

# Welcome to your CDP Water Security Questionnaire 2019

## W0. Introduction

### W0.1

#### **(W0.1) Give a general description of and introduction to your organization.**

Ameren Corporation, headquartered in St. Louis, MO, is a public utility holding company with annual revenues of more than \$6 billion and the parent company of Ameren Illinois Company (AIC), Union Electric Company, doing business as Ameren Missouri (AMO) and Ameren Transmission Company of Illinois (ATXI). Ameren serves approximately 2.4 million electric and more than 900,000 natural gas customers across 64,000 square miles in Illinois and Missouri. Ameren's net generating capacity, all of which, is owned by Ameren Missouri, is approximately 10,300 megawatts (MWs) as of 12/31/18. In 2018, Ameren Missouri's energy supply was: 68% from coal, 24% from nuclear, 2% from hydro, 1% from purchased wind, 1% from gas and 4% from purchased power.

Ameren Missouri operates rate-regulated electric generation, transmission and distribution and natural gas distribution businesses in Missouri. Ameren Illinois Company operates rate-regulated electric transmission, electric distribution, and natural gas distribution businesses in Illinois. ATXI operates a rate-regulated electric transmission business.

Ameren released its annual Corporate Social Responsibility (CSR) report, available at [AmerenCSR.com](http://AmerenCSR.com), in May 2019 which details outlines actions to balance customer and community development, workforce needs, the environment and shareholders. The report details how Ameren Missouri is transitioning to a cleaner, more diverse generation portfolio in a responsible fashion and how overall emissions have declined since 2005. Ameren also participates in a voluntary industry initiative, coordinated by the Edison Electric Institute (EEI), to provide electric industry investors with uniform and consistent environmental, social, governance and sustainability-related (ESG/sustainability) metrics. EEI's ESG/sustainability reporting template, is available at [AmerenInvestors.com](http://AmerenInvestors.com). In 2018, Ameren published a Water Resilience Assessment (available at [Ameren.com/Sustainability](http://Ameren.com/Sustainability)) which assesses the current and future availability of water resources in regions including our service territory and major supply chain components under a variety of potential climate change scenarios. Ameren also has the goal to decrease our water usage by approximately 11 billion gallons per year, as is the estimated result from our water efficiency investments which are presented in Our Responsible Management of Coal Combustion Residuals report. Ameren also recently published a Climate Risk Report, which used science based climate information to assess our plan against the prevailing body of knowledge around climate modeling.

In 2018, Ameren created the Corporate Social Responsibility (CSR) department to lead efforts on ESG, climate-related and water-related issues and shareholder advocacy efforts. In 2019, Ameren further emphasized the importance of managing ESG issues by establishing a Vice President-Sustainability & Electrification. Ameren is advancing its commitment to environmental stewardship through Ameren Missouri's 20-year Integrated Resource Plan (IRP), (issued in September 2017, with major updates planned for fall 2020). The 2017 IRP outlines plans to significantly increase AMO's renewable energy portfolio, including the addition of at least 700 MWs of wind generation by 2020 and 100 MWs of solar generation by 2027. It also includes the planned retirement of more than half of AMO's coal-fired generation capacity over the next 20 years, with the retirement of the Meramec Energy Center by the end of 2022 and others between 2033 and 2036. Further, Ameren Missouri has a goal to reduce carbon dioxide emissions 35% by 2030, 50% by 2040 and 80% by 2050, as compared to 2005 levels.

**FORWARD-LOOKING STATEMENTS.** Statements in this report not based on historical facts are considered “forward-looking” and, accordingly, involve risks and uncertainties that could cause actual results to differ materially from those discussed. Although such forward-looking statements have been made in good faith and are based on reasonable assumptions, there is no assurance that the expected results will be achieved. These statements include (without limitation) statements as to future expectations, beliefs, plans, strategies, objectives, events, conditions, and financial performance. We are providing this cautionary statement to identify important factors that could cause actual results to differ materially from those anticipated. We refer you to our Annual Report on Form 10-K for the year ended December 31, 2018, and our other reports filed with the Securities and Exchange Commission, which contain a list of factors and a discussion of risks that could cause actual results to differ materially from management expectations suggested in such forward-looking statements. Except to the extent required by the federal securities laws, we undertake no obligation to update or revise publicly any forward-looking statements to reflect new information or future events.

## W-EU0.1a

**(W-EU0.1a) Which activities in the electric utilities sector does your organization engage in?**

- Electricity generation
- Transmission
- Distribution

## W-EU0.1b

**(W-EU0.1b) For your electricity generation activities, provide details of your nameplate capacity and the generation for each power source.**

	Nameplate capacity (MW)	% of total nameplate capacity	Gross generation (MWh)
Coal – hard	5,379	46.98	32,381,542
Lignite	0	0	0

Oil	312	2.73	4,380
Gas	3,761	32.85	500,225
Biomass	0	0	0
Waste (non-biomass)	15	0.13	41,255
Nuclear	1,236	10.79	11,127,683
Geothermal	0	0	0
Hydroelectric	333	2.91	1,263,885
Wind	0	0	277,653
Solar	6	0.05	5,996
Other renewable	0	0	0
Other non-renewable	408	3.56	308,720
Total	11,450	100	45,911,339

### W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

### W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1, 2018	December 31, 2018

### W0.3

(W0.3) Select the countries/regions for which you will be supplying data.

United States of America

### W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

USD

### W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which operational control is exercised

## W0.6

**(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?**

Yes

### W0.6a

**(W0.6a) Please report the exclusions.**

Exclusion	Please explain
<p>Non- generation facilities including call centers, office buildings and administration sites, unmanned facilities (i.e. substations), and other sites unrelated to direct energy generation.</p>	<p>Ameren and its subsidiaries own over 800 separate facility locations including energy generation centers, administrative buildings, substations, warehouses etc.</p> <ul style="list-style-type: none"> <li>• Of these, by far the largest amounts of water are used at 16 of Ameren Missouri's energy centers. About four million mega liters of surface water are used annually as cooling water at the thermal cycle generation plants (fossil fueled and nuclear centers) and also for pollution controls and other operations. In addition, about 55 million mega liters of surface water is used annually for direct energy generation at Ameren's three hydroelectric generation sites. The scope of this disclosure will therefore exclude all facilities except for the following 16 energy centers: 4 coal, 1 nuclear, 2 hydroelectric dam, 1 pump storage, and 8 combustion turbines (CTGs). Over 99% of water withdrawn for generation operations is discharged back to surface water sources. Groundwater volume usage at our major energy centers is less than 0.01% of total withdrawal. <p>Ameren exercises water management practices at all of our facilities to minimize water use. As described in several reports, our Water Resilience Assessment report indicated the current and future availability of water resources in our service territory and select regions of our supply chain, and our Report on our Responsible Management of Coal Combustion Residuals (CCR) provides information regarding our efforts to reduce water usage consistent with corporate sustainability initiatives.</p> </li></ul>
<p>Natural Gas distribution</p>	<p>Ameren distributes both electricity and natural gas to customers in our service area. The operations associated with procuring and distributing natural gas to our customers uses little to no direct water resources. These operations include the use of potable water as a resource for personnel use at related sites, for hydrostatic testing, and some used in</p>

	<p>excavation operations for construction of gas lines.</p> <p>We are implementing practices to reduce the necessary volumes of water required to perform these operations. The volumes of water used in these operations are much less than that of our electrical generation centers. Therefore, Ameren's natural gas distribution activities are excluded from the scope.</p>
Solar and wind generation facilities	<p>Ameren owns and operates 6 MWs of solar nameplate capacity. We have power purchase agreements for wind energy but do not own the generation. Consequently, wind and solar generation sites will be excluded from the scope.</p> <p>We are investing in at least 700 MW of additional wind by 2020 and 100 MW of solar generation by 2027, which will contribute to reduce water consumption volumes in future.</p>

## W1. Current state

### W1.1

**(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.**

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	Direct Use: "Vital" was chosen because large volumes of freshwater from rivers in the Midwest are required for use for thermal cooling and pollution control at our major nuclear and fossil energy centers and energy production at our hydroelectric generation sites. Having large volumes of water available is more important than the quality of the water. 99% of water withdrawn is discharged again back to the environment. Our Water Resilience Assessment (available at Ameren.com) assesses the current and future availability of water resources across our service territories under a variety of potential climate change assumptions. The report indicates that all of our generation facilities are located in regions with low water scarcity risk, and little change is expected in water availability in future. We expect reliance on water resources to decrease in the future as Ameren's Meramec coal and natural gas

			<p>fired energy center is scheduled to close in 2022, and our additional investments in 700 MW of wind by 2020 and 100 MW of solar generation by 2027 will contribute to reduced future reliance on water. Indirect Use/Value Chain: The largest key input within the supply chain is coal, which is the primary fuel source for our four coal-fired energy centers. A significant amount of our coal supply is from the Powder River Basin (PRB) in Wyoming. Our Water Resilience Assessment indicated that water stress is likely to increase in future in the PRB. In addition, barges are sometimes used in our upstream supply chain to transport coal. Therefore, "important" was chosen because water availability is necessary for coal production, and water scarcity could affect our supplier and logistics. However, we continually monitor our supply chain and are not aware of any water related risks that cannot be managed. We expect reduced reliance on coal resources in future as our Meramec coal fired Energy Center is scheduled to close in 2022, reducing the amount coal coming from the PRB.</p>
<p>Sufficient amounts of recycled, brackish and/or produced water available for use</p>	<p>Important</p>	<p>Important</p>	<p>Direct Use: Some of Ameren's generation operations use recycled water. "Important" was chosen because recycled water is necessary for our closed loop and storage systems, and we have alternative measures in place should the volumes of used recycled water become disrupted. Recycled water is used at Taum Sauk, a pump storage hydroelectric facility located in Southeast Missouri, for direct energy generation. Recycled water is also used in the flue-gas desulfurization (FGD) scrubber at the Sioux Energy Center (fossil fueled) and at the Callaway Energy Center (nuclear) for cooling purposes, which are both located in Missouri. Recycled water is also used at one of our combustion turbine energy centers for use in the cooling towers, although this volume is negligible compared to the volumes used at our fossil, nuclear and hydroelectric energy centers. Utilizing recycled water reduces the amount of water withdrawn and discharged. We expect to continue our current recycled water operations</p>

		<p>into the long term; there are currently no scheduled investments to increase these volumes. We are considering ways in which we can better measure and incorporate larger volumes of recycled water into our operations in future.</p> <p>Indirect Use/Value Chain: Coal from the Powder River Basin (PRB) is the primary fuel source for four major energy centers and represents the largest key input within the supply chain. Important was chosen because some water is used in mining the coal and our Water Resilience Assessment indicated potential increased water stress in the PRB. Ameren is not currently aware of any specific brackish or recycled water related issues or improvements within this supply chain, and therefore are expecting no significant changes to recycled water use in our indirect operations in the near future.</p>
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## W1.2

**(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?**

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	Water withdrawals are calculated daily at all of our generation sites included in the scope and rolled up into monthly reports. Withdrawal flows/volumes are calculated based on design pump flow rate and run times for each energy center. It is impractical to directly measure volumes at our fossil fueled and hydroelectric energy centers due to physical design limitations, scale, and technologies used at the energy generation facilities. While measured volumes are not needed for plant operations, calculated withdrawal and discharge flows are used to evaluate compliance with National Pollutant Discharge Elimination System (NPDES) permit limitations. Withdrawal volumes are measured with meters at CTG locations.
Water withdrawals – volumes from water stressed areas	Not relevant	Ameren does not withdraw water from water stressed areas. Ameren released a Water Resilience Assessment report in 2018 that assessed the current and future availability of

		<p>water resources across a broad region, including the Midwest and Great Plains (where Ameren service territory is located) under a variety of potential climate change scenarios. The report did not identify areas of present or future water stress within our operational boundaries. In addition, the report concluded that water stress is projected to be near normal for most regions within the study area until 2030. Ameren's Water Resiliency Report is posted on our website at <a href="http://www.ameren.com/Sustainability">www.ameren.com/Sustainability</a></p>
Water withdrawals – volumes by source	100%	<p>Water withdrawals are calculated daily at our fossil fueled, nuclear, and hydroelectric energy centers, and rolled up into monthly reports. Our CTGs all source water from third party sources which are metered and recorded monthly. Water withdrawals at Ameren's fossil fueled, nuclear, and dam hydroelectric energy centers occur from both freshwater surface and groundwater sources. For these energy centers, withdrawal flows/volumes are calculated based on design pump flow rate and run times for each energy center. The principal sources of surface freshwaters are within the upper Mississippi and Missouri River basins. It is impractical to directly measure volumes at our 8 largest energy centers due to physical design limitations, scale, and technologies used at the energy generation facilities. While measured volumes are not needed for plant operations, calculated withdrawal and discharge flows are used to evaluate compliance with NPDES permit limitations.</p>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	Not relevant	<p>Not applicable. Ameren is not in the oil and gas sector.</p>
Water withdrawals quality	100%	<p>Water quality of withdrawals are calculated daily at our four fossil fueled, one CTG, nuclear, and hydroelectric energy centers, and rolled up into monthly reports. The rest of the CTGs source water from third party municipalities providing quality potable water. While the CTGs do not</p>

