



Improving Community Resilience with Energy Efficient Buildings

Partner Support



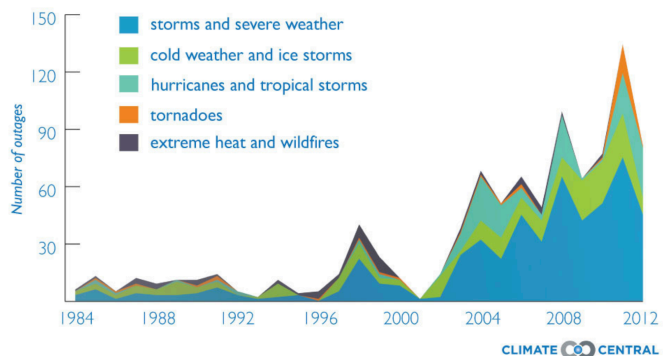
Cities and towns across the commonwealth from Chester to Monaca are creating and implementing resiliency plans to protect themselves from increasingly frequent extreme weather events and other emergencies. One common component of resilience planning is energy efficiency. Energy efficient buildings make communities more resilient by keeping residents comfortable and safe during power outages, enhancing housing affordability and financial security, and improving health.

Withstanding Power Disruptions

Energy efficient buildings provide a haven during power disruptions.

According to [a report by Climate Central](#), between 2003 and 2012, the number of power outages per year in the U.S. doubled, **with Pennsylvania ranking fourth among all 50 states**. Power outages pose risks to Pennsylvania citizens, especially the most vulnerable residents including

Extreme Weather Is Causing More Major Power Outages
(major = at least 50,000 customers affected)



the poor, elderly, and people on fixed incomes. When the power goes out, energy efficient buildings maintain their temperatures longer, enabling residents to outlast power disruptions and avoid dangerously high or low temperatures. In combination with energy efficiency, strategies like combined heat and power, or solar power with battery storage, can result in even more resilient buildings and communities.

Economic and Social Impacts

Community resilience also has a variety of positive economic and social impacts.

[A report from the American Council for an Energy Efficient Economy](#) notes that resilience goes beyond a community's immediate response to an emergency or disaster. As the report states, "It is also important to recognize the underlying social and economic conditions that make communities more susceptible to emergencies and less able to cope with their impacts in the first place." These conditions may include a weak local economy and poverty. Energy efficiency improves community resilience by improving the everyday resilience of households.

"Increasing the energy efficiency of buildings...is a core strategy to increase a community's ability to mitigate and respond to economic and climate risks."

-AMERICAN COUNCIL FOR AN ENERGY EFFICIENT ECONOMY

Economic Benefits

Economic Benefits include improved housing affordability, protection from energy price volatility, improved power reliability, lower infrastructure costs, and improved local economies

- **Improved housing affordability.** As many communities struggle to provide enough affordable housing, energy efficient buildings can improve overall housing affordability. Energy efficient buildings mean less money spent on utility bills and more to spend on mortgage and rent payments. This also makes residents better prepared for natural or man-made disasters, with more money to spend on healthcare, food, water, transportation, and supplies.
- **Protection from price volatility.** Efficient buildings insulate residents and businesses from inevitable energy price shocks caused by supply interruptions around the globe.
- **Improved power reliability and lower infrastructure costs.** Energy efficiency also reduces strains on aging infrastructure and may delay or eliminate the need for costly upgrades and expansions, helping keep costs down.

- **Boosting the local economy.** Reduced utility costs boost the local economy with more disposable income to be spent on local restaurants, shops, and entertainment.

Health Benefits

Energy efficient buildings may help to improve overall community health.

[According to the National Association of County and City Health Officials](#), community health is an essential aspect of planning for resilient and sustainable communities. The byproducts of burning fossil fuels is [associated with diseases of the heart and lungs, cancers, and other health problems](#). An article in the [International Journal of Environmental Research and Public Health](#) notes the disproportionate impacts on children, stating, “By impairing children’s health, ability to learn, and potential to contribute to society, pollution and climate change cause children to become less resilient and the communities they live in to become less equitable.” According to the [U.S. Energy Information Administration](#), buildings are responsible for about 40% of total U.S. energy consumption - [80% of which comes from burning fossil fuels](#).

“Buildings are responsible for about 40% of total U.S. energy consumption”

-U.S. ENERGY INFORMATION ADMINISTRATION

Pennsylvanians experience some of the poorest air quality in the country with the areas of Johnstown-Somerset, Lancaster, Harrisburg-York-Lebanon, Philadelphia-Reading, and Pittsburgh-New Castle all appearing on the American Lung Association’s [list of the 25 most polluted cities](#).

Recap

Energy efficient buildings allow residents to shelter-in-place longer when a disaster strikes. Efficient buildings may also improve the local economy and public health, allowing communities to better cope in emergency situations.

Actions

What can your community do to protect itself?

- **Create a community resilience plan.** The National Institute of Standards and Technology outlines a six-step planning process in their [*Community Resilience Planning Guide*](#).
- **Lead by example.** Municipal governments can lead by example by building new municipal buildings and affordable housing to LEED, the Living Building Challenge, Passive House, or other high-performance building standards.
- **Building code enforcement.** Support your local building department or third-party inspection agency by providing enough staffing, training, and tools to enforce the building code. This includes elements that improve structural rigidity, prevent water intrusion, and decrease energy use. In fact, Pennsylvania homes built to the modern, highly efficient building energy code will use approximately 40 percent less energy than homes built prior to 2010. Also, if your municipality hasn't already, adopting an ordinance requiring permits and inspections for alterations to existing buildings.
- **Utility rebates programs.** Promote the energy efficiency rebates offered to residents and businesses by your local electric and gas utilities. These programs reduce the cost of purchasing efficient lighting, appliances, insulation, and whole-building upgrades.

Start your community's resilience and energy efficiency planning process now by visiting the follow websites. Together we can protect the citizens of the commonwealth from a variety of challenges that lie ahead.

Case Study

In December 2015, **Pittsburgh** was selected as one of the Rockefeller Foundation's *100 Resilient Cities*. The city's resilience strategy contains a proposal to **evaluate the utility bills** of its 139 municipal buildings and other assets to assess the impacts that capital investments could have on the city's resilience. This assessment would identify building projects that would have the highest net savings and the highest benefit-cost ratio.

The strategy encourages **viewing capital improvements through a "resilience lens"** to consider benefits other than utility bill reductions. This includes assessing co-benefits like socioeconomic impacts, reduced carbon footprint, and emergency preparedness.

The strategy also outlines objectives to coordinate efforts to **"green" Pittsburgh's housing stock**. These objectives include housing, health, resilient households, resource efficiency, and resilient design. Actions include the support of energy efficiency incentive and certification programs.

Resources

NIST Resilience Planning Guide:

<https://www.nist.gov/topics/community-resilience/planning-guide>

Sustainable Pennsylvania Communities:

<http://sustainablepa.org>

Building and energy code training:

PCCA: <https://paconstructioncodesacademy.org>

PHRC: <https://www.phrc.psu.edu/>

Energy efficiency rebates:

Duquesne Light: <https://www.duquesnelight.com/energy-money-savings/watt-choices>

FirstEnergy's Pennsylvania Utilities: <https://energysavepa.com>

PPL Electric Utilities: www.pplelectric.com/ways-to-save

PECO: www.peco.com/WaysToSave

PGW: <https://pgwenergysense.com/>

UGI: www.ugi.com

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