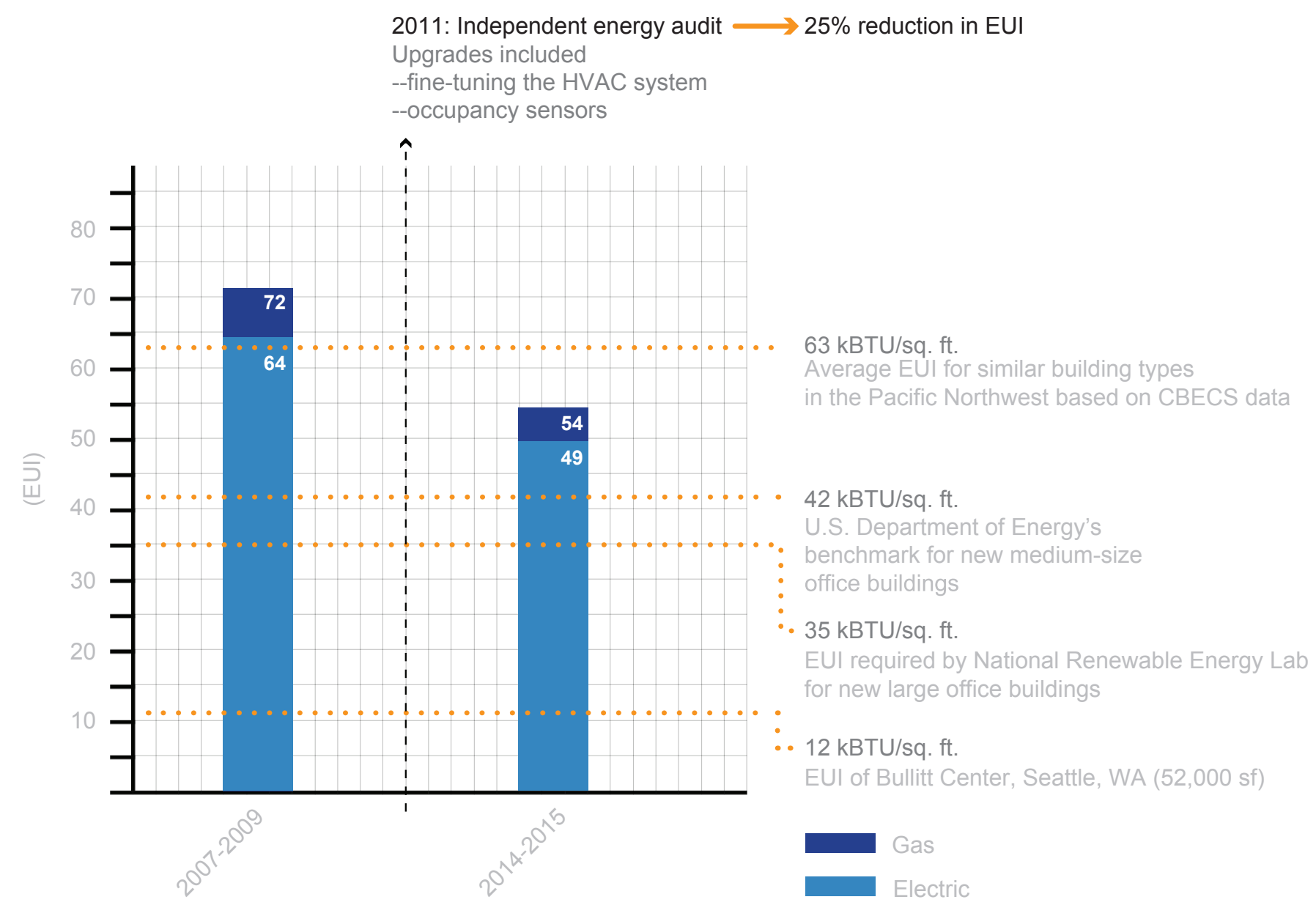