		<p>directly measure water quality, 100% was reported because the water comes from municipal potable water systems. The water withdrawal of all 8 CTG facilities only makes up less than 0.2% of total withdrawal. At the fossil fueled energy centers, intake water is routinely monitored for temperature and total suspended solids. NPDES (wastewater) permits also require periodic chemical analysis of a broad range of parameters in intake water. At our hydroelectric dams (Osage and Keokuk) and pumped storage (Taum Sauk) sites, reservoir quality as well as upstream and downstream quality is regularly monitored to ensure appropriate environmental quality and maintain our operational permits.</p>
Water discharges – total volumes	100%	<p>Water discharge is calculated daily at all energy generation sites in scope and are rolled up into monthly reports for Discharge Monitoring Reports (DMRs). Large volumes of water are discharged from seven energy centers: four fossil fueled, one nuclear, and two hydroelectric dams. Discharge flows/volumes are calculated based on design pump flow rate and run times for each energy center. Very little water is discharged from the pumped storage facility at Taum Sauk as this facility is considered a closed loop and uses recycled water. Many of the combustion turbine sites use water but their use and discharge is negligible compared to our other generation centers. For our two hydroelectric dams, withdrawal equals discharge as there is no consumption.</p>
Water discharges – volumes by destination	100%	<p>Water discharge is calculated daily at all energy generation sites in scope and are rolled up into monthly reports for DMRs. Seven of the largest energy centers (four fossil fuel, one nuclear, and two hydroelectric dams) discharge to surface water and calculations are based on design pump flow rate and run times. All of these energy centers have wastewater treatment systems. The CTGs discharge to third party sources, includes storm water, and volumes are measured for DMRs. Total CTG discharge is less than 0.2% of total discharge.</p> <ul style="list-style-type: none"> <li>• Three fossil fueled energy centers discharge to</li> </ul>

		<p>the Mississippi River and one coal plant discharges to the Missouri River.</p> <ul style="list-style-type: none"> <li>• One hydroelectric facility discharges to the Osage River, and the other is a run-of-the-river dam spans the Mississippi River.</li> <li>• There is no water discharged from the closed-loop Taum Sauk pumped storage location, which uses recycled water.</li> <li>• Our two hydroelectric dams calculate water discharge based on pump flow rates and run time.</li> </ul>
Water discharges – volumes by treatment method	100%	<p>Discharge volumes are calculated daily based on design pump flow rate and run times, and reported monthly. For this calculation, Ameren's two hydroelectric dam facilities and one pump storage facility have been excluded as recommended by the CDP guidance</p> <ul style="list-style-type: none"> <li>• Three fossil fueled energy centers discharge to the Mississippi River and one coal plant discharges to Missouri River. All have on-site wastewater treatment systems that are being upgraded.</li> <li>• One of our hydroelectric dam discharges to the Osage River, and the other is a run-of-the-river dam that spans the Mississippi River.</li> <li>• There is no water discharged from the Taum Sauk pumped storage as it is considered to be on a closed loop system using recycled water.</li> <li>• The combustion turbine sites are a closed loop, discharge to third party sources, and have very little discharge compared to other energy centers (&lt; 0.001% of total). For our two hydroelectric dams, water is estimated based on river flow rates.</li> </ul>
Water discharge quality – by standard effluent parameters	76-99	<p>Discharges (via specified outfalls) are monitored for water quality as required by NPDES (wastewater) permits at all energy centers subject to wastewater quality monitoring conditions in their permits (this excludes one CTG site). Ameren owns and operates two river-based hydroelectric facilities.</p> <ul style="list-style-type: none"> <li>• The Keokuk Renewable Energy Center is a run-of-the-river facility on the Mississippi River where water flows through at the same rate as the river's natural flow rate. As it is a run-of-the-river facility, no water is taken up, discharged, or held up in</li> </ul>

		<p>any way that would affect natural river flow.</p> <ul style="list-style-type: none"> <li>• The Osage Energy Center (Bagnell Dam) withholds water in a reservoir that is used for recreation (Lake of the Ozarks) and is released in compliance for downstream flow obligations. Releases are monitored and managed to ensure downstream flows meet regulatory criteria (as contained in our Federal Energy Regulatory Commission license).</li> </ul>
Water discharge quality – temperature	51-75	<p>Thermal cooling water discharge outfalls are monitored for thermal parameters as required by NPDES (wastewater) permits at our five energy centers subject to thermal monitoring conditions (These include the four fossil fueled and one nuclear generation sites). For this calculation, Ameren's two hydroelectric dam facilities and one pump storage facility have been excluded as recommended by the CDP guidance (making the new total number of facilities included in the calculation thirteen). CTGs discharge very small amounts to surface water and many are not subject to thermal permitting requirements. The water used at all 8 CTG facilities makes up less than 0.0001% of total discharge. The rest of the 99.99% discharged is monitored for temperature at the five thermal cycling facilities (four fossil fueled, one nuclear). 99.99% of our water discharge is monitored for temperature, although this represents only 62% of facilities included in the reporting boundary.</p>
Water consumption – total volume	100%	<p>A small percentage of water is consumed at our major energy centers for cooling and about 99% of water withdrawn is discharged back to the environment. Consumption volumes are estimated based on energy center operations (i.e. generation) and consumption factors published by regulatory agencies.</p>
Water recycled/reused	1-25	<p>Recycled volumes are calculated annually based on flow balances developed and provided to regulators as part of NPDES (wastewater) permit applications. Water is recycled/reused at three of our energy centers. For this calculation, Ameren's two hydroelectric dam facilities have been excluded as recommended by the CDP guidance (making the new total number of facilities included</p>

		in the calculation fourteen). Recycled water is used at one coal fired facility for the flue gas desulfurization (FGD scrubber), and one nuclear facility for thermal cooling. Water is also recycled at the Taum Sauk pump storage facility, which is considered to be closed-loop systems.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Clean and safe potable water is available at all Ameren facilities for personnel use. The water quality is monitored at our facilities that produce their own potable water.

## W-EU1.2a

**(W-EU1.2a) For your hydroelectric operations, what proportion of the following water aspects are regularly measured and monitored?**

	<b>% of sites/facilities/operations measured and monitored</b>	<b>Please explain</b>
Fulfilment of downstream environmental flows	100%	<p>Ameren owns and operates two river-based hydroelectric facilities, where downstream environmental flows are maintained.</p> <ul style="list-style-type: none"> <li>• The Keokuk Energy Center is a run-of-the-river facility on the Mississippi River where water flows through at the same rate as the river's natural flow rate. The water is not taken up, discharged, or held up in any way that would affect natural river flow.</li> <li>• The Bagnell Dam (Osage Energy Center) withholds water in the Lake of the Ozarks reservoir that is used for recreation. The Osage Energy Center has downstream flow obligations. Water releases from the lake are monitored and managed to ensure that downstream flows meet regulatory criteria (as contained in our Federal Energy Regulatory Commission license).</li> </ul>
Sediment loading	100%	<p>Ameren owns and operates two river-based hydroelectric facilities where sediment loading is monitored.</p> <ul style="list-style-type: none"> <li>• The Keokuk Energy Center is a run-of-the-river facility on the Mississippi River where water flows through at the same rate as the river's natural flow rate. The water is not taken up, discharged, or held up in any way that would affect natural river</li> </ul>

		<p>flow.</p> <ul style="list-style-type: none"> <li>• The Osage dam withholds water in a reservoir that is used for recreation. The Osage Energy has downstream flow obligations. At this location water releases are monitored and managed to ensure that downstream flows meet regulatory criteria (as contained in our Federal Energy Regulatory Commission license).</li> </ul>
Other, please specify	Not relevant	We do not measure and monitor other water aspects at this time

## W1.2b

**(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?**

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	59,905,443	Lower	<p>For this 2019 disclosure, we have expanded on our reporting boundary from the 2018 disclosure to include our fossil fueled, nuclear, hydroelectric and CTG generation facilities that use water. The total withdrawal volume is lower than previous years ("lower" is defined as 10%-30% lower). This is primarily due to the decreased generation at our Osage Energy Center (hydroelectric dam) which used half the volumes of water of previous years due to construction that was occurring on site. Water withdrawals are calculated daily for all generation sites within the reporting boundary. The figure reported in column two includes all of the water withdrawn annually for use in our energy generation operations.</p> <ul style="list-style-type: none"> <li>• Two of our hydroelectric operations represent the main share of our water withdrawals. These are the Keokuk run-of-river facility on the Mississippi River and the dam on the Osage River where withdrawal is calculated based on the flow through the turbine house and spillway. No water is considered to be withheld or consumed as it flows through the generation turbines</li> <li>• The next largest withdrawals occur at our four</li> </ul>

			<p>major fossil fueled energy centers and one nuclear energy center, which also withdraw directly from the Mississippi and Missouri Rivers.</p> <ul style="list-style-type: none"> <li>• The volumes of water withdrawn for the combustion turbines and makeup water for our pump storage facility are relatively insignificant compared to the hydroelectric, fossil fueled, and nuclear energy centers (CTG withdrawal makes up less than 0.2% of total).</li> <li>• Our Meramec coal-fired energy center will close in 2022 and we are investing in more than 700 MW of additional wind and approximately 100 MWs of solar generation, which will contribute to reduced water withdrawal volumes in future.</li> </ul>
Total discharges	59,751,529	Lower	<p>For this 2019 disclosure, we have expanded on our reporting boundary from the 2018 disclosure to include our fossil fueled, nuclear, hydroelectric and CTG generation facilities that use water. The total discharge volume is lower than previous years ("lower" is defined as 10%-30% lower). This is primarily due to the decreased generation at our Osage Energy Center (hydroelectric dam) which used half the volumes of water of previous years due to construction that was occurring on site. Water discharges are calculated daily for all generation sites included in the reporting boundary and are calculated based on withdrawal and consumption values at our fossil fueled energy centers and based on pump curve values and run time at our hydroelectric facilities.</p> <ul style="list-style-type: none"> <li>• Our hydroelectric operations represent the main share of our water discharges. These are the Keokuk run-of-the-river facility on the Mississippi River, where discharge is calculated based on pump curves and run time, and includes volumes moving through the spillway. No water is considered to be withheld or consumed as it flows through the hydroelectric generation turbines.</li> <li>• The next largest withdrawals occur at our four major fossil fueled energy centers and one nuclear energy center. The volumes of water</li> </ul>

			<p>discharges for the combustion turbines are relatively insignificant compared to the hydroelectric, coal, and nuclear energy centers.</p> <ul style="list-style-type: none"> <li>• No water is discharged from our Taum Sauk pump storage facility, which uses recycled water and is considered a closed loop system.</li> <li>• Our coal-fired Meramec Energy Center will close in 2022 and we are investing in more than 700 MW of additional wind and approximately 100 MWs of solar generation which, will contribute to reduce water discharge volumes in future.</li> </ul>
Total consumption	35,730	Higher	<p>For this 2019 disclosure, we have expanded on our reporting boundary from the 2018 disclosure to include our fossil fueled, nuclear, hydroelectric and CTG generation facilities that use water. The amount of water consumption is higher than the previous year ("higher" is defined as 10%-30% higher). This is primarily due to increased consumption at our nuclear Energy Center, and increased consumption at two of our coal-fired energy centers. Increased consumption at these locations can be attributed to a re-fueling event that resulted in decreased generation at our nuclear energy center in 2017, making numbers in 2018 seem higher in comparison. In addition, one of our fossil-fueled energy centers had increased generation in 2018. Water consumption is estimated monthly for all of our generation sites included in the scope and is calculated based on known generation consumption factors.</p> <ul style="list-style-type: none"> <li>• The largest consumer of water is our nuclear energy center for use in the cooling towers.</li> <li>• Our coal-fired Meramec Energy Center is scheduled for retirement in 2022 and we are investing in more than 700 MW of additional wind and approximately 100 MWs of solar generation, which will contribute to reduce water discharge volumes in future.</li> </ul>

## W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	59,781,581	Lower	<p>The volume of water withdrawn from freshwater sources is lower than the previous year ("lower" is 10-30% lower). This is primarily due to the decreased generation at our Osage Energy Center (hydroelectric dam), which used half the volumes of water of previous years due to construction that was occurring on site.</p> <p>"Relevant" was chosen because we rely heavily on freshwater resources for generation operations.</p> <ul style="list-style-type: none"> <li>•The Keokuk run-of-river facility on the Mississippi River and the Bagnell Dam on the Osage River withdrawal the most, and withdrawal is calculated based on design pump curves and flow through the spillway.</li> <li>•The next largest surface water withdrawals occur at our four major fossil fueled energy centers and one nuclear energy center for use as cooling water.</li> <li>• The Meramec Energy Center, a coal and natural gas fired facility, is scheduled for retirement in 2022 and are investing in at least 800MW of renewable generation, which will reduce surface water</li> </ul>

				withdrawal volumes in future.
Brackish surface water/Seawater	Not relevant			"Not Relevant" was chosen because our operations are not located near, nor withdraw from brackish or seawater sources. This is not expected to change.
Groundwater – renewable	Relevant	5,656	Lower	<p>"Relevant" was chosen because shallow alluvial groundwater is used at three of five generation facilities (2 coal fired energy centers and one nuclear energy center) for drinking water and other plant operations. It is supplied by on-site wells.</p> <ul style="list-style-type: none"> <li>• The amount of groundwater withdrawn is very small, representing less than 0.001% of total withdrawal and is "lower" (defined as 10%-30% lower) compared to previous years. This is due to a refueling in 2017 at the nuclear power plant, which requires a significant increase in personnel on-site increasing potable groundwater withdrawals, making 2018 comparatively lower.</li> <li>• Groundwater is used at two fossil fuel, the nuclear, and one CTG energy center. Volumes are calculated daily based on pump capacity and run time. The amount that is withdrawn is not expected to change significantly in future as our energy centers are expected to run at similar capacities to previous years.</li> </ul>
Groundwater – non-renewable	Not relevant			"Not Relevant" was chosen because our operations do

				not withdrawal water from non-renewable groundwater resources. This is not expected to change.
Produced/Entrained water	Not relevant			"Not Relevant" was chosen because our operations included in the reporting boundary do not produce or entrain water. This is not expected to change.
Third party sources	Relevant	118,206	About the same	"Relevant" was chosen because third-party supply of potable water is from municipal, public and/or private water providers and is used as potable water and for use in our CTG operations. Third-party water volumes are purchased, and therefore metered and reported monthly, and volumes were about the same as the previous year as facilities operated on similar run times compared to the previous year ("about the same" is defined as less than 10% difference). Overall, these water volumes are negligible (less than 0.01%) compared to the volumes used for operations and the facilities are expected to run similar to previous years so no significant changes in volume withdrawal from third-party sources is expected in future.

