

# PPL Corporation - Climate Change 2018

## C0. Introduction

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### C0.1

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#### **(C0.1) Give a general description and introduction to your organization.**

Headquartered in Allentown, Pa., PPL Corporation (NYSE: PPL) is a public utility holding company with more than \$7.4 billion in annual revenue and total assets of \$41 billion. The company's seven operating utilities in the U.S. and U.K. employ more than 12,500 people, maintain approximately 218,000 miles of electric lines, and annually deliver more than 142 billion kilowatt-hours of electricity and 26.2 billion MMBtu of natural gas.

PPL's U.K. segment consists of regulated electricity distribution operations of Western Power Distribution plc ("WPD"), which serves 7.9 million customers in central and southwest England and south Wales.

PPL's Kentucky segment consists primarily of the regulated electricity and natural gas operations of Louisville Gas and Electric Company ("LGE") and Kentucky Utilities Company ("KU"), which serve 1.0 million electric customers in Kentucky, Virginia and Tennessee, and 0.3 million gas customers in Kentucky and operate 8,000 megawatts of regulated generating capacity.

PPL's Pennsylvania segment consists of the regulated electricity transmission and distribution operations of PPL Electric Utilities Corporation ("PPL EU"), which serves approximately 1.4 million customers in eastern and central Pennsylvania.

PPL regularly assesses risks and opportunities associated with climate change as part of our overall strategic business planning and enterprise risk management processes. Our Board's Compensation, Governance and Nominating Committee (CGNC) was designated by the Board with oversight over PPL's practices and positions to further its corporate citizenship, including sustainability, environmental and corporate social responsibility initiatives. The CGNC has regularly scheduled meetings at which sustainability strategy is discussed, and climate-related issues are regularly incorporated into those discussions. The full Board is also updated as needed.

The company has established a senior-level Corporate Sustainability Committee that engages on sustainability strategy and advises corporate leadership on sustainability matters. The committee is chaired by the Vice President-Public Affairs and Sustainability.

## C0.2

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**(C0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2017	December 31 2017	Yes	3 years
Row 2	January 1 2016	December 31 2016	<Field Hidden>	<Field Hidden>
Row 3	January 1 2015	December 31 2015	<Field Hidden>	<Field Hidden>
Row 4	January 1 2014	December 31 2014	<Field Hidden>	<Field Hidden>

## C0.3

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**(C0.3) Select the countries/regions for which you will be supplying data.**

United Kingdom of Great Britain and Northern Ireland

United States of America

## C0.4

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**(C0.4) Select the currency used for all financial information disclosed throughout your response.**

USD

## C1. Governance

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### C1.1

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**(C1.1) Is there board-level oversight of climate-related issues within your organization?**

Yes

### C1.3

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**(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

Yes

## C2. Risks and opportunities

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### C2.2

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**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

### C2.3

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**(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes

### C2.3a

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**(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.**

**Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Mandates on and regulation of existing products and services

**Type of financial impact driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

Carbon regulation, if implemented, and depending upon specific requirements could increase the cost of electricity for customers, depressing regional economies, and reducing demand for electricity. In the long term, this could significantly reduce revenues for PPL, reduce the need for PPL's centralized generation and electricity delivery, and make it more difficult for PPL to obtain just and reasonable rates, limiting our ability to earn an acceptable return on capital investments or fully recover operation and maintenance costs. This risk is greatest for our Kentucky operations as those include power generation.

**Time horizon**

Unknown

**Likelihood**

Unknown

**Magnitude of impact**

Unknown

**Potential financial impact****Explanation of financial impact**

Financial impact cannot be estimated absent a regulatory framework for assessment.

