THE CHAMBER OF COMMERCE FOR GREATER PHILADELPHIA

ENERGY AT WORK

Innovative Energy Strategies from the Regional Business Community

Edition 1

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High-Performance Building Services

ENERGY IMPACTS BUSINESS

—from the day-to-day operations and bottom line, to our region's economic vitality. Industries from manufacturing and health care, to higher education and even municipalities, require reliable, clean, affordable, and efficient energy.

To address this need, our region's energy leaders are delivering innovative strategies and technological solutions that boost efficiency and resiliency, cut costs, and reduce our region's carbon footprint and environmental impact. With increasing access, businesses in any industry can manage their energy consumption and even production.

More than ever before, businesses across the region are playing a critical part in defining our energy future. The projects highlighted demonstrate that investing in energy yields significant returns. Beyond the benefits of reducing operating costs and improving productivity, businesses are helping power healthy communities with sustainable energy solutions.

CANCER TREATMENT CENTERS OF AMERICA

A project by **Philadelphia Gas Works**

OPPORTUNITY

Cancer Treatment Centers of America (CTCA), located at the Eastern Regional Medical Center in Philadelphia, provides round-the-clock medical care to cancer patients across the region. Access to reliable, affordable energy is essential to meeting CTCA's commitment to comprehensive, personalized care.

SOLUTION

To remain competitive with regional health care institutions and control non-patient care costs, CTCA turned to Philadelphia Gas Works (PGW) to provide its facility with a 1.1 MW natural gas-fueled **combined heat and power (CHP) plant.**

The CHP plant provides approximately 85% of heating needs and generates roughly 70% of electricity demand, maximizing reliability and resiliency for CTCA. It also allows for continuous power and provides heat and hot water without disruption, even during extreme weather.

BUSINESS CASE

The plant significantly increases CTCA's operational efficiency while decreasing its energy costs and carbon footprint. By incorporating CHP, CTCA has **reduced its annual operating costs by approximately $500,000,** a figure projected to increase over the lifetime of the equipment. CTCA received a combined **$709,187 in grants and incentives** to fund the project. In total, CTCA invested $6,432,130 in the installation of its CHP plant and additional facility improvements to help maximize the system's efficiency.

ENVIRONMENTAL IMPACT

The natural gas used through the CHP plant is clean, abundant, and low-cost. CTCA now generates electricity on-site at double the efficiency of pulling power from the grid. The CHP plant will help CTCA **reduce CO_2e emissions by more than 6,300 tons annually** — equivalent to heating and cooling approximately 550 homes a year — and will save **2.9 million gallons of water annually** — equivalent to drinking water for 16,000 people.

FAST FACTS

6,300 tons
Year one CO_2e emissions reduction

$500,000
Year one operations cost savings

Contact: Florian Teme, Vice President, Marketing, Philadelphia Gas Works, florian.teme@pgworks.com

> When the power goes out, Cancer Treatment Centers of America cannot simply press pause on its life-saving work. The system will boost efficiency and reliability, while cutting costs and emissions thanks to clean, abundant, cost-effective natural gas from PGW.

CRAIG WHITE
President & CEO, Philadelphia Gas Works

THE JEWISH FEDERATION OF SOUTHERN NEW JERSEY

A project by **Ecosave**

OPPORTUNITY

The Jewish Federation of Southern New Jersey (JFED), a community center that promotes Jewish life and learning, operates in a 127,000-square-foot facility featuring a number of amenities and function rooms. Empowering a community requires a lot of energy — JFED needed a cost-effective strategy to save energy and improve sustainability for its facility.

SOLUTION

Ecosave upgraded and optimized JFED's building services equipment with new, more efficient equipment for heating, ventilation, and air conditioning, as well as LED lighting upgrades across the whole building to drastically reduce energy consumption. To achieve further savings and to improve resiliency, Ecosave installed a 146-kW natural gas-fueled **combined heat and power (CHP) plant,** an efficient, clean, and reliable technology which simultaneously generates electricity and thermal energy from a single fuel source. The CHP plant generates power and hot water, space heating, and pool heating for JFED's facility.