## W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous	Please explain
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			reporting year	
Fresh surface water	Relevant	59,751,529	Lower	Water is discharged to surface water at all of our energy centers except for our pumped storage facility which has no discharge and is considered a closed-loop system. The total discharge volume was "lower" (10-30% lower) than last year, primarily due to decreased generation at our Osage Energy Center (hydroelectric dam) which used half the volumes of water of last year due to construction that was occurring on site. "Relevant" was chosen because of the large volumes of water that are discharged to surface water annually. Discharge is calculated using known consumption factors, run time, and design pump flows. The CTGs discharge relatively insignificant (< 0.0001%) volumes compared to the hydro and fossil fuel fired energy centers. Our coal-fired Meramec Energy Center will close in 2022 and we are investing in more than 700 MW of additional wind and approximately 100MWs of solar generation in the next several years which, will contribute to reduce water discharge volumes in future.
Brackish surface water/seawater	Not relevant			"Not Relevant" was chosen because our operations are not located near, nor discharge brackish or seawater sources. This is not expected to change in future.
Groundwater	Not relevant			"Not Relevant" was chosen because none of our operations discharge to groundwater. This is not expected to change in future.

Third-party destinations	Not relevant			"Not Relevant" was chosen because none of our operations discharge to third-party party sources. This is not expected to change in future.
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## W1.2j

### (W1.2j) What proportion of your total water use do you recycle or reuse?

	% recycled and reused	Comparison with previous reporting year	Please explain
Row 1	Less than 1%	About the same	<p>Approximately 8238 mega liters of water is recycled continually at Taum Sauk Energy Center, a pumped storage location, our nuclear energy center and one coal-fired energy center. The volume of recycled water was about the same compared to previous years, and this is not expected to change as the volume of water within the system is constant by plant design, and are not expected to be changed.</p> <ul style="list-style-type: none"> <li>• The majority of water is recycled at the Taum Sauk pumped storage location (about 5500 mega liters) where it is pumped up and down between and upper and lower reservoirs to generate electricity. This is considered a closed loop system. Volume of recycled water was calculated based on the upper reservoir capacity.</li> <li>• Water is also recycled at our Callaway Energy Center, a nuclear facility, where water is reused for thermal cooling, and at the coal-fired Sioux Energy Center, where water is reused in the flue gas desulfurization (FGD scrubber). Recycled water was calculated based on the design pump flow rates and capacities of the closed-loop systems.</li> <li>• Reusing water in an isolated reservoir or plant system avoids additional water constantly extracted and reintroduced to the environment. Recycling the cooling water at our nuclear facility helps to reduce additional thermal pollution to surface water discharges, as well as reduce the volume of water that must be withdrawn from the environment for cooling purposes.</li> <li>• The percent of recycled water was calculated according to the suggested CDP methodology and is expected to increase in future as we are closing one of our fossil fueled energy centers, decreasing the total volume of water used, and therefore increasing the proportion of recycled water in overall operations.</li> </ul>

## W-EU1.3

**(W-EU1.3) Do you calculate water intensity for your electricity generation activities?**

Yes

### W-EU1.3a

**(W-EU1.3a) Provide the following intensity information associated with your electricity generation activities.**

Water intensity value (m3)	Numerator: water aspect	Denominator: unit of production	Comparison with previous reporting year	Please explain
0.83	Freshwater consumption	MWh	About the same	<p>The intensity shown is the water intensity in cubic meters (m3) of freshwater consumed per MWh of net generation, for all generation facilities included in the reporting boundary. This intensity factor is about the same compared to the previous year because the percent difference is less than 10%. The water intensity did not change much because generation operations were similar to that of the previous year.</p> <p>We use water intensity internally to track and demonstrate progress in efficiency upgrade investments and several measures of intensity (including various emissions intensities) are included in our voluntary EEI ESG report which is posted on our website.</p> <p>Increased water efficiency reduces the thermal load and MWh efficiency. Therefore, we are investing in water efficiency measures, and expect to use less water in the long-term for similar loads, decreasing our water intensity factor in future. We are transitioning to closing our coal-fired generation technologies that use water and increasing our investment in non-water intensive generation technologies. Our</p>

				<p>coal-fired Meramec Energy Center will close in 2022 and we are investing in more than 700 MW of additional wind and approximately 100 MW of solar generation which, will contribute to reduced volumes of water use per MWh generated in future. We are also currently transitioning to dry ash handling and closing the ash basins at three of our coal-fired energy centers, which also contributes to increased efficiency of water usage. In addition, the wastewater treatment systems are being upgraded, making them more efficient, at our three coal-fired energy centers.</p>
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### W-OG1.3

**(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?**

No, and we have no plans to do so in the next two years

### W1.4

**(W1.4) Do you engage with your value chain on water-related issues?**

Yes, our suppliers

Yes, our customers or other value chain partners

### W1.4a

**(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?**

**Row 1**

**% of suppliers by number**

1-25%

**% of total procurement spend**

51-75

**Rationale for this coverage**

At Ameren, Suppliers within the Strategic Sourcing Supply Chain are engaged in a variety of issues including water use. Ameren is a member and active participant in the Electric Utility Industry Sustainable Supply Chain Alliance (EUISSCA) which

collaborates with other utility companies and suppliers across the nation to advance sustainable best practices in supply chain activities and supplier networks. One such activity is a yearly voluntary survey created by EUISSCA that is sent to the top 100 Suppliers, based on annual spend, within Ameren's Supply Chain. Suppliers are asked to disclose information such as water usage and a variant of sustainable concerns. The Suppliers who are selected to complete the voluntary survey are chosen based on the fact they have the largest impact within Ameren's Supply Chain. The survey is voluntary, but Ameren continually follows up with suppliers on their response so they are incentivized to participate in the survey.

### **Impact of the engagement and measures of success**

The impact of engaging with Ameren's Supply Chain on water related issues has resulted in several Suppliers responding to the voluntary survey. Ameren considers it a success to have Suppliers respond to the voluntary survey and each year, Ameren strives to increase participation. Participation in the survey will allow Ameren to assess where the Suppliers strengths and opportunities are within sustainability and provide an opportunity to work with the Suppliers to create best practices.

### **Comment**

Ameren recognizes that the survey created by EUISSCA is voluntary; however, the Suppliers are responding and are interested in working together to find sustainable options when available. The voluntary survey also allows the Suppliers to gauge their sustainable practices against their peers. Ameren looks forward to engaging with more Suppliers within Supply Chain and increasing participation and transparency in the future.

## **W1.4b**

### **(W1.4b) Provide details of any other water-related supplier engagement activity.**

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#### **Type of engagement**

Onboarding & compliance

#### **Details of engagement**

Inclusion of water stewardship and risk management in supplier selection mechanism

#### **% of suppliers by number**

76-100

#### **% of total procurement spend**

76-100

#### **Rationale for the coverage of your engagement**

Currently, our top 100 suppliers by spend are asked to fill out a voluntary survey on sustainability topics that also includes water use issues and we have the goal to increase response rate of the survey in future. In addition, we are exploring the possibility of including sustainability language in our Request For Proposals (RFPs). By

including this in our RFPs, Ameren will make it clear to suppliers that awareness and management of sustainability and water related stewardship is a priority and desirable trait sought in the suppliers we choose to engage with. Suppliers will be incentivized to examine and/or share their progress on these issues in order to engage with Ameren's supply chain.

#### **Impact of the engagement and measures of success**

It is considered a success when suppliers fill out the voluntary EUISSCA survey, and therefore the greater the number of suppliers that respond, the greater the impact of engagement. In addition, it will be considered a success should sustainability language eventually be included in our RFPs. Further success is when our suppliers are made aware that these issues are important to Ameren and our supply chain engagement activities.

#### **Comment**

We have the goal to increase response rate of the survey in future. In addition, we are exploring the possibility of including sustainability language in our Request For Proposals (RFPs). By including language about how Ameren values sustainability and water stewardship, our suppliers are made aware of our priorities and are also inclined to think about their own business impacts.

### **W1.4c**

#### **(W1.4c) What is your organization's rationale and strategy for prioritizing engagements with customers or other partners in its value chain?**

We manage our business in a sustainable fashion, balancing the needs of the customers and the communities we serve, our co-workers, the environment and our shareholders. Therefore, we engage with our entire value chain and specifically working with municipal governments. For example, we are becoming involved in the St. Louis Metropolitan Sewer District (MSD) initiative called Project Clear where we will be working with MSD to reconstruct the parking lot of one of our facilities to better manage water runoff, enhancing the health of local streams. Across Ameren, we have outlined new construction guidelines to promote constant improvement of water management by reducing volumes used in excavation and hydrostatic testing, and better managing runoff from site and ensuring no contaminated runoff. We listen to the local communities in which we work, and strive to reduce our impact and meet their needs. This is important to us as the local communities are also our customers.

## **W2. Business impacts**

### **W2.1**

#### **(W2.1) Has your organization experienced any detrimental water-related impacts?**

Yes

## W2.1a

**(W2.1a) Describe the water-related detrimental impacts experienced by your organization, your response, and total financial impact.**

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### Country/Region

United States of America

### River basin

Mississippi River

### Type of impact driver

Physical

### Primary impact driver

Flooding

### Primary impact

Reduction or disruption in production capacity

### Description of impact

As many of our energy generation stations are located near the banks of major rivers, flooding can be a risk during periods of prolonged wet weather. The impacts of this are highly dependent on the location and type of facility. Flooding can lead to temporarily increased Operations & Maintenance costs, disruption in personnel transport, or disruptions in plant operations.

### Primary response

Develop flood emergency plans

### Total financial impact

100,000

### Description of response

Impacts from flooding are highly dependent on the facility and location, as well as severity of the flooding event. Costs could start near \$100,000 and range from several hundred thousand in mitigation costs to substantive effects, which is defined as costing several million. These financial impacts are derived from the cost of emergency response, disrupted generation and maintenance procedures, and the cost of implementing measures to mitigate future events. Ameren has robust crisis management strategies at both the operations and corporate levels. We use advance weather systems to monitor and prepare for the severity of impending weather events and mobilize crews and resources to respond effectively. We recently published a Climate Risk Report entitled Building a Cleaner Energy Future, which outlined our long-term risks and expectations. Following past flooding events, Ameren implemented more vigilant surveillance and monitoring of local river stages following extreme rainfall or drought conditions. We have also constructed flood walls, upgraded berms,

implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding.

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**Country/Region**

United States of America

**River basin**

Mississippi River

**Type of impact driver**

Physical

**Primary impact driver**

Severe weather events

**Primary impact**

Increased operating costs

**Description of impact**

Severe weather can lead to damages from rising water and high winds. The impacts of this are highly dependent on the location and type of facility. These impacts can lead to temporarily increased Operations & Maintenance costs, disruption in personnel transport, or disruptions in plant operations.

**Primary response**

Infrastructure maintenance

**Total financial impact**

100,000

**Description of response**

Impacts from severe weather events are highly dependent on the facility and location. Costs could start near \$100,000 and range from several hundred thousand in mitigation costs to substantive effects, which is defined as costing several million. This financial impact figure is calculated based on estimated cost for responding to disruptions in operations and implementing measures to mitigate future impacts and response. The range of response could require slight temporary adjustment in operations or infrastructure maintenance or could lead to total disruption of operations and/or the temporary shutting down of operations. Ameren has robust crisis management strategies at both the operations and corporate levels. We use advance weather systems to monitor and prepare for the severity of impending weather events and mobilize crews and resources to respond effectively. We recently published a Climate Risk Report: Building a Cleaner Energy Future, which outlined our potential climate-related risks. Following recent extreme weather events, we have increased our investment in monitoring and preparedness and constructed flood walls, upgraded berms, implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding.

## W2.2

**(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?**

No

## W3. Procedures

### W-EU3.1

**(W-EU3.1) How does your organization identify and classify potential water pollutants associated with your business activities in the electric utilities sector that could have a detrimental impact on water ecosystems or human health?**

Ameren identifies and classifies potential water pollutants based on the permit and compliance requirements, as well as in response to interactions with our customers and stakeholders. We have identified several potential water pollutants including: Hydrocarbons, Coal Combustion Residuals (CCR), Radiation, Contaminated cooling water, Thermal Pollution, and additional pollutants included on the federal Clean Water Act.

As a condition of the standards for the NPDES operating permits (at four of our five coal and nuclear generating facilities), we are currently re-evaluating the potential risks associated with cooling water withdrawals and resulting thermal discharges. Multiple studies are being performed, culminating in a comprehensive review/report to be submitted to the Missouri Department of Natural Resources with our next permit renewal application for each facility (this excludes the Meramec Energy Center which will cease operations by year-end 2022). Study has already been submitted for Callaway and Labadie Energy Centers and the additional completion and submittal deadlines are as follows: Sioux Energy Center – September 2022, and the Rush Island Energy Center (whose permit renewal is currently pending) with an estimated deadline of late 2023.