**Management method**

Our Kentucky operations consider the uncertainty around future CO2 regulations and costs as part of their integrated resource planning (IRP) process. In the last IRP filed with the Kentucky Public Service Commission in 2014, we assessed portfolio implications of CO2 regulations under two scenarios: in the first we assumed a price of carbon both at \$0 and in the range of \$17 - \$48; in the second we used mass reduction targets under the CPP. In addition, this risk is included in PPL's Enterprise Risk Management (ERM) Process, which provides a business portfolio view of material risks that may impact achievement of PPL's business strategy. ERM's analyses are completed and reported to the Audit Committee of the Board on a quarterly basis and considered near term (within 12 months), long term (within 3 years) and emerging risks (beyond 3 years). In addition the full Board receives reports from the Audit Committee as well as the Compensation, Governance and Nominating Committee for determining PPL's business strategy and overseeing PPL's practices and positions to further its sustainability initiatives.

**Cost of management****Comment**

Carbon regulation could significantly increase costs and limit operating flexibility. Cost of management not determined.

**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Customer

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Other

**Type of financial impact driver**

Other, please specify (Adequate rate recovery more difficult )

**Company- specific description**

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 to manage volatility in demand for power.

**Time horizon**

Current

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

Financial impact not specifically estimated for this risk.

**Management method**

See description in Risk 1 above regarding PPL's Enterprise Risk Management Process and Board oversight. In addition, the incentive pay of each operating company's leaders includes metrics related to reliability and customer satisfaction. The company plans to invest \$16 billion from 2017-2021 in infrastructure investments, much of it focused on modernizing and strengthening the grid. WPD is transitioning from a Distribution Network Operator to a Distribution System Operator in order to more proactively support increased customer adoption of low-carbon technologies. PPL EU is supported legislation in support of alternative rates which would enable greater flexibility in making investments towards a stronger and more reliable grid. LGE and KU have filed with the Kentucky Public Service Commission to install smart meter technology and to provide solar energy options to all customer classes.

**Cost of management****Comment**

A rapid increase in distributed energy resources and private renewable energy could pose a reliability challenge to delivery networks. Cost of management not determined.

**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Please select

**Type of financial impact driver**

Other, please specify (Adequate rate recovery more difficult )

**Company- specific description**

Storms may increase in frequency and severity. This can disrupt PPL's operations, increase costs and hurt the reliability of PPL's service in a variety of ways, including flooding which can damage electrical equipment and disrupt fuel supply, and fallen trees and debris which can bring down power lines and block access for restoration efforts.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

High

**Potential financial impact****Explanation of financial impact**

Financial impact not specifically estimated for this risk.

**Management method**

The company plans to invest \$16 billion from 2017 - 2021 in infrastructure investments, much of it focused on modernizing and strengthening the grid.

**Cost of management**

16000000000

**Comment**

Stronger and more frequent severe weather could damage PPL's equipment, inhibit service restoration efforts and disrupt fuel supply, all of which can have an impact on reliability of service. Investments in modernizing and strengthening the grid can make it more resilient to storms.

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**Identifier**

Risk 4

**Where in the value chain does the risk driver occur?**

Customer

**Risk type**

Transition risk

**Primary climate-related risk driver**

Reputation: Shifts in consumer preferences

**Type of financial impact driver**

Reputation: Reduced revenue from decreased demand for goods/services

**Company- specific description**

Growing public concern over climate change is driving increasing interest in clean energy. Our Kentucky operation's coal-fired plants could drive some Kentucky customers to develop off-grid solutions to support their operations. Attracting new customers may also become increasingly difficult. Our ability to transition to low-carbon generation can be constrained because cost recovery and returns on investments may be disallowed if they are not considered prudent or lowest reasonable cost. Absent a regulation that imposes a price on CO2 emissions, the marginal cost of energy from coal-fired generation is expected to be lower in Kentucky than the levelized cost of energy from constructing new solar or wind generation.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Unknown

**Potential financial impact****Explanation of financial impact**

Financial impact not estimated specifically for this risk.

