Green Performance Contracting (PC)

Leverage your Facilities

in your organization's journey toward sustainability

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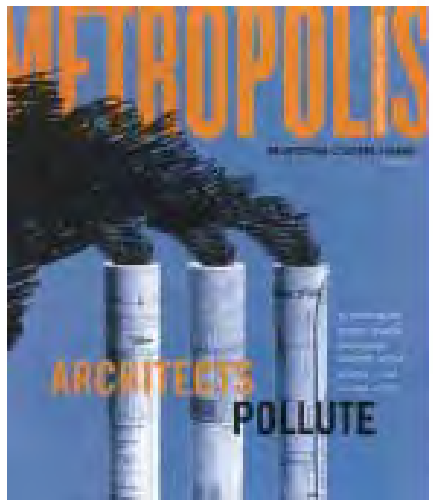
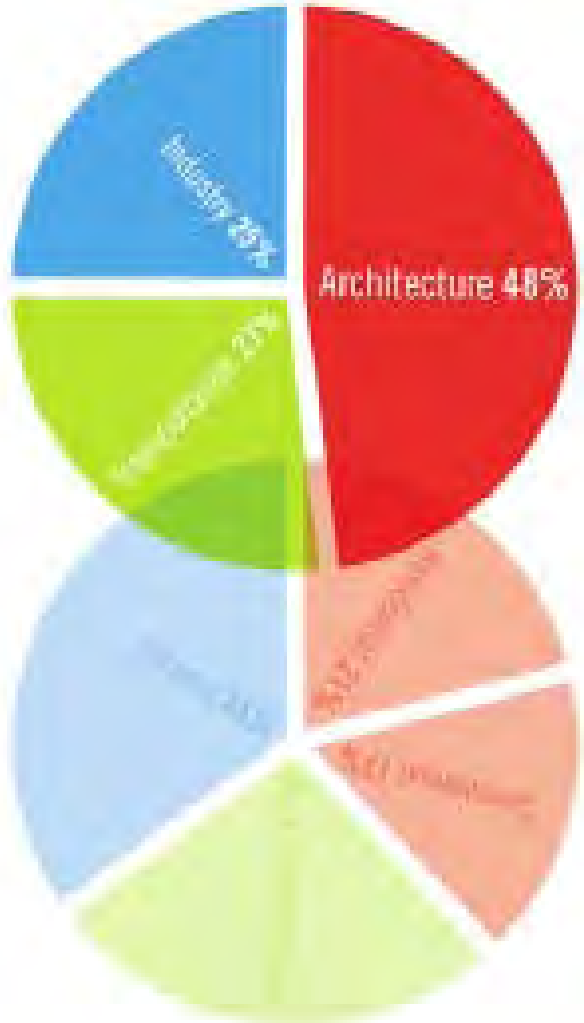
The Problem: Buildings Pollute

- Buildings Contribute 40-50% of greenhouse gas (GHG) emissions
- Create 65% of all municipal waste
  - 90% of C&D waste could be recycled
- 65% of all solid waste
  - 90-95% of construction and demolition was could be recycled





From Metropolis website. Data from Ed Mazria; graphic by Criswell Lappin

A Cost Effective Solution ...

- A resource efficient building that:
  - **Reduces energy use**
  - **Reduces CO2 production**
  - **Increased use of renewable energy**
  - **Reduced consumption of resources**
  - **Reduced generation of pollution**
  - **Healthy buildings and occupants**

A.K.A. = A GREEN BUILDING

What is a green building?

- Resource efficient
  - Natural Resources
  - Human Resources
  - Financial Resources
- Healthy indoor environment
  - Promotes health and productivity
- Minimal impact on outdoor environment
  - Low GHG emissions
  - Impact on waste water
  - Impact on landfills

Green Does Not Cost Money,
It Saves Money ($$$)!

Green Performance Contracting (PC) Some details

- Install the same Energy Efficiency in traditional PC, but add Water Efficiency, Renewable Energy, Waste Management, Streamlined Purchasing, green policies and procedures, etc.
- Obtain LEED-EB certification
- Entire project paid for thru savings in existing operations and maintenance budgets
- Guaranteed Results
  - Operational performance
  - Financial performance & guaranteed savings
- Sound too good to be true? It's not, in fact it's very feasible with well established contracting mechanism = Performance Contracting
  - Enabling legislation exists in 49 states
  - $4 Billion industry

Doesn't green cost more?