We recently performed ecological and human health risks assessments associated with operations and CCR management at our four coal generating facilities. These studies considered discharges to both receiving stream surface waters and adjacent ground water resources. All four studies concluded that there were no risks to human health or the environment. These studies were conducted by Haley and Aldrich, and their 2018 Reports are available on Ameren's web site at: <https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/water-quality>

In response to the US EPA's CCR Rule, Ameren installed groundwater monitoring wells around each of the impoundments and landfills at our coal-fired energy centers. Annual groundwater monitoring reports are issued. The 2018 reports are available under the Compliance heading in the Managing CCRs section of on Ameren's web site at:

<https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports>

## W-EU3.1a

**(W-EU3.1a) Describe how your organization minimizes the adverse impacts of potential water pollutants associated with your activities in the electric utilities sector on water ecosystems or human health.**

Potential water pollutant	Description of water pollutant and potential impacts	Management procedures	Please explain
Hydrocarbons	Hydrocarbons are toxic to all forms of life and have been linked to a variety of health issues in humans including cancer. Hydrocarbons are a very serious pollutant that come from the combustion of coal and oil, among other sources. For hydrocarbons to constitute a threat to human health or the environment, concentration levels must exist above a health based screening level and there must be	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching, and leakages</p> <p>Emergency preparedness</p>	<p>Ameren complies with all permitting and regulatory requirements and works hard to minimize the impact of operations on the environment. We are careful about the use and management of hydrocarbons in equipment at our facilities to minimize the risk of uncontrolled releases. Spill Prevention Control Plans are in place for our generating facilities, substations and other operational areas. Ameren ensures that such pollutants do not enter the discharged water supply by remaining compliant with NPDES permits and investing in best practice infrastructures that prevent spillage, leaching, and leakages. We are also closing our ash ponds and transitioning to dry ash handling which further mitigates the risk of groundwater impacts from our operations.</p>

	a pathway of actual exposure.		
Coal combustion residuals	Coal Combustion Residuals (CCR) may contain fly ash, bottom ash boiler slag and flue gas desulfurization materials generated from burning coal to make electricity. CCRs are non-hazardous and are regulated as solid waste under the Resource Conservation and Recovery Act. Coal ash contains contaminants like mercury, cadmium and arsenic. Without proper management, these contaminants can pollute waterways, ground water, drinking water, and the air. For a	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching, and leakages</p> <p>Community/stakeholder engagement</p> <p>Emergency preparedness</p>	<p>Ameren has four coal-fired energy centers that manage Coal Combustion Residual (CCR) in various impoundments and landfills These facilities are subject to numerous federal and state regulatory programs covering solid waste management and wastewater treatment and discharge. These include the federal "CCR Regulations" issued in 2015. In 2012 and 2014, We conducted ecological and human health risks assessments associated with operations and CCR management at all four coal-fired energy centers. These studies considered discharges to both receiving stream surface waters and adjacent ground water resources. We also identified the location and depth of all private wells located within a mile of our facilities. All four studies concluded that the surface impoundments do not present a risk to human health or the environment. Off-site sampling adjacent to our energy centers confirms that surface waters that serve as a public water supply resource all comply with drinking water standards. Groundwater impacts at the energy centers are limited in nature and there is no risk to public health or the environment. Technical reports concerning CCR are available on Ameren's web site at: <a href="https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports">https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports</a> The groundwater quality data are available in the 2018 annual groundwater monitoring reports on this same website.</p> <p>In addition, Ameren is transitioning all coal-fired energy centers (with the exception of Meramec Energy Center, which is scheduled to close in 2022) to dry ash handling. This means that CCR will be managed with significantly lower volumes of water, enhancing the efficiency of water use and</p>

	<p>pollutant to constitute a threat to human health or the environment, concentration levels must exist above a health based screening level and there must be a pathway of actual exposure. It is important to comply with the various federal and state regulatory programs related to CCR management in order to ensure there is no contamination entering and pollution the environment and waterways.</p>		<p>further reducing the risk of surface and groundwater contamination in future.</p>
Radiation	<p>Radiation has an ionizing effect on living matter, and different particles can penetrate various layers</p>	<p>Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Community/stakeholder engagement</p>	<p>Our sole nuclear generating facility, the Callaway Energy Center, is subject to stringent controls per the terms of its federal Nuclear Regulatory Commission license, as well as other state and federal regulations and permit programs. The Callaway Energy Center performs routine monitoring which is reported annually to the state of Missouri and the</p>

	<p>of material posing serious dangers to humans and environments in the event of a contamination event. As nuclear power plants use large volumes of water, of primary concern is allowing no amount of radiation to pollute the water that is used. The risk of such radiation contamination at nuclear power plants in the United States is small because of the diverse and redundant barriers and safety systems in place at nuclear power plants, the training and skills of the reactor operators, testing and</p>	<p>Emergency preparedness</p>	<p>Nuclear Regulatory Commission. All effluents are sampled, analyzed and treated prior to discharge. Calloway also participates in the Nuclear Energy Institute's Ground Water Protection Initiative.</p>
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	<p>maintenance activities, and the regulatory requirements and oversight of the U.S. Nuclear Regulatory Commission. In addition, cooling water it is never in contact with the nuclear part of the plant but only cools the condenser in the turbine hall.</p>		
<p>Contaminated cooling water</p>	<p>Large volumes of water are used at thermal cycle power plants as cooling water. At nuclear power plants, cooling water could become contaminated with radio nucleotides which can damage cell DNA. The risk of this is low due to the diverse and redundant barriers and</p>	<p>Compliance with effluent quality standards Emergency preparedness</p>	<p>Our coal and nuclear generating facilities are located along two of the largest rivers in the United States that are used as the source of cooling water. Water is withdrawn for use as cooling water and discharged back to the source. For withdrawal, water contaminants (pollutants) are not believed to be present in concentrations that would adversely impact use as cooling water supplies. For discharge, water is monitored for quality to ensure no dangerous levels of pollutants are being discharged back to the environment. As large volumes of water are used for thermal cooling is a non-contact event, there is a low risk of carrying contaminants.</p>

	<p>safety systems in place at nuclear power plants, the training and skills of the reactor operators, testing and maintenance activities, and the regulatory requirements and oversight of the U.S. Nuclear Regulatory Commission.</p>		
<p>Thermal pollution</p>	<p>Elevated temperatures in cooling water discharges may result in either acute or chronic toxicity to aquatic life in the receiving stream, dependent upon temperatures and exposure.</p>	<p>Compliance with effluent quality standards</p>	<p>Thermal impacts from our five coal and nuclear generating facilities are studied extensively. These included evaluations of entrainment and impingement aquatic organisms in cooling water systems and resulting cooling water effluent. With relatively recent revisions to thermal and water intake provisions in the federal Clean Water Act ("Sections 316 a and b"), updated and expanded studies have been included in the latest round of wastewater NPDES wastewater permits and are currently underway. The purpose of these studies is to determine whether Ameren facilities are having an adverse impact on the aquatic organisms in the adjacent rivers. Several studies have been completed and submitted to the permitting authority while several are ongoing. Interim results from one of these studies for the Labadie Energy Center concludes that the balanced indigenous community of aquatic organisms near the thermal discharge are adequately protected and are not adversely impacted.</p>

<p>Other, please specify</p> <p>Other pollutants per the federal CWA</p>	<p>As water pollutants, these chemicals (included by US EPA per the Steam Electric Power Generating Point Source Category, under the Clean Water Act) may result in ecological or human health toxicity, depending on concentration and exposure.</p>	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching, and leakages</p> <p>Emergency preparedness</p>	<p>Recent updates to the Steam Electric Effluent Guidelines per the federal Clean Water Act (2015) included reviews and revisions of water quality impacts and resulted in more stringent effluent limitations for many designated waste streams. We have constructed treatment facilities to upgrade and/or replace affected systems at two of our energy centers and expect to complete remaining projects in 2020.</p>
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### W-OG3.1

**(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?**

Not applicable. Ameren is not in the oil and gas sector.

### W-OG3.1a

**(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.**

Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
No potential water pollutants identified				Not applicable. Ameren is not in the oil and gas sector.

## W3.3

### (W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

## W3.3a

### (W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

#### Direct operations

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##### Coverage

Full

##### Risk assessment procedure

Water risks are assessed as part of an enterprise risk management framework

##### Frequency of assessment

Annually

##### How far into the future are risks considered?

>6 years

##### Type of tools and methods used

Tools on the market  
Enterprise Risk Management  
Databases

##### Tools and methods used

WRI Aqueduct  
Other, please specify  
See comment section below

##### Comment

We have a robust enterprise risk management (ERM) and governance program to identify, evaluate and manage risks. We recently published our Water Resilience Assessment Report, which assess current and future availability of water resources in Ameren's region including our direct operations. The report also assessed the Powder River Basin area of Wyoming, which serves a key location in Ameren's supply chain for coal procurement. Based on the report's findings, we do not expect material impacts on our direct operations through 2030 due to water resource availability. We also published a Climate Risk Report, which took a comprehensive look at the steps Ameren is taking to manage our climate-related risks – including policy and legal, physical, reputational and financial risks – while continuing to meet our obligation to provide safe, reliable and affordable energy to serve our customers. We are also active in transitioning to dry ash handling which reduces our water-related risks. We use a variety of tools in our risk assessment procedures including: USACE Climate Hydrology Assessment Tool; NOAA

US Climate Resilience Toolkit; US Drought Monitor; PRISM Data Explorer; NASA Earth Exchange; and USGS Monthly Water Balance Model.

## Supply chain

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### Coverage

Partial

### Risk assessment procedure

Water risks are assessed as a standalone issue

### Frequency of assessment

Every two years

### How far into the future are risks considered?

>6 years

### Type of tools and methods used

Tools on the market  
Enterprise Risk Management  
Databases

### Tools and methods used

WRI Aqueduct  
Other, please specify  
See comment section below

### Comment

We recently published our Water Resilience Assessment, which assess current and future availability of water resources in Ameren's region including our direct operations. The report also assessed the Powder River Basin area of Wyoming, which serves a key location in Ameren's supply chain for energy fuel procurement. Based on the report's findings, we do not expect material impacts on our direct operations through 2030 due to water resource availability. We also published a Climate Risk Report: Building a Cleaner Energy Future, which took a comprehensive look at the steps Ameren is taking to manage our climate-related risks – including policy and legal, physical, reputational and financial risks – while continuing to meet our obligation to provide safe, reliable and affordable energy to serve our customers. We also are involved in the Electric Utility Industry Sustainable Supply Chain Alliance where we engage with many of or top suppliers by spend on sustainability issues. Partial coverage was selected because our supply chain is so large it is unrealistic to assess these risks in depth across the full supply chain.

## Other stages of the value chain

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### Coverage

None

### Comment

Water risks are not assessed in other stages of our value chain

### W3.3b

**(W3.3b) Which of the following contextual issues are considered in your organization’s water-related risk assessments?**

	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	Ameren's primary energy centers are located within the lower Missouri and middle Mississippi river watersheds and rely heavily on surface water resources. Although our facilities are geographically situated in an area of ample water supply, we strive to minimize the impact of our operations on water quality and use. We monitor water levels in surrounding rivers. This data can alert us to any stressed water level conditions that may affect generation. Historically, water availability in our operating region has not been a cause for concern. Ameren conducted a voluntary Water Resilience Assessment to determine the current and future availability of water resources under a variety of potential climate change scenarios that may influence water resources and water availability. Water stress is projected to be near normal for most regions within Ameren's service area, but is likely to increase in the Powder River Basin, where much of our coal is sourced. We are continually assessing the risks, complying with environmental considerations for permitting, and evaluating the impacts our operations have on the surrounding watersheds. We are using publicly available databases and tools (i.e. WRI Aqueduct, USACE Climate Hydrology Assessment Tool, among others) to assess water resource availability risks.
Water quality at a basin/catchment level	Not relevant, explanation provided	Ameren's primary energy centers are located within the lower Missouri and middle Mississippi river watersheds. Water quality in these large river systems is adequate for our uses and so it is not considered a risk within our water-related risk assessments. Water used from these sources are used in non-contact processes, reducing the necessity for consistently high quality sources. Historically, this has remained unchanged, and we anticipate no major changes in future. Nonetheless, Ameren conducts routine monitoring of temperatures and total suspended solids at our facility intakes in order to continually monitor for potential future changes in quality. In connection with NPDES (wastewater discharge) permit renewals, we monitor intake and effluent water for a broad range of chemical constituents.

<p>Stakeholder conflicts concerning water resources at a basin/catchment level</p>	<p>Relevant, always included</p>	<p>We actively communicate with key stakeholders and participate in stakeholder meetings on water-related issues. The primary opportunity for such communications is in conjunction with our participation on the congressionally authorized Missouri River Recovery Implementation Committee. In addition, we are aware of the impact of current environmental laws and new, more stringent, or changing requirements, including those related to carbon dioxide (CO<sub>2</sub>) under the Affordable Clean Energy Rule, regulations regarding air emissions and effluent discharges, evaluation of cooling water intake structures, the management of coal combustion residuals, and energy efficiency requirements. We engage with our stakeholders on these topics, as failing to do so could limit or terminate the operation of certain of Ameren Missouri's energy centers, increase our operating costs or investment requirements, result in an impairment of our assets, cause us to sell our assets, reduce our customers' demand for electricity or natural gas, or otherwise have a negative financial effect.</p>
<p>Implications of water on your key commodities/raw materials</p>	<p>Relevant, always included</p>	<p>The primary fuel source at Ameren Missouri's coal-fired energy centers comes from the Powder River Basin. These coal mines are located in northeastern Wyoming which could experience increased water stress in the future. However, this is not expected to impact coal supply. We are equipped to source alternatives should long-term impacts affect energy fuel procurement. In addition, the Meramec coal-fired generation center is scheduled to close in 2022. This will reduce the volume of coal resources we need to meet our generation demand.</p> <p>Ameren also plans to add 700MW of wind power by 2020 and 100 MW of solar by 2027, which uses significantly less water resources than coal-burning facilities. The increase of renewable energy generation capacity will support a reduction in reliance on water resources with regard to key commodities and raw materials.</p>
<p>Water-related regulatory frameworks</p>	<p>Not relevant, explanation provided</p>	<p>Ameren's primary energy centers are located within the lower Missouri and middle Mississippi river watersheds. Flows on the Missouri, and to a lesser extent the Mississippi, are managed by various agencies, including most significantly the US Army Corps of Engineers. All of our energy centers are subject to compliance under various state and federal regulations including the Clean Water Act and compliance with water discharge permits such are</p>

		NPDES. We also participate in various stakeholder and regulatory review groups that monitor activities and provide feedback on potential changes that might affect water availability or water quality.
Status of ecosystems and habitats	Relevant, always included	<p>Ecosystems and habitats are currently considered at generating facilities when making plant modifications/changes and during regulatory permit actions. In addition, land and water habitats are considered when constructing or modifying transmission lines and natural gas distribution systems. For example the Illinois Rivers transmission project included endangered bat and frog species studies and protection actions as well as habitat restoration activities included planting of pollinator-friendly vegetation. Another opportunity for communications regarding endangered species and habitat protection/restoration is in conjunction with our participation on the congressionally authorized Missouri River Recovery Implementation Committee.</p> <p>River basin management - Ameren participates in the Missouri River Recovery Implementation Committee Advisory Group. Membership includes 29 stakeholders: federal agencies, states, tribes, and non-governmental stakeholders. The purpose of the Advisory Group is to study the Missouri River and its tributaries to determine actions required to recover federally listed species under the Endangered Species Act while balancing such actions with the risks and benefits to other designated purposes of the US Army Corps of Engineer's river management system.</p>
Access to fully-functioning, safely managed WASH services for all employees	Not relevant, explanation provided	<p>Potable water is available for personnel to use for sanitation and hygiene at each facility.</p> <p>As part of our commitment to our employees, the water quality is monitored at our facilities that provide potable water to ensure that it is safe for drinking. Given the facilities in our region, this is not anticipated to be an area of concern in the future.</p>
Other contextual issues, please specify	Not relevant, explanation provided	No other contextual issues are considered at this time.

