

THE PHILADELPHIA ENERGY CAMPAIGN

MAY
2018

YEAR 1 UPDATE
through December 2017



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ABOUT THE PHILADELPHIA ENERGY AUTHORITY

The Philadelphia Energy Authority (PEA) is an independent municipal authority chartered under the PA Municipal Authorities Act in 2010 by City Council and then-Mayor Michael Nutter. PEA was formed to bring expertise, support, and focus to the city's efforts on energy affordability and sustainability.

PEA serves five major functions:

- » Serving as the financial agent for capital energy projects and legally able to hold long-term contracts (over 4 years) on behalf of the City, adding value with energy expertise and oversight;
- » Identifying, supporting, and facilitating the most cost-effective and environmentally sound opportunities for the City, School District, consumers, and businesses to reduce energy use and expense;
- » Promoting and assisting the development of alternative sources of energy and energy efficiency benefiting the development and retention of local workforce;
- » Educating the broader public, decisions makers, and leaders on energy-related issues; and
- » Engaging stakeholders to explore and act on opportunities for: enhancing energy efficiency, obtaining clean, renewable and affordable energy supply, and reducing energy consumption.

VISION

Philadelphia will serve as a national model for implementing energy strategies which improve the health and well-being of the community and local economy.

MISSION

Drive and support the development of long-term energy projects, policy and educational programs in Philadelphia.

PEA BOARD

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The Philadelphia Energy Campaign launched February 2016, with a 10-year horizon for investing \$1 billion in energy efficiency and clean energy projects in Philadelphia, with the goal of creating 10,000 jobs. The Campaign’s work focuses on four sectors: City Buildings, Schools, Low- and Moderate-Income (LMI) Housing and Small Businesses. PEA spent the first 9 months planning and talking with stakeholders to design programs, pilots and projects in ways that best serve the communities and buildings we are targeting. This report is the Year 1 update on PEA’s progress, and includes an estimate of job creation.

We’ve tackled complex issues over the last year, and realize how powerful a vehicle energy can be to address many of Philadelphia’s most pressing challenges: reducing poverty through household expense reduction and job creation, preserving affordable housing using energy savings to pay for much-needed improvements, creating better learning environments for our children, and stabilizing neighborhoods by keeping small, local businesses afloat.

We are proud to report that we are on track to meet the Energy Campaign’s goals.

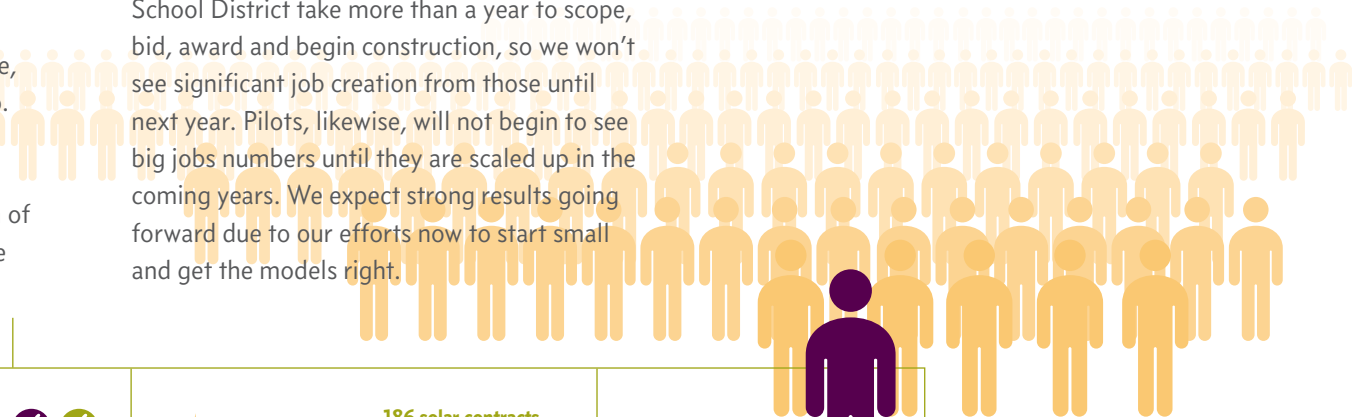
While there are many more issues to resolve, many of our programs are ready to scale up. We have a near-term pipeline of \$53.2 million in projects and programs, and have laid the groundwork for \$758 million worth of projects during the 9 remaining years of the Energy Campaign.

We graduated our first cohort of high school solar installation trainees, and drove a residential solar market in Philadelphia that was the 5th fastest growing in the nation, with a 46% increase in installations in 2017. We designed and implemented pilots in all sectors and are preparing to move on to Phase 2 for many of them.

Our jobs numbers are on track with our projections for the first year of the program. Large projects like those with the City and School District take more than a year to scope, bid, award and begin construction, so we won’t see significant job creation from those until next year. Pilots, likewise, will not begin to see big jobs numbers until they are scaled up in the coming years. We expect strong results going forward due to our efforts now to start small and get the models right.





Many of the jobs tracked since the launch of the Campaign resulted from energy efficiency work at SEPTA, small projects from the City’s Office of Sustainability, and ongoing energy savings.

