

Implementing Green Purchasing: Low(er) Hanging Fruit

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March 18, 2009
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Operated by the City of Palo Alto for the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto and Stanford.

Seven lower hanging fruit

- Antibacterial soaps
- Custodial products
- Structural pest control
- Printing services
- Producer responsibility
- Copiers and printers
- Green Business Certified

Antibacterial Soaps:

The issue: triclosan (antibiotic ingredient)

- Found in 57% of the waterways tested by the USGS
- The American Medical Association -- believes that triclosan can cause antimicrobial resistance and that there is no evidence that antibacterial agents do any good.
- May photodegrade into dioxins

Alternatives: alcohol based sanitizers, wash hands for 20 seconds with soap



Custodial products

Primary concerns: acute and long-term human and environmental health issues
(*e.g. asthma, cancer, water pollutant*)

Alternatives:

- Green Seal
- EcoLogo
- Additional specs
 - Plastic bags
 - Disinfectants



www.ecologo.org

www.greensealcertified.org



Structural Pest Control

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EcoWise Certified professionals provide effective, prevention-based pest control, minimizing the need to use pesticides.

Printing Services

The issue: recycled content, paper bleaching, printing chemicals, packaging, water and energy use/CO2



Alternatives:

- Green Seal Certified papers
- Minimize packaging and shipping materials
- Reporting on environmental benefits of paper



Start Over

[Clear Choices, Start Again](#)

Paper Choices

Baseline Paper
Uncoated Freesheet (e.g. copy paper)
5 tons 30% recycled. [Edit](#)

Target Paper I
Uncoated Freesheet (e.g. copy paper)
5 tons 100% recycled. [Edit](#)

Results

[Basic Overview](#)

[Show all parameters](#)

[Export to PDF](#)

[Export to Excel](#)

More Information

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Lifecycle Environmental Impact

The following is a break down of the environmental impact of your choices for different grades of paper.

Recalculate	Baseline Paper	Target Paper I
Paper	Uncoated Freesheet (e.g. <input type="text"/>)	Uncoated Freesheet (e.g. <input type="text"/>)
Quantity per year	5 <input type="text"/> Tons <input type="text"/>	5 <input type="text"/> Tons <input type="text"/>
% Postconsumer	30 <input type="text"/>	100 <input type="text"/>
Wood Use	12 tons	0 tons 12 tons less
Total Energy	167 million BTU's	108 million BTU's 58 million BTU's less
Greenhouse Gases	25,289 lbs CO₂ equiv.	17,911 lbs CO₂ equiv. 7,378 lbs CO ₂ equiv. less
Wastewater	82,251 gallons	51,625 gallons 30,626 gallons less
Solid Waste	9,706 pounds	5,774 pounds 3,933 pounds less

www.edf.org/papercalculator/

Explanation of Data Values

The Paper Calculator is based on research done by the Paper Task Force, a peer-reviewed study of the lifecycle environmental impacts of paper production and disposal.

▲ Wood Use

Wood use measures the amount of wood required to produce a given amount of paper. The number of typical trees assumes a mix of hardwoods and softwoods 6-8" in diameter and 40' tall. Calculated collaboratively by Conservatree and Environmental Defense based on data from Tom Soder, Pulp & Paper Technology Program, University of Maine, as reported in Recycled Papers: The Essential Guide, by Claudia G. Thompson, The MIT Press, 1992.

