

## On-Line Calculators, Tools, and Resources that Measure, Track, and Evaluate Pollution Prevention Activities

This document briefly describes on-line calculators, tools, and resources that measure, track, and evaluate pollution prevention activities. The 53 listings include websites with multiple resources, stand-alone programs, and simple spreadsheets. These sites have not been fully reviewed for their contents however; the research goal was to seek tools and resources that would benefit pollution prevention measurement and evaluation activities.

### 5 Categories

- Solid Waste/Recycling
- Green House Gas/Fleets/Particulate Emissions
- Energy and Electronics
- Water
- Other Resources.



## Solid Waste/ Recycling

### 1) Environmental Defense Paper Calculator

<http://www.environmentaldefense.org/papercalculator/>

Environmental Defense's "new and improved" Paper Calculator is a web-based tool that enables companies, communities, schools, and other organizations to understand and improve their daily paper use. The Paper Calculator provides users with the U.S. average energy and wood consumption and environmental releases of different paper types across their full lifecycle. For each of thirteen major grades of paper and paperboard, it allows the user to compare the environmental impacts of papers made with different levels of recycled content, and to see how using less paper or changing other specifications can reduce environmental impacts. Finally, the Paper Calculator helps users to measure and communicate the environmental benefits of better paper choices.

### 2) National Recycling Coalition (NRC) Environmental Benefits Calculator

<http://www.nrc-recycle.org/member/advocacy/rworks/calculator.htm>

Contact: Anjia Nicolaidis, 202-789-1430, [anjian@nrc-recycle.org](mailto:anjian@nrc-recycle.org)

The NRC calculator is based on a model that was originally developed by Ed Boisson and Associates for NERC, with funding provided the U.S. EPA, Region II. This tool generates estimates of environmental benefits, based on the number of tons of specified materials recycled, land filled, and incinerated in a particular geographic region. The NRC calculator shows, in an inventive way, how much we save each year by recycling paper, glass, plastic and aluminum. The site informs consumers on why it is so important to recycle and what should be recycled.

### 3) NERC's Environmental Benefits Calculator

[http://www.nerc.org/topic\\_areas/environmental\\_benefits\\_calculator.html](http://www.nerc.org/topic_areas/environmental_benefits_calculator.html)



NERC's Environmental Benefits Calculator (in Microsoft Excel) generates estimates of the environmental benefits of a study area, based on the tonnages of materials that are source reduced, reused, recycled, landfilled, or incinerated (includes waste-to-energy). The Calculator tailors the results to the amount of materials source reduced, reused, and recycled and the current mix of landfilling, incineration/waste-to-energy in the study area.

### 4) New York Wa\$teMatch Building Materials Reuse Calculator

<http://www.wastematch.org/calculator/calculator.htm>

[NOTE: This calculator is available for downloading only to registered users of the NY Wa\$teMatch Materials Exchange]

This tool helps to estimate the environmental benefits of salvaging and reusing building materials, rather than buying and installing new ones. The calculator measures the environmental benefits of reusing building materials in terms of 10 avoided negative environmental impacts (global warming, acidification, eutrophication, fossil fuel depletion, water intake, criteria air pollutants, ecological toxicity, human health, ozone depletion, smog) and in terms of the embodied energy that the materials contain, which is preserved when the materials are reused.

### 5) OFEE Paper Calculator

<http://www.ofee.gov/gp/papercal.asp>

The web-based Paper Calculator calculates the U.S. average environmental releases and energy and wood consumption summed across the full life cycle of each of five major grades of paper and paperboard. For a given grade, the user can compare the environmental impacts of papers made with different levels of post-consumer recycled content, ranging from 0% (i.e., virgin paper) to 100%. Converts to number of trees saved, gallons of water saved, pounds of solid waste avoided, BTUs saved, homes/generators powered.

### 6) Recycled Content (ReCon) Tool

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteToolsRecon.html>

The ReCon Tool is a web based calculator or a Microsoft Excel spreadsheet that calculates greenhouse gas (GHG) emissions and energy consumption of alternative recycled content purchasing decisions. The calculations are made based on purchasing and/or manufacturing activities.

### 7) WASTE Reduction Model (WARM)

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteWARM.html>

EPA created WARM to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions and energy savings from several different waste management practices. Web-based worksheet compares baseline and alternative MSW management scenarios.