### W3.3c

**(W3.3c) Which of the following stakeholders are considered in your organization's water-related risk assessments?**

	Relevance & inclusion	Please explain
Customers	Not relevant, explanation provided	Ameren provides safe, reliable, affordable, and cleaner energy that is foundational to the well-being and security of millions of people, as well as the economy of our region and country. The water resilience assessment examined water resources across a broad region of the United States including the Midwest and Great Plains regions under a variety of climate change assumptions. These regions include the communities in which our customers live and work.
Employees	Not relevant, explanation provided	Our Water Resiliency Assessment focused on the potential climate change impacts on water availability, as needed for our largest generating facilities. The water resilience assessment examined water resources across a broad region of the United States including the Midwest and Great Plains regions under a variety of climate change assumptions. These regions include the communities in which our co-workers live and work.
Investors	Relevant, always included	Economic risk is always considered with a goal of providing low-cost power to customers, while providing a fair return to our investors. Investors are considered in our water resilience efforts as they are a key input into our supply chain. In addition, we dedicate significant time and resources to report and remain transparent to our investors by responding to the CDP Climate and CDP Water surveys.
Local communities	Relevant, always included	With regard to water-related risk, our Water Resilience Assessment informed and helped us better understand the degree of water scarcity risk in our business and operation territories. By looking at regional water stress in this way, we were taking local communities, our customers, into account and considering them and their communities in our understanding of water resource availability. Both Ameren and our local communities are dependent on sustainable sources of freshwater and it is important to understand how we play a role alongside our local communities.
NGOs	Not considered	NGOs are not considered in our water-related risk assessments
Other water users at a basin/catchment level	Relevant, always included	Ameren meets with local water users and monitors water near major generating facilities.
Regulators	Relevant, always included	Ameren meets often with state and federal regulatory agencies including the Missouri Department of Natural Resources, the US Environmental Protection Agency, the US

		Fish and Wildlife Service, and the US Army Corps of Engineers, among others.
River basin management authorities	Relevant, always included	Ameren participates in the Missouri River Recovery Implementation Committee Advisory Group. The purpose of the Advisory Group is to study the Missouri River and its tributaries to determine actions required to recover federally listed species under the Endangered Species Act.
Statutory special interest groups at a local level	Not considered	Statutory special interest groups at a local level are not considered in our water-related risk assessment.
Suppliers	Relevant, always included	Ameren's primary fuel source for its coal-fired energy centers is the Powder River Basin. These coal mines are located in northeastern Wyoming which could experience increased water stress in the future. However, this is not expected to impact coal supply. We are equipped to source alternatives should long-term impacts affect energy fuel procurement. In addition, the Meramec coal-fired generation center is scheduled to close in 2022. This will reduce the volume of coal resources we need to meet our generation demand.
Water utilities at a local level	Not considered	Water utilities at a local level are not considered in our water-related risk assessment.
Other stakeholder, please specify	Not considered	We do not include other stakeholders in our assessment.

### W3.3d

**(W3.3d) Describe your organization’s process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.**

Ameren continually tracks developments and new environmental rulings, then verifies compliance and assesses the need for action including, as may be needed, in the design and deployment of new or modified treatment systems. Ameren recently conducted a water resiliency study which assessed the current and future availability of water resources and potential water stress across a broad region, under a variety of potential climate change assumptions. The report, available to the public on the Ameren website, focuses on natural factors and how changes in global temperature and precipitation may influence water resources and water availability. Regions encompassing both full direct operations as well as major supply chain factors were incorporated. Ameren has a robust enterprise risk management (ERM) and governance programs to identify, evaluate and manage risks. Our ERM program is a comprehensive, consistently applied management framework that captures all climate-related policy and legal, physical, reputational and financial risks. Risk management is embedded into the business processes and key decision making at all levels of the Company.

A variety of management teams throughout our organization plan and execute our risk strategy, as well as coordinate with internal and external subject matter experts to inform the Board and company leadership of specific issues. These teams include, but are not limited to: environmental, innovation, legislative and regulatory affairs, corporate planning, engineering and generation, transmission, distribution and gas operations. In addition, our Board of Directors has extensive oversight over our strategy and execution and all aspects of risk, including key climate risks. In addition to the Board's direct oversight, the Audit and Risk Committee oversees Ameren's ERM program, which includes strategic and operational risks, as well as the processes, guidelines and policies for identifying, assessing, monitoring, and mitigating such risks, which, as noted above, include climate-related risks. In 2018, Ameren created the Corporate Social Responsibility (CSR) department to lead efforts on ESG, climate and water-related issues and shareholder advocacy efforts. Additionally in 2018, Ameren created a CSR Executive Steering Committee to lead Ameren's enterprise-wide social responsibility efforts, including providing input to our CSR strategy. In 2019, Ameren further emphasized the importance of managing ESG and climate-related issues by establishing a Vice President-Sustainability & Electrification.

Furthermore, the Nuclear and Operations Committee oversees and reviews the Company's operations, including safety, performance and compliance issues. Company representatives also engage various outside entities on water related matters such as state and federal regulatory/resource organizations including the Missouri Department of Natural Resources (MDNR), Missouri Department of Conservation (MDC), US Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (FWS), regional watershed groups (Missouri River), along with local and regional non-governmental organizations (NGOs). Decisions are made internally according to financial and regulatory factors, as well as in response to our engagement with the local community and our own goals to operate in an environmentally optimal way.

## W4. Risks and opportunities

### W4.1

**(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes, only within our direct operations

### W4.1a

**(W4.1a) How does your organization define substantive financial or strategic impact on your business?**

Climate and water-related risks and opportunities are identified by numerous functions within the Company, including Corporate Social Responsibility, Ameren Missouri Power Operations, Energy Efficiency, Innovation & Corporate Strategy, and others through analysis, research and discussions by and among our different business segments. Once a potential risk/opportunity is identified that could have a financial impact greater than \$1M or other qualitative impacts the

company or an asset, a subject matter expert studies it. This threshold identifies potential substantive financial impact. Ameren's process for identifying risks and opportunities associated with water-related issues allows Ameren to make prudent decisions, while meeting customers' energy needs in a safe, reliable, efficient and environmentally responsible manner. We assess climate-related risks, including risks related to regulatory changes, changes in customer behavior, reputation, and weather. Short (from 0 to 5 years), medium (from 5 to 10 years), and long-term (from 10 to 30 years and beyond) risks are part of the identification, assessment, and management processes. The Audit and Risk Committee (ARC) of Ameren's Board of Directors oversees our enterprise risk management (ERM) program. The goals of the ERM program are to enhance the ERM structure, further enable cross segment risk portfolio management, create solid ties to emergent risks, and incorporate detailed analysis of topical areas including environmental. Ameren's ARC meets at least five times per year. Current risk is related to implementation of water regulations through the National Pollutant Discharge Elimination System (NPDES) permit program for our energy centers, new EPA regulations pertaining to Clean Water Act section 316(b) and Effluent Limitations Guidelines as well as future regulatory actions associated with threatened and endangered species and Clean Water Act section 316(a). If major capital expenditures or increases in operating costs are required at energy centers based on the final rules that would constitute a substantive change. This would apply to our direct operations as well as parts of our supply chain. We are taking actions to transition our generation fleet to cleaner and more diverse energy resources including renewable wind and solar energy, which do not need the large quantities of water compared to coal-fired energy centers, which will serve to reduce impacts of water-related regulations to the generation fleet.

## W4.1b

**(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?**

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	8	Less than 1%	In total, Ameren is estimated to have over 800 facilities that are defined as administrative and business buildings, substations, energy centers, and other owned locations related to our business and operations. Of these, sixteen energy generation facilities (all of our energy centers that use water for generation) are included in the scope of this disclosure. Of these, eight have the potential to have substantive financial or strategic impact and include our four coal-fired, one nuclear, and three hydroelectric energy centers. When compared to all 800 facilities considered part of Ameren operations, these eight facilities represent approximately 1% of Ameren's total facilities. However, these eight are our

			<p>largest energy centers and accounted for 98% of total gross generation in 2018 and withdrew 99% of the water needed for operations. These energy centers rely heavily on large volumes of water for operations and may be exposed to water risk due to flooding or insufficient flows. However, our Water Resilience Assessment concluded that the regions in which we operate have low risk of future water scarcity. The two hydroelectric dams and one hydroelectric pump storage may also be exposed to water risk due to insufficient flows. However, gross hydroelectric generation is relatively low (approximately 3%) of total gross generation from 2018. In addition, our recently completed Water Resilience Assessment concluded that the major river basins (i.e. the Missouri and the Mississippi) in our operating regions are expected to have ample water supply into the long term. The combustion turbines are not exposed to substantive water-related risk due to their very small reliance on water resources in comparison to the larger energy centers.</p>
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## W4.1c

**(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive impact on your business, and what is the potential business impact associated with those facilities?**

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**Country/Region**

United States of America

**River basin**

Mississippi River

**Number of facilities exposed to water risk**

8

**% company-wide facilities this represents**

Less than 1%

**% company's annual electricity generation that could be affected by these facilities**

76-99

**% company's global oil & gas production volume that could be affected by these facilities**

**% company's total global revenue that could be affected**

Unknown

### Comment

Ameren does not selectively disclose revenues from energy centers and have therefore not provided a figure. Eight energy centers are exposed to substantive water related risk, and they are all located in the Mississippi River Basin. These include four fossil fuel fired, two hydroelectric dams, a pumped storage facility, and one nuclear energy center. More specifically, one coal fired and the nuclear energy center are also located in the Missouri River Basin (which is a part of the Mississippi River Basin). Each of these energy centers can be substantively affected by flooding or insufficient flows. The four coal fired facilities comprised approximately 71% of 2018 generation, making up the largest bulk of gross generation. In comparison, the hydroelectrically dams and pump storage make up a small portion of gross generation capacity in 2018 (approximately 3%).

## W4.2

**(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.**

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### Country/Region

United States of America

### River basin

Mississippi River

### Type of risk

Physical

### Primary risk driver

Dependency on water intensive energy sources

### Primary potential impact

Closure of operations

### Company-specific description

Our largest energy centers withdraw and discharge millions of mega liters of surface water per year from the Mississippi and Missouri river basins. These basins are large, covering broad geographic areas, and flows are highly managed (using numerous dams and locks) and regulated by the US Army Corps of Engineers (USACE). Primary factors that may influence the availability of these water resources include USACE management of flows, climate (temperature and precipitation), and consumption (by upstream users). A substantial uncertainty is how changes in temperature and precipitation, resulting from climate change, may influence water resources and availability. There is uncertain risk that future flows might be insufficient to meet our cooling water demand. If energy centers need to be closed due to a lack of available

water, stranded cost issues for shareholders would arise and require regulatory approval for cost recovery. However, our Water Resilience Assessment published in 2018 shows water stress is projected to be near normal for the Mississippi River basin.

**Timeframe**

More than 6 years

**Magnitude of potential impact**

Medium-high

**Likelihood**

Very unlikely

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

Ameren operations are located in the water abundant Mississippi and Missouri river watersheds. Ameren completed a Water Resilience Assessment that concluded that the risk of greatly reduced water availability is very low for the foreseeable future. The amount of financial impact cannot be precisely determined due to the high level of uncertainty and variability in cost in the extent and duration of any possible disruptions.

**Primary response to risk**

Improve monitoring

**Description of response**

Ameren monitors river basin conditions, and performs periodic water resiliency and risk assessments, including consideration of climate change. We expect to coordinate these updates with the Ameren Missouri Integrated Resource Plan (IRP) triennial filing. River levels are monitored daily at major energy centers.

**Cost of response**

50,000

**Explanation of cost of response**

Approximate cost is expected to be in the range of \$50,000 per year, including both the embedded cost of river level monitoring and periodic studies.

