

## THIS WEEK

**THROUGH APRIL 28**
**Trenton Rescue Mission  
Clothing Drive**  
[See page 9 for details.](#)
**TUESDAY, APRIL 18**
**PPPL Sitewide Campus Cleanup**  
 10:30 a.m.  
 A lunch will be served after the  
 clean-up in Mod 6. [Sign up here.](#)  
 The rain date is April 20.

**WEDNESDAY, APRIL 19**
**Safety Training Observation  
Program (STOP) class**  
 9:30-11:30 a.m. ♦ Mod 6  
 conference room

### Earth Day Celebration

**Unicor Home Electronics  
Collection**  
 7:30 a.m. to 10 a.m. ♦ Warehouse  
 roll-up door across from the ESU  
 building

**Vendor displays**  
 11 a.m. ♦ LSB Lobby  
**Includes Children's Art show and  
succulent office plant giveaways**
**Green Machine Awards**  
 11:30 a.m. ♦ MBG Auditorium  
**Snacks and raffle prizes**
**Lunchtime movie —  
"Anthropocene"**  
 11:45 a.m. ♦ MBG Auditorium  
**Snacks provided**
[See page 9 for more details.](#)

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## PPPL wins award for its green electronics purchases

By Jeanne Jackson DeVoe

**P** PPL has won a national award for ensuring that 99 percent of eligible electronic equipment purchased last year met rigorous standards for recyclability and energy efficiency.

The Green Electronics Council honored PPPL with a three-star EPEAT award – the highest award the group gives, and the third such award PPPL has received in as many years. It was the most recent of many awards PPPL has received for its environmental programs.

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## Kenneth Ford, a researcher on Project Matterhorn, recalls PPPL's origins

By Jeanne Jackson DeVoe



Climbing the Matterhorn in the Alps gave Lyman Spitzer inspiration to name a project to create fusion energy.

**K**enneth Ford was a physicist at Los Alamos laboratory in 1951 when another young Princeton scientist named Lyman Spitzer sat down and told him about the brain-storm he had about how to create fusion energy in a figure-8 shaped device, later to be called a "stellarator."

Ford recalled that moment in a talk about his role in the origins of the Princeton Plasma Physics Laboratory (PPPL) in an April 12 colloquium.

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## Metal decking installed for new floors in C Site MG building

Work is progressing quickly on the Infrastructure Operational Improvements (IOI) project as workers install metal decking to support a new cement deck on the first floor of the MG building on C Site.

Three-quarters of the concrete deck will be installed by mid-May – a crucial step in the project because it will allow contractors to bring in heavy equipment to work on the walls and ceiling of the building, said Les Hill, head of the IOI project.

“That’s an important milestone for us,” Hill said. “It just tremendously changes the game for us.”

Meanwhile, workers continue to excavate the southeast quadrant of the building where most of the heavy equipment of the machine shops will be located. That area of the building will have numerous steel-reinforced concrete pillars to support the concrete floor that will bear the weight of the heavy equipment. The machine shops will be relocated from the RESA building, which will be transformed into a large, modern warehouse.



Metal decking will be the base for a concrete deck on the first floor of the C Site-MG Building. (Photo by Elle Starkman)



Ductwork is being installed on the first floor of the Lyman Spitzer Building Annex. (Photo by Elle Starkman)

The construction schedule was adjusted after contractors found rock beneath the soil that must be excavated before the pillars can be installed. The target date for completing most of the work on the MG Building is late November or early December, Hill said.

Work on the Lyman Spitzer Building (LSB) Annex should be completed by September, he added.

Contractors spent several days applying fireproofing chemicals to all three floors of the LSB Annex.

Most of the complicated ductwork for HVAC (heating, ventilation and air conditioning) systems has been completed on the third floor of the building and contractors will soon begin installing sheet rock for office walls. The ceiling should be reinstalled by late May, Hill said.

On the second floor, contractors have already begun erecting sheetrock walls and a new sprinkler system will soon be installed. On the first floor, workers are still placing ductwork in the ceiling and will insulate the walls and ceiling. Overall, the project is progressing extremely well, Hill said. 📍

## NPR affiliate WHYY interviews Zwicker, teen building a fusor

Andrew Zwicker, head of Communications and Public Outreach, is interviewed by WHYY, Philadelphia’s National Public Radio affiliate, with a New Jersey high school student who is building a fusor in his basement, and his mother. They visited the NSTX-U Control Room and other areas, including the plasma exhibit in the lobby of the LSB.

