



# Green Building:

Megatrends 2014

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Green Building Initiative

# Take-Aways



- Multiple drivers
- Performance counts
- Headwinds for green





## Green Building Megatrends







## 10 Green Building Megatrends

- Commercial Sustainability
- NGO/Government Sustainability
- Existing Buildings: Energy is It!
- Using the Cloud to Manage
- Performance Disclosure
- Water as Green Building Issue
- Solar Power Use
- Local Mandates
- Zero-Net-Energy Buildings
- Property Goes Global



# Commercial Sector Sustainability





# Government/NGO Sustainability

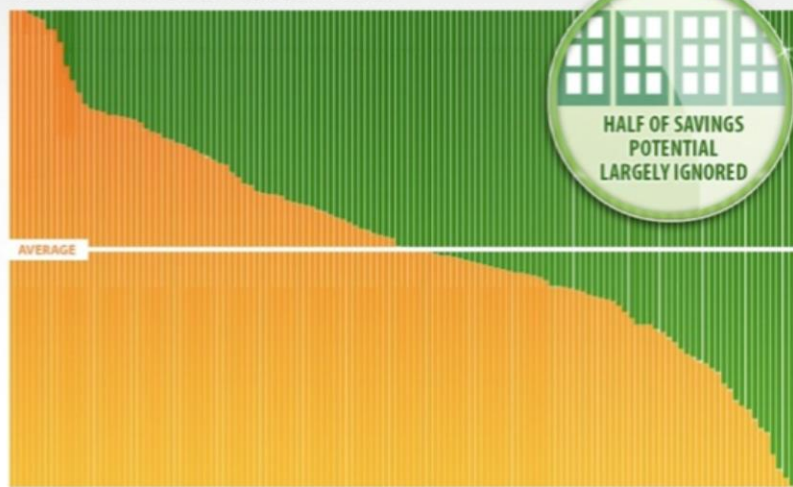




# Greening Existing Buildings: Energy

## LOW / NO-COST OPERATIONAL CHANGES COULD DOUBLE ENERGY EFFICIENCY IN COMMERCIAL BUILDINGS

RETROFIT VS. OPERATIONAL SAVINGS POTENTIAL SPLIT



↑ EACH BAR REPRESENTS A BUILDING

■ % OF RETROFIT SAVINGS

■ % OF OPERATIONAL SAVINGS

**FIRSTFUEL**  
BUILDING ENERGY ANALYTICS

FIRSTFUEL SAMPLE BUILDING PORTFOLIO ( 60M SQFT )

51 percent of all energy efficiency savings in commercial buildings are achievable through low / no-cost operational improvements. The portfolio above represents \$12M in operational savings potential, with a substantial return on investment.

### MOST COMMON OPERATIONAL SAVINGS

Can be implemented immediately by building operators once identified – often at little cost and fast payback periods.



#### HVAC SCHEDULING

60% of sampled buildings were ready for occupancy an hour or more before people arrive and after they leave.



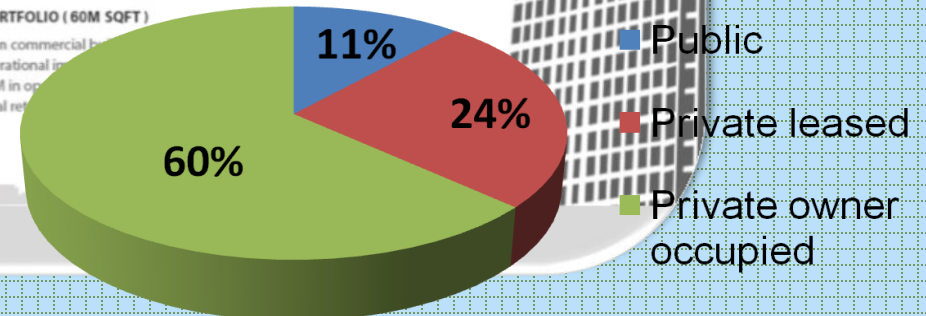
#### EQUIPMENT SEQUENCING

Over 60% of sampled buildings had equipment that was improperly sequenced, running less efficient equipment when not required.



