

Existing Buildings

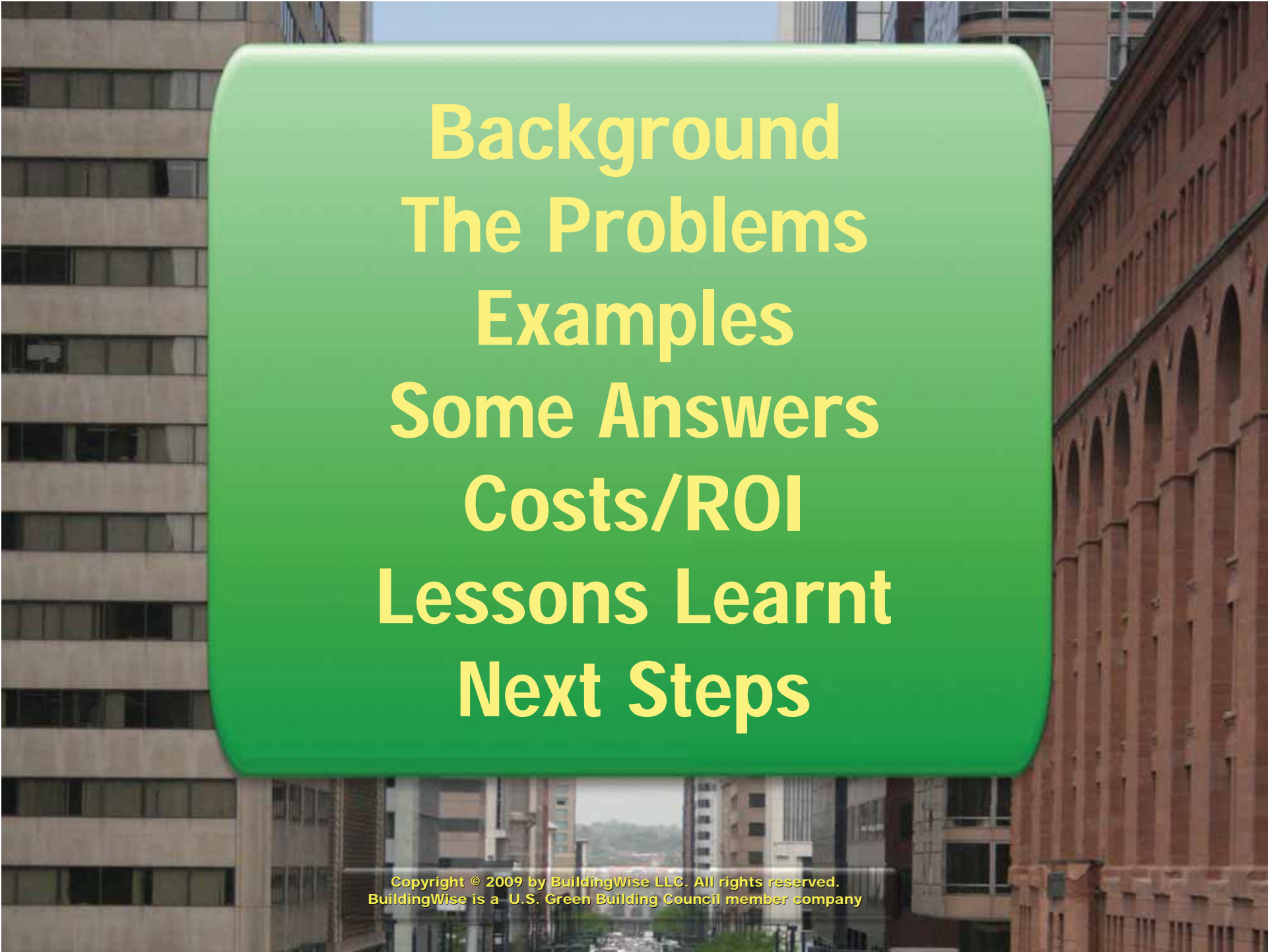
A Roadmap to Environmental and Economic Prosperity

Barry Giles, CEO, BuildingWise, LLC
March 2, 2010



GREENPRINTS
Sustainable Communities *by Design*

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Background
The Problems
Examples
Some Answers
Costs/ROI
Lessons Learnt
Next Steps

5 million Existing Commercial Buildings in the USA

Consuming \$100B of energy per year

The Problems

IMPACTS OF U.S. BUILDINGS ON RESOURCES

40% primary energy use*

72% electricity consumption*

39% CO₂ emissions*

13.6% potable water consumption**

Global CO₂ Emissions by Sector

#1. Buildings

#2. Transportation

#3. Industry

The Problems

Source: Energy Information Administration (2006), Emissions of Greenhouse Gases in the United States.