## Green House Gas Fleets/ Particulate Emissions



### 1) Blue Sky Energy's Travel Greener calculator

<http://www.travelgreener.com/>

Blue Sky Energy's Travel Greener calculator estimates the amount of pollution offsets necessary to compensate for accommodations and travel by air or auto from anywhere in the U.S. to a variety of locations around the world. Purchase of offset certificates pays for renewable energy generation.

### 2) Carbon Dioxide Emissions Calculator for Ski Resorts

[http://www.c2p2online.com/main.php3?section=165&doc\\_id=545](http://www.c2p2online.com/main.php3?section=165&doc_id=545)

This Excel spreadsheet from the Canadian Center for Pollution Prevention helps estimate carbon dioxide emissions for ski resorts. Other resources from the C2P2 website help ski resorts reduce carbon dioxide.

### 3) Climate Change Calculator

[http://www.americanforests.org/global\\_releaf/](http://www.americanforests.org/global_releaf/)

How many trees do you need to plant to offset your carbon emissions? American Forests' Personal Climate Change Calculator can quickly help you calculate the effect your lifestyle has on our Earth's climate. They advise individuals, organizations, agencies, and corporations on improving the environment by planting and caring for trees.



### 4) Combustion

[Calculations](#)

[Spreadsheets](#)

<http://www.envirometrics.com/news/index.html>

These spreadsheets calculate sulfur dioxide, particulate matter, and chloride emissions by mass balance and nitrogen oxides from emission factors. Calculations are included for the rate of urea injection required for approximately 50% NOx control, the amount of carbon injection required for mercury control, and the humidification water required for effective dry sorbent injection for acid gas control. Users are cautioned to examine the calculations closely as some details will reflect these specific projects.

### 5) DOE's Federal Automotive Statistical Tool (FAST)

<http://fastweb.inel.gov/>

Contact: Paul Grigsby, EPA's lead contact for green fleets, 202 564-7737, [grigsby.paul@epa.gov](mailto:grigsby.paul@epa.gov)

DOE's FAST system was developed to assist federal agencies in meeting the data reporting requirements of Executive Order 13149, "Greening the Government Through Federal Fleet and Transportation Efficiency," The Energy Policy Act of 1992, as amended by the Energy Conservation Reauthorization Act of 1998 (Public Law 105-388), and the General Services Administration's SF82, "Agency Report of Motor Vehicle Data." Data collected through the FAST satisfies all of these requirements. DOE compiles inputs annually.

### 6) EPA's Green Power Tracking Spreadsheet

Contact: Justin Spenillo, 202 564-0639, [spenillo.justin@epa.gov](mailto:spenillo.justin@epa.gov)

EPA currently uses this tool (currently in Lotus123 spreadsheet format) to track all of the Agency's green power purchases for its laboratories and regional offices, as well as the associated GHG emissions and criteria pollutants offset. Using the emission offsets resulting from purchased green power (outputs), EPA can calculate the equivalence to cars off the road, trees planted, homes powered. For access contact Bucky Green, Chief, Sustainable Facilities Practices Branch, Facilities Management and Services Division, Office of Administration and Resource Management

### 7) EPA Global Warming Resource Center

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterToolsCalculators.html>

A list of interactive calculators that help estimate the greenhouse gas emissions of human activities, convert carbon emissions to equivalent units, and identify and compare emissions reduction options. The calculators vary greatly in complexity, scope, and intent. A brief description of each is provided to help you choose one or more that best meets your needs.



### 8) Fuel Cost Calculator

<http://www.fueleconomy.gov/feg/savemoney.shtml>

Calculates fuel costs and compares savings between two vehicles.

### 9) Green Power Purchasing Decision Support Tool

Contacts: Bucky Green, 202 564-0639, [green.bucky@epa.gov](mailto:green.bucky@epa.gov), Joe DeCarolis, 919 541-3200, [decarolis.joseph@epa.gov](mailto:decarolis.joseph@epa.gov)

[Note: This tool is still under development by EPA's Office of Research and Development and is not yet available.]

This tool allows decision makers to estimate the multi-pollutant emissions impact resulting from the purchase of different types of low GHG energy in different regions of the nation. It could prove useful to other government agencies required to comply with EPAct 2005, as well as regional EPA offices interested in estimating the emissions impact of new power plants.



