EPA Energy Star Program and Energy Data Normalization

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Building Performance Benchmarking

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Why You Should Care

- Energy Star tools enable you to take Strategic Energy Management to a new level
- Energy performance ratings identify where to focus energy and cost reduction efforts
- Advanced energy data normalization is the accurate way to rate energy performance

Purpose: To Introduce

- A valuable tool available from EPA's Energy Star Program
- Energy data normalization
- Related work initiated to support the U.S. Army

Energy Star's Portfolio Manager Provides

- A national ranking of how your building performs compared to peers
- Energy use statisitics and tracking on your building and entire portfolio
- An electronic link to utility data tracking systems to automate ratings

Portfolio Manager Works By

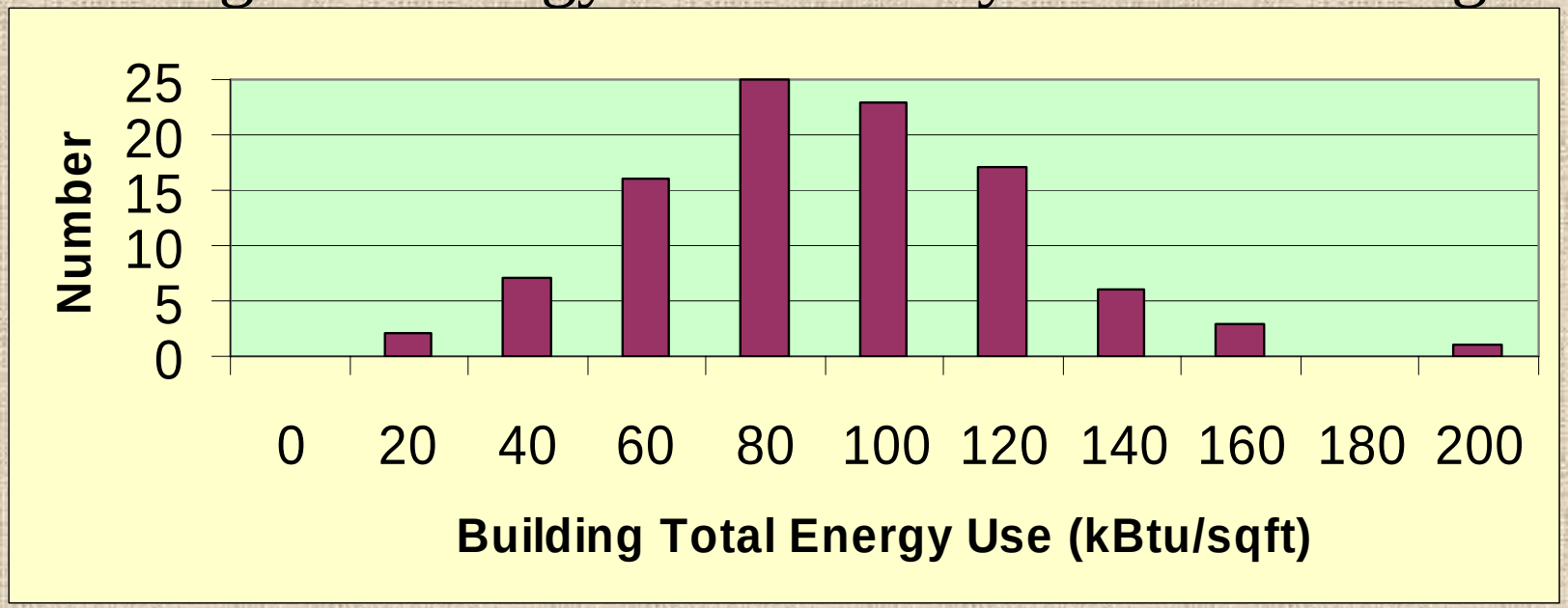
- 1) Using monthly energy use data and easy-to-obtain building operating characteristics (energy use drivers such as building size, operating hours, number of workers, etc.)
- 2) Providing an accurate performance rating after normalizing for the key operational drivers that control building energy use

Energy Data Normalization

- Why is it important
  - It is a critical part of establishing realistic performance targets and performing peer-to-peer comparisons

How is Energy Data Normalization Done

Histogram: Energy Use Intensity of 100 Buildings



Energy use is driven by size, people, hours, weather,…

Improving Army Strategic Energy Management

- Army-Wide Challenge
  - Which installations are ripe for improvement?
- Installation Challenge:
  - Which buildings are ripe for improvement?

