

# Go Green PC Power Play



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# Green PC Question



## The Question

How much energy and power can the Federal government save with ENERGY STAR® 4.0 qualified PCs?

# Why Should We Care?

- 100 million office computers use **1%** of the nation's commercial electricity\*
- The average PC wastes **1/2** of the power delivered to it\*\*
- As many as **60%** of employed adults in the U.S. do not turn their PC off at night, wasting significant energy and money\*\*\*
- The U.S. government is the largest energy consumer in the nation\*\*\*\*



\*ENERGY STAR, [http://www.federalectronicschallenge.net/resources/docs/use\\_energy\\_w.pdf](http://www.federalectronicschallenge.net/resources/docs/use_energy_w.pdf)

\*\*Climate Savers, <http://www.climatesaverscomputing.org/>

\*\*\*PC Energy Report 2007, [http://www.ase.org/uploaded\\_files/greencampus/core\\_portfolio/power\\_management/pc\\_report.pdf](http://www.ase.org/uploaded_files/greencampus/core_portfolio/power_management/pc_report.pdf)

\*\*\*\*U.S. DOE, <http://www.energy.gov/news/2615.htm>

# Federal Government is Focused on Green

EPA Enacts ENERGY STAR® 3.0 Guidelines for Computers and Monitors\*\*

1999

Executive Order 13123: Greening the Government Through Efficient Energy Management

Requires agencies to strive to meet ENERGY STAR® specifications to increase energy performance and environmental quality\*

2005

Energy Policy Act of 2005

Directs agencies to purchase ENERGY STAR® qualified or FEMP (Federal Energy Management Program)-designated products; Mandates a total Federal energy reduction goal of 2% by FY 2015\*\*\*

EPA Enacts ENERGY STAR® 4.0 Guidelines for PCs, Laptops, and Other Equipment\*\*\*\*\*

2007

Executive Order 13423: Strengthening Federal Environmental, Energy, and Transportation Management

Requires agencies to reduce greenhouse gases through a 3% reduction in energy intensity a year or 30% by the end of fiscal year 2015 (compares with 2% per year and 20% overall from EPAct 2005)\*\*\*\*

+ Requires agencies to purchase EPEAT™-registered green electronic products to meet 95% of their needs\*\*\*

\*U.S. DOE, <http://www1.eere.energy.gov/femp/pdfs/eo13123.pdf>

\*\* Energy Star, [http://www.energystar.gov/ia/partners/product\\_specs/program\\_reqs/computer.mou.v3.pdf](http://www.energystar.gov/ia/partners/product_specs/program_reqs/computer.mou.v3.pdf)

\*\*\*U.S. DOE, [http://www1.eere.energy.gov/femp/about/legislation\\_epact\\_05.html](http://www1.eere.energy.gov/femp/about/legislation_epact_05.html)

\*\*\*\*U.S. DOE, [http://www1.eere.energy.gov/femp/about/eo\\_fedmgmt.html](http://www1.eere.energy.gov/femp/about/eo_fedmgmt.html)

\*\*\*\*\*EPA, [http://www.energystar.gov/index.cfm?c=revisions.computer\\_spec](http://www.energystar.gov/index.cfm?c=revisions.computer_spec)

# Federal Government is Focused on Green

## ENERGY STAR® 4.0

- Establishes efficiency requirements for all modes of operation, which ensure energy savings when a computer is active and running basic applications, as well as when it is on standby\*
- Requires computers to include an internal power supply that is at least 80% efficient\*

## Electronic Product Environmental Assessment Tool (EPEAT™)

- A system to help purchasers in the public and private sectors evaluate, compare, and select desktop computers, notebooks, and monitors based on their environmental attributes\*\*

\*EPA, <http://yosemite.epa.gov/opa/admpress.nsf/eebfaebc1afd883d85257355005afd19/4a118c6cb8a366388525738b0067f146!OpenDocument>

\*\*EPEAT, <http://www.epeat.net/>

# Power Management Makes an Impact

Power management features place inactive monitors and computers into a low-power sleep mode when sitting idle. Agencies should activate ENERGY STAR® power management features to realize maximum energy savings.