Global CO₂ Emissions by Sector

#1. Buildings

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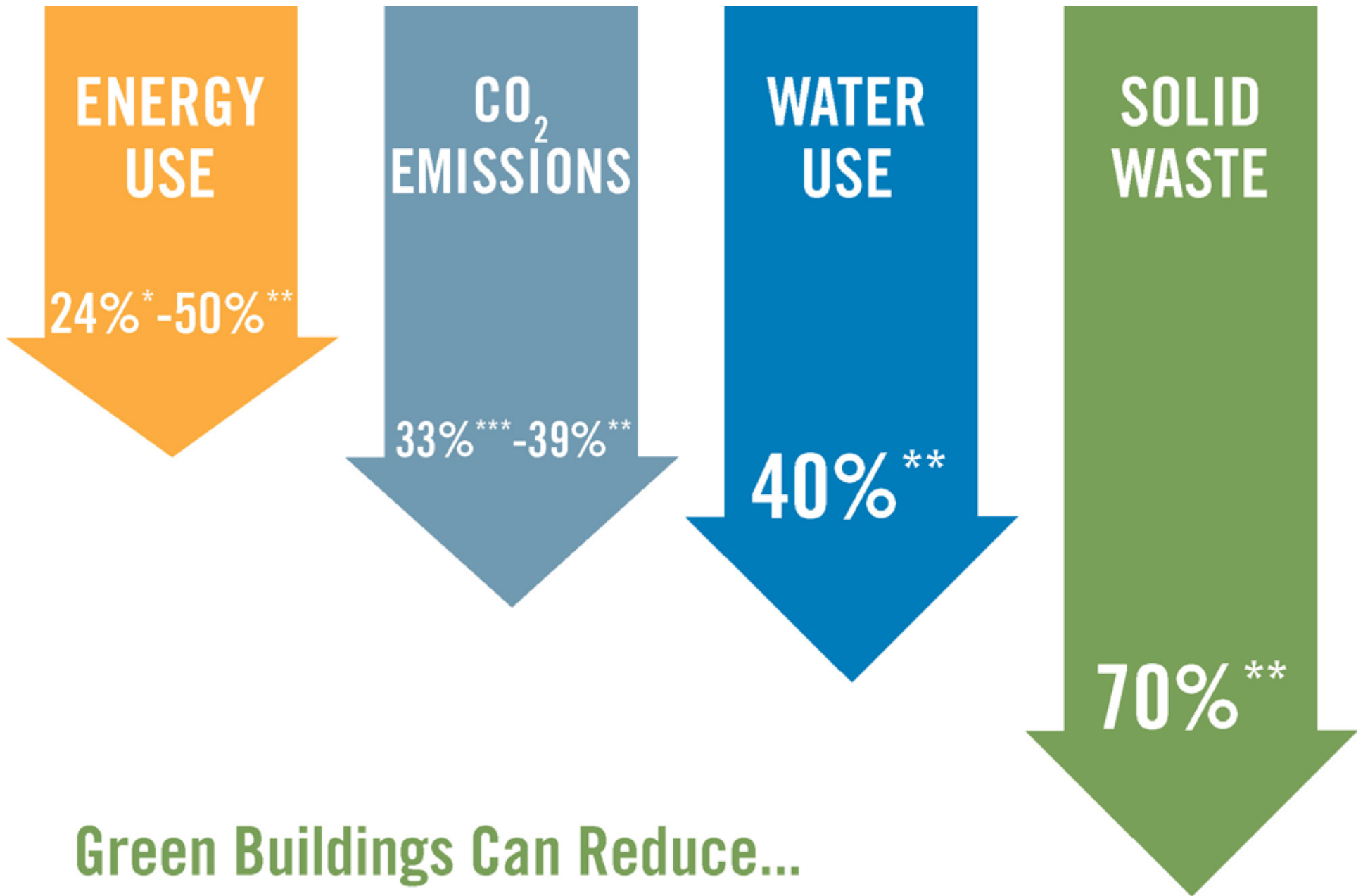
Note: Buildings DON'T produce CO₂ per se

The Problems

Source: Energy Information Administration (2006), Emissions of Greenhouse Gases in the United States.

So what are the targets?

(As per the USGBC)



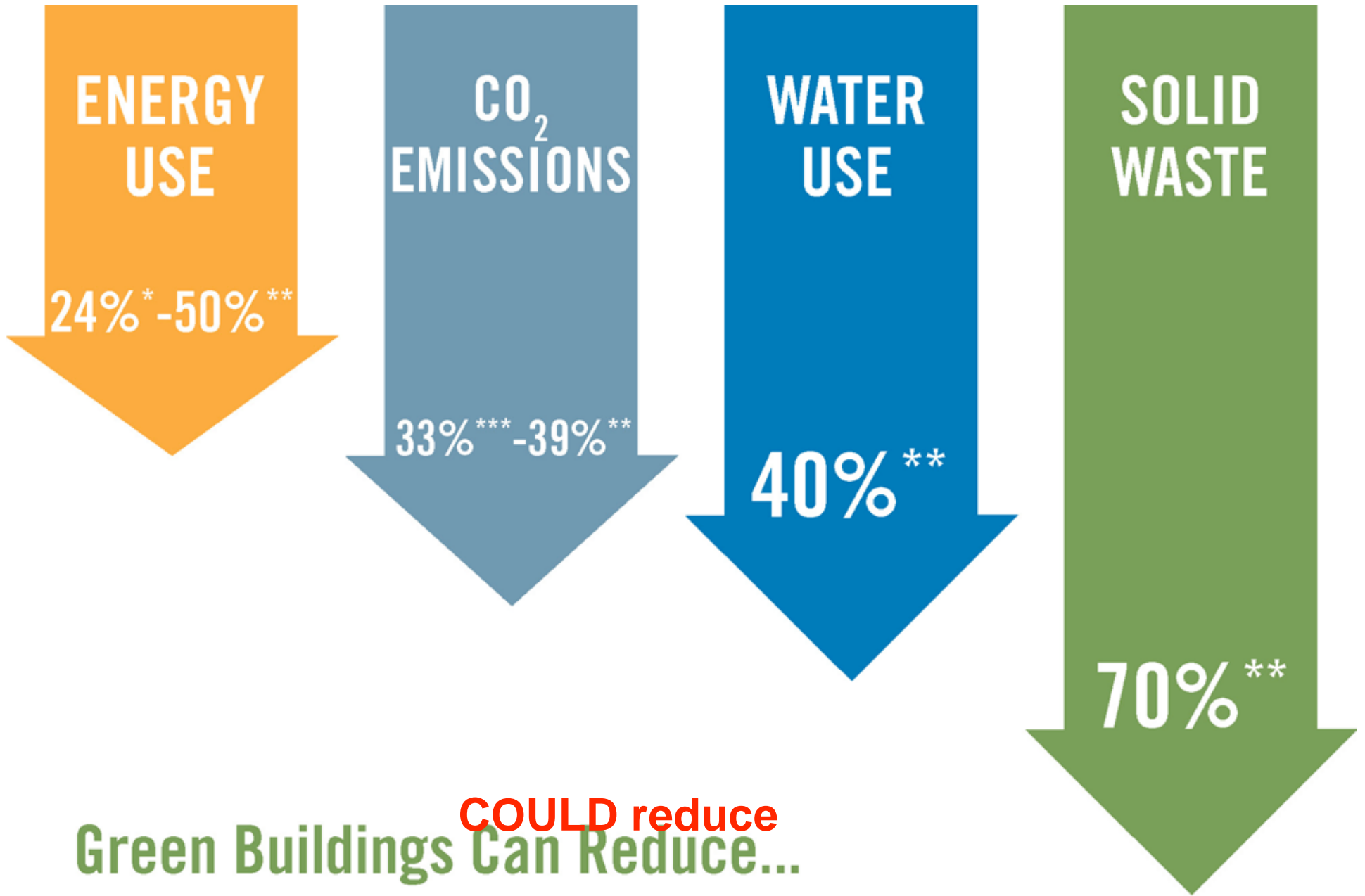
Green Buildings Can Reduce...

