Welcome to your CDP Water Security Questionnaire 2019

W0. Introduction

W0.1

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

American Electric Power (AEP) has been providing electric service for more than 100 years and is one of the largest electric utilities in America, serving 5.4 million regulated customers in portions of 11 states. AEP ranks among the nation's largest generators of electricity, owning pproximately 32,000 megawatts of generating capacity (owned and PPA) in the U.S. , including nearly 5,300 MW of renewable energy. AEP also owns the nation's largest electricity transmission system, a more than 40,000-mile network that includes more 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. AEP's transmission system directly or indirectly serves about 10 percent of the electricity demand in the Eastern Interconnection, the interconnected transmission system that covers 38 eastern and central U.S. states and eastern Canada, and approximately 11 percent of the electricity demand in ERCOT, the transmission system that covers much of Texas. In addition, AEP's transmission systems provides the pathway for approximately 11,900 MW of renewable energy to serve customers across the United States. AEP's utility units operate as AEP Ohio, AEP Texas, Appalachian Power (in Virginia, West Virginia), AEP Appalachian Power (in Tennessee), Indiana Michigan Power, Kentucky Power, Public Service Company of Oklahoma, and Southwestern Electric Power Company (in Arkansas, Louisiana and east Texas). AEP's headquarters are in Columbus, Ohio.

W-EU0.1a

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

Electricity generation
Transmission
Distribution
Other, please specify

Smart grids/Demand Response; battery storage; micro grids; coal mining. The response to generation capacity section below is limited to facilities that are operated by AEP. Information is based on AEP operated capacity and gross generation.

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	13,381	52	61,953,368
Lignite	675	2.6	4,878,545
Oil	0	0	0
Gas	7,808	23	13,622,402
Biomass	0	0	0
Waste (non-biomass)	0	0	0
Nuclear	2,278	8.9	18,156,094
Geothermal	0	0	0
Hydroelectric	866	3.4	871,669
Wind	538	2.1	1,206,128
Solar	15	0.06	20,747
Other renewable	0	0	0
Other non-renewable	0	0	0
Total	25,561	100	100,708,953

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
Corporate facilities that house administrative or support functions including, but not limited to, office buildings, warehouses, and maintenance buildings.	Only generation facilities over which AEP exercises control are included in the disclosure, since these are the facilities with significant exposure to water issues that can be directly controlled by AEP.

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	Adequate water quantity is needed for electric generation facilities and for barge operations; adequate water quality is needed to protect generation equipment and to ensure compliance with water quality standards and for general operations.
Sufficient amounts of recycled, brackish and/or produced water available for use	Important	Important	Recycled water is used at generation facilities (direct use) and for gas fracking (indirect use as part of our supply chain).

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%	Surface water and groundwater withdrawals from steam electric facilities are reported here. Groundwater withdrawals at gas plants were measured and reported for the first time this year.
Water withdrawals – volumes from water stressed areas	100%	Surface water and groundwater withdrawals from steam electric facilities are reported here. Groundwater withdrawals at gas plants were measured and reported for the first time this year.
Water withdrawals – volumes by source	100%	Surface water and groundwater withdrawals from steam electric facilities are reported here. Groundwater withdrawals at gas plants were measured and reported for the first time this year.
Water withdrawals quality	100%	
Water discharges – total volumes	100%	Only surface water discharges from steam electric facilities are reported here, but the discharge volume of each facility is recorded as per NPDES permit requirements.
Water discharges – volumes by destination	100%	Only surface water discharges from steam electric facilities are reported here, but the discharge volume of each facility is recorded by outfall location and destination as per NPDES permit requirements.
Water discharges – volumes by treatment method	100%	Only surface water discharges from steam electric facilities are reported here, but the discharge volume of each facility is recorded by treatment method as per NPDES permit requirements.
Water discharge quality – by standard effluent parameters	100%	Only surface water discharges from steam electric facilities are reported here, but the discharge quality of each facility is recorded by standard effluent parameters (i.e. pH) as per NPDES permit requirements.
Water discharge quality – temperature	100%	While water discharge temperature reporting is not always required, it is measured 100% of the time at those facilities were required by state or federal regulation. All once-through, non-contact cooling water discharges are monitored.