## Monitor Power Management

Places inactive monitors into a low-power sleep mode which may save \$10 to \$30 per monitor annually\*

## Computer Power Management

Places inactive computers into a low-power sleep mode which may save \$15 to \$45 per desktop computer annually\*

## Power Management Usage Scenarios Annual kWh Used\*\*

Scenario	PC Frequency	CRT Monitor Frequency	LCD Monitor Frequency	Laptop Frequency
Power management enabled and equipment turned off	3% 3.0 – 101; 4.0 – 80	25% 3.0 – 70; 4.0 – 37	15% 3.0 – 50; 4.0 – 28	6% 3.0 – 24; 4.0 – 20
Power management not enabled and equipment turned off	33% 3.0 – 187; 4.0 – 141	7% 3.0 – 147; 4.0 – 74	3% 3.0 – 92; 4.0 – 58	30% 3.0 – 44; 4.0 – 37
Power management enabled and equipment left on	5% 3.0 – 123; 4.0 – 94	52% 3.0 – 86; 4.0 – 44	66% 3.0 – 60; 4.0 – 30	11% 3.0 – 27; 4.0 – 23
Power management not enabled and equipment left on	59% 3.0 – 741; 4.0 – 535	16% 3.0 – 643; 4.0 – 308	16% 3.0 – 363; 4.0 – 243	53% 3.0 – 171; 4.0 – 144

# Estimated Current Cost to Power Federal ENERGY STAR® 3.0 Qualified PCs

# \$293,484,802

Estimated annual cost to power Federal ENERGY STAR® 3.0 qualified PCs – desktops, laptops, monitors

The total estimated cost per year is based on the following data:

4,548,776*	Current installed base of ENERGY STAR® 3.0 qualified Federal desktops that are 0-4 years old
440,953**	Current installed base of ENERGY STAR® 3.0 qualified Federal CRT monitors that are 0-4 years old
3,968,575***	Current installed base of ENERGY STAR® 3.0 qualified Federal LCD monitors that are 0-4 years old
1,089,886****	Current installed base of ENERGY STAR® 3.0 qualified Federal laptops that are 0-4 years old
\$ .10/kWh*****	Estimated average cost per kWh

## Applied Against Power Management Scenarios =

\$231,114,221	Estimated current cost to power ENERGY STAR® 3.0 qualified Federal desktops
\$7,733,850	Estimated current cost to power ENERGY STAR® 3.0 qualified Federal CRT monitors
\$42,839,798	Estimated current cost to power ENERGY STAR® 3.0 qualified Federal LCD monitors
\$11,796,933	Estimated current cost to power ENERGY STAR® 3.0 qualified Federal laptops
<b>\$293,484,802</b>	<b>Total estimated annual cost to power ENERGY STAR® 3.0 qualified Federal PCs, 0-4 years old</b>

\*Government Insights, an IDC Company – 98% of total population (4,641,608) are ENERGY STAR 3.0 qualified

\*\*Government Insights, an IDC Company – 95% of total population are ENERGY STAR 3.0 qualified and assuming that 10% of the total population of monitors are CRT

\*\*\* Government Insights, an IDC Company – 95% of total population are ENERGY STAR 3.0 qualified and assuming that 90% of the total population of monitors are LCD

\*\*\*\*Government Insights, an IDC Company – 98% of total population (1,112,129) are ENERGY STAR 3.0 qualified

\*\*\*\*\*Energy Information Administration, [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_6\\_a.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_6_a.html)

Source, data on 3.0 ratios as a portion of total population: Sanchez, Maria C., Carrie A. Webber, Richard Brown, and Gregory K. Homan. 2008 Status Report - Savings Estimates for the ENERGY STAR® Voluntary Labeling Program. LBNL-56380. October. Lawrence Berkeley National Laboratory, Berkeley CA.

# Estimated Projected Cost to Power Federal ENERGY STAR® 4.0 Qualified PCs

# \$211,041,618

Estimated projected annual cost to power Federal ENERGY STAR® 4.0 qualified PCs – assuming all 3.0 PCs are refreshed with 4.0 PCs

The estimated projected cost per year is based on the following:

4,548,776*	Current installed base of ENERGY STAR® 3.0 qualified Federal desktops that are 0-4 years old
440,953**	Current installed base of ENERGY STAR® 3.0 qualified Federal CRT monitors that are 0-4 years old
3,968,575***	Current installed base of ENERGY STAR® 3.0 qualified Federal LCD monitors that are 0-4 years old
1,089,886****	Current installed base of ENERGY STAR® 3.0 qualified Federal laptops that are 0-4 years old
\$ .10/kWh*****	Estimated average cost per kWh