The student, Steven Udotong, hopes to produce energy by creating conditions suitable for a fusion reaction. Zwicker showed them a much larger fusion device. Said Zwicker: “His device isn’t going to revolutionize the world. But he might.” 📍

Photo by Elle Starkman



# EPEAT awards

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Robert Sheneman, head of the Environmental Services Division, holds the EPEAT award, with some of the employees who have helped facilitate PPPL's green electronics purchasing. From left, Robert Reed, media specialist in IT, Kristen Ferraro, user services team lead in IT, and at right, Tori Sikkema, procurement specialist. (Photo by Elle Starkman)

"The award is a reflection of our continued commitment to purchasing environmentally-preferred products and managing our electronics in a sustainable manner," said Robert Sheneman, head of PPPL's Environmental Services Division.

The Green Electronics Council noted that nearly 99 percent of PPPL's 422 electronic purchases in fiscal year 2016 were EPEAT-certified, meaning the products use sustainable and recyclable materials that meet or exceed Energy Star specifications for energy efficiency.

Earlier this year, PPPL received a gold Green Buy award from the U.S. Department of Energy (DOE) for its green purchasing program. PPPL also received a U.S. Environmental Protection Agency (EPA) Region 2 Food Recovery Challenge Award for fiscal year 2015 for the Laboratory's composting program.

## Benefits to the environment

The Green Electronics Council estimates that PPPL's purchase of the electronics will have the following benefits to the environment:

- Reduce the use of primary materials by 52.9 metric tons, equivalent to the weight of 1.5 tractor-trailer 18-wheelers.
- Avoid the disposal of 358 kilograms of hazardous weight, equal to the weight of three refrigerators.
- Eliminate 1.5 metric tons of waste – the equivalent of one U.S. household's solid waste for 10 months.
- Avoid 234 kilograms of water pollutant emissions.

The Council estimated that the energy savings from the products would:

- Save 149,360 kilowatt hours of electricity – enough to power 12 U.S. homes for one year.
- Reduce 25.8 metric tons of greenhouse gas emissions – the equivalent of taking 18.5 U.S. passenger cars off the road for a year.
- Save \$15,321 over the lifetime of the electronics.

## Staff facilitated purchases

In addition to PPPL environmental scientist Leanna Sullivan, Sheneman credits Tori Sikkema, in purchasing, along with Kristen Ferraro and Bob Reed, of the IT Department, with helping to facilitate PPPL's green electronics purchases.

Sheneman noted that PPPL has had to adjust its electronics purchases to keep up with changing EPEAT requirements. The Green Electronics Council recently added flat-screen TVs to its list of sustainable electronics products, for example.

In addition to its purchasing program, PPPL also collects home electronics from employees for recycling on behalf of UNICOR during twice-yearly collections. The last such collection in November netted 2,095 pounds of home electronics. The next UNICOR collection will be on Wednesday, April 19 from 7:30 a.m. to 10 a.m. ([See page 9 for details](#)).

PPPL has long purchased sustainable products in other areas of the Laboratory. Some 95 percent of cleaning products purchased for the Laboratory are bio-based, for example. The Laboratory also uses bio-based fuel for some vehicles and requires Brock, the company that runs the cafeteria, to purchase compostable plates and dinnerware.

In addition to these efforts, PPPL recycled 98 percent of all construction demolition and waste from the Infrastructure Operational Improvements (IOI) project in the last fiscal year. PPPL recycled 69 percent of its solid waste last year, including 41 tons of recycling, 19 tons of food waste and 10 tons of yard waste.

The Laboratory has received numerous awards for its environmental programs over the last several years. The Laboratory's main office building, the Lyman Spitzer Building, was U.S.-LEED Gold certified in 2011. PPPL received a DOE Federal Sustainability Award for reducing greenhouse gas emissions and was named an EPA Waste-Wise Federal Partner of the Year in 2012. 🏆

