

Kentucky Energy and Environment Cabinet

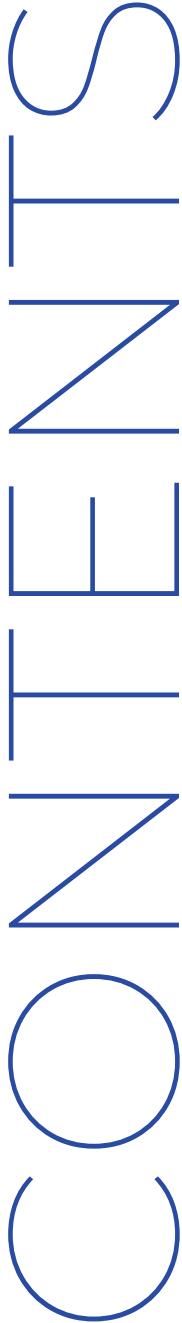
Office of
Energy Policy
Impact
Summary

2023



ENERGY AND
ENVIRONMENT CABINET

Table of Contents



01.	Energy Policy	Page 5
02.	Energy Grants	Page 10
03.	Energy Data, Analysis, Monitoring, Tracking	Page 13
04.	Energy Literacy & Collaboration	Page 15
05.	Energy Affordability, Equity and Justice	Page 20
06.	Energy Security & Emergency Response	Page 25

NON O T C U D O R T N

Kentucky's progress has been powered by traditional sources of energy for over a century. However, as these sources evolve, the Kentucky Office of Energy Policy (OEP) is adapting to meet the state's energy needs in a holistic and integrated manner. By sharing our impacts, the Office increases energy awareness and education. When an idea is shared it grows and changes. We hope you are inspired to act and engage.

The year 2023 presented challenges and opportunities, with the major challenge being how to provide reliable, affordable, and sustainable energy while ensuring equity. The OEP successfully tackled these challenges through historic funding opportunities, stakeholder collaborations, new initiatives, and exploration of new technologies. These programs are effective, creative, and flexible pathways that address the state's energy needs comprehensively.

At a pivotal time with once-in-a-lifetime federal investments, OEP will continue to build on its progress and accomplishments in 2023. As Kentucky's energy needs evolve, the OEP will continue to adapt and evolve to meet these changes. The OEP's work is never done, but it remains committed to providing effective, creative, and flexible pathways forward that cater to Kentucky's unique energy needs.

Our story so far

OUR MISSION

To utilize Kentucky's energy resources for the betterment of the Commonwealth while protecting and improving our environment.

WHO WE ARE

The Office of Energy Policy (OEP) was established during the 2018 Kentucky General Assembly as part of an Energy and Environment Cabinet reorganization. The OEP has a simplified organizational structure that helps us address energy policy issues and energy programs in a way that aligns with current challenges and opportunities.

OEP takes a pragmatic approach to energy policy that ensures the Commonwealth thrives in the face of rapid changes happening in the production, delivery, and usage of energy. For instance, affordable electricity is a key driver of our economy, but the paths we need to take to guarantee the continued affordability and reliability of Kentucky's energy sectors are becoming more intricate.

Our objective is to improve our understanding by discussing how swift changes happening in the energy sector (such as advancements and cost reductions in certain technologies, federal and other states' policies, and market forces) create pressure on existing energy systems, but also provide new opportunities for energy users and producers.

What we do

Energy in Education Affordability Resilience

The Kentucky Office of Energy Policy (OEP) is responsible for developing and overseeing energy-related programs and initiatives that promote secure, affordable energy resources and a stronger economy.

These programs and initiatives focus on three areas: energy education, affordability, and resilience.

Through federal grant partners, the OEP funds projects that support the three focus areas, along with grid resilience, data modeling, power-sector modernization, and more throughout the state.

As a central part of its mission, the OEP develops and maintains web content that includes interactive dashboards, maps, and data. Additionally, the OEP posts timely announcements of events, funding opportunities, and new resources to both internal and external audiences.

Furthermore, the OEP supports Emergency Support Function 12-Energy (ESF-12) activities and provides ongoing management of the state's Energy Security Plan.

OEP follows a strategic plan to guide informed decision-making in a way that best protects and develops Kentucky's energy advantages; maintains our position at the forefront of today's energy landscape; and ensures a Commonwealth with reliable, affordable, and resilient energy resources. Day-to-day, the Office has five major functional areas that guide staff activities:

- 1) Provide policy and technical assistance to the Commonwealth and leadership on energy issues.
- 2) Administer grant programs to support the state's energy goals.
- 3) Monitor, track, and analyze energy data and policies nationwide and in Kentucky to proactively identify trends, opportunities, and potential issues affecting Kentucky's energy sector.
- 4) Increase energy literacy by proactively leveraging communication pathways and a variety of stakeholders to deliver relevant and reliable energy information.
- 5) Oversee the State Energy Security Plan implementation and respond to energy emergencies.

2023 PROGRESS

POLICY, TECHNICAL ASSISTANCE, LEADERSHIP



OEP addresses energy policy with a common-sense approach that ensures the Commonwealth thrives amid rapid changes occurring in the production, delivery, and use of energy.

Energy Policy

01

Kentucky's energy policy recognizes that economic prosperity is linked to the availability, reliability, sustainability, and affordability of consumer energy supplies, and supports the commercialization of innovative energy technologies. During 2023, OEP's leadership accomplished significant milestones in adapting energy policy and opening new doors to meet the challenges of Kentucky's changing energy landscape.

One example of how leadership combined technical assistance to affect energy policy is the establishment of the Nuclear Development Working Group. Meetings were held throughout the year and in November, the OEP submitted the **Nuclear Workgroup Final Report** to the Kentucky Legislative Research Commission. This report presents a comprehensive and strategic document that stems from the objectives set forth by SJR 79 (2023). It offers a detailed exploration of Kentucky's energy landscape, with a specific focus on nuclear energy, and lays the groundwork for the establishment of a permanent nuclear energy organization within the state government. Funding for the report was provided through the State Energy Program and technical assistance via the Nuclear Innovation Alliance. The report is available on the OEP Website. https://eec.ky.gov/Energy/Documents/Final%20Report%20SJR79_11.17.23.pdf

2023 PROGRESS

Leadership and Collaboration

OEP's leadership understands the importance of cooperation with external partners and organizations. The following are examples of how OEP effectively partnered with other agencies during 2023.

The OEP and the Kentucky Transportation Cabinet worked together to promote **Kentucky's Electric Vehicle Charging Station Program**, a vision for a reliable, accessible, convenient, and affordable EV charging network that supports transportation choices, energy diversification, economic development, and environmental sustainability. Kentucky was allotted nearly \$70 million in federal funding through the Bipartisan Infrastructure Law to expand EV charging stations over the next five years. The creation and update of the EV Infrastructure Deployment Plan are requirements for unlocking funding to build infrastructure along Alternative Fuel Corridors. Through the collaborative efforts of the EEC, KYTC, and in partnership with the Public Service Commission and Federal Highway Administration, the plan approved in 2022 secured the funding with the first \$25 million available immediately. The latest plan approved in September 2023, secures the funding for FY 2024.