BUSINESS CASE

With the energy savings generated from this project, JFED was able to enter into a service agreement with Ecosave to replace failing building services equipment. With a zero-dollar capital outlay and no debt, JFED **received $2.75 million in building upgrades that led to $311,723 in energy cost savings,** reducing their annual energy costs by more than 63%. JFED also leveraged the **New Jersey Clean Energy Program** to help fund the CHP plant.

ENVIRONMENTAL IMPACT

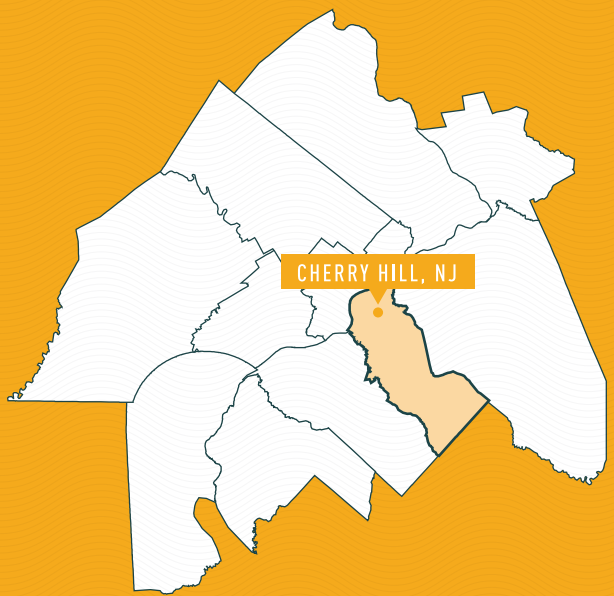
As a large building, JFED made a significant impact on improving sustainability for the entire community. As a result of the CHP installation and efficiency upgrades, JFED significantly reduced their energy consumption and carbon footprint. The project **reduced annual electricity consumption by 70%** with an annual carbon emissions reduction of 634 tons per year.

FAST FACTS

634 tons
Carbon emissions reduced annually

$311,723
Energy costs saved annually

Contact: Marcelo Rouco, CEO, Ecosave Inc., mrouco@ecosaveinc.com



> The Jewish Federation of Southern New Jersey is part of a growing trend of organizations that care about saving our planet from global warming for future generations in a manner that reduces costs & makes great financial sense.

MARCELO ROUCO
CEO and Founder, Ecosave

CITY OF PHILADELPHIA WATER DEPARTMENT

A project by **Ameresco**

OPPORTUNITY

The Philadelphia Water Department (PWD) provides integrated water, wastewater, and stormwater services. As a significant energy user, PWD wanted to diversify its energy portfolio and demonstrate its commitment to waste recovery as part of its pledge to be sustainable and cost-conscious. PWD's wastewater treatment plants present substantial opportunities to reduce greenhouse gas emissions via the recovery and use of fuel created onsite from the anaerobic digestion process.

SOLUTION

Ameresco partnered with PWD to install a **biogas cogeneration facility at the Northeast Water Pollution Control Plant (NE WPCP). The 5.6 MW cogeneration facility utilizes innovative wastewater biogas-to-energy technology** and has the capacity to generate electricity in addition to thermal energy by utilizing reciprocating gas engines.

The facility was constructed to capture methane generated from the existing wastewater treatment process; the captured biogas is then fed to four internal combustion engines which can **provide the plant with up to 85% of its electrical requirements.** By optimizing the NE WPCP's energy usage, Ameresco helped to reduce PWD's reliance on electricity from the grid.

BUSINESS CASE

The Philadelphia Water Department has improved its reliability and resiliency by refining and utilizing biogas as fuel for generators and equipment. Over the span of this project's 16-year contract, PWD is expected to **save more than $12 million in energy costs.** Additionally, the project received **$15.5 million in incentives.** PWD's biogas cogeneration facility provides a secure source of green energy for the facility demonstrating the importance of environmental stewardship while enhancing utility infrastructure.