The Problems

* Turner, C. & Frankel, M. (2008). Energy performance of LEED for New Construction buildings: Final report.

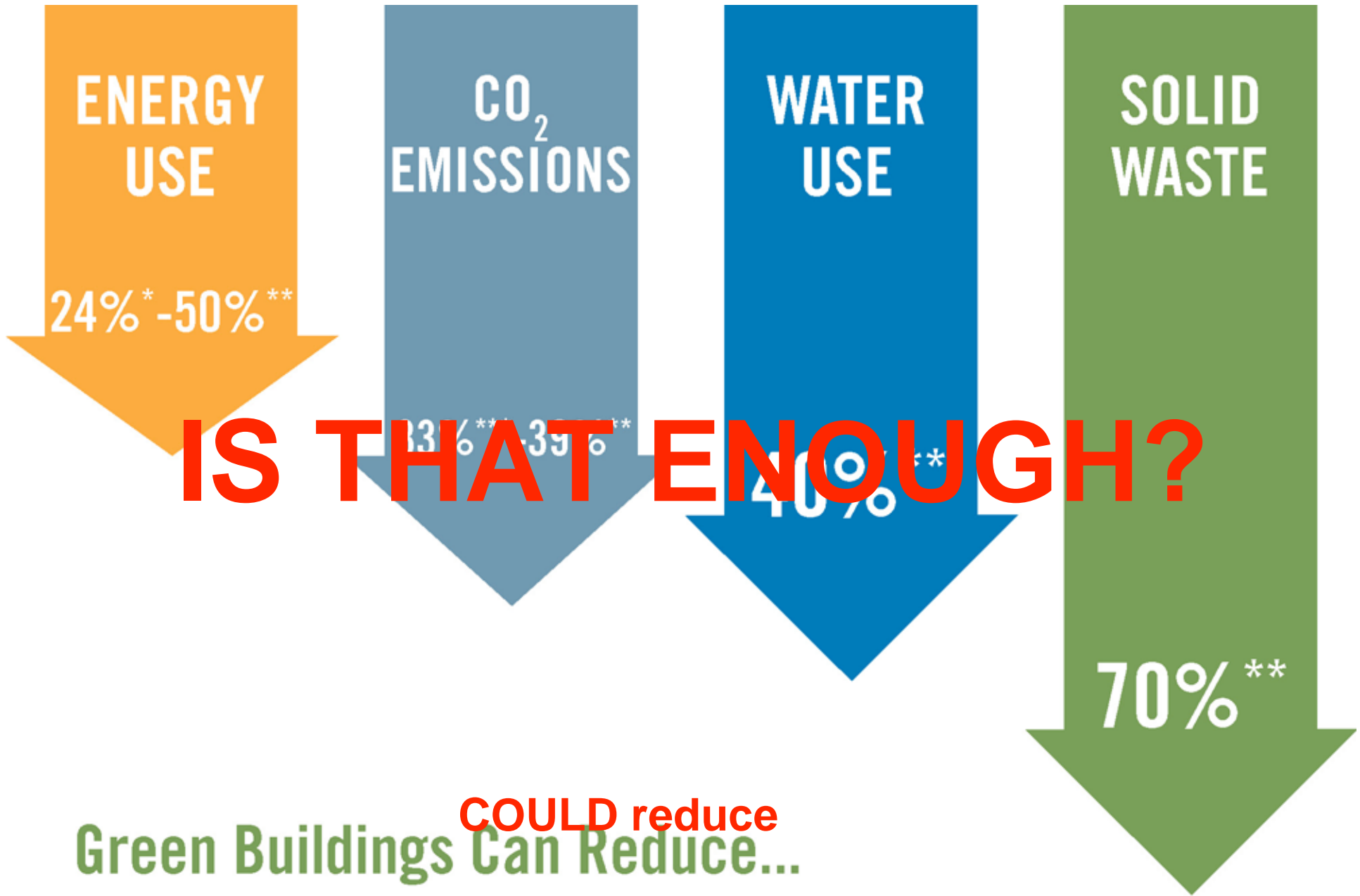
** Kats, G. (2003). The Costs and Financial Benefits of Green Building: A Report to California's Sustainable Building Task Force.

*** GSA Public Buildings Service (2008). Assessing green building performance: A post occupancy evaluation of 12 GSA buildings.