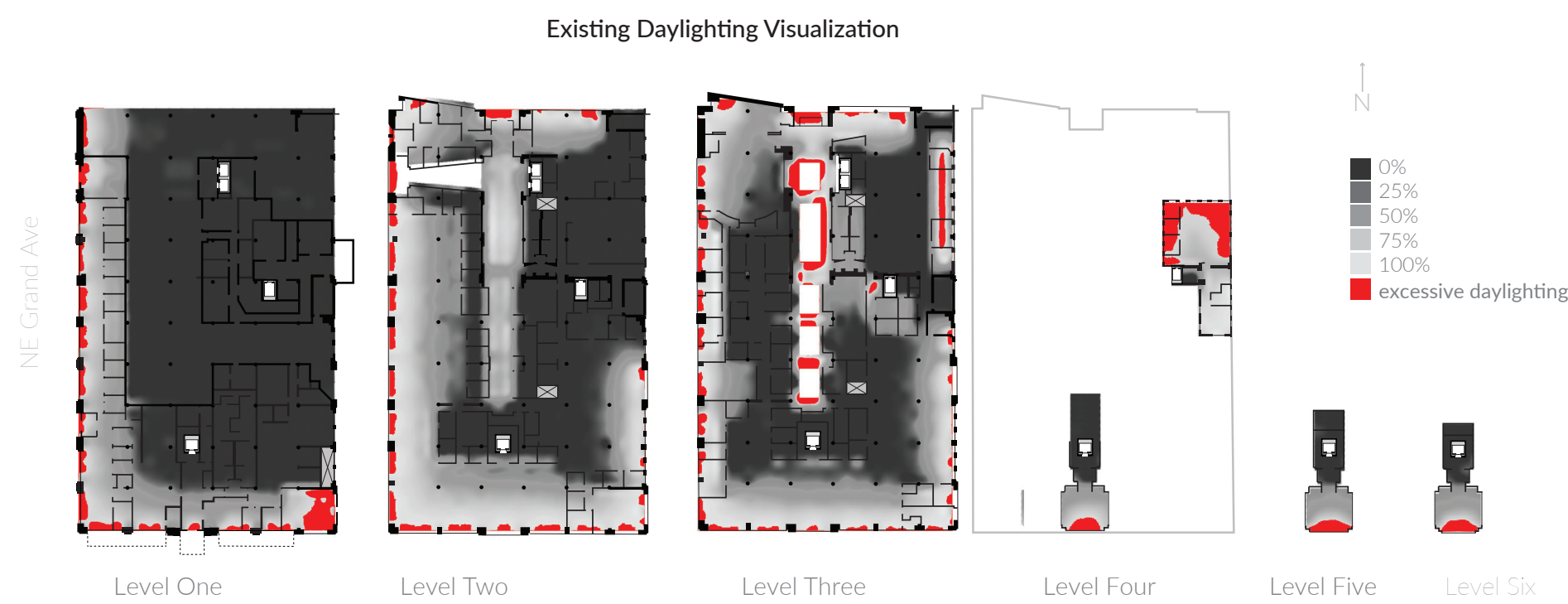