- People think a healthy high performance green building is too expensive
- Savings potential is 50 cents to $1 a square foot per year.
- The most expensive component is achieving the energy efficiency pre-requisites for LEED-EB
  - Need ENERGYSTAR rating of 60, will soon change to 67. Can achieve 1 LEED point for every 3 ENERGYSTAR points improved
  - With Performance Contracting this pre-requisite is paid for by the savings – out of existing operating budgets

Some Green PC Improvements
Some 'no-brainer' examples

1. Optimize building orientation
2. Use sustainable landscaping
3. **Try day cleaning and green cleaning**
4. **Install a Green and/or White Roof**
5. **Get the building Energy Star rated**
6. Use moisture-control barriers and air barriers on the exterior
7. **Pack in high R-value insulation**
8. Design-in low-e glazed windows
9. Install skylights and light shelves
10. **Provide task ambient lighting, get light where occupants need it**
11. Put in time clocks, occupancy sensors, and dimming ballasts.
12. Use scotopic enhanced lighting
13. Install harmonic canceling transformers in the electrical system
14. Think underfloor air distribution
15. **Try variable-speed drives**
16. **Control your plug load**
17. Specify "UVGI" (ultraviolet germicidal irradiation) and electronic air cleaners
18. **Check out waterless urinals and low-flow plumbing fixtures**
19. Look into gray water recovery and UV treatment for drinking water
20. **Deploy a building management system (with sub-metering)**
21. Design with movable walls and wireless sensors and controllers
22. **Use low- VOC carpet tiles**
23. Install high-performance ceiling tile
24. Use sound masking, overhead or under the raised floor
25. **Pay for the efficient skinny LCD monitors**
26. Specify eco-friendly products

Green maintenance practices

- Inadequate maintenance can defeat HVAC project design, installation and operation
- After building offgasing and HVAC system design, commissioning and addressing chemicals used for cleaning can have the next largest controllable impact on IAQ.
  - Chemicals for cleaning examples
    - Use GreenSeal (or other) green chemicals that are gentle to environment and people
    - Automate dispensing of housekeeping chemicals and reduce usage 30% - 60%
    - Use recycled content paper
    - Dispose of cleaning wastes in environmentally safe ways
- Switch to recycled paper and program all printers to print double-sided
- Clean to reduce health risks first, and to improve appearance second
- Minimize employee exposure to harmful contaminants
- Minimize the pollutants entering the building through good filtration, good entryway mats, and careful procurement rules

Pyramid of Savings Streams Form Green Existing Buildings ($.90 per sq. ft. per year)

- Education & Communication ($.05)
- Recycling ($.06)
- Water Efficiency ($.06)
- Sustainable Sites ($.07)
- O&M / Performance Measurement ($.08)
- Green Cleaning ($.13)
- Commissioning ($.15)
- Lighting Upgrades ($.15)
- Mechanical Upgrades ($.15)

Energy & Atmosphere

	Save	Cost	Payback
Building Commissioning	.15	.20	1.3 years
Optimize Energy Performance	.30	TBD	0-10 years
Renewable/Alternative Energy	TBD	TBD	TBD
Building Op. & Maintenance	.04	.10	2.5 years
Performance Management	.02	.03	1.5 years
	Total	**$.51**	

Indoor Environmental Air Quality

	Save	Cost	Payback
Outdoor Air & Exhaust	-	.01	-
Outdoor Air Delivery Monitoring	-	.04	-
Controllability of Systems	.02	TBD	-
Thermal Comfort	-	.02	-
Green Cleaning	.02	.01	6 months
Day Cleaning	.10	-	immediate
Total	**$.14**		

Water Efficiency

	Save	Cost	Payback
Minimum Water Efficiency	.02	.02	1 year
Water Efficient Landscaping	.02	.05	2.5 years
Water Use Reduction	.02	.02	1 year
Total	**$.06**		

Materials & Resources

	Save	Cost	Payback
▪ Source Reduction & Mgmt	.02	.02	1 year
▪ Construction Waste Mgmt	.03	.01	4 months
▪ Sustainable Cleaning Products	.01	-	-
▪ Occupant Recycling	.03	.04	1.3 years
Total	**$.09**		

Sustainable Sites

	Save	Cost	Payback
Erosion/Sediment Control	.01	.01	1 year
Plan for Site & Exterior	.01	-	-
Reduce Site Disturbance	.01	.01	1 year
Storm water Management	.01	.01	1 year
Alternative Transportation	.03	-	-
Total	**$.07**		