ENVIRONMENTAL IMPACT

By recovering its intrinsic resources, PWD has reduced its reliance on other fuel sources at the NE WPCP. The biogas facility offsets **27,870 tons of carbon per year** — that's equivalent to **removing 5,917 passenger vehicles from the road for an entire year.**

FAST FACTS

27,870 tons
Carbon output reduction

$15.5 million
Incentives

Contact: Robert Morin, Senior Project Developer, Ameresco, rmorin@ameresco.com

> The Combined Heat and Power facility at the NE WPCP is a reliable source of alternative energy. The generated heat has reduced our reliance on natural gas and boilers. In the future, this facility could serve as a backup power source during electrical power outages.

HASIB AHMED
NE WPCP Acting Assistant Plant Manager

THE SIMPSON HOUSE

A project by **Blue Sky Power**

OPPORTUNITY

Founded over 150 years ago, the Simpson House is the nation's oldest senior living facility. Due to the high costs associated with senior care, the Simpson House needed a long-term energy strategy to better control and stabilize its energy costs.

SOLUTION

To ensure affordability and efficiency, Blue Sky Power installed a natural gas-fueled 265 kW **combined cooling, heat, and power (CCHP) plant,** an electrical power generator that utilizes recoverable waste heat for space heating, cooling, and domestic hot water purposes.

To maximize the clean energy infrastructure, Blue Sky Power also upgraded existing electrical infrastructure, installed a building management system, and retrofitted lighting fixtures and related sensors and controls for the Simpson House — significantly **improving energy efficiency and helping to reduce the building's greenhouse gas emissions.**

BUSINESS CASE

Blue Sky Power financed and constructed this $3.5 million project at no cost to the Simpson House through a 20-year Energy Services Agreement. The Simpson House received a combined **$680,000 in state clean energy grants and other incentives** for the project, including a $400,000 Commonwealth of Pennsylvania Clean Energy Grant and a $280,000 PECO Smart On-Site Program Incentive. By supplying reliable, efficient, and sustainable energy infrastructure, Blue Sky Power helped the Simpson House in focusing on their mission: to aid and service senior citizens.

ENVIRONMENTAL IMPACT

With the highly cost-efficient CCHP plant, the Simpson House was able to efficiently produce electricity, heat, and cooling while reducing greenhouse gas emissions. The Simpson House **reduced its carbon output by 27,000 tons.** In total, **the project offset 2,562,670 kWh of energy per year.**

FAST FACTS

27,000 tons
Carbon output reduction

$680,000
State energy and other incentives

Contact: Ben Parvey, President, Blue Sky Power, bparvey@blueskypower.com

> Many landmark buildings, like the Simpson House, are discovering that there is a dire need for modernizing aging energy systems. By integrating clean energy infrastructure financed by Blue Sky power into its historic and new buildings, the Simpson House avoided a large capital expense and gained long-term energy cost certainty, while eliminating substantial carbon emissions.

BEN PARVEY
President, Blue Sky Power

DOYLESTOWN HOSPITAL

A project by **Burns Mechanical**

OPPORTUNITY

Doylestown Hospital is a community-focused health care facility serving patients and families in the northern suburban communities of Philadelphia. Hospitals like Doylestown operate 24/7 and need high-quality, highly reliable energy for its patients.

SOLUTION

To improve reliability, sustainability, and operational efficiency, Burns Mechanical installed a 1.6 MW natural gas-fueled **reciprocating internal combustion engine (RICE)** for power generation. Because the RICE unit utilizes packaged steam and hot water heat exchangers for recovering waste heat, the hospital is able to use 100% of the recovered heat from the generator for other operations, such as HVAC, domestic water heating, medical equipment sterilization, and humidification.

While most hospitals are powered only from the local grid, **the combined heat and power (CHP) system provides approximately 80% of Doylestown Hospital's electricity needs** so it can reliably operate at nearly full capacity, even during a catastrophic power outage.

BUSINESS CASE

Doylestown Hospital realized **energy cost savings of more than $700,000 in the first year, reducing annual energy costs by more than 40%.** The hospital was also able to offset nearly 25% of the total project costs with the combination of PECO's Act 129 rebate program and Pennsylvania's Alternative Clean Energy (ACE) grant program. The net cost after rebates and grants was $3,411,227 equal to a net cost of $2,132 per installed kW. The result was a positive cash flow for the hospital from the moment the system was energized.

