

PPL Corporation Climate Assessment

Assessing the Long-term Impact of Climate Policies on PPL

November 2017





ABOUT OUR COMPANY

Headquartered in Allentown, Pa., PPL Corporation (NYSE: PPL) is one of the largest companies in the U.S. utility sector. The company serves more than 10 million customers in the United States and United Kingdom and employs nearly 13,000 people.

Our mission is to provide reliable, safe energy at a reasonable cost to our customers and best-in-sector returns to our shareowners. We believe our competitive earnings, growing dividend, solid management and high-quality assets represent an attractive low-risk opportunity for those looking to invest in the utility sector.

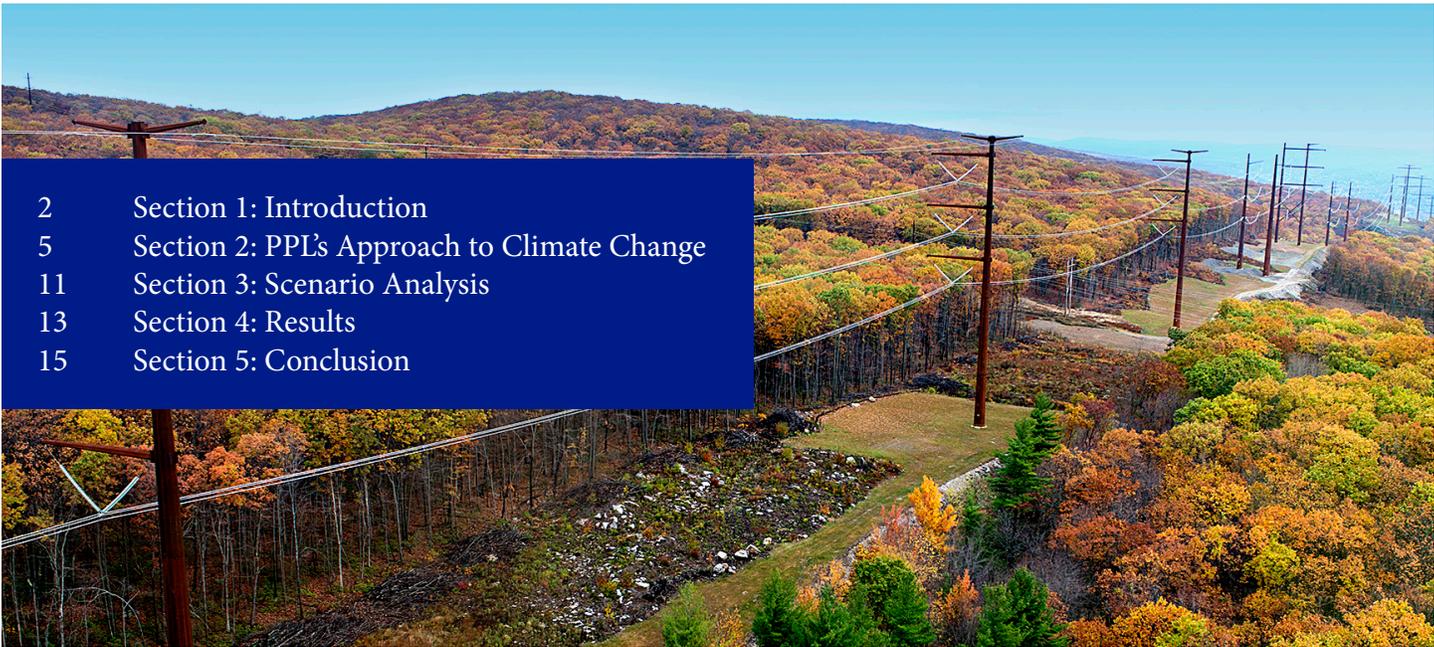
Our vision is “to empower economic vitality and quality of life,” and to be a positive force in the communities where we do business. We support human services, education, arts and culture, and environmental stewardship. In addition, our companies work closely with local and state officials to foster economic development that creates jobs throughout the territories we serve.

PPL Corporation's portfolio of operating companies is located in three primary jurisdictions: Kentucky, Pennsylvania and the U.K. Each of these jurisdictions has different laws, regulatory agencies and local governing bodies. Details are available in the company's **2016 Form 10-K Report**, Part I, Business (filed with the Securities and Exchange Commission).

As we move forward, PPL's strategy for growth is simple: Deliver industry-leading customer service and reliability. Invest responsibly in a sustainable energy future. Execute our business plans well. Maintain a strong financial foundation. And engage and develop our people.

ABOUT THIS ASSESSMENT

This assessment was prepared in 2017, and the results are based on specific assumptions and estimates made in the context of the scenarios modeled in the report. Given the inherent uncertainty in predicting and modeling future conditions, caution should be exercised when interpreting the information provided. The results are not indicative of, and this assessment does not represent, a preferred or expected outcome or view of the future.



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EXECUTIVE SUMMARY

In August 2017, PPL Corporation committed to shareowners that it would publish an assessment of the potential impacts on PPL resulting from future requirements and technological advances aimed at limiting global warming to 2° Celsius over pre-industrial levels.

In keeping with that commitment, this report presents the results of PPL's scenario-based climate assessment. In addition, it describes PPL's approach to climate change and steps the company is taking to manage climate-related risks and to capitalize on new opportunities.

Our approach to climate change

PPL regularly assesses risks and opportunities associated with climate change as part of our overall strategic business planning and enterprise risk management. The company is committed to advancing a cleaner energy future. Our actions include using innovative approaches to integrate more distributed energy resources, investing in lower-emitting generation in Kentucky consistent with Kentucky's lowest reasonable cost requirements and investing in a more dynamic, resilient grid. As a result of PPL's strategic restructuring and investments in recent years, PPL's carbon dioxide (CO₂) emissions dropped about 50 percent from 2010 to 2016.

Our analysis

PPL's portfolio is heavily focused on electricity delivery with more than 80 percent of 2016 earnings driven by our delivery operations. Our Kentucky utilities own and operate generation facilities. For this assessment, the company analyzed the potential impacts on its Kentucky generation assets of three possible long-term policy scenarios. We considered potential variations in commodity prices, technology adoption rates and other factors across these scenarios.

Potential impact

Under each policy scenario considered, including a scenario consistent with limiting the global temperature increase to 2° Celsius, carbon dioxide emissions from PPL's Kentucky generation assets are expected to decline 45-90 percent from 2005 levels by 2050. Moreover, we anticipate that the financial risk of continuing to operate the existing coal units will be minimal so long as they are operated consistent with approved regulatory frameworks and are economically justifiable to Kentucky regulators. We have made, and continue to make, major investments across our transmission and distribution operations to mitigate weather-related climate risks and make the grid more reliable and resilient. We are also leveraging smart grid technologies to actively manage our system and integrate distributed energy resources. In addition, we are actively engaging with regulators on these issues.

Moving forward

PPL will continue to assess risks and opportunities associated with climate change. In addition, we will continue to engage on related public policy matters to ensure we can respond effectively to future changes in policy and regulation as we look to preserve and grow shareowner value.

Section 1: INTRODUCTION

In December 2015, nearly 200 nations, including the United States and United Kingdom, adopted the Paris Agreement on Climate Change. The agreement established a comprehensive framework for reducing greenhouse gas emissions and limiting global warming to well below 2° Celsius above pre-industrial levels.

The Intergovernmental Panel on Climate Change (IPCC), the leading international body for the assessment of climate change, estimates that achieving the 2° Celsius constraint requires limiting the atmospheric concentration of CO₂ to 450 parts per million (ppm) by 2100.

On June 1, 2017, U.S. President Donald J. Trump announced that the U.S. would withdraw from the Paris Agreement, but would be willing to re-engage if appropriate. The circumstances under which the U.S. would be willing to re-engage are not clear.

In addition, on March 28, 2017, President Trump signed an Executive Order directing the U.S. Environmental Protection Agency (EPA) to review the agency's Clean Power Plan (CPP) and, if appropriate, suspend, revise or rescind the guidance "as soon as practicable." In October 2017, the EPA began the process to repeal the CPP.