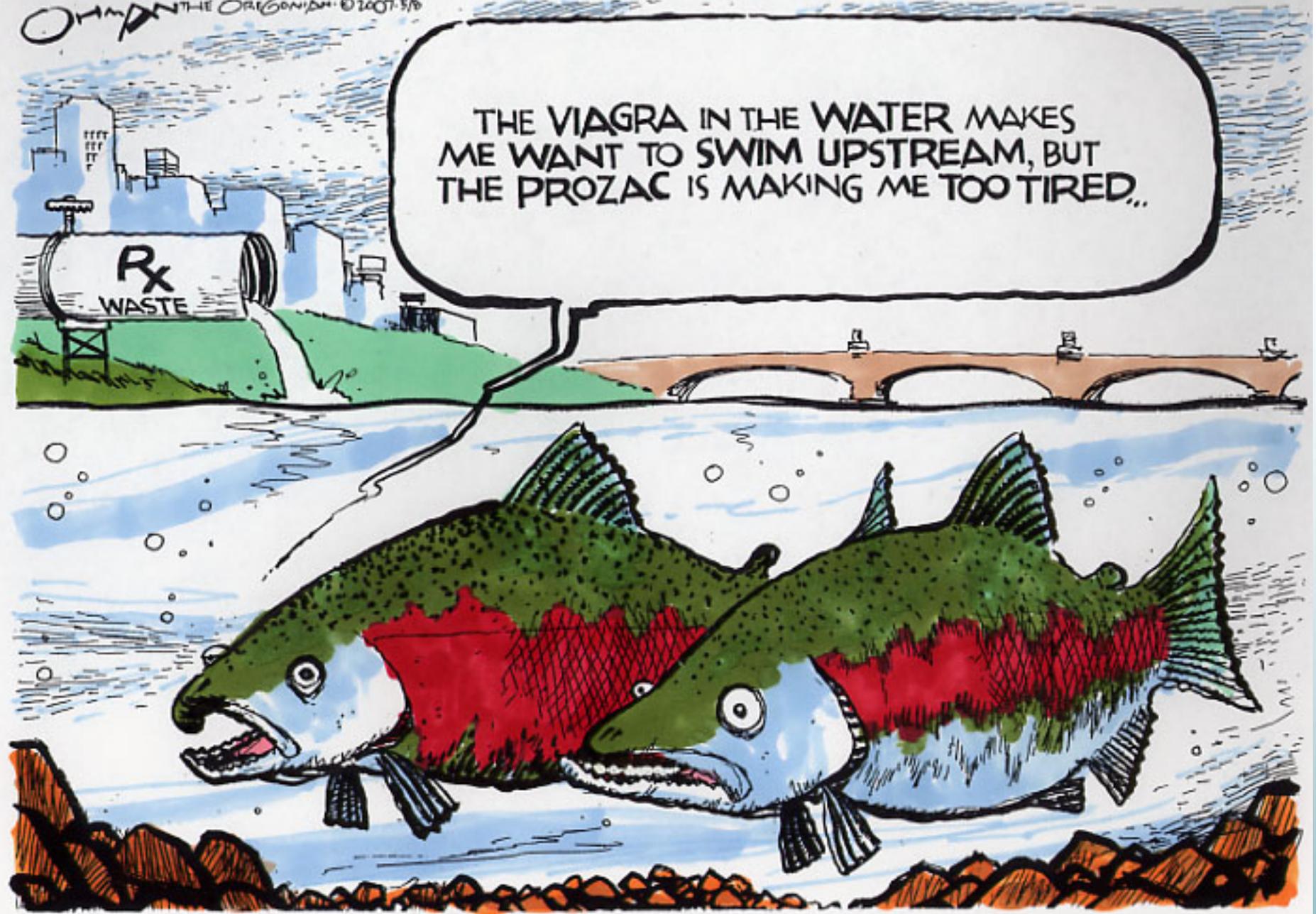
The Baseline Paper uses 12 tons . the equivalent of about 84 trees

Why we need Producer Responsibility

4526, 000000

OH MAN THE OREGONIAN © 2007-5/0

THE VIAGRA IN THE WATER MAKES
ME WANT TO SWIM UPSTREAM, BUT
THE PROZAC IS MAKING ME TOO TIRED..



Copiers and Printers

The issue: paper and energy use, producer responsibility

- Require preset duplexing and sleep setting
- Producer responsibility
- Proposers must describe how Universal Wastes will be handled and ensure that no Universal Waste originating from this contract is landfilled, incinerated, nor exported to developing countries for disposal or recycling in accordance with the Basel Convention. Agree to provide take-back programs that comply with the requirements established in the Electronics Recycler's Pledge of True Stewardship, per the Basel Action Network (www.ban.org)

Bay Area Green Business Certified

www.greenbiz.ca.gov/

The issue:

Supporting green businesses,
demanding energy and water
conservation, less toxic products

