

Electric Lighting & Daylighting Study

REI Auditorium
Denver, CO



Light Refreshments



From Left: Tom, Pete, Irene, Troy, Sam, Ali, Amelia



Hypothesis

- 80% of the REI auditorium total illuminance is provided by daylighting on a sunny day around noon.



Methodology

- Sylvania Light Meter DS2000/DS2050
- Equally spaced grid of measurements at a height of 42" above the floor
- 5 Measurements taken at same time
- Data sets
 - Control: Both electric and daylighting
 - Electric Lighting Only
 - Daylighting Only



Electric and Daylighting



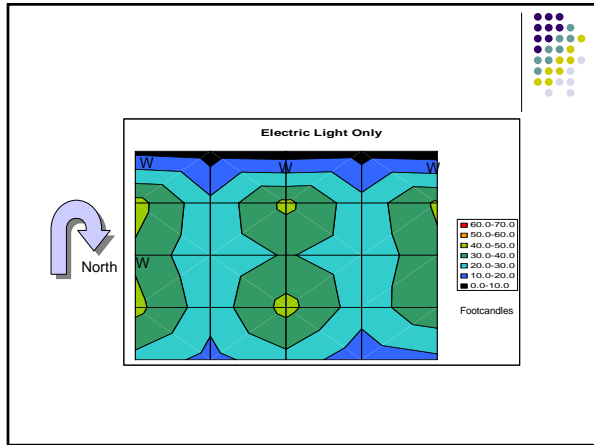
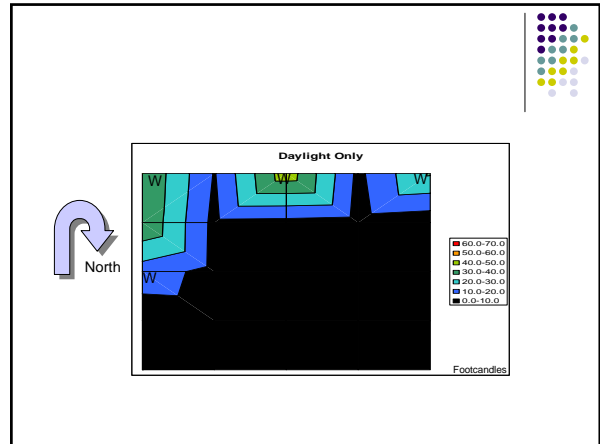
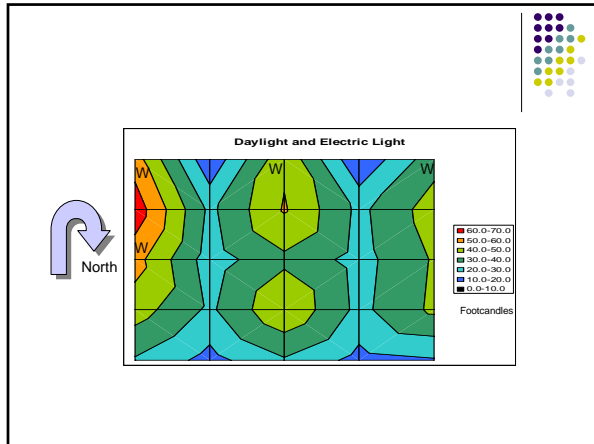
Daylighting Only



Data

- Control Data
 - Average Footcandles for total space: 35 fc
 - Averages by row (window wall to back wall):
 - 32.5 fc, 43.4 fc, 36.8 fc, 38.3 fc, 22.0 fc
- Daylighting Data
 - Average Footcandles for total space: 10.3 fc
 - Averages by row (window wall to back wall):
 - 26.8 fc, 12.3 fc, 6.4 fc, 3.3 fc, 2.5 fc
- Electric Light Data
 - Average Footcandles for total space: 24.9 fc
 - Averages by row (window wall to back wall):
 - 4.8 fc, 34.9 fc, 30.1 fc, 34.6 fc, 20.3 fc





Conclusion

- 30% of total illuminance is provided by daylight.
- 83% of illuminance for row 1 (windows) is provided by daylight.