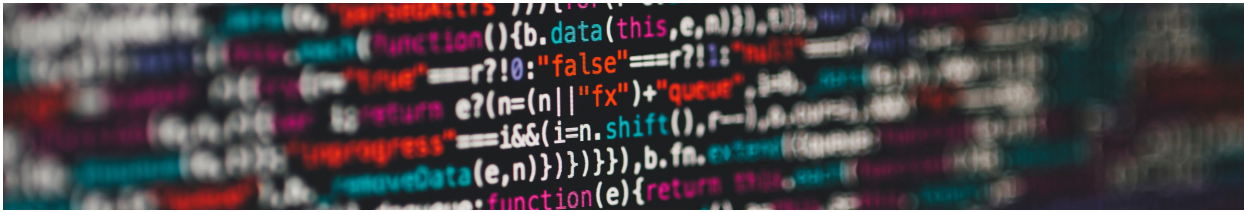
This year, OEP continued to manage the \$20.3 million **VW Settlement** allocation. Under the structure approved by the Kentucky General Assembly, Kentucky has provided \$8,521,700 to replace 2001 and older school buses operating in the state and funded the replacement of older transit buses in our urban areas. Under this settlement, participating school districts and transit authorities have been reimbursed up to 50 percent of the costs to replace these buses.



OEP participates in cross-agency collaboration with the **Cabinet for Economic Development**. Through education and sharing resources, OEP helps to connect the dots on advanced energy economic opportunities in Kentucky as we explore a modernized grid and electrified transportation.

Part of the Southwest Kentucky electric grid falls under the jurisdiction of the Tennessee Valley Authority (TVA). The Office of Energy Policy represents the Commonwealth in its **Integrated Resource Planning (IRP)**. An IRP is a planning tool that analyzes several factors such as generation type, reliability, system demand, system growth, baseload, peak generation, etc., and evaluates them across various future scenarios that TVA anticipates. The IRP process takes over five years to complete, and TVA serves more than ten million people, so it must be comprehensive and robust. As a stakeholder member, OEP represents the TVA territory in Kentucky and **advocates for the residents of Kentucky** who are served by TVA.

2023 PROGRESS



Technical Assistance

With the expansion of grant funding in 2023, OEP developed new web-based resources to help grant partners meet compliance requirements for funding, provide consumer education, and update Kentucky's energy resources.

To provide OEP grant partners with flexibility, staff created an online self-paced **Grant-Partner Compliance Training Program**. A new **Grant-Partner Dashboard** is scheduled to go live in early 2024 to provide greater transparency regarding where federal dollars are being spent and how these funds are impacting the lives of Kentuckians.



Residential Rooftop Solar Installation Resources

OEP launched a new web-based **Solar Consumer Guide** that provides many resources to assist Kentuckians who wish to install rooftop solar at their residence. OEP realizes it is of the utmost importance for interested homeowners to ensure they are educated on the technology in general, the incentives available to them, the average price in their area, and even the potential for misleading advertisements.

Kentucky Energy Profile 2023

OEP updates the **Kentucky Energy Profile** semi-annually. This document serves as an impartial point of reference for the general public and as a foundation for discussing Kentucky's energy future. Several key findings reported in the 2023 edition include:

- Renewables (solar, hydroelectric, and biomass) accounted for 8.5 percent of total electric generation in 2020. This is a 31 percent increase from 2019 when renewables only accounted for 6.5 percent of generation.
- Kentucky has the 13th lowest average electricity price, at \$9.12 per Kilowatt.
- Kentucky's domestic supply of coal remains a primary source of energy. Kentucky is the seventh largest coal-producing state in the U.S. with 95 percent of the coal staying in the US and 46 percent being used in-state.
- Electricity in Kentucky is supplied by 173 individual electricity-generating units at 52 power plants across the state. In 2020 our power plants averaged 32 years of age, with our oldest hydroelectric station being built in 1925 and the newest solar facilities coming online in 2019.
- Electricity is sold by six major electric utilities and dozens of smaller municipalities. Each major electric utility and coal-fired power plant is profiled.

2023 PROGRESS



National Presence

OEP's leadership role spans state and national audiences. OEP staff routinely served as an advocate for Kentucky's energy policies and initiatives through various outreach opportunities and organizations. Examples of activities include participation in the annual Kentucky Governor's Conference on Energy and the Environment, engagement with the National Association of State Government Officials, and participation with Kentucky Emergency Management and state energy offices through the Federal Emergency Management Agency (FEMA).



The Office of Energy Policy works with the **Idaho National Laboratory** and **GAIN, the Gateway for Accelerated Innovation in Nuclear** on nuclear energy issues. The Idaho National Laboratory is one of 17 national labs in the U.S. Department of Energy complex. It is home to more than 6,100 researchers and support staff focused on innovations in nuclear research, renewable energy systems, and security solutions that are changing the world. The U. S. Department of Energy Office of Nuclear Energy established GAIN to provide the nuclear community with access to the technical, regulatory, and financial support necessary to move innovative nuclear energy technologies toward commercialization while ensuring the continued safe, reliable, and economic operation of the existing nuclear fleet.

The Kentucky Office of Energy Policy is among 15 state energy offices participating in the **NASEO National Association of Regulatory Utility Commissioners (NARUC) Advanced Nuclear State Collaborative (ANSC)**. The ANSC convenes state utility regulators and state energy officials and invites experts to share questions, needs, and challenges relating to the planning and deployment of new advanced nuclear generation.



Kentucky Hydrogen Hub Workgroup

OEP established the **Kentucky Hydrogen Hub Workgroup** to develop hydrogen-based projects eligible for funding under the Infrastructure Investment and Jobs Act (IIJA) of 2021. The workgroup stakeholders include academic institutions, individuals, organizations, and businesses focused on hydrogen production, transportation, delivery, and end-use utilization opportunities. Details are available on the OEP website. Additionally, the working group has stakeholders from both of the hydrogen hubs that the state participates in: Appalachian Regional Clean Hydrogen Hub (ARCH2) and Midwest Alliance for Clean Hydrogen (MACHH2).

2023 PROGRESS

OEP also participates in the **National Association of State Energy Officials (NASEO)**. NASEO is the only national non-profit association for governor-designated energy officials from each of the 56 states and territories. Formed by the states in 1986, NASEO facilitates peer learning among state energy officials, serves as a resource for and about state energy offices, and advocates for the interests of the SEOs to Congress and federal agencies. Throughout 2023, OEP staff participated in state and regional conferences, online leadership training, and served on committees and boards.

OEP represents the Kentucky State Energy Office on **standing NASEO committees** that meet regularly, both in-person and via conference calls and webinars. Committees are focused on increasing state energy office awareness and education on specific topics, including buildings, electricity, energy equity, energy security, financing, government affairs and transportation. They are guided by a core “leadership team” of state and affiliate members.

In 2023, OEP participated in the **NASEO Energy Property Assessed Clean Energy (EPACE) Work Group** and hosted stakeholder engagement sessions. Work groups are project-specific and time-bound, usually lasting one to two years. Members of these groups volunteer to provide strategic guidance and direction to NASEO staff, events, and other resources and may be invited to participate in conference calls, webinars, and meetings.