Optimizing User Comfort and Energy Efficiency at Portland Metro Office

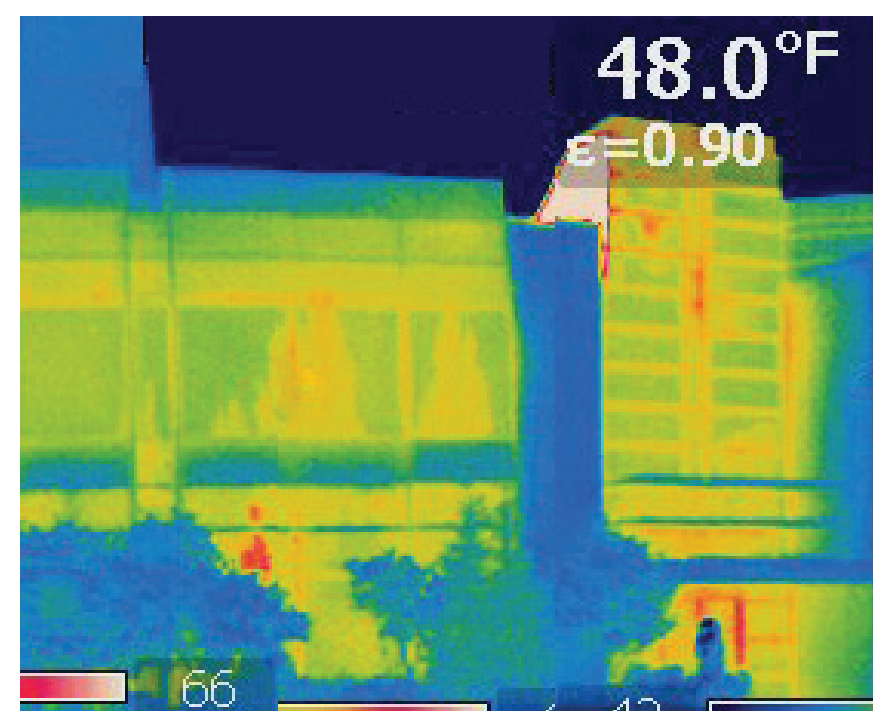
