

ROOM ENERGY MODELING

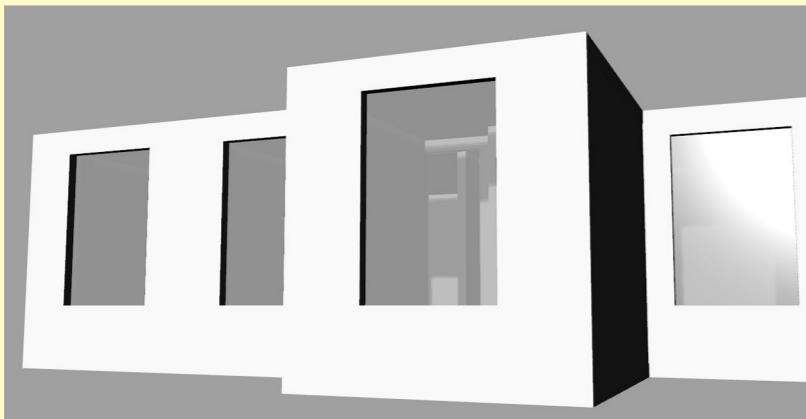
OKLAHOMA CITY, OKLAHOMA



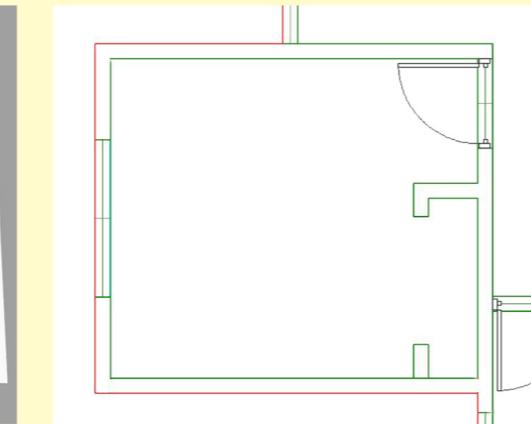
JUAN D. GUARIN

ENERGY MODELING

ROOM WITH NO SHADING



PERSPECTIVE

