



# Environmentally Preferable Purchasing at the U.S. Department of Energy





# Environmentally Preferable Purchasing



## Definition:

*Acquisition of products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose*

## DOE Policy:

*Purchase designated products containing environmentally preferable attributes to the maximum extent practicable when available, affordable and effective*

## Benefits:

- Conserves nation's, DOE's, your site's resources
- Meets federal regulations and DOE policy
- Makes good business \$ense





## Examples of Potential Cost Savings When Purchasing Designated Products 2010



- Paint (latex)  
*Recycled paint (meets commercial paint specs)* \$19-\$33/gal  
\$9/gal
- Toner cartridge (HP 2100/5500)  
*Remanufactured toner cartridge* \$89/\$269  
\$47/\$186
- Paper/ream (20lb, truck-load)  
*Recycled paper (30% pc)* \$3.94/\$4.38  
\$2.69/\$4.89
- Carpet (Nylon commercial grade)  
*Biobased back/recycled face* \$35/sq yd  
\$35/sq yd



## Agency Drivers for Designated Product Purchases



- Legislation:
  - Resource Conservation & Recovery Act (RCRA)
  - Clean Air Act Title VI (CAA)
  - Farm Security and Rural Investment Act (FSRIA)
  - Energy Acts of 1992, 2005, 2007
- Executive Orders: 13221, 13423 (replace EO13101, 13123, 13134, 13148, 13149), **13514**
  - Specify environmental preferability in environmental management systems
  - Add Electronic Stewardship and Sustainable Design
  - Include standby power devices
  - Specify reducing green house gas emissions when purchasing
  - Specify designated products in a minimum of 95% of new contract actions, including task and delivery orders



## Agency Drivers for Designated Product Purchases



- Memoranda of Understanding:
  - Federal Electronics Challenge
  - High Performance and Sustainable Buildings
- Federal Acquisition Regulation (FAR)
- DOE Acquisition Regulation (DEAR)
- DOE Orders 450.1A and 430.2B and 413.3A
- DOE Acquisition Guide (Chapter 23)
- See [http://www.hss.doe.gov/pp/epp/drivers\\_and\\_guidelines.html](http://www.hss.doe.gov/pp/epp/drivers_and_guidelines.html) for information on regulations affecting Green Purchasing



# DEAR Flow Down Clause for Contractors Purchasing Designated Products



**DEAR 970.5223-2 Affirmative procurement program.**

**As prescribed in 48 CFR (DEAR) 970.2304-2, insert the following clause in contracts for the management and operation of DOE facilities, including national laboratories.**

## **AFFIRMATIVE PROCUREMENT PROGRAM (MAR 2003)**

**(a) In the performance of this contract, the Contractor shall comply with the requirements of Executive Order 13423 ...**

**(c) The Contractor shall prepare and submit reports,...**

**(d) If the Contractor subcontracts a significant portion of the operation which includes the acquisition of items designated, the subcontract shall contain a clause substantially the same as the clause for contractors:**

- Construction or remodeling contract**
- Facility maintenance or supply contract**
- Motor vehicle fleet contract, etc.**



## Principles of Green Purchasing



- Reduce purchases
- Reuse products
- Embed green purchasing in systems
- Use life cycle analyses to select green products with
  - Designated attributes
  - Other environmentally preferable attributes, such as non-toxic





## Reduce Purchases



- Is the product needed?  
Would specifying waxless flooring eliminate the cost of wax, polish, wax remover, and staff time?
- Is the product repairable rather than replaceable?  
Can the carpet seam be mended?
- Is there an alternative?  
Could replacing fluorescent tubes be reduced by connecting lights to motion sensors?
- Would a benign substitute perform as well?  
Can hazardous cleaning chemicals be replaced with non-hazardous?