Water consumption – total volume	76-99	Only surface water discharges from steam electric facilities are reported here and water consumption is not a required measurement, however, it is estimated based on facility design flows.
Water recycled/reused	76-99	Recycled or reused water rates are recorded/estimated for steam electric facilities dependent on surface water as part of the company's GRI reporting effort.
The provision of fully-functioning, safely managed WASH services to all workers	100%	

W-EU1.2a

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

	% of sites/facilities/operations measured and monitored	Please explain
Fulfilment of downstream environmental flows	100%	All AEP hydroelectric projects are operated in accordance with FERC licenses which include requirements for downstream flows. Typically, all AEP facilities are operated as run-of river projects.
Sediment loading	Not monitored	All AEP hydroelectric projects are operated in accordance with FERC licenses which do not require that sediment loading be monitored.
Other, please specify		

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	5,779,989	Much lower	Total water withdrawals are much lower due to changes in fleet dispatch, retirements and ownership.
Total discharges	5,564,961	Much lower	Total water discharges are much lower due to changes in fleet dispatch, retirements and ownership.
Total consumption	153,753	Lower	Total water consumption is lower due to changes in fleet dispatch, retirements and ownership.

W1.2d

(W1.2d) Provide the proportion of your total withdrawals sourced from water stressed areas.

	% withdrawn from stressed areas	Comparison with previous reporting year	Identification tool	Please explain
Row 1	30	About the same	WRI Aqueduct	Number of steam-electric facilities (excludes hydroelectric facilities) in the Mississippi and St Lawrence watersheds that fall within the WRI Aqueduct med-high water risk areas. Proportion of operation affected based on number of withdrawing facilities.

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	5,771,157	Much lower	Value is for the entire AEP steam electric fleet, minus one POWT-dependent facility and several groundwater dependent facilities. It is lower due to changes in fleet dispatch, retirements and ownership.
Brackish surface water/Seawater	Not relevant			

Groundwater – renewable	Relevant	7,307	This is our first year of measurement	
Groundwater – non-renewable	Relevant but volume unknown			Water withdrawals from non-renewable sources of groundwater are not recorded.
Produced/Entrained water	Not relevant			
Third party sources	Relevant	1,525	Lower	Water for the Comanche Plant is from the City of Lawton POTW.

W1.2i

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	5,564,961	Much lower	Value is for the entire AEP steam electric fleet. It is much lower due to changes in fleet ownership, plant retirements and dispatch.
Brackish surface water/seawater	Not relevant			
Groundwater	Not relevant			
Third-party destinations	Not relevant			

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	26-50	About the same	The percentage reported is the proportion of total water use that is met by recycling/reuse. The proportion is calculated as total water recycled/total water recycled + total water withdrawals.

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
5,772,820,436	Total water withdrawals	MWh	Much lower	Value is for the entire AEP steam electric fleet. It is much lower due to changes in fleet ownership, plant retirements and dispatch.

W1.4

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

Yes, our suppliers

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

Unknown

% of total procurement spend

Unknown

Rationale for this coverage

The AEP Turk Plant had several density intrusion events in 2018, during which turbid water backs up into the plant surface water supply, forcing the plant to utilize make-up water stored in ponds. The Corps manages the local watershed and has created situations which have allowed the density intrusions to occur. AEP has engaged with the Corps to discuss its management of the watershed and during the most recent event, the Corps canceled its maintenance work, which was the cause of a density intrusion. AEP also engages with the City of Lawton in Oklahoma, which supplies water to the AEP Comanche Plant through its municipal POTW. In the past, AEP has had to discuss the quality of this water to ensure its suitability for use in a power plant.

Impact of the engagement and measures of success

Per the Corp engagement example above, the Corps cancelled their maintenance due to the Red River backing up to the Millwood dam, reopened the gates on the Millwood dam, and the density intrusion event at the Turk Plant was resolved. There was no financial impact as the Turk Plant makeup pond capacity had been increased.

Comment

W1.4b

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

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.

Country/Region

United States of America

River basin

Mississippi River

Type of impact driver

Physical

Primary impact driver

Flooding

Primary impact

Disruption to workforce management and planning

Description of impact

The AEP Turk Plant had several density intrusion events in 2018, during which turbid water backs up into the plant surface water supply, forcing the plant to utilize make-up water stored in ponds. The Red River was flowing at a higher than normal level (but not at flood stage) while the Corps of Engineers was attempting to perform some repairs on

the Lake Millwood spillway. The Corps had reduced the flow from Millwood to the minimum amount into the Little River during the maintenance event, which allowed the density intrusion event to occur.

Primary response

Engage with regulators/policymakers

Total financial impact

0

Description of response

The Corps cancelled their maintenance due to the Red River backing up to the Millwood dam, reopened the gates on the Millwood dam, and the density intrusion event was resolved. There was no financial impact as the Turk Plant makeup pond capacity has been increased.

