

KYE³: Designs for a Resilient Economy

KYE³: Energy, Environment & Economic Development



An economy built on our past,
answering the needs of today,
and equipping us for
tomorrow's opportunities.

2021

Message from Governor Andy Beshear

The COVID-19 pandemic has altered how every Kentuckian lives, works and plays, from how we shop, to our children's activities, and to how we communicate. Our homes have been transformed to work and learning spaces and terms like personal protection equipment have been normalized into our everyday language. We've faced tremendous challenges, grieved for the loss of our fellow Kentuckians, and endured. We've seen that we are a resilient Kentucky, able to face adversity head on, adapt, and recover for a Better Kentucky.

In the pages ahead, you will explore how Kentucky's energy strategy builds on this concept of resilience. Our energy strategy is one where energy and environment meets economic development. It's no surprise that Kentucky's energy and economic development landscape is changing. Our world is changing. From our infrastructure's increasing threats from natural, man-made and cybersecurity events, to a changing corporate business culture, and international and national market fluctuations, these changes offer us innovative emerging industry opportunities where our history, infrastructure and culture enable us to step boldly into the future and lead the nation.

We present a strategy that is flexible and stakeholder driven. It is an overarching long-term strategy for a resilient economy, built by partnerships and made actionable by the commitment of those willing to do the work. No one person or entity is responsible for its success but everyone is responsible for being aware and engaging in robust discussion.

Diversity is important. From supporting a diverse energy portfolio to including diverse perspectives in our discussion, diversity is the heart of our resilience. Equally important is sustainability which allows us to meet the needs of the present without compromising our future and that of our children. And yet we must do all of this while balancing the affordability and reliability of our energy systems.

As you read the following pages, keep in mind that it all begins with finding what resonates with you and your community. We can't do all of it at once but we all can find a part and work together to find new solutions and opportunities. We encourage you to reach out and come meet with us, bring us your ideas, your partnerships, and your commitment to build a Better Kentucky.

Sincerely,



Why E³?

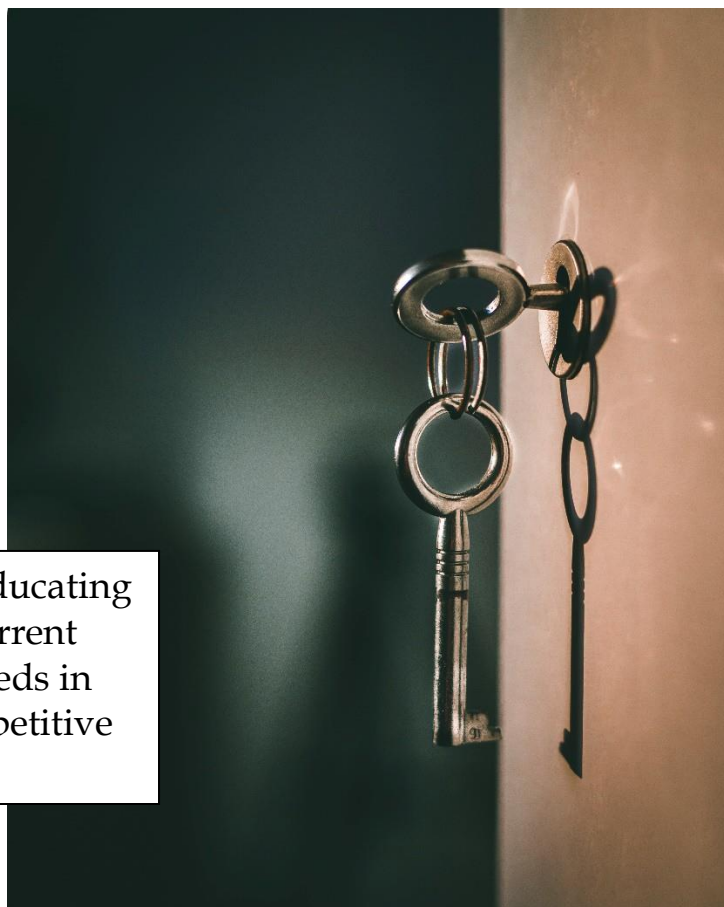
Kentucky's **energy infrastructure** is essential for the well-being of all Kentuckians. It connects all aspects of our society and provides an essential link for the national and global economies.