## Reuse Products



- Is the product available for free through materials exchanges:
  - DOE Complex Wide Materials Exchange
  - Your local materials exchange
  - DOE-HQ office product/chemical/other materials exchange





## Integrate EPP in Site's EMS



- Set goals and targets for the purchase of environmentally preferable products in your site's Environmental Management System
- Survey your organization's purchasing and resulting waste
- Recognize that products purchased today often become tomorrow's environmental management problems
- Identify mechanisms for buying environmental products
  - o Credit card purchases - Statements of work
  - o Service contracts - Requests for proposal
  - o Electronic catalogs
- Conduct pilot projects
- Evaluate progress and renew efforts according to results
- Communicate benefits



## Guidelines for Integrating EPP in Site EMS



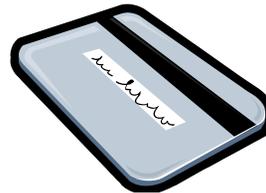
- EPA's *Integrating Green Purchasing into Your Environmental Management System* (<http://www.epa.gov/epp/pubs/ems.htm>)
- EPA's *Integrating Environmentally Beneficial Landscaping into Your Environmental Management System* (<http://www.epa.gov/epaoswer/non-hw/green/pubs/green-ems.pdf>)
- DOE Guide 450.1-5, *Implementation Guide for Integrating Pollution Prevention into Environmental Management Systems* (<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/g4501-5.pdf>)



## Integrate EPP in All Purchasing Systems



- Purchase card
- Purchasing request
- Statements of work and requests for proposal
- Contracts and preferred customer agreements – 95% of all new contracts must specify designated products: biobased/recycled, energy efficient (ENERGY STAR/FEMP), EPEAT, non-ozone depleting, non/less toxic, water efficient (WaterSense), or other environmentally preferable attributes





## Template Language for Contracts



- General statement in all contracts that all designated products used in the course of the work must be compliant + reporting
- Language for specific designated products/services
  - Construction products and office supplies  
(<http://www.hss.doe.gov/pp/epp/epspecs.html>)
  - Architecture Engineer, Construction, Computers, Janitorial Services, and General Services  
(<http://www.management.energy.gov/documents/Flash2009-49Attachment.pdf>)
  - Biobased construction, custodial, food services, grounds, operations, vehicles—scroll down to “Contract Templates”  
(<http://www.usda.gov/procurement/programs/biobased/procurementtools.htm>)
  - EPA’s Environmentally Preferable Purchasing website  
(<http://yosemite.epa.gov/oppt/eppstand2.nsf/Pages/Search.html?Open>)





## Verify Products and Services Meet the Requirements



- Ask for percentage of biobased/recycled content, not just yes or no
- Ask for demonstration of vendor's products and quality assurance program
- Verify products meet all other national standards (ANSI, ASTM) for commercial products
- Ask for free products to test
- Ask for free training on how to install and use products
- Set up closed loop contracts for carpet, cartridges, ceiling tiles





## Use Life Cycle Analyses to Select Green Products by considering



- Raw materials (renewable resource?)
- Manufacturing process (energy/water efficient?)
- Packaging (returnable?)
- Distribution/transportation (locally produced?)
- Operation (energy/water efficient?)
- Maintenance (healthy for staff?)
- Special handling (toxic?)
- Disposal (reusable or at least recyclable?)





## Join Forces to Push Prices Down



- Take advantage of Centralized Purchasing – Bulk purchasing prices An illustration showing a group of business professionals in business attire pulling a large globe on a track, symbolizing global collaboration and shared effort.
- Take advantage of Decentralized Purchasing – Preferred Customer Agreements leverage same advantage
- Compare prices with other DOE sites at quarterly teleconferences or request DOE-HQ conduct price comparison of specific products
- Check out DOE-HQ Blanket Ordering Agreements (<http://www.management.energy.gov/1364.htm>)
- Check out Integrated Contractor Purchasing Team BOAs (<https://icpt.llnl.gov/icptagreements.html>)



# Designated Products Federal Agencies Are Required to Give Preference to



## Preferred Procurement: Designated Product Categories



- **Affirmative Procurement**
  - Biobased content (Farm Security and Rural Investment Act)
  - Recycled content (Resource Conservation and Recovery Act)
- **Other Preferred Procurement**
  - Alternative fuels/vehicles (Energy Acts of 1992, 2005, 2007)
  - Energy and water efficient (Energy Acts of 1992, 2005, 2007)
  - Electronic Stewardship (EO13423, MOU, DOE O450.1)
  - Non-ozone depleting substances (Clean Air Act Title VI, DOE O450.1)
  - Sustainable buildings (EO13423/Memo of Understanding)
  - Other environmentally preferable (reduced toxic/hazardous chemicals) attributes