Innovation in Upgrades Operations & Maintenance

	Save	Cost	Payback
▪ Education & Comm. Program	.05	TBD	TBD

(Program can yield 5 LEED credits)

Total	**$.05**

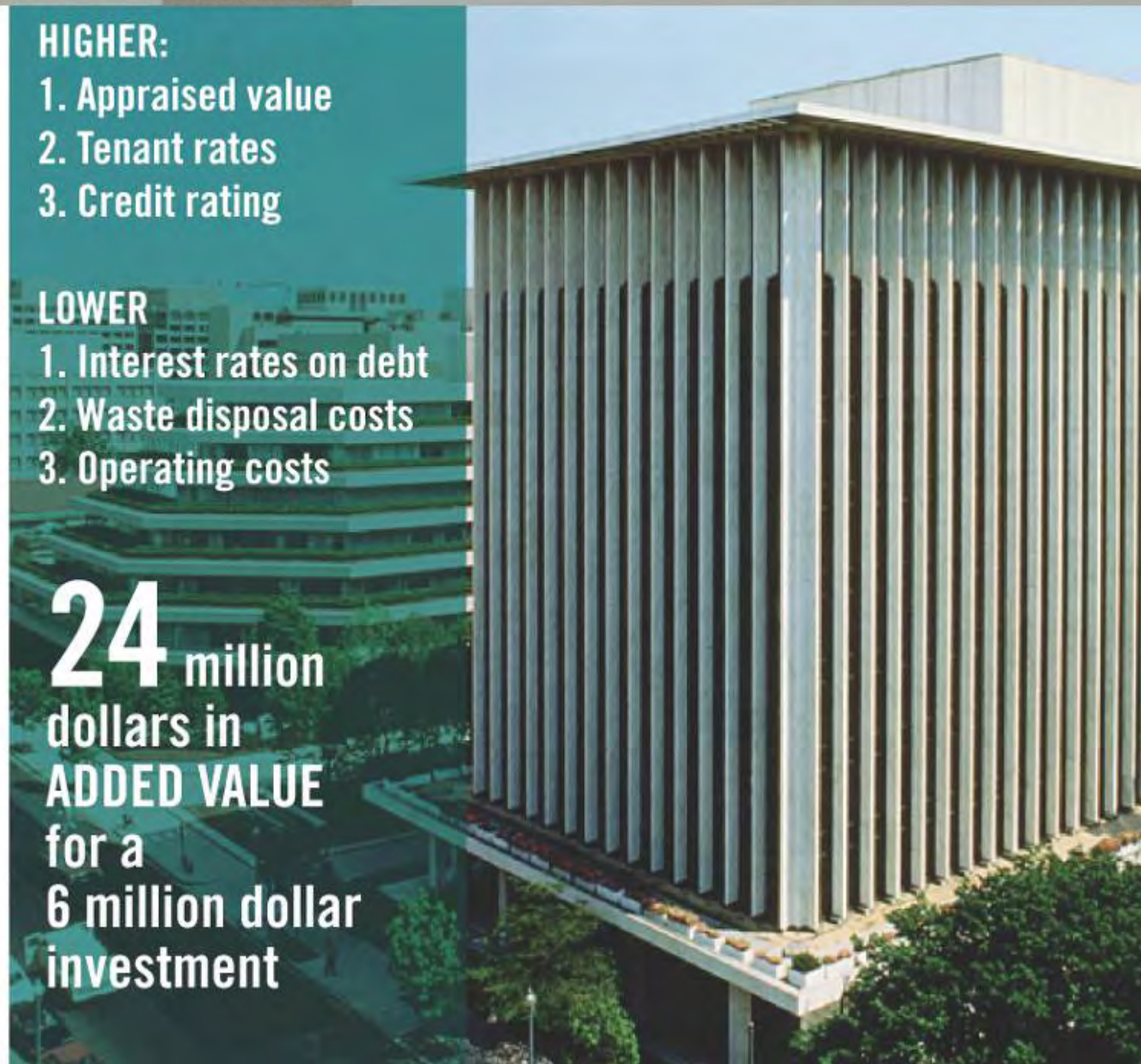
Case Study
National Geographic Society

National Geographic Society Headquarters Complex
Washington DC
Commercial Office
LEED-EB Silver
Pilot Project