---

**Country/Region**

United States of America

**River basin**

Mississippi River

**Type of risk**

Regulatory

**Primary risk driver**

Regulation of discharge quality/volumes

**Primary potential impact**

Increased operating costs

**Company-specific description**

Section 316(a) of the US Clean Water Act requires limitations on thermal discharges from industrial sources, including power plants. Cooling water discharges at Ameren's energy centers are regulated by the US Environmental Protection Agency and the Missouri Department of Natural Resources, through the NPDES (National Pollutant Discharge Elimination System) permit program. As required by the current Labadie Energy Center permit, extensive thermal studies, monitoring, and modeling are being conducted at that energy center. Based on the results to date, we believe we are in full compliance with Section 316(a). In the event of changing thermal conditions, changes in operating procedures might be necessary to address thermal issues, avoiding the high-cost alternative of installing cooling towers. We do not believe there are thermal issues at our other fossil energy centers that would require cooling towers. Nonetheless, if one of our energy centers would need to reduce or cease operations or install capital intensive modifications, stranded cost issues could potentially arise for shareholders and require regulatory approval for cost recovery.

**Timeframe**

More than 6 years

**Magnitude of potential impact**

Medium-high

**Likelihood**

Unknown

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

### **Explanation of financial impact**

The actual amount of expenditures to comply with these environmental regulations may vary substantially because of uncertainty as to whether EPA will revise regulatory obligations, which compliance strategy will be used, and their ultimate cost, among other things.

### **Primary response to risk**

Pollution abatement and control measures

### **Description of response**

In the event that ongoing studies indicate that the Labadie Energy Center may not fully meet compliance requirements in the future, we expect operating procedures would be implemented to address thermal issues and thereby avoid requirements to install cooling towers at the Labadie Energy Center.

### **Cost of response**

0

### **Explanation of cost of response**

Unknown until a response is warranted. Therefore it is very difficult to provide a single number for cost of response.

---

### **Country/Region**

United States of America

### **River basin**

Mississippi River

### **Type of risk**

Regulatory

### **Primary risk driver**

Regulatory uncertainty

### **Primary potential impact**

Increased capital costs

### **Company-specific description**

Section 316(b) of the US Clean Water Act (CWA) establishes criteria to protect fish and other aquatic organisms from detrimental impacts associated with large water intake structures. At power plants (including Ameren's energy centers), aquatic organisms can be impinged or entrained within cooling water intake structures, piping and condenser systems. The US Environmental Protection Agency issued revised Section 316(b) regulations in 2014, requiring extensive studies for review by the Missouri Department of Natural Resources and other agencies over the next 4 to 6 years. These include assessments of various control technologies, up to and including cooling tower retrofits. Outcomes of CWA Section 316(b) studies might result in regulatory agencies requiring

cooling system modifications or replacement technologies at our Labadie, Rush Island, and Sioux energy centers. Ameren believes the installation of fine mesh screens may be required (upon completion of these studies and review by regulatory agencies) at these three energy centers. {See Ameren's 2017 IRP for details:  
<https://www.ameren.com/missouri/company/environment-and-sustainability/integrated-resource-plan>.

**Timeframe**

4 - 6 years

**Magnitude of potential impact**

Medium-high

**Likelihood**

Likely

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

49,000,000

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

Costs for fine mesh screen retrofits at three Ameren Energy Centers were estimated in Table 5.3 of Chapter 5, Environmental Compliance, (Environmental Mitigation Costs) of Ameren Missouri's 2017 Integrated Resource Plan (as referenced above). The Integrated Resource Plan is available at:  
<https://www.ameren.com/missouri/company/environment-and-sustainability/integrated-resource-plan>

**Primary response to risk**

Pollution abatement and control measures

**Description of response**

Upon completion of the current Section 316(b) studies, we will begin dialogue with the regulatory agencies, and if warranted, begin design, budgeting and procurement of the required technologies.

**Cost of response**

49,000,000

**Explanation of cost of response**

The approximate cost of fitting three energy centers with fine mesh screens is estimated to be \$49 million dollars, as reported in table 5.3 of Ameren Missouri's 2017 IRP.

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**Country/Region**

United States of America

**River basin**

Mississippi River

**Type of risk**

Physical

**Primary risk driver**

Flooding

**Primary potential impact**

Increased operating costs

**Company-specific description**

Impacts from flooding are highly dependent on the facility and location, as well as severity of the flooding event. Costs could range from several hundred thousand in mitigation costs to substantive effects costing several million. The range of response could require slight temporary adjustment in operations or could lead to total disruption of operations and/or the temporary shutting down of operations. Ameren has robust crisis management strategies at both the operations and corporate levels. We use advance weather systems to monitor and prepare for the severity of impending weather events and mobilize crews and resources to respond effectively. We have published a Climate Risk Report: Building a Cleaner Energy Future which outlined our potential climate and water-related risks and expectations. Following past flooding events, Ameren implemented more vigilant surveillance and monitoring of local river stages following extreme rainfall or drought conditions. We have also constructed flood walls, upgraded berms, implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding.

**Timeframe**

Current up to 1 year

**Magnitude of potential impact**

Medium-high

**Likelihood**

Very likely

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

Severe weather can lead to damages from rising water, lightning and high winds. The impacts of this are highly dependent on the location and type of facility. These impacts can lead to temporarily increased operation and maintenance costs, disruption in personnel transport, or disruptions in plant operations.

**Primary response to risk**

Develop flood emergency plans

**Description of response**

Before any potential flooding event, our crisis management teams are constantly monitoring weather patterns, developing crisis response protocols, and predicting impacts so we can mobilize our resources to best respond during an event. Following recent extreme weather events, we have implemented "system hardening" by constructing flood walls, upgrading berms, implementing storm water capture and control efforts, and relocating equipment within substation sites susceptible to flooding.

**Cost of response**

**Explanation of cost of response**

Impacts from severe weather events are highly dependent on the facility and location, as well as severity of the flooding event. Costs could range from several hundred thousand in mitigation costs to several million dollars. The range of response could require slight temporary adjustment in operations or infrastructure maintenance or could lead to total disruption of operations and/or the temporary shutting down of operations. Ameren has robust crisis management strategies at both the operations and corporate levels. We use advance weather systems to monitor and prepare for the severity of impending weather events and mobilize crews and resources to respond effectively. We have published a Climate Risk Report which outlined our long-term risks and expectations.

**W4.2c**

**(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	Ameren conducted a voluntary Water Resilience Assessment looking at the current and future availability of water resources across a broad region under a variety of potential climate change scenarios that may influence water resources and water availability. The study area included the Upper Mississippi Water Resources Region and the lower Missouri Water Resources Region (Ameren’s service area), as well as specific portions of

		<p>the Powder River Basin (PRB) in Wyoming (a key portion of Ameren’s supply chain for low sulfur coal sourcing). Significant climate change factors, including temperature, precipitation, extreme weather events, drought and streamflow were used to document how historical trends relate to future projections incorporating climate models. Water stress is projected to be near normal for most regions, but is likely to increase in the already arid Powder River Basin. Average annual precipitation has been variable to increasing, but is projected to increase in the future across all three watersheds. Flooding has been increasing and is projected to continue to increase; however, flooding is more variable in the PRB. Drought is projected to increase across all three watersheds. Water is used in processing coal prior to transport, which adds to the water demand. In the long run, this basin could experience increased water stress. Over time, Ameren Missouri expects to increase its portfolio of renewable generation which will reduce our use of coal. In addition the Meramec coal fired energy center is scheduled to close in 2022 reducing reliance on coal. In further reduction of risk, following recent flooding events, Ameren implemented more vigilant surveillance and monitoring of local river stages following extreme rainfall or drought conditions. We have also constructed flood walls, upgraded berms, implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding.</p>
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### W4.3

**(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes, we have identified opportunities, and some/all are being realized

### W4.3a

**(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.**

**Type of opportunity**

Efficiency

**Primary water-related opportunity**

Cost savings

**Company-specific description & strategy to realize opportunity**

Recently the USEPA published a new rule called the Affordable Clean Energy (ACE) rule requiring plant efficiency improvements which will support increased efficiency, reducing use of water for thermal cooling and other purposes in energy centers. Water

is required to operate our generating facilities which produce electricity for our customers' consumption.

**Estimated timeframe for realization**

4 to 6 years

**Magnitude of potential financial impact**

Low-medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact**

Financial impacts have not yet been estimated. This is because the reduction in water use per MWh would reduce pumping power and save electricity at the marginal cost of production. At the same time, Ameren does not purchase water for thermal cooling purposes and therefore there is no commodity cost.

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**Type of opportunity**

Resilience

**Primary water-related opportunity**

Increased resilience to impacts of climate change

**Company-specific description & strategy to realize opportunity**

Ameren designs and incorporates physically robust features into the electric grid in anticipation of weather-related or other disruptive events that could be enhanced by climate change. Following recent flooding events, we implemented more vigilant surveillance and monitoring of local river stages following extreme rainfall or drought conditions. We have also constructed flood walls, upgraded berms, implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding. To increase resiliency of the electric grid, we bury lines most susceptible to weather-related damage, including those in heavily forested areas and crossing over interstate and multi-lane state highways. For overhead line assets, we increasingly use composite material poles and cross-arms, line post insulators, 360-degree pole guying, and mechanical line dampers. All are effective in neutralizing the otherwise destructive effects of wind and moisture.

**Estimated timeframe for realization**

Current - up to 1 year

**Magnitude of potential financial impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

3,000,000,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact**

Over the next five years (2019-2023) Ameren plans to invest over [\$3.0] billion in transmission system improvements and wind energy generation to ensure that we will be able to provide reliable and safe service and serve customers better. This number was calculated from expected build-transfer agreements.

---

**Type of opportunity**

Efficiency

**Primary water-related opportunity**

Improved water efficiency in operations

**Company-specific description & strategy to realize opportunity**

Three coal generating stations are being converted to manage CCRs in a dry state and thereby reduce water usage and discharge. Modifications are being made to comply with revised Clean Water Act Steam Electric Effluent Guidelines applicable to these facilities.

**Estimated timeframe for realization**

Current - up to 1 year

**Magnitude of potential financial impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

340,000,000

**Potential financial impact figure – minimum (currency)**

## Potential financial impact figure – maximum (currency)

### Explanation of financial impact

On November 3, 2015, the EPA issued a revised rulemaking for steam electric power plant discharges (the Steam Electric Effluent Guidelines Rule). This rule prohibits discharges of ash transport water. As such, Ameren Missouri will have to construct new or augmented fly ash handling systems and new bottom ash handling systems. Ameren Missouri will also need to construct new wastewater treatment systems to manage discharges from various power plant systems such as demineralizer regenerations, storm water, and other process wastewater. We believe the modifications described above will be required at each of our coal-fired energy centers except Meramec. With its retirement at the end of 2022, it is assumed that Meramec would be exempted from these requirements. In 2015, Ameren Missouri began to design waste water treatment systems and conversion to dry ash handling for the Labadie, Rush Island, and Sioux energy centers. Costs for these retrofits at these three Ameren energy centers were estimated in Table 5.3 of Chapter 5, Environmental Compliance, (Environmental Mitigation Costs) of Ameren Missouri's 2017 Integrated Resource Plan (IRP) (referenced above). A total of \$340 million was calculated based on the costs for waste water treatment plant and dry ash conversion at Labadie, Sioux, and Rush Island, as presented in table 5.3 of the IRP. The Integrated Resource Plan is available at: <https://www.ameren.com/missouri/company/environment-and-sustainability/integrated-resource-plan>.

## W5. Facility-level water accounting

### W5.1

**(W5.1) For each facility referenced in W4.1c, provide coordinates, total water accounting data and comparisons with the previous reporting year.**

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**Facility reference number**

Facility 1

**Facility name (optional)**

Labadie Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.56419

**Longitude**

-90.83728

**Primary power generation source for your electricity generation at this facility**

Coal - hard

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

1,693,635

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

1,689,398

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

4,237

**Comparison of consumption with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%.

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**Facility reference number**

Facility 2

**Facility name (optional)**

Sioux Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.914722

**Longitude**

-90.29

**Primary power generation source for your electricity generation at this facility**

Coal - hard

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

898,891

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

896,683

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

2,208

**Comparison of consumption with previous reporting year**

Higher

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. "Higher" is used to denote year to year changes of 10%-30% higher.

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**Facility reference number**

Facility 3

**Facility name (optional)**

Rush Island Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.108722

**Longitude**

-90.258056

**Primary power generation source for your electricity generation at this facility**

Coal - hard

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

1,254,336

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

1,252,249

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

2,087

**Comparison of consumption with previous reporting year**

Lower

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. "Lower" is used to denote year to year changes of 10%-30% lower.

---

**Facility reference number**

Facility 4

**Facility name (optional)**

Meramec Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.401348

**Longitude**

-90.334862

**Primary power generation source for your electricity generation at this facility**

Coal - hard

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

420,130

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

419,768

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

362

**Comparison of consumption with previous reporting year**

Higher

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. "Higher" is used to denote year to year changes 10%- 30% higher.

---

**Facility reference number**

Facility 5

**Facility name (optional)**

Callaway Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.761666

**Longitude**

-91.78

**Primary power generation source for your electricity generation at this facility**

Nuclear

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

34,140

**Comparison of withdrawals with previous reporting year**

Higher

**Total water discharges at this facility (megaliters/year)**

7,304

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

26,836

**Comparison of consumption with previous reporting year**

Higher

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. "Higher" is used to denote year to year changes of 10%-30% higher.

---

**Facility reference number**

Facility 6

**Facility name (optional)**

Keokuk Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

40.395833

**Longitude**

-91.374166

**Primary power generation source for your electricity generation at this facility**

Hydroelectric

**Oil & gas sector business division**

**Total water withdrawals at this facility (megaliters/year)**

49,974,717

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

49,974,717

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

0

**Comparison of consumption with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%.

---

**Facility reference number**

Facility 7

**Facility name (optional)**

Osage Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

38.2045

**Longitude**

-92.623

**Primary power generation source for your electricity generation at this facility**

Hydroelectric

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

5,511,388

**Comparison of withdrawals with previous reporting year**

Much lower

**Total water discharges at this facility (megaliters/year)**

5,511,388

**Comparison of discharges with previous reporting year**

Much lower

**Total water consumption at this facility (megaliters/year)**

0

**Comparison of consumption with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. Much lower is used to denote year to year changes more than 30% lower.