The CPP, published in the Federal Register in October 2015, established a regulatory framework to enable existing U.S. power plants to reduce CO₂ emissions 26-28 percent below 2005 levels by 2025 and 32 percent nationally by 2030, consistent with the U.S. nationally determined contribution submitted under the Paris Agreement in March 2015.

The CPP, which was challenged in court, is currently stayed by the U.S. Supreme Court pending judicial review by the U.S. Court of Appeals for the District of Columbia Circuit.

As of the publication of this report, there is no comprehensive federal regulatory framework for limiting CO₂ emissions from existing power plants in the U.S. absent major modifications at those plants.

The U.K., meanwhile, remains a signatory to the Paris Agreement and has established aggressive CO₂ targets that have translated into public policy initiatives. The U.K.'s Climate Change Act 2008 requires a mandatory 80 percent reduction in CO₂ emissions by 2050, compared with 1990 levels. It establishes an intermediate reduction target of 34 percent by 2020.

Neither Pennsylvania nor Kentucky has enacted legislation or regulations to specifically regulate CO₂ emissions. Pennsylvania enacted an Alternative Energy Portfolio Standard in 2004 requiring utilities and retail suppliers to purchase a portion of their customers' electricity needs from renewable and alternative energy sources (15 percent for the 2016-2017 compliance period, climbing to 18 percent by 2020).

As a regulated utility business with operations in both the U.S. and U.K., PPL Corporation is actively engaged in monitoring policy developments in both countries, regularly assessing risks and opportunities associated with climate change and investing responsibly in a sustainable energy future.

A Sector in Transition

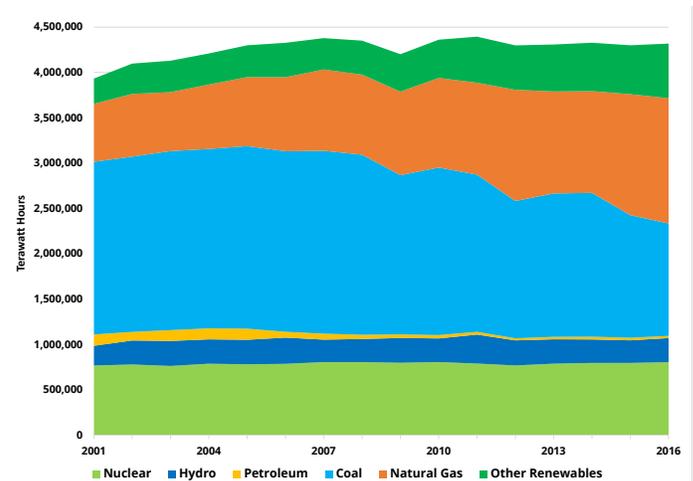
PPL is part of a broader energy sector that has witnessed significant change in recent years.

After growing more than 2 percent annually through much of the 1980s and 1990s, U.S. electricity consumption has remained essentially flat since 2005 due to higher efficiency standards and changes in technology, particularly for lighting and appliances. Stable or, in some cases, declining consumption has significantly reduced the need for new generation, limiting the construction of new, lower-emitting power plants.

Since 2005, more than 100 gigawatts (GW) of U.S. coal-fired generation has been retired after an average operating life of 52 years, with the vast majority of replacement generation fueled by natural gas and, increasingly, by renewable energy. In fact, a March 2016 report by the U.S. Energy Information Administration shows that 67 percent of new electric generation capacity added in 2015 was wind or solar.

With respect to existing generation capacity, low natural gas prices have resulted in gas plants running more and coal plants running less (see Figure 1). In fact, in 2016 and for the first time in U.S. history, natural gas displaced coal as the nation's top power generation source.

United States Electricity Generation by Fuel, 2001-2016 (Figure 1)

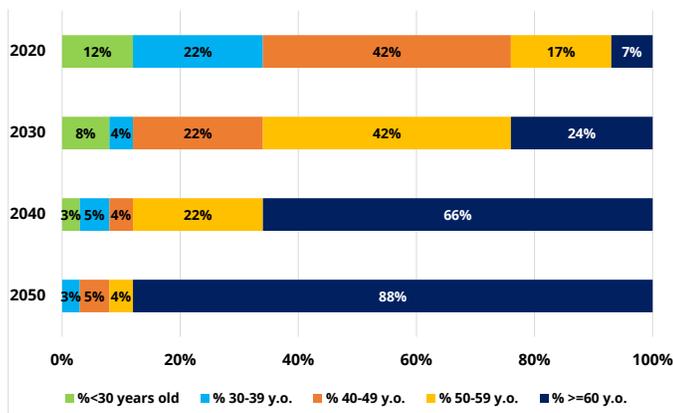


Source: U.S. Energy Information Administration Electric Power Monthly

This transformation is likely to continue due primarily to four factors: gas prices are expected to remain low; the cost and development risk of new coal and nuclear generation remains high relative to natural gas in particular; the costs of renewable energy and energy storage are expected to continue to decline; and long-term forecasted growth in electricity demand remains minimal. Absent the addition of new coal units, the nation's coal fleet will likely continue to shrink as it ages.

As Figure 2 illustrates, of the approximately 270 GW of existing coal generation, approximately two-thirds will be 50-plus years old by 2030, growing to 92 percent by 2050. Assuming coal units in the U.S. continue to retire after 50-plus years of operation, CO₂ emissions are likely to decline as they are replaced by natural gas and renewable generation.

Most of U.S. Coal Fleet Will be Over 50 Years Old in the Next 20-30 Years (Figure 2)



Source: Based on U.S. Energy Information Administration 2016 Form EIA-860 Data Schedule 3

As a result of this trend, U.S. utility sector CO₂ emissions dropped 25 percent from 2005 to 2016. The carbon intensity of the nation's generation capacity is expected to continue to decline as the sector's transformation continues.

A Closer Look at PPL

PPL is a regulated utility business with three major business segments:

- A U.K. segment that consists of four regulated electricity distribution network operators owned by Western Power Distribution plc (WPD), serving 7.8 million customers in central and southwest England and Wales.
- A Pennsylvania segment that consists of the regulated distribution and transmission operations of PPL Electric Utilities Corporation (PPL Electric), serving 1.4 million customers in eastern and central Pennsylvania.

- A Kentucky segment that consists of the regulated electricity and natural gas operations of Louisville Gas and Electric Company (LG&E) and Kentucky Utilities Company (KU), serving a combined 1.3 million customers.

WPD and PPL Electric do not own power plants or generate electricity. Their business is strictly delivering power. Their rates are set by utility regulators – in the case of PPL Electric, through Pennsylvania Public Utility Commission (PUC) base rate reviews and, with respect to transmission, a Federal Energy Regulatory Commission (FERC) formula rate. In the WPD, rates are set through the Office of Gas and Electricity Markets' (Ofgem's) current eight-year price-control period.

PPL's Kentucky utilities generate power, operating about 8,100 megawatts of capacity, in addition to delivering electricity and natural gas. Kentucky rates are set by Kentucky Public Service Commission (KPSC) base rate reviews and, with respect to wholesale transmission, a FERC formula rate or tariff.

Electricity Delivery a Prime Focus

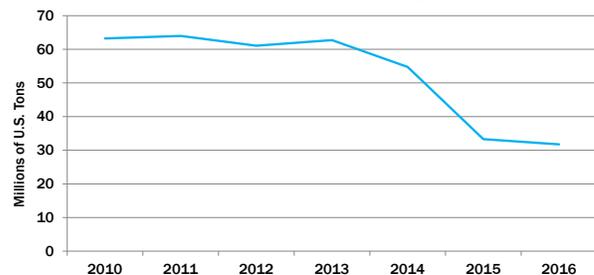
In 2016, more than 80 percent of PPL's earnings were driven by PPL's non-generating U.K. and Pennsylvania business segments. Moreover, a significant portion of Kentucky segment earnings resulted from the distribution of electricity and natural gas.

Collectively, PPL's utility businesses delivered more than 144 million megawatt-hours of electricity in 2016. Coal-fired generation at our Kentucky utilities produced 27 million megawatt-hours, or about one-fifth of that amount.

Significant CO₂ Reductions

In June 2015, PPL spun off its competitive generation business, significantly reducing the amount of generation in its portfolio and its exposure to the climate-change risks associated with those generation activities. The spinoff of PPL's competitive generation business, combined with actions taken at our Kentucky utilities, reduced PPL's CO₂ emissions by approximately 50 percent from 2010 to 2016 (see Figure 3).