Special thanks to Council President Darrell Clarke, Mayor Jim Kenney, the Office of Sustainability and Superintendent Hite for their leadership and support.



<p>NEAR-TERM PIPELINE</p> <p>\$53.2 M projects and programs</p>	<p>  Pilot projects completed in all sectors </p>	<p>  186 solar contracts 18 students trained 5th fastest-growing U.S. residential solar market </p>	<p>225 jobs in 2017</p> 
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For more information on our programs, public bids and jobs, visit www.philaenergy.org.

SECTOR	STATUS	KEY OUTCOMES
Municipal Buildings 	Art Museum Energy Performance Contract (In Progress)	25% energy reduction in City's highest energy-consuming building; construction begins Spring 2018
	Renewables PPA (In Progress)	RFP complete, under review
	3 additional large projects in development at Office of Sustainability (targeting late 2018)	Initial project scoping in process, targeting LED Streetlighting, Public Safety project and Quadplex 2 over next 2 years
Public Schools 	Opportunity Assessment (Complete)	Identified \$345 million in opportunity for energy financing for capital work
	3-School Energy Performance Contract (In Progress)	ESCO selected, Northeast HS, Strawberry Mansion HS and Saul, projecting 35%+ energy savings, construction begins Summer 2018
Low and Moderate Income Housing 	Multi-Family Affordable Housing Energy Efficiency Pilot	Completed Phase I, in analysis for Phase II (Fall 2018), won award from Smart Cities Connect for using smart technology to drive energy efficiency in 200 units of affordable housing
	Housing Preservation Loan Program with City Council	Supported PRA to develop criteria for Health and Energy Assessment
	Energy Standards for PHDC Home Repair programs	Developed and supported implementation of new energy efficiency standards to lower long-term utility costs for vulnerable homeowners
	Solarize Philly	Completed Phase I of Solarize Philly, 186 solar contracts, 18 high school students trained, nearly \$200,000 raised for training and subsidized financing for LMI households. Phase II launched April 2018.
Small Businesses 	Small Business Energy Efficiency Pilot	Phase I completed, provided free energy audits/proposals to 55 corner stores and restaurants, with average 25% energy savings. Phase II rolled out April 2018 in West Philadelphia.

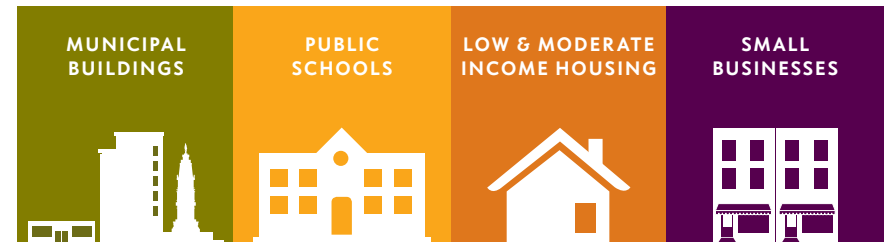


The Philadelphia Energy Campaign is neighborhood-driven, and strives to strengthen communities, cut energy bills, reduce Philadelphia's carbon footprint and build our local economy equitably. The Campaign kicked-off on February 8, 2016 with the leadership and support of City Council President Darrell Clarke, Mayor Jim Kenney, and many other key stakeholders from labor and private enterprise to utilities and government agencies.

The Campaign will invest \$1 billion in energy efficiency and clean energy between fiscal years 2017 and 2027, leveraging both public and private dollars. It will:

- » Create **10,000 jobs**
- » Reach **25,000 households**
- » Support **2,500 small businesses**
- » Save more than **\$200 million** in energy costs
- » **Reduce Philadelphia's carbon footprint**

TARGET SECTORS



The initial nine months of the Campaign were focused on developing programs and pilots, finding willing partners to try out new models and designing energy-saving projects. We met with stakeholders and worked to understand the complex issues at play in our communities. We supported work already moving forward, and leveraged the success of others (e.g. SEPTA's fast-growing energy efforts) to help drive markets, encourage new participants and fix market failures. In 2017, that work began to pay off as we completed multiple pilots and helped get several large projects off the ground.

THE CAMPAIGN'S FOUR GOALS

1 CREATE JOBS

The Campaign's \$1 billion investment will create 10,000 jobs over 10 years, and support job training and local hiring. Energy efficiency and clean energy projects employ more local workers per dollar of expenditure than traditional electricity, natural gas, coal and oil industries, and the number of clean energy jobs already in Pennsylvania outpaces the number of fossil fuel jobs. These are living wage jobs in a booming industry that will need skilled employees for decades to come.

2 STRENGTHEN COMMUNITIES

The Campaign seeks to improve the lives of Philadelphians by preserving existing affordable housing infrastructure, reducing household expenses for low- and moderate-income residents, helping small businesses keep their doors open by reducing their largest monthly expense (utilities), and supporting the City and School District to reduce costs, address deferred maintenance and invest in buildings across our city.