Communication and Outreach

Effective communication pathways are key to educating and implementing energy policy. To reach local and national audiences, OEP works with the cabinet’s communications office to share energy-related content via social media platforms, print and electronic media, and cabinet resources. The Energy and Environment Cabinet publishes the **Naturally Connected Blog** that shares news and events from the EEC, and **Land, Air and Water**, a webzine that celebrates the everyday work of the EEC staff as they safeguard the health and welfare of Kentucky’s citizens, environment, and natural resources. OEP publishes a monthly **newsletter** for subscribers to learn about activities, current news articles, announcements, and more.

The OEP responds to ~100 requests from citizens across the Commonwealth, ranging from energy efficiency to power generation.

2023 PROGRESS

GRANT PROGRAMS



The Office of Energy Policy has the responsibility of developing and overseeing energy-related programs and initiatives that promote secure, affordable energy resources and a stronger economy.

Grant Funding

02

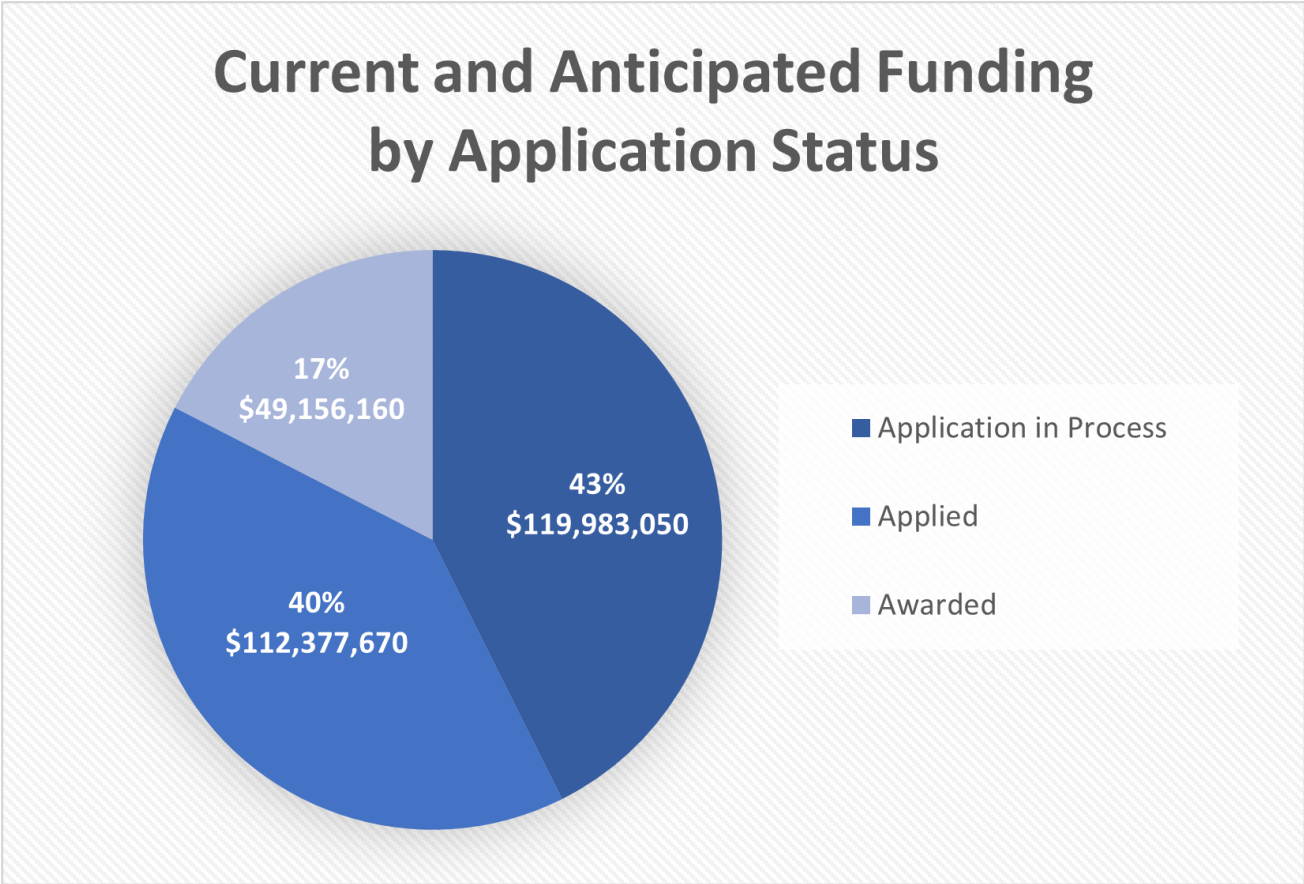
The U.S. Department of Energy (DOE) State Energy Program (SEP) provides funding and technical assistance to states, territories, and the District of Columbia to enhance energy security, advance state-led energy initiatives, and maximize the benefits of decreasing energy waste. The program emphasizes the state's role as the decision-maker and administrator. This allows activities that are tailored to Kentucky's unique resources, capacity, and energy goals.

With the introduction of the 2021 Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA), and the Inflation Reduction Act (IRA), OEP staff reviewed and responded to a variety of notices of intent, requests for information, funding opportunity announcements, and administrative and legal requirements issued by the U.S. DOE for the IIJA and IRA formula and competitive programs. Responses and actual funding allocations are ongoing with different timelines ranging from 2023 to 2031.

In 2023, Kentucky was awarded \$973,520 from the annual formula U.S. DOE State Energy Program to support energy education, energy affordability, and energy security programs and initiatives.

2023 PROGRESS

CURRENT AND ANTICIPATED GRANT PROGRAMS



Formula Funding Program	Length of Program Funding	OEP Status	Program Type	Funding Source
Inflation Reduction Act Rebate Programs (IRA)	FY2024-31	Application in Process	New	IRA
Energy Efficiency and Conservation Block Grants (EECBG)	FY24-27	Applied	New	IIJA
IIJA Energy Efficiency Revolving Loan Fund (EE RLF)	FY22-26	Applied	New	IIJA
Residential Energy Contractors Program (TREC)	FY24-28	Applied	New	IRA
Solar For All Grant	FY2025-30	Applied	New	IIJA
Building Resilient Infrastructure and Communities (BRIC)	FY22-25	Awarded	New	FEMA
Coal Education Funds	Annual	Awarded	Existing	State
Energy Efficiency and Conservation Block Grants for Local Governments - Revolving Loan Fund	Ongoing	Awarded	Existing	AARA
General Funds	Annual	Awarded	Existing	State
Green Bank	Ongoing	Awarded	Existing	AARA
Preventing Outages and Enhancing the Resilience of the Electric Grid (40101d)	FY22-26	Awarded	New	IIJA
State Energy Program - Annual Funds	Annual	Awarded	Existing	SEP
State Energy Program - IIJA	FY23-27	Awarded	New	IIJA
Volkswagon Settlement (VW)	Ongoing	Awarded	Existing	Settlement

2023 PROGRESS



Future Grant Funded Projects

In response to the **IJA opportunities**, OEP received **\$28 million** for special projects, grid improvements, resilience, and more. This funding presents unprecedented opportunities for Kentucky.

