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Environmental Management System

Sandia National Laboratories

Green Your Commute!

Sandia Rail Runner Commuters are Reducing Their Carbon Footprint & Saving Money on Gas

By Amy Coplen

Sandia National Laboratories, New Mexico (SNL/NM) commuters emit more than 33,000 metric tons of carbon dioxide (CO_2) equivalent green house gases into the atmosphere annually. This astonishing figure corresponds to an ecological footprint of more than 18,000 acres. Some members of the workforce are reducing CO_2 emissions by choosing an alternative mode of transportation for their commute. Bicycle, bus, car, and vanpool commuters have been helping SNL/NM decrease its carbon footprint for years, but the recent operation of the Rail Runner is providing commuters who live in Belen, Los Lunas, Los Ranchos, and Bernalillo a new approach to greening their commute.

Sandians Jesus I. Martinez and Kevin Lederer have been advocates of riding the Rail Runner since the Los Lunas station opened in December 2006, and have been encouraging ABQ Ride to accommodate commuters from the Rio Bravo station to Kirtland Air Force Base (KAFB). They distributed surveys and petitions to prove that there were plenty of riders in support of the new service, and the city listened. On March 15th, the Rail Runner modified route 222 to initiate bus service from the downtown Rail Runner station directly to Building 800, making the commute faster and easier. On May 15th, ABQ Ride dedicated a bus to serve commuters from the Rio Bravo Rail Runner Station directly to KAFB non-stop. This route, appropriately named the "Sandia Express," has made Mr. Martinez's commute by Rail Runner, in combination with ABQ Ride, just as fast as his commute by car. In addition, he is saving $6 thousand each year – at current gas prices, which threaten to keep rising – and nearly 10 metric tons of CO_2 equivalent emissions.

In addition to these savings, surveyed riders report that their stress levels have significantly decreased by opting for public transportation rather than contending with hectic rush hour traffic. New friendships and a close-knit community of environmentally conscious commuters have developed into a strong advocacy group that continues to gain momentum. Mr. Lederer has gone out of his way to recruit and guide new riders through the process of using public transportation, and maintains that it is less complicated than one might imagine.

Sandians taking advantage of the Rail Runner are preventing an estimated 468 metric tons (almost 10 metric tons per person) of CO_2 equivalent emissions and saving $278,865 ($5,810 per person) annually. Other non-Sandian KAFB commuters have increased these numbers to 793 metric tons of CO_2 equivalent emissions saved and $472,192 annually. These numbers could significantly increase if more Sandians would utilize public transportation. As the hard work of Mr. Lederer and Mr. Martinez has shown, increased ridership means more influence on our public transportation systems. The more we take advantage of our bus and train routes, the more efficient and complete these routes will be.

Kevin and Jesus hope that in the near future SNL/NM and KAFB will consider implementing a shuttle system to provide transportation for the last leg of the commute. The shuttle could assist commuters using Route 222, and many other routes that end at Building 800, in getting to their final destination, whether it be Innovation Parkway Office Center (IPOC), another tech area, or the many buildings in between. Increased ridership would help SNL/NM reduce its ecological footprint and mitigate its environmental impact.

Rail Runner Passengers

Although commuting to work in your single passenger vehicle might seem like the most convenient means of transportation, using public systems can relieve stress, save significant amounts of money, help the environment, and even give you more time with your family by providing you with a steady work schedule. According to Mr. Martinez, "we need to find a better balance in our lives between work and family." Greening your commute could be just the way to accomplish that balance. Join the new Smart Commuting Options list serve!

To subscribe:

1. Send an email to majordomo@sandia.gov

2. Leave the subject line blank.

3. In the body of the message type in lowercase letters: subscribe smartcommutingoptions and your email address.

ABQ Ride Passengers

For Rail Runner schedule and information visit:
http://www.nmrailrunner.com

For ABQ Ride schedule and information visit:
http://www.cabq.gov/transit/tran.html

For more information, contact:

Kevin Lederer at kbleder@sandia.gov 844-4906 or Jesus Martinez at jimarti@sandia.gov 845-0785.