PPL CO₂ Emissions (Figure 3)



EPA Electronic Greenhouse Gas Reporting Tool (e-GGRT) Scope 1 emissions for PPL's Kentucky segment and PPL Energy Supply. Data excludes PPL Energy Supply emissions beginning in 2015, as PPL spun off PPL Energy Supply on June 1, 2015.

PPL Generation in Kentucky

In Kentucky, where PPL's utilities own power plants, LG&E and KU generate about 40 percent of the electricity consumed in the Commonwealth.

As a leading manufacturer of automobiles, steel and other products, Kentucky was the eighth most electricity-intensive U.S. state in 2016, as measured by the ratio of electricity consumption and state gross domestic product. As such, low-cost electricity is critically important to the Commonwealth's economy.

Strong, bipartisan political support for coal exists in Kentucky, and the Commonwealth does not have a renewable portfolio standard. In April 2014, the Kentucky General Assembly passed legislation limiting measures state officials could consider in setting performance standards to comply with the EPA's CPP.

The legislation provided that such performance standards be based on emission reductions, efficiency measures and other improvements available at each power plant, rather than renewable energy, end-use energy efficiency, fuel switching and re-dispatch.

Under Kentucky statute (KRS 278), the KPSC is responsible for ensuring that utility rates are "fair, just and reasonable." Historically, the KPSC has applied a "lowest reasonable cost" analysis to meet this requirement as rates are set and applications for certificates of public convenience and necessity for major construction are reviewed. To recover their costs, LG&E and KU are required to demonstrate to the KPSC that their investments are prudent and represent the lowest reasonable cost option.

LG&E and KU generation currently includes a mix of coal, natural gas and renewable capacity. In 2016, coal accounted for 64 percent of LG&E's and KU's generating capacity, which represented less than 2 percent of coal-fired generation capacity in the U.S.

Like the nation's generation fleet, PPL's Kentucky fleet has changed in recent years. In 2015, PPL's Kentucky utilities completed the retirement of 800 megawatts of coal capacity and completed construction of a new natural gas, combined-cycle unit. In 2016, LG&E and KU also completed a 10-megawatt universal solar power facility, Kentucky's largest. In addition, LG&E and KU completed a multi-year, \$2.8 billion project to add environmental controls to four of the company's coal-fired power plants to further reduce emissions and improve operations. As a result of these emissions controls, 2017 emissions of sulfur dioxide, nitrogen oxide and particulate matter are expected to be 92 percent, 77 percent and 90 percent lower, respectively, than they were in 1998.

Finally, in November 2017, LG&E and KU announced plans to retire two coal units totaling 272 MW in the first quarter of 2019 (E.W. Brown Units 1 and 2).

Assessing Future Risks and Opportunities

Across its portfolio of regulated utilities, PPL remains committed to advancing a smarter, cleaner energy future, while balancing its utilities' obligations to provide power safely, reliably and affordably to millions of customers.

This report highlights a number of ways in which PPL is demonstrating this commitment. Additional details and examples of PPL initiatives can be found in PPL's Sustainability Report online at www.pplsustainability.com.

Similarly, PPL is also committed to creating long-term shareholder value through fiscal discipline, continuous improvement, environmental stewardship, effective risk management and strategic investment.

Climate Impact Assessment

This report assesses potential impacts on PPL resulting from future requirements and technological advances aimed at limiting global warming to 2° Celsius over pre-industrial levels. As the report demonstrates, PPL's long-term strategy is informed by continuous and focused scenario planning.

Section 2 of this report discusses PPL's approach to climate change and includes PPL's views regarding overall risks and opportunities.

Section 3 highlights PPL's analysis around three scenarios:

- A Current Policies scenario, which assumes that future CO₂ emissions will be driven by generation economics and technology developments, rather than by new law or regulation.
- A Paris Agreement/CPP scenario, which assumes that federal regulations are adopted that would require PPL's CO₂ emissions from generation to be reduced by 25 percent below their 2005 level by 2030, with no further regulatory-driven reductions from that point forward.
- A 2° Celsius scenario, which assumes that, while not mandated by regulation or law, PPL's CO₂ emissions would need to be on a trajectory to be 50 percent below 2005 levels by 2050.

Section 4 discusses the results of PPL's analysis, which demonstrates that CO₂ emission reductions could occur consistent with the 2° Celsius scenario by 2050 with or without the Paris Agreement/CPP. The timing and magnitude of future CO₂ emissions will depend on the actual operating life of coal plants, future natural gas prices relative to the cost of new renewables and existing coal units, future developments in battery storage technology, distributed solar penetration and electric vehicle adoption.

Section 5 provides PPL's conclusions from its analysis, including the company's expectation that the financial risk of continuing to operate its existing coal units will be minimal so long as they are operated consistent with approved regulatory frameworks and are economically justifiable to Kentucky regulators.

Section 2: PPL'S APPROACH TO CLIMATE CHANGE

PPL has a longstanding commitment to conduct business in a manner that avoids or minimizes any adverse impacts on the environment while providing electricity safely, reliably and affordably to its customers.

PPL has established seven sustainability commitments (see Figure 4) as a framework for the corporation to grow and innovate in responsible ways. Included in this framework are commitments to advance a cleaner energy future and to build tomorrow's energy infrastructure.

Regarding climate change, PPL's approach centers on understanding and managing climate risks, exploring opportunities associated with the drive for a cleaner energy future and taking steps to reduce the company's carbon footprint.

PPL Sustainability Commitments (Figure 4)

-  Create extraordinary shareowner value
-  Drive best-in-sector operational performance
-  Advance a cleaner energy future
-  Build tomorrow's energy infrastructure
-  Exceed customer expectations
-  Foster an exceptional workplace
-  Strengthen communities

Enterprise Risk Management

PPL maintains a robust enterprise risk management (ERM) process that provides a business portfolio view of material risks that may impact achievement of PPL's business strategy (see Figure 5). This includes risks associated with climate change.

As part of the ERM process, representatives from PPL's operating companies and service groups identify, assess, monitor and report on both ongoing and emerging risks. PPL's Risk Management group oversees this process and reports quarterly to the Audit Committee of PPL Corporation's Board of Directors.

Consistent Methodology Enables Enterprise Risk View of PPL Portfolio (Figure 5)



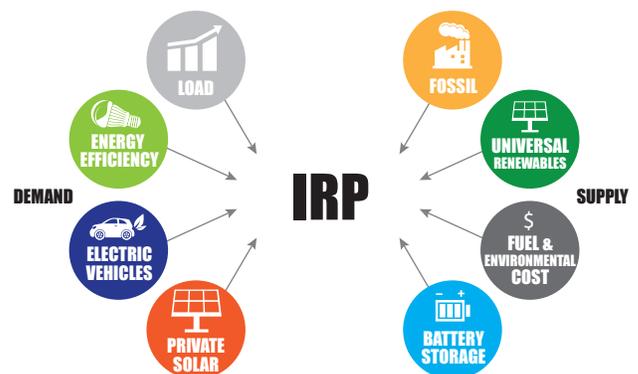
In addition, PPL's full board receives periodic updates on risk-related matters from its committees, as well as management. The board has designated its Compensation, Governance and Nominating Committee as the body responsible for overseeing PPL's practices and positions to further its corporate citizenship, including sustainability, environmental and corporate social responsibility initiatives.

Integrated Resource Planning

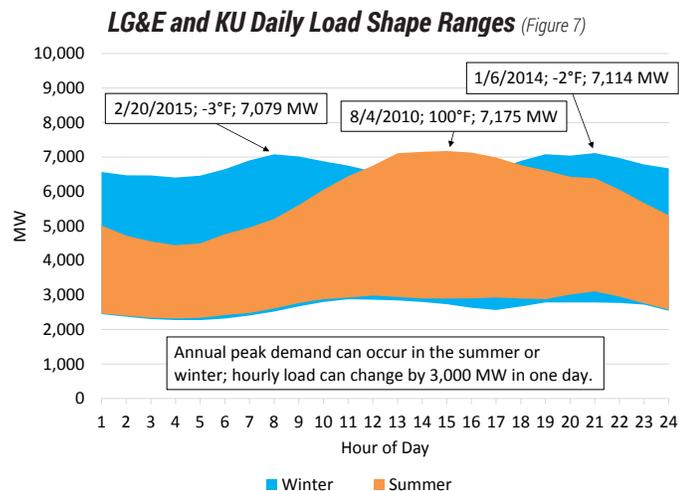
In addition to the ERM process, PPL's operating companies regularly review and analyze risks and opportunities as part of ongoing business planning activities.