3 CUT ENERGY BILLS

The Campaign will drive energy efficiency projects that will reduce building energy use by over 20%, collectively saving over \$200 million citywide. These are savings that accrue year after year for the life of the energy measures – dollars that residents, businesses, schools and government can use to reinvest in our local economy and meet basic needs.

4 REDUCE AIR AND WATER POLLUTION

By reducing the consumption of fossil fuels through energy efficiency and clean energy, the Campaign will reduce carbon emissions and other environmental pollutants, which will have both immediate and long-term impacts on public health and the environment in Philadelphia. Our goal is to remove 790,000 metric tons of carbon dioxide from our air over the course of the Campaign.





JOB CREATION UPDATE

This report is our first in which we track job creation, and we are proud to report that we are moving forward as projected. In our first start-up year, 225 jobs were created. We expect that number to continue to ramp up in the coming years to reach our 10-year goal. Our first full year was focused on advancing institutional projects with the City and School District, and implementing our first pilot programs in residential solar, multi-family affordable housing energy efficiency and small business energy efficiency.

In 2017, we contracted with the American Council for an Energy-Efficient Economy (ACEEE) to develop a Philadelphia-specific economic job tracking model. Our intention is to track direct jobs directly, and utilize the model for extrapolating indirect and induced jobs from implementation of projects, as well as the jobs created during the savings phase of the projects.

We included job tracking for all of our pilot programs that executed investments, including Solarize Philly, our first Small Business pilot with Penn State, and Phase I of our Multi-Family Affordable Housing pilot.

GOALS:

- » Create 10,000 jobs
- » Support job training and local, diverse hiring

Some of the job creation cited in this report came from projects that were already in development when we started this initiative, but represent investments in energy projects in our sectors nonetheless. In particular, we are tracking Philadelphia-based energy investments from SEPTA which were completed after the launch of the Campaign. We are also including a significant amount of energy auditing completed by the Philadelphia Housing Authority during this time, and will continue to track their progress through implementation and savings. The Office of Sustainability leads a significant amount of capital investment in small energy efficiency projects at police and fire stations and other municipal buildings, which are also included here.

Finally, we are also tracking the savings jobs created from the City's successful Quadplex energy performance contract, which reduced energy consumption for the City's four main office buildings, including City Hall, by 20%.

We intentionally cast a wide net on job tracking to demonstrate the value of energy projects to the City. Energy is a job engine for Philadelphia, and as more and more energy projects come online and the Energy Campaign scales up, we are excited to continue to show bigger and bigger impact on job creation.

Implementation vs. Savings Phase

With energy projects of any kind, jobs are created in two ways. First, design, engineering, project management, and construction jobs are created in the "implementation" phase, when work like solar installation, boiler replacements, insulating and lighting upgrades is completed. This phase creates these direct jobs for people who work on the project directly, but also creates indirect and induced employment down the supply chain, where manufacturers and suppliers add jobs and those folks spend their money going to restaurants and the movies. The second phase is the "Savings" phase. Once an energy project is completed, energy costs decrease, and money is getting diverted from the utility companies (who create relatively fewer jobs per dollar invested) into the broader economy (which creates relatively more jobs per dollar invested).

municipal buildings



Our goal is to collaborate with the Office of Sustainability (OOS) to bring cost-effective energy efficiency and clean energy projects to the City's buildings and infrastructure. This work is led by the OOS, and is informed by the Mayor's commitments to renewable energy and carbon reduction, the new Municipal Energy Master Plan and the City Energy Vision.



PHILADELPHIA MUSEUM OF ART

41%

M/W/DBE
participation

**~\$11
million**

investment

\$23M

total project energy
savings (20 years)

277

projected
jobs created

25%

reduction in
PMA's energy use

The Philadelphia Museum of Art (PMA) is the largest user of energy among City-owned buildings. PEA has partnered with the City and PMA to develop and implement an energy performance contract that will reduce PMA's consumption by up to 25%.

After completing a competitive procurement process, Johnson Controls was selected as the Energy Services Company who will lead the project. They have committed to include 41% M/W/DBE participation, and will seamlessly integrate this project into PMA's existing core renovation project.

PEA issued the procurement documents, holds the contract with Johnson Controls and provides expertise and support to move the project forward. Construction will begin in mid-2018. The bond will be issued by the Philadelphia Authority for Industrial Development.

What is an Energy Performance Contract?

Energy Performance Contracting (EPC) is a project financing and procurement model that uses cost savings from reduced energy consumption to repay the cost of installing energy conservation measures. Normally offered by Energy Service Companies (ESCOs), this mechanism allows building users to achieve energy savings without up-front capital expenses, and allows for a single project owner to develop a scope of services that considers the entire building, and optimizes energy savings across all types of building systems. Pennsylvania's Guaranteed Energy Savings Act (GESA) authorizes EPCs with paybacks of 20 years or fewer, using energy and maintenance savings as well as avoided capital costs to determine payback. PA's law allows government and other entities to use a single contractor, an ESCO, to perform the investment-grade audit, bring their own subcontractors to execute the necessary retrofits, and to guarantee the energy savings from a selected series of conservation measures.