**IJA
Projects
Outlined FY
2024**

OEP projects outlined for 2024:

- State Energy Program Special Projects (SEPBL)
- Preventing Outages and Enhancing the Resilience of the Electric Grid (Section 40101 (d))
- Energy Efficiency Revolving Loan Program (RLF)
- Energy Efficiency Conservation Block Grant (EECBG)

**IRA
Funding
Applications
for 2025**

The **Inflation Reduction Act (IRA)** of 2022 also calls for historic amounts of funding to states and tribes for administrative purposes, audits, electrification upgrades, appliance rebates, and contractor training.

Funds for applications submitted in 2023 will not be available until 2025.

- Home Efficiency Rebates Program
- Home Electrification and Appliance Rebates Program
- Energy Efficiency Contractor Training Program

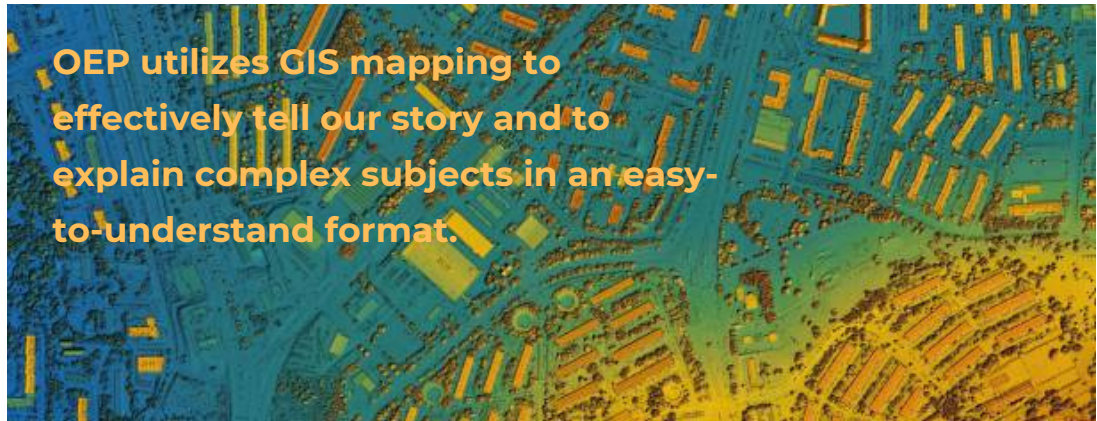
**Application
Submitted**

On June 28, 2023, the Environmental Protection Agency (EPA) released the \$7 billion "**Solar for All**" **Notice of Funding Opportunity**. This competitive grant program will award up to 60 grants to states, territories, tribal governments, municipalities, and non-profits to expand the number of low-income and disadvantaged communities primed for residential solar investment--enabling millions of low-income households to access affordable, resilient, and clean solar energy.

The OEP has submitted an application for this funding source.

2023 PROGRESS

ENERGY DATA ANALYSIS, MONITORING, TRACKING



OEP utilizes GIS mapping to effectively tell our story and to explain complex subjects in an easy-to-understand format.

Ongoing activities include monitoring, tracking, and analyzing energy data and policies in Kentucky and nationwide, to proactively identify trends, opportunities, and potential issues affecting the Commonwealth's energy sector. Here is what is new in 2023.

03

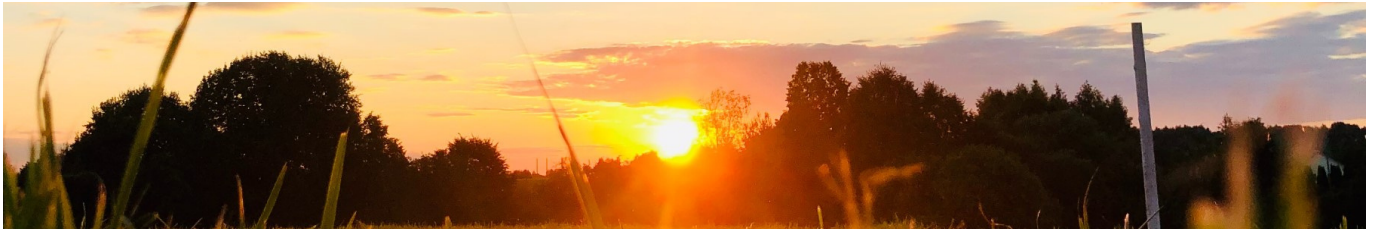
Solar Siting Potential in Kentucky

The **Solar Siting Potential in Kentucky** is a new platform designed to help relevant entities explore the feasibility of developing utility-scale solar projects in Kentucky, particularly in areas that were previously used for mining and could be repurposed. The platform includes a solar suitability model that takes into account topography, federally protected land, population, necessary infrastructure, and other characteristics that may limit development. Moreover, the platform provides many resources, such as information on mine permitting and reclamation, additional data required for site analysis, and the OEP's Community Energy Management Access Guide - a guide for utility customers seeking pathways to access alternative energy through onsite or offsite electricity generation in Kentucky.

Kentucky Energy Affordability Dashboard

The **Kentucky Energy Affordability Dashboard** is part of OEP's broad initiative to address the complexities of energy equity and justice. This new resource was launched in 2023 to help educate those using it on issues affecting energy affordability and energy burden. The Energy Affordability Dashboard was made possible by federal State Energy Program funding directed to the OEP. The dashboard provides data that describes the demographic, housing, and utility landscape that affects energy affordability. The hope is that data can be used in forming policy decisions, and in applying for funding designed to assist Kentuckians.

2023 PROGRESS



Kentucky Solar Projects and County/Municipal Ordinances

This dashboard provides users with a comprehensive view of solar projects that have applied to the Siting Board for a certificate of construction and includes relevant local regulations for these projects. Users can access information on the status of each merchant plant application, including planned MW capacity, acreage, predicted operation date, proposed regenerative practices, battery storage, and other relevant details.

KY Energy Dashboard

OEP updates the **Kentucky Energy Dashboard** to provide real-time resources to the general public. Staff provides ongoing monitoring of data on energy topics such as Energy Maps: Electricity Service Areas; Power Plants; Electricity Infrastructure; Natural Gas Infrastructure; Ky. Natural Gas Infrastructure; Petroleum Infrastructure; Alternative Fuels Infrastructure; Electricity Outages and Electricity Generation and Pricing.

SHOPP Program

Kentucky participates in the U.S. Energy Information Administration (EIA) State Heating Oil Propane Program (SHOPP) to collect state-level residential price data for No. 2 heating oil and propane. The Office of Energy Policy collects weekly, residential fuel prices from 48 Kentucky businesses during the heating season October – March. The data collected is useful to EIA and states in responding to Congressional and consumer inquiries and is a valuable means of communication among federal and state governments and the petroleum industry. All published aggregated data (averages across all responding companies) appear on EIA’s website in the Heating Oil and Propane Update.



