

Energy Management Team at Sandia National Labs

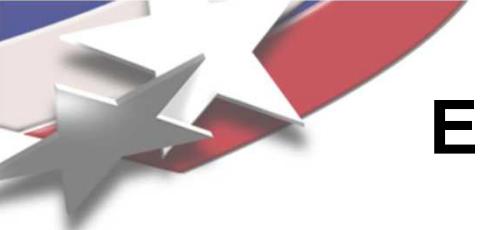
February 21, 2008

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Agenda

- Energy Management Team at SNL
- Progress/Accomplishments
- Future Projects
- LEED and Executive Order/HPSB
- LEED Existing Building requirements
- Sustainable Design Implementation Strategy
- Questions



Energy Management Program

- Energy use is increasing
 - Programmatic missions are increasing (24/7operations)
- Cost of energy is rising
 - Sandia does not control the cost of utilities (Kirtland Air Force Base, DOE/NNSA, Government-owned facilities) – Rate increase 1/1/09 (could double – ~\$12M)
- Rules have changed
 - DOE Order 430.2A required a 30% energy reduction by 2005 relative to 1985 baseline
 - The Energy Policy Act of 2005 required a 2% energy reduction over 10 years relative to 2003 baseline
 - Executive Order 13423 requires a 3% energy reduction over 10 years relative to 2003 baseline



Energy Management Program

Progress/Accomplishments

Energy Management Program savings:

- \$2.2 million energy savings from FY85-FY01 due to increased awareness, energy projects, improved designs, etc.
- Lighting program saved additional \$452K/year in lighting costs
- 23% reduction in water usage since 1994
- 39% reduction of energy use in office-type buildings from FY85-FY01

Innovative Projects:

- Variable Frequency Drive (VFD) installations
- Thermostat Setback
- Chilled Water Loop
- Lighting Retrofits
- Awareness Campaigns
- Computer Monitor Shut-off
- Chemical-Mechanical-Polishing
- Solar Projects (PV, Heating)
- Retro-commissioning
- Central Irrigation Control (CICS)
- Hybrid Lighting Project



Energy Management Program

Other Accomplishments

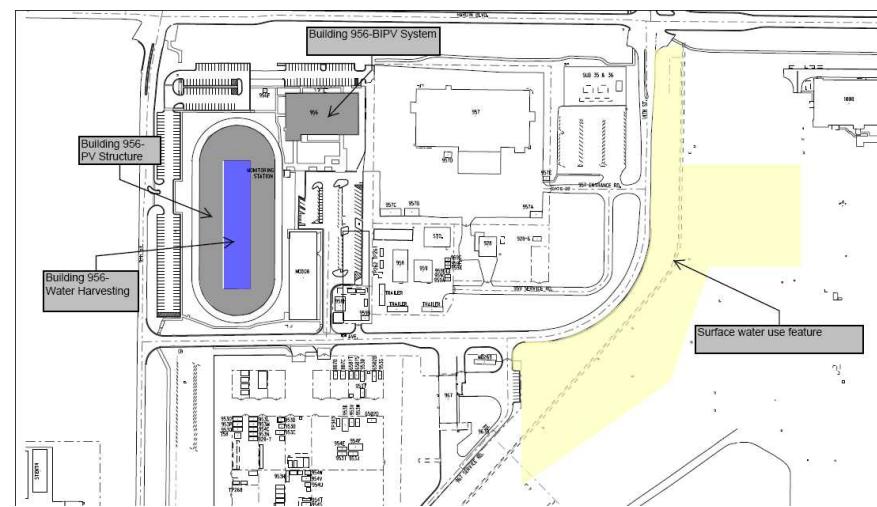
- Installed 3.2-kW photovoltaic roof on solar energy research building
- Modified ~16,700 computer monitors to transfer to low energy standby mode when not in use, saving more than 2,008 MWH/year
- Received Leadership in Energy and Environmental Design (LEED) certifications for several buildings:

- One silver – Joint Computational Engineering Laboratory
- Two certified – Weapons Evaluation Test Laboratory and Microsystems and Engineering Sciences Applications MicroFab Facility (first fabrication facility ever to be certified)
- Planned Experimental Sciences Complex to be Sandia's first gold-certified building



