Why Energy Policy Matters in Europe

Credits: MDG UN, 2012
Why Energy Policy Matters in Europe
Why Energy Policy Matters in Europe

Source: ASHRAE 90.1-2004 standards
Purpose & Methodology
• 141,000 ft², 7-story research building in Berkeley, California
• Users: mostly researchers, students and UC Berkeley staff
• **69 installed Passive InfraRed (PIR) sensors** in 67 private and 2 conf. rooms
• The state of each space was aggregated to a time series with a 5-min time step
• Data collection spans **18 months (June 2013-November 2014)**
• Data were filtered to remove US federal holidays
A total of 38,847 days of sensor-data: **4,150 sensor-days (10.6%)** were replaced by ASHRAE standard values.
Simple and Pragmatic Method

- **Occupancy diversity factor:** percentage of sensors (out of 69) that registered an occupied state at a particular time

- Data set **t-test statistic methods** (95% confidence interval) to determine if there were statistically significant differences between months, days, hours

Monthly and day type profiles are reported

![Graphs showing critical features examined and compared with ASHRAE standards]
Results & Discussion
Average workday occupancy diversity factor for each month
Diversity factors – Average & high-, medium-, and low-level months
Average occupancy diversity factor profile for weekdays
Comparing diversity factors (ASHRAE 90.1 2004 VS study)
Conclusion & Questions