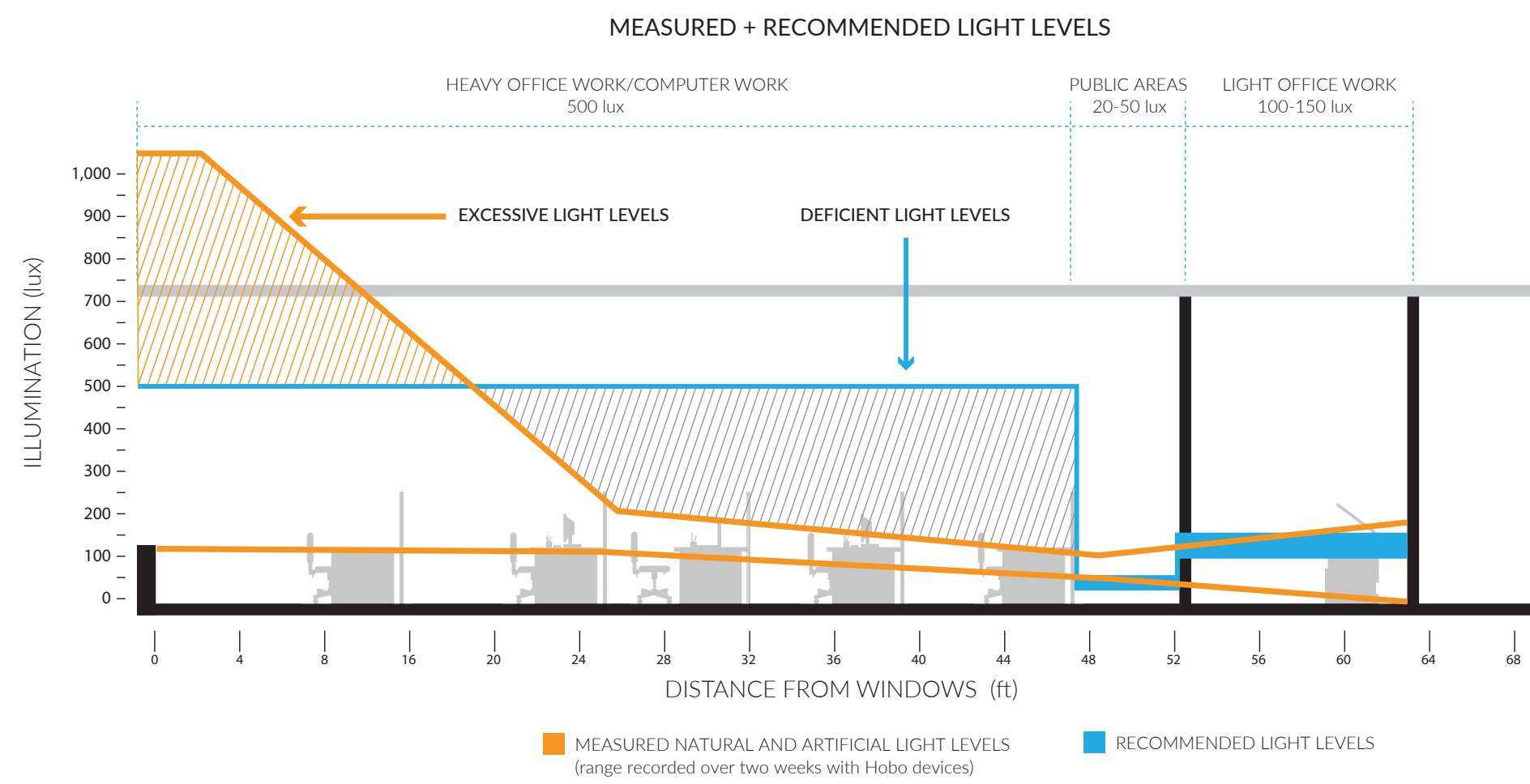
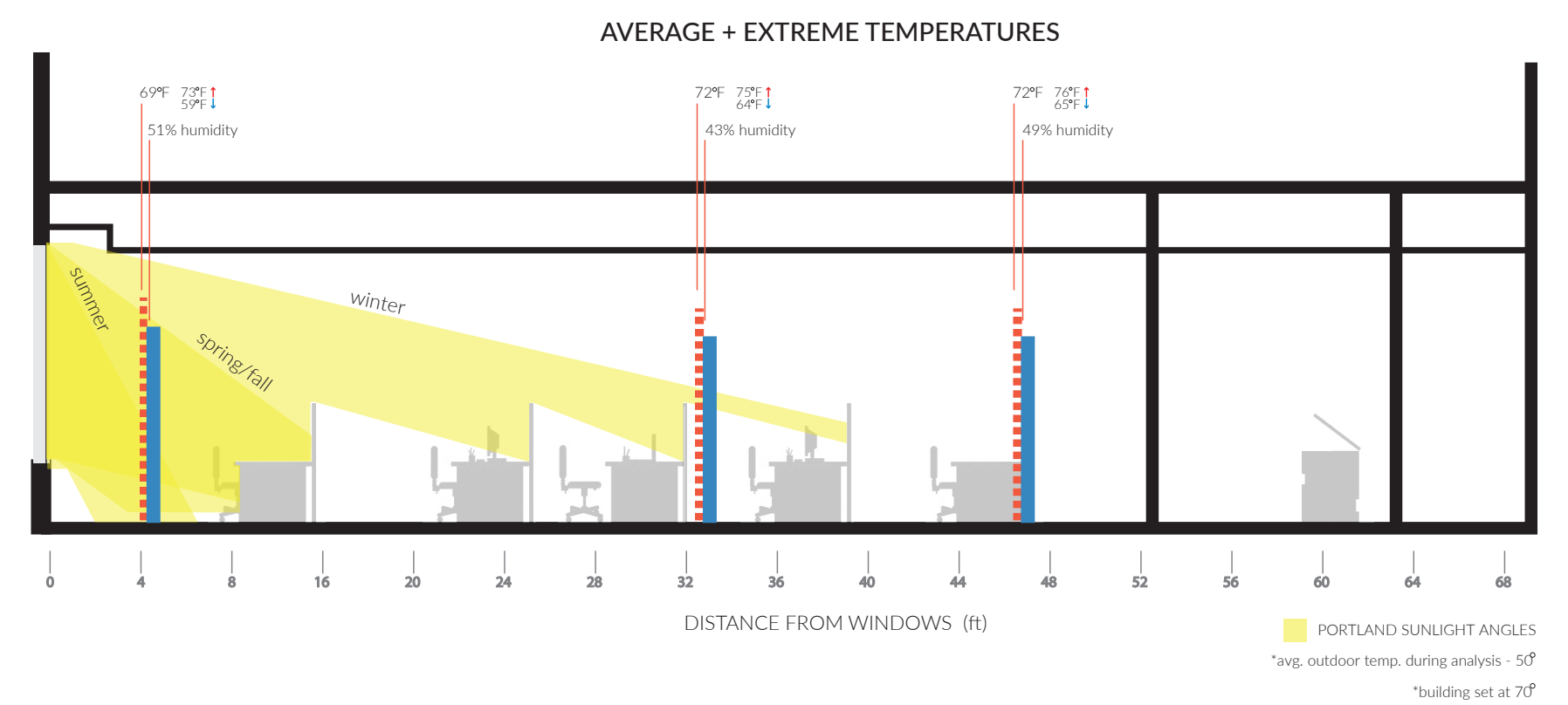
Portland State University + Yost Grube Hall Architecture