### 10) BEF Carbon Offsets

<http://www.b-e-f.org/offsets/index.cfm>

This calculator helps individuals determine how much CO2 and other greenhouse gasses their activities create. The Bonneville Environmental Foundation, sells BEF Carbon Offsets, formally known as Green Tags.

### 11) Greenhouse Gas Equivalencies Calculator

<http://epa.gov/cleanenergy/energy-resources/calculator.html>

The Greenhouse Gas Equivalencies Calculator is designed to enable public and private sector organizations and individuals to quickly and easily translate greenhouse gas (GHG) reductions from units that are typically used to report reductions (e.g., metric tons of carbon dioxide equivalent) into terms that are easier to conceptualize (e.g., equivalent number of cars not driven for one year). Applications of this calculator might include developing a greenhouse gas reduction strategy, communicating reduction targets to the public or stakeholders, and supporting other initiatives aimed at reducing GHG emissions.

### 12) HEV Cost Calculator Tool

[http://www.afdc.energy.gov/afdc/vehicles/hybrid\\_electric\\_calculator.html](http://www.afdc.energy.gov/afdc/vehicles/hybrid_electric_calculator.html)

The HEV Cost Calculator Tool allows fleets to evaluate the full costs and benefits of a hybrid electric vehicle (HEV) in comparison to a conventional vehicle. Fleets also may use the tool to determine the cost and benefits of a fleet of HEVs versus a fleet of conventional vehicles. The tool assesses both capital and operating costs, over the lifetime of use, as well as greenhouse gases and other air emissions. Outputs are provided per vehicle, per year, and per mile.

### 13) Hybrid Car Gas Mileage Impact Calculator

<http://www.hybridcars.com/calculator/>

This calculator offers information related to gas consumption, fuel cost and emission of pollutants to compare a hybrid car with a non-hybrid car.



### 14) Implementation Tool: Air Emissions Reduction Calculator

<http://www.moea.state.mn.us/lc/ippat.cfm>

This calculator can be used by state agencies to document progress toward the commitments they made in response to Executive Order 04-08. Each department chose two activities to undertake toward reducing their contribution to air pollution.

### 15) NOx and Energy Assessment Tool (Nx/EAT)

[http://www1.eere.energy.gov/industry/bestpractices/pdfs/nox\\_tool.pdf](http://www1.eere.energy.gov/industry/bestpractices/pdfs/nox_tool.pdf)

The NOx and Energy Assessment Tool (Nx/EAT) helps plants in the petroleum refining and chemical industries to assess and analyze NOx emissions and application of energy efficiency improvements. Use the tool to inventory emissions from equipment that generates NOx, and then compare how various technology applications and efficiency measure affect overall costs and reduction of NOx. Perform "what-if" analyses to optimize and select the most cost-effective methods for reducing NOx from systems such as steam heaters, boilers, gas turbines, and reciprocating engines.

### 16) PM Calculator

<http://www.epa.gov/ttn/chief/software/pmcalc/>

EPA has replaced the PM-10 Calculator program with new software that will estimate filterable PM2.5 emissions. The new software, PM Calculator, Version 2.0, is applicable to point sources only and requires the user to input uncontrolled emissions (either total filterable particulate or filterable PM10) for each source, the source category classification (SCC) and the control device, if any. The program will then calculate controlled emissions for filterable PM2.5 and filterable PM10 for each point source.



## Energy and Electronics

### **1) AIRMaster**

<http://ww1.eere.energy.gov/industry/bestpractices/pdfs/airmaster.pdf>

AIRMaster+ provides comprehensive information on assessing compressed air systems, including modeling, existing and future system upgrades, and evaluating savings and effectiveness of energy efficiency measures.

### **2) Building Life-Cycle Cost Software**

<http://ww1.eere.energy.gov/femp/information/download/blcc.html>

FEMP offers this software to analyze the cost-effectiveness of Federal energy and water conservation projects funded by agencies or financed through energy savings performance contracts or utility energy services contracts. The software calculates life-cycle costs, net savings, savings-to-investment ratio, internal rate of return and payback period. The BLCC programs also estimate emissions and emission reductions. Typically, BLCC software is used to evaluate alternative designs that have higher initial costs but lower operating-related costs over the project life than the lowest-initial-cost design.