# Project Matterhorn Colloquium

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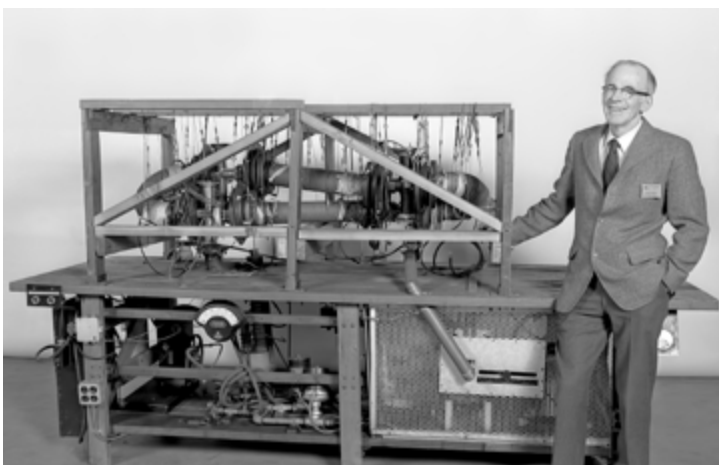
Kenneth Ford, far right, second row, with the Matterhorn B team. Next to Ford is John Wheeler, the founder of Project Matterhorn with Lyman Spitzer. Edward Frieman, who went on to become an associate director of PPPL, is in the center of the back row. (Photograph by Howard Schrader. Courtesy of Lawrence Wilets estate.)

Spitzer had returned from a ski vacation in Aspen, Colorado, Ford recalled, and had come to Los Alamos only to find he didn't have security clearance to get into the laboratory. Ford and another physicist were dispatched to take Spitzer to lunch to calm him down, and that's when Spitzer told them about his idea.

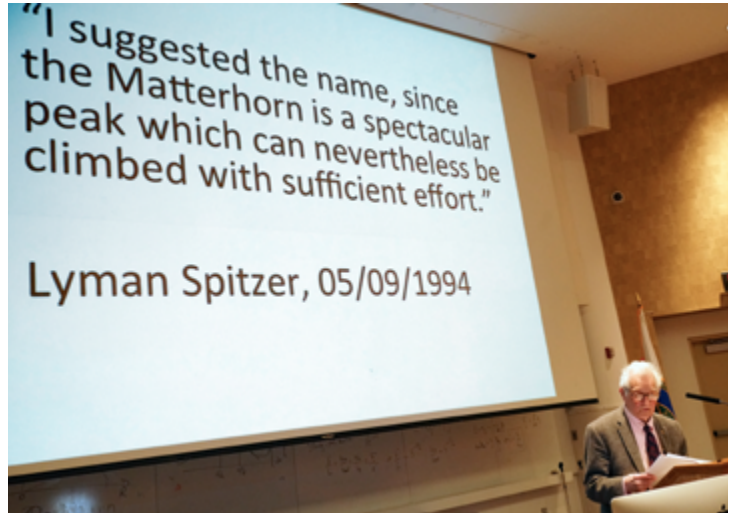
"He explained it to us in simple terms that even a nuclear physicist could understand," Ford said. "You take the torus, you twist it into a figure 8, and maybe with luck ions will drift back and forth long enough to undergo a nuclear reaction before they strike the wall of the container. He was quite excited about it."

Ford is the author of 10 books and textbooks about physics, including "Building the H Bomb: A Personal History" (2015: World Scientific Publishing Co.) and "Geons, Black Holes, and Quantum Foam: a Life in Physics," with John Archibald Wheeler (1998: W.W. Norton & Co.).

John Wheeler, the Princeton physicist who helped develop the hydrogen bomb and founded Project Matterhorn with his Princeton colleague Lyman Spitzer, had been lobbying Princeton's academic and administrative leaders to start a research program focused on nuclear weapons. It was a time when anti-Communist sentiment was high and the American government was concerned about the Soviet government's testing of a nuclear weapon in 1949, Ford said. In May 1951, with what Ford called "stunning speed," the University and the Atomic Energy Commission approved Project Matterhorn.



Lyman Spitzer and his Model A Stellarator, the first figure-8 fusion device.



Kenneth Ford reflected on what Lyman Spitzer told him about Project Matterhorn, the predecessor of the Princeton Plasma Physics Laboratory, at a colloquium at the Lab.



Hazel Stix, right, widow of plasma physicist Thomas Stix, attended the colloquium on PPPL's history given by Kenneth Ford.

## Naming "Project Matterhorn"

An avid mountain climber and skier, Spitzer later said he came up with the name Project Matterhorn after the famous mountain in the Alps between Switzerland and Italy. "He loved mountaineering and to him Matterhorn meant challenge," Wheeler said. Years later, Spitzer wrote that, "I suggested the name since the Matterhorn is a spectacular peak, which can nevertheless be climbed with sufficient effort." Wheeler, in turn, had the privilege of naming Spitzer's device and he called it a "stellarator."