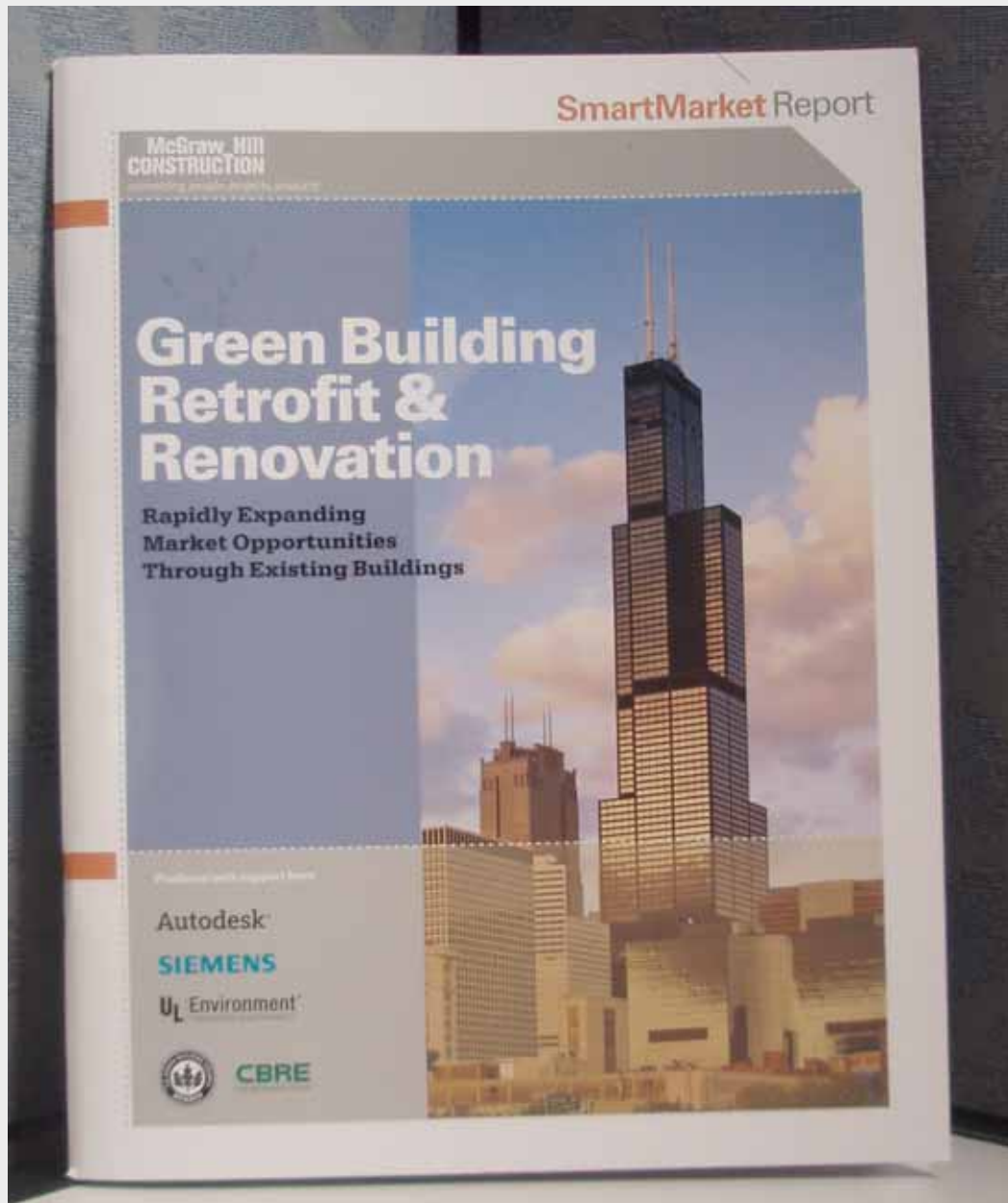
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Examples

Pages 14-18

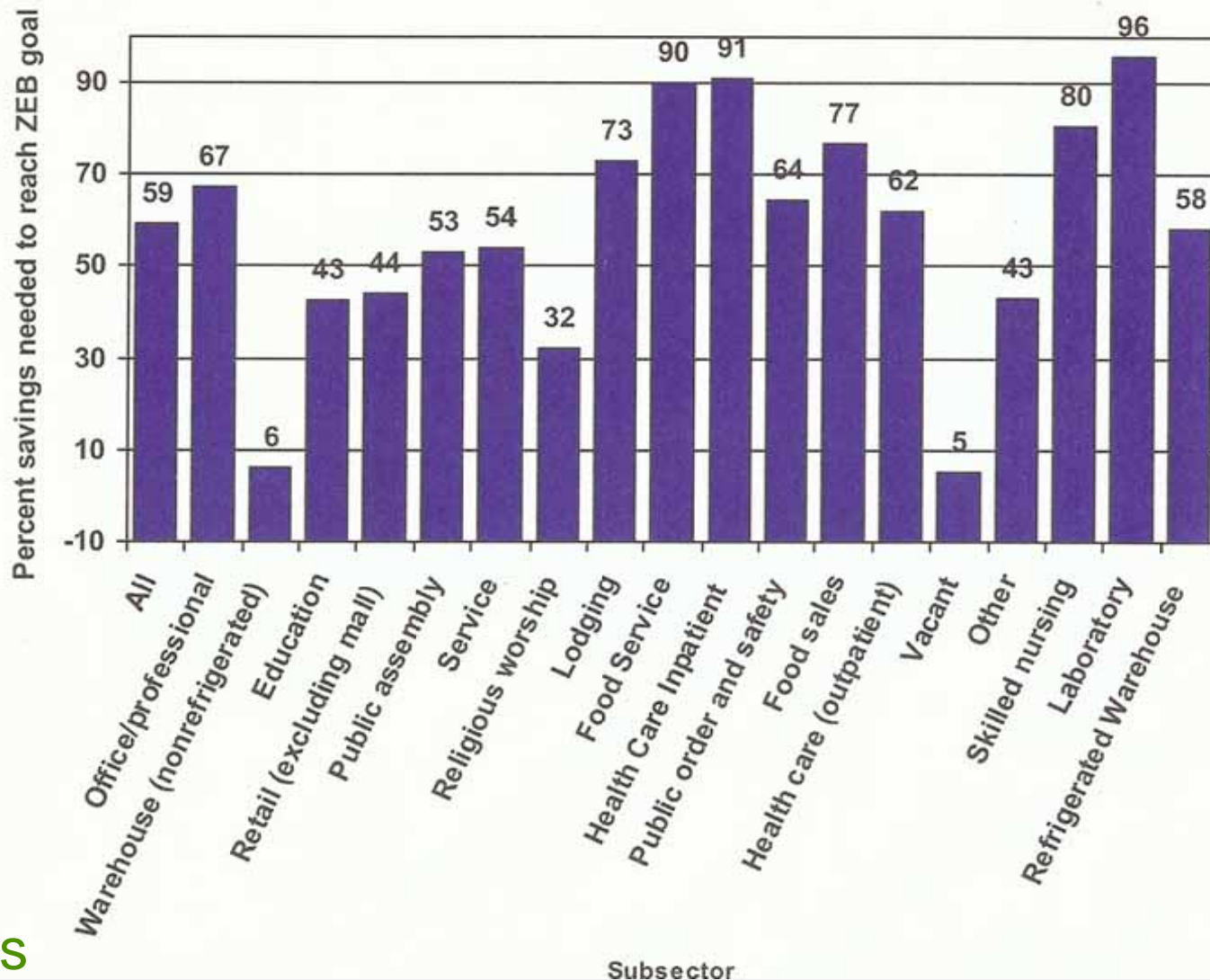
- Expectation that Energy Cost Savings..in 10 years
- Expected Decrease in Operations Costs
- Expected Increase in Building Values
- Expected Increase in ROI
- Expected time to Lease