Option: *The City prefers*

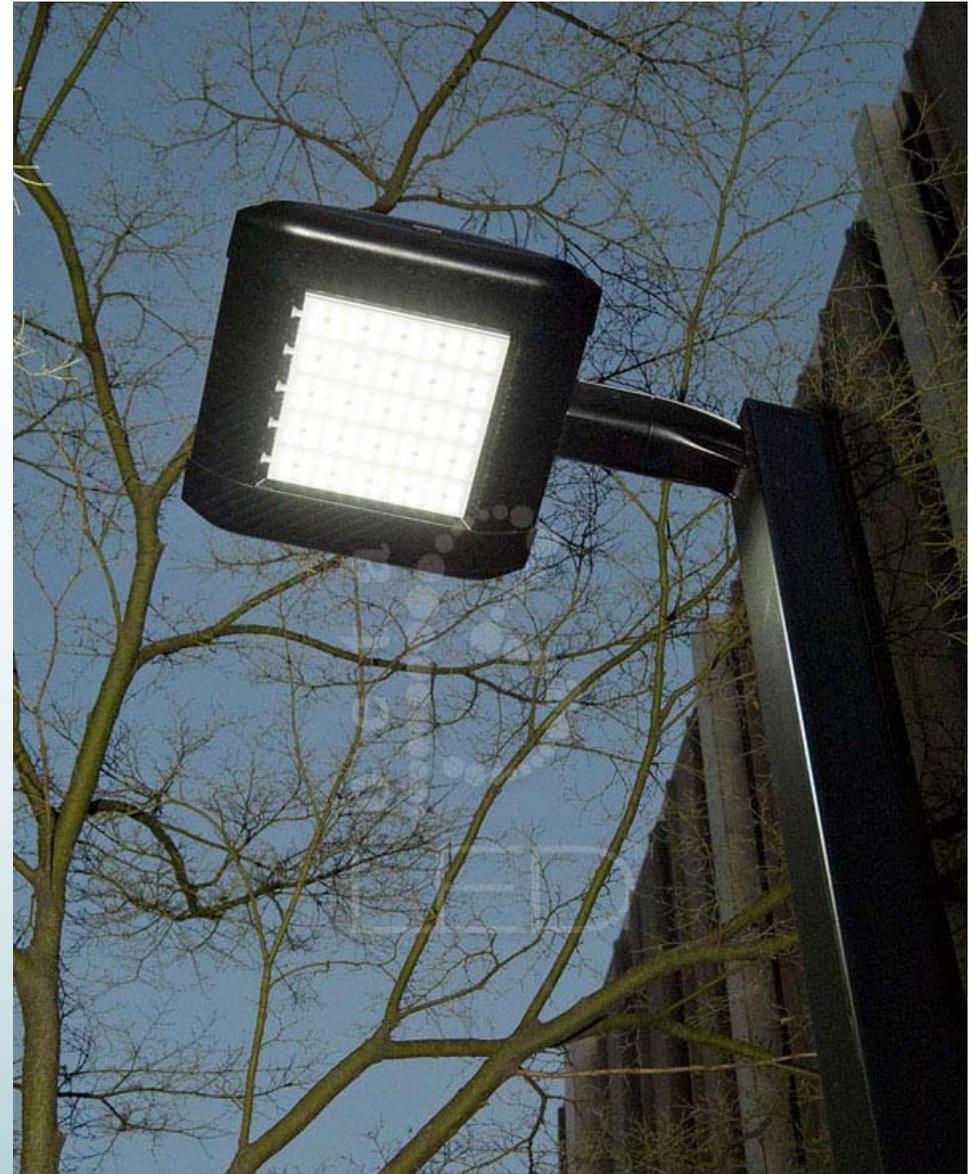
...to conduct business with certified Bay Area Green Businesses (or those actively enrolled in the program with the intention of completing the certification process) when the business provides the service needed at a reasonable cost; proposer shall provide the contact information of the Green Business coordinator if seeking certification.



One higher hanging fruit...