Project Matterhorn was located on property sold to Princeton University by what was then the Rockefeller Institute of Medical Research. The institute moved to New York to become part of Rockefeller University. Princeton called the property the "Forrestal Research Center" and the Project Matterhorn team operated out of a small building on the property, which Ford referred to as "a shack."

PPPL lore has it that the building was a former rabbit hutch and Ford said that was possible. The building had certainly been used for animal research "and the aroma still lingered."

Almost all of the Matterhorn researchers were under age 30 and they worked on two separate teams: Matterhorn S was focused on fusion energy research, while Matterhorn B was focused on weapons research.

## Frieman and Stix among Project Matterhorn researchers

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# Project Matterhorn Colloquium

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Among those working on Matterhorn S was Ed Frieman, who went on to become an associate director of PPPL from 1964 to 1969, and later became the director of the Scripps Institute of Oceanography at the University of California, San Diego. Another young researcher recruited by Spitzer was Thomas Stix, the well-known plasma physicist and Princeton professor who worked at PPPL for many years and wrote the famous textbook on plasma physics "The Theory of Plasma Waves."

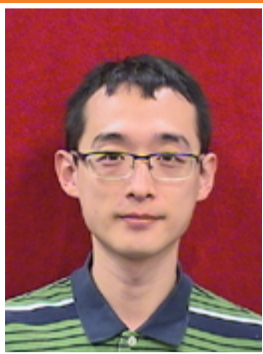
Stix's widow, Hazel, who attended the colloquium, recalled that she was hired to fill in for a secretary on vacation, despite having no skills, simply because she had security clearance. She said Spitzer was unfailingly kind. "Lyman was such a lovely man," she said, "such a gentleman."

The weapons research concluded in 1952 with the successful explosion of "Mike," the first thermonuclear device, but the energy research continued, with Spitzer leading the

laboratory until 1961. During that decade, PPPL took part in the Atoms for Peace Conference in 1958 in which physicists from the U.S., the U.S.S.R., and other countries shared information on fusion energy research. Project Matterhorn was declassified in 1958 and became the Princeton Plasma Physics Laboratory in 1961.

Ford noted that Spitzer chaired the Scientists' Committee on Loyalty Problems of the Federation of American Scientists, which served as a resource for scientists who were having difficulty getting security clearance during an era when many were investigated by the House Un-American Activities Committee. Ford himself was a member of the scientists' committee, as was Albert Einstein. "Spitzer was not only a great scientist and a great leader, he was really a wonderful human being," Ford said. 📷

## PPPL Welcomes New Employees!



**CHANG LIU**  
Associate research physicist  
Theory Department

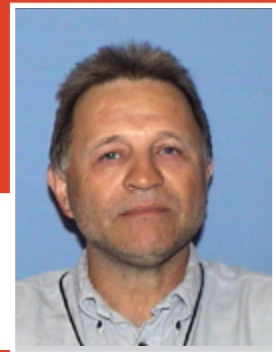


**HONG YAN**  
Database administrator  
Information Technology

## PPPL bids a fond farewell to the following employees:



**DICK SHOE**  
Control officer  
Business Ops  
38 YEARS  
(RETIRED 2/1/17)



**THOMAS HOLOMAN**  
Diagnostics technician  
Engineering  
43 YEARS  
(RETIRED 2/1/17)



**LARRY SUTTON**  
Senior subcontractor  
Business Ops.  
34 YEARS  
(RETIRED 3/1/17)



**SKIP SCHOEN**  
Planning and control office  
Business Ops  
34 YEARS  
(RETIRED 4/1/17)

## PPPL'ers take part in bilingual Dia de la Ciencia at Princeton Library

PPPL took part in a bilingual Dia de la Ciencia (Day of Science) on Saturday, April 8, at the Princeton Public Library. Children tried out plasma demos such as the Van de Graaff generator and plasma balls, looked at the signature color pattern of light from various elements with prismatic glasses, and listened to a plasma stereo. They enjoyed seeing marshmallows and balloons expand and contract in the vacuum chamber demonstration. Volunteers for the day were: Atiba Brereton, Deedee Ortiz, Luxherta Buzi, and Arturo Dominguez. The event was sponsored by the Princeton Center for Complex Materials. 📷