---

**Facility reference number**

Facility 8

**Facility name (optional)**

Taum Sauk Energy Center

**Country/Region**

United States of America

**River basin**

Mississippi River

**Latitude**

37.535555

**Longitude**

-90.818055

**Primary power generation source for your electricity generation at this facility**

Hydroelectric

**Oil & gas sector business division**

Not applicable

**Total water withdrawals at this facility (megaliters/year)**

0

**Comparison of withdrawals with previous reporting year**

About the same

**Total water discharges at this facility (megaliters/year)**

0

**Comparison of discharges with previous reporting year**

About the same

**Total water consumption at this facility (megaliters/year)**

0

**Comparison of consumption with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. Taum Sauk Energy Center is a pump storage facility that pumps water between an upper and lower reservoir in order to generate electricity. This is considered a closed loop system.

## W5.1a

(W5.1a) For each facility referenced in W5.1, provide withdrawal data by water source.

---

**Facility reference number**

Facility 1

**Facility name**

Labadie Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

1,688,336

**Brackish surface water/seawater**

0

**Groundwater - renewable**

5,299

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 2

**Facility name**

Sioux Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

898,891

**Brackish surface water/seawater**

0

**Groundwater - renewable**

0

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 3

**Facility name**

Rush Island Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

1,254,299

**Brackish surface water/seawater**

0

**Groundwater - renewable**

37

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 4

**Facility name**

Meramec Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

420,130

**Brackish surface water/seawater**

0

**Groundwater - renewable**

0

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 5

**Facility name**

Callaway Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

33,820

**Brackish surface water/seawater**

0

**Groundwater - renewable**

320

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 6

**Facility name**

Keokuk Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

49,974,717

**Brackish surface water/seawater**

0

**Groundwater - renewable**

0

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 7

**Facility name**

Osage Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

5,511,388

**Brackish surface water/seawater**

0

**Groundwater - renewable**

0

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

---

**Facility reference number**

Facility 8

**Facility name**

Taum Sauk Energy Center

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**

0

**Brackish surface water/seawater**

0

**Groundwater - renewable**

0

**Groundwater - non-renewable**

0

**Produced/Entrained water**

0

**Third party sources**

0

**Comment**

## **W5.1b**

**(W5.1b) For each facility referenced in W5.1, provide discharge data by destination.**

---

**Facility reference number**

Facility 1

**Facility name**

Labadie Energy Center

**Fresh surface water**

1,689,398

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 2

**Facility name**

Sioux Energy Center

**Fresh surface water**

896,683

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 3

**Facility name**

Rush Island Energy Center

**Fresh surface water**

1,252,249

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 4

**Facility name**

Meramec Energy Center

**Fresh surface water**

419,769

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 5

**Facility name**

Callaway Energy Center

**Fresh surface water**

7,304

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 6

**Facility name**

Keokuk Energy Center

**Fresh surface water**

49,974,717

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 7

**Facility name**

Osage Energy Center

**Fresh surface water**

5,511,388

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

---

**Facility reference number**

Facility 8

**Facility name**

Taum Sauk Energy Center

**Fresh surface water**

0

**Brackish surface water/Seawater**

0

**Groundwater**

0

**Third party destinations**

0

**Comment**

## W5.1c

(W5.1c) For each facility referenced in W5.1, provide the proportion of your total water use that is recycled or reused, and give the comparison with the previous reporting year.

---

**Facility reference number**

Facility 1

**Facility name**

Labadie Energy Center

**% recycled or reused**

None

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. No water is recycled at the Labadie Energy Center.

---

**Facility reference number**

Facility 2

**Facility name**

Sioux Energy Center

**% recycled or reused**

Less than 1%

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. The closed loop system at Sioux Energy Center that is used in the FDG scrubber has a fixed capacity and therefore the amount recycled remains about the same from year to year. The percent recycled is calculated by dividing total volume of water recycled by the sum of total volume of water recycled and total water withdrawal for the facility.

---

**Facility reference number**

Facility 3

**Facility name**

Rush Island Energy Center

**% recycled or reused**

None

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. No water is recycled at the Rush Island Energy Center.

---

**Facility reference number**

Facility 4

**Facility name**

Meramec Energy Center

**% recycled or reused**

None

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. No water is recycled at the Meramec Energy Center.

**Facility reference number**

Facility 5

**Facility name**

Callaway Energy Center

**% recycled or reused**

1-10%

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. The closed loop system at Callaway Energy Center that is used for cooling has a fixed capacity and therefore the amount recycled remains about the same from year to year. The percent recycled is calculated by dividing total volume of water recycled by the sum of total volume of water recycled and total water withdrawal for the facility.

---

**Facility reference number**

Facility 6

**Facility name**

Keokuk Energy Center

**% recycled or reused**

None

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. No water is recycled at the Keokuk Energy Center.

---

**Facility reference number**

Facility 7

**Facility name**

Osage Energy Center

**% recycled or reused**

None

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. No water is recycled at the Osage Energy Center.

---

**Facility reference number**

Facility 8

**Facility name**

Taum Sauk

**% recycled or reused**

100%

**Comparison with previous reporting year**

About the same

**Please explain**

"About the same" is used to denote year to year changes + or - 10%. Taum Sauk Energy Center is a pump storage facility that pumps water between an upper and lower reservoir in order to generate electricity. This is considered a closed loop system. The percent recycled is calculated by dividing total volume of water recycled by the sum of total volume of water recycled and total water withdrawal for the facility.

## W5.1d

**(W5.1d) For the facilities referenced in W5.1, what proportion of water accounting data has been externally verified?**

**Water withdrawals – total volumes**

---

**% verified**

76-100

**What standard and methodology was used?**

The verification was undertaken in accordance with the ERM CVS assurance methodology which is aligned with the International Standard for Assurance Engagements ISAE 3000 (Revised) and is a CDP-accepted standard. The ERM CVS Independent Assurance Statement is attached. See question W11, W-FI.

**Water withdrawals – volume by source**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water withdrawals by source have not been externally verified.

### **Water withdrawals – quality**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water withdrawals for quality have not been externally verified.

### **Water discharges – total volumes**

---

**% verified**

76-100

**What standard and methodology was used?**

The verification was undertaken in accordance with the ERM CVS assurance methodology which is aligned with the International Standard for Assurance Engagements ISAE 3000 (Revised) and is a CDP-accepted standard. The ERM CVS Independent Assurance Statement is attached. See question W11, W-FI.

### **Water discharges – volume by destination**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water discharge by source have not been externally verified.

### **Water discharges – volume by treatment method**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water withdrawals discharges by treatment method have not been externally verified.

### **Water discharge quality – quality by standard effluent parameters**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water quality withdrawals discharges by standard effluent parameters have not been externally verified.

### **Water discharge quality – temperature**

---

**% verified**

Not verified

**What standard and methodology was used?**

Water withdrawals discharges by temperature have not been externally verified.

### **Water consumption – total volume**

---

**% verified**

76-100

**What standard and methodology was used?**

The verification was undertaken in accordance with the ERM CVS assurance methodology which is aligned with the International Standard for Assurance Engagements ISAE 3000 (Revised) and is a CDP-accepted standard. The ERM CVS Independent Assurance Statement is attached. See question W11, W-FI.

### **Water recycled/reused**

---

**% verified**

76-100

**What standard and methodology was used?**

The verification was undertaken in accordance with the ERM CVS assurance methodology which is aligned with the International Standard for Assurance Engagements ISAE 3000 (Revised) and is a CDP-accepted standard. The ERM CVS Independent Assurance Statement is attached. See question W11, W-FI.

## **W6. Governance**

### **W6.1**

**(W6.1) Does your organization have a water policy?**

Yes, we have a documented water policy that is publicly available

#### **W6.1a**

**(W6.1a) Select the options that best describe the scope and content of your water policy.**

	Scope	Content	Please explain
Row 1	Company-wide	Description of business impact on water Company water targets and goals Commitments beyond regulatory compliance	<p>Ameren's water policy states: "Ameren is committed to protecting natural resources, including the preservation of water. Though our facilities are geographically situated in an area of ample water supply, operating divisions within Ameren take into consideration the impact of our operations on both water quality and use. We have made conscious decisions to conserve water in the design and modifications of our facilities, and plan to conserve water further in the future".</p> <ul style="list-style-type: none"> <li>• In our water policy, we identify that our business impacts affect water quality and use, and the need to conserve water. Of the large volumes of surface water we use for cooling, 99% of which is discharged again to the source and is constantly monitored to comply with thermal and other pollution limits.</li> <li>• We have specific goals to meet our conscious decision to conserve water by reducing the use of surface water by 11 billion gallons a year by converting to dry ash handling systems at the fossil-fueled energy centers. In addition, we are making significant investments in upgrading wastewater treatment systems. These goals go beyond regulatory requirements. In transitioning to cleaner generation and we expect to close a fossil-fuel fired energy center in 2022 (including increased renewable generation by adding at least 800 MW of wind and solar by 2027) and expect to further reducing our need for surface water in operations. Ameren also conducted a voluntary Water Resilience Assessment to inform our understanding and knowledge of water stress to verify our understanding of water availability and inform decision making for design of our facilities and operations for enhanced water conservation. This report is available at <a href="http://Ameren.com/sustainability">Ameren.com/sustainability</a>. The planned additions of renewable generation as well as increased investments in water efficiency measures and technologies work towards our goal to conserve water further in the future.</li> </ul>

## W6.2

**(W6.2) Is there board level oversight of water-related issues within your organization?**

Yes

## W6.2a

**(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.**

Position of individual	Please explain
------------------------	----------------

Board-level committee	<p>Ameren’s commitment to strong corporate governance includes policies and principles that integrate ESG matters into our broader risk management and strategic planning initiatives, including water-related issues.</p> <ul style="list-style-type: none"> <li>• The Audit and Risk Committee of the Board of Directors (Board) oversees the Company’s overall enterprise risk management program.</li> <li>• The Finance Committee of the Board oversees capital expenditure planning and reviews and approves major capital projects, including those related to water-related initiatives.</li> <li>• The Nuclear and Operations Committee of the Board oversees all operational matters, including environmental compliance matters.</li> <li>• The Nominating and Corporate Governance Committee of the Board oversees the Company’s corporate governance, which includes review of the Company’s proxy statements, shareholder proposals, responses to shareholder proposals and any reports the Company issues in response to shareholder proposals.</li> </ul>
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## W6.2b

**(W6.2b) Provide further details on the board’s oversight of water-related issues.**

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	Monitoring implementation and performance Overseeing major capital expenditures Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding corporate responsibility strategy	<p>We are focused on ensuring that our corporate governance and enterprise risk management practices protect and enhance long-term shareholder value and reflect our environmental stewardship, including water stewardship.</p> <p>In addition to receiving regular reports from each board committee that oversees the various elements impacted by environmental and water-related matters, the full Board of Directors holds an annual strategy session to consider key risks and opportunities for the company, including those posed by climate change and water-related issues. The Board hosts presentations by outside experts who provide perspectives and updates on climate change and related risks and opportunities. The Board of Directors Audit and Risk Committee which oversees the Company's overall enterprise risk management program which includes water-related issues, as water availability is a key component of power generation at our fossil-fueled, nuclear, and hydroelectric energy centers. The Nuclear and</p>

		<p>Operations Committee oversees and reviews our operations, including safety, performance, and compliance issues, including environmental and nuclear compliance, and related risk management policies and practices. The Finance Committee maintains oversight of and approves major capital expenditures relating to environmental compliance measures, such as programs to comply with coal combustion residual management plans and the acquisition of renewable generation facilities as outlined in our 2017 Integrated Resource Plan. This includes oversight of projects related to water-related initiatives such as implementing resilience measures such as flood walls, upgraded berms, implemented storm water capture and control efforts.</p> <p>An example of how climate-related issues are monitored at Ameren is provided through the development of the Ameren Climate Risk Report. In March 2019, we issued a climate risk report that includes analysis of the impact of technological and policy changes that are consistent with limiting global warming. The report was prepared by subject matter experts across the Company and was overseen by our Executive Leadership Team. The report was reviewed by the Board, as well as the Nuclear and Operations Committee and Nominating and Corporate Governance Committee.</p>
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### W6.3

**(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).**

**Name of the position(s) and/or committee(s)**

Chief Executive Officer (CEO)

**Responsibility**

Both assessing and managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

The Chief Executive Officer, who is the highest ranking executive at Ameren, receives information on a regular basis on water-related matters from both subject matter experts in Ameren business segments and other organizations of which Ameren is a member. As water-related risks are inherent in a variety of operations at Ameren, these issues arise and are presented to the CEO for discussion in a variety of corporate and operational level meetings and decision making processes.

## W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4

**(W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?**

No, and we do not plan to introduce them in the next two years

## W6.5

**(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?**

Yes, direct engagement with policy makers

Yes, trade associations

Yes, funding research organizations

## W6.5a

**(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?**

Ameren Missouri Environmental Services and Ameren Environmental staff at Ameren Services share roles and jointly participate in meetings and communications with: regulatory agencies, advisory groups (including the Missouri River Recovery Implementation Committee, the Missouri Water Protection Forum, and the Illinois Environmental Regulatory Group), Ameren's Environmental Advocacy Committee, and Ameren's Enterprise Risk Management Committee. These departments, in conjunction with Ameren leadership, are responsible for both processes and commitments, ensuring coordination with and consistent adherence to Ameren's water policy.