EXPECTED?

We **MUST** have real data

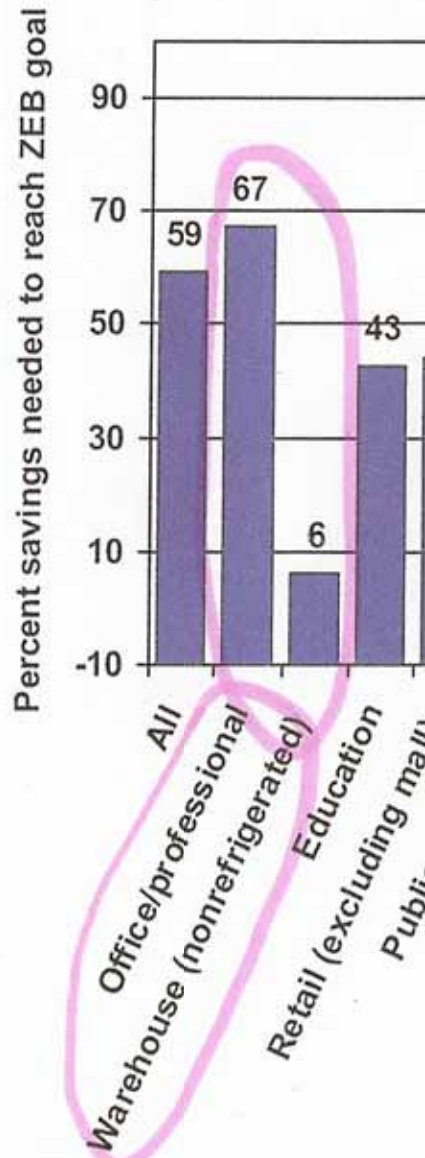
Examples

Need 60% to 70% decrease in energy consumption of commercial buildings



Examples

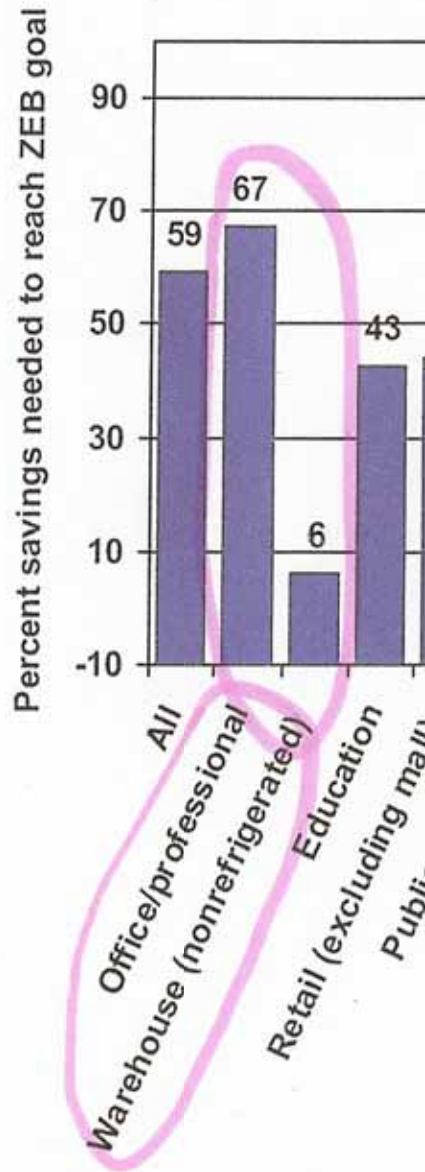
How are we going to achieve Net Energy Zero?



Examples

How are we going to achieve Net Energy Zero?

With Great difficulty!
1 way = generate our electric



Examples



A PATH TO SUSTAINABLE ENERGY BY 2030

Wind, water and solar technologies can provide 100 percent of the world's energy, eliminating all fossil fuels.
HERE'S HOW



By Mark Z. Jacobson and Mark A. Delucchi

In December leaders from around the world will meet in Copenhagen to try to agree on cutting back greenhouse gas emissions for decades to come. The most effective step to implement that goal would be a massive shift away from fossil fuels to clean, renewable energy sources. If leaders can have confidence that such a transformation is possible, they might commit to an historic agreement. We think they can.