Children view plasmas and each other through prismatic glasses at PPPL's booth at Dia de la Ciencia. (Photo by Elle Starkman)



A boy tries out the Van De Graaff generator as volunteer Atiba Brereton looks on. (Photo by Elle Starkman)



Parents and children check out the plasma speaker. (Photo by Elle Starkman)



Arturo Dominguez lights up a fluorescent tube with a Tesla coil as a girl watches through her prismatic glasses. (Photo by Elle Starkman)



Deedee Ortiz shows students an expanded balloon in the vacuum chamber demo. (Photo by Elle Starkman)



Children check out a deflated marshmallow in the vacuum chamber demo as Atiba Brereton looks on. (Photo by Elle Starkman)

## Mercer Science Fair winners tour PPPL



A few winners of the Mercer Science Fair toured PPPL on April 12, courtesy of tour guide Kevin Lamb, who was a science judge, assisted by Atiba Brereton.

## Nature walk at New Jersey Audubon's Plainsboro Preserve

**P**PLers celebrated Earth Day a week early on April 11 with a nature walk at New Jersey Audubon's Plainsboro Preserve led by Scott Barnes, bird programs director, and organized by Virginia Finley. 📷



From left: Mark Swanek, tour guide Scott Barnes, Virginia Finley, Jeanne Jackson DeVoe, Leanna Sullivan, and Mark Hughes. (Photo courtesy of Mark Hughes).



Tour guide Scott Barnes carries a large telescope for bird watching on the short hike. (Photo by Leanna Sullivan)

# Volunteer for PPPL's Communiversality booth

Communiversality is a huge arts festival sponsored by Princeton University and the Arts Council of Princeton on Sunday, April 30, from 11:30 a.m. to 5:30 p.m. It's a great opportunity to tell the community what PPPL does. Please volunteer for a one or two-hour shift at PPPL's booth on the Princeton University lawn from 11:30 a.m. to 1:30 p.m., 1:30 p.m. to 3:30 p.m., or 3:30 p.m. to 5:30 p.m.



Contact Deedee Ortiz, [dortiz@pppl.gov](mailto:dortiz@pppl.gov), ext. 2785, for more information. Thank you!

## New training module on reporting sexual misconduct

[A new training module](#) for PPPL employees on what to do if you experience or witness sexual misconduct or other illegal activity has been posted on PPPL's Human Resources website, [hr.pppl.gov](http://hr.pppl.gov).

The module advises PPPL staff members of available resources at PPPL and Princeton University for anyone who is the victim of sexual misconduct or who witnesses or learns of such conduct or other illegal activities. The module was developed by Michael Gonzalez, of PPPL's HR Department.

The video reminds PPPL staff to call PPPL's Emergency Services Unit immediately at ext. 3333 from PPPL phones or 609-243-3333 from non-campus phones if they are the victim of or witness a crime or other emergency. Princeton University policy states that all staff members have an obligation to report sexual misconduct to the University's Human Resources Department.

The University also has a confidential hotline at 866-478-9804 as well as several other confidential resources. Additional information is available at <http://sexualmisconduct.princeton.edu>.



# PPPL Celebrates Earth Week

## April 4-28

### Trenton Rescue Mission Clothing Drive

Drop off used or new donations at the Old Security Entrance. If you have any questions, please contact Margaret King, [mking@pppl.gov](mailto:mking@pppl.gov), ext. 3568, or Dana Eckstein, [deckstei@pppl.gov](mailto:deckstei@pppl.gov), ext. 2588.

## April 18

### PPPL Sitewide Campus Cleanup 10:30 a.m.

A lunch will be served after the clean-up in Mod 6. [Sign up here](#). The rain date is April 20.

## April 19 — Earth Day Celebration

### Unicor Home Electronics Collection

7:30 a.m. to 10 a.m.

Warehouse roll-up door  
across from the ESU building

Contact Kyron Jones, [kjones@pppl.gov](mailto:kjones@pppl.gov),  
ext. 3326, for more information.

### Vendor displays

11 a.m.

LSB Lobby

Includes Children's Art show  
and succulent office plant giveaways

### Green Machine Awards

11:30 a.m.

MBG Auditorium

Snacks and raffle prizes

### Lunchtime movie — "Anthropocene"

11:45 a.m.