Our environment has long shaped Kentucky's culture and economy. Both new and existing businesses are demanding a sustainable business ecosystem to operate.

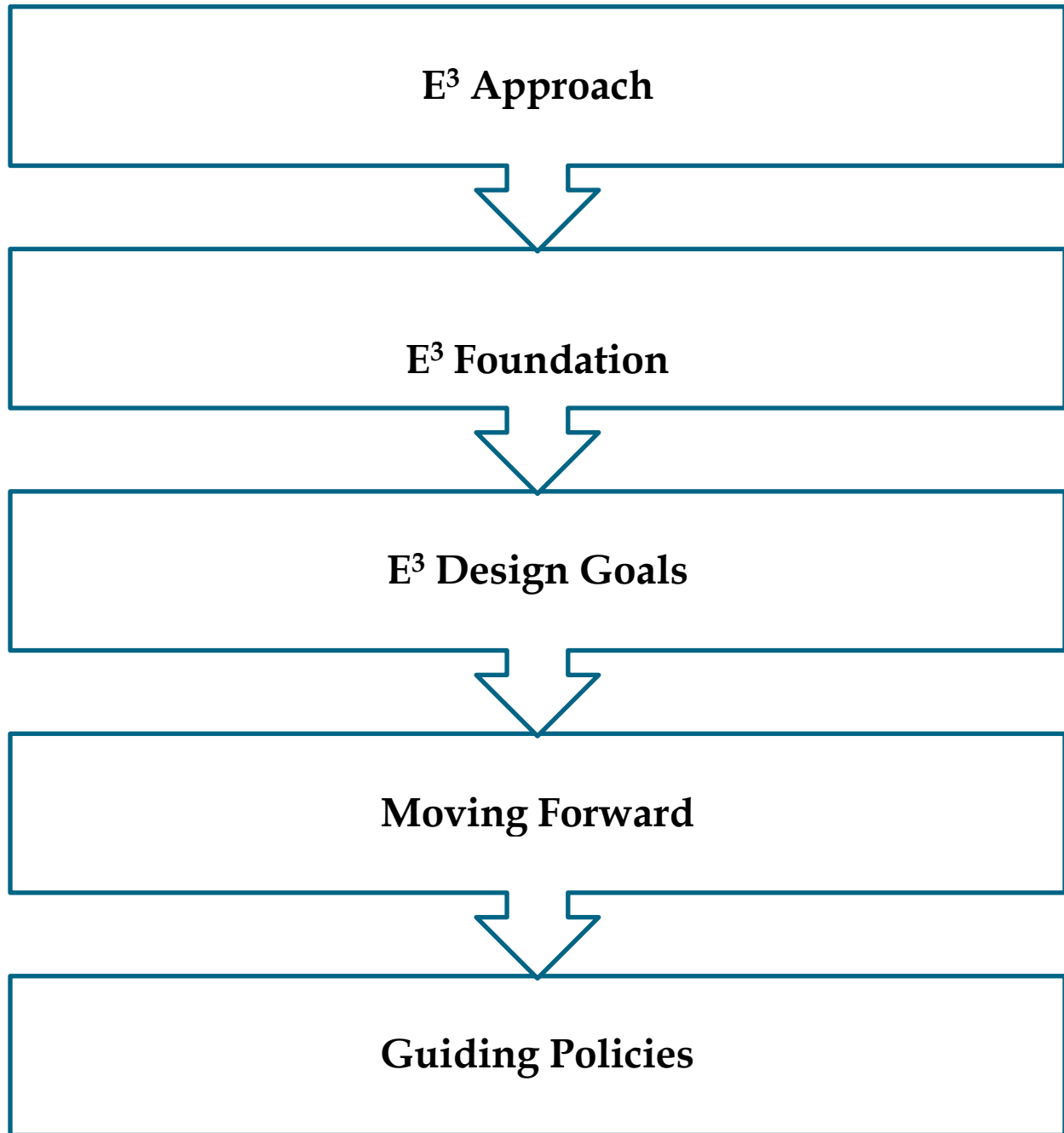
Sustainable economic development builds on Kentucky's unique resources and assets to bring long-lasting benefits for all Kentuckians to enjoy. It allows us to meet the needs of the present without compromising our future.