ENVIRONMENTAL IMPACT

Doylestown Hospital achieved net energy efficiencies of more than 70%, compared to approximately 30% net efficiency from purchasing electricity from the grid. With the CHP installation, **the hospital reduced each of its generated greenhouse gas emissions by 50%; this number is equivalent to removing 1,492 cars from the road or eliminating carbon emissions from 426 homes.**

FAST FACTS

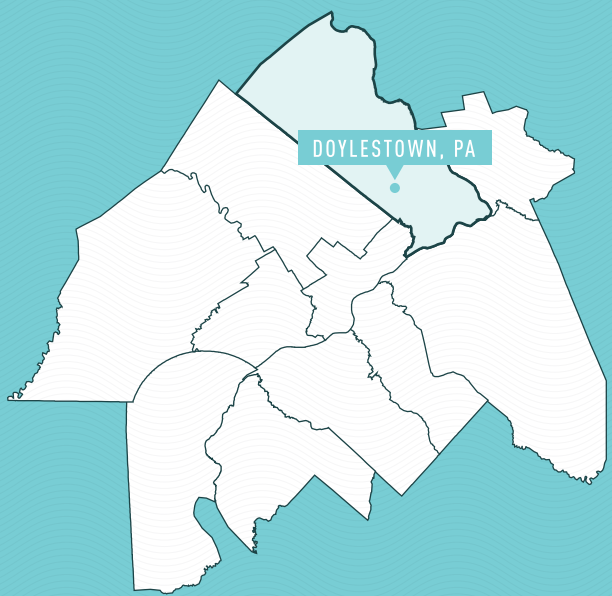
50%
Greenhouse gas emissions reduction

$700,000
Year one energy savings

Contact: Dan Kerr, President, Burns Mechanical, dkerr@burnsinc.com

> The financial results for the hospital have been outstanding, reducing our annual energy costs by more than 40%.

RICHARD LANG
Vice President, Doylestown Health



SUSTAINABLE ENERGY SOLUTIONS UPLIFT BUSINESS

and the entire Greater Philadelphia region. The energy companies and industries featured in these projects are reducing energy costs and improving resiliency, while actively creating a more energy-efficient and environmentally responsible future.

These projects demonstrate that businesses across any industry can implement solutions and strategies to realize not only lower operational costs through energy-efficiency but also reap the environmental benefits for their business and the region.

As members of the Chamber's Greater Philadelphia Energy Action Team, these energy leaders are doing their part to further a vision of a region powered by an advanced, affordable, diversified, and low-carbon energy economy.

ABOUT THE GREATER PHILADELPHIA ENERGY ACTION TEAM

The Greater Philadelphia Energy Action Team (GPEAT) brings together 150+ industry leaders committed to delivering energy solutions that will benefit the current families and businesses living and operating in Greater Philadelphia while attracting new development and growth opportunities.

Greater Philadelphia is positioned to leverage its abundant, low-cost energy resources to power innovation and business growth in the region. To realize this potential, GPEAT is driving initiatives to support an advanced, affordable, diversified, and low-carbon energy economy. GPEAT's Steering Committee is led by Co-Chairs John Walsh, President & CEO, UGI Corporation, and Craig E. White, President & CEO, Philadelphia Gas Works.


THE NAVY YARD

ABOUT THE CHAMBER

The Chamber of Commerce for Greater Philadelphia brings area businesses and civic leaders together to promote growth and create opportunity in our region. Our members represent eleven counties, three states, and roughly 600,000 employees from thousands of member companies and organizations. And by bringing all kinds of businesses and leaders to the table — the new, the established, the big, the small, the growing, the thriving, the perennial, the innovative, and the experimental — we build community and find commonalities among us all.

We advocate for regional development, business-friendly public policies, and economic prosperity. We support our members with practical, inspiring programs, resources, and events. And all that we do serves one clear, bold goal: to make Greater Philadelphia a great place for good business.

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