A year ago former vice president Al Gore threw down a gauntlet: to repower America with 100 percent carbon-free electricity within 10 years. As the two of us started to evaluate the feasibility of such a change, we took on an even larger challenge: to determine how 100 percent of the world's energy, for all purposes, could be supplied by wind, water and solar resources, by as early as 2030. Our plan is presented here.

Scientists have been building to this moment

for at least a decade, analyzing various pieces of the challenge. Most recently, a 2009 Stanford University study ranked energy systems according to their impacts on global warming, pollution, water supply, land use, wildlife and other concerns. The very best options were wind, solar, geothermal, tidal and hydroelectric power—all of which are driven by wind, water or sunlight (referred to as WWS). Nuclear power, coal with carbon capture, and ethanol were all poorer options, as were oil and natural gas. The study also found that battery-electric vehicles and hydrogen fuel-cell vehicles recharged by WWS options would largely eliminate pollution from the transportation sector.

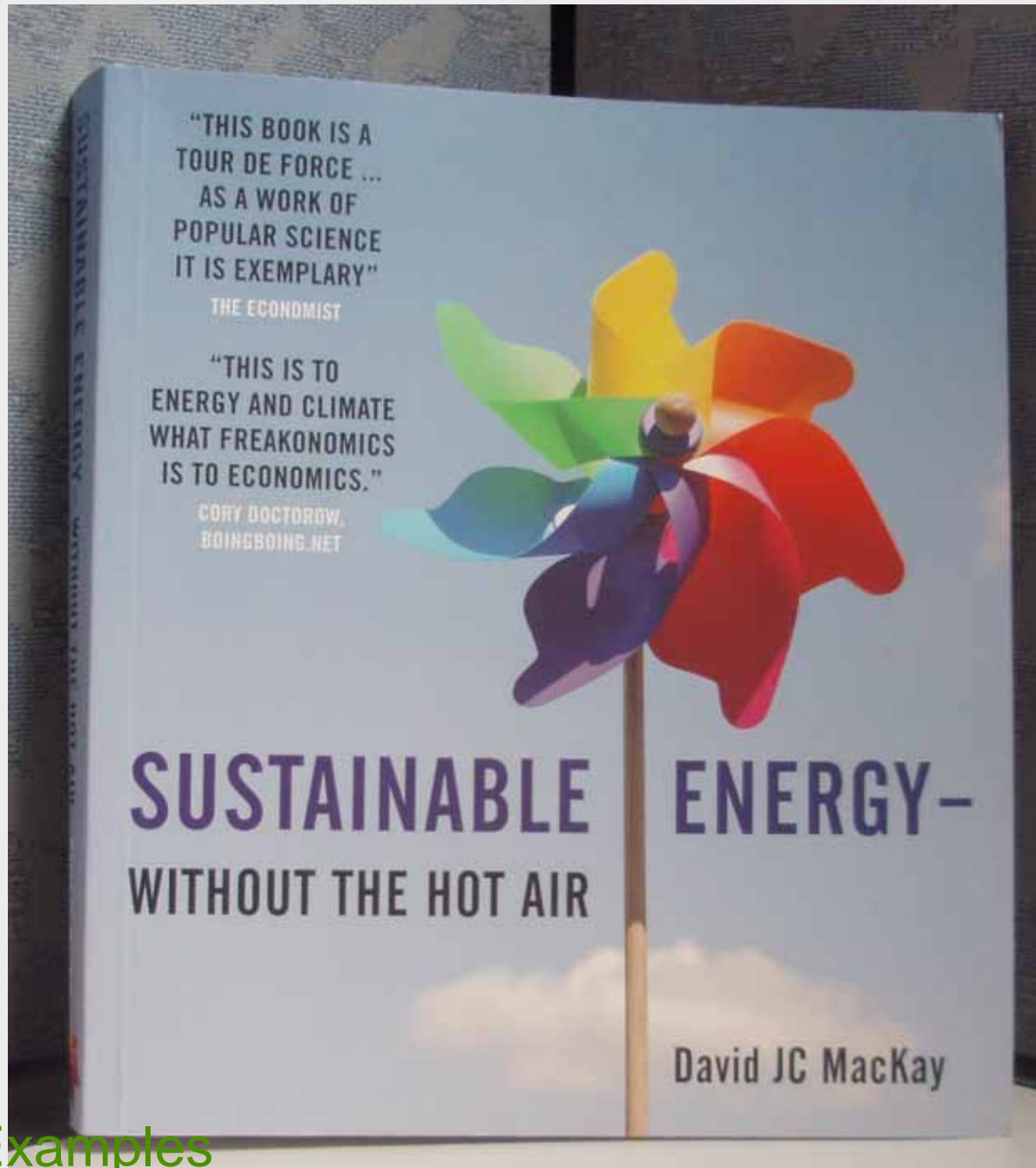
Our plan calls for millions of wind turbines, water machines and solar installations. The numbers are large, but the scale is not an insurmountable hurdle; society has achieved massive

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Not Going to Happen!

WHY NOT?

Examples



Read It

Examples

“every little bit helps”

Examples

“every little bit helps”

If everyone does a little bit, we'll
achieve only a little bit

We **MUST** be radical!

Examples



Some Answers

PYRAMID

Work Started
December
1969

First Steel
Placed
November
1970

First Occupied
Summer 1972



Some Answers



[Click to enlarge](#)

Some Answers

48 Floors

Largest Floor: 5th,
21,025 sq feet

Smallest floor: 48th
2,025 sq feet

Total space: 530,000
sq feet

Total height: 853 feet,
including the 212-foot
spire



PROCESS

Where did we start?

Some Answers



Some Answers

PROCESS

Where did we start?

BASELINE



Some Answers

PROCESS

Where did we start?