**Management method**

See description in Risk 1 above regarding PPL's Enterprise Risk Management process and Board oversight. By 2019, LGE and KU will have closed more than 900 MW of coal-fired generation in just under five years. KU also has Kentucky's largest universal solar facility at 10 MW, a 33 MW hydroelectric facility and several natural gas turbines. LGE and KU have also begun accepting enrollments in a new Solar Share program which gives residential, business and industrial customers the opportunity to share in local solar energy and receive credits on their monthly bills. LGE and KU have also created a new Energy Storage Research and Demonstration Site to continue developing large-scale battery storage technologies. LGE and KU are also providing solar energy options to all customer classes.

**Cost of management****Comment**

Customer demand for clean energy in Kentucky could be difficult to meet if costs of alternative energy are not deemed reasonable and prudent. This could result in inability to retain existing customers or to attract new ones. The total cost of management has not been determined.

**Identifier**

Risk 5

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Market: Other

**Type of financial impact driver**

Other, please specify (Lost opportunity to own generation )

**Company- specific description**

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

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Low

**Potential financial impact****Explanation of financial impact**

Not quantified; cost is not direct but rather an opportunity cost of not being able to own generation in the transition to a cleaner energy future.

**Management method**

Despite inability of PPL's utilities to own generation resources in PA and U.K., PPL's utilities have made significant investments in smart grid technology and the reliability of our delivery networks to adjust to changing customer preferences and enhance the integration of distributed energy resources (DER). The transition to a cleaner energy future and increased deployment of DER offers the U.K. and PA companies the potential to take on an expanded role in actively managing distribution networks through both network and non-network solutions, products and services. PPL EU purchases a portion of their customers' electricity needs from renewable and alternative energy sources under the state's Alternative Energy Portfolio Standard (15% from 2015 - 2017 compliance period, climbing to 18% by 2020).

**Cost of management****Comment**

Legislative limitations on companies in PA and license limitations on distribution network operators in the U.K. restrict utilities from owning solar, wind power and other generation resources to serve customers. The total cost of management has not been determined. PPL is not precluded from non-utility ownership of renewables.

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**C2.4**

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**(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes

**C2.4a****(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.****Identifier**

Opp1

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Other

**Type of financial impact driver**

Other, please specify (Investments in grid assets)

**Company- specific description**

Climate-related risks to the power-grid give PPL the opportunity to invest in a stronger, more resilient grid. This includes investments in smart grid technology and more flexible delivery networks.

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-high

**Potential financial impact**

16000000000

**Explanation of financial impact**

This is the level of investment PPL is making from 2017 - 2021 in the transition to a cleaner energy future.

**Strategy to realize opportunity**

In order to continue to transition to a cleaner energy future, our companies are making investments to actively manage distribution networks through both network and non-network solutions, products and services.

**Cost to realize opportunity****Comment**

Opportunity to earn a return on investments in modernizing and strengthening the grid in all of PPL's operating areas.

**Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Other

**Type of financial impact driver**

Other, please specify (Investment in new products and services)

**Company- specific description**

Enhancements to the grid 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 on investment.

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-high

**Potential financial impact****Explanation of financial impact**

Potential financial impact cannot be calculated absent specific projects.

**Strategy to realize opportunity**

Ongoing engagement with regulators and policy makers.

**Cost to realize opportunity****Comment**

New transmission needed to connect more renewable and low-carbon generation sources.

**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Other

**Type of financial impact driver**

Other, please specify (Investment in cleaner generation)

**Company- specific description**

Increased demand for renewable energy in Kentucky could enhance customer interest in new solar subscription and onsite solar development options offered by LGE 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.

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-low

**Potential financial impact****Explanation of financial impact**

Investments in renewables and lower-carbon generation provides an opportunity for long-term earnings growth and favorable returns so long as the investments are determined to be prudent by the regulators.

**Strategy to realize opportunity**

Ongoing engagement with regulators and policy makers.

**Cost to realize opportunity****Comment**

Opportunity in Kentucky to invest in renewable energy and lower-carbon generation.