#### SIMULTANEOUS HEATING & COOLING

Many buildings use heating systems during 70+ degree outside temperatures, with cooling systems working in 'overdrive' to compensate.



# Using Cloud to Manage Buildings

## Intersection:

- Real Estate
- IT/Cloud
- Energy
- Sustainability

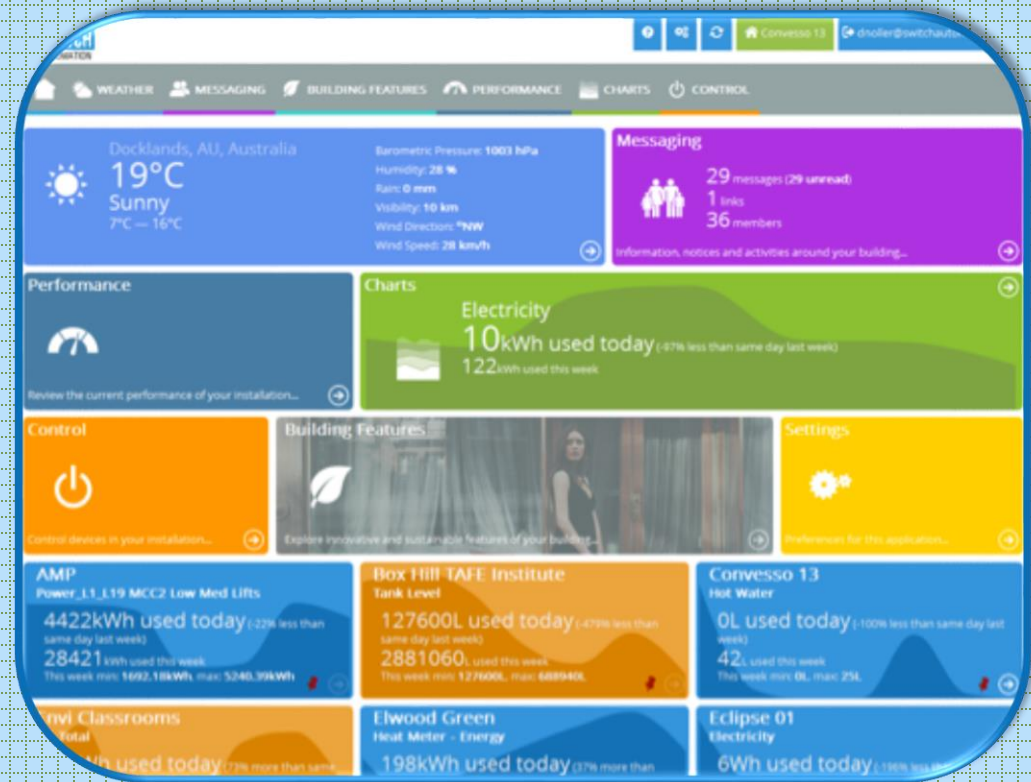




# Building Energy Management:

## Cloud-based • Real-time • Big Data Analytics

- Switch Smart Hub
  - real time monitoring and control via Cloud
- Monitoring and control
  - Non-proprietary
  - All over IP
  - All in real time
  - All via Web
  - All Cloud-hosted
- Fault detection
- Set-point changes
- Sustainability reporting
- Investment decisions



[www.switchautomation.com](http://www.switchautomation.com)



Carbon: Only Performance Counts!



The image shows the Bullitt Center, a modern commercial building in Seattle, Washington. The building features a prominent glass facade with a large, yellow-tinted glass elevator on the left side. The roof is covered with solar panels, and there is a green roof section. The building is surrounded by trees with yellow autumn foliage. A red banner with white text is overlaid on the right side of the image. The text reads: "Performance Disclosure: Getting Serious about Carbon".