### **3) Calculator for Grid-Connected Photovoltaic Systems (PVWATTS)**

[http://rredc.nrel.gov/solar/codes\\_algs/PVWATTS/](http://rredc.nrel.gov/solar/codes_algs/PVWATTS/)

Many state electrical utilities have implemented programs where operators of photovoltaic systems connected to the electrical power grid can sell power to the utility operator. PVWATTS calculates electrical energy produced by a grid-connected photovoltaic system.

### **4) Chilled Water System Analysis Tool (CWSAT) Version 2.1**

[http://ww1.eere.energy.gov/industry/bestpractices/pdfs/chiller\\_tool.pdf](http://ww1.eere.energy.gov/industry/bestpractices/pdfs/chiller_tool.pdf)

Use the Chilled Water System Analysis Tool (CWSAT) to determine energy requirements of the system, and to evaluate opportunities for energy and costs savings by applying improvement measures. Provide basic information about an existing configuration to calculate current energy consumption, and then select proposed equipment or operational changes for comparison. The results of this analysis will help quantify the potential benefits of chilled water system improvements.

### **5) Clean Power Estimator**

<http://www.clean-power.com/Kyocerasolar/default.asp>

The PV Calculator is a tool to help determine the variable costs and benefits of installing a photovoltaic (PV) power system in a home or business. By choosing one of Kyocera Solar's pre-packaged grid-connected PV systems, and inputting information about the physical and financial environment of the home or business, the calculator will estimate how much pollution could be prevented and how much money could be saved with solar energy.

### **6) Combined Heat and Power Application Tool (CHP)**

The Combined Heat and Power (CHP) Application Tool helps industrial users evaluate the feasibility of CHP for heating systems such as fuel-fired furnaces, boilers, ovens, heaters, and heat exchangers. It allows analysis of three typical system types: fluid heating, exhaust-gas heat recovery, and duct burner systems. Use the tool to estimate system costs and payback period, and to perform "what-if" analysis for various utility costs. The tool includes performance data and preliminary cost information for many commercially available gas turbines and default values that can be adapted to meet specific application requirements.



[http://ww1.eere.energy.gov/industry/bestpractices/pdfs/chp\\_tool.pdf](http://ww1.eere.energy.gov/industry/bestpractices/pdfs/chp_tool.pdf)

### **7) Electronic Product Environmental Assessment Tool (EPEAT)**

<http://www.epeat.net>

Contacts: Sarah O'Brien, EPEAT Outreach Director, (802) 479-0317, [sarah.obrien@greenelectronicscouncil.org](mailto:sarah.obrien@greenelectronicscouncil.org), Wayne Rifer, EPEAT Operations Manager, (503) 644- 0294 [wayne.rifer@greenelectronicscouncil.org](mailto:wayne.rifer@greenelectronicscouncil.org)

The Electronic Product Environmental Assessment Tool (EPEAT) is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, laptops and monitors based on their environmental attributes. EPEAT consists of both a set of criteria for assessing products and a management system for their application and maintenance. Provides three tiers of environmental performance (gold, silver, and bronze) for eight performance categories: reduction/elimination of environmentally sensitive materials, material selection, design for end-of-life, product longevity/life extension, energy conservation, end-of-life management, corporate performance, packaging.

### **8) EPA/University of Tennessee Environmental Benefits Calculator**

<http://eerc.ra.utk.edu/ccpct/eebc/eebc.html>

Through a cooperative agreement with EPA, the University of Tennessee is developing calculator tools that will allow program participants to quantify the benefits of environmentally sound management of electronic equipment. The tool is intended for Federal Electronics Challenge (FEC) program participants, and manufacturers of EPEAT-qualified products. Research is currently underway to develop performance metrics and calculator tools. The FEC and EPEAT programs specify product design criteria and management activities based on environmental attributes (e.g., the elimination of toxic chemicals, the use of recycled materials, power consumption) or program activity (e.g., equipment reuse and recycling). The project will develop environmental performance metrics and quantitative tools that translate attributes and activities into environmental benefits.

### **9) EPA's Green Power Tracking Spreadsheet**

Contact: Justin Spenillo, 202 564-0639, [spenillo.justin@epa.gov](mailto:spenillo.justin@epa.gov)

EPA currently uses this tool (currently in Lotus123 spreadsheet format) to track all of the Agency's green power purchases for its laboratories and regional offices, as well as the associated GHG emissions and criteria pollutants offset. Using the emission offsets resulting from purchased green power (outputs), EPA can calculate the equivalence to cars off the road, trees planted, homes powered. For access contact Bucky Green, Chief, Sustainable Facilities Practices Branch, Facilities Management and Services Division, Office of Administration and Resource Management. (Also listed under II-6 above)

### **10) Energy Guide**

<http://www.energyguide.com/>

This calculator is designed to provide a comprehensive analysis of energy use in your home or business along with customized energy efficiency improvement recommendations. The calculator prepares a report, based on information submitted by the user, showing investments with greatest savings and those with the fastest payback on investment. Information on multiple buildings may be stored and updated for use in future analyses.