Willy Chandler, Kevin Chavez, and Abby Cooper



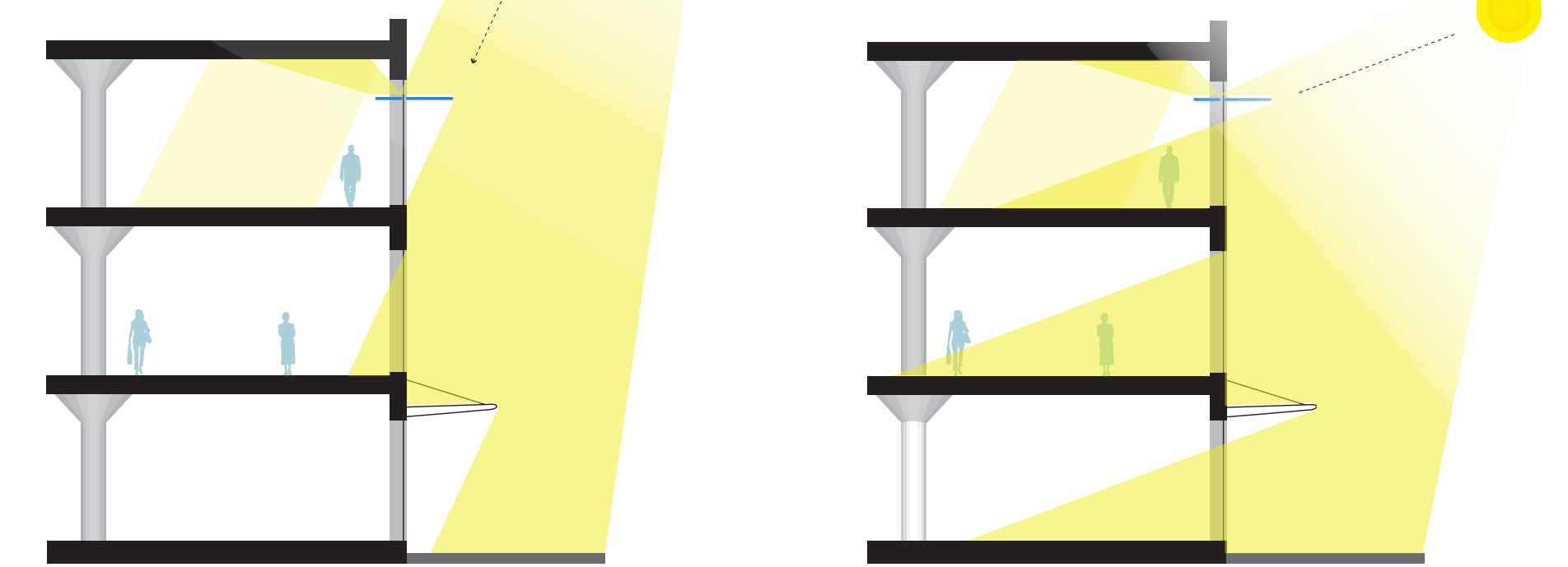
ANALYSIS

1. large windows on all aspects result in uncomfortable thermal and lighting conditions
2. a drop ceiling and high cubicle walls reduce daylight in the building