In Kentucky, for example, LG&E and KU routinely evaluate the best ways to serve customers under a wide range of scenarios. These scenarios evaluate the uncertainty about future load; fuel prices; environmental costs, including CO₂ emissions; and other factors. The purpose of LG&E's and KU's Integrated Resource Planning process is to ensure that their generation fleets meet their obligations to provide reliable electric service at the lowest reasonable cost (see Figure 6).

Factors Considered During Integrated Resource Planning (Figure 6)



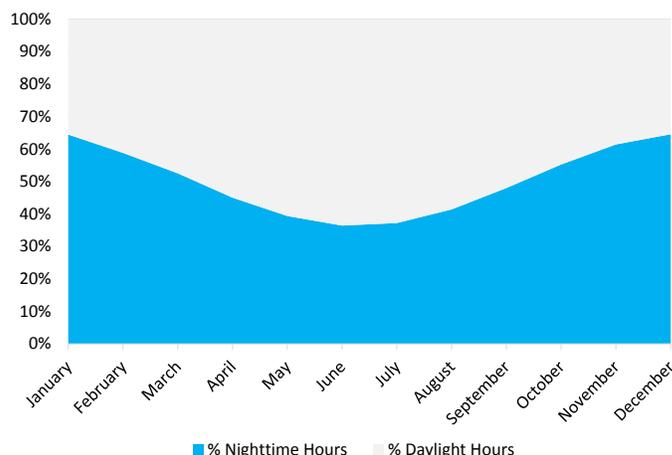
The Integrated Resource Planning process starts with a forecast of our customers' energy needs. LG&E and KU use the best information available to develop reasonable long-term forecasts that reflect not only the quantity of electricity required but also the hour-by-hour demand (see Figure 7). LG&E's and KU's load forecast models consider factors such as weather conditions, daily usage patterns, future economic activity, population, potential adoption rates of new and existing demand-side management programs and key technological drivers like electric vehicles, private solar generation, appliance efficiencies, LED lighting penetration and more.



The seasonal and daily variability of customers' energy needs drives the development of a generation portfolio that can reliably meet customers' demands in every hour throughout the year. For example, over the course of the year, approximately 50 percent of customers' energy needs occur at night, with up to 65 percent occurring at night during the winter months (see Figure 8). Currently, fossil-fueled generation is the lowest reasonable cost technology for meeting this nighttime energy demand. However, if the economics of battery storage technology improve, then battery storage could be coupled with solar generation to replace the existing fossil-fueled resources.

Also, improvements in battery storage technology and economics could support the ability to serve peak demand and manage the hour-to-hour changes in customer demands. For example, solar output does not coincide directly with summer peak and is not available at all for winter peak. Similarly, wind output is typically lower in the summer when our customers' demand for energy is greatest.

LG&E and KU Energy Consumption by Time of Day (Figure 8)



LG&E and KU submit an Integrated Resource Plan to the KPSC as required about once every three years. Between reports, however, they annually review and update their plan to reflect the latest information and forecasts.

Additionally, WPD and PPL Electric, which do not own generation, periodically report to regulators the plans and actions the companies are taking to modernize and strengthen their electric delivery networks. This includes enhancing their networks to reduce damage and speed up recovery from severe weather impacts that could become more common as a result of climate change.

WPD's May 2015 "Adaptation to Climate Change Second Round Report" details WPD's plans to mitigate projected impacts from climate change, while its "2015-2016 Environment and Innovation Report" highlights environmental performance, including WPD's support of the transition to a low-carbon future through innovation. Most recently, in January 2017, WPD published its strategy to reduce "line losses," or energy lost primarily as heat on powerlines during delivery. In addition, WPD has committed to reducing its business carbon footprint 5 percent from 2012-2013 levels by 2023. These reports and details regarding WPD's environmental performance can be found online at www.westernpower.co.uk.

PPL Electric files its Summer Readiness report annually with the PUC detailing actions it is taking to strengthen its distribution system. These actions are discussed in more detail on page 9 of this report.

Climate-Related Risks

PPL's businesses could be subject to a variety of risks associated with the potential effects of climate change. Among those risks, climate change may produce stronger and more frequent severe weather, disrupting operations and increasing the costs to prepare for, and respond to, weather events.

Carbon regulation, if implemented, could increase the cost of electricity for customers, depressing regional economies and reducing demand for electricity. Similarly, increases in distributed energy resources and private solar and wind could reduce demand for centralized electricity delivery.

A rapid increase in distributed energy resources and private renewable energy could pose a reliability challenge to delivery networks if not incorporated and managed appropriately. Such an increase could make it more difficult to monitor and adequately provide necessary 24/7 generation and manage volatility in demand for power.

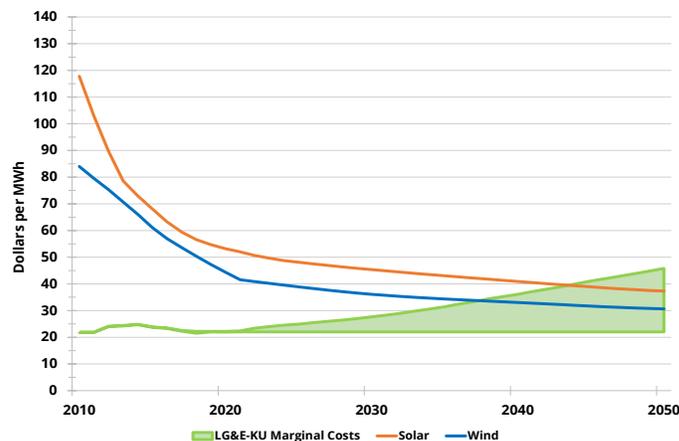
Legislative limitations on electric distribution companies in Pennsylvania and license limitations on distribution network operators in the U.K. currently prohibit PPL Electric and WPD, respectively, from owning and generating power for customers. This may continue to limit the extent of activities the companies may engage in to support the transition to a cleaner energy future. These limitations restrict utilities from owning solar and wind power to serve customers.

In Kentucky, meanwhile, cost recovery and returns on investments may be disallowed if they are not considered prudent or lowest reasonable cost by regulators. Kentucky regulations and policies require that investments driven by environmental regulations must be part of a lowest reasonable cost environmental compliance plan.

Currently, LG&E and KU have adequate generation to meet customer demand for the foreseeable future. Therefore, to justify adding new renewable generation to reduce CO₂ emissions, the cost of energy from new renewable generation must be less than the marginal cost of energy from existing generation. Absent a regulation that imposes a price on CO₂ emissions, the marginal cost of energy from coal-fired generation is expected to be lower than the levelized cost of energy from constructing new solar or wind generation (see Figure 9).

LG&E and KU consider the uncertainty around future CO₂ regulations and costs as part of their IRP process. In the last IRP filed with the KPSC in 2014, in order to reflect the impact of potential CO₂ regulations, LG&E and KU assessed portfolio implications using two scenarios: the first of which assumed a price of carbon both at \$0 and in the range of \$17 to \$48 from 2020 to 2029 and the second of which used mass reduction targets under the CPP.

Levelized Cost of Constructing New Renewables vs. LG&E and KU Marginal Energy Cost from Coal (Figure 9)



Source: National Renewable Energy Laboratory 2017 Annual Technology Baseline

Opportunities

Just as there are risks associated with climate change, the drive for a cleaner energy future presents opportunities, as well.

New transmission will be needed to connect more renewable and low-carbon generation sources, particularly as these sources are often located far from population centers. Such projects support long-term earnings growth and have typically offered favorable returns.

Additional investments in smart grid technology and more flexible delivery networks will be needed to adjust to changes in customer usage patterns and support more widespread adoption of distributed energy resources, including intermittent renewable energy, energy storage technology and microgrids. Such investments would support continued rate base growth.