13,000 miles of electricity transmission lines

6,769 miles of natural gas transmission

18,834 miles of distribution pipelines

Over 800 miles of crude and petroleum product pipelines

2023 PROGRESS

ENERGY LITERACY, COLLABORATION AND EQUITY



OEP approaches energy literacy, collaboration, and equity with all Kentuckians in mind. Success can only be realized by listening to all voices across the Commonwealth and engaging in partnerships that build actions to create success across our energy, environment, and economic landscape.

04

Current local, national, and global issues highlight the need for energy literacy. OEP strives to advance energy literacy, defined as the understanding of the nature and role of energy in our world and daily lives, across all sectors. Energy education plays a critical role in all our programs and initiatives. Without a basic understanding of energy, energy sources, generation, use, and conservation strategies, individuals and communities cannot make informed decisions on topics ranging from smart energy use at home and consumer choices to national and international energy policy.

Specific to 2023, OEP's collaboration with sister agencies, utilities, and organizations from the public and private sectors resulted in several key accomplishments in advancing energy literacy and equity.

Ongoing discussions and collaboration with the **Cabinet for Health and Family Services** and the **Kentucky Association of Electric Cooperatives** not only enhanced communications but also discovered solutions to remove barriers for vulnerable populations. Activities resulted in a new streamlined process of applying for and receiving replacement **Supplemental Nutrition Assistance Program** (SNAP) benefits during times of energy service interruptions. SNAP helps low-income people buy food for healthy meals.

2023 PROGRESS

SOAR: Shaping Our Appalachian Region

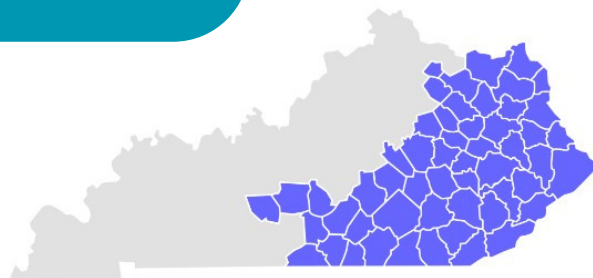
The Kentucky Office of Energy Policy collaborated with **Shaping Our Appalachian Region (SOAR)**, a non-profit dedicated to reversing population loss and driving prosperity in 54 eastern Kentucky counties. In the fall of 2023 to host a **Commercial Property-Assessed Clean Energy (C-PACE) workshop** in eastern Kentucky. C-PACE is a tool that can finance energy efficiency and renewable energy improvements on commercial property. It is not a federal program, and public funding is not necessary. C-PACE must be authorized by state legislation and requires further authorization from local governments. The eastern Kentucky workshop was made possible by an awarded application that OEP applied for from NASEO, Lawrence Berkeley National Lab, and the U.S. DOE. Experts educated attendees on how C-PACE can be a tool for communities to fund energy efficiency projects affordably. SOAR was able to connect our office with prime location to host the event where we were able to engage with local government and community members.



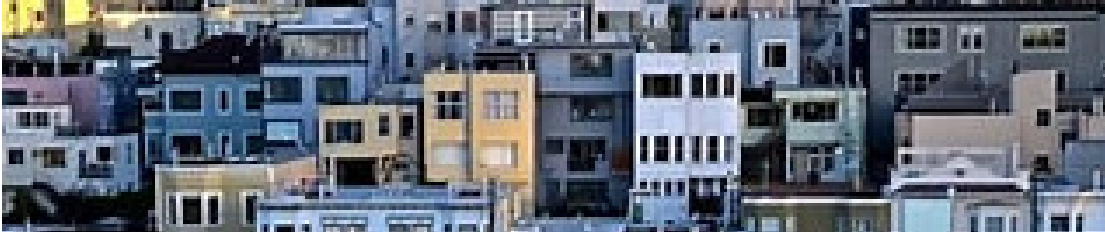
Manufactured Housing

The Office of Energy is doing a deep dive into the benefits of modern-day manufactured housing as an energy-efficient affordable housing solution. The Office has researched zoning across the state and has discovered there are significant barriers to this option in many parts of the state. Throughout the year, OEP worked with the **Manufactured Housing Institute of Kentucky** and brought a net zero manufactured home to the Energy and Environment Conference in October 2023 to better educate those in attendance. OEP is also a part of the **NASEO Manufactured Housing Committee** where we are engaging in the latest industry knowledge and learning about programs that are adding energy efficiency enhancements to existing units as well as programs that provide replacement.

The Appalachian Regional Commission defines 54 counties as Appalachia Kentucky.



2023 PROGRESS



Energy, Equity and Justice

The Kentucky Office of Energy Policy works daily to ensure that every Kentuckian has an opportunity to participate fully in our energy programs and initiatives. We are committed to assisting our citizens and communities to fully realize the benefits of the emerging clean energy economy.

In 2023, OEP combined leadership, community engagement, and technical assistance resulting in key accomplishments.

OEP participates in a leadership position on the **NASEO Energy Equity Committee**. This committee convenes state and territory energy offices, NASEO, affiliate members, industry stakeholders, and experts for discussions and best practice exchanges. The committee was established in June 2020 by the NASEO Board of Directors with the passage of the resolution “Commitment to Equity, Access, and Inclusion.” The committee has identified community engagement, the development of metrics and indicators, the identification of marginalized communities, and access to programs and funding as content priorities to support state energy offices. The committee is also enabling peer sharing and supporting equity across NASEO programs. The Equity Resources page contains details on these topics. Information on upcoming meetings is available on the NASEO Events page.

OEP also created a specific section in the **OEP Grant Partner Training** developed in 2023 to educate on Justice40, a national commitment to environmental justice and equity. This training was developed to ensure OEP grant partners not only are compliant with U.S. DOE but also to ensure their organizations are intentional about equitable engagement inside their programs.

2023 PROGRESS



GEN EV students from the Rise STEM Academy, Lexington, prepare for the May 2023 race day. The event held at the University of Kentucky campus culminates the year-long GEN-EV STEM education program.

Energy in Education

OEP has a long history of supporting K-12 energy education through teacher professional development and student learning opportunities. In 2023, OEP supported energy education programs through state and federal SEP grants. Programs delivered energy education to students Pre-K through high school, teachers, and communities with a focus on providing opportunities in Kentucky's energy burdened regions. Highlighted below are key accomplishments during the 2022-2023 academic year.

UK Center for Applied Energy Research GEN-EV Program

The **GEN-EV Program** is a STEM (science, technology, engineering, and mathematics)--based workforce development program implemented in partnership with the **University of Kentucky Center for Applied Energy Research (CAER)**, the Greenpower USA Foundation, and the OEP.

To date, the GEN-EV program has reached more than 400 elementary students from schools across the state. The program aims to support the Commonwealth's growing electric vehicle and battery manufacturing industries while teaching fundamental engineering concepts such as reading schematics, applying these concepts to building a one-driver electric vehicle, and racing against other school teams from across the state. Additionally, students learn financial accounting, presentation skills, philanthropic fundraising, team collaboration, and operational strategies.