HIGHER:
1. Appraised value
2. Tenant rates
3. Credit rating

LOWER
1. Interest rates on debt
2. Waste disposal costs
3. Operating costs

24 million dollars in ADDED VALUE for a 6 million dollar investment



Case Study

Thomas Properties Group

Joe Serna Jr.
California EPA Headquarters
Sacramento, CA
Commercial Office
LEED-EB Platinum Pilot Project

HIGHER

1. Staff retention
2. Occupant
3. Asset Value

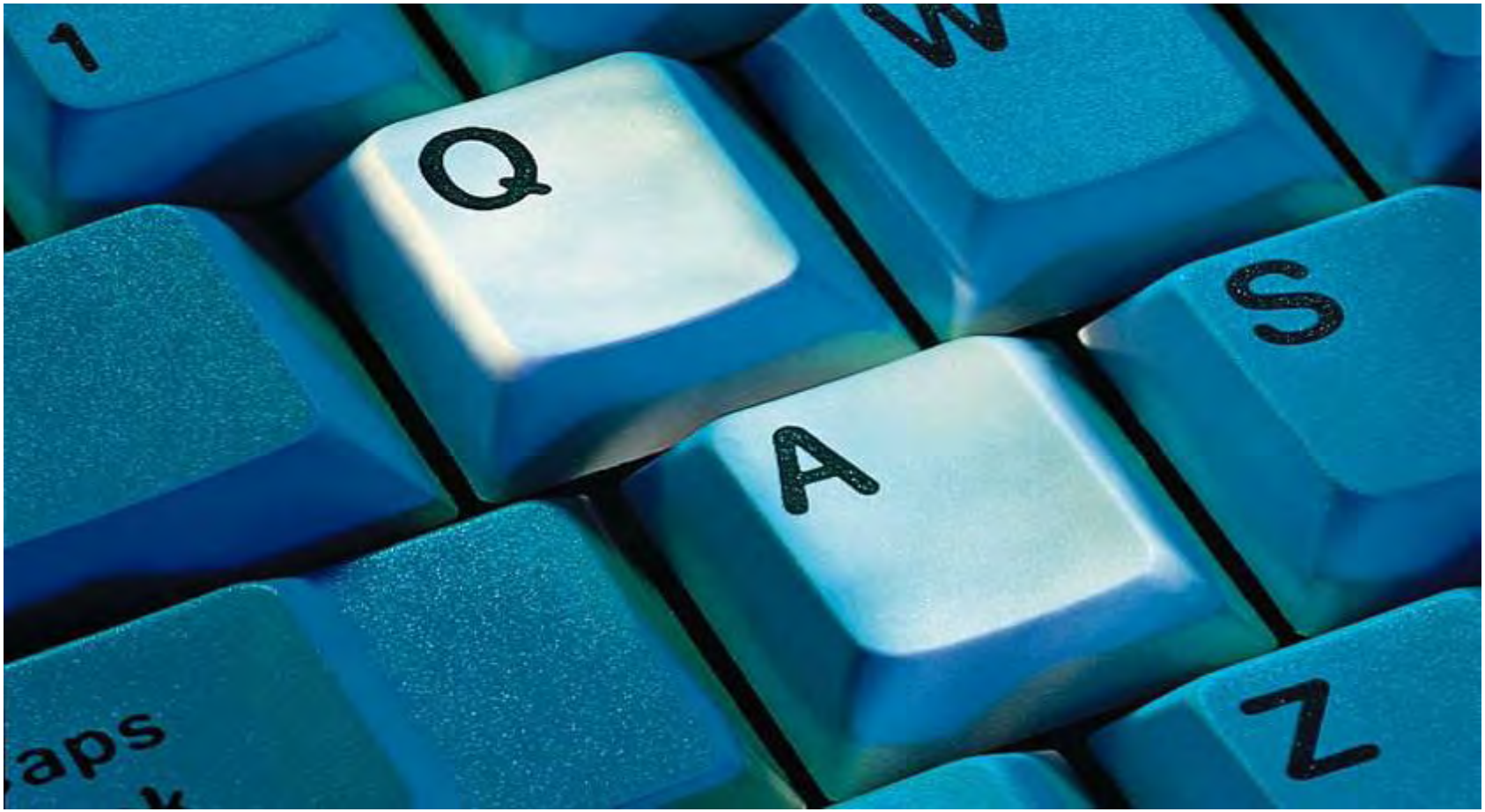
LOWER

1. Energy Use
2. Waste Disposal
3. Operational Costs

10 million dollar increase in asset value.

100,000 dollars in annual savings due to improved operations.

Questions & Answers



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