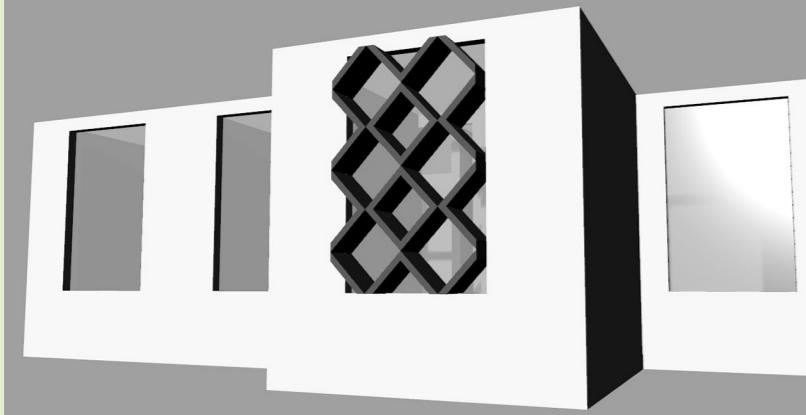


PLAN

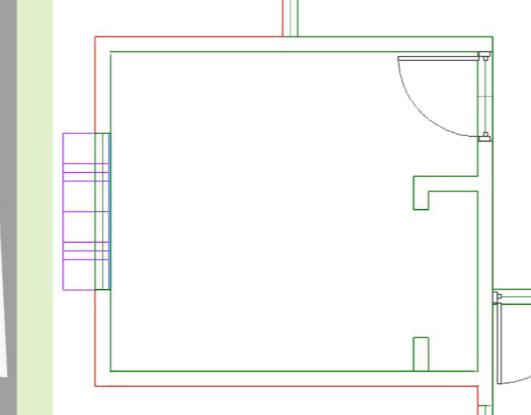


COMFORT CHART

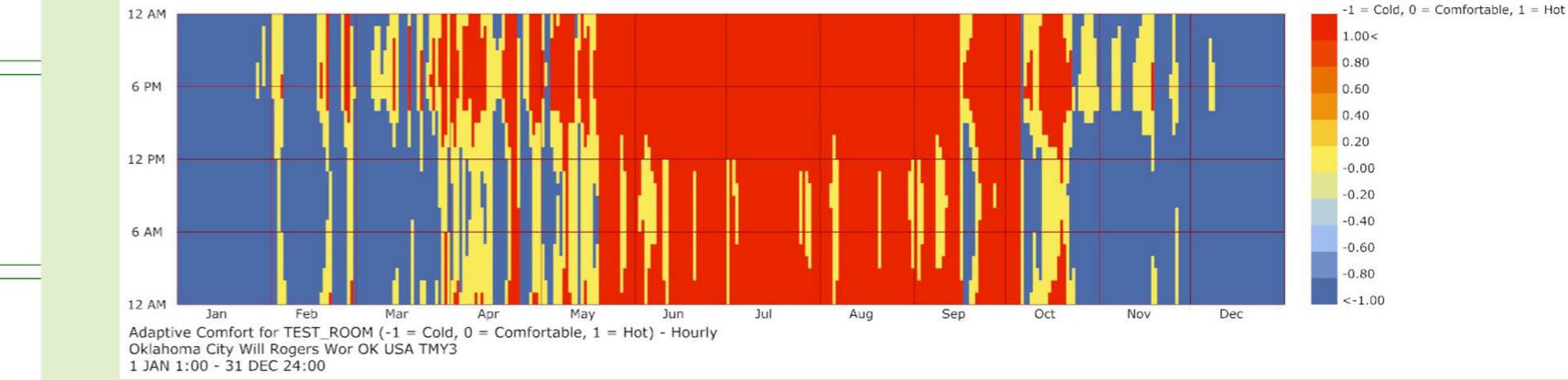
ROOM WITH SHADING: POINT-IN-TIME SCENARIO