Workforce development includes educating and training Kentuckians to meet current and future business and industry needs in order to maintain a sustainable competitive economic environment.

*Working together to
build a better
Kentucky!*



What's Inside?



E³ Approach

The design for a resilient economy that benefits all Kentuckians incorporates four key principles.

Fair. Actions marked by impartiality and honesty.

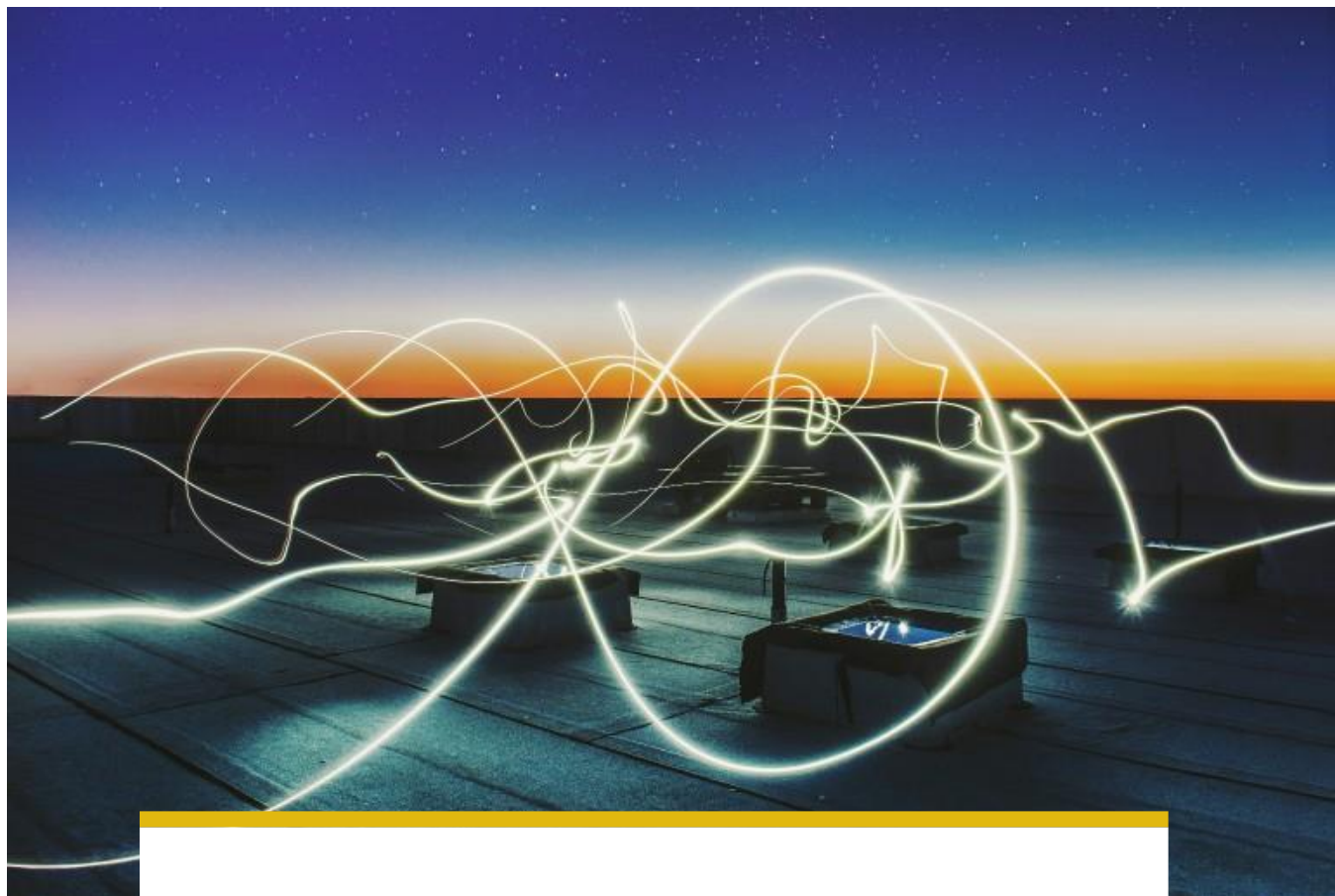
Robust. Ideas that are strongly formed and capable of performing under a wide range of conditions.

