PPPL PRINCETON PLASMA PHYSICS LABORATORY
A Collaborative National Center for Fusion & Plasma Research
U.S. DEPARTMENT OF ENERGY
WEEKLY
November 13, 2017

THIS WEEK

MONDAY, NOV. 13

VSP Information Session
2–3 p.m. ◆ MBG Auditorium

TUESDAY, NOV. 14

VSP Information Session
9–10 a.m. ◆ MBG Auditorium

WEDNESDAY, NOV. 15

PPPL celebrates America Recycles Day
See page 10 for details.

Unicor Electronics Recycling
7:30–10 a.m. ◆ Warehouse door across from firehouse

Council Café Lunch
12 p.m. ◆ Cafeteria
Andrew Zwicker
Head of Communication and Public Outreach, Head of Science Education

PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
Nature's Multiscale Materials Integration Strategies and Additive Manufacturing
Xiadong Li, University of Virginia

FRIDAY, NOV. 17

Public Tour
10 a.m.

UPCOMING

MONDAY, NOV. 20

Celebrate PPPL's Inventor Hall of Fame
12:30 p.m. ◆ LSB Lobby
See page 7 for details.

INSIDE

State of the Lab focuses on PPPL's accomplishments and challenges

By Jeanne Jackson DeVoe

PPPL has accomplished a great deal in the past year despite many challenges and PPPL researchers are contributing key research that is moving scientists' understanding of plasmas and fusion energy forward, Richard Hawryluk, PPPL's interim director, told staff last week in his State of the Laboratory address.

"We're pursuing transformative ideas and strong collaborations on national and international facilities, on tokamaks, spherical tokamaks, stellarators and laser facilities," Hawryluk said. "This is all underpinned by the theory work we're doing and the vibrant work taking place in basic plasma physics."

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Grierson and Greenough honored for contributions to fusion energy development

Award winners Brian Grierson, second from left, and Nevell Greenough, with Interim Director Rich Hawryluk, far left, and Princeton University Vice President for PPPL Dave McComas, right. *(Photo by Elle Starkman)*

PPPL presented its 2017 outstanding research and engineering awards to physicist Brian Grierson, for a breakthrough in measuring the behavior of a critical component of fusion plasmas, and engineer Nevell Greenough, for the creative use of radio frequency waves to provide auxiliary heat to raise plasma to fusion temperatures. The awards, announced following Interim Director Rich Hawryluk's State of the Laboratory address on Nov. 7, recognized distinguished achievements in developing fusion energy and designing and running the high-power radio frequency equipment required for PPPL's fusion experiments.

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A call for the Laboratory to RISE to its core values

Margaret Kevin-King, the Building and Grounds supervisor and a leader of an Organizational Diagnosis subcommittee on core values, called for PPPL staff to come together to meet the challenges ahead by embracing the core values of responsibility, innovation, safety and engagement (RISE).

Kevin-King said the team identified these core values as being integral to the Laboratory after many months of "grappling" with identifying values that "everyone can relate to."

"This is a great time and a great opportunity for us to rise from the past and move forward into the future as we try to meet the goals and mission of the Laboratory," Kevin-King said. She received a standing ovation after her talk, which came at the beginning of the State of the Laboratory address by Rich Hawryluk, interim director of PPPL.

The core values fill a need identified by staff members in the Organizational Diagnosis survey who said they are uncertain about the Laboratory's future and do not have a sense of the Laboratory's core mission and values. In addition to Kevin-King, the subcommittee included Alana Coleman, of Business Operations; Jeanne Jackson DeVoe, of Communications and Public Outreach; Erik Gilson, of Plasma Science and Technology; and Tori Sikkema, of Procurement.

Hawryluk said he incorporated the core values into his State of the Lab presentation. "Margaret and her team did an absolutely wonderful job in articulating the core values of the Laboratory," he said. "I was very impressed with their understanding and insight into what makes this Laboratory work and what we need to do moving forward."

The RISE acronym was a happy coincidence that didn't emerge until long after the team identified the four core values, Kevin-King said.