The transition to a cleaner energy future and increased deployment of distributed energy resources also offers PPL's U.K. and Pennsylvania companies the potential to take on an expanded role in actively managing distribution networks through both network and non-network solutions, products and services. This includes services that control and balance two-way electricity flows across local networks.

In Kentucky, future increased demand for renewable energy could enhance customer interest in new solar subscription and onsite solar development options offered by LG&E and KU. In addition, our Kentucky utilities will have opportunities to invest in more renewables and natural gas as coal-fired power plants retire, electricity demand increases or future environmental regulations accelerate a transition to less carbon-intense power generation.

Last but not least, greater electrification of the economy to reduce carbon, in particular widespread adoption of electric vehicles, could support increased electricity sales and require additional investments in distribution networks. This could also require additional investment in lower CO₂-emitting generation in Kentucky.

In the U.K., for example, there were 50,000 electric vehicles on the road by the end of 2015. Ofgem forecasts suggest that number could rise to 1 million by 2020. An electric car driving nearly 11,000 miles a year consumes roughly 3.5 megawatt-hours, the same amount of electricity annually as the average U.K. home, offering a glimpse at how greater electrification could increase demand.

PPL Actions Related to Climate Change

PPL understands that risks associated with climate change must be strategically managed. As the world considers climate change, PPL continues to advance a cleaner energy future and to build tomorrow's energy infrastructure, taking steps to mitigate risks and evaluate opportunities presented by climate change.



Connecting renewables

In the U.K., where aggressive carbon targets have translated into public policy directives, WPD is using innovative approaches to reliably connect private solar power to local delivery networks.

U.K. regulator Ofgem has recognized WPD as “leading the way” in facilitating these connections. Overall, the company has connected nearly one-third of the nation's solar power and re-engineered its networks, traditionally designed for 14 gigawatts of demand, to be able to accept 21 gigawatts of embedded generation.

During the U.K.'s current eight-year price-control period, April 2015 through March 2023, WPD is specifically targeting more than £172 million in spending on network reinforcement to support distributed energy resources. The company has designated another £50 million for deployment of smart grid technology to further accommodate low-carbon resources.

In Kentucky, where PPL's utilities own generation, LG&E and KU invested \$25 million to build the state's largest solar power facility – a 10-megawatt universal solar plant completed in 2016.

LG&E and KU have since launched a new Solar Share program to develop a subscription-based solar power purchase option for customers who wish to support renewables, but cannot or do not want to install solar panels on their properties. In addition, the companies have launched a new solar business offering to build, own and operate individual solar facilities ranging from 30 kilowatts to 5 megawatts for interested customers.

In Pennsylvania, PPL Electric is exploring ways to leverage existing smart grid technology to better integrate distributed energy resources on the grid and balance the two-way flow of electricity. PPL Electric has secured a \$3.3 million grant from the U.S. Department of Energy to support the company's Keystone Solar Future Project. The three-year pilot project will leverage PPL Electric's existing smart grid infrastructure to develop a Distributed Energy Resource Management System capable of reliably and safely integrating more solar power on the grid.



Researching clean energy technologies

At the same time, PPL continues to explore low-carbon technologies through a wide variety of innovative research and demonstration projects across its portfolio. These projects benefit customers, enhance PPL's knowledge of emerging technologies and help accelerate the drive for a cleaner energy future.

In the U.K., for example, WPD has completed more than 26 projects to help networks enable increased adoption of renewables, electric vehicles, heat pumps, energy storage and demand-side management. The company has another 17 active projects in various stages of completion.

WPD has secured more than £47 million in support for these projects through competitive funding mechanisms offered by Ofgem – the Low Carbon Networks Fund and its successor, Network Innovation Allowance. Project ideas are developed by WPD teams and through engagement with WPD stakeholders, academia and other sources.

One such project is WPD's Electric Nation, the largest electric vehicle project of its kind in the world. In late 2016, WPD began recruiting participants for the project, which will test, evaluate and assess the implications of how different battery sizes, charging speeds and user behavior impact local networks. This will help WPD better manage electric vehicle load in the future. WPD is seeking to recruit at least 500 participants. WPD provides participants a free smart charger installed at their homes.

In Kentucky, LG&E and KU created a new Energy Storage Research and Demonstration Site in collaboration with the Electric Power Research Institute (EPRI). The site will allow the utilities to develop, test and evaluate the potential benefits and operating needs of large-scale battery technologies. The site includes testing bays for up to 3 megawatts of energy storage.

Additional examples of PPL research projects can be found in PPL's Sustainability Report online at www.pplsustainability.com.



Building a stronger, more resilient grid

Potential climate threats include more frequent and severe weather and flooding, which increases the risk of service interruptions for customers of PPL utilities. PPL's climate adaptation strategy to mitigate these risks includes making investments across its portfolio to build a smarter, more reliable, more resilient grid.

Over the past five years (2012-2016), PPL has invested more than \$16 billion in infrastructure improvements, much of that focused on modernizing and strengthening the grid. The company plans to invest an additional \$16 billion from 2017 through 2021.

These investments include rebuilding aging distribution and transmission lines with stronger and taller poles, where appropriate, and expanding the distribution and transmission system with new, more efficient substations and power lines to give PPL greater flexibility to reroute power when outages occur.

PPL's efforts also include investing in smart grid technology to more quickly detect outages and restore power to customers and to enable more active network management by the company's utilities.

In Pennsylvania, PPL Electric already has one of the most advanced and robust distribution automation systems in the country – technology that has strengthened reliability for customers. PPL Electric, which ranks in the first quartile for reliability among utilities nationwide, was the only utility in the country with a centralized automated restoration system in place on all of its distribution circuits in 2016. That distinction is making a significant difference in keeping the lights on for customers. The automated restoration system prevented about 100,000 customer interruptions in 2016 and shortened the duration of service interruptions.

LG&E's and KU's proposed distribution automation program comprises \$112 million in infrastructure investments. Upon implementation, when a power outage strikes, equipment will detect it immediately and then communicate with an automated system to identify the outage location. Having this instant information will allow immediate rerouting of power around the affected area when feasible, immediately restoring service to as many customers as possible. This will improve service restoration and limit the number of customers affected by an outage.

In the U.K., where flooding poses a serious climate risk to WPD's network, our investments include a long-term program to improve substation resilience to flooding. WPD also continues to engage with stakeholders on its strategy to transition from passive network management to a Distribution System Operator (DSO) role. In this new role, WPD would carry out its existing functions while providing customers simple and consistent access to new markets and delivering services that control and balance two-way electricity flows across local networks. WPD's strategy includes investing £125 million in the transition to a DSO role. WPD is looking to be at the forefront of this transformation in the U.K.

Apart from capital investments, PPL has robust tree trimming programs along transmission and distribution circuits in all three operating segments to reduce tree-related outages from storms.



Helping our customers conserve electricity

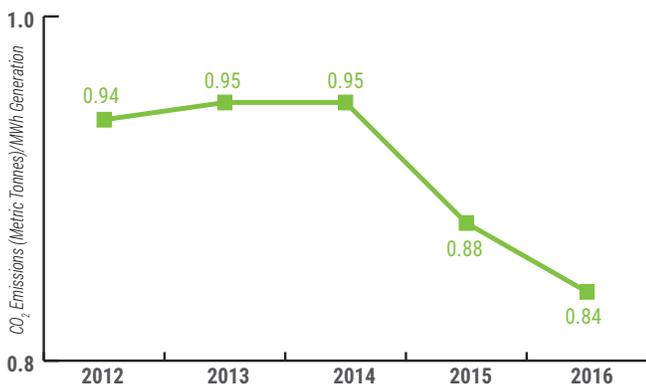
PPL's utilities give customers more options to manage their energy use than ever before. In 2016, more than 1 million participants took advantage of the utilities' wide menu of energy-efficiency programs for residential and commercial customers, receiving more than \$34 million in energy-efficiency rebates. In total, energy-efficiency programs helped customers save more than 433 million kilowatt-hours of electricity and reduced peak demand by more than 100 megawatts. That's equivalent to eliminating more than 322,000 tons of CO₂ emissions or taking 69,000 cars off the road.