# Performance Disclosure: Getting Serious about Carbon

Bullitt Center, Seattle, WA





# How Much Energy Should Buildings Use?

Solon Corporate HQ, Berlin  
Zero-Net-Energy Building

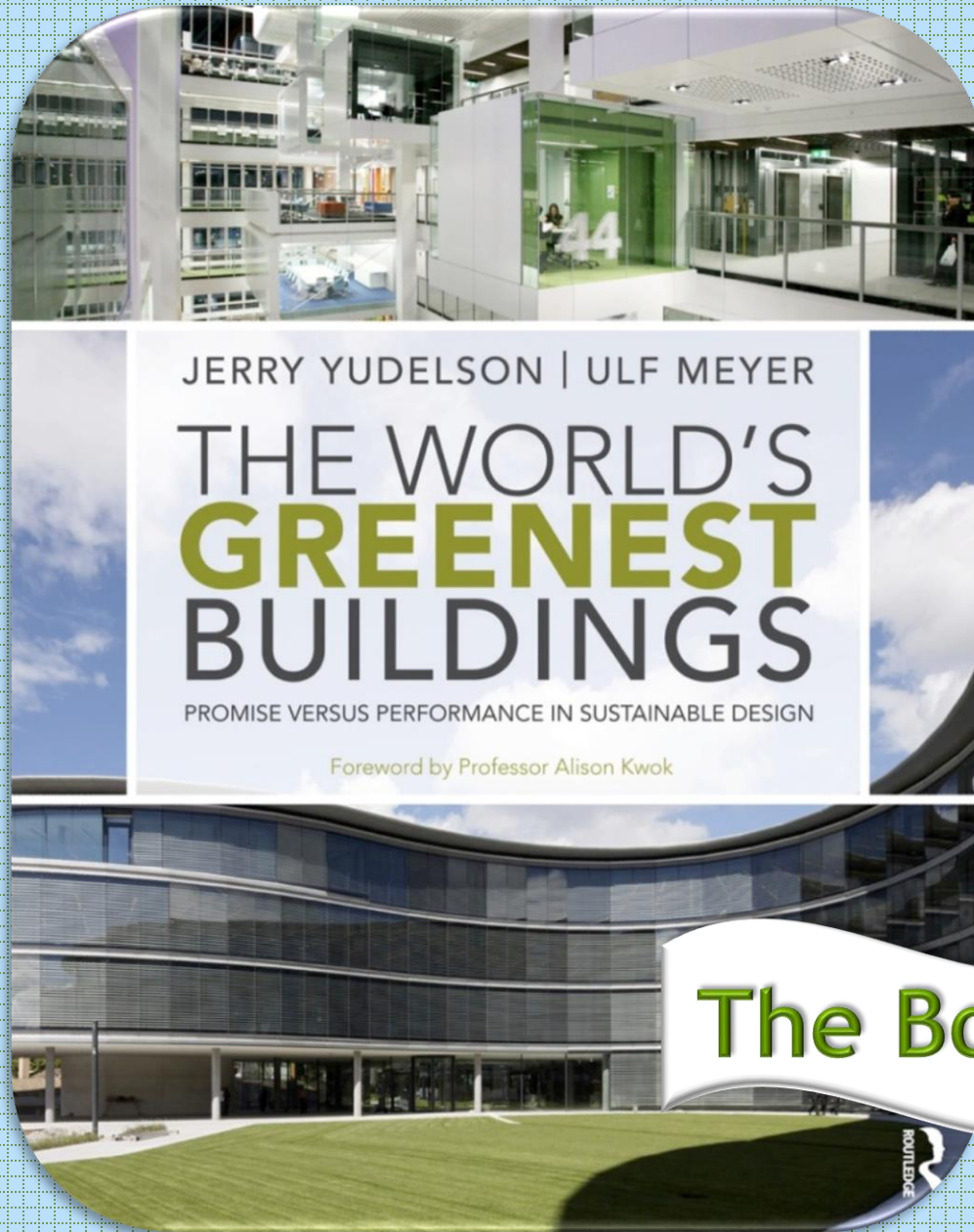


# World's Greenest Buildings: Research



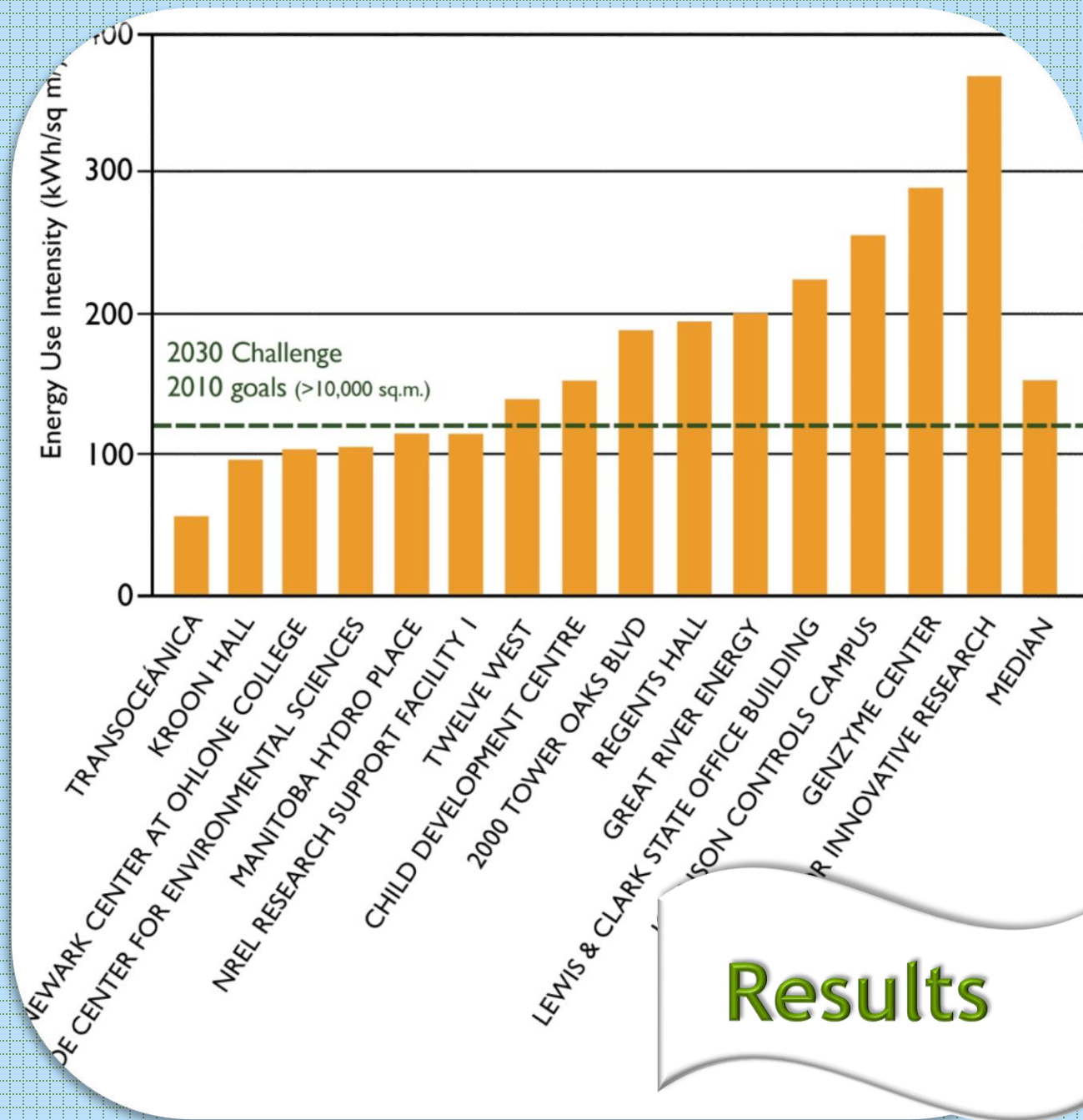
One Bligh— Sydney, Australia

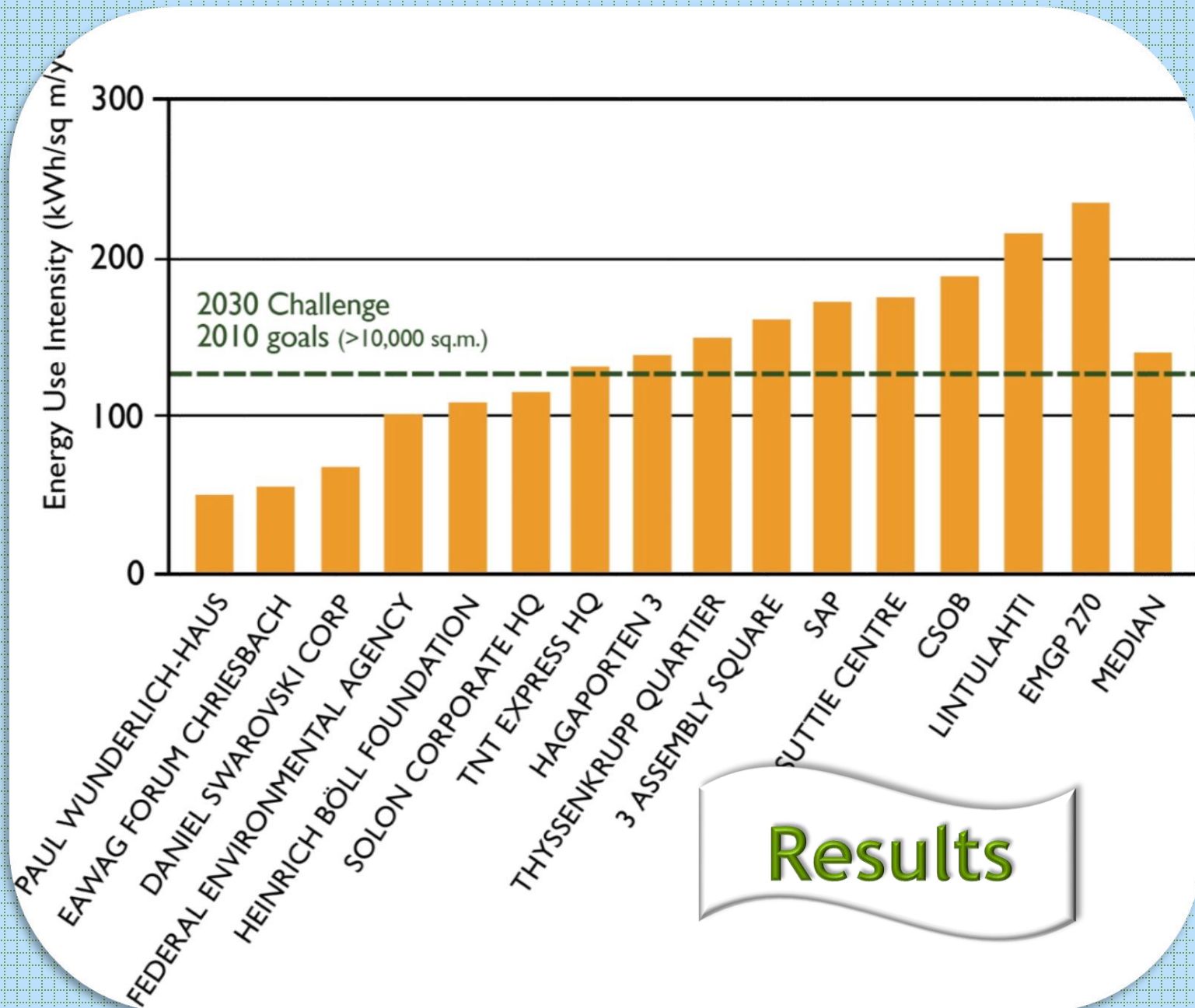




