Electronics Stewardship & Environmental Management Systems (EMS)

FEDERAL ELECTRONICS CHALLENGE PARTNER CALL

SEPTEMBER 2012

What is an EMS?

Environmental Management System (EMS)

- Part of an organization's overall management system that integrates environmental concerns and issues into the organization's management processes.

- A set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency.

- A framework that helps an organization achieve its environmental goals through consistent control of its operations.

A Successful EMS….

Helps avoid environmental problems by:
- Increasing awareness
- Implementing sustainable activities

Helps organizations:
- Improve regulatory compliance
- Increase efficiency & accountability
- Reduce operational costs & liability
- Enhance employee morale & community relations
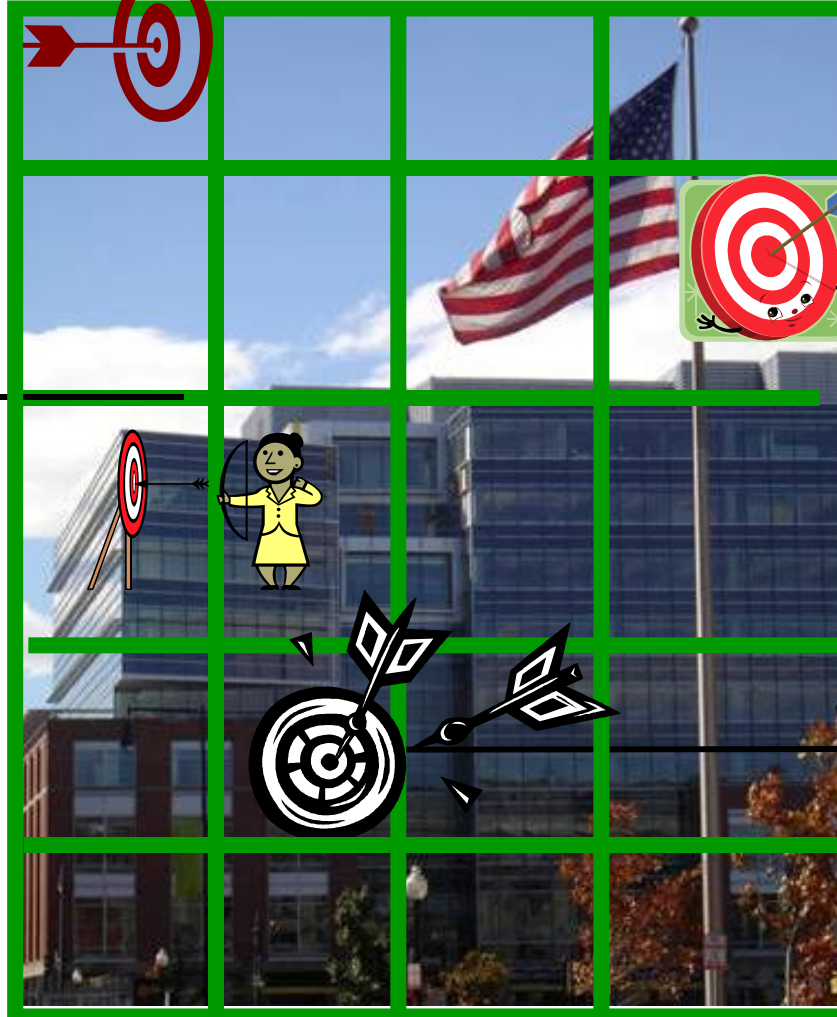
Addressing Your Impacts