Improving power plant efficiency

Over the past three years, PPL has achieved a steady reduction in carbon emissions intensity through technology investments, facility upgrades, renovations and new construction projects. As a result, our carbon intensity (measured in tonnes per MWh of generation) has decreased 10 percent from 2012 to 2016 (see Figure 10).

We have also reduced our energy consumption by significantly increasing the efficiency of our power plant operations in Kentucky. In 2015 our plant energy consumption decreased by about 10 percent from the previous year, and in 2016 we reduced plant consumption by nearly 6 percent.

Carbon Intensity of Kentucky Generation (Figure 10)



Source: LG&E and KU EPA CAMD emission rates



Engaging with policymakers and stakeholders

PPL regularly engages with policymakers on energy policy issues. For the last several years, PPL has communicated with regulators about its position on climate change and regulation that would effectively balance environmental, economic and customer needs.

LG&E and KU are members of the Coalition for Innovative Climate Solutions, an industry group working constructively at the federal and state levels on the establishment of greenhouse gas regulations for the electric power sector. LG&E and KU are also members of the Carbon Utilization Research Council and EPRI – both engaged in the research, development and deployment of carbon control and utilization technologies for power plants.

In Pennsylvania, PPL Electric is engaging with policymakers and other stakeholders to support regulatory policies that foster greater innovation and support a more dynamic network. PPL Electric is leading an effort to better align policies to advance energy efficiency and distributed energy resources deployment with utility ratemaking and investments through the use of alternative ratemaking mechanisms. PPL Electric is also supporting efforts to advance electric vehicle deployment and allow limited utility ownership of microgrids and energy storage.

WPD regularly reports to regulators around climate adaptation and progress towards reducing its business carbon footprint. WPD is also engaging with stakeholders on the potential impacts of climate change. Through the Resilient Electricity Networks for Great Britain project, WPD is working with Newcastle University on a project to develop predictions for the impact of climate change on PPL's U.K. assets.

Section 3: SCENARIO ANALYSIS

As discussed in Section 1, no comprehensive federal framework exists for limiting carbon dioxide emissions from existing power plants. Further, Kentucky, the only state in which any PPL companies generate electricity, has not enacted legislation or policies to specifically regulate carbon. Nevertheless, PPL is committed to regularly assessing the potential risks and opportunities associated with climate change and evaluating the resiliency of its long-term strategy against climate risks.

This report examines PPL's Kentucky segment generation assets under three scenarios.

Scenario 1 – Current Policies

Scenario 1 reflects the current regulatory regime in which carbon emissions from existing power plants may need to be addressed only if the plant undergoes a major modification resulting in a significant increase in emissions of certain other air pollutants. As LG&E and KU have no current plans to make any such major modifications, CO₂ reductions under Scenario 1 are driven not by law or environmental regulation, but by economics and technology consistent with existing Kentucky policies and regulation governing electric utility service. These policies and regulations require regulated utility generation investments to be prudent and meet the KPSC's lowest reasonable cost standard.

Scenario 2 – Paris Agreement/CPP

Scenario 2 models a CO₂ emissions target consistent with the CPP, which was an important component of meeting U.S. commitments associated with the Paris Agreement.

This scenario entails modifying the generation mix to meet mass emissions targets set by the CPP. For the purposes of this analysis, PPL assumes that its Kentucky segment would be required to reduce annual CO₂ emissions 25 percent from 2005 levels by 2030 to comply with the Commonwealth of Kentucky's mass target under the CPP. PPL's analysis assumes no further required emissions targets beyond 2030 as a result of the CPP.

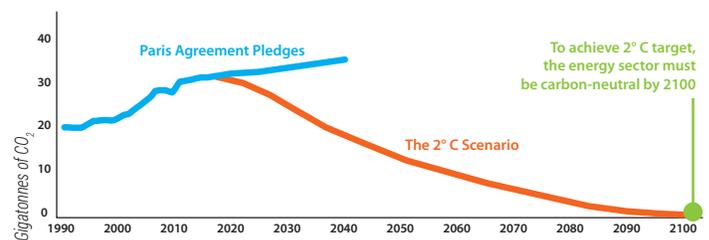
Scenario 3 – 2° Celsius Scenario

Scenario 3 assess the potential impacts should environmental policy and regulation seek to reduce CO₂ emissions to levels consistent with limiting the global temperature increase to 2° Celsius from pre-industrial levels by 2100.

It is impossible to predict what legal and policy requirements would be adopted to achieve the desired limitations. For the purposes of this scenario, PPL relied on the International Energy Agency's 450 ppm scenario. This scenario sets out an energy pathway (see Figure 11) consistent with a goal of limiting the global increase in temperature to 2° Celsius by limiting the concentration of greenhouse gases in the atmosphere to around 450 ppm of CO₂.

This scenario is based upon the Intergovernmental Panel on Climate Change's stated requirement to decarbonize the economy by 2100. Under this scenario, PPL assumed its Kentucky segment would be required to achieve a 50 percent reduction in CO₂ emissions from 2005 levels by 2050 and that reductions prior to 2050 would be consistent with current policies.

International Energy Agency 2° Celsius Pathway (Figure 11)



Based on International Energy Agency's World Energy Outlook 2016

Key Assumptions

Customer demand

Customer demand and energy requirements will significantly impact future CO₂ emissions. In this regard, PPL's scenario analysis considers potential energy requirements under three load forecast scenarios, referred to as the Base, High and Low demand forecasts. All three forecasts reflect anticipated changes in appliance efficiencies, LED lighting, customer growth, general economic conditions and other drivers of energy consumption.

The **Base forecast** assumes little to no load growth as energy efficiency improvements largely offset customer growth. Key variables that contribute to uncertainty in the Base forecast include electric vehicles and private solar generation. Optimism regarding electric vehicles has existed since the 1970s, and penetration levels have largely been the result of government subsidies. The Base forecast assumes limited electric vehicle growth in Kentucky. The growth in private solar nationally has historically been driven by net metering tariffs that compensate solar generation based on a high energy rate. Given Kentucky's low energy rates, private solar penetration has been low. The Base forecast assumes that private solar will not materially impact future sales.

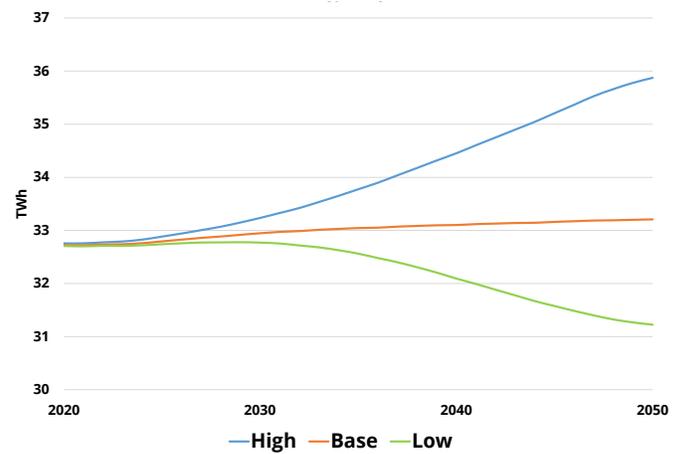
The **High and Low forecast** assumptions vary from the Base assumptions in the adoption of electric vehicles (high penetration of electric vehicles in the High forecast) and private solar generation (high penetration of private solar generation in the Low forecast) (see Figure 12).

The **High forecast** assumes high electric vehicle transportation market penetration due to lower electric vehicle costs and increased range as battery technology evolves to the point that government subsidies and mandates are no longer required. In the High forecast, approximately half of LG&E's and KU's residential customers are assumed to own an electric vehicle by 2050, significantly increasing energy consumption (see Figure 13). The **Low forecast** assumes no change to Kentucky's net metering laws, so that net metering customers receive the same energy rate as non-net metering customers. In the Low forecast, 1,500 megawatts of private solar generation exist in LG&E's and KU's service territories by 2050 (see Figure 14).