Balanced. Opportunities that consider contrasting and interacting elements.

Collaborative Engagement. Designed with all Kentuckians in mind. The benefits of our approach 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 development landscape.

An economy where every Kentuckian and community can reach their highest potential.





The E³ Foundation

Energy



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

72% of the gas transmission and 24% of the distribution systems were constructed before 1970.



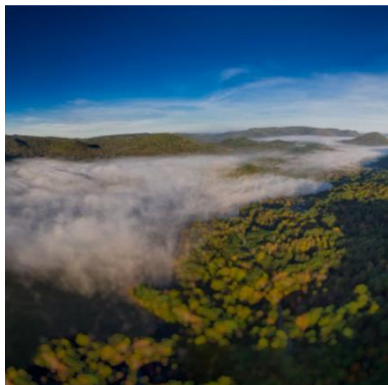
Kentucky ranks 28th in gross domestic product, with total energy expenditures per capita equaling \$4,255

- 42,797 energy sector jobs.
- 57 power plants using fossil and renewable resources.
- Two wholesale energy markets.
- Ninth-lowest average electricity retail price of any state.
- Home to one major oil refinery and several terminals.

Environment



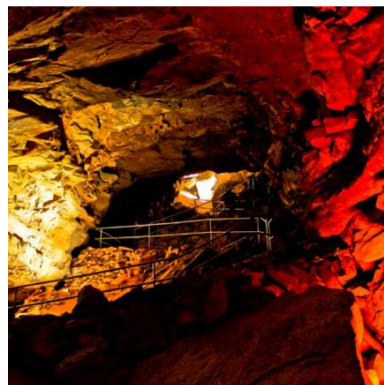
Appalachian Mountains



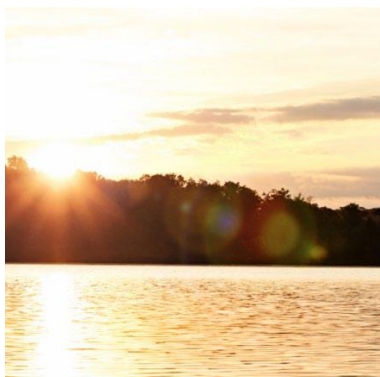
Kentucky Bourbon Trail



Mammoth Cave



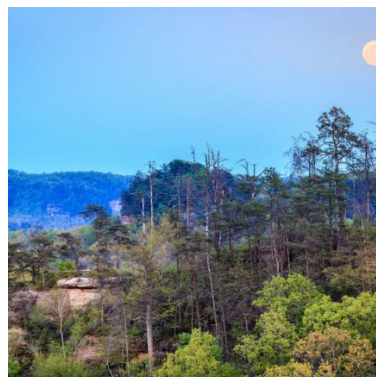
Land Between the Lakes



Kentucky Horse Farms and Racing



Red River Gorge



Economic Development

- 60% of Fortune 500 companies have set goals to address energy usage.
- 90% of S&P 500 Index follow sustainability reporting standards.
- 64.5 % of Kentucky's energy consumption comes from industrial and transportation sectors.
- Automotive industries operating in Kentucky commit to an electric vehicle future.