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**Identifier**

Opp4

**Where in the value chain does the opportunity occur?**

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Other

**Type of financial impact driver**

Other, please specify (Greater demand for power and delivery)

**Company- specific description**

Greater electrification of the economy to reduce carbon, in particular the widespread adoption of electric vehicles, could support increased electricity sales and require additional investments in distribution networks. This could support long-term earnings growth and favorable returns on investment.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-low

**Potential financial impact****Explanation of financial impact**

Too speculative to estimate financial impact of this opportunity.

**Strategy to realize opportunity**

PPL is making system enhancements necessary to meet electricity demand over the long-term to support the adoption of electricity-fueled transportation and is also adding electric vehicles to its fleet. WPD is taking a proactive approach with Electric Nation, a two-year project to study the impact of Electric Vehicles ("EVs") on electricity networks. LGE and KU gained regulatory approval to install new EV charging infrastructure both in public access areas and for business customers. PPL EU has acquired EVs to study their impact on the grid.

**Cost to realize opportunity****Comment**

Greater electrification of the economy to reduce carbon could increase electricity sales and demand for power delivery. Cost to realize the opportunity has not been determined corporate-wide.

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**C3. Business Strategy**

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**C3.1**

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**(C3.1) Are climate-related issues integrated into your business strategy?**

Yes

**C4. Targets and performance**

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**C4.1**

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**(C4.1) Did you have an emissions target that was active in the reporting year?**

Absolute target

**C4.1a**

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**(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.****Target reference number**

Abs 1

**Scope**

Other, please specify (Scope 1 + 2 (location and market based))

**% emissions in Scope**

99.9

**% reduction from base year**

70

**Base year**

2010

**Start year**

2017

**Base year emissions covered by target (metric tons CO2e)**

62577296

**Target year**

2050

**Is this a science-based target?**

No, and we do not anticipate setting one in the next 2 years

**% achieved (emissions)**

53.5

**Target status**

New

**Please explain**

PPL's 2050 goal was approved by the Board in late 2017 and publicly announced in January 2018. As discussed in PPL's scenario-based climate assessment report released in November 2017, the Kentucky subsidiaries will likely economically retire the bulk of their coal-fired units by 2050, even absent future carbon regulation. Emissions from generation account for the majority of PPL's overall carbon emissions. PPL plans to achieve additional emissions reductions across its U.S. and U.K. business, with Pennsylvania and U.K. subsidiaries focused solely on delivering electricity. Steps will include reducing greenhouse gas emissions at substations through monitoring and proactive equipment replacements; improving energy efficiency at company facilities; and transitioning to a cleaner fleet of trucks and vehicles. Regarding calculation of Scope 2 emissions, LGE and KU's emissions are calculated using a hybrid of location based and market based factors. LGE and KU have access to location-based factors for power procured from specific contracted units. LGE and KU also purchase a small amount of power in the wholesale market. Emissions associated with all electric and gas use in buildings across all operations (LGE, KU, PPL EU and WPD) are calculated based on market-based factors.

**C4.2****(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.****Target**

Waste

**KPI – Metric numerator**

WPD - Reduce the amount of waste sent to landfill by 20% over the first two years of RIIO-ED1 and 5% per year after this.

**KPI – Metric denominator (intensity targets only)**

N/A

**Base year**

2012

**Start year**

2015

**Target year**

2022

**KPI in baseline year**

52

**KPI in target year**

32

**% achieved in reporting year**

37

**Target Status**

Underway

**Please explain**

Waste to landfill reduction target. 20% reduction in waste to landfill in the first two years of ED1, and 5% reduction per annum thereafter. WPD's reporting year runs on the regulatory year: 1st April - 30th March.

**Part of emissions target**

N/A

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Target**

Energy usage

**KPI – Metric numerator**

WPD - Reduce technical network losses.