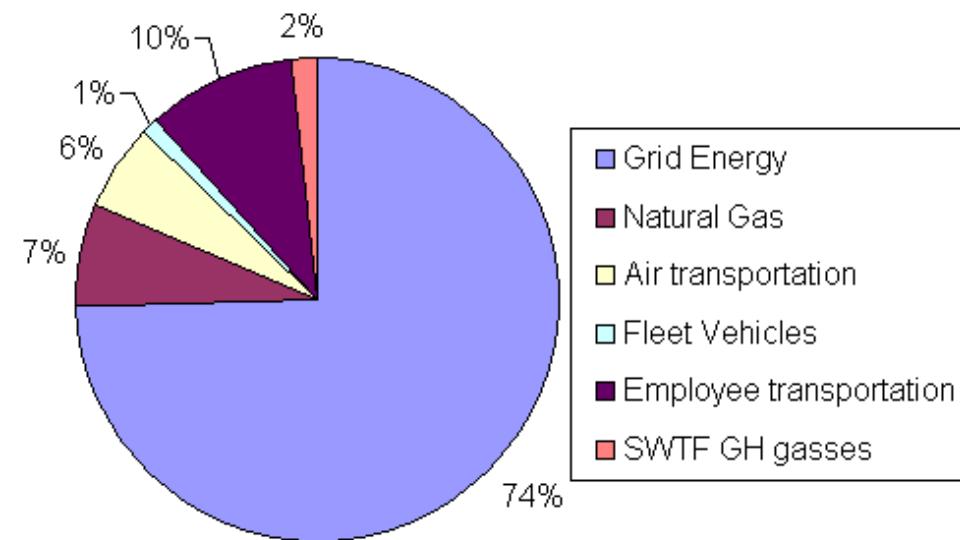
EMT Future Projects

- ESPContract for SNL-NM campus
- Building 956 BIPV-50kW system
- PV Cart Charging Stations
- Building 887, PV Shade Structure
- PV Parking/Pedestrian Lights
- Eco-planning
 - PV Farm
 - Campus water harvesting