Total Ky investment and jobs by target industry for announced projects (2019 - YTD 2021)

<i>Industry</i>	<i>Investment</i>	<i>Jobs</i>
Automotive-related	\$1.60 billion	3,235
Distribution & Logistics	\$627 million	3,099
Food & Beverage	\$1.62 billion	2,811
Metals	\$2.68 billion	2,660
Aerospace	\$913 million	1,945
Healthcare	\$141 million	1,561
Plastics & Rubber	\$448 million	900
Chemicals	\$332 million	632
Agritech	\$197.6 million	575
Spirits (Sub-category of Food & Beverage)	\$718 million	548

What Companies Want

- Waste management options and recycling,
- Access to potable water and supply,
- Alternative energy access and onsite options,
- Assistance with sustainability goals,
- Competitive energy prices,
- Workforce training,
- Research and development,
- Commercialization opportunities

Current as of July 2021

E³ Design Goals



Manufacture a resilient economy



Fuel a diversified energy economy



Build the next generation infrastructure




Develop a sustainable workforce



Lead by example

A resilient economy is one that has the capacity to anticipate change, adapt quickly, and rapidly recover to previous levels of economic growth or better.

Moving Forward

A photograph showing the silhouettes of a group of people walking along the crest of a dark hill against a vibrant, colorful sunset sky. The sky transitions from deep purple at the top to bright orange and yellow near the horizon. The people are walking from left to right, with one person leading and a group following.

The following represent ideas for engagement to move forward with creating a resilient economic future. This is a stepping-off point for robust stakeholder involvement.

A large, abstract yellow graphic consisting of several overlapping, semi-transparent geometric shapes that create a sense of depth and movement, pointing towards the right.

**“THE SECRET TO GETTING
AHEAD IS GETTING
STARTED!”**

Mark Twain

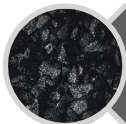
E³ Starts with Communities



Ensure the resilience of our critical facilities



Support sustainable community development



Identify new sustainable fossil fuel opportunities



Assess climate risk

Manufacturing a Resilient Economy

Work with existing manufacturers to meet new energy supply chain needs	Incentivize sustainable business investments including hydrogen and other renewable fuels	Commercialize critical mineral recovery operations
Attract coal-to-advanced carbon product opportunities	Recruit R&D and industry innovation facilities	Develop carbon capture utilization and sequestration (CCUS) industries
Increase big data processing capabilities	Manufacture the software and equipment that support a smart, secure infrastructure	Incentivize advanced manufacturing opportunities in key sectors like electric vehicles

Fueling a Diverse Energy Economy



Create alternative fuel transportation corridors



Grow renewable gas and liquid fuels such as sustainable aviation fuels



Engage in regional and international partnerships



Establish Kentucky as a hydrogen hub for production, transportation, exports, and industrial use

Building the Next Generation Infrastructure

Support alternative fuel transportation infrastructure

Encourage resilient, grid-connected buildings

Accommodate renewable products, hydrogen, and carbon dioxide

Grow the infrastructure to capture, transport, and utilize methane

Plan for an electric transmission grid that supports growing renewable resources

Create an electric distribution grid that is self-healing, self-sufficient, and auto-sensing

Ensure a physical and cyber-secure infrastructure

Support a diversified energy supply that is fuel secure, sustainable, and resilient