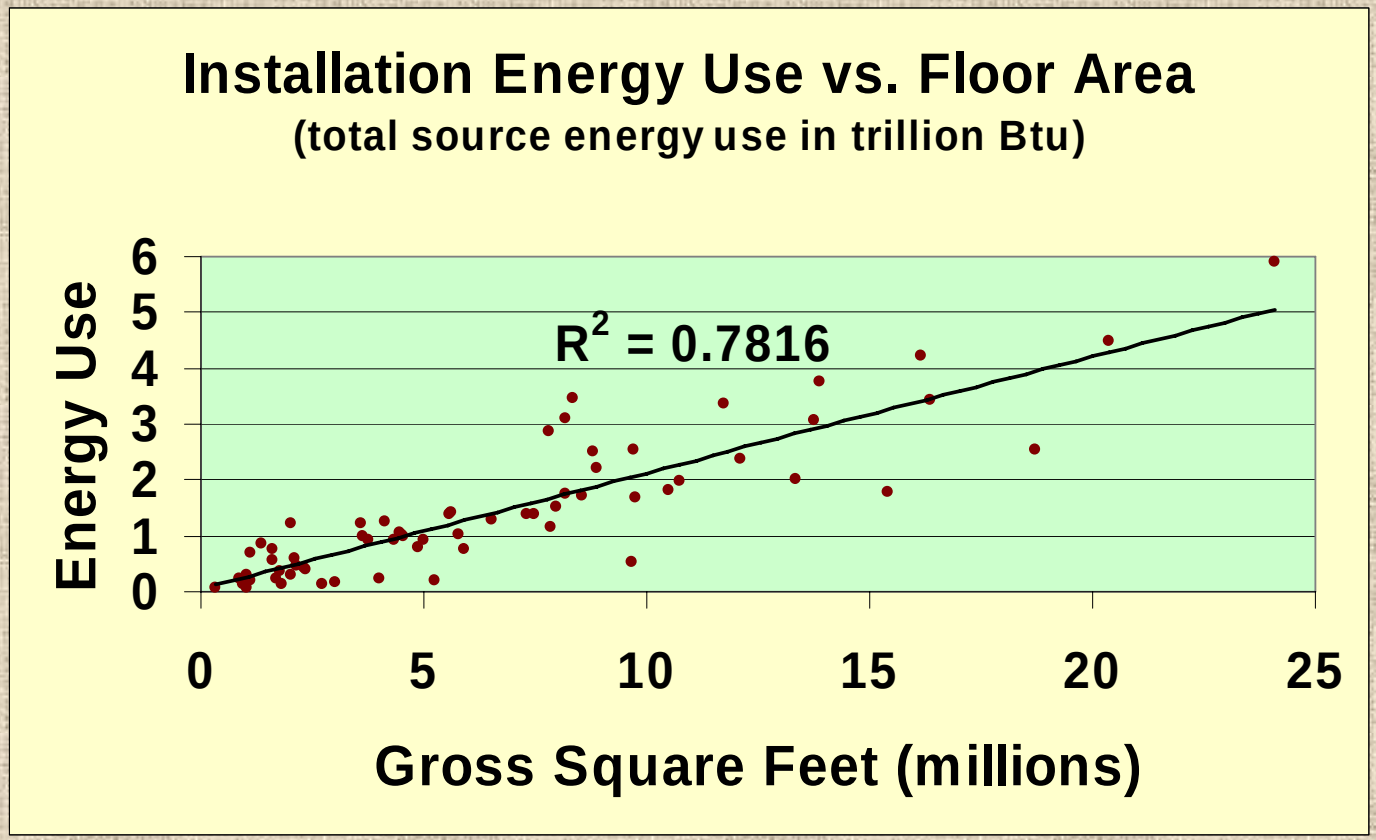
ORNL Efforts

- Develop tool to rate the energy performance of installations (usable by MACOMs, regions, and installations)
- Develop tool to rate the energy performance of buildings where meters exist (administrative office, barracks)

Installation-Level Rating Tool

- Development based on data set representing installations
  - From all MACOMs
  - With over 100,000 buildings
  - From all U.S. climate regions
  - With sizes from 0.3 to 24 mil sqft
  - With energy costs from $0.5 to $40 mil

Relation of Installation Energy Use to Size



Normalization Variables Being Examined

- Production facilities (aircraft, missile, tank, weapon, ammunition)
- Laboratories
- Commercial buildings (excludes office)
- Administrative office
- Family housing
- Hospitals

Summary

- For buildings, current Energy Star tools can:
  - Help you rate your existing buildings
  - Give realistic energy use targets for new buildings
- Prototype rating tools are coming for:
  - Installations (strong foundation for tool exists)
  - Army-specific *Administrative Office* and *Barracks* buildings
- Normalization for many energy use drivers is critical for accurate performance ratings