## Biobased Product Categories Defined by USDA



- adhesives
- carpet/fibers
- cleaners/solvents
- construction materials
- fuel additives
- inks
- landscaping
- lubricants
- packaging
- paint/coatings
- papers
- plastics
- sealants
- sorbents



**Biobased Hydraulic Fluid in stationary Equipment at Princeton Plasma Physics Lab**



## USDA Designated Biobased Products



- DOE Sites must give preference to purchase of the following effective FY2007:

|   | Percentage biobased<br>by weight |
|---|----------------------------------|
| ■ Bedding, bed linens, towels           | 12%                              |
| ■ Diesel fuel additives                 | 90%                              |
| ■ Hydraulic fluids for mobile equipment | 44%                              |
| ■ Lubricants, penetrating               | 68%                              |
| ■ Urethane roof coating                 | 20%                              |
| ■ Water tank coating                    | 59%                              |



**Biobased Hydraulic Fluid in Mobile  
Equipment at Brookhaven National  
Lab**



## USDA Designated Biobased Products

DOE Sites must give preference to purchase  
of the following effective May 14, 2009



### ■ CLEANERS/SOLVENTS

- Adhesive and mastic removers – 58%
- Bath and spa cleaners – 74%
- Carpet and upholstery cleaners
  - General purpose cleaners – 54%
  - Spot removers – 7%
- Floor strippers – 78%
- Glass cleaners – 49%
- Graffiti and grease removers – 34%
- Hand cleaners and sanitizers
  - Hand cleaners – 64%
  - Sanitizers – 73%
- Laundry products
  - General purpose laundry – 34%
  - Pretreatment/spot removers – 46%



Glass Cleaner at the Idaho National Lab



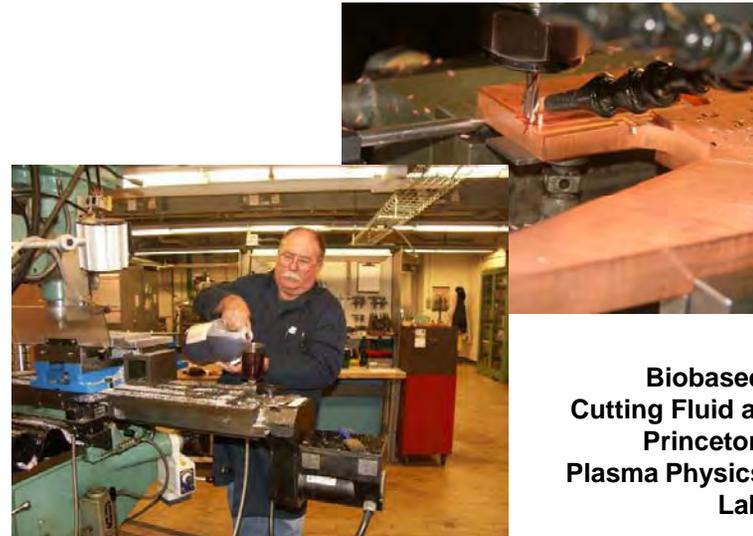
# USDA Designated Biobased Products

DOE Sites must give preference to purchase  
of the following effective May 14, 2009



## ■ LUBRICANTS

- 2-cycle engine oils – 34%
- Firearm lubricants – 49%
- Greases
  - Food grade -42%
  - Multi-purpose – 72%
  - Rail track – 30%
  - Truck – 71%
  - Unspecified – 75%
- Metalworking fluids—straight oils
  - Straight oils – 66%
  - General purpose soluble, semi-synthetic, synthetic – 57%
  - High performance soluble, semi-synthetic, synthetic (**delayed preference compliance date**) – 40%



Biobased  
Cutting Fluid at  
Princeton  
Plasma Physics  
Lab



# USDA Designated Biobased Products

DOE Sites must give preference to purchase of the following effective May 14, 2009



## ■ CONSTRUCTION

- \*Carpets - 7%
- \*Insulating foam (plastic) for residential and commercial construction – 7%
- \*Panels - composite panels
  - Acoustical composite panels – 37%
  - Interior panels – 55%
  - Plastic lumber composite panels – 23%
  - Structural interior panels – 89%
  - Structural wall panels – 94%
- Release fluids - concrete and asphalt – 87%
- May overlap with recycled content requirements. Recycled content requirements have precedence.