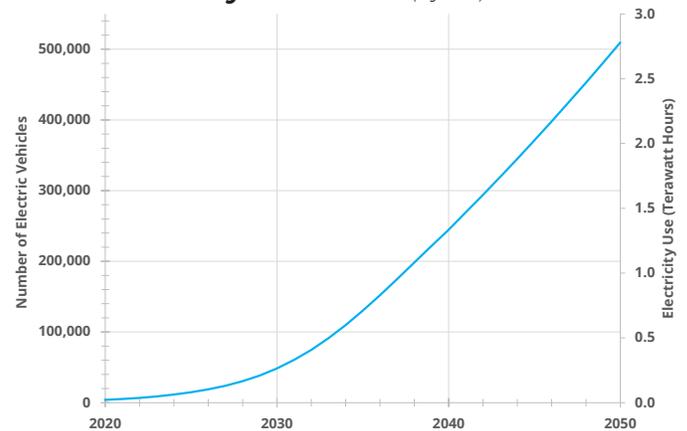
Carbon pricing

This analysis does not explicitly use carbon price as an input to the modeling, but rather assesses impacts to the Current Policies scenario of achieving the CPP target and a 2° Celsius goal. Depending on the cost of renewable generation and other factors, the implied cost of CO₂ emissions may be greater than zero in the CPP scenario.

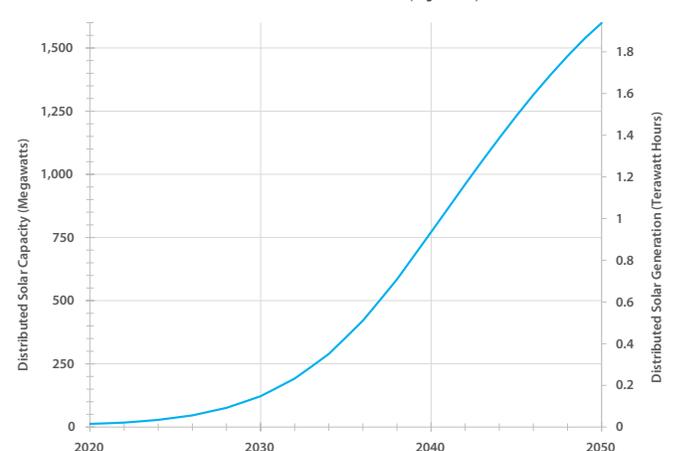
LG&E and KU Energy Requirements (Figure 12)



LG&E/KU Electric Vehicle Penetration – High Load Forecast (Figure 13)



LG&E/KU Distributed Solar Penetration – Low Load Forecast (Figure 14)



Power plant operating life

On average between 2005 and 2017, coal-fired power plants in the U.S. were retired after 52 years of operation. PPL's experience with the recent retirement of some of its own coal units is consistent with the national experience.⁽¹⁾ To reflect uncertainty regarding the operating life of coal units, each of the three climate scenarios discussed above was modeled assuming a 55-year operating life and a 65-year operating life for PPL's Kentucky coal units. Figure 15 illustrates the amount of coal capacity that would need to be replaced by a given date based on the operating life assumptions.

For reasons mentioned in Section 1 of this report, this analysis assumes PPL's portfolio of replacement generation will be a combination of gas-fired and renewable generation.

¹ Since 2010, LG&E and KU have retired 909 MW of coal-fired generation. This includes Tyrone Unit 3, which was 60 years old, Green River units 3 and 4, which were 62 and 56 years old, respectively, and Cane Run units 4, 5 and 6, which were 53, 49, and 46 years old, respectively. Furthermore, to comply with environmental regulations, the utilities will be retiring E.W. Brown Units 1 and 2, in the first quarter of 2019 when they will be 62 and 56 years old, respectively.

The share of renewables versus natural gas will depend on future natural gas prices and any potential CO₂ prices, as well as the cost of battery storage and renewable generation. All other things equal, the share of renewables in the replacement generation portfolio will increase as natural gas and CO₂ prices increase and as the costs of battery storage and renewable generation decrease.

Coal Capacity Retirements Based on Operating Life Assumptions (Figure 15)

Coal Retired	at 55-Year Life		at 65-Year Life	
	MW	% of Coal	MW	% of Coal
2030	1,753	35%	272	5%
2040	4,065	82%	1,753	35%
2050	4,435	89%	4,065	82%

Section 4: RESULTS

Figure 16 summarizes expected Kentucky segment CO₂ reductions by decade under the three scenarios analyzed in this report.

The economic operating life of existing coal units is the key driver for the timing and magnitude of reductions, which result either from economics and technology, or by regulations, depending on the policy scenario.

CO₂ Reductions from 2005 Levels (65-Year Operating Life) (Figure 16)

Climate Policy	2020	2030	2040	2050
Current Policies	10-15%	5-15%	15-45%	45-85%
CPP	10-15%	25%	25-45%	45-85%
2°C	10-15%	5-15%	15-45%	50-85%

CO₂ Reductions from 2005 Levels (55-Year Operating Life)

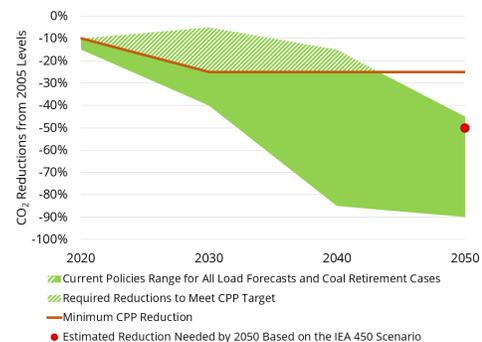
Climate Policy	2020	2030	2040	2050
Current Policies	10-15%	20-40%	50-85%	50-90%
CPP	10-15%	25-40%	50-85%	50-90%
2°C	10-15%	20-40%	50-85%	50-90%

In the Current Policies scenario, the replacement of generation is driven solely by economics and technology development. As shown in Figure 9 (page 7), with no change in policies, the economics of new renewables are not competitive with the marginal cost of generation from the existing coal fleet. Therefore, CO₂ reduction opportunities are limited absent the economic retirement of coal units, and one would not expect material changes in CO₂ emissions through 2030 with a 65-year operating life. Indeed,

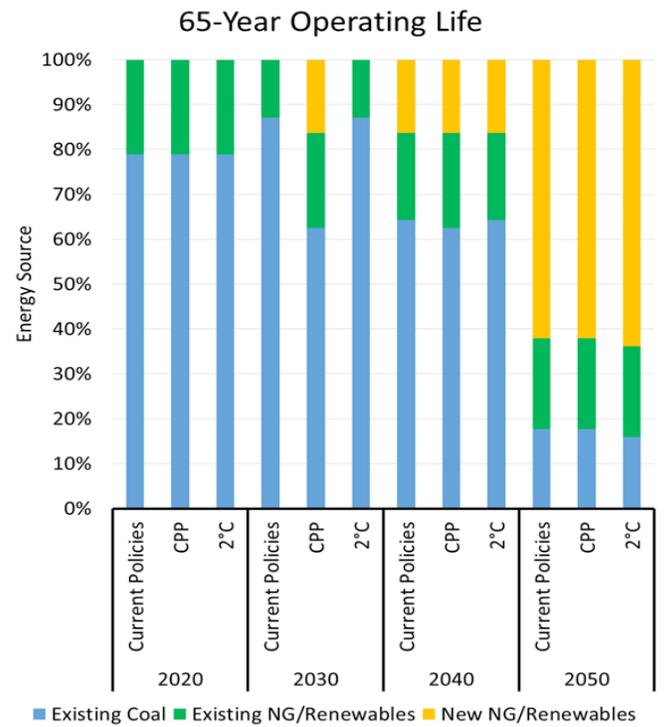
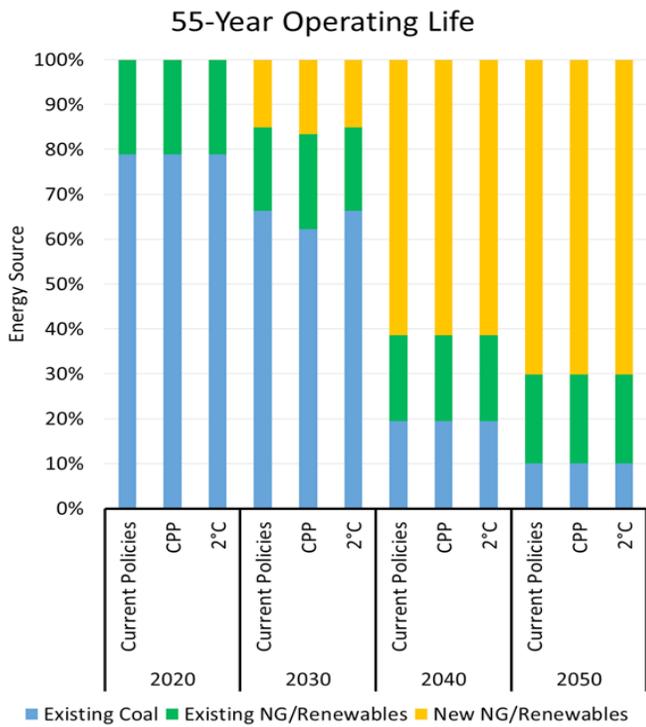
Figure 16 shows only a 5 to 15 percent reduction by 2030. This contrasts with reductions of 20 to 40 percent that occurred in the 55-year operating life cases. In general, a 55-year operating life accelerates CO₂ emission reductions that would otherwise occur in the 2030s and 2040s with a 65-year operating life. By 2050, however, overall reductions are similar to reductions observed in the 65-year operating life cases.