### **11) Energy Star Savings Calculators**

[http://www.energystar.gov/index.cfm?c=bulk\\_purchasing.bus\\_purchasing](http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing)

Energy Star has savings calculators for the following appliances:

Commercial Clothes Washers; Commercial Refrigerators/Freezers; Commercial Fryers (Electric and Gas); Commercial Hot Food Holding Cabinets; Commercial Steam Cookers (Electric and Gas); Vending Machines; Exit Signs (Lighting Products); LED Traffic Signals; TVs and VCRs; DVD Players; Cordless Phones and Answering Machines; Computers and Monitors; Printers; Fax Machines; Scanners; Copiers; Multifunction Devices; Water Coolers; Residential Refrigerator/Freezer/Compact Refrigerator; Dishwashers; Clothes Washers; Dehumidifiers; Room Air Cleaners; Residential Central Air Conditioners; Residential Air-source Heat Pumps; Residential Room Air Conditioners; Residential Boilers; Residential Furnaces; Residential Thermostats; Residential Ceiling Fans; Residential Lighting Products (CFLs and Light Fixtures)

### **12) Energy Star Canada Simple Savings Calculator**

<http://oee.nrcan.gc.ca/energystar/english/participants/procurement/calculator.cfm?Text=N&PrintView=N>

Many Energy Star calculators consolidated here into one tool, an interactive software tool to compare the costs of purchasing energy-efficient products with those of conventional equipment. Using local utility rates, projected savings can be calculated from reduced energy consumption and maintenance costs.

### **13) EPA Global Warming Resource Center**

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterToolsCalculators.html>

A list of interactive calculators that help estimate the greenhouse gas emissions of human activities, convert carbon emissions to equivalent units, and identify and compare emissions reduction options. The calculators vary greatly in complexity, scope, and intent. A brief description of each is provided to help you choose one or more that best meets your needs. (Also listed under II-6 above)

### **14) Fan System Assessment Tool (FSAT)**

[http://ww1.eere.energy.gov/industry/bestpractices/pdfs/fsat\\_tool.pdf](http://ww1.eere.energy.gov/industry/bestpractices/pdfs/fsat_tool.pdf)

Use the Fan System Assessment Tool (FSAT) to help quantify the potential benefits of optimizing fan system configurations that serve industrial processes. FSAT is simple and quick, and requires only basic information about your fans and the motors that drive them. With FSAT, calculate the amount of energy used by your fan system; determine system efficiency; and quantify the savings potential of an upgraded system.

### **15) Green Power Purchasing Decision Support Tool**

Contacts: Bucky Green, 202 564-0639, [green.bucky@epa.gov](mailto:green.bucky@epa.gov), Joe DeCarolis, 919 541-3200, [decarolis.joseph@epa.gov](mailto:decarolis.joseph@epa.gov)

<http://www.epa.gov/greenpower/pubs/index.htm>

This tool allows decision makers to estimate the multi-pollutant emissions impact resulting from the purchase of different types of low GHG energy in different regions of the nation. It could prove useful to other government agencies required to comply with EPAct 2005, as well as regional EPA offices interested in estimating the emissions impact of new power plants. (Also listed under II-9 above)

### **16) Home Energy Saver**

<http://hes.lbl.gov/>

The Home Energy Saver is designed to help consumers identify the best ways to save energy in their homes, and find the resources to make the savings happen. The Home Energy Saver was the first Internet-based tool for calculating energy use in residential buildings.

### **17) Motormaster+**

<http://ww1.eere.energy.gov/industry/bestpractices/pdfs/mmplus.pdf>

FEMP recommends this software to determine the cost-effectiveness of motor replacement projects. An energy-efficient motor selection and management tool, MotorMaster+ software includes a catalog of over 20,000 AC motors. This tool features motor inventory management tools, maintenance log tracking, efficiency analysis, savings evaluation, energy accounting, and environmental reporting capabilities.