Developing a Sustainable Workforce



Conduct a comprehensive E3 workforce assessment



Develop pre-K through post-graduate pathways for a sustainable workforce

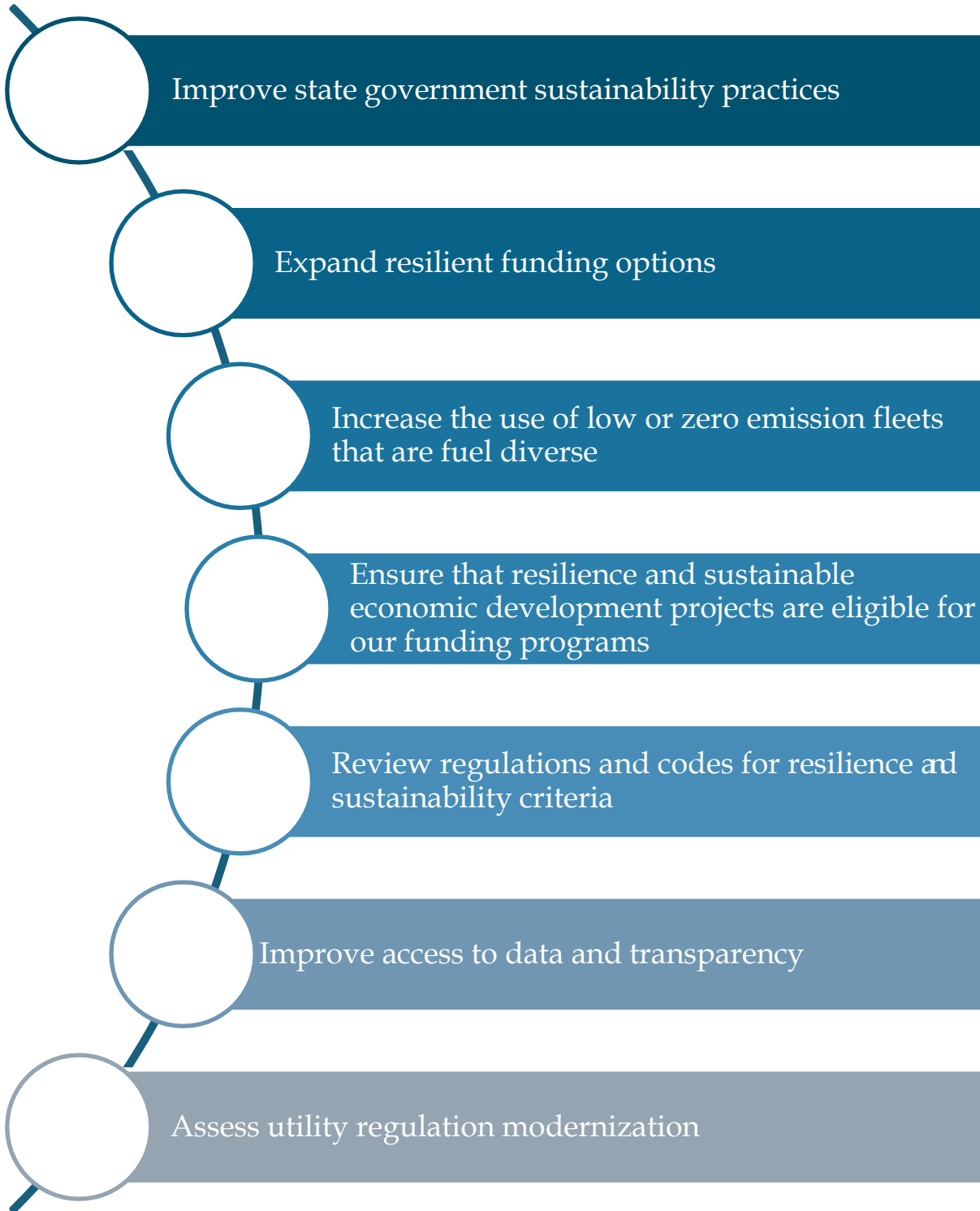


Engage in regional sustainable business collaborations



Provide rapid apprenticeships and certifications for a skilled workforce

Leading By Example





Guiding Policies

Energy

Acknowledges the health and wellbeing of the Commonwealth is dependent upon citizens who are energy literate and an energy infrastructure that is safe, resilient, reliable, sustainable and affordable.