Figure 17 summarizes the range of CO₂ emission reductions for the Current Policies scenario. This range is driven by factors such as future gas prices, customers' demand for electricity, the timing of coal generation retirements and the pace of improvement in the relative economics of renewable generation. The low end of the range corresponds to an environment where retired coal generation is replaced by natural gas generation due to the higher cost of renewables. Also at the lower end of the range, customer load is high and remaining coal generation is utilized more than natural gas generation due to the relative fuel cost of coal versus natural gas. The high end of the range corresponds to an environment where retired coal generation is replaced by renewable generation and battery technology, customer load is low and the utilization of the remaining coal generation is minimized.

Estimated Range of Reductions Under Current Policies Scenario (Figure 17)



Potential LG&E and KU Generation Mix (Figure 18)



By 2040, emissions are reduced by 15 to 85 percent in the Current Policies scenario, depending on operating life assumptions. By 2050, this range increases to 45 to 90 percent as virtually all existing coal units will have been retired per the operating life assumptions.

Prior to 2040, the CO₂ reductions under the Current Policies scenario may not be in compliance with the CPP target. To comply with CO₂ targets in the CPP scenario, some portion of coal retirements otherwise expected in the 2030s would have to be accelerated to the late 2020s. For the 2° Celsius scenario, absent regulations like the CPP, the same level of reductions would occur as under the Current Policies scenario, but with an assumed goal to achieve a 50 percent reduction by 2050. Achieving this goal is slightly more challenging with a 65-year operating life for the existing coal units, absent a greater share of renewables (private or universal) relative to gas and lower electric vehicle penetration.

Figure 18 summarizes PPL's potential Kentucky segment generation mix by decade under the three climate scenarios analyzed. It shows that there will be little difference in the future energy generation mix among the three climate scenarios assuming a 55-year operating life

for coal units. However, should coal units operate longer than 55-years and a regulation like the CPP is enacted with compliance by 2030, then some coal units that would naturally have retired after 2030 would likely need to be retired in the 2020s. While the generation mix by 2050 is largely the same regardless of assumed operating life, a 65-year operating life assumption does lead to more coal generation in the 2040s as compared to the 55-year operating life assumption, regardless of the climate scenario.

The Current Policies scenario shows that CO₂ emissions would decline dramatically by 2050 as aging coal units are retired. It is not a matter of if emissions will decline, but when the reductions will occur and by how much. Only minor changes to PPL's Current Policies generation portfolio are required to meet the CPP emission reductions by 2030 with further reductions occurring consistent with the Current Policies scenario. The assumed goal contemplated in the 2° Celsius scenario of a 50 percent reduction in CO₂ emissions from 2005 levels by 2050 would not cause a material change in PPL's future generation investments.

Section 5: CONCLUSION

As demonstrated by PPL's scenario analysis, meeting a 2° Celsius reduction scenario by 2050 would not cause a material change in PPL's Kentucky generation capital plans. Public policy engagement and continued long-range planning will enable us to respond effectively to changes in policy, regulation and technology adoption.

We expect that PPL will have minimal financial risk associated with continuing to operate its existing coal units so long as those operations are consistent with approved regulatory frameworks and are economically justifiable to Kentucky regulators.

The scenario analysis shows that CO₂ emissions in Kentucky are expected to decline dramatically by 2050 as aging coal units are retired due to economics or government policies and replaced with a mix of renewable and natural gas generation. This is true even without new climate policies. Ultimately, the future generation mix will depend upon customers' energy needs while at the same time meeting regulatory requirements.

CO₂ reductions by 2030, meanwhile, are expected to be limited absent new carbon regulations, coal economics or other regulations impacting the cost of existing coal-fired generation. Under the Base and Low forecasts, absent coal unit retirements, PPL's Kentucky segment does not envision a need to add new generating capacity for the foreseeable future. Additional climate policies may accelerate reductions.

Further, under current conditions and without a regulatory requirement to reduce CO₂ emissions, PPL believes adding renewable energy simply to replace existing coal would not meet the KPSC's lowest reasonable cost standard and could risk disallowance of cost recovery and returns, because the marginal cost of LG&E's and KU's existing generation portfolio is much lower than the current levelized cost of building new wind or solar generation (see Figure 9 on page 7). This limits the potential near-term reduction of CO₂ emissions.

PPL regularly assesses risks and opportunities associated with climate change through enterprise risk management and long-range planning activities. The company is effectively managing the risks of climate change across its operations and will remain proactive in identifying and seizing prudent opportunities.

Finally, PPL will continue to take steps to advance a cleaner energy future and build tomorrow's energy infrastructure. This includes using innovative ways to connect more private solar or other renewable generation to delivery networks; exploring emerging technologies; building a stronger, smarter, more resilient grid; improving power plant efficiency; and helping customers save energy. Details are included in PPL's Sustainability Report at www.pplsustainability.com.

FORWARD-LOOKING STATEMENTS IN THIS ASSESSMENT

This assessment contains forward-looking statements regarding, among other things, future energy demand, the availability and cost of natural gas, the market for electric vehicles, the growth of solar and other renewable forms of electricity generation and storage, potential rates of reduction in coal-fired electricity generation in Kentucky, the expected operating life of existing coal-fired electricity generation plants and PPL Corporation's corporate strategy. These statements, and all others that reflect beliefs, plans, estimates or any other forward-looking information, are "forward-looking statements" within the meaning of the federal securities laws.

PPL Corporation believes that the forward-looking statements in this assessment reflect reasonable expectations and assumptions. However, it is important to understand that forward-looking statements, and their underlying assumptions, are subject to a wide range of risks and uncertainties, both known and unknown. Any number of factors could cause actual results to be materially different from those discussed in the statements, including: market demand for energy in our service territories; weather or other conditions affecting customer energy usage and operating costs; the effect of any business or industry restructuring; the profitability and liquidity of PPL Corporation and its subsidiaries; operating performance of its facilities; environmental, legal and regulatory requirements and the related costs of compliance; development of new projects, markets and technologies for the generation and delivery of electricity; performance of new ventures; asset or business acquisitions and dispositions; receipt of necessary government permits, approvals, rate relief and regulatory cost recovery; capital market conditions and decisions regarding capital structure; the outcome of litigation against PPL Corporation and its subsidiaries; the securities and credit ratings of PPL Corporation and its subsidiaries; political, regulatory or economic conditions in states, regions or countries where PPL Corporation or its subsidiaries conduct business; new state, federal or foreign legislation; commitments and liabilities of PPL Corporation and its subsidiaries; and catastrophic events such as fires, earthquakes, explosions, floods, hurricanes and other storms, droughts or other similar occurrences as well as cyber intrusion or other terrorist incidents and their direct or indirect effect on PPL Corporation's businesses and the U.S. or U.K. electricity grids. All forward-looking statements in this assessment should be considered in light of these important factors. Further information on these and other risks and uncertainties is available in PPL Corporation's Form 10-K and other reports on file with the Securities and Exchange Commission.