RENEWABLE ENERGY OFFTAKE AGREEMENT

In partnership with the Office of Sustainability, PEA released a RFI in November 2016 to identify cost-effective opportunities for the City to procure renewable energy. We received more than 20 responses, which led to an RFP in September 2017 for an off-site renewables power purchase agreement for 20-40% of the City's electricity usage. RFP responses were due back November 2017, with evaluation and selection in early 2018. We received 28 project proposals.

This will be the first time the City has tried to make this type of long-term commitment to purchase renewable energy from a large scale wind, solar, or other renewable project in the region. PEA will hold the contract and provide expertise and support, though this project is driven, designed and managed by the Office of Sustainability. This project will support the City's goal of reaching 100% renewable electricity by 2030.

FLAT ROCK DAM HYDROPOWER PROJECT

The Philadelphia Water Department (PWD) is completing engineering on improvements to the Flat Rock Dam in Manayunk. PWD has committed to working with PEA to evaluate a plan to include a small amount of hydrokinetic power generation on the dam. PEA would act as project developer for the energy generation. PEA hired Net-Zero Microgrid Solutions (NZM) to conduct a technical and economic pre-feasibility study, and is also partnering with the University of Pennsylvania's School of Engineering for support. Among the critical details addressed by this study is the generating capacity of hydropower in this relatively small dam, the ballpark cost of installation, the resulting price of the electricity generated, and the overall market for sale of this power.

PEA will work with PWD to conduct a more in-depth feasibility analysis to assess environmental impact, construction scheduling and feasibility of interconnection options. Additional details will be available in Fall 2018.

GENERATING ALTERNATIVE ENERGY FROM PHILADELPHIA WATERWAYS RFI

As part of the conversation around Flat Rock Dam hydropower, PEA, in partnership with City Council's Director of Civic Engagement, released an RFI seeking innovative ideas around low-impact ways to generate power using Philadelphia's water resources. Responses were due back in April.

LED STREET LIGHTING + SMART CITIES

PEA has been participating in conversations around smart city technology and how to deploy it in tandem with future LED street lighting conversions. PEA is supporting the Streets Department, City Energy Office and PECO as they put together a plan for making the switch to LEDs, and for integrating technology that could improve liveability, safety and health for all Philadelphians. The City's Office of Innovation and Technology also has a keen interest in this project since it could provide a platform for smart city infrastructure, and PEA continues to explore ways to support that mission.

WATER/SEWER LINE INSURANCE PROGRAM

PEA is adapting a program recommended by the National League of Cities, which offers a City-supported insurance product for water and sewer lines that run from residential homes to the water main. This is an important program for energy since the Philadelphia Water Department loses nearly 1/5 of all treated water from leaky lateral lines before it reaches the meter. PWD's HELP program provides a no-interest loan to support customers who need to replace known faulty lines, but the faster they can repair leaky lines, the less energy is wasted treating water that isn't used. We estimate that this program will save PWD more than \$500,000 annually in energy costs. At the same time, it will provide up to \$10,000 of low-cost insurance coverage to all homeowners who sign up, and create a fund to subsidize line repair and replacement for low-income homeowners.

PEA released an RFP for this program in April 2018 and hopes to launch a program in Fall 2018.

public schools



Our goal is to help the School District leverage energy savings to address much-needed capital projects, save money, improve learning environments for students, and meet their sustainability goals. As Philadelphia’s solar market grows, we also work to train students to take on the new jobs being created.



ENERGY PERFORMANCE CONTRACTING (EPC) PILOT

The School District of Philadelphia (SDP) launched a pilot project to use Energy Performance Contracting to provide building upgrades that result in energy savings. After a public RFP, the District selected NORESKO as the vendor. NORESKO will perform the upgrades using local subcontractors approved by the District, and will guarantee the projected energy savings. This pilot project will include three schools: Saul High School, Strawberry Mansion High School, and Northeast High School.

The contract is expected to cover a range of needed building upgrades, such as lighting, heating and cooling equipment, temperature controls systems, boilers, and window replacements, and is likely to result in more than 35% energy savings at all three schools. Construction is targeted to begin in Summer 2018. SDP hired ECG Engineers in Summer 2017 to serve as owner’s representative.

PEA has been providing no-cost consulting services to SDP since September 2016 to support the development of this energy performance contract pilot.

In February 2017, PEA released a white paper outlining the potential for SDP to use Energy Performance Contracting as a tool for addressing deferred maintenance projects, and identified more than \$345 million in capital projects that could be paid for through energy savings. PEA has continued to serve as an advisor to SDP as they roll out this pilot.

This program will serve as a pilot for a broader rollout of energy performance contracts across the District, with more than 200 other schools needing improvements.