**KPI – Metric denominator (intensity targets only)**

N/A

**Base year**

2012

**Start year**

2015

**Target year**

2022

**KPI in baseline year**

5158

**KPI in target year****% achieved in reporting year**

28

**Target Status**

Underway

**Please explain**

Install oversize transformers when replacing assets in areas where demand for power may become higher than our equipment can cope with - WPD have installed 30 oversized transformers in 2017. Use larger cables when installing new network in LCT hotspots - WPD have installed 337 metres of cable in LCT hotspots in 2017. WPD's reporting year runs on the regulatory year: 1st April - 30th March

**Part of emissions target**

N/A

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Target**

Other, please specify (Climate Change Mitigation and Adaptation)

**KPI – Metric numerator**

WPD - Climate change adaptation activities - substation protection against flooding.

**KPI – Metric denominator (intensity targets only)**

N/A

**Base year**

2010

**Start year**

2014

**Target year**

2026

**KPI in baseline year**

79

**KPI in target year**

234

**% achieved in reporting year**

44

**Target Status**

Underway

**Please explain**

Apply flood defenses to 75 substations, reducing the risk of both damage to equipment and power cuts due to flooding. During ED1 we have to date installed flood defenses at 27 substations. We have carried out data analysis and site surveys at a further 97 substations.

**Part of emissions target**

N/A

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Target**

Waste

**KPI – Metric numerator**

PPL EU - Increase percentage recycling and reuse of wood poles and other wood wastes.

**KPI – Metric denominator (intensity targets only)**

N/A

**Base year**

2015

**Start year**

2017

**Target year**

**KPI in baseline year**

72.3

**KPI in target year**

99.8

**% achieved in reporting year**

99.8

**Target Status**

Underway

**Please explain**

Trending KPI The target is measured against 3 year average of 2015, 2016 and 2017.

**Part of emissions target**

N/A

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**C4.3**

**(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.**

Yes

**C4.3b**

**(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.**

**Activity type**

Other, please specify (Alternative Energy Portfolio)

**Description of activity**

&lt;Field Hidden&gt;

**Estimated annual CO2e savings (metric tonnes CO2e)**

265077

**Scope**

Scope 3

**Voluntary/Mandatory**

Mandatory

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

PPL EU - Alternative Energy Portfolio Standards Act requires Pennsylvania's Electric Distribution Companies (EDC's) to purchase a set amount of power from alternative sources like solar, wind and biofuels. By 2021, companies will need to purchase eight percent of their overall power from "tier 1" renewable energy sources. This program does not have an associated payback period.

**Activity type**

Other, please specify (Energy efficiency: Act 129)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)**

505923

**Scope**

Scope 3

**Voluntary/Mandatory**

Mandatory

**Annual monetary savings (unit currency – as specified in CC0.4)**

23795381

**Investment required (unit currency – as specified in CC0.4)**

57182010

**Payback period**

Please select

**Estimated lifetime of the initiative**

11-15 years

**Comment**

PPL EU - Act 129 legislation, which became effective in November 2008, requires Pennsylvania EDC's to cost-effectively reduce electricity consumption and peak demand on their systems. New energy efficiency plans need to be submitted to regulator. Payback period is applicable only to customers and varies based on each project.

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**Activity type**

Low-carbon energy installation

**Description of activity**

Please select

**Estimated annual CO2e savings (metric tonnes CO2e)**

39

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

6700000

**Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

LGE and KU - Business Solar Program - developing partnership with Archdioceses of Louisville. LGE and KU generates and delivers electricity, as such these initiatives directly reduce Scope 1 emissions.

Investment and payback calculated on a project-specific basis.

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**Activity type**

Other, please specify (Demand Side Management Programs)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)**

143665

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)**

44000000

**Payback period**

Please select

**Estimated lifetime of the initiative**

6-10 years

**Comment**

LGE and KU - In 2017 LGE and KU invested \$44M in Demand Side Management Programs, which includes: Residential energy audits, Residential winterization, Residential appliance rebates, Residential behavior programs, Residential demand response, Residential education programs, and Commercial programs LGE and KU generates and delivers electricity, as such these initiatives directly reduced Scope 1 emissions. Payback period is applicable only to customers and varies based on each project.