Beta Testing Green Building Standards for Existing Buildings

By Erin Murphy

On March 5th and 6th, 2008, members of Sandia National Laboratories, New Mexico (SNL/NM) Environmental Planning and Facilities Management and Operations hosted a "Beta Test" with policy makers from the U.S. Department of Energy (DOE), the National Nuclear Security Administration (NNSA), and Lockheed Martin, as well as a team from Lawrence Livermore National Laboratory, on how to green existing buildings in accordance with the requirements of Executive Order (EO) 13423. Because of SNL/NM's decade of experience with green building, the site was chosen for the two day series of meetings. The meetings included tours of SNL/NM's Leadership in Energy and Environmental Design for New Construction (LEED NC) green certified buildings, Existing Buildings (EB) with green certification potential, and presentations by SNL/NM Custodial Services and the Environmental Management System (EMS).

EO 13423 requires that 15% of SNL/NM's existing building inventory incorporate the High Performance Sustainable Buildings (HPSB) Guiding Principles by 2015. SNL/NM is well on its way towards meeting the 15% requirement, with approximately 9% of current square footage that is, or will be, LEED-NC certified. Achievement of LEED NC certification qualifies as having met the Guiding Principles. The series of meetings were considered a "Beta Test" because the application of the Guiding Principles to existing buildings was the major topic of discussion.

The Guiding Principles were expressly written to incorporate sustainable design principles into new construction and they mirror some components of the LEED NC green building rating system. Building commissioning, installation of building level utility meters to measure and verify energy performance, use of water efficient plumbing fixtures, and inclusion of daylighting in 75% of occupied space are all examples of Guiding Principles. Unfortunately many of the Guiding Principles are not compatible with the challenges encountered in existing buildings. An example of their incompatibility with existing buildings is daylighting; in an existing building it can be expensive or impossible to change the building envelope to bring daylight into 75% of occupied spaces. One outcome of the "Beta Test" was the recommendation to amend the Guiding Principles to be more congruous with existing building scenarios.

Another important discussion point was whether or not the LEED for EB rating system could be used to meet the intent of the Guiding Principles, and thus count LEED EB certified buildings towards meeting the 15% requirement of EO 13423. At this time the answer is unclear; however, the point is important because the EMS team has developed a plan and is in the process of using a campus approach to certify multiple buildings at SNL/NM and SNL, California (CA) under the LEED EB green building rating system. The reasons for choosing the LEED EB rating system as the metric to be applied to EB at SNL/NM are:

Photo of CINT LEED certified building - taken by Heidrich Blessing

- The LEED EB system is rigorous, inclusive and well tested,
- LEED EB is focused on operations and maintenance which can save money and boost productivity,
- There is existing and rapidly expanding industry acceptance and understanding of the LEED rating system,
- Components of many of the LEED EB required policies are already in place at SNL/NM so they can be applied on a campus-wide basis saving time and money.

Because of SNL/NM's proactive plan to meet the requirements of EO 13423 through LEED EB certification, SNL/NM strongly advocated that LEED EB is approved as a mechanism for meeting the intent of the Guiding Principles and the requirements of the EO.

The "Beta Testing" ended with many praises for SNL/NM's forward looking approach to green building certification and sustainable policies such as Custodial Services green cleaning program. The group's comments and recommendations have been provided to the HPSB Working Group that is charged with providing guidance for implementation of EO 13423.

Chemical Mechanical Planarization Diversion Project could help Sandia save up to 70 million gallons of water per year

by Morgan Gerard

Water conservation is an integral part of the Sandia National Laboratories, New Mexico (SNL/NM) Energy Management Program. Yet, water conservation efforts are often at a disadvantage and overshadowed by electrical and gas energy reduction efforts primarily because of the costs involved. Because of a new utilities contract, electrical costs at SNL/NM will double in Calendar Year 2009. This is a concern because water, again, will likely take a backseat to electrical and gas consumption reduction efforts.