PERSPECTIVE

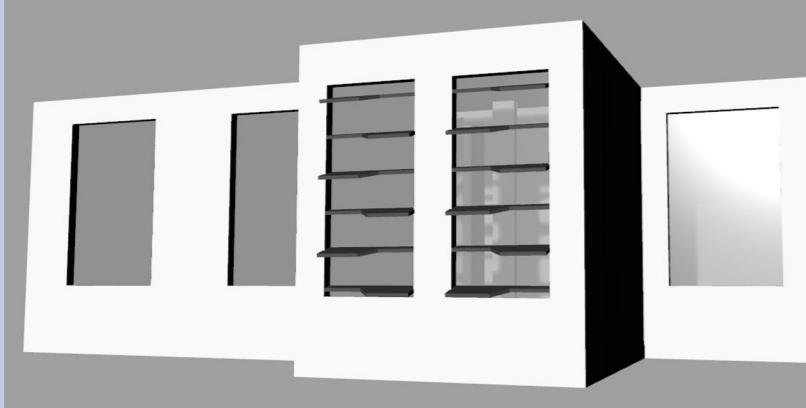


PLAN

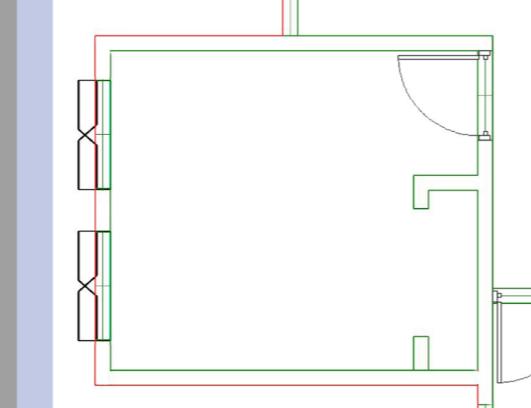


COMFORT CHART

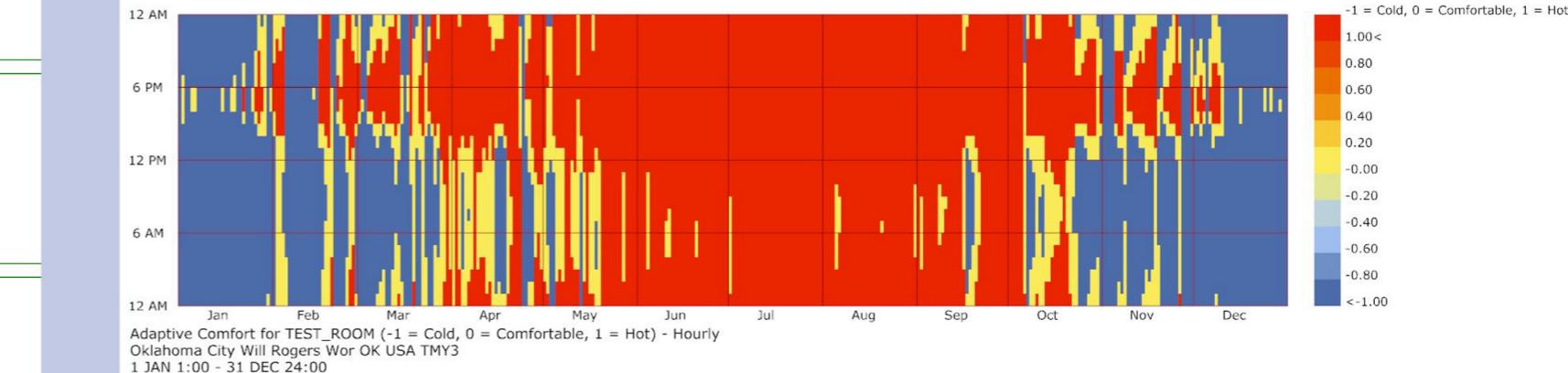
ROOM WITH SHADING: UDI SCENARIO



PERSPECTIVE



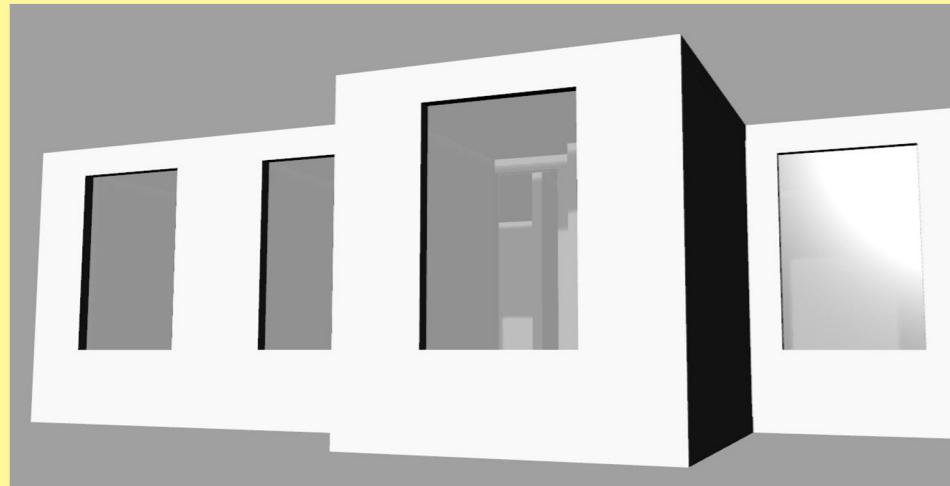
PLAN



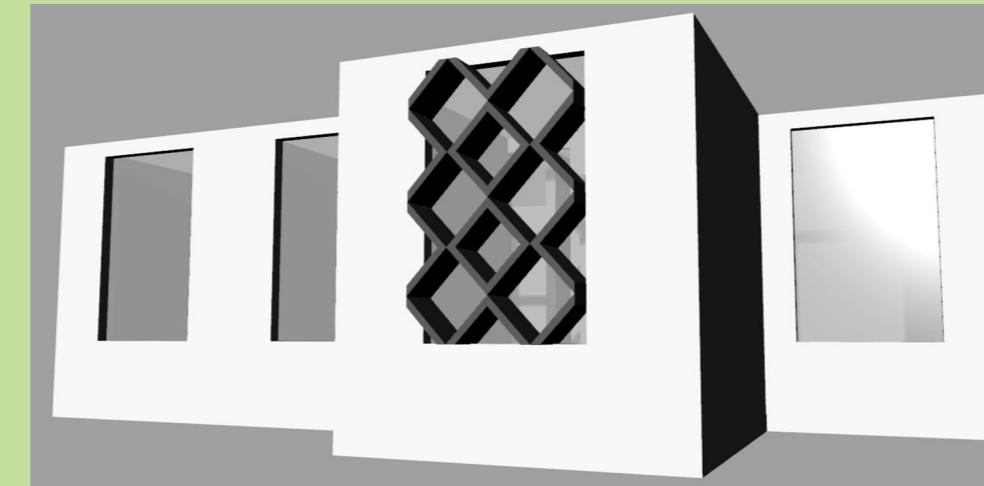
COMFORT CHART

CONCLUSIONS

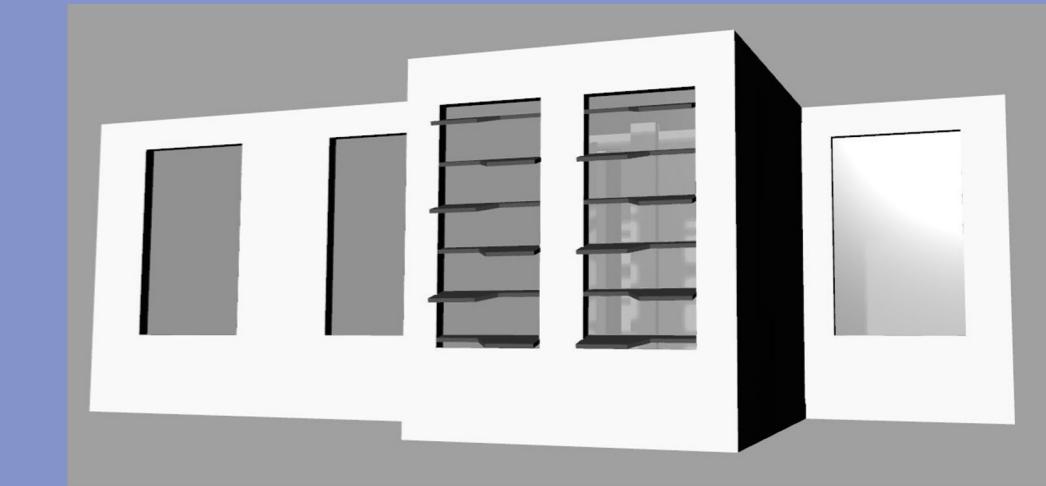
ROOM WITH NO SHADING



ROOM WITH SHADING: POINT-IN-TIME SCENARIO



ROOM WITH SHADING: UDI SCENARIO



✗ WORST PERFORMING SCENARIO, PROVING IT IS NECESSARY TO HAVE A SHADING SYSTEM IN ORDER TO HAVE COMFORT IN THE ROOM.

✗ SINCE THERE IS NO SHADING SYSTEM IN THIS SCENARIO, EXCESIVE AMOUNTS OF SUNLIGHT ENTER THE ROOM DURING THE SUMMER.