Recycled Face and Biobased Back Carpet  
at Pacific NW National Lab



# USDA Designated Biobased Products

DOE Sites must give preference to purchase of the following effective May 14, 2009



- **DISHWARE**
  - Cutlery - disposable – 48%
  - \*Disposable containers – 72%
  
- **SEALANTS**
  - Wood and concrete sealers
    - Membrane concrete sealers – 11%
    - Penetrating liquid sealers – 79%



Biobased Sorbent at Los Alamos National Lab



## USDA Designated Biobased Products

DOE Sites must give preference to purchase of the following effective May 14, 2009



### ■ OTHER

- De-icers - general purpose de-icers – 93%
- Dust suppressants – 85%
- \*Fertilizers - 71%
- Films
  - Non-durable – 85%
  - \*Semi-durable (plastic bags) – 45%
- Fluid filled transformers
  - Synthetic esterbased transformer fluids (**delayed preference compliance date**) – 66%
  - Vegetable oil-based transformer fluids – 95%
- \*Hydraulic fluids - stationary equipment – 44%
- Lip care products – 82%
- \*Sorbents – 89% (proposed 52%)

\* May overlap with recycled content requirements. Recycled content requirements have precedence.



Biobased  
Hydraulic  
Fluid at  
Princeton  
Plasma  
Physics Lab



## USDA Designated Biobased Products

DOE Sites must give preference to purchase of the following effective Oct 27, 2010



### ■ Cleaners/Solvents

- Food cleaners – 53%
- General purpose household cleaners – 39%
- Industrial cleaners – 41%
- Multipurpose cleaners – 56%
- Parts Wash Solutions – 65%

### ■ Lubricants

- Chain & cable lubricants – 77%
- Corrosion preventatives – 53%
- Forming lubricants – 68% (metal working under extreme pressure, such as tube bending)
- \*Gear lubricants – 58%

\* May overlap with recycled content requirements. Recycled content requirements have precedence.



**Biobased Cleaners at  
Princeton Plasma Physics  
Lab**



## EPA Designated Recycled Products



DOE Sites must give preference to purchase of the following:

- **Office:** binders, containers, folders, furniture, paper, toner cartridges
- **Custodial supplies:** tissue/towels, wipes recycle/trash containers & bags
- **Construction:** carpet, cement, fiberboard, insulation, paint, roofing
- **Landscaping:** compost, edging, hoses, lumber, mulch, posts, timbers





## EPA Designated Recycled Products



DOE Sites must give preference to purchase of the following:

- **Park/recreation:** benches, fencing, surfaces, tables, tracks
- **Transportation:** barricades, channelizers, cones, delineators, parking stops
- **Vehicular:** coolants, parts, oil, tires
- **Miscellaneous:** awards, bike racks, drums, mats, signs, sorbents, strapping





## Exceptions to Purchasing Requirements for Biobased and Recycled Content Products



- Cost, availability, performance = CAP
- NO exceptions for paper
- If unavoidable conflict, recycled content takes precedence over biobased content
- Maintain written justification on file for any products not meeting specifications
- Justification template available at HSS home page  
<http://www.hss.doe.gov/pp/epp/reporting.html>



## Alternative Fuels and Vehicles



- EPA Act 1992 mandates 75% of a Federal fleet's covered vehicle (under 8,500lb) acquisitions be alternative fuel vehicles (AFV)
- EPA Act 2005 Section 701d requires 95% of dual fuel vehicles be operated on alternative fuels unless waiver approved by DOE
- Energy Security and Independence Act of 2007 prohibits Federal agencies from acquiring a light duty motor vehicle or medium duty passenger vehicle that is not a low greenhouse gas emitting vehicle