Several water use reduction initiatives are underway at SNL/NM to conserve and optimize water use in the near and distant future. First, there are many individuals at SNL/NM who are concerned about water conservation, which contributes to a successful outcome. Next, SNL/NM has been ordered through Executive Order 13423 to reduce water consumption by 2% annually through the end of fiscal year (FY) 2015 or by a total of 16%. Finally, SNL/NM's Energy Management Program has key personnel working on large scale water reduction efforts to help meet water reduction goals. One of these efforts, called the Chemical Mechanical Planarization (CMP) Diversion Project, is beginning to produce exemplary water use reduction results.

CMP is a common process in the semiconductor industry that uses abrasive slurry in conjunction with a polishing pad and retaining ring to make a wafer flat, or planar. The processed slurry is then released to the sanitary sewer system. The semiconductor facility, located in the SNL/NM 858 Complex, like many silicon wafer facilities industry-wide, plumbed all the process waste water to an acid waste neutralization (AWN) unit and then to the municipal sewer system. Unfortunately, CMP waste slurry often causes fouling (the accumulation and deposition of living organisms and certain non-living material on hard surfaces - most often in an aquatic environment) of the AWN system. This fouling becomes maintenance-intensive and requires cleaning the AWN probes and drains to ensure the system functions properly.

In an effort to conserve water at SNL/NM, a team of water conservation engineers determined that waste water from the wafer fabrication facility could be reclaimed for use in cooling towers and scrubbers. If process waste water could be diverted from the sewer and reclaimed for use in associated and nearby cooling towers and scrubbers, the water saving would be significant. Unfortunately, the combination of process waste water and the CMP slurry waste would foul and promote scaling of heat transfer surfaces and the cooling towers. The potential to reuse significant amounts of water and the need for retrofitting of the AWN system became a paramount effort for the Energy Management Program.

The CMP Diversion Project to segregate CMP slurry discharge from other process water for reuse has recently seen its "first light" since completion. A pilot run to test the reclaim system in late September of 2007 showed an average water use reduction of 34,096 gallons per day using only one system of cooling towers. Based on the success of this initial test, the SNL/NM Energy Management Program and its Water Conservation engineers plan to expand the reclaim system significantly by sending its water through more scrubbers, chillers, and additional cooling towers. The immediate water savings of this system will be over 56 million gallons per year. Expansion of this system to other chillers and equipment nearby could increase this amount to 70 million gallons per year.

Commitment to Environment Recognized in California

Livermore Chamber of Commerce honors Sandia with its first Environmental Spirit award

Source: Sandia Press Release

Sandia National Laboratories, California (SNL/CA) has been selected by the Livermore Chamber of Commerce as a recipient of its inaugural Environmental Spirit Award. The award, said Livermore Chamber president and Chief Executive Officer Dale Kaye, was presented to SNL/CA for its environmental programs and ongoing commitment to protecting the environment, wildlife, and numerous species on the laboratory's 400-acre site. "Sandia has not only shown tremendous sensitivity to the land they occupy, but also a dedicated commitment to its community," said Kaye. "This is an organization that helps to protect our world and we are delighted to be able to present them with this award." Gary Shamber, who manages SNL/CA's Environmental Management Department, said he considers environmental stewardship to be a fundamental obligation shared by all SNL/CA employees and staff. "Many of our program objectives have been specifically designed to minimize our environmental impacts on the local community and to preserve the natural environment and resources that we share," he said. "Recognition of our environmental performance by the chamber is especially appreciated since environmental stewardship by individuals, companies and communities is as important as it's ever been." SNL/CA was presented with the Environmental Spirit Award during the Livermore Chamber of Commerce annual Installation and Community Awards Gala.

Earth Day 2008

by Michael Lee

The 2008 Sandia National Laboratories, New Mexico (SNL/NM) Earth Day Celebration was a great success! An estimated 350 people turned out to hear Dr. Robert Hirsch's presentation entitled "Peaking of World Oil Production: Background, Timing and Ramifications." In addition to the presentation, the event had 16 displays in the Steve Schiff Auditorium Lobby with exhibitors from both internal (SNL/NM) organizations, and external commercial and non-profit organizations.

Gifts of reusable, 20% recycled-content shopping bags, 100% organic cotton hats, and energy-saving compact fluorescent lamps were given out. An estimated 750 people for a period of two hours circulated through the booths. Over 350 people turned in surveys and approximately 200 people took advantage of the Rolling BBQ stationed outside the Steve Schiff Auditorium.