The first core value, respect, is about "taking ownership and being accountable to others," Kevin-King said. "Think about how your actions impact others," she told the audience. "As we go through our core values I want all of you to think about how you can do your jobs. See how you can use them to be successful."

The second core value, innovation, goes back to the origins of the Laboratory launched 66 years ago by physicist Lyman Spitzer, who first proposed a national fusion energy program in 1951. "He had a vision and he didn't sit on his vision," Kevin-King said. "He did something about it, and it's because of him that we're here today."

She pointed out the "Inventors Hall of Fame" at the rear of the MBG Auditorium, which is dedicated to PPPL inventors. Innovation also has to do with being creative in our jobs and in improving operations, Kevin-King said. "We improve the way we do business every day in pursuit of our mission," she said.

The third value, safety, is ingrained into PPPL's culture and has been emphasized by Jerry Levine, head of Environment, Safety and Health and his staff, Kevin-King said. It has become so much a part of our values that PPPL'ers cannot pass by a broken jar at the grocery store without calling someone to make it safe, she said. "We all know safety is very important to us at the Laboratory," she said.

The fourth value is engagement, Kevin-King said. She cited the example of Arlene White of Procurement, who routinely stays late at work to get her work done as an example of engagement. Physicists also are often late at work checking their calculations, she said. Facilities staff members do their part to ensure that PPPL's grounds are safe and offices are clean. "We all contribute and we're all focused and we're all engaged," Kevin-King said.

"We need to recognize that we have values that are important to how we operate and how we live," she concluded. "We ask each of you to incorporate these values into your daily lives."

Margaret Kevin-King, building and grounds supervisor and a member of an Organizational Diagnosis subcommittee, discusses PPPL's core values. *(Photo by Elle Starkman)*

Core Values:

- **R**esponsibility: We are accountable, respectful, ethical and we strive to be diverse and inclusive
- **I**nnovation: We pursue transformative ideas & leading-edge solutions in science, engineering, technology and operations
- **S**afety: We are vigilant about safety through training, education, and prevention
- **E**ngagement: We are passionately committed to and focused on scientific, engineering, and operational excellence

Responsibility:

- Accountability: We take ownership of and are accountable for our own actions as well as driving the Laboratory to the highest levels of success
- Respect: Demonstrate respect for our colleagues, the community, and our environment through our daily actions
- Ethics: Uphold the highest principles and do the right thing
- Diversity and inclusion: Foster a culture that invites a spectrum of voices and ideas and creates a positive and collaborative workplace

Innovation

- Push the envelope of current notions in science, engineering, and technology to transform our world, further scientific research, and carry out the Laboratory's mission
- Improve the way we do business every day in pursuit of our mission

Safety:

- Think safe, act safe and uphold safety every day
- Demonstrate that the safety and health of our people, Laboratory, community and environment is paramount through vigilance, training, education and prevention

Engagement:

- Invest our utmost energy, talents and abilities to advance the Laboratory's mission
- Individually and collectively embrace collaborations with each other as well as our partners, stakeholders, and world-leading institutions to achieve outstanding results

State of the Lab

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Rich Hawryluk, PPPL's interim director, addresses PPPL staff. *(Photo by Elle Starkman)*

The State of the Laboratory address began with a discussion of PPPL's core values by Margaret Kevin-King, building and grounds supervisor and member of an Organizational Diagnosis team (see page 2). Also at the address, PPPL physicist Brian Grierson received the Kaul Foundation Prize for Excellence in Plasma Physics Research and Technology Development for his research into a spectroscopic technique leading to the first routine measurement of main ion flow in fusion plasma. Nevell Greenough received the Distinguished Engineering Fellow award for his creation of new techniques to heat and diagnose plasmas using radio frequency waves (see page 1). Hawryluk also announced a voluntary buy-out program for some staff members (see page 7).

Hawryluk outlined findings from the National Spherical Torus Experiment-Upgrade (NSTX-U) that have already contributed to exciting scientific results, including several papers at the recent American Physical Society Division of Plasma Physics meeting. One example was an invited talk by physicist Eric Frederickson on the suppression and control of Global Alfvén Eigenmodes. Frederickson worked with physicist Elena Belova on this research.