Targets & objectives
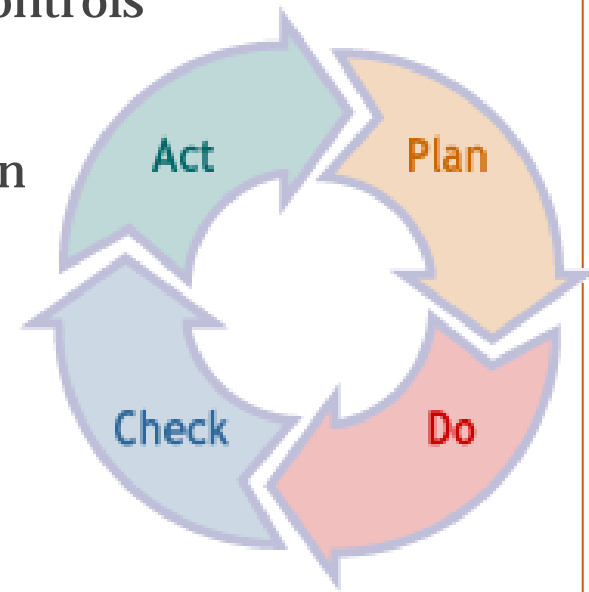
Policies

Operating procedures

Performance measures

EMS: "Plan, Do, Check, Act" Model

This model leads to continual improvement based upon:

- **Plan**
  Planning, including identifying environmental aspects and establishing goals

- **Do**
  Implementing, including training and operational controls

- **Check**
  Checking, including monitoring and corrective action

- **Act**
  Reviewing, including progress reviews and acting to make needed changes to the EMS

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EMS Elements – based on the framework of ISO 14001:2004(E)

- Environmental policy
- Environmental aspects
- Legal & other requirements
- Objectives, targets, & programs
- Resources, roles, responsibility & authority
- Competence, training & awareness
- Communication
- Documentation
- Control of documents

- Operational Control
- Emergency preparedness & response
- Monitoring & measurement
- Evaluation of compliance
- Nonconformity, corrective action & preventative action
- Control of records
- Internal audit
- Management review

EMS & Federal Electronics Stewardship

Executive Order (E.O.) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009):

Federal agencies:

- Must continue to implement environmental management systems at all appropriate organizational levels to ensure performance necessary to meet the E.O. goals.
- Need to ensure that all appropriate facilities or organizations develop, implement, and maintain an EMS.
- May develop, implement, and maintain an EMS at both the organizational or facility level and at the agency or component level.
- Should consult with their agency for additional guidance.

EMS & Federal Electronics Stewardship

- Federal government has the potential to significantly impact the environment.

- Operation of electronic equipment and services provided by data centers impact the environment:
  ◦ Energy consumption
  ◦ Solid and hazardous waste generation

- Environmentally preferable purchasing of electronic equipment.

- Environmentally responsible management and disposition.

EMS & FEC: The Connection

Goal of EMS:
Organizations achieve and demonstrate sound environmental performance by addressing the impact of their activities on the environment.

FEC Program Goal:
Partners reduce life-cycle environmental impacts of electronic products and services.

EMS = Structure and framework to achieve FEC goals

Participation in the FEC can support your EMS

The FEC has helpful tools and assistance to "populate" the elements of an EMS, including:

- Identifying life cycle activities which have an environmental impact.
- Identifying roles and responsibilities.
- Providing access to other federal experiences.
- Developing goals and measuring progress.

FEC EMS Award Requirement

Federal Electronics Challenge
Electronics Stewardship One Byte @ A Time

2013 FEC Award
Mandatory Activities Checklist
(for FY2012 activities)

Updated: 4/18/2012

LIFECYCLE MANDATORY ACTIVITIES: OPERATION & MAINTENANCE

Yes ▾ Ensure that your organization's Environmental Management System (EMS) addresses electronics stewardship or considered electronics stewardship as a significant aspect during the last review.[3]

Supporting Documentation
- Copies of, or excerpts from, the referenced Environmental Management System document (please provide applicable page numbers if the document contains other content).
- Documentation of request to appropriate parties for consideration of electronics stewardship as an aspect.