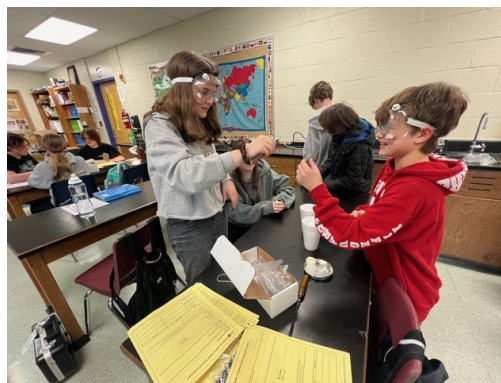
Currently, the program is available for elementary school students from 4th through 6th grade, and more than a dozen schools have already participated. The program is usually run as an afterschool club with 10 to 15 students who spend a semester constructing the car and planning for the car race in the spring. The program also provides teacher professional development sessions and a curriculum is offered for each level, including the construction and operation of both the elementary, middle school and high school car kits.

2023 PROGRESS



Bluegrass Greensource is an environmental non-profit organization that provides energy-related educational programs for families and preschool students in central Kentucky. The **BGGS Energy Education Project** funded through the State Energy Program, incorporates elementary energy education to K-5 grade students and offers a successful Preschool Energy Curriculum that is available to all preschool classrooms in the region.

In addition, BGGS expanded its community-focused outreach efforts to offer energy efficiency workshops to communities and residents, targeting low-income and disadvantaged communities. Attendees learn the basic changes they can make to their homes and behavior to have a healthier, more comfortable, and efficient home. They also receive a wealth of resources to support their efforts to make their homes more efficient, including a free energy efficiency kit. Each kit includes 4 LED bulbs; 2 tubes of caulk and a caulk gun; 1 low-flow shower head; 2 sink aerators; 8 sockets and light-switch sealing gaskets; 1 WiFi smart socket; and 1 solar charging power bank.



The **National Energy Education Development (NEED)** Project works with teachers and students to increase knowledge of energy and energy efficiency and improve STEM skills and workforce readiness. OEP supported the **NEED Energy Education Program** through the State Energy Program to provide training, curriculum, and implementation support for teachers and students in participating schools. The program focused on providing educational opportunities in areas of high energy burden and Title 1 schools.

This year's Energy Education Program offered teachers professional development, classroom resources, and science of energy kits for student project-based learning activities. Students are also provided in-classroom training from experienced NEED energy educators to explore the science of energy and how efficiency and conservation measures positively influence the home environment. Students have an opportunity to submit energy projects to a statewide energy awards event, with those excelling in their grade category invited to attend the National NEED Youth Conference in Washington, DC. Grant funds will provide some scholarship support.

2023 PROGRESS

ENERGY AFFORDABILITY



Energy affordability is a complex issue involving many factors and considerations across society. Addressing these issues involves actions to improve educational attainment, improve the energy efficiency of households, and continue efforts to provide energy at a low cost, along with targeted assistance programs to support vulnerable communities.

05

OEP's key accomplishments in 2023 include submitting applications for funding from the U.S. Department of Energy (DOE) and Environmental Protection Agency (EPA) to launch new programs in 2024, and collaboration with the Kentucky Cabinet for Health and Family Services (CHFS) to enhance the visibility of energy resources through Kynect. OEP also launched a new Energy Affordability Dashboard.

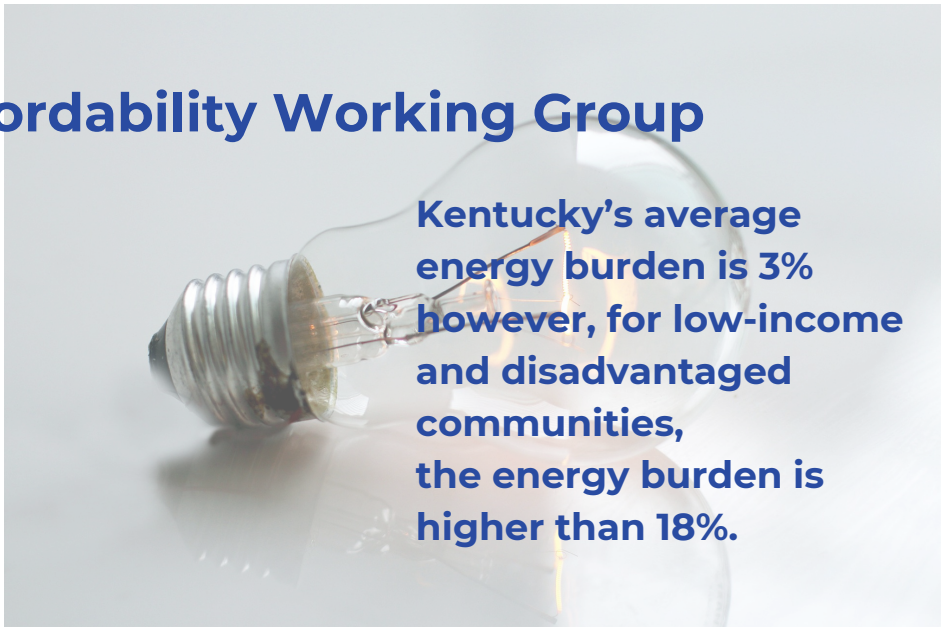
Manufactured housing accounts for nearly 17% of all occupied housing in KY.

Counties in the golden triangle have the highest percentage of housing stock older than 1940.

On average, Kentuckians pay \$318 a month for electric, gas, water and other fuel utilities, an 8.5% increase from 2016

2023 PROGRESS

Energy Affordability Working Group

A glowing lightbulb is shown against a light blue background. The bulb is tilted and has a warm, yellow glow emanating from it. Overlaid on the right side of the bulb is text in a bold, blue font.

Kentucky's average energy burden is 3% however, for low-income and disadvantaged communities, the energy burden is higher than 18%.

The Office of Energy Policy formed the **Energy Affordability Work Group** in 2021 to help address high energy burdens. Members include nonprofits such as Mountain Association, Community Action, United Way Kentucky, Habitat for Humanity, state government agencies, and several large utilities as well as state energy cooperatives. The group prioritizes bringing everyone to the table so that it can develop comprehensive solutions that work for everyone, including under-resourced individuals, nonprofit agencies, and energy companies.

In 2023 discussions led OEP to pursue federal funding opportunities from the U.S. DOE and EPA for initiatives that will ensure Kentucky's vulnerable populations are positively impacted.

