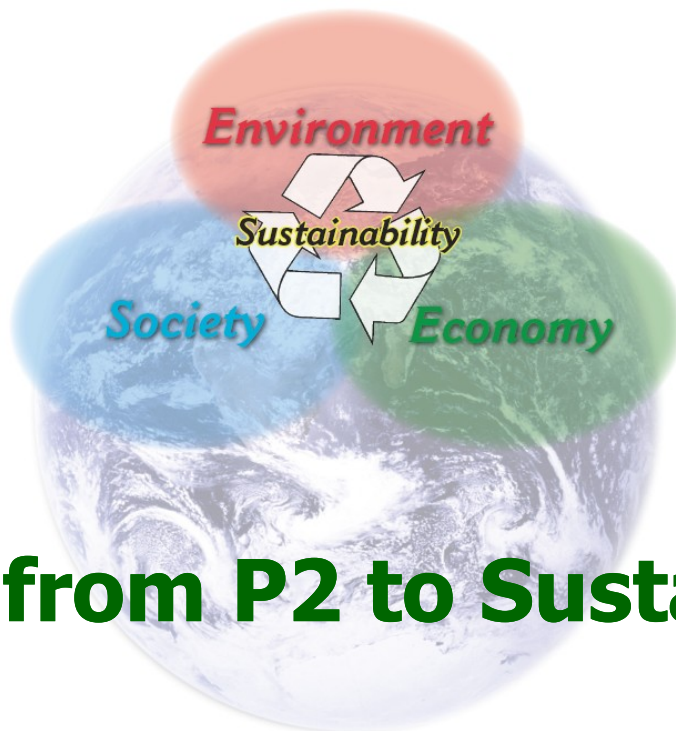
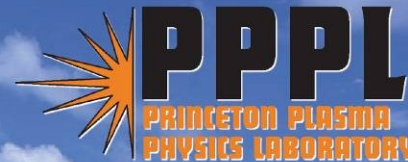




Sustainable

ENERGY • AIR • WATER • EARTH



Moving from P2 to Sustainability

Rob Sheneman

Head, Materiel & Environmental Services Division

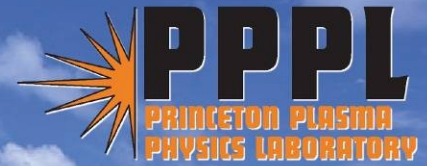
Princeton Plasma Physics Laboratory

Princeton, New Jersey



Sustainable

ENERGY • AIR • WATER • EARTH



Introduction & Background

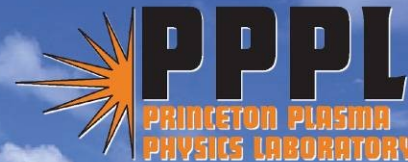
- Managed by Princeton University
- James Forrestal Campus
- ~88 acres
- ~750,000 s.f. of buildings
- *Collaborative national center for plasma science & technology and fusion energy research*





Sustainable

ENERGY • AIR • WATER • EARTH



Sustainability at PPPL

“In its most general sense, sustainability means using resources to meet the needs of the present generation without compromising the ability of future generations to meet their needs.”

United Nations World Commission on Environment and Development, 1986

“We don’t inherit the earth from our ancestors, we borrow it from our children.”