Examples of EMS Aspects & Programs

EPA Agency Priorities:

- Greenhouse-gas emissions
- Energy and water use
- Sustainable building design
- Vehicle use and transportation programs
- Chemical use
- Sustainable acquisition
- Paper consumption
- **Electronics stewardship**
- Recycling
- Solid waste reduction

Example: EPA Region 8 EMS Aspects & Programs

- Water Conservation and Efficiency
- Transportation/Fleet Management
- Recycling & Solid Waste Management
- Hazardous Waste/Universal Waste Management
- Energy Management
- **Electronics Stewardship**
- Affirmative Procurement
- Communications

Example: EPA Region 8 Electronics Stewardship Environmental Management Plan (EMP)

			Objectives and Targets; Structure, Authorities, Responsibilities:				
Objectives:	**Targets**	**Target Driver**	**Metrics**	**Task/ Activities:**	**Responsible Person(s):**	**Resources/ funding available:**	**Target Date**
			Regional Office and Lab				
ensure all incoming equipment have 3 environmental attributes	Ensure at least 3 environmental attributes for(printers, copiers, faxes, MFD, TV's)	EPEAT	product specifications	verify products meet the standard		ISP operational budget	10/1/12
Promote electronic stewardship through purchase of EPEAT-registered products and operation	95% of eligible electronic equipment purchased or leased annually will be EPEAT-registered.	EPEAT	EPEAT registration #s of purchased equipment	track the % of electronic equipment purchased that is EPEAT registered		ISP operational budget	11/1/2012
Promote electronic stewardship	100% eligible equipment will have double-sided printing set as default	EPEAT	Track the number of eligible computers, printers, copers and multifunction devices have double-sided printing features set as default.	Documentation of duplex verification		ISP operational budget	11/1/2012
Promote electronic stewardship	95% of eligible e equipment will be reused, donated, recycled, or disposed of in an environmentally friendly way	EPEAT	Track metrics of used electronic equipment that is reused internally, transferred to other federal agencies, donated, sold, recycled, or sent for disposal.	Examples of equipment transfer documentation		ISP operational budget	11/1/2012
Promote electronic stewardship	100% of eligible computers and monitors in operation at the facilities will have ENERGY STAR® features enabled	EPEAT	% of eligible computers and monitors with ENERGY STAR® features enabled - Documentation of power management verification	Set all eligible computers and monitors to enable ENERGY STAR® features		ISP operational budget	11/1/2012

Example: EPA Region 8 Electronics Stewardship Environmental Management Plan (EMP)

Operational Controls (OCs):						
Activities that give rise to the hazard	Operational Control(s)	Person(s) responsible for controls	Monitoring & Measurement of OCs	Records generated by controls	Person responsible for records	Actions to be taken if controls fail
Regional Office and Lab						
Procurement of electronic equipment	*EPA R8 IT Asset Management SOP* dated 2/19/09		Local custodian receiving log	ISP Inventory updates		Follow R8 EMS procedure for Nonconformances
Procurement of electronic equipment	*Green IT Purchasing SOP* dated 2/5/09		Local custodian receiving log	ISP Inventory updates		Follow R8 EMS procedure for Nonconformances
Procurement of electronic equipment	Data Center energy comsumption and monitoring		Local custodian receiving log	ISP Inventory updates		Follow R8 EMS procedure for Nonconformances
Paper Consumption	Network Printer Paper Consumption		Monitoring of paper consumption by individual MFP	Monitoring of paper consumption by individual MFP		Follow R8 EMS procedure for Nonconformances
Property Inventory	Property Inventory database		Property Inventory database	Inventory records		Follow R8 EMS procedure for Nonconformances
Property Disposal	GSA Property Excessing Regulations		Property Inventory database	Excess/Disposal list of equipment		Follow R8 EMS procedure for Nonconformances
Property Disposal	EPA Property Manual		Property Inventory database	Excess/Disposal list of equipment		Follow R8 EMS procedure for Nonconformances

Authorization
Deputy ARA, Technical and Management Services (TMS):_____
(DATE)_____
Lead:_____
(DATE)_____

Other FEC & EMS Resources

Environmental Management Systems and Federal Electronics Stewardship :
www.epa.gov/fec/resources/ems_connection.pdf