**Biodiesel  
at Idaho  
National  
Lab**





## Alternative Fuels and Vehicles



- OMB Scorecard requires fewer than 50% of AFVs be waived with 2% reduction or if more than 50% then 10% reduction from previous year beginning FY2009
- EO13423 mandates
  - Reduction in fleet's total consumption of petroleum products by 2% annually through end of fiscal year 2015 (8% by FY2009)
  - Increase in total fuel consumption that is non-petroleum-based by 10% annually
  - Use of plug-in hybrid (PIH) vehicles when PIH vehicles are commercially available at a cost reasonably comparable, on the basis of life-cycle cost, to non-PIH vehicles
  - Install one renewable fuel pump at fueling center by January 1, 2010—  
At Hanford, 200 Area and North of Stevens Center Complex



## Energy Efficient Products



- Need to reduce energy intensity 3% annually (12% FY09), 30% FY15 (baseline year FY2003)
- Must specify ENERGY STAR®/FEMP criteria in all contracts per DOE Acquisition Letter 2006-09 and FAR 2006-008
- Must have 80 Plus Power Supply/ES 4.0 to be labeled ENERGY STAR® effective July 2007





## Energy Efficient Products



- DOE Sites must give preference to purchase of ENERGY STAR® qualified or FEMP designated products ([energystar.gov/fedofficeenergy](http://energystar.gov/fedofficeenergy)):
  - **Appliances:** clothes washers, vending machines, water coolers
  - **Construction:** doors, insulation, roofing, sealing, skylights, windows
  - **Electronic/Office Equipment:** battery chargers, imaging equipment (copiers, fax, printers), power adapters, servers
  - **Food service equipment:** ice/vending machines, kitchen
  - **HVAC:** air conditioning, boilers, fans, heat pumps (geothermal)
  - **Lighting:** compact fluorescent, LED, light fixtures
  - **Plumbing:** water heaters



# EPEAT

## Electronic Product Assessment Tool



- 51 environmental performance criteria: 23 required and 28 optional
- Manufacturers choose tier level for products
  - Bronze, Silver, and Gold
- Over 1000 products are currently EPEAT-registered



### What is EPEAT<sup>®</sup>?



**EPEAT Bronze**- Meets the 23 required criteria



**EPEAT Silver**- Meets 23 required criteria and at least 50% of the optional criteria



**EPEAT Gold**- Meets 23 required criteria and at least 75% of the optional criteria



10



# Current State of EPEAT Certification

February 2010



## EPEAT Registered Products Search Tool

| Product               |  BRONZE™ |  SILVER™ |  GOLD™ | Total       |
|-----------------------|--|---|---|-------------|
| Desktops              | 4  | 31  | 72  | 107         |
| Displays/<br>Monitors | 1  | 92  | 94  | 187         |
| Integrated<br>Systems | 0  | 33  | 11  | 44          |
| Notebooks             | 30   | 464   | 401   | 895         |
| Thin Clients          | 0  | 9   | 0   | 9           |
| Workstations          | 1  | 1   | 15  | 17          |
| Totals                | <b>36</b>  | <b>630</b>  | <b>593</b>  | <b>1259</b> |

<http://www.epeat.net>



## Electronics Stewardship



### Examples of a few criteria in EPEAT standard

- Restricts cadmium, hexavalent chromium, lead, mercury
- Specifies less material or post-consumer recycled or biobased plastic content
- Specifies design for longevity, reuse, take back including packaging
- Specifies Energy Star® certified equipment

### Examples of how to reduce computer purchases

- Buy laptop with docking station instead of desktop and laptop
- Install a Watt Stopper ®
- Become a Federal Electronics Challenge Partner





## Electronics Stewardship



- Specify in purchasing contracts
  - EPEAT if standard available (95% purchases required)
  - Enabling ENERGY STAR features on 100% of computers and monitors
  - Take back of equipment and packaging
- Have policies to extend useful life
- Ensure all non-usable electronic equipment is reused, donated, sold, or recycled
- Become a Federal Electronics Challenge Partner or implement equivalent electronics stewardship program



Donating Computer Equipment from Pacific Northwest National Lab to schools



## Water Efficient Products



- Must reduce water use by 4% in FY2009 (FY2007 baseline)
- Must give preference to purchase of water efficient products, including those meeting EPA's WaterSense standards (<http://www.epa.gov/watersense/>) per Executive Order 13423
- Types of products and services with WaterSense standards
  - Faucets
  - Toilets
  - Urinals





