Fall 2015

Occupant Usage and Behavior

Zach Baugher
Portland State University

Janna Ferguson
Portland State University

Yukari Kubo
Portland State University

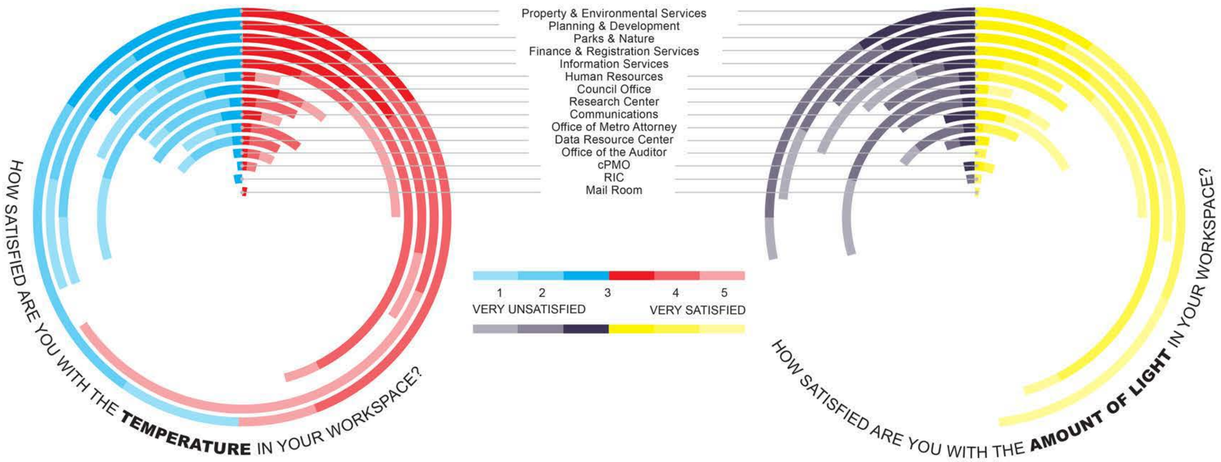
Erika Colvin
Portland State University

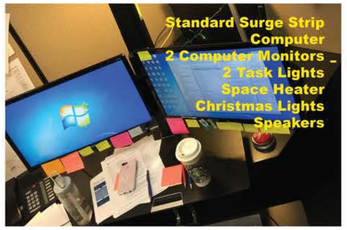
OCCUPANT USAGE AND BEHAVIOR

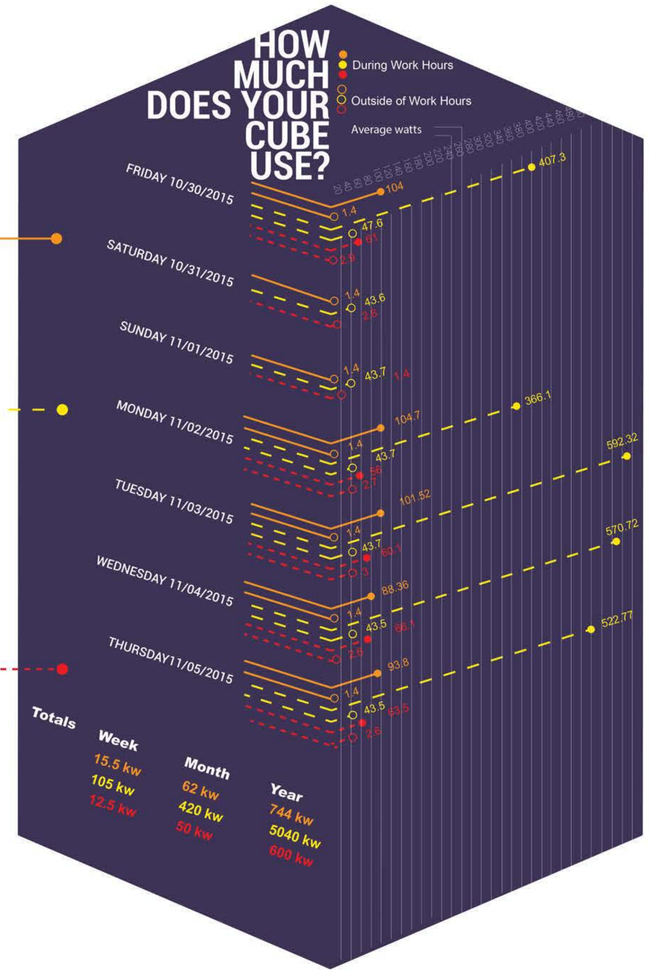
Zach Baugher | Janna Ferguson | Yukari Kubo | Ericka Colvin