Once improvements are completed on the NSTX-U, it will be the highest performance spherical torus in the world, Hawryluk reminded staff. The new central magnet and a second neutral beam will give the device the highest magnetic field and highest temperature of any spherical tokamak. This will produce research results that could lead to a smaller and more cost-competitive fusion reactor, he said. It will also provide key technical results for ITER and the next generation of fusion experiments, he said. "NSTX-U has a major opportunity to take a major step forward," Hawryluk said.

Exciting scientific results

Hawryluk outlined several other exciting research results. He cited physicist C.S. Chang as another example of promising research. Chang's exascale project to develop the next generation of supercomputers is aimed at producing a full predictive model of burning plasmas for ITER and future fusion devices. "We're really looking forward to these results in the future," Hawryluk said.

Other notable research achievements include:

- Understanding the impact of the plasma boundary: Using lithium as a plasma boundary in experiments on PPPL's Lithium Tokamak Experiment and others around the world to explore whether lithium can increase plasma confinement and pressure and solve the first wall challenge.
- Understanding the plasma universe through work on the Omega Laser Facility at the University of Rochester on collisionless shocks, which is of great interest to astrophysicists.
- Major contributions to W7-X on using correction fields to compensate for error fields.
- New tools to understand plasmas: Through FLARE, an experiment constructed by the National Science Foundation and Princeton University, that PPPL has proposed to be operated as an Office of Science user facility at the Laboratory, and through exploring facilities to support space physics diagnostics.

Addressing issues on NSTX-U

Hawryluk also discussed the huge effort the Laboratory has made over the past year to identify potential issues in each system of NSTX-U as well as gaps in PPPL's policies, procedures and operations in the wake of a magnet failure that shut down the experiment. Now the Lab is ready to move forward with plans to correct those problems, he said.

Hawryluk noted that in the past year PPPL held 12 design, verification, and validation reviews, two extent of conditions reviews, a conceptual design review, and a cost and schedule review. These reviews brought 47 national and international experts to PPPL and resulted in a 346-page recovery plan

"This was a major effort, a fantastic effort by the entire Laboratory and I want to thank all of you," Hawryluk said.

There will be more reviews ahead focusing on the technical scope of the recovery initiative, Hawryluk said. The initial cost of the recovery is estimated at $63 million, including a $15 million contingency fund. The machine is to become operational between the fall of 2019 and summer of 2020, he added.

Margaret Kevin-King with a slide depicting the core values of responsibility, innovation, safety and engagement *(RISE). (Photo by Elle Starkman)*

An overflow crowd watches the State of the Laboratory address in the cafeteria. *(Photo by Elle Starkman)*

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State of the Lab

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In addition to the technical challenges ahead, the Laboratory also commissioned a peer review of policies, procedures and operational methods by experts from Oak Ridge National Laboratory, Fermi National Accelerator Laboratory, Brookhaven National Laboratory and MIT, Hawryluk said. This resulted in an extensive plan to improve operations. Les Hill, who headed the review, and Valeria Riccardo, head of Engineering, are rewriting many core procedures, he said. "Addressing this is as critical a step to achieve operational excellence as rebuilding NSTX-U," Hawryluk said.

Contributions to ITER and other collaborators

PPPL's Engineering Department made major contributions to ITER when it delivered the final components for the steady-state electrical network, completing the five-year, $35 million project, Hawryluk said. Engineers also contributed to other collaborations, including delivering two divertor units to the Wendelstein 7-X (W7-X) stellarator in Germany, various equipment to DIII-D at General Atomics, and a powder dropper to the ASDEX-Upgrade tokamak, also in Germany.

Hawryluk noted that there has been major progress in the Infrastructure Operational Improvements (IOI) project. Offices have been renovated in the LSB Annex and the C-Site MG Building is being converted into a space for technical shops.

