

PURPOSE

This document provides background information and step-by-step instructions for using data from the Federal Electronics Challenge Annual Reporting Form to calculate environmental benefits using the Electronics Environmental Benefits Calculator, version 3.1.

ELECTRONICS ENVIRONMENTAL BENEFITS CALCULATOR

The Electronics Environmental Benefits Calculator (EEBC) was developed to assist organizations in estimating the environmental benefits of greening their purchase, use, and end-of-life management of electronics. Data collected by Federal Electronics Challenge (FEC) Facility Partners and submitted using the FEC Annual Reporting Form (ARF) is easily entered into the EEBC to calculate environmental benefits such as reductions in greenhouse gas emissions, energy use, toxic material use, and hazardous waste generation.

The EEBC currently estimates the environmental benefits accruing from the following activities:

- Purchase or lease of Electronic Product Environmental Assessment Tool (EPEAT®)-registered computer products including, desktop computers, liquid crystal display (LCD) monitors, and notebook computers;
- Power management of computers and monitors currently in use at a facility;
- Extending the service life of computer and monitors within a facility;
- Reuse and recycling of desktop computers, LCD monitors, cathode ray tube (CRT) monitors, notebook computers, and mobile telephones; and
- Recycling of mixed loads of electronics.

The EEBC allows users to calculate the environmental benefits of any combination of these electronics stewardship activities, depending on Partner interest and available data.

USING DATA FROM THE ANNUAL REPORTING FORM TO CALCULATE BENEFITS

The table below summarizes data elements from the FEC ARF and where to enter them into the EEBC Microsoft Excel spreadsheet, along with brief instructions. For most data elements, all that is needed is a simple data transfer from the ARF to the EEBC.

FEC Activity	Data from FEC ARF	Enter Data into EEBC	Instructions
Purchasing/ leasing EPEAT- registered electronic equipment	Section 2, Q1	Sheet 3a	Transfer data on the number of products (desktop computers, LCD monitors, and notebook computers) and EPEAT registration level (Bronze, Silver, and Gold) that were purchased/leased. Data for up to three different products can be entered for each calculator run. If you have more than three product types/registration levels, you will need to run the calculator multiple times.
Computer and monitor power management	Section 3, Q1	Sheet 3b Cells D9 – D12, E9 – E12	See special instructions below.
	Section 3, Q2	Sheet 3b Cells F9 – F12, G9 – G12	See special instructions below.



Using the FEC Annual Reporting Form Data to Calculate Environmental Benefits

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Extending the life of electronic equipment	Section 3, Q3	Sheet 3b Cells H9 – H12	See special instructions below.
Reusing electronic equipment (by Unit)	Section 4, Q1 Units "Reused"	Sheet 3b Cells D17 – D21	Transfer data on the number of desktop computers, CRT monitors, LCD monitors, notebook computers, and mobile phones reused.
Recycling electronic equipment (by Unit)	Section 4, Q1 Units "Recycled"	Sheet 3b Cells D24 – D28	Transfer data on the number of desktop computers, CRT monitors, LCD monitors, notebook computers, and mobile phones recycled.
Recycling electronic equipment (by Weight)	Section 4, Q1 Mixed electronic products "Weight of load recycled"	Sheet 3b Cell D29	Enter weight of mixed load of electronic equipment (in kilograms) sent for recycling. Weight conversions are provided in the EEBC on Sheet 3b, see row 31.

Special Instructions for "Computer and monitor power management"

The ENERGY STAR 5.0 specification for monitors went into effect on October 30, 2009 for displays less than 30 inches. Any ENERGY STAR qualified monitors purchased after this date is likely to meet ENERGY STAR 5.0. Any ENERGY STAR monitors older than this date are likely to meet ENERGY STAR 4.*.

The ENERGY STAR 5.2 specification for computers went into effect on July 1, 2009. Any ENERGY STAR qualified computers purchased after this date are likely to meet ENERGY STAR 5.2. Any ENERGY STAR computers older than this date are likely to be ENERGY STAR 4.*.

Please note that there are currently no CRT monitors qualified to the ENERGY STAR 5.0 specification. Any ENERGY STAR qualified CRT monitors in use at your organization are likely ENERGY STAR 4.* or older.