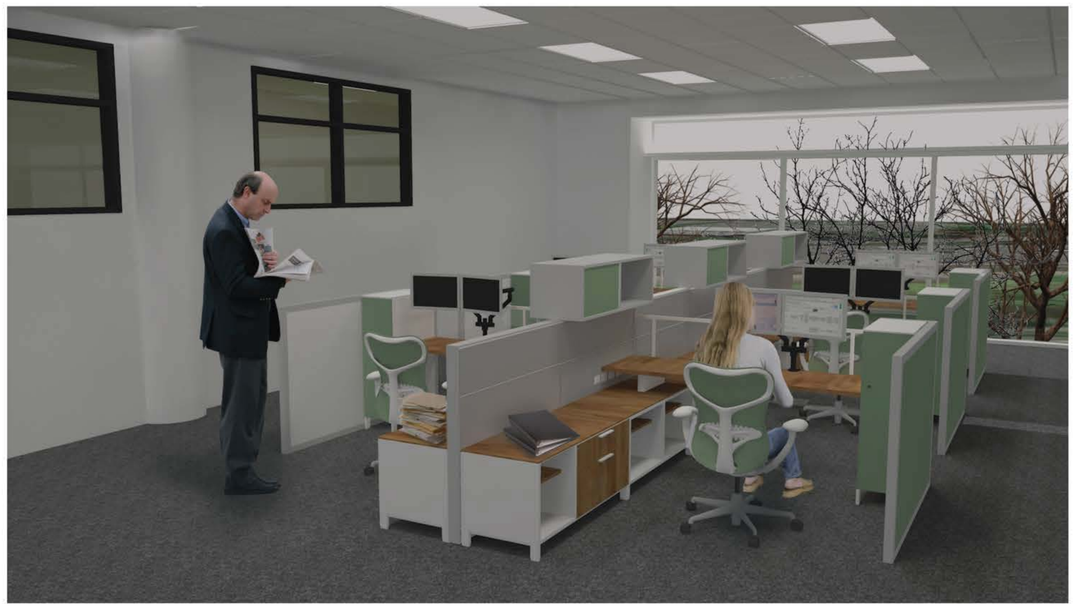
The Metro Building is located at 600 NE Grand Ave in Portland, OR. Occupied by Metro, a regional governmental organization, the building houses roughly 400 employees over a total of 120,000 square feet of office space. The objective of our research, in collaboration with YGH architecture and New Buildings Institute, is to provide Metro with a cumulative plan of action to address energy inefficiencies due to occupant behavior, equipment, and furniture arrangement. A user survey was sent to all the Metro employees to understand how they feel about their work environment and to begin to brainstorm ways their environment could be improved. The survey included 15 questions related to temperature, lighting, and personal behavior. Of Metro's 400 employess, 178 of them responded. The data was analyzed and several questions are represented in the two examples below.

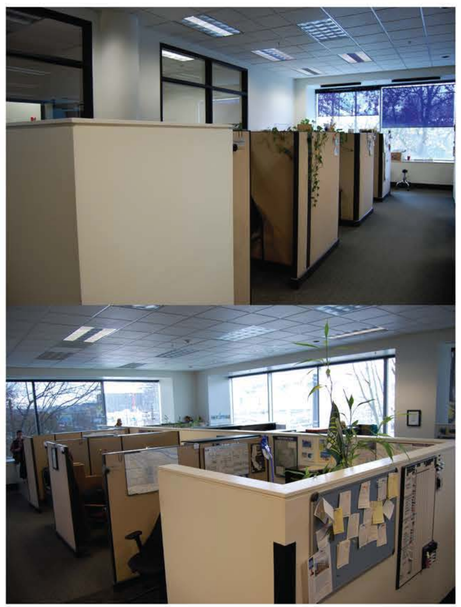
In order to raise awareness about how personal behavior can effect the overall energy use of the building, the plug loads of three cubicles were measured over a one week period. From this information, Metro staff can see how even small changes in behavior can make significant differences in the buildings energy use over longer periods of time.

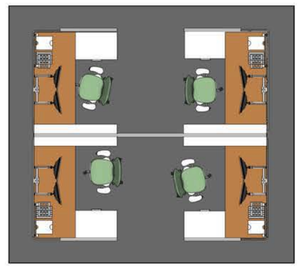


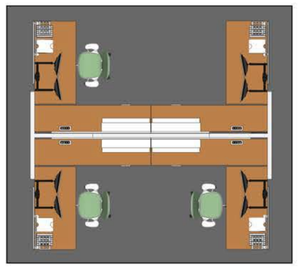


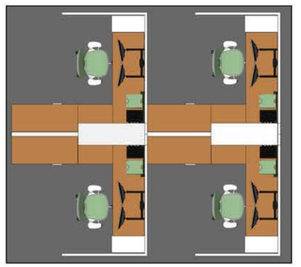












KEY FINDINGS

- Individual EUI's vary widely with no office policy regarding desk accessories/use.
- A mix of shading and diffusion will offer greater daylight penetration and thermal comfort, reducing lighting load and increasing productivity.
- Open cubicle arrangements will allow higher density in the sufficiently day-lit zone.
-Proposed cubes use 30% less space and would reduce artificial light load by 50%
- An EUI feedback mechanism should be integrated with new, smarter workstations.

Portland State UNIVERSITY YOST GRUBE HALL ARCHITECTURE Metro