2017-2018

PECO Innovation Challenge

Program Guidelines and Application

Apply NOW! Applications will be accepted and approved on a rolling basis. All applications must be submitted by February 1.

For more details and to apply NOW, visit www.need.org/peco.
PECO and The Exelon Foundation, in partnership with the National Energy Education Development (NEED) Project and The Franklin Institute, are offering PEEP 2.0 with a series of energy workshops, educational energy audits and the PECO Innovation Challenge, a STEM-focused energy program for grades 4-12. This program brings together standards-based curriculum, teacher training, STEM innovation challenges and many other engaging and fun activities.

The PECO Innovation Challenge is a collaborative educational initiative designed to empower young students to explore opportunities in STEM and help them discover their own path to innovation through a variety of classroom subjects.

PEEP 2.0 is designed to help educators bring energy into the school and to provide all the tools and resources necessary for students and teachers to learn together, explore energy together, and teach their local communities about energy.

The PECO Innovation Challenge includes:

- District standards aligned curriculum
- A $500 grant for supplies to complete the challenge
- A series of PECO Innovation Challenge starters
- A free half-day Educational Energy Audit for students to learn about their school building with energy professionals
- The opportunity to attend a PEEP 2.0 workshop for energy training and curriculum -
- Webinars to highlight opportunities within the PECO Innovation Challenge
- PECO Innovation Challenge and STEM Career Symposium on Tuesday, May 22, 2018 where school teams showcase their challenge projects and learn more about STEM careers in energy.

Students and educators engage in science, technology, engineering and mathematics activities in classroom and extracurricular activities while learning fundamental principles of energy use and conservation. Students learn best when engaged in inquiry learning, and the activities and explorations included in the program allow them to think, explore, share, and develop a profound respect for energy and the world around them.

We know that teaching others helps us learn as well, and the Kids Teaching Kids philosophy woven throughout The NEED Project curriculum helps keep students of all learning styles engaged and excited to learn. The lessons and projects in this program are designed to allow students to teach their peers as well as their local community.

Sign up for the PECO Innovation Challenge Now!
What is expected of schools participating in the PECO Innovation Challenge?

1. Incorporate the program’s energy-focused curriculum and related activities into your classroom.

2. Working in classrooms or in an extracurricular setting, choose or design an energy-focused Innovation Challenge (some samples are provided in this application packet) and get started!

3. Work with students, faculty, parents and community members to plan and implement the STEM focused challenge.

4. Work with your student team to document progress on the challenge. Research, explore, learn, share, reach out to experts, and more.

5. Participate in program calls and webinars to review progress and discuss concerns as a group.

6. Share about your program via your school and community communication networks and social media. For example, PTA newsletter, community newsletter, Facebook, Instagram, Twitter. Submit at least 2 photos per month with captions (be sure we can use the photos publicly) to PEEP for use in media. When you share your work on Social Media use the hashtag: #pecopeep

7. Create a presentation of your PECO Innovation Challenge and solutions share with PECO employees and PEEP 2.0 partners at the PECO Innovation Challenge and STEM Career Symposium on May 22, 2018 at The Franklin Institute from 3 – 7 p.m. Presenting on May 22 with a group of five students, is a requirement of participation in the PECO Innovation Challenge.

Who should apply for the PECO Innovation Challenge?

- Teachers teaching grades 4-12 in the 6 counties PECO serves.
  - Philadelphia
  - Bucks
  - Montgomery
  - Chester
  - Delaware
  - York (partial)

- Schools seeking to provide students with STEM and energy focused explorations.
- Schools seeking to provide students an opportunity to engage their minds in the Challenge while learning many other skills like public speaking, team work, and more.
PECO Innovation Challenge Prompt

Using an energy concept and a challenge or problem within that concept, design or create an innovative solution for the challenge.

- Explore energy concepts as a class.
- Use student questions and student learning to identify problems, issues, concerns, and questions related to an energy source, energy technology, or consumer need.
- Design or create a solution to one or more of the challenges you have identified.

Innovation Challenge Samples – use these for inspiration, or create your own!

Microgrid
In the last election, the county citizens decided that sustainability would become a priority in your county. Your community has decided that their first goal will be to become energy independent, creating a microgrid.