David Brower

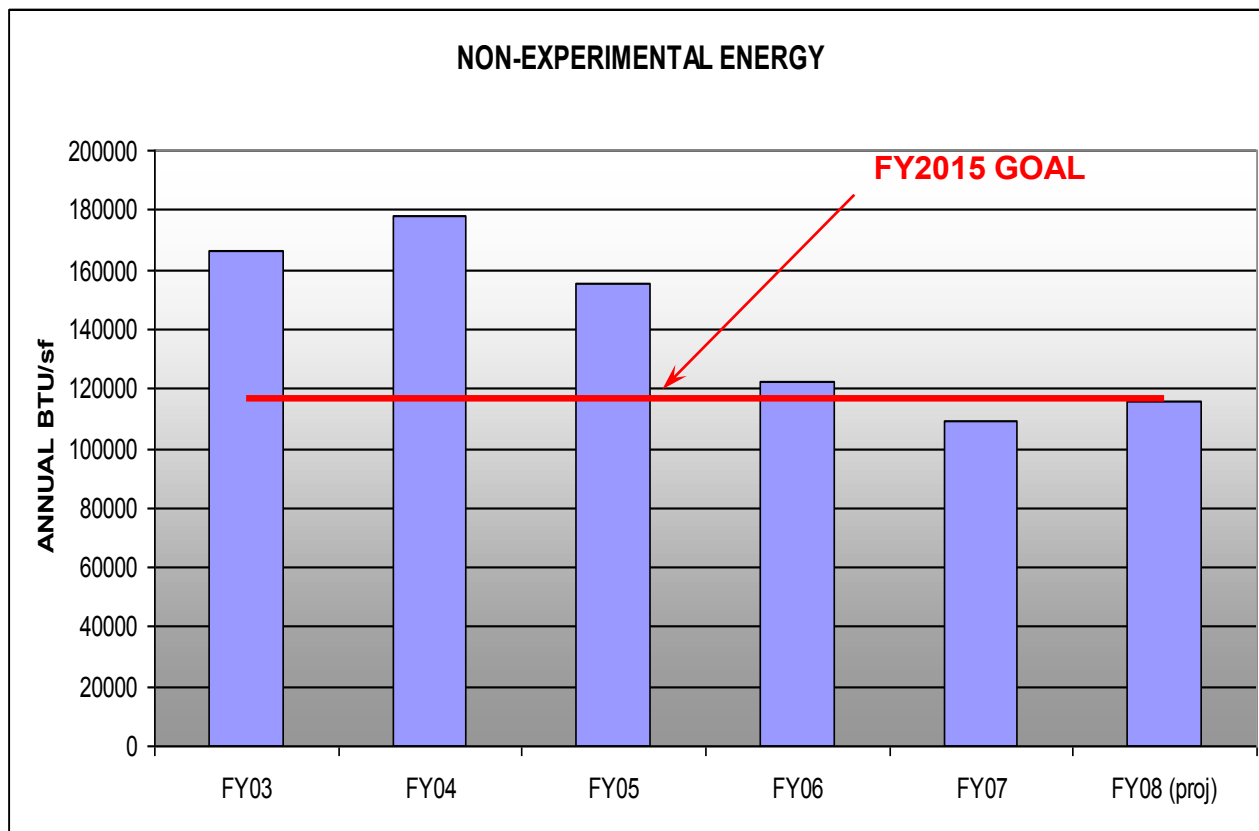


Environmental Performance Improvement Energy Efficiency

Reduced non-experimental energy intensity (Btu/s.f.) by ~37% from FY2003

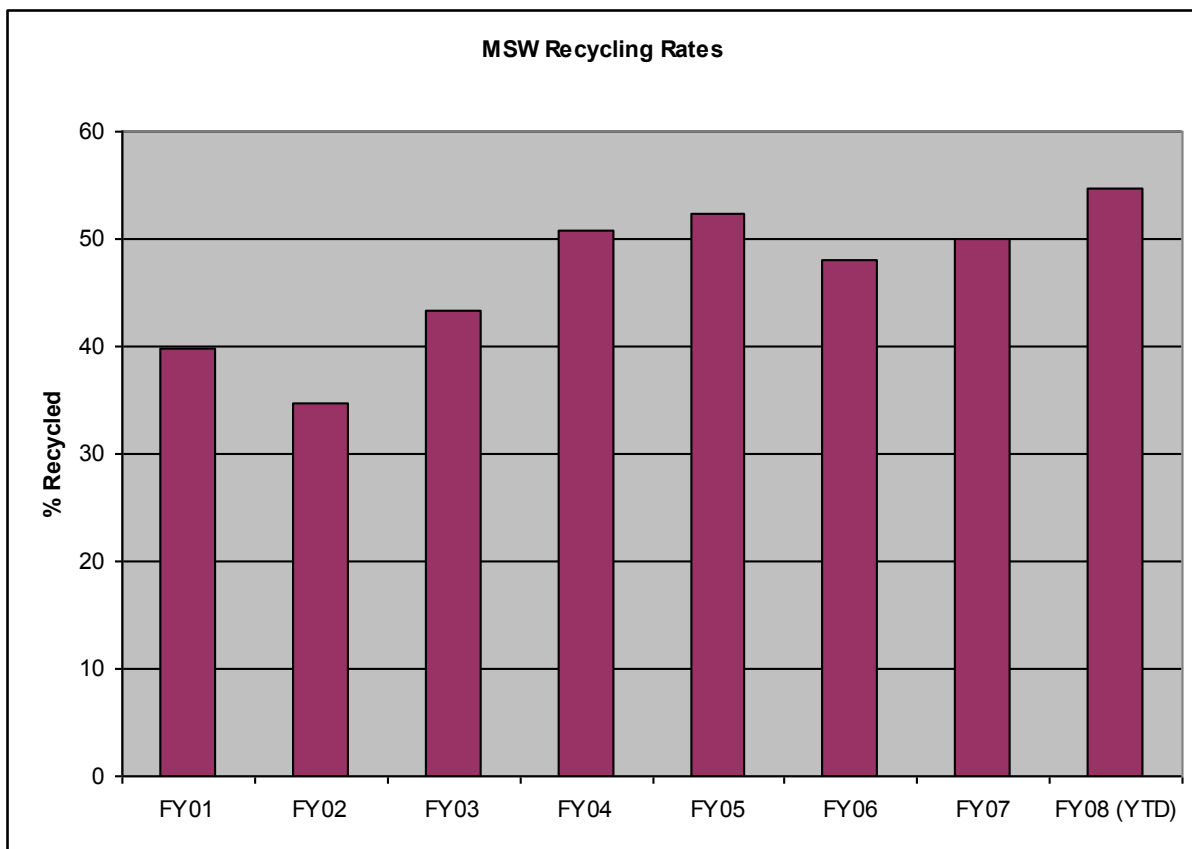
Reduced annual CO2 emissions by ~4,275 tons from FY2003 baseline