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**Activity type**

Low-carbon energy installation

**Description of activity**

Please select

**Estimated annual CO2e savings (metric tonnes CO2e)**

5182

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

LGE and KU - Community Solar Share Program. Costs of this program do not have an associated payback period.

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**Activity type**

Other, please specify (Low-carbon Technologies)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - Improve by 20% the time taken to provide a response to customers who want to use Low Carbon Technologies (LCT). - Identify LCT hotspots using information from smart meters, expert organizations and local authorities and use this information when making decisions (Information on LCT hotspots has been added to our management processes). - Provide additional network capacity by using traditional or 'smart' methods. - In 2017, we introduced new processes to allow us to report on LCT response times. Costs of this program do not have an associated payback period; no project specific CO2 savings.

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**Activity type**

Other, please specify (Low carbon network)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - 'Car-Connect – Electric Nation': enables U.K. Utilities to identify which parts of their network are likely to be affected by Plug-in Vehicles ("PIV") / vehicle to grid uptake, and whether PIV demand control services are a cost effective solution to avoiding or deferring reinforcement on vulnerable parts of the network. Costs and payback period have not yet been calculated; no project specific CO2 savings.

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**Activity type**

Low-carbon energy installation

**Description of activity**

Please select

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - Smart Energy Isles: WPD are part of a Hitachi led consortium awarded European Union funding to build and operate a renewable energy microgrid on the Isles of Scilly. Costs of this program do not have an associated payback period; no project specific CO2 savings.

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**Activity type**

Other, please specify (Low-carbon energy purchase/installation)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - FREEDOM: Investigate the feasibility of the use of heat pumps on WPD network in order to better understand if hybrid heating systems are technically capable, affordable and attractive to customers as an

alternative way of heating homes. Costs and payback period have not yet been calculated; no project specific CO2 savings.

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**Activity type**

Low-carbon energy installation

**Description of activity**

Please select

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - Solar Storage: Identifying viable incentive arrangements with stored solar providers during peak demand periods. Costs and payback period have not yet been calculated; no project specific CO2 savings.

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**Activity type**

Other, please specify (Low-carbon energy purchase/installation)

**Description of activity**

<Field Hidden>

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - Industrial and Commercial Storage: Battery energy storage trialled in multiple configurations to ascertain the potential for improvements in cost efficiency, customer service, reliability and the environment. Costs and payback period have not yet been calculated; no project specific CO2 savings.

---

**Activity type**

Low-carbon energy purchase

**Description of activity**

Please select

**Estimated annual CO2e savings (metric tonnes CO2e)****Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)****Investment required (unit currency – as specified in CC0.4)****Payback period**

Please select

**Estimated lifetime of the initiative**

Ongoing

**Comment**

WPD - Development of new systems and contracts with commercial customers to allow WPD to fulfil its requirements whilst also enabling it to sell the aggregated capacity into other DSR schemes when not required for the Distribution Network Operator. Costs of this program do not have an associated payback period; no project specific CO2 savings.

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## C5. Emissions methodology

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### C5.2

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**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

Defra Voluntary 2017 Reporting Guidelines  
US EPA Mandatory Greenhouse Gas Reporting Rule

## C6. Emissions data

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### C6.1

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**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**

**Row 1**

**Gross global Scope 1 emissions (metric tons CO2e)**

28587423

**End-year of reporting period**

&lt;Field Hidden&gt;

**Comment**

Scope 1 (Gross): 28,407,677 + Scope 1 (Fleet Vehicles): 47,630 + Scope 1 (Small Plant Stationary): 8,984 + Scope 1 (Plant Mobile Equipment): 4,893 + Scope 1 (Gas Operations): 28,132 + Scope 1 (SF6): 90,107

**Row 2****Gross global Scope 1 emissions (metric tons CO2e)**

28941770

**End-year of reporting period**

2016

**Comment**

Scope 1 (Gross): 28,737,028 + Scope 1 (Fleet Vehicles): 46,633 + Scope 1 (Small Plant Stationary): 32,645 + Scope 1 (Plant Mobile Equipment): 4,893 + Scope 1 (Gas Operations): 35,376 + Scope 1 (SF6): 85,195