## Substitutes for Ozone Depleting Substances



- SNAP: Significant New Alternatives Policy
  - Under Section 612(c) of the Clean Air Act, EPA is authorized to identify and publish lists of acceptable and unacceptable substitutes for class I or class II ozone-depleting substances.
- Substitutes for ozone depleting substances relevant to DOE sites:
  - Adhesives, coatings, ink
  - Aerosols
  - Cleaning solvents
  - Fire suppression & explosion protection
  - Refrigeration & air conditioning





## Substitutes for Ozone Depleting Substances



- **EO 13423** prohibits the use of Class I and Class II ODS in new equipment (EO 13148 did not).
- **EO 13423** emphasizes need for leak repair of refrigeration and air conditioning systems.
- **EO 13423** implementation instructions have no 12/31/10 Class I ODS procurement phase-out date (as was the case under EO13148), but call for the phase-out of ODS as equipment reaches its expected service life.





## Sustainable Remodels



- Have 15% of existing buildings in FY2015 capital asset building inventory meet Guiding Principles as outlined in the *Federal Leadership in High Performance and Sustainable Buildings* Memorandum of Understanding (EO 13423)—3% in FY2009
- Apply to new construction **and renovation** above capital asset threshold (EO 13423)
- Reduce fossil-fuel generated energy consumption in new \$2.5M+ construction (compared to 2003) by 55% in 2010, 80% in 2020, and 100% in 2030 (Energy Independence and Security Act of 2007)
- Apply to new, renegotiation, or extension of leases for Federal occupancy (EO 13423)
- Allow no leased space in non-ENERGY STAR buildings by 2010 (Energy Independence and Security Act of 2007)



## Sustainable Remodels



### Five Guiding Principles:

- Employ integrated design principles
- Optimize energy performance
- Protect and conserve water
- Enhance indoor environmental quality
- Reduce environmental impact of materials
  - Biobased construction materials
  - Forest Stewardship Certified wood
  - Non-ozone depleting substances
  - Recycled construction materials
  - Other environmentally preferable construction materials, such as those with low-to-no hazardous ingredients



## Examples of Products with Multiple Attributes



- Carpet (biobased\* and recycled\*)
- Insulation (biobased and recycled)
- Landscaping materials (biobased\* and recycled\*)
- Lubricants (biobased and recycled)
- Paints/coatings (biobased,\* ENERGY STAR®,\* recycled)
- Roofing (biobased, ENERGY STAR®, recycled)
- \* = quality commercial products with varying attributes available in a single product





## Designated Products Tool



Excel file compiles all designated products into purchasing categories for quick reference

[http://www.fedcenter.gov/Documents/index.cfm?id=11767&pge\\_prg\\_id=20257](http://www.fedcenter.gov/Documents/index.cfm?id=11767&pge_prg_id=20257)

|                       |                              |
|-----------------------|------------------------------|
| Building Construction | Roadway Construction         |
| Building Finishes     | Traffic Control              |
| Building Interior     | Vehicle Products             |
| Cafeteria Services    | Lube, Oil, Hydraulic, Grease |
| Cleaning Products     | Non-Paper Office Products    |
| Refrigeration         | Office Electronics           |
| Renewable Energy      | Paper Office Products        |
| Landscaping           | Printing                     |
| Park and Recreation   | Miscellaneous                |



# How Are Other DOE Orgs Meeting These Requirements?



# Construction/Remodel



## DOE Experience Pacific NW National Lab



### ■ Biobased and Recycled Carpet

- Backing: 55% biobased content by weight (polyurethane from soybeans)
- Secondary Backing: 100% post-consumer recycled content
- Facing: 25% recycled content and recyclable into carpet fiber
- Price: Comparable to other high quality commercial carpets
- Qualifies for LEED (Green Building Rating System)
- Meets CRI requirements for volatile organic compounds (no vinyl)





# DOE Experience Weatherization Assistance Program



## ■ Biobased Insulation

### (spray foam)

- Made from soy
- Density 0.5 lb/cu ft (ASTM D1622)
- Compressive strength 20-30 psi (ASTM D1621)
- Flame spread <20 (ASTM E84)
- Smoke development <400 (ASTM D2863)
- Contains/emits no VOCs, CFCs, formaldehyde, or HCFCs
- Passed UPITT Test for off gassing toxins when burned
- Approved for use in DOE Weatherization Assistance Program