Organizational Diagnosis Team initiatives

Speaking to a full house in the MBG Auditorium, Hawryluk praised the work of Organizational Diagnosis (OD) teams, which have now merged into one team. "The engagement of the Organizational Diagnostic teams is making an impact," he said. He cited the Big Bang Bash – a Lab-wide picnic – on Sept. 14 as one major success. Several initiatives are in the works, including a Plasma 101 Course for staff members next month, he said.

Kyron Jones, Van Snyder, and Jose Rodriguez enjoy some refreshments. *(Photo by Elle Starkman)*

Ray Camp and Mary Payne at the celebration following the State of the Lab address. *(Photo by Elle Starkman)*

Carmela Ciummo, Jay Kung, and Marc Sibilia. *(Photo by Elle Starkman)*

Other accomplishments of the OD teams include a new travel manual by an OD and Business Operations subcommittee (see page 8), small group meetings with Hawryluk and staff members, a new coat of paint outside the Theory Wing entrance, and Council Café Lunches.

Hawryluk noted that the Science Education staff had several initiatives to improve diversity in the plasma physics field, including a Conference for Undergraduate Women in Physics in January and courses aimed specifically at physics students from under-represented groups and at professors from institutions serving underrepresented groups.

"We're addressing the opportunities and the challenges we face," Hawryluk said. "The science we're doing is excellent. Rebuilding NSTX-U and improving Laboratory operations must be and is a major focus. Changes are underway to strengthen the Laboratory's foundation for the future. We will 'RISE' to take advantages, of the opportunities and address the challenges we are facing."

Staff members enjoy coffee and cake after the State of the Laboratory presentation. *(Photo by Elle Starkman)*

Awards

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Grierson received the Kaul Foundation Prize for Excellence in Plasma Physics Research and Technology Development for his "groundbreaking studies in deuterium charge exchange spectroscopy, leading to the first routine measurement of main ion flow in a fusion plasma." Direct measurement of the flow of the main, or deuterium, ions enables comparison with theory and provides improved understanding of the behavior of plasma that fuels fusion reactions — a breakthrough for PPPL in the development of fusion energy. The prize includes a $7,000 cash award endowed by former PPPL Director Ronald Davidson, who donated to Princeton University a portion of the gift he received as the 1993 recipient of the Award for Excellence in Science, Education and Physics from the Kaul Foundation in Tampa, Florida.

Greenough was named "Distinguished Engineering Fellow" for his creation of "high-power electrical and electronic engineering solutions to heat and diagnose plasmas with radio frequencies." Such heating works alongside the injection of powerful neutral beams to raise plasma temperature to the tens of millions of degrees that fusion reactions require. The honor, which is part of the PPPL Distinguished Research and Engineering Fellow Program, includes a $5,000 award supported by the U.S. Department of Energy.

Rich Hawryluk, PPPL's interim director, congratulates physicist Brian Grierson after Grierson received the Kaul Foundation Prize for Excellence in Plasma Physics Research and Technology Development. *(Photo by Elle Starkman)*

Brian Grierson

For Grierson, a member of the PPPL collaboration on the DIII-D tokamak that General Atomics runs in San Diego, plasma physics holds intriguing mysteries that he seeks to unravel. "I find great excitement in discovering new things, figuring it out, achieving new insight," Grierson said. "Physics research is a series of small discoveries that accumulate to new understanding through close collaboration with other equally inquisitive minds. Every day, we experience frustration, challenge conventional wisdom, solve complex problems and eventually get the satisfaction of accomplishment — that never gets old for me."

Grierson holds a five-year DOE Early Career Research Program grant that he received in 2014. With it he runs DIII-D experiments, analyzes the data and manages two junior physicists in research related to the main ions in plasma. He divides his time between such Early Career Research work and general DIII-D research on the transport of heat, particles and momentum in plasma. "He's interested in everything and has great impact on everything that he touches," says Mike Zarnstorff, PPPL deputy director for research.