## W6.6

**(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?**

Yes (you may attach the report - this is optional)

 Ameren-Corp.-2018-Annual-Report-(Final).pdf

## W7. Business strategy

### W7.1

**(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?**

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	16-20	<p>We are committed to operating in a sustainable manner, and are doing this by carefully balancing our key responsibilities to our customers and the communities we serve, our co-workers, our shareholders, and the environment.</p> <p>For example, the 2017 Ameren Missouri Integrated Resource Plan (IRP) (available on Ameren.com) which has a twenty year planning horizon included considerations for water related issues. This included the installation of additional solar and wind generation capacity (more than 800 MW) which are generation technologies that do not use water for generation.</p>
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	16-20	<p>Reflecting a balanced approach to sustainability, Ameren's commitment to strong corporate governance includes policies and principles that integrate environmental, social and governance matters into our broader risk management and strategic planning initiatives. For example, the 2017 Ameren Missouri Integrated Resource Plan for the next twenty year planning horizon included considerations for water related issues. In addition to complying with permitting regulations, Ameren is also committed to go above and beyond in our environmental commitment. We also conducted a Climate Risk Report and Water Resiliency assessment, which looked at water-related impacts under a variety of climate change scenarios in regions of our direct operations and major portions of our supply chain. We are engaging with the Municipal Sewer District in St, Louis on their Project Clear with the intent to enhance our storm water management at our headquarters. This consists of a redesign of our parking lot and surrounding vegetation to support the enhanced quality of the surrounding streams. The upgrading of the</p>

			wastewater treatment facilities on-site of our coal fired energy centers have already or are nearing completion, which contributes to our water management strategy. We also established goals to reduce water consumption by approximately 11 billion gallons a year resulting from converting to dry handling of CCRs at the four coal-fired energy centers.
Financial planning	Yes, water-related issues are integrated	16-20	<p>We are committed to operating in a sustainable manner, and are doing this by carefully balancing our key responsibilities to our customers and the communities we serve, our co-workers, our shareholders, and the environment.</p> <p>For example the 2017 Ameren Missouri Integrated Resource Plan (IRP) (available on Ameren.com) which has a twenty year planning horizon included considerations for water related issues. This included the installation of additional solar and wind generation capacity (at least 800 MW) which are generation technologies that do not use water.</p>

## W7.2

**(W7.2) What is the trend in your organization’s water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?**

Row 1

**Water-related CAPEX (+/- % change)**

**Anticipated forward trend for CAPEX (+/- % change)**

**Water-related OPEX (+/- % change)**

**Anticipated forward trend for OPEX (+/- % change)**

**Please explain**

Ameren does not track or disclose "water-related" CAPEX and OPEX as defined by CDP for this question.

### W7.3

**(W7.3) Does your organization use climate-related scenario analysis to inform its business strategy?**

	Use of climate-related scenario analysis	Comment
Row 1	Yes	To assess the resilience of Ameren Missouri’s IRP against potential future climate policies and associated emissions requirements, we leveraged the EPRI study “Grounding Decisions: A Scientific Foundation for Companies Considering Global Climate Scenarios and Greenhouse Gas Goals,” which summarized over 1,000 climate scenarios from the IPCC and others. The study presents a scientifically-based framework for considering uncertainty in climate-scenario analysis and provides insights that can be applied companies or organizations. We also published a Water Resilience Assessment that looked at current and future availability of water resources across Ameren service territory and supply chain under a variety of potential climate change scenarios. These resources helped us develop our targets to reduce CO2 emissions 35% by 2030, 50% by 2040, and 80% by 2050 compared to 2005 levels (which supports a 2°C goal) and develop our 2019 Building a Cleaner Energy Future Report ( AmerenInvestors.com)

### W7.3a

**(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?**

Yes

### W7.3b

**(W7.3b) What water-related outcomes were identified from the use of climate-related scenario analysis, and what was your organization’s response?**

	Climate-related scenario(s)	Description of possible water-related outcomes	Company response to possible water-related outcomes
Row 1	2DS RCP 2.6	A study area was defined for this report to include the Upper Mississippi and the Lower Missouri Water Resources Region, which represents Ameren’s service area, as well as specific portions of the Powder River Basin in Wyoming, which represents a key	Our climate and water-related studies indicated the potential for increased variability of precipitation and flood events in our service territory, and potential increased drought in the PRB. Our actions include: • Response to physical risks: For

	<p>portion of Ameren’s supply chain. Water stress is projected to be near normal for most areas within Ameren's service area in the time period around 2030. With precipitation projected to see a slight increase, the Upper Mississippi and the lower portion of Missouri Regions are anticipated to see an increasing trend for maximum monthly flow and flooding events. Precipitation is also expected to have seasonal variability, with specific increases seen in the spring. However, the projected increase in temperature and evaporation and potentially lower streamflow in the summer is anticipated to outweigh a projected increase in average annual precipitation, and contribute to an increase in drought events by midcentury, particularly in summer months. The Powder River Basin, already considered an arid region, may experience increased water stress. The potentially higher temperatures, higher evaporation and lower summer stream flows are likely to contribute to a potential future increase in drought severity and frequency. The projections for the future flooding trend are mixed as the historical instantaneous peak flows in this area has been steadily decreasing, while projected maximum monthly flow is shown to increase in the future.</p>	<p>future flooding events, we have already implemented more vigilant surveillance and monitoring of local river stages following extreme rainfall or drought conditions. We have also constructed flood walls, upgraded berms, implemented storm water capture and control efforts, and relocated equipment within substation sites susceptible to flooding. We are burying lines most susceptible to weather-related damage. For overhead line assets, we increasingly use composite material poles and cross-arms, line post insulators, 360-degree pole guying, and mechanical line dampers. All are effective in neutralizing the otherwise destructive effects of wind and moisture.</p> <ul style="list-style-type: none"> <li>• Response to water conservation: While our Water Resilience Assessment indicated low water scarcity risk in our service territory we are currently implementing water-saving measures such as transition to dry ash handling and investment in renewable technologies that do not use water including more than 800 MW of wind and solar capacity.</li> </ul>
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## W7.4

### (W7.4) Does your company use an internal price on water?

#### Row 1

#### Does your company use an internal price on water?

No, and we do not anticipate doing so within the next two years

#### Please explain

Ameren has not implemented an internal price on water. Ameren has however included a carbon price in its evaluation of long-term resource planning for its Missouri regulated

business through its Integrated Resource Plan (IRP) process. The price is included to represent the expectation for either regulation of carbon dioxide (CO2) emissions through a mechanism that establishes an explicit price for CO2 emissions, such as a carbon tax or cap-and-trade program, or emission credit trading markets.

## W8. Targets

### W8.1

**(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.**

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Business level specific targets and/or goals	Targets are monitored at the corporate level Goals are monitored at the corporate level	Ameren developed targets as described below, based on best sector practice, water stewardship, risk mitigation, and regulatory compliance requirements. Solutions were determined through engineering evaluations and risk assessments for each site. Progress towards elimination of the use of water for ash handling is monitored through the use of project schedules and cost management procedures. Groundwater quality is monitored through the use of sampling wells and laboratory analyses over the long term.

### W8.1a

**(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.**

**Target reference number**

Target 1

**Category of target**

Other, please specify  
Eliminate use of water for ash handling

**Level**

Site/facility

**Primary motivation**

Recommended sector best practice

**Description of target**

Eliminate the use of water for ash handling (by conversion to dry ash management) at the Labadie Energy Center, thereby reducing water use by approximately 4.8 billion gallons a year. This is a multi-year design and construction project.

**Quantitative metric**

Other, please specify  
Percent of project complete

**Baseline year**

2015

**Start year**

2016

**Target year**

2019

**% achieved**

85

**Please explain**

Target is based on sector best practice, water stewardship, risk mitigation, and regulatory compliance requirements. Metric is percent complete of engineering and construction project to install new facilities.

---

**Target reference number**

Target 2

**Category of target**

Other, please specify  
Eliminate use of water for ash handling

**Level**

Site/facility

**Primary motivation**

Recommended sector best practice

**Description of target**

Eliminate the use of water for ash handling (by conversion to dry ash management) at the Rush Island Energy Center, thereby reducing water use by approximately 4.8 billion gallons a year. This is a multi-year design and construction project.

**Quantitative metric**

Other, please specify  
Percent of project complete

**Baseline year**

2015

**Start year**

2016

**Target year**

2018

**% achieved**

98

**Please explain**

Target is based on sector best practice, water stewardship, risk mitigation, and regulatory compliance requirements. Metric is percent complete of engineering and construction project to install new facilities.

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**Target reference number**

Target 3

**Category of target**

Other, please specify

Eliminate use of water for ash handling

**Level**

Site/facility

**Primary motivation**

Recommended sector best practice

**Description of target**

Eliminate the discharge of water for ash handling (by conversion to a closed-loop bottom ash and dry fly ash management system) at the Sioux Energy Center thereby reducing water use by approximately 1.7 billion gallons a year. This is a multi-year design and construction project.

**Quantitative metric**

Other, please specify

Percent of project completion

**Baseline year**

2015

**Start year**

2016

**Target year**

2020

**% achieved**

20

**Please explain**

Target is based on sector best practice, water stewardship, risk mitigation, and regulatory compliance requirements. Metric is percent complete of engineering and construction project to install new facilities.

## W8.1b

**(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.**

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**Goal**

Improve wastewater quality beyond compliance requirements

**Level**

Business activity

**Motivation**

Reduced environmental impact

**Description of goal**

Our goal is to go beyond our permitting compliance with regard to water stewardship and further reduce use of surface water in operations at our coal fueled energy centers.

**Baseline year**

2015

**Start year**

2015

**End year**

2020

**Progress**

Wastewater treatment system upgrades are nearing completion at the three of the coal fired energy centers which improves the quality and efficiency of wastewater treatment. In addition, the transition to dry ash handling and the closing of our ash basins has led to decreased volumes of water exposed to pollutants in ash residuals and improving the overall quality of water going through wastewater treatment. These upgrades were not required by regulatory compliance protocols, and will result in increased efficiency of wastewater treatment and reduced water use in operations.

## W9. Linkages and trade-offs

### W9.1

**(W9.1) Has your organization identified any linkages or tradeoffs between water and other environmental issues in its direct operations and/or other parts of its value chain?**

Yes

### W9.1a

**(W9.1a) Describe the linkages or tradeoffs and the related management policy or action.**

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**Linkage or tradeoff**

Linkage

**Type of linkage/tradeoff**

Decreased wastewater treatment

**Description of linkage/tradeoff**

One method to reduce water consumption is to increase generation using renewable generation from solar and wind technologies. Wind and solar use no water resources in their direct operation, and therefore don't require the wastewater treatment facilities that are present at the fossil-fueled and nuclear energy centers that treat the used cooling water before discharge. An increased reliance on wind, solar and other non-hydro renewable energy generation sources will reduce GHG emissions and use of water resources.

**Policy or action**

Ameren Missouri operates a 5.7 MW (DC) solar generation facility located in O'Fallon, MO. Solar energy reduces reliance on water resources compared to coal-fired and/or nuclear generation. Ameren is transitioning to cleaner generation through implementation of wind and solar technologies as described in the Ameren Missouri 2017 Integrated Resource Plan, available at Ameren.com. The plan calls for the addition of at least 700 MW of wind generation by 2020, the addition of 100 MW of solar generation by 2027, and the planned retirement of more than half of Ameren Missouri's coal-fired generation over the next 20 years. All of these changes will result in the use of less water for generation of electricity while also implementing more renewable energy generation capacity which will reduce GHG emissions.

## W10. Verification

### W10.1

**(W10.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1d)?**

No, but we are actively considering verifying within the next two years

## W11. Sign off

### W-FI

**(W-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.**

As referenced in several of the questions above, water data, risk assessment reports, and compliance information is available to the public on the Ameren website at <https://www.ameren.com/Environment/managing-ccrs>, and at <https://www.ameren.com/missouri/environment/integrated-resource-plan>. For convenience, several reports from these websites have been attached to this survey. Also attached is a copy of the Independent Assurance Statement from ERM CVS.

- 📎 Ash Pond Closure Fact Sheet.pdf
- 📎 Ameren Integrated Resource Plan (IRP) - Chapter-5-Environmental-compliance.pdf
- 📎 Ameren Corporate Social Responsibility Report (CSR) 2019\_CSR\_Summary\_Sheet.pdf
- 📎 Ameren's Climate Risk Report - Building A Cleaner Energy Future.pdf
- 📎 Labadie-Haley-Aldrich-Report.pdf
- 📎 Ameren 2019 CDP Assurance Statement\_ERM CVS\_FINAL\_18July2019.pdf
- 📎 Meramec-Haley-Aldrich-Report.pdf
- 📎 Sioux-Haley-Aldrich-Report.pdf
- 📎 Rush-Island-Haley-Aldrich-Report.pdf
- 📎 Ameren Water Resilience Assessment .pdf

### W11.1

**(W11.1) Provide details for the person that has signed off (approved) your CDP water response.**

	Job title	Corresponding job category
Row 1	Vice President , Sustainability & Electrification	Other, please specify Vice President , Sustainability & Electrification

## W11.2

**(W11.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate’s Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].**

No

## SW. Supply chain module

### SW0.1

**(SW0.1) What is your organization’s annual revenue for the reporting period?**

	Annual revenue
Row 1	

### SW0.2

**(SW0.2) Do you have an ISIN for your organization that you are willing to share with CDP?**

### SW1.1

**(SW1.1) Have you identified if any of your facilities reported in W5.1 could have an impact on a requesting CDP supply chain member?**

### SW1.2

**(SW1.2) Are you able to provide geolocation data for your site facilities?**

### SW2.1

**(SW2.1) Please propose any mutually beneficial water-related projects you could collaborate on with specific CDP supply chain members.**

### SW2.2

**(SW2.2) Have any water projects been implemented due to CDP supply chain member engagement?**

## SW3.1

**(SW3.1) Provide any available water intensity values for your organization's products or services across its operations.**

## Submit your response

**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 state the main reason why you are declining to respond to your Customers**

Prefer to work directly with customer, not through a third party

**Please confirm below**

I have read and accept the applicable Terms