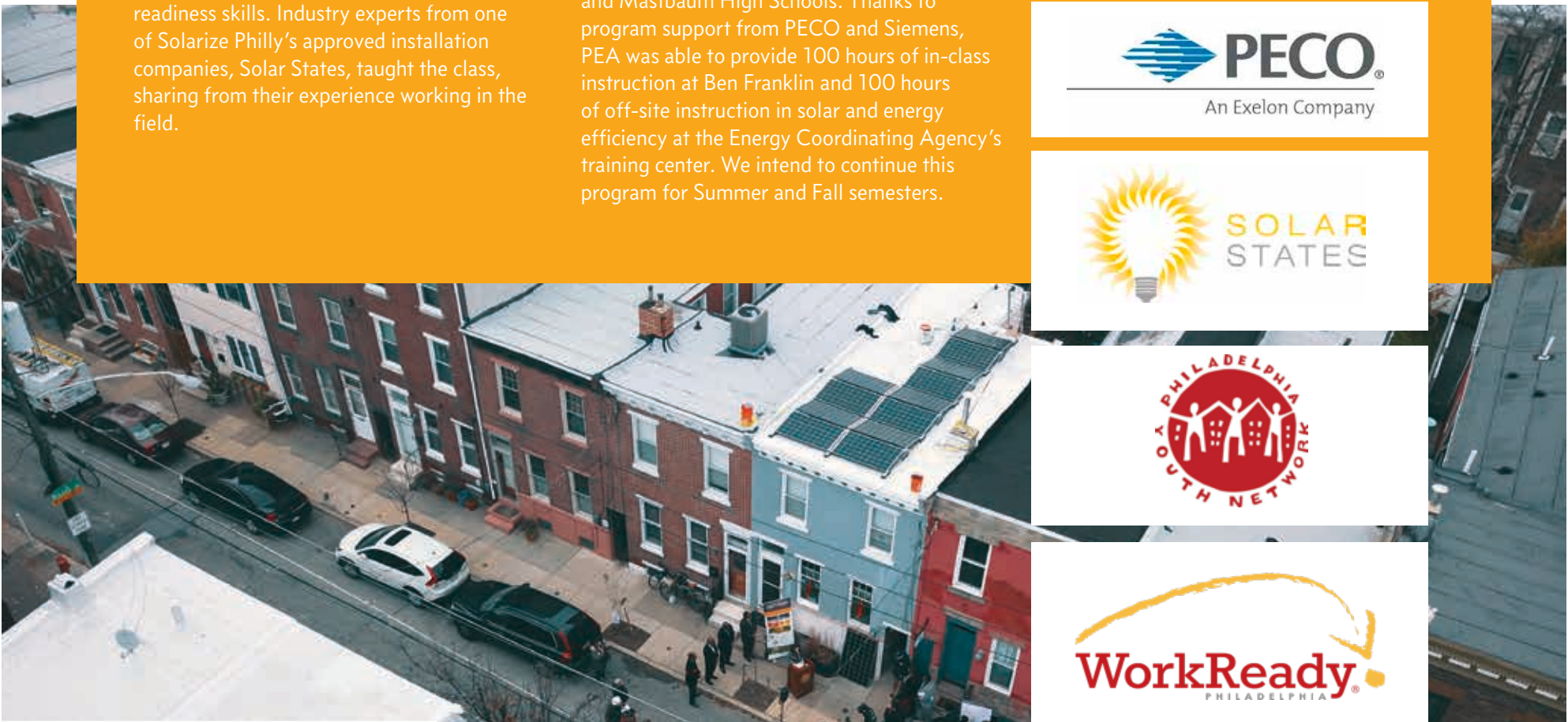
CTE/GREENFUTURES SOLAR & ENERGY JOB TRAINING

In August 2017, 18 students completed the inaugural “Find Your Power” solar training program, the first solar job training program offered through the Philadelphia School District. PEA developed the class in partnership with the School District’s Office of Career and Technical Education (CTE) with the support of the School District’s GreenFutures sustainability initiative. The 6-week class took place in Ben Franklin High School’s Renewable Energy Lab. Students gained an understanding of the importance of clean energy, solar installation best practices, and general job readiness skills. Industry experts from one of Solarize Philly’s approved installation companies, Solar States, taught the class, sharing from their experience working in the field.

PEA worked to secure funding, identify instructors and appropriate curriculum, coordinate with CTE and the Philadelphia Youth Network (under whose WorkReady umbrella this program fell), and provided extensive program administration and supplemental funding. PEA will pair graduating students with mentors and support internships, jobs and apprenticeships.

PEA is currently running a school-based program for the Spring 2018 semester with 20 students from Ben Franklin, Randolph and Mastbaum High Schools. Thanks to program support from PECO and Siemens, PEA was able to provide 100 hours of in-class instruction at Ben Franklin and 100 hours of off-site instruction in solar and energy efficiency at the Energy Coordinating Agency’s training center. We intend to continue this program for Summer and Fall semesters.

PEA is also seeking approval for a statewide CTE Program of Study for Renewable Energy and Energy Efficiency, which would authorize state funding for instruction of the program into the future.





SOLAR PROJECTS

In Spring 2017, PEA authored a report titled “Solar Schools: Context, Lessons, and Recommendations for the School District of Philadelphia,” which outlined the costs and savings that could result from installing solar on district schools. PEA also identified a potential purchaser for the Solar Renewable Energy Credits generated by the project, which could offer an additional subsidy toward the program. PEA is currently supporting the District on a project-by-project basis to evaluate and develop solar where it can provide cost savings in the short-term and protection from utility price increases in the long-term.