# DOE Experience Weatherization Assistance Program



## ■ Track Record

- Social Security Building – Miami, OK
- Caring Cabin – Portland, OR
- Colorado University Solar Decathlon home – Boulder, CO
- Habitat for Humanity/Kentucky Soybean Board home – Monticello, KY
- Not So Big Home Show – Orlando, FL  
International Builders Show 2005
- Heifer Int. Headquarters - Little Rock, AR

“When looking at Insulation for Heifer International, BioBased quickly became the product of choice. Not only did it meet the R value and Air tightness requirements the mechanical engineers asked us to meet, it also was a product that Heifer and the project team liked because [of] BioBased’s environmental focus. ” -  
Dustin Davis, Associate AIA, LEED<sup>AP</sup>





## DOE Experience Across the Complex



### Lighting

- Incandescent (75W) ~13 lpw
- Fluorescent (T8)\* ~83 lpw
- HID (Metal Halide) ~100 lpw
- SSL (White LED) ~45 lpw
  - 1<sup>st</sup> products meeting standard available as of Sep 30, 2008
  - LED tubes not yet meeting criteria
  - ENERGY STAR criteria  
[http://www.energystar.gov/index.cfm?c=ssl\\_res.pt\\_ssl](http://www.energystar.gov/index.cfm?c=ssl_res.pt_ssl)
  - Qualified SSLs/LEDs  
[http://www.energystar.gov/index.cfm?fuseaction=ssl.display\\_products\\_com\\_html](http://www.energystar.gov/index.cfm?fuseaction=ssl.display_products_com_html)



\*California has specifications for low mercury lights



## DOE Experience Weatherization Assistance Program



### ■ Biobased Roofing sealant

- Made from soy
- ENERGY STAR® approved
- Single-coat application
- Exceeds UL
- Class A Flame Ratings
- 100% Resistant to mold, algae, bacteria (ASTM D3273)
- 10-year labor and material warranty
- Approved for use in DOE Weatherization Assistance Program





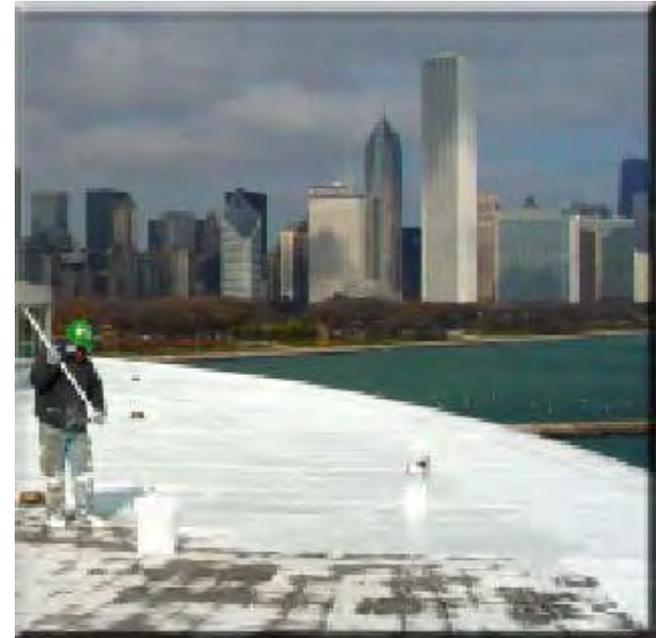
# DOE Experience Weatherization Assistance Program



## ■ Track Record

- Shedd Aquarium – Chicago, IL
- Coca Cola Distribution Ctr - Niles, IL
- ING Clarion – Houston, TX
- McDonalds – Greenwich, NY
- Medical Center - Northridge, CA
- Women’s Club – Austin, TX
- Union Pacific – Omaha, NB

“Union Pacific has used ELMS on multiple projects with multiple roofing systems and we are very pleased with the products performance” – Michael Bucklin, Corporate Director of Facilities - Union Pacific Railroad, Omaha, Nebraska.





