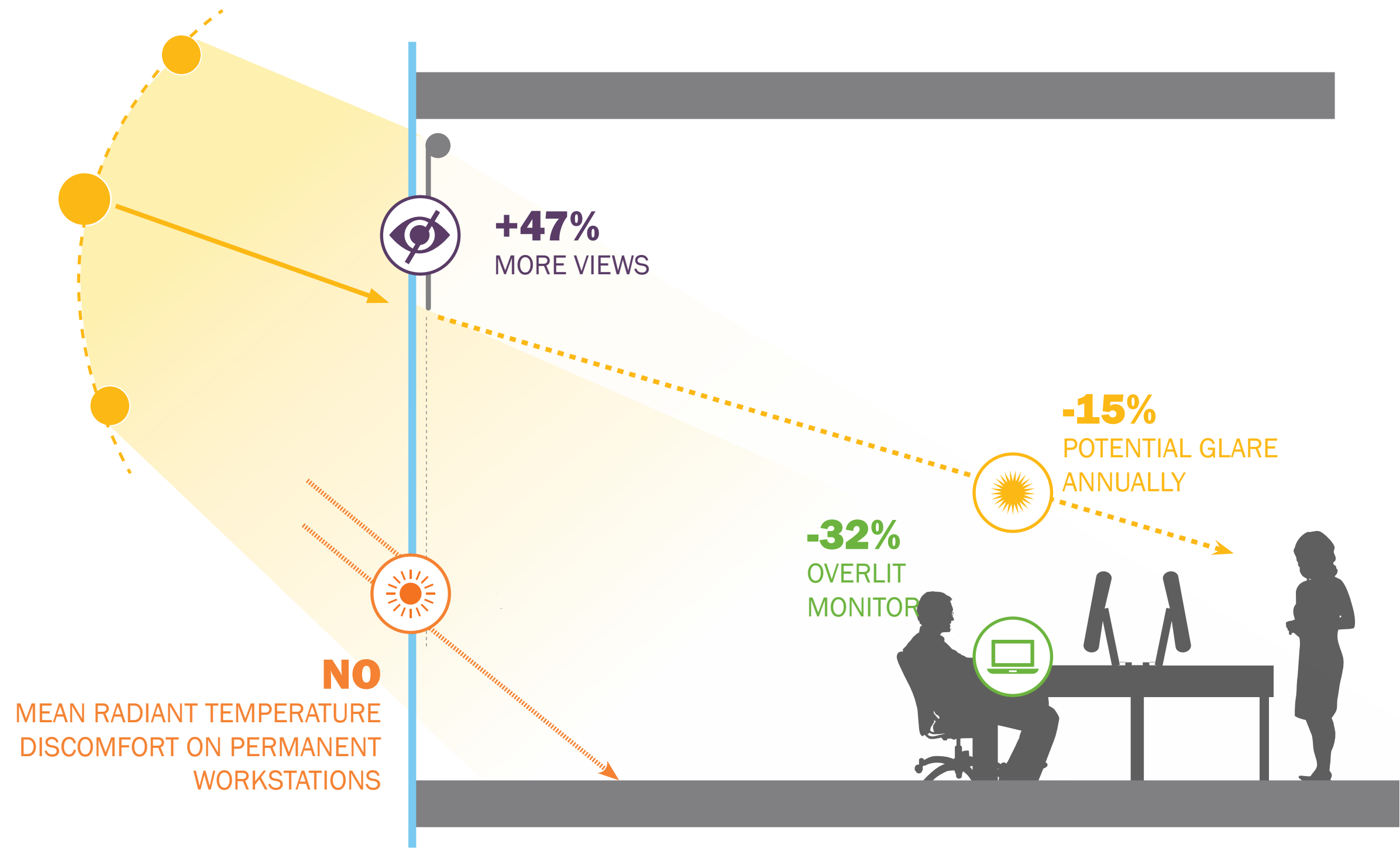


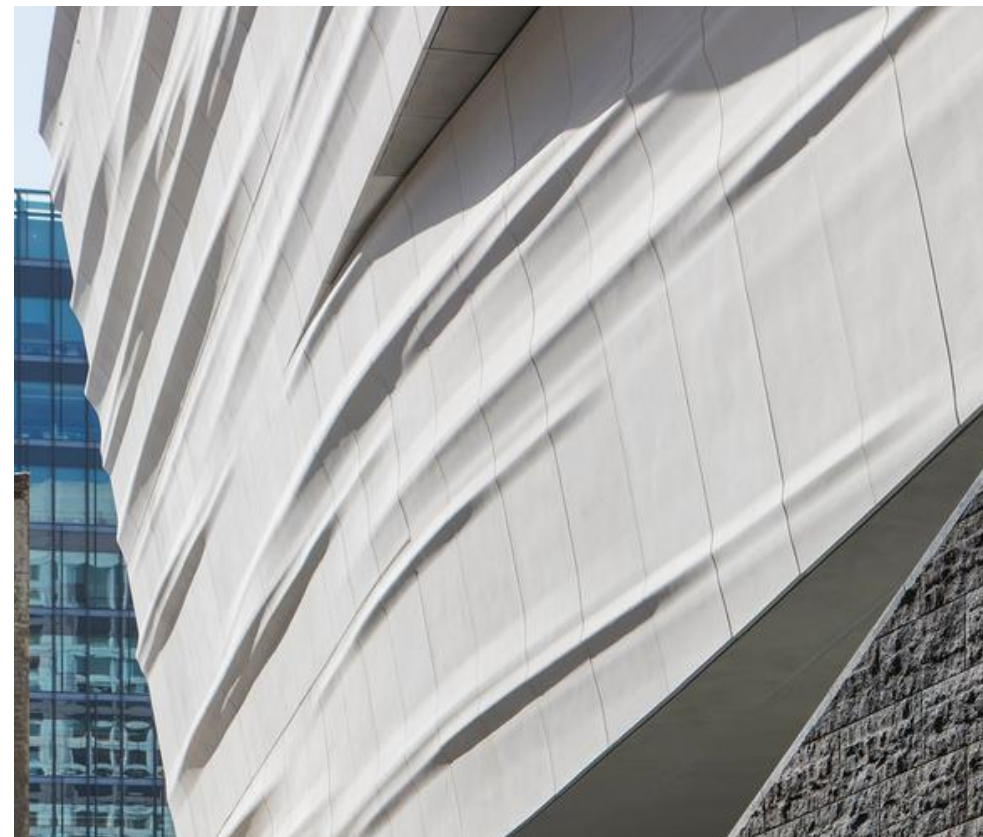
VISUAL COMFORT WITHOUT SHADES



VISUAL COMFORT WITH SHADES

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