“Through the informative instruction and hands-on learning during field trips, I was able to come straight out of the program and on to a work-site. I learned the basis that prepared me for working at a solar company and installing panels on roofs.”

—Danaje Elliott, Overbrook HS '17

low & moderate income housing



Our goals are to preserve existing affordable housing stock through energy-driven repairs and upgrades, support affordable housing owners and developers to improve building health and comfort while reducing costs, and ensure that clean energy is accessible to low- and moderate-income individuals in Philadelphia.





MULTI-FAMILY AFFORDABLE HOUSING ENERGY EFFICIENCY PILOT

PEA is proud to have won the Smart Cities Connect “Smart 50” award for Phase 1 of this pilot.

This program combines smart technology with low-cost strategic engineering and implementation support, plus a combination of utility grants and financing to help multi-family affordable housing reduce energy costs and improve tenant comfort and health.

PEA focuses on multi-family affordable housing efficiency because in Philadelphia, these tend to be older buildings with insufficient maintenance budgets and high energy footprints. Philadelphia renters whose incomes are between 0 and 30% of AMI pay 23% of their income for utilities—the highest energy burden for any category of citizens in our region. This project lets these buildings use energy financing and rebates to address maintenance and capital issues that will lower their utility bills, improve tenant health and comfort, and allow more investment in affordable housing. It leverages smart thermostats, boiler controls, and other smart tech to provide deeper building analysis and guide Phase 2 investment in building system upgrades with the best return on investment. These buildings’ projects typically are too small for ESCOs and too complex for local contractors who may not have expertise in energy projects, making a unique solution necessary.

This pilot includes 4 buildings with approximately 200 units of senior and affordable housing in West and Northeast Philadelphia neighborhoods, owned by two non-profit organizations: Mission First Housing Group and Friends Rehabilitation Program.

Building owners received audit, scoping and engineering services at no up-front cost and with minimal disruption to tenants. BlocPower, our engineering partner, and CMC Energy Services, our primary implementation partner, conducted investment-grade audits, and leveraged utility programs to drive down cost, provide consumer education, and speed installation. BlocPower partnered with a local firm, StratIS IOT, to install networking that allows data collection from key building systems to inform Phase 2. CMC then managed installation of all measures. PECO’s Low-Income Multi-Family Program and PGW’s new multi-family program provided critical rebates (~56% of project cost), with the building owners paying out of pocket for the balance.

Phase 1 was completed in December 2017 and reduced utility bills by an average of 20% for both tenants and building owners (some buildings are master metered, others are tenant-paid utilities).

Phase 2 is expected to save an additional 20%+ in energy costs. We hope to be able to move forward with Phase 2 in Fall 2018.

Pilot Program Plan

1. Use the PECO Act 129 measures as the base set of energy cost saving measures. Supplement the basic list with a few additional measures to achieve deeper cost reductions by further reducing the properties’ energy consumption
2. Phase 1 of the pilot should yield up to 20% energy savings for the property owners.
3. Use Phase 1 pilot data to establish the energy cost reduction and consumption reduction targets.
4. Phase 2 will incorporate measures that result in deeper retrofits, such as updated heating and cooling equipment, higher efficiency hot water heaters, building envelope.
5. By implementing Phase 2 ‘deeper retrofit’ measures, property owners should achieve 20% more savings in addition to Phase 1 energy savings.

KEY PARTNERS:



SINGLE-FAMILY HOUSING PRESERVATION INITIATIVES

For single-family low and moderate-income housing, significant subsidy is required to make programs work. For that reason, we focused on two key areas of impact.

1. Incorporating energy standards into PHDC's home repair programs

The Philadelphia Housing Development Corp (PHDC) has a 3-5 year waitlist for their Basic System Repairs Program (BSRP), Weatherization Assistance Program (WAP) and Adaptive Modification Program (AMP), that amounts to thousands of households waiting for urgently-needed assistance. In 2017, City Council authorized a \$60 million bond to clear the waitlists (paid for through a .1% increase to the Realty Transfer Tax). To ensure the waitlists do not build back up, PHDC has modified their programs to focus on emergency repairs and has incorporated basic energy standards into their work to ensure that the repairs that are made are high quality and help reduce utility costs for homeowners who most need it. In particular, there are a few things that could only be done cost-effectively if completed when PHDC is already doing the work, including high-efficiency heaters (which typically saves 15% of heating costs) and roof cavity insulation (which typically saves 20% of heating and cooling costs). Though PHDC is still testing out insulation, we are grateful for their progressive and thoughtful approach to integrating these important measures into their programs.

In order to ensure that costs remain similar with energy standards in place, PEA has developed a Bulk Purchase program for certain products that leverage the buying power of the program and reduce costs significantly. PEA expects to release the RFP for this program for participation by manufacturers and distributors in mid-2018.

2. Supporting City Council's Housing Preservation Loan Program

This program, administered by the Philadelphia Redevelopment Authority (PRA) and supported by a \$40 million bond from City Council, will provide low-interest home repair loans to low and moderate-income homeowners at a broad range of credit scores. These loans will be backed by a reserve from the City, allowing PRA to leverage private financing. PEA's role has been to advocate for a mandatory Health and Energy Assessment for each participating home, which identifies opportunities to improve indoor health and save money on utilities. These measures are not required as a condition of the loan but will be strongly recommended and scoped. PEA has been a part of the planning process throughout and will continue to work with PRA to select vendors and support program development and implementation.