## Other than DOE Experience Natural Resources Defense Council



- **Wallboard – formaldehyde free**
  - Solid compressed straw panel (agriboard) alternated with
  - Recycled synthetic (byproduct of titanium dioxide) gypsum wallboard to meet code requirements in D.C. that limit amount of contiguous space built with combustible materials and require certified noncombustible material for egress corridors (Georgia-Pacific Gypsum, 800-327-2344)





## DOE Experience Across the Complex



### ■ Water Heaters – Quick Flash and Tank ENERGY STAR

- Conserve Energy
  - Lower temperature – maximum 120F
  - Insulate pipes with special foam
  - Install solar panels to heat water
- Conserve water
  - Install low-flow shower heads, faucets, toilets (save 50%)
  - Fix leaks (save 6-10 gallons/day)
  - Don't run water while washing hands, etc.





## DOE Experience Pacific NW National Lab



### ■ Water Free Urinals

- Trap/sealant/gravity instead of flushing water
- Better: Lifetime Cartridge
- Complies with ADA, ANSI Z124.9, CSA®, UPC®, IAPMO C-3346; ICC-ES #2324
- Avg water reduction: 40,000 gallons/urinal/yr
- Calculator:  
[http://www.falconwaterfree.com/savings\\_calculator.asp](http://www.falconwaterfree.com/savings_calculator.asp)





# Fleet



# DOE Experience Idaho National Lab



## ■ Biobased Fleet Products



- Alternative fuels since 1994
- 232 alternative fuel vehicles
  - 79 biodiesel buses
  - 59 ethanol light duty vehicles
- Biodiesel better mileage/gal
- Biodiesel acts as lubricant
- Some Detroit engines have computer systems that preclude biodiesel
- Exploring use of methane from decomposing biological materials in liquid natural gas buses

Biodiesel Bus at DOE Idaho National Lab



## DOE Experience



### ■ Biodiesel Findings

- Reduces carbon dioxide emissions by 75% vs. oil
- Produces fewer particulate, carbon monoxide, sulfur dioxide emissions
- Requires no engine alterations
- Super lubricant and solvent
  - Change filters often
  - Alert for rubber gaskets and hoses on older equipment
- ASTM D6751
- Gels at higher temp (32F) – use lower % in winter + additives
- 6-month shelf life
- Cost and availability





# DOE Experience Idaho National Lab



## Biobased Fleet Products

### Glass cleaner

- Uses half the amount
- Works better than previous product

### Penetrating lubricant

- Works faster to dissolve rust
- Some considered it superior to WD40

### Metal cleaner

- Uses same amount for cleaning and maintaining
- Lacks abrasive needed for polishing
- Cleans fender guards well



Bus Maintenance at DOE Idaho National Lab



# Furniture



# DOE Experience JNAL, LBNL, and Yucca Mountain Project



## ■ Recycled Content Furniture

- Any furniture with steel meets the requirement
- Suppliers of office furniture that meets the requirements
  - Haworth
  - Herman Miller
  - Hon Office Furniture
  - Knoll
  - Watson





## DOE Experience Pacific NW National Lab



- **Request for Proposal Contract Language**
  - In the interest of conserving resources and in accordance with the Resource Conservation and Recovery Act (Section 6002), PNNL requires that all office furniture contain at least one of the following. Please report content of all units listed in Attachment 1.
  - 100% recycled agriculture fiber OR
  - 75% recycled aluminum OR
  - 70% post-consumer HDPE with total of 95% recycled HDPE OR
  - 100% post-consumer PET OR
  - 25% post-consumer remanufactured/refurbished components OR
  - 16% post-consumer steel with total of 25% recycled steel OR
  - 1% post-consumer wood composite with total of 80% recycled wood composite





# Grounds



## DOE Experience Pacific NW National Lab



### ■ Irrigation Controls

- Replaced manual valves with self-contained, battery operated, timer control valves
- Reduced over 186,000,000 gallons per season





## DOE Experience Brookhaven National Lab



### ■ Biobased Hydraulic Fluid in Riding Mowers

- Former cost of hydraulic fluid spills \$2500-\$3500 per spill
- Present cost of spills less than \$1000 per spill.
- <http://www.bnl.gov/bnlweb/pubaf/pr/2002/bnlpr071702.htm>