Congratulations to the Earth Day planning team, composed of staff members from Pollution Prevention, the Environmental Management System, Energy Management, and the Solid Waste Transfer Facility, who all worked hard in planning and running this great event.

Earth Day participants enjoying information booths

The Revitalization of the Chemical Exchange Program

By Pascale Waffelaert

The Sandia National Laboratories (SNL/NM) Chemical Exchange Program (CEP) was developed in 1989 as a Hazardous Waste Management Waste Minimization program. From 1989 to 1994, one staff member and one part-time contract technician, responsible for chemical transportation, operated the CEP. Excess chemicals, previously sent for disposal, were put into the chemical exchange using a Chemical Waste Disposal Request Form. Item(s) were stored at the Hazardous Waste Management Facility (HWMF) until a user requested the chemical, at which time it was delivered to the requestor. Chemicals available for exchange were advertised in the Sandia Weekly Bulletin, a communication instrumental to the success of the CEP. During this time, approximately 90 percent of the chemicals coming into the chemical exchange were re-applied. The quantity of chemicals and their cost avoidance (purchase of new chemicals and disposal costs avoided) was reported on a monthly basis. From August 1989 to March 1993 SNL/NM saved $217,830 (approximately $62,240 annually) by reapplying chemicals.

In 1994, a new manager was assigned to the CEP and the handling and transportation duties were taken over by Rinchem Company, the HWMF Operations & Management contractor. The transportation of chemicals for CEP was combined with routine waste transportation. By combining the tasks, there was no longer a need for the half-time technician. After mid 1994, budget reductions and increased job duties no longer allowed the program manager the necessary time to track materials as closely as in previous years. Additionally, improved Environment, Safety & Health (ES&H) and procurement practices resulted in a reduction in the volume of chemicals passing through the CEP. In 1998, the CEP was suspended.

The CEP was brought back in 2002 and functioned virtually through a website. When a chemical owner deemed an item to be excess, the owner emailed the information to the CEP database custodian who entered the information into the "Material Available" database. The owner would continue to store the excess chemical until either someone requested the chemical or the owner declared it waste. If a request was made for the chemical, the CEP custodian contacted the owner of the chemical and arranged for transfer. The website was advertised using links on other websites, the Sandia Daily News, and the Porcelain Press. The website still exists but is not functional. Chemicals continue to be posted on the CEP database; however, the system was not user-friendly and no chemicals were reapplied for several years.

In 2005, as part of its Environmental Management System (EMS), Sandia performed an annual environmental aspects/impacts analysis. The purpose of this analysis was to identify the environmental aspects associated with Sandia's activities, products, and services and the potential associated environmental impacts. The most significant aspect identified was Hazardous Materials (Use and Storage). Division and environmental programs established objectives and targets based upon the environmental aspects associated with their operations. The objective for Hazardous Materials was to improve chemical handling, storage, and on-site movement of hazardous materials. One of the targets supporting this objective was to develop an effective CEP, making a business case for it in fiscal year (FY) 07, and fully implementing a comprehensive CEP in FY08.

A new CEP team was formed to address reinstitution of the program. The team consisted of representatives from the Chemical Information System (CIS), Pollution Prevention (P2), the HWMF, Procurement and the EMS. The team met regularly to discuss logistics of the CEP and in July 2007 the CEP once again became active. Since the reinstitution of the CEP in 2007, 247 chemicals have been successfully reapplied, resulting in a cost savings of $39,416.70 in material purchase and waste disposal costs, avoiding 1030 kilograms of hazardous waste.

The future of the CEP includes a web-based interactive database entry and tracking system is currently undergoing beta-testing. The database will be activated at the end of May 2008. This interactive system allows individuals to place, search, and request chemicals from the CEP inventory online.

The CEP is also undergoing revisions to include chemicals at SNL/California (CA). This expansion will enable users to exchange chemicals throughout the respective sites and between the two sites. The CEP is a free service provided to members of the workforce to reduce chemical purchasing costs, disposal fees, and Sandia's environmental footprint. All chemical owners and users are encouraged to participate in the CEP.