PHILADELPHIA HOUSING AUTHORITY'S ENERGY EFFICIENCY PROJECT

In May 2016, the Philadelphia Housing Authority ("PHA") Board of Commissioners engaged Johnson Controls Inc. (JCI) as the ESCO for a comprehensive energy performance contract looking at electric, gas, water and resiliency measures across 20,000 multi-family and scattered site PHA properties. JCI has completed the auditing phase to develop appropriate scope and has made recommendations to PHA. As part of their contract with PHA, JCI hired PHA residents during the audit phase. Those jobs were temporary positions, with the intention of rolling them into the project when it moves forward.

This project has been slow to move forward, but recognizing how complex rules around energy projects can be when federal HUD dollars are involved, we are hopeful that PHA will continue to push the project forward.

There are a number of buildings where PHA, rather than the tenant, pays the utilities directly. PEA is focused on supporting PHA to look at solar as a way to hedge long-term electric costs and reduce energy costs wherever possible through efficiency work, including at the newly-purchased Vaux School, which has one of the highest energy spends in the District.

SOLARIZE PHILLY

Solarize Philly is a citywide group-buying program to help all Philadelphians go solar at home. PEA launched Solarize Philly to make the process of installing solar as easy and affordable as possible, while supporting job training at the School District of Philadelphia and improving access to clean energy for all neighborhoods.

Homeowners who sign up for Solarize Philly receive a free solar project proposal from one of the program's three pre-approved local solar installers. Proposals are designed based on homeowner's electricity consumption and roof space with the intention of maximizing energy savings over time. As more people sign contracts through Solarize Philly, the deeper the discounts are for everyone in the program. PEA supported discounted pricing with both installers and manufacturers, arranged important consumer protections, collaborated with PECO and the City's Department of Licenses and Inspections (L+I) to speed up interconnection and permitting approvals, and provided quality assurance testing to ensure high quality installations.

Round one of Solarize Philly, which ran from July 1 to October 31, 2017 was expected to sign up 50 households. Exceeding expectations, 160 households signed contracts for an investment of nearly \$3 million in 885 kW of solar. It raised nearly \$200,000 for solar training in the School District of Philadelphia, ensuring that solar is deployed in Philadelphia equitably. PEA participated in 21 community outreach events citywide during those four months.

PEA received seed funding for Solarize Philly through the Department of Energy's Solar in Your Community Challenge, which supports programs designed to bring solar to underserved communities across the U.S. PEA was selected thanks in part to its innovative model of using Solarize Philly revenues to help support job training and subsidized financing that supports low-to-moderate (LMI) income households in Philadelphia go solar.

PARTNERS



THE MULTIPLIER EFFECT

We believe that all of our work should clear up market barriers and make it easier for others to participate, creating a more robust clean energy economy in Philly. We are so excited to see that happening for solar! Solarize Philly resulted in a 10% increase in solar installs in Philadelphia, but total installs in 2017 grew by 46%, with interconnection applications (the first step to getting solar) increasing by 89% in 2017! That's more than a 4X multiplier effect!

Philadelphia is now the 5th fastest growing solar market in the country!

As mentioned earlier, PEA's Summer 2017 training program for high schoolers, "Find Your Power", was supported by GreenFutures, the sustainability program of the School District of Philadelphia. Our Spring 2018 solar and energy training program, available as part of Career and Technical Education programs at Ben Franklin, Randolph and Mastbaum High Schools, was generously sponsored by PECO and Siemens.

Round 2 of Solarize Philly began April 2, 2018, and includes a subsidized financing model for low- and moderate-income households. Intake for the special financing program will be conducted by ECA's Neighborhood Energy Centers. For more information, visit www.solarizephilly.org.

Results of Round 1

- » 2200 sign-ups (households interested in solar at home)
 - 186 contracts signed
 - \$3 million invested
- » 14 jobs created (half went to minorities and women)
- » 885 kW installed
- » Turnaround time on permit & interconnection applications drastically reduced. Streamlined application processes in place with L&I and PECO



Goals of Round 2

- » 500 installs by the end 2018
- » 1.6 MW in Round 2
- » 20% of installs are for LMI households

small businesses



Neighborhood businesses support vibrant communities, and often do not have access to the tools needed for energy efficiency. Our goal is to support these businesses by creating substantial reduction in their utility costs to improve the stability and profitability of small businesses.



SMALL BUSINESS ENERGY EFFICIENCY PILOT

PEA conducted an initial pilot in 2016 and 2017 in partnership with Penn State at the Navy Yard and Private Energy Partners to provide corner stores and small restaurants with access to customized energy audits and free project proposals designed to save business owners 25-30% of their utility costs. The goal was to create an affordable, scalable process that enhanced the efficacy of the existing PECO Small Business program, doubling or even tripling the savings.