Integrating Electronics Into Your Environmental Management System (EMS) :
www.epa.gov/fec/resources/ems_tool.pdf

EPA EMS Website : *www.epa.gov/ems/*

Executive Order 13514 text :
www.fedcenter.gov/programs/eo13514/

Contact

- Kim Bartels - EPA Region 8
  bartels.kim@epa.gov
  (303) 312-6346

- Web site: www.epa.gov/fec

- FEC Champions: www.epa.gov/fec/technical.html

- Partner E-mail: fec@epa.gov

Electronics Stewardship & Environmental Management Systems (EMS)

OTHER FEDERAL EXAMPLES

Example: National Renewable Energy Laboratory – Golden, Colorado

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- NREL Environmental Management System
- NREL Site Sustainability Plan

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

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U.S. DEPARTMENT OF
ENERGY

Example: National Renewable Energy Laboratory – Golden, Colorado

NREL Environmental Management System

- Environmental Aspects
  - Electronics purchases, management & disposal
- Operational Control
  - Electronics purchases, management & disposal (lab level procedures)

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U.S. DEPARTMENT OF ENERGY

NREL Environmental Management System

- Objectives, Targets & Programs
  - DOE O 436.1, Departmental Sustainability
    - EO 13514 Federal Leadership in Environmental, Energy, and Economic Performance (and other orders)
    - Annual Site Sustainability Plan (SSP)
    - Requires EMS
  - Develop planned actions (including due dates and who is responsible) for the coming fiscal year and submit for inclusion in the SSP and as part of the EMS

NREL NATIONAL RENEWABLE ENERGY LABORATORY
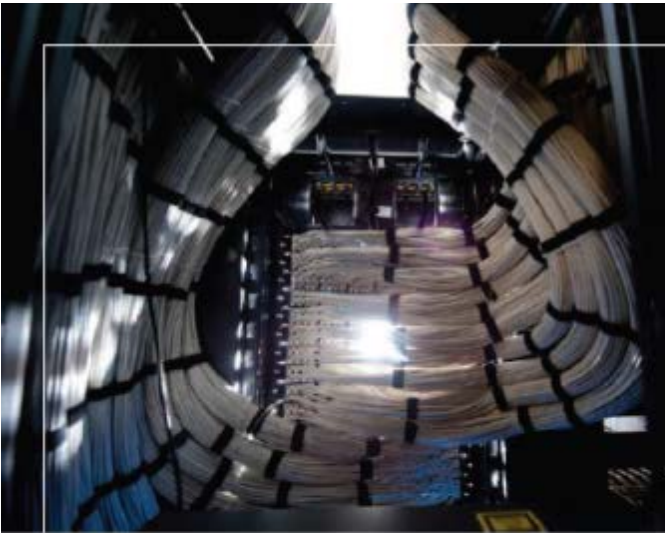
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U.S. DEPARTMENT OF ENERGY

NREL Environmental Management System

- Monitoring and measurement
  - Actions are tracked at least quarterly using the Reliance EtQ system

- Management Review
  - Results are reported to executive management every six months
  - Results are reported using the SSP

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NREL Site Sustainability Plan

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DATA CENTERS AND ELECTRONIC STEWARDSHIP

NREL's world-class data center is located in the RSF. To be incorporated in this LEED Platinum and net-zero energy building, the energy center was designed to minimize its energy footprint without compromising needed service quality.

GOALS

(7.1) All data centers are metered to measure a monthly PUE (100% by FY2015)

NREL's RSF data center measures monthly PUE.

(7.2) Maximum annual weighted average Power Utilization Effectiveness (PUE) of 1.4 by FY 2015

PUE for the RSF data center is 1.16.

(7.3) Electronic Stewardship—100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012

Power management is enabled on 100% of devices.

STRATEGY AND PERFORMANCE SUMMARY

NREL is working to transform the delivery of its Information Technology (IT) products and services to demonstrate the leading edge of energy efficiency. By leveraging cloud computing, implementing the use of virtual desktops in the end-user computing environment, and monitoring performance, NREL strives for continuous improvement in our efforts to optimize IT service management.