Environmental Compliance Coordinator

Featured Environmental Program at Sandia

by Teresa Goering & Craig Wood

Sandia National Laboratories, New Mexico (SNL/NM) aims to achieve environmental excellence by implementing several programs that identify controls needed to protect human health and the environment. The programs include: Pollution Prevention (P2), National Environmental Policy Act (NEPA), Air Quality Control (AQC), Water Quality, Storm Water, Wastewater Discharge, Groundwater Protection, Oil Storage, Waste Management and Long-Term Environmental Stewardship (LTES). Each Environmental Program serves a different role in achieving Environmental Excellence and they all work with line organization customers at Sandia. With so many programs, it can be difficult for line organizations to keep track of all the objectives and regulations required of them. That's when the Environmental Compliance (EC) Coordinators Program comes in handy.

EC Coordinators serve as a liaison between environmental programs and their line organization customers by assisting the line organizations in complying with Federal, State, Department of Energy (DOE) and SNL/NM environmental requirements. By going on site in the field more than any other environmental program, EC Coordinators provide daily guidance and options to line organizations. These activities include:

- Assisting line organizations in performing Environmental, Safety and Health (ES&H) Self Assessments (SAs);
- Providing environmental training that ranges from debriefs to line managers and ES&H Coordinators, to formal classroom training;
- Providing instructions in disposition and resolution of problematic or unique waste streams, as well as the management of common waste streams.

The EC Coordinators Program includes many outlets to provide Sandians and contractors with guidance on achieving environmental excellence. These outlets include various brochures and a periodic newsletter. If you would like to know who your EC Coordinator is, Sandia workers can visit the internal ECC website today!

The EC Coordinators Program is developed and managed by the Environmental Programs and Assurance Department (4133). EC Coordinators interact regularly with (1) other Environmental Program staff (e.g., P2, Storm Water, etc.), (2) internal customers (e.g., SNL/NM line organizations, Facilities Planning Department, etc.), (3) the U.S. Department of Energy's (DOE) Sandia Site Office, and (4) regulatory entities.

SANDIA
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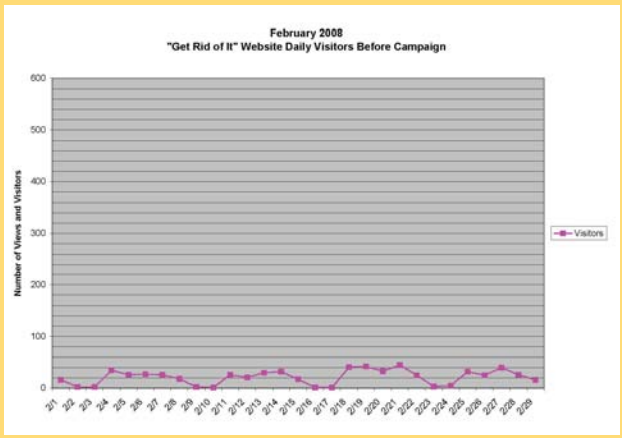
COMPLIANCE COORDINATOR

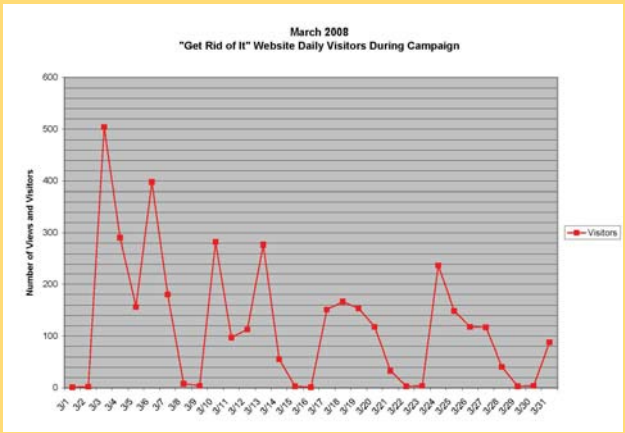
Environmental Accomplishment

Get Rid of It!