### **18) OSWER Innovations Pilot - Measuring the Environmental Benefits of Federal Electronic Equipment Management Practices**

Contacts: Vicky Salazar, 703 308-8647, [salazar.vicky@epa.gov](mailto:salazar.vicky@epa.gov), Oliver Voss, 202 564-4514, [voss.oliver@epa.gov](mailto:voss.oliver@epa.gov)

EPA, in partnership with the General Services Administration, Department of Defense, Office of the Federal Executive, and the Federal Network for Sustainability, will develop a calculator to quantify the benefits of environmentally sound management of federal electronic equipment. The pilot will evaluate existing environmental benefits calculators to determine what information is necessary to develop meaningful measures and how to incorporate electronic equipment into one of them. Information will be collected from FEC facilities, including material recovery and disposal data. A survey of current research on the life cycle of electronic products will be conducted. While there are online calculators and other tools to assess the environmental benefits of recycling traditional commodities, there is no tool to assess the environmental benefits of purchasing, operating, reusing, and recycling electronics in an environmentally sound manner. Ultimately, the development of this assessment tool will help translate the successes of sound electronics management into quantifiable benefits to the environment. Beyond the pilot phase, a major goal of the project is to expand the FEC to federal facilities in other EPA Regions.

### **19) Plant Energy Profiler for the Chemical Industry (ChemPEP Tool)**

[http://ww1.eere.energy.gov/industry/bestpractices/pdfs/pep\\_tool.pdf](http://ww1.eere.energy.gov/industry/bestpractices/pdfs/pep_tool.pdf)

The ChemPEP Tool provides chemical plant managers with the information they need to identify savings and efficiency opportunities. The ChemPEP Tool enables energy managers to see overall plant energy use, identify major energy-using equipment and operations, summarize energy cost distributions, and pinpoint areas for more detailed analysis. The ChemPEP Tool provides plant energy information in an easy to understand graphical manner that can be very useful to managers.



### **20) Power Profiler**

<http://www.epa.gov/cleanenergy/powerprofiler.htm>

The Power Profiler helps users determine the specific air emissions impacts of electricity used to power their home or business using actual monthly energy use information (provided by the user), average monthly use, or default values for monthly residential and commercial electricity use.

### **21) Process Heating Assessment and Survey Tool (PHAST)**

[http://ww1.eere.energy.gov/industry/bestpractices/pdfs/phast\\_tool.pdf](http://ww1.eere.energy.gov/industry/bestpractices/pdfs/phast_tool.pdf)

Process Heating Assessment and Survey Tool (PHAST) provides an introduction to process heating methods and tools to improve thermal efficiency of heating equipment. Use the tool to survey process heating equipment that uses fuel, steam, or electricity, and identify the most energy-intensive equipment. You can also perform an energy (heat) balance on selected equipment (furnaces) to identify and reduce non-productive energy use. Compare performance of the furnace under various operating conditions and test "what-if" scenarios.



## **22) Pumping System Assessment Tool (PSAT)**

[http://www1.eere.energy.gov/industry/bestpractices/pdfs/psat\\_tool.pdf](http://www1.eere.energy.gov/industry/bestpractices/pdfs/psat_tool.pdf)

The Pumping System Assessment Tool helps industrial users assess the efficiency of pumping system operations. PSAT uses achievable pump performance data from Hydraulic Institute standards and motor performance data from the MotorMaster+ database to calculate potential energy and associated cost savings. Minimum screen resolution of 1024 x 768 and 10 megabytes of hard drive space are required.

## **23) Steam System Tool Suite**

[http://www1.eere.energy.gov/industry/bestpractices/pdfs/steam\\_tools.pdf](http://www1.eere.energy.gov/industry/bestpractices/pdfs/steam_tools.pdf)

If you consider potential steam system improvements in your plant, the results could be worthwhile. In fact, in many facilities, steam system improvements can save 10% to 20% in fuel costs. To help you tap into potential savings in your facility, DOE offers a suite of tools for evaluating and identifying steam system improvements.