✗ EVENTHough THE AMOUNT OF GLAZING IS 30% LESS, COMPARED TO THE UDI SCENARIO, THE RESULTS IN BOTH CASES ARE VERY SIMILAR, SHOWING THE IMPORTANCE OF HAVING SHADING WHEN THE WINDOW TO WALL RATIO IS HIGH.

✓ IN TERMS OF MATERIAL USE, THIS IS, BY FAR, THE MOST EFFECTIVE SOLUTION: 0% OF MATERIAL USED.

✗ EVENTHough, THE AMOUNT OF SUNLIGHT DURING THE SUMMER MAKES THE ROOM TOO HOT, DURING THE WINTERS THE ROOM HAS A DECENT PERFORMANCE, ALLOWING A LOT OF RADIATION IN.

✓ COMPARED TO THE OTHER TWO SCENARIOS, THE DIFFERENCE BETWEEN COMFORT PERCENTAGES IS NOT HIGH AT ALL, WHICH MAKES YOU WONDER: IN TERMS OF COMFORT, IS IT WORTH IT HAVING SHADING?

✗ THE BULKY SHADING ELEMENTS BLOCK A CONSIDERABLE AMOUNT OF SUNLIGHT DURING THE WINTER, MAKING IT THE WORST PERFORMING SCENARIO IN THIS SEASON.

✗ THE SYSTEM USES, BY FAR, THE MOST AMOUNT OF MATERIAL OF ALL THREE SCENARIOS

✗ EVENTHough THIS SCENARIO IS THE MOST COMFORTABLE OF ALL THREE OPTIONS, BASED ON THE UDI ANALYSIS, THE PRICE TO PAY FOR THIS IS HAVING A CONSIDERABLY DARK ROOM ALL YEAR LONG.

✓ SYSTEM WITH THE MOST % OF COMFORT THROUGHOUT THE YEAR AND LEAST % OF "TOO HOT" TIME. GOOD RESULTS, CONSIDERING OKLAHOMA CITY IS A PREDOMINANTLY HOT AREA.

✓ COMPARED TO THE UDI SCENARIO, THIS IS A MORE REALISTIC, AND MORE EFFICIENT SOLUTION: COMFORT IS IMPROVED WITHOUT HAVING TO REBUILD THE WALL.

✓ A COMBINATION OF, LOW GLARE, LOW HOT DAYS AND HIGH COMFORT PERCENTAGE THROUGHOUT THE YEAR, MAKES THIS SCENARIO THE MOST SUITABLE FOR THIS WEATHER.

✗ THIS SCENARIO HAS A BAD PERFORMANCE IN TERMS OF PERCENTAGE OF TIME COMFORTABLE THROUGHOUT THE YEAR AND PERCENTAGE OF TIME FEELING "TOO HOT" (NOT VERY GOOD RESULTS, CONSIDERING OKC IS PREDOMINANTLY HOT).

✗ NOT A VERY REALISTIC SOLUTION, CONSIDERING THAT THE WALL HAS TO BE REBUILT AND SHADED.

✗ BESIDES THE FACT THAT THE ROOM IS GOING TO BE THERMALLY UNCOMFORTABLE, IT WILL ALSO BE VISUALLY UNCOMFORTABLE HAVING HIGH AMOUNTS OF GLARE AND SUNLIGHT.

✓ A VERY GOOD AMOUNT OF SUNLIGHT WILL ENTER THE ROOM WITHOUT DRASTICALLY REDUCING % OF COMFORT.

✓ THIS IS THE MOST FLEXIBLE SYSTEM, ALLOWING THE LOUVERS TO BE ROTATED IN THE DESIRED ANGLE.

✓ THIS SYSTEM WILL PROVIDE A GOOD PERFORMANCE IN THE WINTER SEASON, WHICH MIGHT BE QUITE HARSH, REGARDLESS OF THE FACT IT IS NOT VERY LONG LASTING SEASON.