## Applied Against Power Management Scenarios =

\$167,977,207	Estimated current cost to power ENERGY STAR® 4.0 qualified Federal desktops
\$3,818,200	Estimated current cost to power ENERGY STAR® 4.0 qualified Federal CRT monitors
\$29,311,895	Estimated current cost to power ENERGY STAR® 4.0 qualified Federal LCD monitors
\$9,934,316	Estimated current cost to power ENERGY STAR® 4.0 qualified Federal laptops
<b>\$211,041,618</b>	<b>Estimated projected annual cost to power ENERGY STAR® 4.0 qualified Federal PCs</b>

\*Government Insights, an IDC Company – 98% of total population (4,641,608) are ENERGY STAR 3.0 qualified

\*\*Government Insights, an IDC Company – 95% of total population are ENERGY STAR 3.0 qualified and assuming that 10% of the total population of monitors are CRT

\*\*\* Government Insights, an IDC Company – 95% of total population are ENERGY STAR 3.0 qualified and assuming that 90% of the total population of monitors are LCD

\*\*\*\*Government Insights, an IDC Company – 98% of total population (1,112,129) are ENERGY STAR 3.0

\*\*\*\*\*Energy Information Administration, [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_6\\_a.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_6_a.html)

Source, data on 3.0 ratios as a portion of total population: Sanchez, Maria C., Carrie A. Webber, Richard Brown, and Gregory K. Homan. 2008 Status Report - Savings Estimates for the ENERGY STAR® Voluntary Labeling Program. LBNL-56380. October. Lawrence Berkeley National Laboratory, Berkeley CA.

# Estimated Projected Savings – ENERGY STAR® 3.0 vs. 4.0

ENERGY STAR® 4.0 guidelines took effect July 20, 2007.

3.0

\$293,484,802

Estimated annual cost to power ENERGY STAR® 3.0 qualified Federal PCs

4.0

\$211,041,618

Estimated projected annual cost to power ENERGY STAR® 4.0 qualified Federal PCs

1

Year

\$82,443,184

Annualized Estimated Potential Energy Cost Savings

4

Years

\$329,772,736

Four-Year Estimated Potential Energy Cost Savings

# Not Just kWh

Over One Year, Saving

**\$82,443,184**  
(824,431,840 kWh)

*Is Equivalent to:*

Providing  
**33,377,807<sup>1</sup>**  
Free lunches to  
school children

Providing  
**1,832,071<sup>2</sup>**  
Americans with flu shots

Conserving  
**1,347,982<sup>3</sup>**  
Barrels of oil

Over Four Years, Saving

**\$329,772,736**  
(3,297,727,360 kWh)

*Is Equivalent to:*

Paying  
**7,924<sup>4</sup>**  
Police officers for  
one year

Providing  
**28,537<sup>5</sup>**  
Americans with  
Social Security for one year

Providing  
**989,318,208<sup>6</sup>**  
Meals to the hungry



1: U.S. Department of Agriculture, <http://www.fns.usda.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.pdf>

2: Boulder County Colorado, <http://www.co.boulder.co.us/health/hpe/lz/flu/faqs.htm>

3: U.S. Climate Technology Cooperation Gateway, <http://www.usctcgateway.net/tool/>

4: U.S. Department of Labor Occupational Outlook Handbook, <http://www.bls.gov/oco/ocos160.htm>

5: Social Security Administration, [http://www.ssa.gov/policy/docs/quickfacts/stat\\_snapshot/](http://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/)

6: Capital Area Food Bank, <http://www.capitalareafoodbank.org/about/>

# Calls to Action

## For Federal Agencies:

- Audit existing PC inventory
- Baseline current energy consumption
- Enable power management features on monitors and computers
- Coach employees to turn PCs off at night
- Purchase EPEAT™-registered equipment

## For Industry:

- Continue to develop more efficient PC technology
- Work with Federal agencies to educate users on power management



## This report was underwritten by Hewlett-Packard

As a leader in global and corporate citizenship, HP is dedicated to addressing global environmental challenges and creating a sustainable future for all. Our environmental commitment is to reduce the impact of our products, services, and operations – thereby enabling both HP and our customers to operate more sustainably. We will continue to build partnerships with key stakeholders and communities; develop innovative technologies and business solutions; and balance the interests of our corporation with the needs of the environment.

**With a deep commitment to environmental stewardship, HP is a member of:**

The Green Electronics Council (GEC)-EPEAT™ Board of Advisors. GEC inspires and supports the effective design, manufacture, use, and recovery of electronic products to contribute to a healthy, fair and prosperous world.

**For more information:**

<http://www.hp.com/go/hpepeat>

<http://www.hp.com/environment>