We selected these business because, according to a Penn State/Food Trust study from 2016, these businesses typically pay more in utilities bills than they do for rent in Philadelphia. These small businesses have high energy bills due primarily to old lighting and refrigeration, leaky building envelopes, inefficient HVAC and long operating hours.

Business owners were provided a free energy assessment conducted by undergraduate students trained by Penn State in energy auditing basics. The students were paid as interns, and collected data that was sent to Private Energy Partners to develop a proposal. PEP led the sales effort and project design, and ultimately brought a turnkey set of subcontractors in to complete the work. Penn State leveraged Small Business Advantage Grants from the PA Department of Environmental Protection (DEP), which provided a subsidy of up to \$9,500 for small business energy efficiency upgrades. We partnered with the Philadelphia Commerce Department's Capital Consortium to identify financing for each customer. The pilot ran for 12 months, provided assessments for 52 businesses and closed about 10% of them.

The pilot data was valuable even with small numbers, and led to the development of a second pilot which was rolled out in April 2018 with a more streamlined approach. The second pilot will focus on a smaller territory (Philadelphia west of the Schuylkill River) to refine our recruitment efforts, and will expand the types of businesses to include corner stores, restaurants, grocery, auto mechanics and laundromats. PEA will be partnering with Lime Energy for the second pilot, who brings unique experience running prescriptive Direct Installation programs for utilities, and who can help design a more scalable model for audits and project development. PEA will also partner this time with West Philadelphia Financial Services Institution (WPFSI) to provide a customized financing product with streamlined approval processes.

Pilot Results

PEA created and distributed marketing materials for businesses in English, Spanish and Mandarin

167 small food-related businesses expressed interest in the Year 1 program between July 2016 and June 2017

30 community organizations were engaged by PEA to recruit the neighborhood businesses for assessments

Assessments were conducted in 52 businesses, 30 resulted in multi-measure integrated retrofit proposals prepared by Private Energy Partners with affordable savings of 25% or more

10% of audited businesses moved forward with a retrofit

KEY PARTNERS:



BUILDING THE CAMPAIGN TO SCALE

After our planning phase, our first year was focused on standing up large institutional projects and getting pilots off the ground, executed and evaluated. We know these are not easy issues to tackle, and are committed to identifying the market barriers and creating programs that resolve them. As we move into 2018, we are focused on:

1. Seamless execution of institutional projects at the City and the School District, in order to more easily scale them in the future
2. Deployment of Phase 2 pilots, learning from our Phase 1 evaluations and ensuring scalability
3. Developing scalable financing structures that allow these programs to grow
4. Developing supporting programs and projects that provide critical market infrastructure to make core programs operate effectively
5. Communicating our work with transparency and at a human level

To achieve these goals, PEA is developing a Finance Advisory Committee, has expanded its board from 5 to 7 members, and is in the process of establishing public-private financing partnerships both for low-income solar specifically and more broadly across all programs. PEA is working with Green Banks, impact investors, CDFIs and others to identify the best mechanisms for leveraging what is becoming a large and well-balanced portfolio of energy projects citywide. PEA has engaged a team of Wharton MBA students, a consultant with Baltimore's low-income solar program and the Coalition for Green Capital to help develop solutions. Further details on scaled financing will be available towards the end of 2018.

We have rolled out a new pilot for the Small Business program, and are on Round 2 of Solarize Philly, with our first LMI pilot. We're working on programs like the Water and Sewer Line Insurance Program that will create program administration revenue while supporting PWD energy savings, and a small hydro project that leverages partnerships with other agencies, departments and private actors to support energy programs. We dedicate a significant portion of our resources to providing consulting support to the School District, and will continue to support the Office of Sustainability to drive City energy projects at scale.

Finally, we continue to work with entities like SEPTA, to encourage energy investment in Philadelphia and share best practices, as well as private non- and for-profit entities considering energy efficiency or clean energy projects. The stronger the market is in Philadelphia, the more localized economic development is created, creating more jobs for trainees and a stronger multiplier effect of our work.

TAKE ACTION

Ways you can take action to support our work:

Consider solar for your own house!

Visit www.solarizephilly.org.

Make a tax-deductible donation to support solar and energy training at the School District or any of our other programs.

For details, contact Laura Rigell at lrigell@philaenergy.org or 215-686-4483.

Know of a neighborhood association or commercial corridor that might be interested in any of our programs?

Invite us to present! Email info@philaenergy.org or call us at 215-686-4483 to set it up.

Attend an upcoming event and meet like-minded Philadelphians.

See the full calendar at www.philaenergy.org/news-events/.

Become a mentor or host an intern!

We are always looking for good summer internship placements for high schoolers, and a good mentor who can connect with our students once a month would make a huge difference in their success in those internships.

Email info@philaenergy.org to express interest.

Own a small business with high utility bills or a finicky walk-in?

Learn more about our Small Business program at www.philaenergy.org/programs-initiatives/small-business/ or email PEAsmallbiz@lime-energy.com for details.

Join a stakeholder meeting, our Finance Advisory Committee or our quarterly public board meetings.

Get on our mailing list at www.philaenergy.org.

Find a Philly energy job on our job board.

Visit www.philaenergy.org/job-board/



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