Addresses our energy sector in a holistic and integrated manner and promotes the utilization of all of Kentucky's energy resources, including energy efficiency and conservation. It 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.

Increases the resilience of the Commonwealth though our local communities' and energy sector's ability to anticipate, prepare, mitigate, respond, and recover quickly from threats or disruptions to our energy infrastructure.

Acknowledges that economic and national security is dependent on secure energy resources, recognizing that domestic production of energy resources and technologies along with fuel diversity enhance economic stability.

Ensures that Kentucky's regulatory oversight provides safe, reliable and adequate energy services at reasonable prices, yet provides for the financial stability of and supports the operational competence of energy providers.

In Kentucky, we seek to utilize all of our energy resources for the benefit of the Commonwealth while protecting and improving our environment.

We endeavor to fulfill the duties vested in us by law under KRS 152.712 and KRS 278 and 279.

Environment

Acknowledges that Kentucky's remarkable natural resources have helped shape our economy, culture and history and that these resources provide us with the responsibility of good stewardship.

Ensures that Kentucky's environmental oversight and regulatory implementation is efficient, transparent, and consistent, recognizing that regulatory certainty is a key component of economic growth.

Addresses our environment in a sustainable, coordinated and collaborative manner that encourages development, providing for the best usage of land areas, maximizing environmental benefits, and minimizing the effects of less desirable environmental conditions.

Acknowledges that our environment is essential to economic development, is the foundation for the Commonwealth's tourism industry, key industries depend on our natural resources, and that these resources impact the quality of life of all citizens.

Increases the environmental literacy of the Commonwealth through experiential learning, improved access to the natural environment, and protection and conservation of our most precious natural resources.

In Kentucky, we seek to provide regulatory guidance and environmental awareness that will bring economic benefits to the Commonwealth while protecting and enhancing the environment and improving the quality of life for Kentucky businesses, workers and the public in general.

We endeavor to fulfill the power and duties vested in us by law under KRS 224.10-100.

Economic Development

Achieves the best quality of life for all Kentuckians through long-term strategic planning and implementation that fosters sustainable growth in jobs and incomes and enables communities, businesses, governments, and individuals to compete in the global marketplace.

Partners with government, business, education, communities, and individuals to provide a coordinated planning and implementation process which prioritizes action and accountability, supports rural and urban communities to invest in their own futures, assists businesses to acquire the resources to compete, and prepares individuals for work in high quality jobs.

Equips people and institutions with the capacity to adapt to future change; creates a skilled, competitive workforce and thriving, resilient and healthy communities throughout the state; and increases access to high-quality jobs.

Acknowledges that our environment and energy infrastructure is essential to a thriving economy and the well-being of our communities; recognizing that sustainable economic development builds on Kentucky's unique resources and assets, and allows us to meet the needs of the present without compromising our future.

In Kentucky, we strive to foster job creation and retention, and business investment in Kentucky by working to attract new industries and helping existing companies grow and expand for the benefit of all Kentuckians.

We endeavor to fulfill the power and duties vested in us by law under KRS 154.

Contact Information

At the Kentucky Office of Energy Policy (OEP) we believe in our mission to utilize all of Kentucky's energy resources for the betterment of the Commonwealth while protecting and improving our environment. We hope to better understand and communicate how rapid changes, occurring in the energy sector, put pressure on existing energy systems, but also present new opportunities for energy users and producers.

The OEP is tasked with overseeing the implementation of Kentucky's comprehensive energy strategy. As such, we depend on your feedback and partnership. The office will be visiting communities to discuss KYE³. If you'd like to talk with us or would like us to visit your community, please use the contact information below. Check back periodically at the KYE³ webpage for a more detailed feedback form and a list of updates, news, and locations of events.

Please contact us at energy@ky.gov or visit our webpage for more information on our programs and data products at <https://eec.ky.gov/Energy/Pages/default.aspx>

To sign up for our monthly newsletter, please visit fill out the form [here](#).