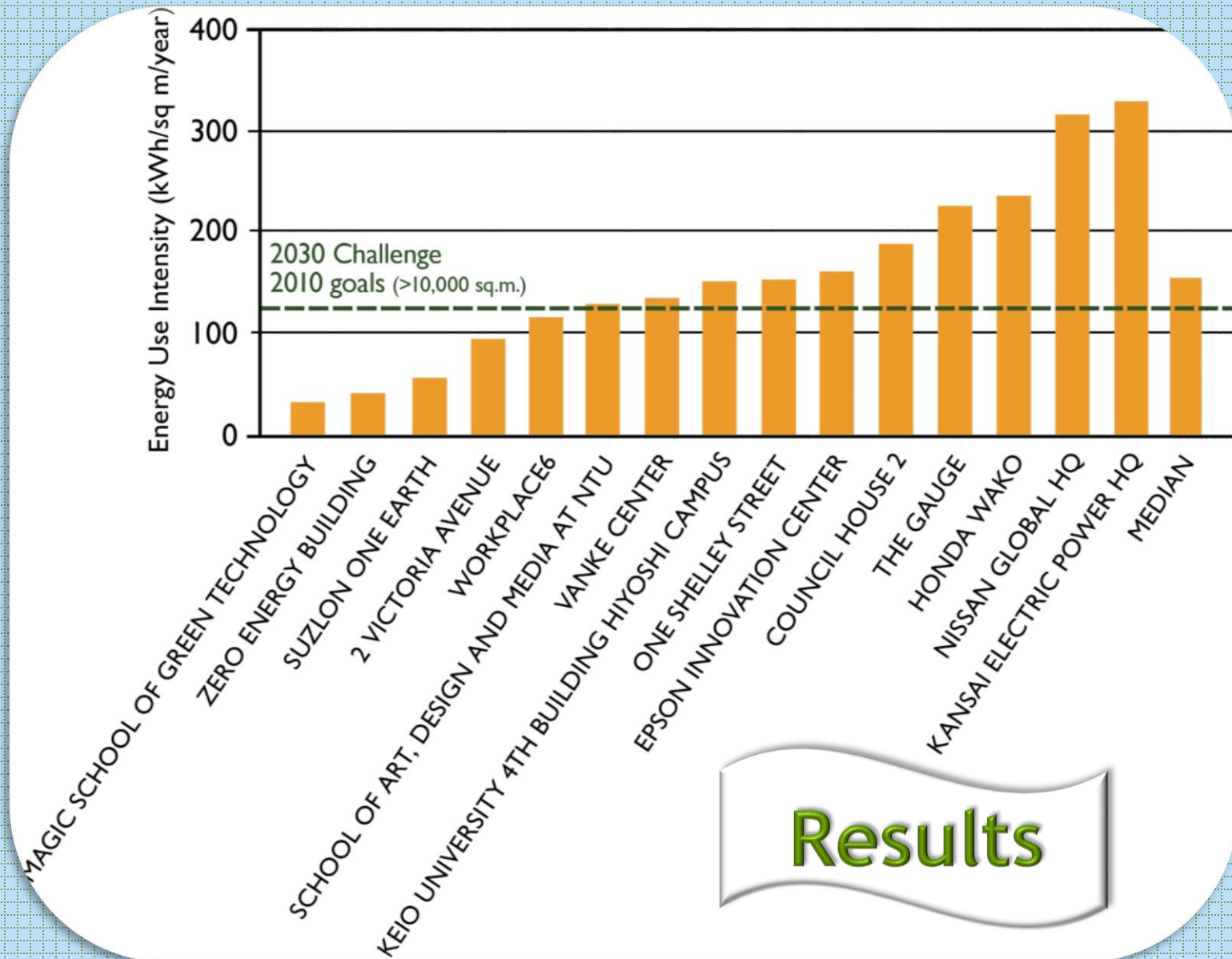
**The Book**







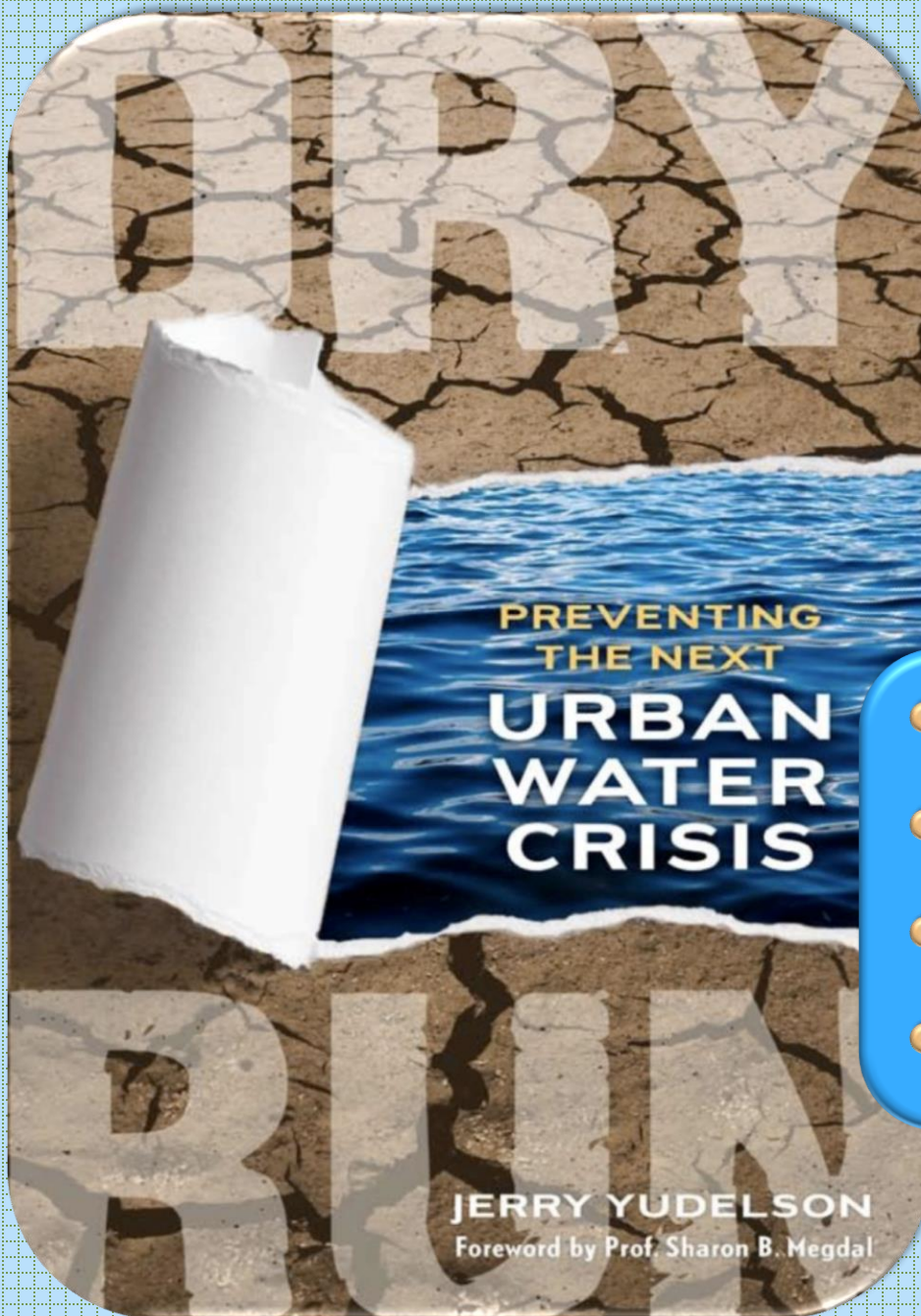




Next  
Big (Green) Thing:

**WATER**

- Water/Energy Nexus
- New Products
- New Technologies
- Global Lessons



JERRY YUDELSON  
Foreword by Prof. Sharon B. Megdal



A photograph of a brick building with a large, dark, curved sign that reads "CITY HALL" in white, three-dimensional letters. The sign is mounted on a red brick wall. A white, wavy banner is overlaid on the image, containing the text "Local Mandates:". Below the banner, the text "Mandatory disclosure", "Water-conservation", and "New construction rule book" is written in a gold, serif font.

# Local Mandates:

Mandatory disclosure  
Water-conservation  
New construction rule book

# Zero-Net-Energy Buildings



NREL Research Support Facility I  
Golden, CO



# Solar Energy for Buildings





# Property Goes Global!

Epson Research, Japan



# What's Down the Road?



# Headwinds for Green Building





# Challenges Ahead

- Growth rate for green building certification has slowed dramatically in the US
  - Business case for green building still weak in most markets
- Focus has shifted to managing sustainability KPIs:
  - Energy/water/waste/purchasing?
  - Scope 1, 2, 3 carbon emissions
- New software tools must provide:
  - Lower costs
  - Real time data
  - Actionable analytics/reporting

# A Greener Future



- Multiple drivers
- Performance counts
- Headwinds for green





The race is on and. . . .



...the winners will be Green!





**THANK YOU!**



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