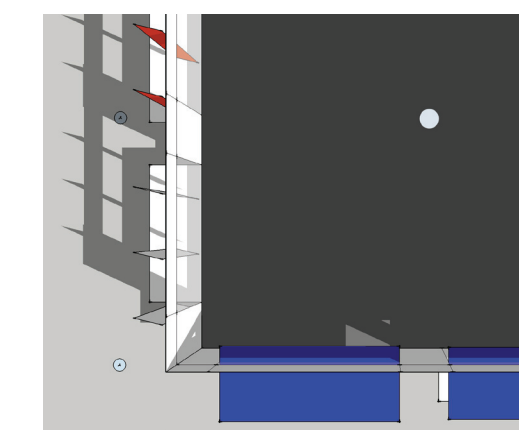
60° winter sun angle

20° winter sun angle

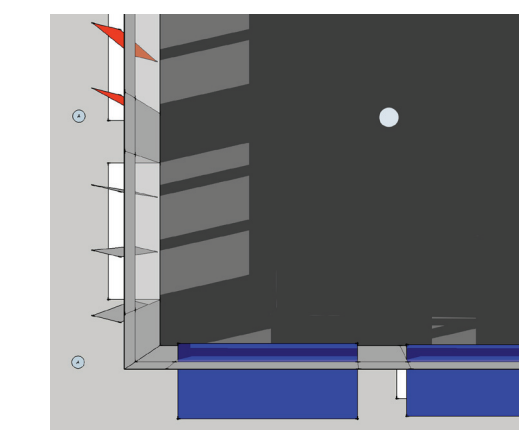


PROPOSAL

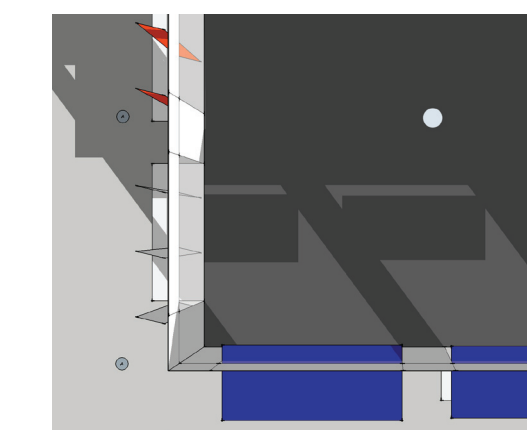
1. continue to reduce Metro EUI
2. utilize external shading to reduce solar heat gain and cooling loads
3. employ light shelves and remove drop ceiling to facilitate daylight



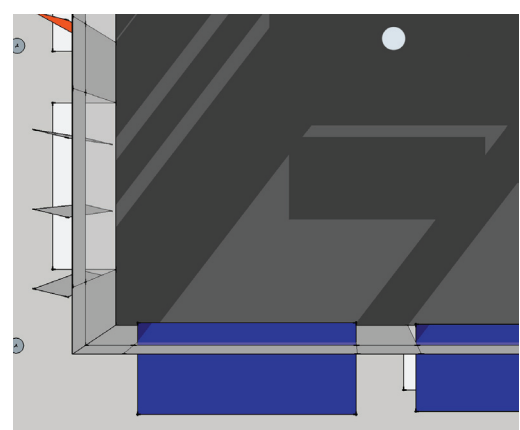
SW Summer AM



SW Summer PM



SW Winter AM



SW Winter PM