Nevell Greenough received the Distinguished Engineering Fellow award. *(Photo by Elle Starkman)*

The Kaul Prize recognizes Grierson's "tour-de-force diagnosis and analysis system for main ion behavior that everybody thought was impossible," Zarnstorff said. "He managed to pull it off and then used it to diagnose how main ions contribute to turbulence-driven rotation at the edge of the plasma and compare with theoretical predictions. This is a very important process that we as a laboratory and with DIII-D are very interested in understanding."

The findings, which Grierson achieved with a fast camera and spectroscopic measurement of light waves, marked a radical shift from previous analyses, which focused on ions from impurities in the plasma that are simpler to analyze. But such measurements relate to main ion flow only through assumptions that do not directly reveal the behavior of the essential main ions. "While data from the past was valuable," said Interim Director Hawryluk, a research physicist, "measurements of the main ion species are far more relevant for comparison with theory, and accomplishing this task was extraordinarily difficult."

Grierson earned his doctorate from Columbia University in 2009 after receiving a bachelor of science degree in applied mathematics, nuclear engineering and physics from the University of Wisconsin-Madison. He joined PPPL as an associate research physicist on assignment to DIII-D and became a staff research physicist on the collaboration in 2012.

When not doing science Grierson enjoys backpacking, camping and exploring the California outdoors with his wife, Michele. The couple maintains a website with photos and videos taken during trips to a dozen places in California and around the world. "There's so much to see and do, so many great places to visit," said Grierson, "and after time spent away from the office I'm eager to jump back into solving the complex challenges of physics research."

Nevell Greenough

Greenough, a 41-year veteran of PPPL, heads the tightly knit Radio Frequency group that runs and maintains the RF heating system for the National Spherical Torus Experiment-Upgrade (NSTX-U). His broad responsibilities range from overseeing RF operations to programming controls for the RF power transmitted from six generators to 12 antennas inside the tokamak. He recently led the detailed description of the system for the design, validation and verification review (DVVR) of NSTX-U components. "I know a little bit about a whole bunch of things," Greenough says with more than a touch of modesty. "I'm an expert in none but maybe I can get it to work when it's needed."

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Awards

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Greenough's supervisors, Joel Hosea and Tim Stevenson, take a more expansive view of his accomplishments. "Nevell is the consummate electrical engineer and has been an incredible asset to the Laboratory," says Stevenson, the head of Heating Systems at PPPL. "In recent years he has taken on many improvements for RF instrumentation and controls systems. Ever the student, Nevell's love of everything electrical, from antique radios to cutting-edge computer chips and programming techniques, makes him the very definition of an engineering distinguished fellow."

For Hosea, who heads RF science and technology at the Laboratory, Greenough is a highly skilled manager of an expert group and a dedicated worker who takes on many tasks to keep the RF systems in pristine condition. His attention to detail is unwavering. "Maintaining RF systems takes quite a lot of effort even when they're down," Hosea says. "Water must always keep running through the main RF power tubes to keep them clean, for example. Nevell is responsible for making sure that the water is flushed so nothing grows in the tubes, which requires a great deal of work along with his other responsibilities."

Greenough joined PPPL in 1976 with a bachelor's degree in electrical engineering from Lehigh University. An expert in fields ranging from high-voltage and electromechanical design to programming and diagnostics, he has designed and installed RF components and control equipment for numerous PPPL projects. Included among them were the Tokamak Fusion Test Reactor (TFTR) and the National Spherical Torus Experiment (NSTX), the forerunner of the NSTX-U, which uses much of the same RF equipment.

Along the way Greenough has collaborated on RF systems for the Alcator C-mod tokamak at MIT and the DIII-D tokamak in San Diego, with a knack for innovation that has been readily apparent. Randy Wilson, retired head of the ITER and Tokamaks Department who worked closely with Greenough for many years and considers him a friend, recalls the time when a DIII-D researcher noted that a circuit that calculated the dissipation of heat from an RF power tube needed improvement. "Nevell went to a computer flea market and found a circuit," Wilson said. "He programmed it over the weekend and brought it in on Monday, and sure enough it worked."