Example:

- LED lighting
 - Uses semiconductor technology to produce light
 - High initial cost for fixtures will pay back in energy savings, reduced maintenance costs, GHG emissions and mercury/hazardous waste disposal
- Stanford students and Palo Alto staff developed an ROI calculator



***BetaLED* Street Light**

Street Lighting Calculator

Changeable Fields
Do not change unhighlighted fields

Common Inputs		Annual Increase
Number of hours in operation per year	4100	NA
Price of Electricity (\$/kWh)	\$ 0.075	3.0%
GHG Intensity of Electricity (lbs CO2e/kWh)	0.879	NA
Price of GHG Emissions (\$/ton)	\$ 20.00	5%
Mercury Emissions Factor (mg/KWh)	0.011	NA
Cost to recycle one HPS bulb	\$ 2.00	NA
User Inputs	HPS	LED
Number of Units	2833	2833
System Power Consumption in Watts	97	60
Material Costs / unit		
Bulb or LED Fixture Cost	\$11	\$650
Bulb or LED Life (hours)	24,000	150,000
Ballast Cost	\$59	NA
Ballast Life (Years)	5	NA
Fixture Cost	\$145	NA
Fixture Life (Years)	15	NA
Igniter Cost	\$35	NA
Igniter Life (Years)	7	NA
Replacement Cost / unit - Labor and Equipment	\$100.00	NA
Installation Cost / unit - Labor and Equipment	NA	\$100

Enter in price of electricity, CO2 intensity, mercury, recycling cost for expired bulbs

Enter labor costs

Environmental Impacts	Current Bulb	Replacement Bulb	Difference*
Mercury Contained in Fixtures (mg)	51,525	0	-51,525
Annual Mercury Emissions from Electricity (mg)	12,394	7,666	-4,727
Total Mercury (mg)	361,363	191,652	-169,711
GHG Emissions per year (Metric Tons/year)	449.2	277.9	-171.4

Environmental benefits: reduced GHG and mercury

Energy Use and Costs			
Initial Investment for Retrofit		\$2,124,750	
Bulb or LED lifetime (years)	5.0	25.0	
Total Annual Energy Use (kWh)	1,126,684	696,918	
First Year Energy Cost (\$)	\$84,501	\$52,269	
First Year GHG Cost	\$8,984	\$5,557	(\$3,427)
Average Annual Material Cost	\$81,213	\$73,658	(\$7,555)
Average Annual Replacement and Installation Cost	\$56,660	\$11,332	(\$45,328)
Annual recycling cost for HPS bulbs	\$1,133	NA	
Total PV Cost without GHG Adder	\$4,389,720	\$3,021,127	(\$1,368,593)
Total PV Cost with GHG Adder	\$4,603,635	\$3,153,445	(\$1,450,190)
Approx Break Even Point (years) without GHG adder**		11	

Break even point

NET PRESENT VALUE SUMMARY

(of 70W fixture inventory replacement)

	70W
Cost during LED's lifetime (max 25 yrs)	
HPS	\$4,389,720
LEDs	\$3,021,127
Cost Savings from Switching	\$1,368,593

% of PV savings	38%
LED life GHG Reduction (Tonnes CO2)	4,727
Hg (mg)	169,711
# of lamps	2,833
Net PV Savings per lamp (energy, parts & labor)	\$483

HPS total Annual Energy used
Percent of original energy

Investment required to change all fixtures to LED
Equipment
Labor
Total Equipment and labor

LED total Annual Energy used (kWh/year) 696,918
LED Saved Energy (kWh/year) 429,766
LED Present Value of Saved Energy \$ 615,159

LED Present Value of Saved parts (\$117,992)
LED Present Value of Saved labor \$871,426
LED Present Value of Saved parts and labor \$753,434
LED Present Value of Saved energy, parts, labor \$1,368,593

\$1.3 million estimated ROI on just 70W LED street lighting inventory (45% of total inventory of various wattage lights)

Lessons Learned

- Use climate protection plans, zero waste, less-toxic programs to help get EPP going
- Work on what people are interested in
- Start with centralized purchase points/people
- Educate: Understand that purchasing staff may not be aware of the drivers associated with your green purchasing program
- Cultivate the expectation that greening considerations are considered from the start
- Build EPP criteria into RFP/RFQ process and checklists

For City of Palo Alto contract specs contact:

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Scope of work and specifications available for:

- Structural pest control
- Copiers
- Printing services
- Draft form for custodial supplies
- Green Business and product stewardship requirements