In October, representatives from the U.S. DOE, the National Association of State Energy Officials (NASEO), and the Manufactured Institute of Kentucky presented about advances in energy efficiency and affordability of manufactured housing. Work is underway to develop a program with CHFS to enhance the visibility of utility resources on the state's resource portal Kynect, the Commonwealth's space for citizens to connect with Kentucky benefits

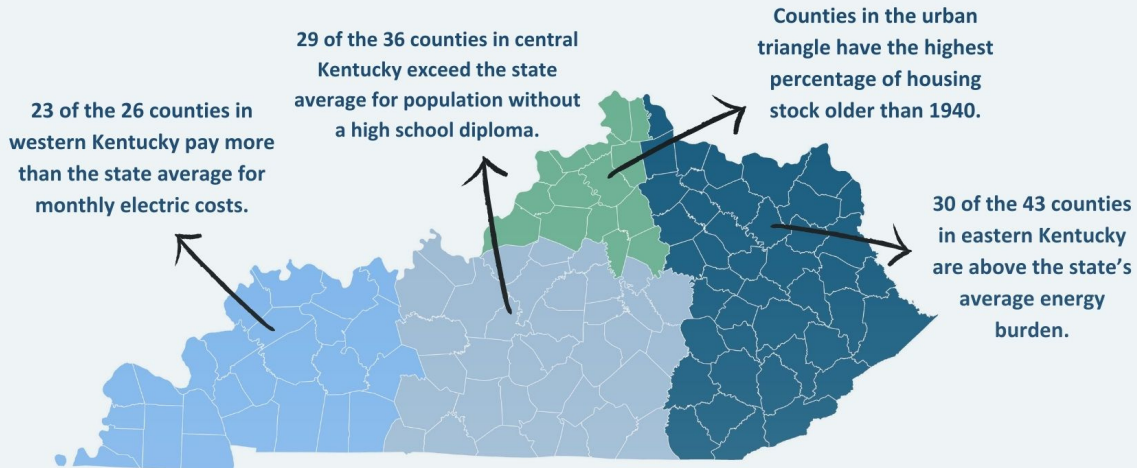
30 of the 43 counties in eastern Kentucky are above the state's average energy burden.

2023 PROGRESS

ENERGY AFFORDABILITY FACT SHEET

Kentucky Energy Affordability

Affordable Energy, Sustainable Futures: Let's Power Up Together!



Key Metrics

Energy Burden

Average energy burden, the percent of a household's gross income spent on energy needs, is 3% and 8% for the total population and low-income population, respectively.

Educational Attainment

The average attainment of high school diplomas in Kentucky's working age population, ages 18-64, is 85%. Associates degree attainment is 26% and 18% for Bachelor's degree or higher.

Manufactured Housing Stock

Manufactured housing accounts for nearly 17% of all occupied housing in the state. The majority of the manufactured housing are located in the eastern part of the state and consist of older, less energy efficient housing stock.

Monthly Utilities

Kentuckians, on average, pay \$391 a month for electric, gas, water and other fuel utilities. Since 2017, utilities have seen a 33% increase in monthly costs.

Trends in Affordability

Higher Poverty Level -> Higher Energy Burden

Counties where the population below poverty level is greater than 19% tend to have energy burdens higher than the state average.

Lower Education Attainment -> Higher Energy Burden

In Kentucky, counties that have a working age population with less than 85% high school graduates tend to be above the state's average energy burden.

Older Manufactured Housing -> Higher Energy Burden

In counties where manufactured housing makes up at least 25% of the housing stock, energy burden tends to be higher than the state average. Today's manufactured housing is more energy efficient which can alleviate energy burden.

Higher Utility Costs -> Higher Energy Burden

In counties where the average monthly utility costs are higher than the state average, energy burden tends to be higher than the state average as well.



2023 PROGRESS

Energy Efficient Affordable Housing

OEP's partnership with the **Housing Development Alliance (HDA)** is one example of how grant funds support efforts to provide sustainable, affordable housing for vulnerable populations. In 2023, State Energy Program funds provided ENERGY STAR ratings of new homes certifying that they are extremely energy efficient, and provided rebates on Energy Star-rated heat pumps required for that certification. The HDA Inc. works to make homeownership a reality for low-and moderate-income families in one of the poorest areas of Kentucky. By building highly energy-efficient homes, the affordability and sustainability of the home is greatly increased. The work done by HDA provides on-the-job training for contractors and promotes an understanding of how energy efficiency contributes to home affordability in southeastern Kentucky.



New ENERGY STAR Certified Home
Josh and Wilma Combs, Jackson, Kentucky
Annual Savings \$1,467
MBTU Saved 37.74
Sq. Ft. 1,440
HERS Rating 52



In 2023, OEP introduced the Community Solar Shares Program to expand opportunities for energy affordability. The program is a unique partnership among the OEP, **Kentucky Habitat for Humanity (KyHFH)** Louisville Gas and Electric, and Kentucky Utilities to add shares to the household utility bills of low-income Kentucky families. KyHFH will assign from ten to 18 solar shares per home for up to ten families. Household savings are expected to be between 30 - 60 percent of the electric bill for a term of 25 years.



Energy audits are the first step to reducing utility bills, thus freeing up money better spent on fulfilling an organization's mission. With the support of Kentucky's State Energy Program funds, energy experts from the **Mountain Association** provide no-cost energy audits for addiction recovery centers, non-profits, and small businesses located in eastern Kentucky. The project also supports the Mountain Association's New Energy Entrepreneurs program to bring increased energy jobs and awareness to the region. The energy audits identify immediate, no-cost, or low-cost changes that will achieve immediate energy savings, and explain how much to invest to maximize energy efficiency savings.

2023 PROGRESS

The U.S. Energy Information Administration 2020 Kentucky Household Facts

- The average home in Kentucky is 1,912.
- The average energy expenditure per household is \$1,848 annually or \$0.97 per square foot.
- Electricity accounts for 61 percent of household onsite fuel consumption.
- 13 percent of households have experienced a power outage lasting longer than 24 hours.
- 57 percent of households can park a car within 20 feet of an outlet.
- 33 percent of households report being energy insecure meaning forgoing paying for food or medicine to pay an energy bill, keeping the home at an unsafe or unhealthy temperature, receiving a disconnection notice, and being unable to use heating or air conditioning equipment because the equipment was broken and the household could not afford to fix it, the electricity or natural gas supply was disrupted due to nonpayment, or the household could not afford a bulk fuel delivery.
- 37 percent of households are classified as all-electric; 48 percent of households in Kentucky report using natural gas.
- Space heating is the largest category of household energy consumption at 41 percent.
- 22 percent of households report using a central heat pump for space heating.
- 84 percent of households use electricity for cooking appliances.

2023 PROGRESS

ENERGY SECURITY AND EMERGENCY RESPONSE



Electricity is essential to our daily life and is the lifeline for our communities. Kentucky has a diverse and robust energy infrastructure that includes a range of energy resources, pipelines, and transmission lines. This infrastructure is maintained by energy providers, generators, transmitters, distributors, and associated equipment. Natural and man-made hazards can disrupt our energy infrastructure. When they occur over a large area and for an extended period, they become “energy emergencies” that require a coordinated response from multiple agencies.

06

Among OEP’s roles in energy assurance for the Commonwealth, the office oversees the **State Energy Security Plan** implementation, a long-term plan for energy sustainability, resilience, and efficiency. In addition, OEP responds to energy emergencies and explores how our communities can better assess their energy vulnerabilities, specifically for critical facilities, and how they can plan and identify power sector mitigation activities. The following sections highlight major accomplishments during 2023. The Kentucky Energy Security Plan is based on the Incident Command Structure (ICS), FEMA’s Community Lifelines, and the roles of emergency support functions to support those lifelines. This plan aims to ensure the continuity of energy supply during an emergency by providing a coordinated response effort from multiple public and private agencies.