## **24) Unitary Air Conditioner Cost Estimator**

[http://www1.eere.energy.gov/femp/procurement/eep\\_unitary\\_ac\\_calc.html](http://www1.eere.energy.gov/femp/procurement/eep_unitary_ac_calc.html)

FEMP recommends this tool to determine the cost-effectiveness of an air conditioner (new installation or replacement) project. The Unitary Air Conditioner (UAC) and the Room Air Conditioner (RAC) Cost Estimators compare high-efficiency rooftop and room air conditioners to standard equipment in terms of life cycle cost. These electronic tools provide an alternative to complicated building simulation models, while offering more detail than simplified estimating tools that are commonly available. While simplified tools are typically based on full-load efficiencies and full-load equivalent operating hours, the estimators account for local climate and partial-load, as well as full-load efficiencies.



## **Water Efficiency**

### **1) Building Life-Cycle Cost Software**

<http://www1.eere.energy.gov/femp/information/download/blcc.html>

FEMP offers this software to analyze the cost-effectiveness of Federal energy and water conservation projects funded by agencies or financed through energy savings performance contracts or utility energy services contracts. The software calculates life-cycle costs, net savings, savings-to-investment ratio, internal rate of return and payback period. The BLCC programs also estimate emissions and emission reductions. Typically, BLCC software is used to evaluate alternative designs that have higher initial costs but lower operating-related costs over the project life than the lowest-initial-cost design. (Also listed under III-2 above)

### **2) WAVE·Saver**

<http://www.p2pays.org/ref/21/20549.pdf>

This software is designed to help hotels measure water expense and evaluate numerous opportunities to reduce costs. It also helps track costs and savings and create future budgets. In addition, since hot water consumption also results in energy use, the program allocates related energy consumption as well.

## **Other Resources**



### **1) FEMP Energy Cost Calculators**

[http://www1.eere.energy.gov/femp/procurement/eep\\_eccalculators.html](http://www1.eere.energy.gov/femp/procurement/eep_eccalculators.html)

FEMP has cost calculators for the following:

- Commercial HVAC Equipment
  - Air-cooled Chillers
  - Boilers
  - Commercial "Rooftops" Air Conditioners
  - Commercial Heat Pumps
  - Water-cooled Chillers
- Commercial Appliances
  - Ice Machines
- Lighting Technologies
- Water Saving Technologies
  - Faucets/Showerheads
  - Residential Refrigerator
  - Toilets/Urinals
- Residential HVAC Equipment
  - Electric/Gas water heaters

### **2) Cost Analysis for Pollution Prevention**

<http://www.ecy.wa.gov/pubs/95400.pdf>

A Washington state report written to help companies identify all the major costs involved in a current process and find possible pollution prevention alternatives, with this information they can then compare the costs and savings.

### **3) Environmental Performance Index**

<http://sedac.ciesin.columbia.edu/es/epi/index.html>

The Environmental Performance Index (EPI) provides a single overall rating of the corporation's performance against its stated goals and involves measurement of twenty-five parameters related to regulatory compliance and contaminated site remediation. Each parameter is weighted according to criteria such as environmental impact and degree of risk. Each year, performance is measured against the 1993 baseline (which was assigned an EPI score of 100 points) and the previous year's performance. Accordingly, any annual score greater than 100 indicates positive progress (i.e., reduced environmental impact and risk) in that year as compared to the previous year or the baseline.

### **4) Global Environmental Management Initiative Measurement and Metrics**

<http://www.gemi.org/GEMIPublications.aspx>

Tips to help businesses measure, report and reduce their greenhouse gas (GHG) emissions

### **5) Guide for Measuring Compliance Assistance Outcomes**

<http://www.smallbiz-enviroweb.org/html/pdf/oeca.pdf>

The EPA prepared this document to help measure the impact of compliance assistance projects and activities (e.g., telephone helplines, compliance assistance tools, workshops, etc.) on the regulated community. The methodology presented in this guide also serves as pilot evaluation methodology under NFMS.

### **6) P2Rx Topic Hub™ for Environmental Measurement**

<http://wrrc.p2pays.org/p2rx/toc.cfm?hub=1000&subsec=7&nav=7&CFID=129576&CFTOKEN=73830390>

This primer is intended as a quick guide to the essential P2 information on environmental measurement, as well as a compilation of pertinent on-line resources.

### **7) Pollution Prevention World Information Network**

[http://www.p2win.org/main/81/81/doc/112/hub\\_id/1000/#Software/electronic%20tool](http://www.p2win.org/main/81/81/doc/112/hub_id/1000/#Software/electronic%20tool)

The Environmental Measurement Hub offers many resources for measuring environmental benefits.