**Row 3****Gross global Scope 1 emissions (metric tons CO2e)**

30382287

**End-year of reporting period**

2015

**Comment**

Scope 1 (Gross): 30,199,495 + Scope 1 (Fleet Vehicles): 49,727 + Scope 1 (Small Plant Stationary): 5,610 + Scope 1 (Plant Mobile Equipment): 4,893 + Scope 1 (Gas Operations): 35,622 + Scope 1 (SF6): 86,940

**Row 4****Gross global Scope 1 emissions (metric tons CO2e)**

33432990

**End-year of reporting period**

2014

**Comment**

Scope 1 (Gross): 33,212,770 + Scope 1 (Fleet Vehicles): 50,469 + Scope 1 (Small Plant Stationary): 3,209 + Scope 1 (Plant Mobile Equipment): 4,893 + Scope 1 (Gas Operations): 30,419 + Scope 1 (SF6): 131,230

**C6.2****(C6.2) Describe your organization's approach to reporting Scope 2 emissions.****Row 1****Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We are reporting a Scope 2, market-based figure

**Comment**

LGE and KU Scope 2 emissions are calculated using a hybrid of location based and market based factors. LGE and KU have access to location-based factors for power procured from specific contracted units. LGE and KU also purchase a small amount of power in the wholesale market. Emissions associated with all electric and gas use in buildings across all operations (LGE, KU, PPL EU and WPD) are calculated based on market-based factors.

## C6.3

**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?****Row 1****Scope 2, location-based**

504517

**Scope 2, market-based (if applicable)**

53684

**End-year of reporting period**

&lt;Field Hidden&gt;

**Comment****Row 2****Scope 2, location-based**

592499

**Scope 2, market-based (if applicable)**

50926

**End-year of reporting period**

2016

**Comment****Row 3****Scope 2, location-based**

430235

**Scope 2, market-based (if applicable)**

54391

**End-year of reporting period**

2015

**Comment****Row 4****Scope 2, location-based**

485940

**Scope 2, market-based (if applicable)**

54987

**End-year of reporting period**

2014

**Comment****C6.5**

**(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.**

**Purchased goods and services****Evaluation status**

Not evaluated

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation****Capital goods****Evaluation status**

Not evaluated

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation****Fuel-and-energy-related activities (not included in Scope 1 or 2)****Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

4076.19

**Emissions calculation methodology**

DEFRA conversion factors

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

**Explanation**

WPD Contractor / ESP fuel combustion activities

**Upstream transportation and distribution****Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

13655.58

**Emissions calculation methodology**

DEFRA conversion factor for standard road transport fuel kg CO<sub>2</sub> / unit diesel = 2.6762 / bio-diesel= 2.61163 / petrol = 2.19697

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

#### Explanation

WPD Contractor / ESP operational and business transport

### Waste generated in operations

#### Evaluation status

Not relevant, explanation provided

#### Metric tonnes CO<sub>2</sub>e

#### Emissions calculation methodology

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

#### Explanation

No wastes that emit CO<sub>2</sub>e are generated in operations by upstream suppliers or value chain partners.

### Business travel

#### Evaluation status

Relevant, calculated

#### Metric tonnes CO<sub>2</sub>e

3311.84

#### Emissions calculation methodology

Road: Total mileage data. DEFRA Conversion Factors (Diesel = 0.18307 and Petrol = 0.19184). Rail: collated and miles / tCO<sub>2</sub>e calculated. DEFRA conversion factor (kg Co<sub>2</sub>/km 0.04885 applied). Air: Flight miles are calculated based on DEFRA conversion factors. Sea: DEFRA conversion factor (kg CO<sub>2</sub> / km 0.116063).