BASELINE

The creation of a set of starting points from which to measure progress



Baseline Results

- Building-very well run
- Tenants took alternative Transport
- Large water saving-inside and out

Good Energy Star

77

Some Answers



Facts and Updates

- Co-Gen at the Pyramid
- Emissions reduction reporting
- Great Tenant Involvement

Great Interest

Purchasing

Recycling

Education

Some Answers



PYRAMID RESULTS

Download
63 points

Achieved
59 points

Some Answers



COSTS AND ROI

Cost & ROI



COSTS AND ROI

\$100K saving in trash

Cost & ROI



COSTS AND ROI

\$100K saving in trash

that's 70% recycled

Cost & ROI



COSTS AND ROI

\$100K saving in trash

**about \$600K saving in
energy costs**

Cost & ROI



COSTS AND ROI

\$100K saving in trash

**about \$600K saving in
energy costs**

**that's generating 70% energy
on site (co-gen)**

Cost & ROI



COSTS AND ROI

\$100K saving in trash

**about \$600K saving in
energy costs**

Increased Energy Efficiency

Cost & ROI



COSTS AND ROI

\$100K saving in trash

**about \$600K saving in
energy costs**

Increased Energy Efficiency

**Increased Tenant
Involvement**

Cost & ROI



COSTS AND ROI

\$100K saving in trash

**about \$600K saving in
energy costs**

Increased Energy Efficiency

**Increased Tenant
Involvement**

**Increased Marketing
Potential**

Cost & ROI



Adobe San Jose



Adobe Headquarters at Twilight





Adobe San Jose



Adobe Headquarters at Twilight

Three buildings, 1 million sq. ft.,
completed 1996, 1998, 2003

Summary of Sustainable Operations:

- 85 projects over seven years
- Cost: \$2.1 million; rebates: \$474k; annual savings: \$1.5 million
- 1.1 year payback; 91% ROI
- Electricity reduced 39%
- Natural gas reduced 38%
- Domestic water reduced 47%
- Irrigation reduced 80%
- 98% of solid waste diverted through composting & recycling
- CO² reduced 19%; with REC's, 100%.



Adobe Dollar Results

Description	#Projects	Costs	Rebate	Savings	ROI
Load Management	26	\$445,248	\$205,437	\$729,185	304%
Lighting	19	\$300,701	\$44,918	\$155,616	61%
Equipment	6	\$298,439	\$122,575	\$107,976	61%
Monitor and Controls	1	\$39,472	\$11,000	\$12,001	42%
Water Management	3	\$145,732	\$5,496	\$31,287	22%
Waste Stream	1	\$0	\$0	\$137,380	Immediate
Office Supplies	1	\$0	\$0	\$8,700	Immediate
Sustainable Janitorial	1	\$0	\$0	\$0	n/a
Indoor Air Quality	1	\$0	\$0	\$0	n/a
Alternative Transport	1	\$0	\$0	\$0	n/a
Compostable Paper	1	\$0	\$0	\$0	n/a
Purchase Alternative Energy	1	\$16,000	\$0	\$0	n/a
LEED Consultant	1	\$105,000	\$0	\$0	n/a
Register/Certification	1	\$12,000	\$0	\$0	n/a
TOTAL	64	\$1,362,592	\$389,326	\$1,182,145	121%

Cost & ROI

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On 'energy features'

42% to 304% ROI

Yet still only reducing gross Energy 40%

Cost & ROI



Going Forward

- Adobe San Jose and Adobe San Francisco Buildings Re-certified LEED-EB, Platinum
- Adobe Boston Certified LEED-CS Gold; Adobe Boston Being Certified LEED-CI Platinum.
- Adobe Seattle being certified LEED-EB, Gold or Platinum
- Adobe Noida (India) being certified LEED-EB
- Sustainable Best Practices being extended to Adobe Offices worldwide
- New Projects Completed or Being Considered 2009-10:
 - Implemented Filtered Water Dispensers
 - Converted all printers to Dual-sided Copying
 - Installed Thermal Window Film on South & West Facing Windows
 - Replaced 740 Halogen Lamps With LED
 - Installed 20 Wind Turbines on 6th Floor Patio, San Jose Site
 - Installing Natural Gas-Fired Fuel Cells April 2010
 - Converting 2,050 Fluorescent T8 Lamps in Garage to LED
 - Testing Dual-flush, Automated Toilets
 - Analyzing Solar Tracking Skylights for San Francisco Offices