Greenough maintains his passion for electrical engineering when not on the job. He is a licensed amateur radio operator and enjoys fixing up old radios from the 1930s and 1940s and hearing them play. An outdoors enthusiast, he kayaks with friends in the Catskills and rows on other lakes. He also enjoys music from all eras and learning the bass guitar.

Looking ahead, Greenough wants to see the high harmonic system, which feeds megawatt power to the RF antennas on NSTX-U, remain productive. "The controls that I developed with a lot of help from others," he said, "will increase the reliability and accuracy of the system for many years to come."

Open Forum with Terry Brog

Terry Brog, deputy director for operations, will host the next open forum on Tuesday, Nov. 28, from 2 to 3 p.m.

Please check your email for registration information.

Make an appointment for your flu shot

Protect yourself from influenza and avoid spreading the illness to others by getting a flu shot.

Please call the OMO at ext. 3200 to schedule an appointment.

PPPL staff can apply for buy-out packages

About 60 percent of PPPL's staff of 500 or so employees received information last week on a voluntary separation (buy-out) plan that allows them to apply for a severance package to leave the Laboratory.

Rich Hawryluk, PPPL's interim director, announced at his State of the Laboratory address on Nov. 7 (see page 1) that many staff members will have the opportunity to voluntarily terminate their employment at PPPL. He said it was a regrettable but necessary step to reduce costs and ensure the Laboratory has employees with the right skill sets for the NSTX-U recovery effort and other initiatives.

PPPL's funding is uncertain for fiscal year 2018, Hawryluk said. "This was a very difficult decision but with the budget decrease and the need for certain skills to support the Laboratory's mission, I don't think we have a choice," Hawryluk said.

The Lab Leadership Council evaluated all skill disciplines to determine who is eligible for the program. The people eligible for the program received emails last week and packets of information were sent to their homes. The Laboratory held an information session on the buy-out on Friday, Nov. 10, and will hold additional sessions today, Monday, Nov. 13, from 2 p.m. to 3 p.m. and tomorrow, Tuesday, Nov. 14, from 9 a.m. to 10 a.m. in the MBG Auditorium.

Princeton University Human Resources representatives will be available for one-to-one meetings at PPPL on Wednesday between 1 and 4:30 p.m. Contact Ricardo Marquez, ext. 2221, for an appointment or call Princeton University HR 258-3300 to make an appointment on campus.

While a large number of employees received the email and packets, not everyone who applies will be permitted to take a buy-out, Hawryluk said. The Lab Leadership Council will have the final say on whether an employee should be retained because the employee has a much-needed skill set or performs a job deemed critical to the Laboratory. Employees have until Nov. 29 to apply and will be informed the week of Dec. 5 about whether or not they are accepted.

All eligible employees should carefully consider the buy-out offer, talk it over with their families, and consult a lawyer or tax advisor, if necessary, Hawryluk said. "It's an important decision that people have to make and it should be done with care," he said. Employees taking the buy-out will terminate employment on Jan. 12, while employees taking retirement will terminate on Jan. 31.

Celebrate PPPL's Inventor Hall of Fame

Come celebrate PPPL's Inventor Hall of Fame, Monday, Nov. 20, at 12:30 p.m. in the LSB Lobby.

Cake and coffee will be served.

Register your future scientist for the Young Women's Conference

Registration is now open for you to register your seventh to tenth-grade future scientist for the 2018 Young Women's Conference in Science, Technology, Engineering, and Mathematics, March 22, 2018, at Princeton University.

The all-day conference for seventh through tenth graders will include lectures, hands-on activities and science demonstrations. Registration is open to the daughters and relatives of PPPL staff and to school groups on a first-come-first-served basis. While registration is closed to the public, it is open for up to 50 PPPL employee relatives.

More information is available here.

Click here for a registration form.

Travel Manual, new and improved, simplifies guidelines

By Jeanne Jackson DeVoe

PPPL's newly revised travel manual aims to provide "clear and concise guidance" with consistent and up-to-date guidelines.