~ \$300,000 annually





Environmental Performance Improvement Waste Management



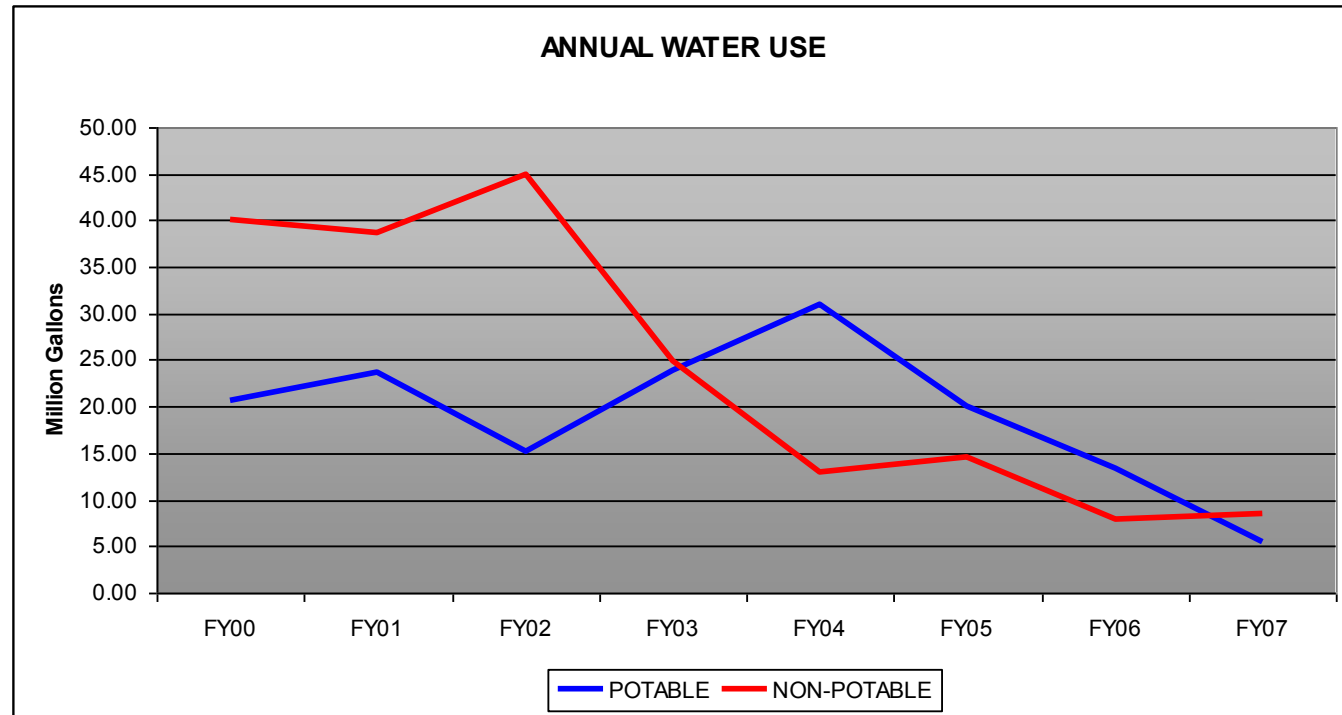
- Solid waste recycling averages 50% for five consecutive years
- Construction waste recycling >90% in 2007
- Overall recycling rate ~93% in 2007
- Chemical & universal waste recycling ~50%
- *6 tons of material recycled for every FTE*
- *\$300,000 in FY2007*



Environmental Performance Improvement Water Conservation

Since 2000, PPPL has reduced:

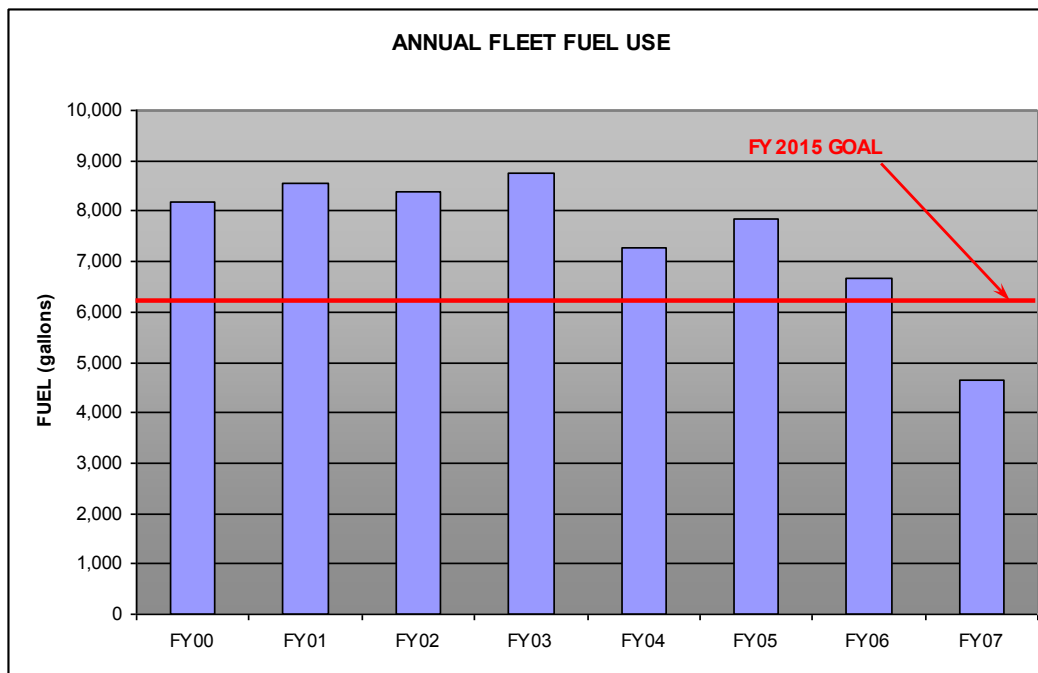
- Potable water use 73.5%
- Non-potable water use 78.7%
- Overall water use 76.9%
- *\$125,000 savings in last two years*





Environmental Performance Improvement Fleet Management

- **Reduced fleet petroleum fuel use by 44% from FY2005**
- **Increased use of alternative vehicle fuels by ~900%**
 - Compressed natural gas (CNG)
 - B-20 fleet conversion
 - B-20 John Deere® “Bio-Gators”
 - Flex-fuel vehicles





Environmental Performance Improvement Supply Chain

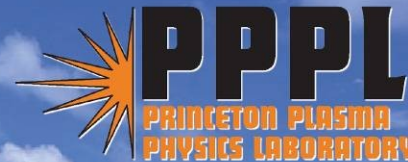
- **Office Supplies**
 - Recycled content products
 - Remanufactured products
 - On-line (paperless) ordering system
- **Furniture & Building Products**
 - Cradle-to-Cradle^{cm} certified furniture products
 - Cool-Zero[®] (carbon neutral) carpeting
 - Recycled content & recyclability
- **Bio-based Products**
 - Cleaning products, hydraulic oils, machining fluids
- **Energy-Star**
 - Expanded use of Energy-Star certified products & EPEAT electronics





Sustainable

ENERGY • AIR • WATER • EARTH



What Does the Future Hold?

- LEED-EB building certification
- Continue focus on energy & water
- Renewable energy (PV) project
- Alternative fueled vehicle fleet
- Sustainable supply chain & subcontractors
- Comprehensive GHG inventory & management
- Princeton University Sustainability Committee





What challenges do we face?

- Budgetary constraints
- Involvement
 - researchers and others outside the environmental area
- Robust integration with ISMS
- Sustainable supply chain & subcontractors
 - Criteria for evaluation
- Comprehensive GHG inventory & management
 - Boundary of footprint
 - Inventory protocols
 - Verification



Lessons Learned

- Sustainability is a journey, not a destination
- Risk is essential and inherent to success
- Gain momentum through early success
- Everyone wants to be on a winning team *share the credit*, and “talk it up”
- Admit a mistake, apologize, fix it, and learn from the experience
- *Build partnerships & collaborations*
- *Branding is important*
- *Believe in what you do – you make a difference every day*





Sustainable

ENERGY • AIR • WATER • EARTH