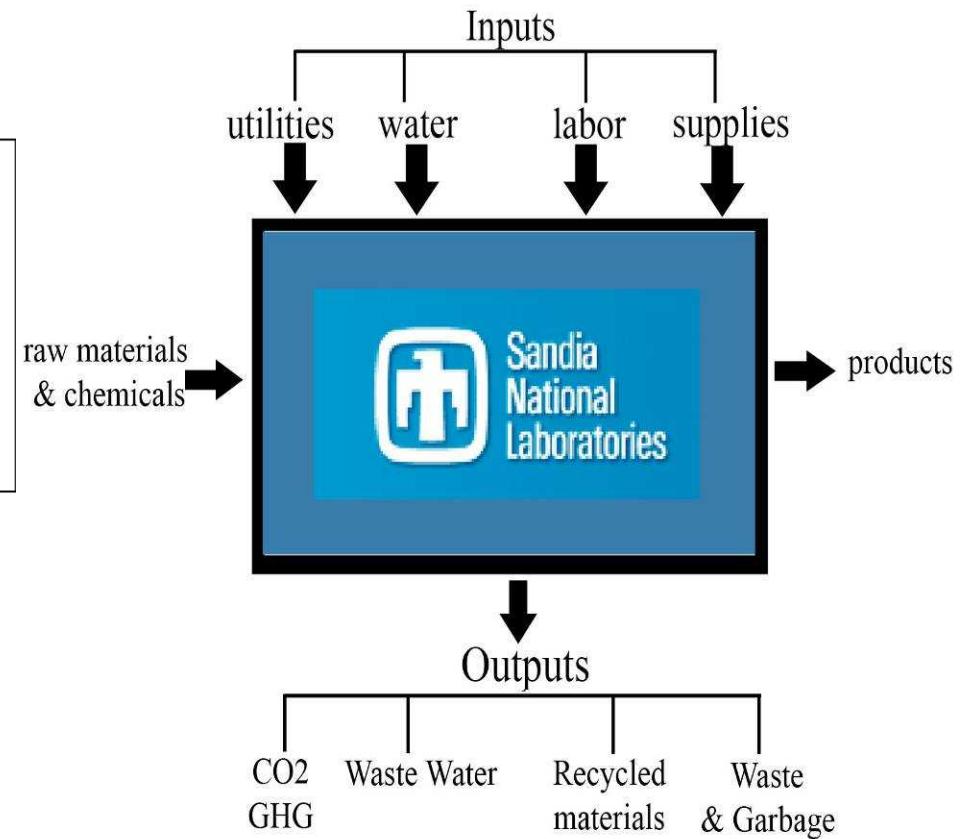


Energy Management Program

Ecological Footprint



- **SNL Ecological Footprint: 76525.63 ha**





LEED and Executive Order 13423

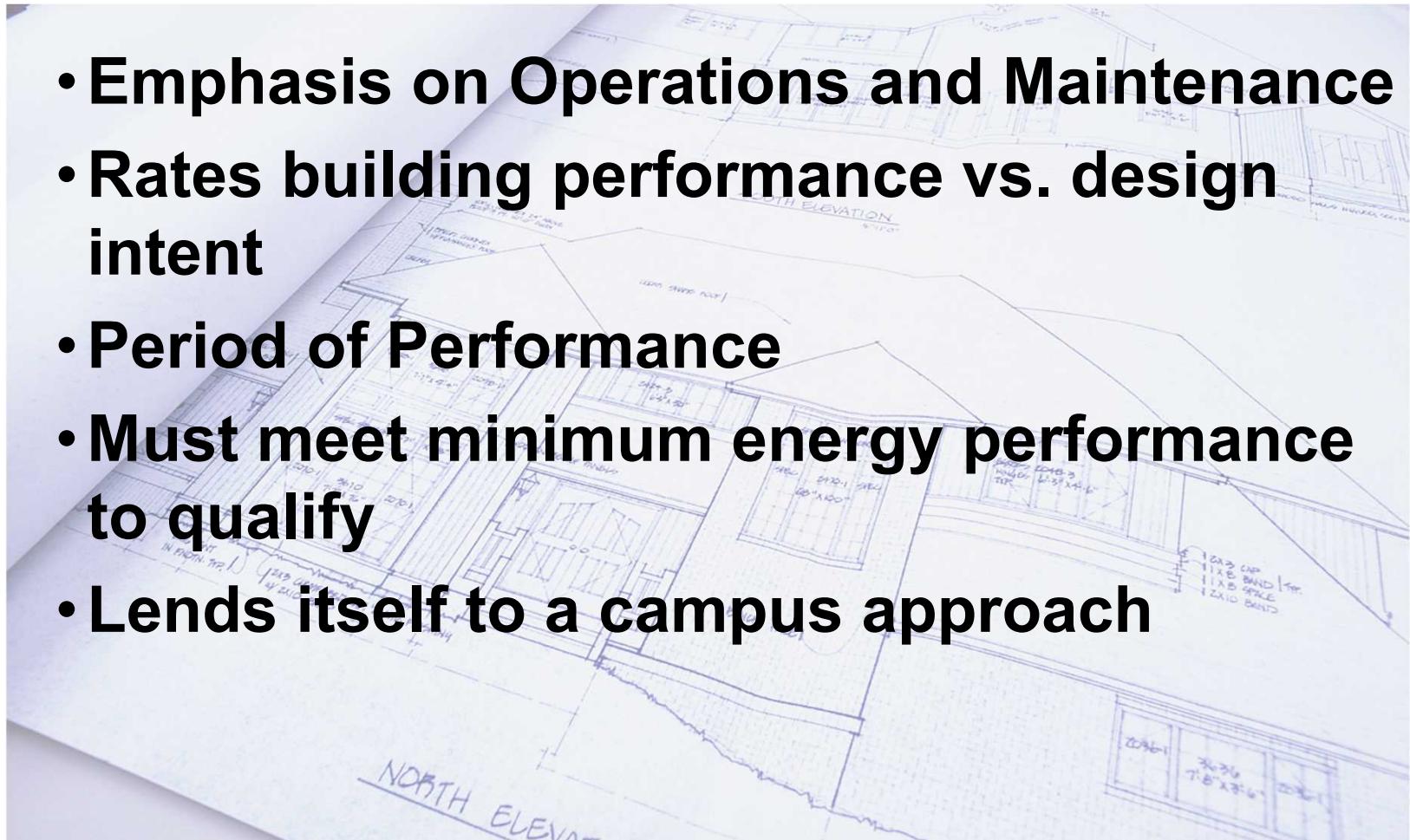
- **EO 13423- By 2015:**
 - “Green” 15% of capitol asset building stock to meet HPSB Guiding Principles
 - Reduce energy intensity by 30%
 - Reduce water consumption by 16%
 - Green building must be included in site EMS
- **Almost 10% of SNL square footage certified “green” under LEED NC**
- **Use LEED EB/HPSB Guiding Principles to “green” the remaining 5%**





LEED for Existing Buildings (LEED EB)

- Emphasis on Operations and Maintenance
- Rates building performance vs. design intent
- Period of Performance
- Must meet minimum energy performance to qualify
- Lends itself to a campus approach





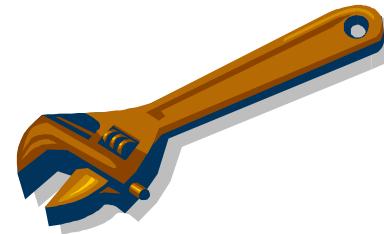
LEED EB Credit Overview

- **Energy**
 - Commissioning, performance measurement (metering, BAS, staff training)
- **Green Cleaning Policy**
 - Covers products, materials, equipment, entryway systems, pest management
- **Sustainable Purchasing**
 - Covers low mercury lamps, facility alterations & additions
- **Solid Waste Management Policy**
 - Covers reuse, recycling or composting of waste
- **Outdoor maintenance**
 - Building exterior, landscape waste management, pest management
- **Indoor Air Quality**
 - Best practices management, monitoring, filtration, facility alterations & additions



Sustainable Design Implementation Strategy

- **FY08 SD Implementation Plan**
 - Focus on LEED EB
- **Building Prioritization**
- **“Portfolio” Approach**
- **DOE Beta Testing**
- **Retro commissioning procedure**
- **1-2 buildings LEED EB certified in FY08**





Questions?