Example:

Facility A has the following electronic equipment in use, with associated power management enabling rates:

100 Desktop computers
 50 CRT monitors
 70 LCD monitors
 30 Laptop/notebook computers

Estimated percentage of enabled monitors: 90%
 Estimated percentage of enabled computers: 60%

Facility A bought 50 of the desktop computers and all 30 laptop/notebook computers in 2011 – they are all ENERGY STAR 5.2. The other 50 desktop computers were bought in 2008 – they are ENERGY STAR 4.*. Facility A bought the 70 LCD monitors with the new computers in 2011 – they are all ENERGY STAR 5.0. The CRT monitors in use have been around since 2006 – they are ENERGY STAR 4.*.

This data would be entered as follows in the EEBC:

USE AND END-OF-LIFE INFORMATION					
<i>User Input</i>	<i>Input data</i>				
	Total number of ENERGY STAR® 4.* units	Total number of ENERGY STAR® 5.* units	Percentage of COMPUTERS with power management features enabled (%)	Percentage of DISPLAYS with power management features enabled (%)	Average lifespan of units (Months)
Use: <i>Data inputs for computers and monitors only</i>					
Desktop computers (CPUs)	50	50	60%		
Cathode ray tube monitors (CRTs)	50			90%	
Liquid crystal display monitors (LCDs)		70		90%	
Notebook computers		30	60%	90%	
Total number of units in service (4.* and 5.*)	250				

Special Instructions for “Extending the life of electronics equipment”

The EEBC allows you to enter the average lifespan of desktop computers, CRT monitors, LCD monitors, and notebook computers. The ARF only requests the average lifespan of a computer at your organization. You have a number of options for entering the lifespan data from your ARF in the EEBC:

- Enter this data for just desktop computers.
- Enter this data for desktop computers and the monitor type(s) in use with desktop computers at your facility.
- Enter this data for all computers (desktop and laptop/notebook) and monitors (CRT and LCD).
- Enter this data for desktop computers and estimate the lifespan for the other equipment.

NO BENEFITS DISPLAYING

The EEBC compares the user entered data (e.g., power management rate or life span) to the baseline data for the entered product. If the user entered data is less than or equal to the baseline, then no benefits are calculated.

In version 3.0 of the EEBC, the following enabling rates are used for the baseline:

- Desktop computers: 8%
- CRT monitors: 81%
- LCD monitors: 81%
- Notebooks (computer portion): 8%
- Notebooks (display portion): 81%

In version 3.0 of the EEBC, the following life spans are used for the baseline:

- Desktop computers: 51 months
- CRT monitors: 51 months
- LCD monitors: 51 months
- Notebooks/laptops: 38 months

The references for these assumptions are detailed in Sheets 8a and 8c.

FIRST YEAR AND LIFETIME BENEFITS

The EEBC separately provides information on benefits accrued in the first year of owning, using, or reusing/recycling an electronic product and the benefits accrued over the lifetime of owning and using a product. These benefits are broken out as follows:

First Year:

- All savings from reduced toxicity, recycled content material use, recycled content in packaging, and reuse of packaging from the purchase or lease of an EPEAT-registered product.
- One year of energy efficiency savings from use of an EPEAT-registered product or from enabling power management on a product above the default rate.
- All savings from the reuse and recycling of any electronic equipment.

Lifetime:

- All the benefits listed in the first year savings.
- All savings from the reduction in hazardous waste at the end-of-life of an EPEAT-registered product.
- The remaining years of energy efficiency savings from the use of an EPEAT-registered product, or from enabling power management on a product above the default rate. The number of years in a product's lifetime is based on the average lifetime of the product.
- All savings from extending the life of electronic equipment.

ADDITIONAL QUESTIONS?

Please see the FEC resource, *Using the Electronics Environmental Benefits Calculator (EEBC)* at: <http://www2.epa.gov/fec/using-electronics-environmental-benefits-calculator-eebc-7252012>.

REFERENCES

Information and instructions for the FEC Annual Reporting Form are available at: <http://www2.epa.gov/fec/baseline-survey-reporting>.

The Electronics Environmental Benefits Calculator may be downloaded as a Microsoft Excel® spreadsheet at: <http://www2.epa.gov/fec/publications-and-resources#calculator>.

CONTACT INFORMATION

If you have questions related to this resource or need other assistance with the Federal Electronics Challenge, please contact your Regional Champion: <http://www2.epa.gov/fec/technical-assistance>.

Visit the FEC online: <http://www2.epa.gov/fec/>

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