Have you ever wondered how to get rid of something at Sandia National Laboratories, New Mexico (SNL/NM) but weren't really sure how? Check out the Get Rid of It website! The website provides useful information for the disposition of materials from around SNL/NM for the general work force. This website has recently undergone extensive revisions and now includes disposition information for both SNL/NM and SNL/California (CA).

The website had a very successful re-launch on March 3 which included a month long media blitz with daily SDNs, cafeteria table toppers (11 different styles), wind masters, and a safety poster. The campaign appeared to be an overall success with the email, phone traffic, and web hits increasing significantly! The graphs below show visits to the site in February, before the media blitz, and in March, during the media blitz! Members of Sandia's workforce with access to the secure restricted network may visit the Get Rid of It Website.





Sandia's EMS Earns AWARDS!

Sandia Environmental Management Programs Earn Recognition

By C.Burroughs

Falling under VP 4000 Mike Hazen's stewardship are Sandia's environmental programs. Several of these recently received recognition and awards. They include:

• Environmental Management System (EMS) Implementation, Outreach, Program and Facilities Integration received the 2008 White House Closing the Circle Award honorable mention. This award recognized numerous EMS activities, including facilities operations (energy management, water conservation, sustainable buildings), outreach and communication (SDN weekly environmental tips and energy savings tips, Earth Day activities and lectures, quarterly newsletter, annual one-day conference for high school students). The EMS also won an NNSA-Best-in-Class award and the DOE Pollution Prevention (P2) Star award.

• Sandia's Green Building program won the NNSA Best-in-Class award and the P2 Star award. During the past year three Sandia buildings — Weapons Evaluation Test Laboratory (WETL), Center for Integrated Nanotechnologies (CINT) facility, and MESA Microsystems Fabrication (MFAB) facility —. were awarded Leadership in Energy and Environmental Design (LEED) building certification given by the US Green Building Council (USGBC). LEED is a standard that recognizes the environmental and energy performance of buildings and rates them in the categories of site development, water efficiency, energy performance, use of materials and resources, and indoor environmental quality.

• The Sandia Electronic Stewardship team won the NNSA Best-in-Class and the DOE (P2) Star awards. The team used the Electronic Product Environmental Assessment Tool (EPEAT), a set of criteria in eight different categories to determine the environmental attributes of a particular electronic office product. As a result, nearly 100 percent of office equipment — computers, monitors, printers — components are recycle. Last fiscal year Sandia/New Mexico purchased 11,101 computer units, 96 percent of which were EPEAT-compliant, and recycled 136.3 metric tons of electronic scrap.

• Sandia was presented six Gold Pretreatment Awards by the Albuquerque/Bernalillo County Water Utility Authority. The gold awards are given to permit holder that have an active pretreatment management system that has demonstrated 100 percent compliance with reporting requirements and 100 percent compliance with their permit discharge limits.

• Sandia received an NNSA Best-in-Class and an honorable mention for the DOE P2 Star for green chemistry, which is the use of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture, and application of chemical products. Ceramics and Glass Dept. 2454 applied this principle in redesigning a process to produce powder used for a hydrogen generation application. The results were reduced overall process volume to accommodate bench scale equipment, reduced chemical usage, and reduced hazardous waste volume.

• Sandia/California was accepted into an Environmental Protection Agency (EPA) Performance Track for committing to the following: complete Arroyo Seco improvements, reduce transportation fuels by 10 percent, increase recycled content of paper products by 16 percent, and reduce water use by 6 percent all by 2010.

• Sandia/California received the Livermore Chamber of Commerce Environmental Spirit Award for its environmental programs and ongoing commitment to protecting the environment and wildlife on the laboratory's 400-acre site.

Semi-Annual EMS Awards - Summer 2008

The deadline for submitting nominations for the summer semi-annual EMS Awards is June 13, 2008 Awards will be given in the following five categories:: 1. Water Conservation/Energy Reduction 2. Risk Mitigation/Environmental Protection 3. Environmentally Preferable Purchasing 4. Waste Minimization 5. Recycling. You can submit nominations now to Katrina Wagner (kmwagne@sandia.gov).

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94-AL85000.