NREL actively seeks opportunities to share information on our energy efficiency best practices through the development of case studies, participation in the FEC, mentoring activities, and industry presentations. NREL also performs staff outreach for electronic stewardship and full life-cycle management of equipment.

FY 2011 PERFORMANCE STATUS

Contact

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NREL Information Services

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http://www.nrel.gov

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Drug Enforcement Administration Special Testing and Research Laboratory

Elizabeth Guest
Forensic Chemist
EMS Team Member

Laboratory Order for Electronic Stewardship

- Acquisition and Procurement
- Operation and Maintenance
- End-of-Life

FEC Awards Received by the Lab

- 2009 – Bronze award
- 2010 – Gold award
- 2011 – Platinum award
- 2012 – Platinum award

Acquisition and Procurement

- Purchase or lease Energy Star and EPEAT-registered products (www.epeat.net)
    - Need written justification if Energy Star or EPEAT products not purchased

- Purchase electronic products that possess
    - Reduced toxic content
    - Highly recycled content
    - Energy savings and/or conservation capabilities

Acquisition and Procurement

- Purchase or lease products that can be recycled or given back to the manufacturer at the end-of-life
  - Some instrument companies offer take back programs and will give credit towards a new instrument to buyers that participate in the program

Operation and Maintenance

- At the end of the day
  - Sleep method needs to be active on
    - Computers and monitors
    - Printers
    - Copy machines
  - Turn off
    - Overhead and fume hood lights
  - Close
    - Hood sashes and hazardous waste containers
- A checklist is signed each night to ensure this is all completed

Operation and Maintenance

- Printing
  - Minimize color printing
  - Double sided photocopying and printing
  - Use electronic alternatives
    - Electronic copies
    - Emails
    - Electronic forms
    - DEA lab system implementing an information system working toward paperless case files

End-of-Life

- Donations
  - Computers and analytical equipment to educational facilities, federal and state agencies
    - Philippines, Afghanistan, Vietnam, Brazil, and Colombia
    - FBI, ICITAP
    - Other DEA laboratories

End-of-Life

- Recycling
  - Within a 250 mile radius of the lab
  - EPA Certified recycler
  - UNICOR in Maryland

EMS Related Plans

- Hazardous Waste Management Plan
- Chemical Hygiene Plan

Pollution Prevention

- All waste containers marked as "Hazardous Waste" and marked with the container contents

- All hazardous waste is disposed in either satellite collection areas or in the solvent room

- The lids of satellite collection containers are closed when not in immediate use

- Hazardous waste spills are cleaned up using the spill kits located throughout the lab

Pollution Prevention

- Chemical inventory database accessible to everyone in laboratory
- MSDS accessible to everyone in laboratory

Chemical Hygiene Plan

- Wear proper safety equipment when handling hazardous chemicals
  - Gloves   - Safety glasses   -Goggles
  - Lab coats   - Respirator
- Dispose of hazardous waste properly
- Store all chemicals in their proper location when not in use
- MSDS's are located in the hallway outside the analytical lab, downloaded from the vendor's website, or Website under Safety Programs

Other EMS Activities

- Water Testing
- Battery recycling
  - Employees can recycle batteries from home
  - We use battery solutions
- Recycle all fluorescent light bulbs
  - Picked up with our hazardous waste
- Paper, plastic, glass, etc. recycling

Favorite EMS Activity at Our Facility

- Eating Candy!!!!!
  - All of the candy wrappers are recycled at www.terracycling.com
  - Proceeds go to the DEA Survivors Benefit Fund
    - We have recycled over 1000 candy wrappers to date!

Questions?

- Please contact any one of the EMS team at 703-668-3300

- EMS Team
  - Liz Guest – elizabeth.m.guest@usdoj.gov
  - Dilka Slivinski
  - Kitty Bertrand
  - Mary Yohannan