1. Design a microgrid system for your community.
   - Decide the boundaries of your “community,” (neighborhood, town, city, etc.).
   - Estimate the number of homes, businesses, and industry. that would be served by the microgrid system.
   - Identify any existing electricity generation facilities, sites or equipment within your community. Identify any electrical infrastructure presently in place in your community.
   - Determine the amount of power required to supply the energy for your community.
   - Plan for new electricity generation that will supply the remaining power needed for your community. At least 50% of this power must be renewable.

2. Create a map of the community, highlighting its borders (streets, landmarks, water features, etc.) and indicating existing homes, businesses, schools, industry, and existing electricity generation facilities and infrastructure.

3. Create an overlay of the map that shows new facilities or technologies that will be installed to create your microgrid system. Indicate the power generating capacity of new facilities or technologies for each site.

4. Write a detailed description of the new facilities or technologies that will be built to provide power to consumers within the community microgrid system.

5. Explain the community’s plan to tie into the larger grid system.

6. Explain the advantages and disadvantages for your community of operating the microgrid as planned (environmental, economic, logistical, etc.)

Option: For a simpler version ask students to do the microgrid for a “new” school building, following any applicable protocols above. Have students visit: http://energy.gov/articles/how-microgrids-work

Solar
Many people are quick to suggest that solar energy can solve energy problems. However, solar has its challenges that prevent it from being our energy savior. Presently, solar energy provides 10 MW of the power needed for those in the city of Philadelphia. Design a plan to incorporate solar into the greater Philadelphia area that is supported by existing infrastructure but creates/addresses power storage, provides 10 additional MW of power, and does not require the use of more than 20 acres of land.

Transportation and Electricity
As popularity of Battery Electric Vehicles (BEVs) rises with models like the Tesla Model-S, Nissan Leaf, and Chevy Volt, more and more Americans must plug-in their vehicles after their day-to-day travels. Devise a set of strategies to meet the additional demand for electric power of these vehicles. These strategies must address the incorporation of renewable energy, reporting of data between plug-in vehicle users and utilities, and efficiency of charging mechanisms.
Balancing the Environment and Economy
The Northeast U.S. is very energy-rich in its resources and industry. Much of the energy used for electric power generation is still attributable to coal, which is a major emitter of carbon dioxide. Balance PA’s power generation in a way that provides adequate power, reduces carbon emissions, AND protects the economy and those jobs related to the coal industry while supplying the energy from other sources.

Using Technology to Increase Energy Conservation and Efficiency
Design an app for tablet and mobile that would allow someone to identify the best energy efficiency discounts and rebates available based on your location. The app could connect with local utilities, contractors, and retailers to provide current rebates, discounts, sales, etc. for energy efficient services, products and materials. The app could also use publicly available data to provide energy efficiency opportunities for a home.

PECO Innovation Challenge – APPLY NOW!

Application for Participation

- Apply online at [www.need.org/peco](http://www.need.org/peco).
- Applicants are invited to apply on a rolling basis. Applicants will be notified of acceptance and can begin challenge work as soon as they are accepted.
- PECO expects to approve applications within two weeks.
- A limited number of spots are available.
- The application window closes February 1, 2018.

Please be sure to submit all application components and respond to all questions:

1. School Information:
   School
   Name of Person Completing Application (Teacher)
   Title
   Address
   City, State, Zip
   Phone
   Email
   % of free lunch

2. Principal of the School
   Name
   Phone
   Email

3. Additional Information
   Grades taught at this school
   Number of students attending this school
   Number of students participating in the PECO Innovation Challenge
4. Please provide responses to the following questions:

Why should your school be selected for the PECO Innovation Challenge?
Do you believe participating in The Challenge will add to your students’ academic and leadership development?

5. Endorsements and Acceptance of Program Expectations

Evaluations have shown that the most successful schools have support at the administrative level. Does the school have the active support of the principal/vice principal/curriculum specialist to provide the administrative support (minimal expectations) needed for The Challenge? Check any/all that have indicated support for your school to participate in the project:

- [ ] Principal/Assistant Principal
- [ ] District and/or school curriculum specialist (library, science, technology, etc.)

6. Signature

By signing above, you certify that, if selected, your school has the administrative approval and support to fully participate in the PECO Innovation Challenge and accepts the expectations of the program.