MBG Auditorium

Snacks provided

Go to PPPL's [Environmental Services Division Earth Week page](#)  
for up-to-date information.

## Safety Training Observation Program (STOP) class

Sessions will be held:

**Wed., April 19** — 9:30-11:30 a.m., Mod 6 conference room

**Fri., April 28** — 9:30-11:30 a.m., Mod 6 conference room

**Tues., May 2** — 1:30-3:30 p.m., Mod 6 conference room

Please contact Dorothy Strauss, x3072, [dstrauss@pppl.gov](mailto:dstrauss@pppl.gov), to enroll.

## May is National Bike Month

Join PPPL's Bike Month Challenge. Teams are forming now. Go to <https://goo.gl/WfyTcU> to register, or contact Robert Sheneman, x3392, [rshenema@pppl.gov](mailto:rshenema@pppl.gov), for more information.

# American Red Cross Blood Drive

Thursday, May 25  
8 a.m.-1 p.m.

The blood mobile will be parked next to the warehouse near Mod VI in the Lower Parking Lot. The check-in point will be the Mod VI Conference Room.

Appointments are still available! Please call the OMO at ext. 3200 or go to [redcrossblood.org](http://redcrossblood.org) and enter sponsor code PPPLPrinceton. You can make a difference! Your blood donation matters!

Thank you!

—American Red Cross, Occupational Medicine Office and Human Resources

**BROCK**

**NICK PETTI**  
Chef Manager



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 April 17	Tuesday April 18	Wednesday April 19	Thursday April 20	Friday April 21
<b>COMMAND PERFORMANCE Chef's Feature</b>	<b>Caprese Chicken</b> over Pasta Alfredo	<b>Power Bowl</b>	<b>Green Chili Chicken Burrito</b> with Rice and Beans	<b>Kielbasa</b> with Sauerkraut and Pierogies	<b>Fried Fish</b> with Cheesy Grits and Stewed Tomatoes
Early Riser	<b>Bacon, Egg &amp; Cheese Croissant</b>	<b>Biscuits</b> with Sausage Gravy	<b>Mango &amp; Blueberry Pancakes</b> served with Choice of Breakfast Meat	<b>Turkey Bacon, Egg and Cheese Sandwich</b>	<b>2 Eggs, 2 Pancakes,</b> Choice of Breakfast Meat & Potatoes
Country Kettle	<b>Vegetable Noodle</b>	<b>Cream of Mushroom</b>	<b>Beef Barley</b>	<b>Tuscan Chicken and Pasta</b>	<b>Seafood Chowder</b>
Deli Special	<b>Curry Tuna Salad</b> on Naan Bread	<b>Caesar Turkey Wrap</b>	<b>Ham and Smoked Gouda</b> with Pineapple Slaw	<b>Portobello Mushroom &amp; Fontina Cheese</b> with Roasted Peppers on Ciabatta	<b>Chicken, Mozzarella,</b> Red Onion, Basil, Arugula and Balsamic Tomatoes on French Bread
Grill Special	<b>Pico De Gallo Black Bean Burger</b> with Avocado Sour Cream and Fries	<b>Teriyaki Chicken Cheesesteak</b> with Asian Slaw	<b>Lamb Burger</b>	<b>Monte Cristo</b>	<b>Roast Vegetable Stromboli</b>
Panini	<b>Tomato, Fresh Mozzarella, Spinach and Pesto Flatbread</b>	<b>Spicy Italian Grinder</b>	<b>Cheddar, Bacon and Apple Panini</b>	<b>Grilled Ham and Cheese</b> on Texas Toast	<b>Foot-long Chili Dog</b>

MENU SUBJECT TO CHANGE WITHOUT NOTICE

HEART HEALTHY

VEGETARIAN OPTION

**WEEKLY** Editor: **Jeanne Jackson DeVoe** ♦ Layout and graphic design: **Kyle Palmer** ♦ Photography: **Elle Starkman** ♦ Science Editor: **John Greenwald** ♦ Science Writer: **Raphael Rosen** ♦ Webmaster: **Chris Cane** ♦ Communications Director: **Larry Bernard**

The PPPL WEEKLY is published by the [PPPL Office of Communications](http://pppl.gov/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](mailto:commteam@pppl.gov) ♦ PPPL WEEKLY is archived on the web at: <http://w3.pppl.gov/communications/weekly/>.