That was the message of a Nov. 6 lunch-and-learn session on the new manual in the MBG Auditorium. Kristen Fischer, PPPL's chief financial officer, along with Svetlana Drapkin, head of accounting and financial controls, hosted the meeting along with Robin KarYee Chang, travel and conference compliance officer.

Fischer and Drapkin worked with Keith Erickson and Ahmed Diallo, of the Organizational Diagnosis Leadership and Communications Team, to review each line of the travel manual to ensure that the guidelines provide travelers with some flexibility, where appropriate, while still complying with U.S. Department of Energy (DOE) regulations.

"The reason why we're sitting here today is we heard the voices of the Lab saying that this is a scenario we want to improve," Fischer said. "We revised the travel manual with an eye to providing clear and consistent guidance."

One issue the group addressed is the need for consistent travel guidelines throughout the Laboratory. "It's really important that we provide consistency," Fischer said. "That is the feedback we heard from the OD group."

The travel committee benchmarked best practices with other laboratories. They compiled a list of frequently asked questions (FAQs) that will be updated as travelers ask more questions. Both the manual and the FAQs are available on the travel website.

The committee will come together again in six months to incorporate feedback on the manual, Fischer said. "We're committed to a continuous effort at improvement," she said. "We're paying attention. Please communicate back to the travel subcommittee or come see us directly if you have suggestions."

Business Operations is working with Princeton University on ways to improve travel booking and eliminate some of the paperwork, Fischer said. The office is also working to clarify and simplify conference regulations, Fischer said.

The committee revising the manual worked to eliminate "any unnecessary burdens," Fischer said. For example, the manual eliminates the foreign trip report, which was no longer required by the DOE. It also eliminates an automatic deduction from reimbursements if a hotel serves a hot meal. Travelers will be responsible for claiming meals they ate at the hotel, that were included in their hotel rate, on their travel form, Fischer said.

Another significant change is to allow a rest day at the beginning, middle, or end of a trip if the door-to-door trip is 14 hours or longer, Fischer said.

Fischer noted that PPPL's contract with Graycar Travel expires at the end of this fiscal year. Business Operations is preparing documentation to put the contract out for bid, she said.

Other changes in the travel manual include:

- Eliminating different reimbursement rates for single or double rooms as long as the double rate is within the per diem rate.
- Allowing travelers to rent a car if needed even if the conference they are attending is at the hotel where they are staying.
- Allowing travelers to use a car service in circumstances where it would be less expensive than other transportation or where there are additional inconveniences or safety issues that justify the additional cost.
- Requiring travelers to refuel rental cars before returning them to the rental company, and to decline pre-paid fuel options.

Kristen Fischer, right, PPPL's chief financial officer, discusses the new travel manual, accompanied by Svetlana Drapkin, left, the head of accounting and financial controls, and Robin KarYee Chang, travel and conference compliance officer. *(Photo by Elle Starkman)*

Please contribute to United Way through Nov. 30

Princeton University matches up to 15 percent of employee donations

Council Café Lunch

This Week:

Andrew Zwicker,

Head of Communications and Public Outreach, Head of Science Education

Wednesday, Nov. 15
12 p.m., PPPL Café

Next Week: Jerry Levine

Saf-Gard Shoe-Mobile

The Saf-Gard shoe-mobile will be at PPPL Thursday, Nov. 16. Shoe services will be provided from 7:30 a.m. to 12 p.m. and 1 p.m. to 4 p.m.

The Shoe-mobile will be located adjacent to the Warehouse (Receiving 3) in the lower "N" parking lot. The Laboratory contributes $125 towards the purchase of safety shoes. The balance (if any) can be paid in cash, check, or credit card.

In preparation, please print and complete the Safety Shoe Authorization Form. This form must be signed by the responsible cost center signatory and given to the shoe-mobile driver/salesman at time of purchase.

Saf-Gard catalogue and shoe price list are available in the Stockroom and Material Services Building.

Online ordering is available during the course of the year. Please contact Marisol Ovalles to assist you with this service.

If you have questions or concerns, please contact Marisol Ovalles x2714 or Fran Cargill x3396.