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

3

#### Explanation

As required by the U.K. energy Regulator, Ofgem, the methodology for the WPD business travel carbon footprint follows U.K. Carbon Reporting guidance as provided by Defra and which is compliant with the principles of the 'Greenhouse Gas Protocol' and the annual Guidelines published DEFRA - GHG Conversion Factors for Company Reporting

### Employee commuting

#### Evaluation status

Not evaluated

#### Metric tonnes CO<sub>2</sub>e

#### Emissions calculation methodology

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

#### Explanation

### Upstream leased assets

#### Evaluation status

Not evaluated

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation****Downstream transportation and distribution****Evaluation status**

Not evaluated

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation**

The electricity and gas that we deliver to end users is not further transported or distributed.

**Processing of sold products****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation**

The electricity and gas that we deliver to end users is not further processed.

**Use of sold products****Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

2034406

**Emissions calculation methodology**

Electric Greenhouse Gas Reporting Tool Subpart NN

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

**Explanation**

Value is calculated with LGE internal data for the quantity of natural gas sold.

**End of life treatment of sold products****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Explanation**

There is not end of life treatment for the electricity and gas that we deliver to end use customers.

**Downstream leased assets****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

There are no additional CO2e emissions (beyond use of gas as a sold product referenced above) associated with use of our electricity or gas at any downstream leased assets.

**Franchises****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

We have no upstream or downstream franchises.

**Investments****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

There are no upstream or downstream investments resulting in any additional CO2e emissions.

**Other (upstream)****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

We have no Other (upstream) CO2e emissions.

**Other (downstream)****Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e****Emissions calculation methodology**

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

**Explanation**

We have no Other (downstream) CO2e emissions.

## C6.10

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**(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.**

**Intensity figure**

0.00391

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

29083085

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

7447000000

**Scope 2 figure used**

Location-based

**% change from previous year**

0.54

**Direction of change**

Decreased

**Reason for change**

Reduction in overall CO2e emissions.

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**Intensity figure**

0.87

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

28407677

**Metric denominator**

megawatt hour generated (MWh)

**Metric denominator: Unit total**

32704089

**Scope 2 figure used**

Location-based

**% change from previous year**

2.68

**Direction of change**

Increased

### Reason for change

Generation intensity is slightly higher from previous year due to outages at the Can Run Natural Gas plant and the hydroelectric plant. Generation carbon intensity by MWh calculated with Scope 1 plant emissions only.

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## C7. Emissions breakdowns

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### C7.9

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**(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?**

Decreased

## C8. Energy

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### C8.2

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**(C8.2) Select which energy-related activities your organization has undertaken.**

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

### C8.2a

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**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)		250633	250633
Consumption of purchased or acquired electricity	<Field Hidden>			530829
Consumption of purchased or acquired heat	<Field Hidden>	<Field Hidden>	<Field Hidden>	<Field Hidden>
Consumption of purchased or acquired steam	<Field Hidden>	<Field Hidden>	<Field Hidden>	<Field Hidden>
Consumption of purchased or acquired cooling	<Field Hidden>	<Field Hidden>	<Field Hidden>	<Field Hidden>
Consumption of self-generated non-fuel renewable energy	<Field Hidden>		<Field Hidden>	
Total energy consumption	<Field Hidden>			3054969

## C12. Engagement

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### C12.1

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**(C12.1) Do you engage with your value chain on climate-related issues?**

Yes, our customers

## C14. Signoff

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### C-FI

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**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

PPL announced on May 31, 2018 that the company had acquired Safari Energy LLC, a leading provider of solar energy solutions for commercial customers in the U.S. Safari Energy has completed over 200 solar projects in 19 states, with over 80 projects underway. This acquisition offers PPL an attractive, low-risk opportunity to help advance a cleaner energy future; to support the growth of distributed energy resources,

including energy storage; and to gain additional experience with technologies that will play a bigger role in shaping the future energy grid.

## C14.1

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**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	Vice President-Public Affairs and Sustainability	Chief Sustainability Officer (CSO)

## Submit your response

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**In which language are you submitting your response?**

English

**Please confirm how your response should be handled by CDP**

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

**Please confirm below**

I have read and accept the applicable Terms