2023 PROGRESS

Kentucky Energy Security Plan

Last year, the U.S. Department of Energy (DOE) reviewed **Kentucky's FY23 State Energy Security Plan** and notified the Office of Energy Policy that the plan had fully addressed the six elements required by Congress. Additionally, the Infrastructure Investment and Jobs Act referred to as the Bipartisan Infrastructure Law, introduced a new requirement for states to submit State energy security plans as a requirement to receive federal financial assistance. Plans are due to the U.S. DOE by September 30 of each year (beginning in 2022) and until 2025.

Energy Security Planning Bootcamp 2023

Hosted by the National Association of State Energy Officials (NASEO), with support from the U.S. Department of Energy Office of Cybersecurity, Energy Security, and Emergency Response (CESER), and the Kentucky Office of Energy Policy.

Objectives:

- Enable state energy offices to develop, maintain, and improve their energy security programs.
- Enhance state energy security planners' and energy emergency responders' abilities to better prepare for and respond to energy disruptions and emergencies.
- Facilitate regional and state agency coordination and planning for energy security.

Collaboration

The OEP participates in the **Energy Emergency Assurance Coordinators Program**, the **NASEO Energy Security Committee**, the **NEMA-NASEO Regional Petroleum Shortage Collaboration**, the **NARUC-NASEO Regional Micro-Grid Working Group**, and the **Southeast Regional EV Information Exchange**.



BRIC Funding

The Kentucky Office of Energy Policy has received a \$213,000 grant from **FEMA's Building Resilient Infrastructure Communities (BRIC)** program to work with the state's fifteen Area Development Districts (ADDs). These ADDs are responsible for regional planning, economic development, and local hazard mitigation planning. The OEP and ADDs collaborate to survey critical facilities for backup generation capabilities, identify vulnerable areas and services in the community, and determine hazards and threats that increase the likelihood of long-term power outages. This information will help identify eligible future mitigation projects that address power and general energy needs and infrastructure needs.

Additionally, new local hazard mitigation plan guidelines published by FEMA (effective April 10, 2023) require counties to conduct a vulnerability assessment and a capabilities assessment. This means that hazard mitigation plans must not only list critical facilities but also describe the county's ability to pursue and complete hazard mitigation actions for those facilities. The data collected will enhance each ADD's local hazard mitigation plans and identify feasible mitigation actions for energy-resilient investments.



Department of Homeland Security Resiliency Assessment Program

The Office of Energy Policy was selected to conduct a **Regional Resiliency Assessment Program (RRAP)**, of its petroleum product terminals, inbound. This project will study the resiliency of Kentucky's petroleum distribution and transportation fuel networks and the supply chain with a focus on dependency on supporting electric power infrastructure. Specifically, the project will characterize the petroleum infrastructure, examine the potential hazards and threats for key refined fuels facilities, identify cross-sector interdependencies, and capture study data to inform planning.

This RRAP will provide Kentucky with information on specific petroleum knowledge gaps and help stakeholders understand the petroleum infrastructure and produce distribution system. Key goals include:

- Kentucky's petroleum supply chain is critically dependent on electric utility systems and dependent on truck, pipeline, and river systems. The Louisville terminal operations are critical and in some instances a sole pathway into the state. An assessment of mitigation measures around terminal operations, statewide infrastructure needs, and transport modes is essential to our energy security programs.

- Analyze critical petroleum infrastructure servicing Kentucky, which is especially vulnerable to winter storms, flooding, tornados, and earthquake hazards.
- Identify vulnerabilities to Kentucky's petroleum infrastructure and systems.
- Analyze petroleum infrastructure which is critically dependent on information technology and operating technologies such as supervisory control and data acquisition (SCADA).
- Foster information-sharing relationships between petroleum sector elements and Kentucky state agencies to improve emergency fuel planning and response.

The RRAP analysis will also inform management of the risks to that system that will ultimately be used to support and assist the development of a state emergency master fuel plan.

2023 PROGRESS

Kentucky Severe Storms, Straight-line Winds, Flooding, Tornadoes, Landslides and Mudslides

Feb. 15, 2023 - Feb. 20, 2023

March 3, 2023 - March 4, 2023

April 10, 2023

May 9, 2023



Wind Storm 2023 Summary

On March 3, 2023, an intense low-pressure system produced severe weather and historic gradient winds to the lower Ohio Valley. Wind gusts of 60-80 mph produced widespread wind damage, snapped more than 1,000 utility poles, and threw trees and other debris on power lines. The peak outage was approximately 550,000 statewide. Fifteen water districts faced challenges and five Kentuckians lost their lives as a result of the storms. All 26 Kentucky electric cooperatives sustained damage in this event, with the smallest co-ops reporting damages totaling \$1 million.

This is the third-most significant weather event in 20 years in terms of total system impact and the number of customers affected, ranking behind the 2009 ice storm and 2008 windstorm. While significant and historic, restoration efforts highlighted how response and restoration activities have improved with repeated exercises and events. Mutual aid crews poured in from 50 sister co-ops in 11 states to support power restoration, which occurred over days rather than over weeks as experienced a decade earlier.

Emergency Support Function ESF - 12

OEP is responsible for coordinating Emergency Support Function 12 – Energy (ESF-12) activities. ESF-12 activities also require OEP staff to attend U.S. DOE energy emergency planning seminars, participate in training exercises, and serve as coordinators for ESF-12 of the Kentucky Emergency Operations Center. In addition, OEP staff serve as the State’s Energy Emergency Assurance Coordinators (EEACs) for the U.S. DOE’s Office of Energy Security, and Emergency Response (CESER). Under this program, EEACs act as points of contact in each state during energy emergencies.

ACKNOWLEDGEMENTS

This report is made possible with funding provided by the U.S. Department of Energy State Energy Program.

The Kentucky Office of Energy Policy invites readers to explore the Energy and Environment Cabinet's Energy website to access information and resources referenced in this report.

<https://eec.ky.gov/Energy/Pages/default.aspx>

The OEP staff work daily to provide relevant, current data, develop and update resources, publish announcements, and serve as the source of information about Kentucky's energy landscape. We are proud to be public servants to the citizens of Kentucky as we work together to address challenges and new opportunities.

The OEP Staff:

Kenya Stump, Executive Director

Lona Brewer, Deputy Director

Ashley Runyon, Assistant Director of the Division of Energy Assistance

Carol Stringer, Grant Manager

Amanda LeMaster, Energy Assurance and Efficiency Coordinator

Evan Moser, Data Management Specialist

Hailey Mattingly, Grant Administrator

Steven Thomas-Barrera, Executive Staff Advisor

Emma Strong, Office Support Assistant

Eileen Hardy, Administrative Specialist III



ENERGY AND
ENVIRONMENT CABINET

Office of Energy Policy
300 Sower Blvd.
Frankfort, KY 40601

502-5643350

<https://eec.ky.gov/Energy/Pages/default.aspx>