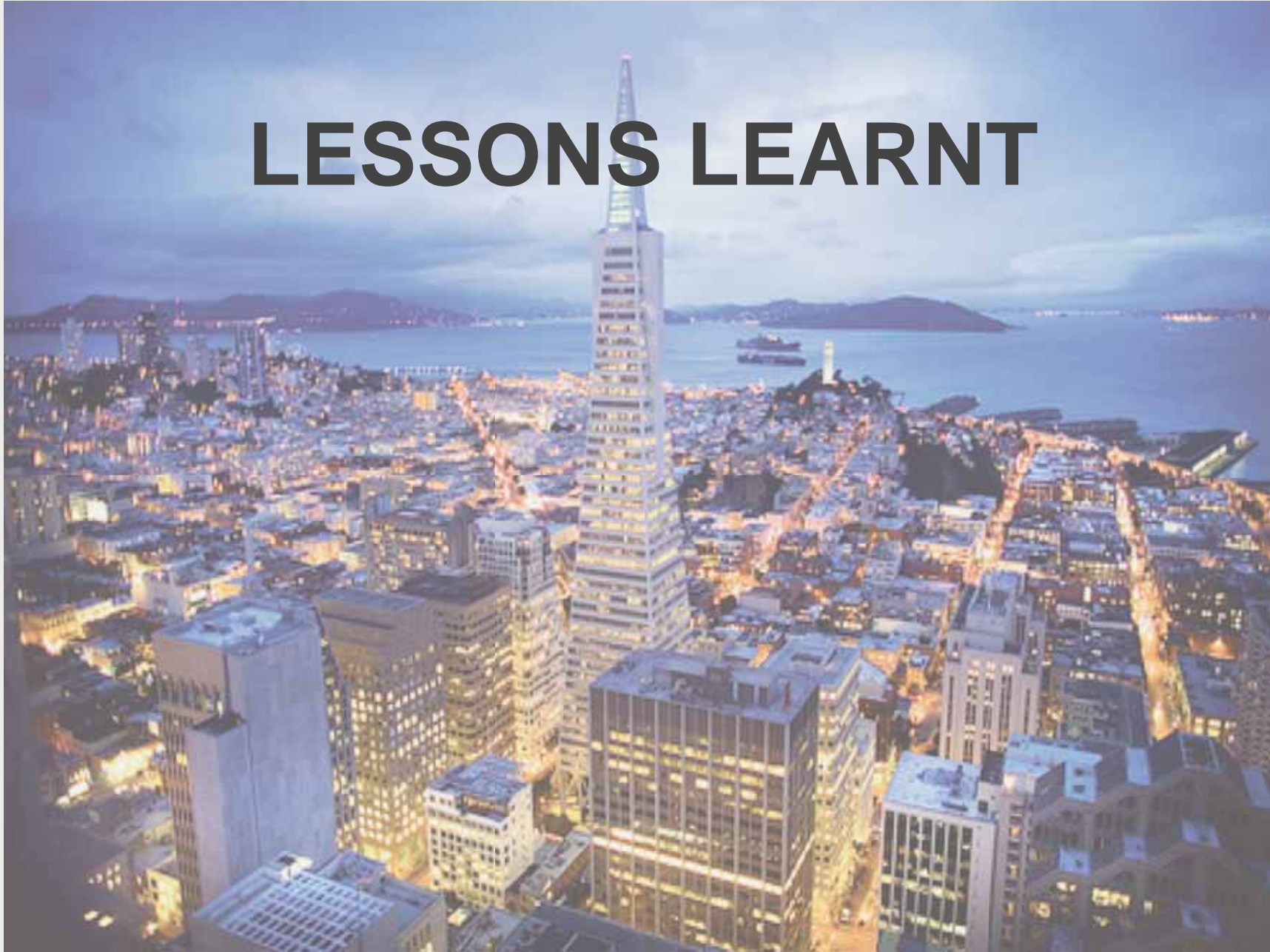
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Will All This
Reach 67%
Reduction?



LESSONS LEARNT



LESSONS LEARNT

Create the Starting point.....



An aerial photograph of San Francisco at dusk. The Transamerica Pyramid is the central focus, illuminated with blue lights. The city's lights are visible, and the bay is in the background under a twilight sky.

LESSONS LEARNT

Create the Starting point.....

Involve the tenants.....

An aerial photograph of San Francisco at dusk. The Transamerica Pyramid is the central focus, illuminated with blue lights. The city's lights are visible, and the bay is in the background under a twilight sky.

LESSONS LEARNT

Create the Starting point.....

Involve the tenants.....

Work with your vendors..



LESSONS LEARNT

Create the Starting point.....

Involve the tenants.....

Work with your vendors..

Make use of all the EXISTING
'things'



NEXT STEPS



NEXT STEPS

Check back in...



NEXT STEPS

Check back in...

Increase the Energy
Efficiency



NEXT STEPS

Check back in...

Increase the Energy
Efficiency

Keep the tenants
involved



NEXT STEPS

Check back in...

Increase the Energy
Efficiency

Keep the tenants
involved

Re-certify...

The Plaque

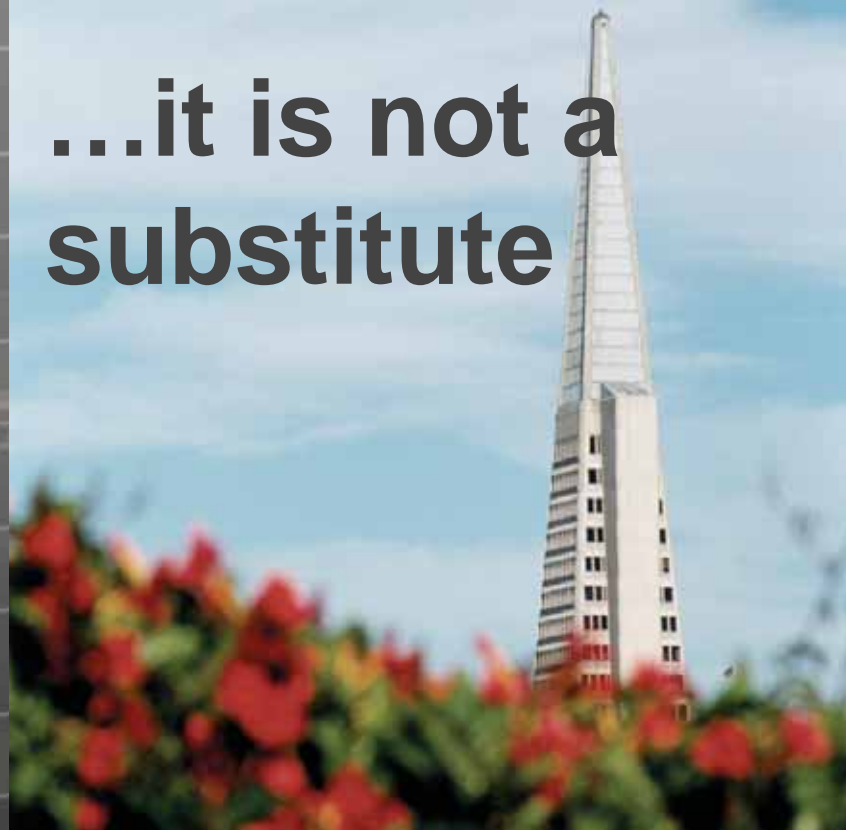


The Plaque is a validation....



**The Plaque is a
validation....**

**...it is not a
substitute**





LEED Gold Certified
BE WISE

**Blow your Own GREEN
Trumpet!**



LEED Gold Certified
BE WISE



THANK YOU

Barry@buildingwise.net