PPPL celebrates America Recycles Day

America Recycles Day events this week and on America Recycles Day Nov. 15

Events include:

- A recycling art contest
- Clothing drive
- Unicor electronics collection
- Get caught green-handed

Nov. 15, 11 a.m.–1 p.m.

- Take ARD Recycling Pledge
- Vote for Best Upcycled Product
- Food & Giveaways
- PPPL Lobby Displays
- READY-SET-SORT Contest

Recycling Art contest

Enter the 2017 Recycling Art contest! Winners will receive a prize and entries will be on display in the LSB lobby Nov. 13–15. Contact Margaret Kevin-King, ext. 3652, or Leanna Sullivan, ext. 2599, for more information.

Clothing Drive

Please donate your gently used clothing to the Trenton Rescue Mission through Nov. 21. Bins are located in the LSB lobby and lower parking lot entrance.

Unicor electronics recycling collection

On Nov. 15, please bring your home electronics for recycling to the Warehouse by the roll-up door across from the firehouse 7:30–10 a.m.

COLLOQUIUM

Nature's Multiscale Materials Integration Strategies and Additive Manufacturing

Xiadong Li
University of Virginia

Wednesday, Nov. 15
4:15 p.m., M.B.G. Auditorium, Lyman Spitzer Building

BROCK

NICK PETTI
Chef Manager

Café at PPPL

BREAKFAST ..... 7 a.m. • 10 a.m.
CONTINENTAL BREAKFAST ..... 10 a.m. • 11:30 a.m.
LUNCH ..... 11:30 a.m. • 1:30 p.m.
SNACK SERVICE ..... until 2:30 p.m.

	Monday Nov. 13	Tuesday Nov. 14	Wednesday Nov. 15	Thursday Nov. 16	Friday Nov. 17
COMMAND PERFORMANCE Chef's Feature	**Stuffed Shells** with Garlic Breadstick	**Chicken-Fried Steak** with Mashed Potatoes and Corn	**Chicken Gyro** served with Greek Salad	**Pineapple Chicken** served over White Rice	**Fried Fish** with Potato Salad and Greens
Early Riser	**Banana-Walnut Pancakes**	**Greek Breakfast Wrap**	**Chicken Omelette**	**French Toast Sticks**	**2 Eggs,** Choice of Breakfast Meat & Tater Tots
Country Kettle	**Spring Vegetable**	**Chicken Noodle**	**Tuscan Bean**	**Split Pea**	**New England Clam Chowder**
Deli Special	**Liverwurst** with Onion and Stone-Ground Mustard	**The Carnegie—** Pastrami, Corned Beef, Swiss, Russian Dressing and Coleslaw on Rye	**Roasted Vegetable Wrap** with Hummus	**Turkey** with Cheddar, Bacon and Cranberry Mayo	**Italian Chopped Antipasto Wrap**
Grill Special	**The Plasma—** Chicken, Bacon, and Swiss on French Bread	**Beef Quesadilla**	**BBQ Pork Rib Sandwich** with Cheddar and Onion Straws	**The Simple Man Burger**	**The Carbonara—** Chicken, Bacon, Mozzarella and Mushrooms with Alfredo on French Bread
Panini	**3 Cheese Panini** with Cheddar, Swiss, Blue Cheese & Tomato on Sourdough	**Spicy Pepperoni Ciabatta**	**Pretzel Melt** with Ham and Swiss	**Falafel Wrap**	**Tuna Melt** on Rye with Fries

MENU SUBJECT TO CHANGE WITHOUT NOTICE

HEART HEALTHY

VEGETARIAN OPTION

WEEKLY

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The **PPPL WEEKLY** is published by the PPPL Office of Communications on Mondays throughout most of the year and biweekly during the summer, except for holidays.
DEADLINE for calendar item submissions is noon on WEDNESDAY. Other stories should be submitted no later than noon on TUESDAY.
Comments: commteam@pppl.gov ◆ **PPPL WEEKLY** is archived on the web at: http://w3.pppl.gov/communications/weekly/.