Country/Region

United States of America

River basin

Mississippi River

Type of impact driver

Regulatory

Primary impact driver

Regulatory uncertainty

Primary impact

Increased compliance costs

Description of impact

In November 2015, the Federal EPA issued a final rule revising effluent limitation guidelines for electricity generating facilities. The rule establishes limits on FGD wastewater, fly ash and bottom ash transport water and flue gas mercury control wastewater to be imposed as soon as possible after November 2018 and no later than December 2023. These requirements would be implemented through each facility's wastewater discharge permit. The rule has been challenged in the U.S. Court of Appeals for the Fifth Circuit. In March 2017, industry associations filed a petition for reconsideration of the rule with the Federal EPA. A final rule revising the compliance deadlines for FGD wastewater and bottom ash transport water was issued in September 2017, but has been challenged in the courts. A draft rule is anticipated late 2019, with a final rule to be issued late 2020. Management continues to assess technology additions and retrofits to comply with the rule and the impacts of the Federal EPA's recent actions on facilities' wastewater discharge permitting. Management is actively participating in the reconsideration proceedings, but the new requirements could affect several AEP owned facilities and increase compliance costs.

Primary response

Engage with regulators/policymakers

Total financial impact

Description of response

The total financial impact is yet to be determined as the regulatory and legal process has yet to be completed.

Country/Region

United States of America

River basin

Mississippi River

Type of impact driver

Regulatory

Primary impact driver

Tighter regulatory standards

Primary impact

Increased capital costs

Description of impact

In 2015, EPA published a final rule to regulate the disposal and beneficial re-use of coal combustion residuals (CCR) generated at coal-fired EGUs. The rule applies to active CCR landfills and surface impoundments at operating EGU facilities. The rule imposes construction and operating obligations, including location restrictions, liner criteria, structural integrity requirements for impoundments, operating criteria and additional groundwater (GW) monitoring requirements. Initial GW monitoring reports were posted in the first quarter of 2018, and some of AEP's facilities were required to begin monitoring programs to determine if unacceptable GW impacts will trigger future remedial actions. The final 2015 rule has been challenged in the courts. In Aug. 2018, the 2015 rule was vacated by the U.S. Court of Appeals and certain provisions of the rule were remanded. In Sep. 2017, EPA granted industry petitions to reconsider the CCR rule. In Mar. 2018, the EPA issued a proposed rule to modify certain provisions of standards and provide additional flexibility to facilities regulated under approved state programs. A final rule was signed in Jul. 2018 modifying certain compliance deadlines and other requirements in the rule. In Dec. 2018, challengers filed a motion for partial stay of the Jul. 2018 rule, which could result in significant increases in costs for AEP. Management is unable to predict the financial or operational outcomes of these cases or the Federal EPA's rulemaking.

Primary response

Engage with regulators/policymakers

Total financial impact

Description of response

The total financial impact is yet to be determined as the regulatory and legal process has yet to be completed.

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?

Yes, fines

W2.2a

(W2.2a) Provide the total number and financial value of all water-related fines.

Row 1

Total number of fines

2

Total value of fines

17,300

% of total facilities/operations associated

7

Number of fines compared to previous reporting year

Higher

Comment

The $17,300 in fines is so small relative to AEP's annual operating expenses that it is not considered to be significant, hence, no response to question W2.2b below. The % of total facilities/operations associated value is determined on the basis of the number of total AEP operated steam electric facilities (2/27*100).

W2.2b

(W2.2b) Provide details for all significant fines, enforcement orders, and/or penalties for water-related regulatory violations in the reporting year, and your plans for resolving them.

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?

AEP must comply with both water quality-based and steam electric guideline effluent limits as they are implemented in NPDES permits. When applying for such permits, the company completes an NPDES Form 2C application, which includes an assessment of the flows, source of pollution and treatment technologies; production and improvements to reduce pollutants in the discharge; intake and effluent characteristics; potential discharges not covered by the analysis; biological toxicity testing data; and contract analysis information. Working with the appropriate state agency, AEP determines if there will be a reasonable potential to exceed any water quality standards. These standards are for the protection of both aquatic life and human health. Typically, metals and metalloids, such as arsenic, copper, mercury and selenium are the potential pollutants of most concern. Thermal discharges are evaluated and conform to the requirements of section 316(a) of the Clean Water Act, which ensures that there is a balanced indigenous community of aquatic organisms protected and maintained within the receiving body of water. The company also complies with all applicable water-related regulatory programs to prevent spills and subsequent impacts.

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
Thermal pollution	AEP operates or owns coal-fired power units that utilize once-through cooling of heated condenser water formed by waste heat in the steam cycle. The potential impacts of heated cooling water on biodiversity range from insignificant to temporarily significant, depending on ambient temperature conditions. During extreme drought events, the heated water can cause a temporary	Compliance with effluent quality standards	The potential ecological impacts of this heated water are addressed in each plant's NPDES permit. AEP plants utilizing once-through cooling have an approved Clean Water Act Section 316(a) variance, which signifies that a state regulatory agency has concluded that a balanced, indigenous biological community will be maintained in the source waterbody despite the discharge of cooling water at temperatures in

	displacement of thermally-sensitive fish species in the immediate area where the thermal discharge mixes with the source water body.		excess of applicable water quality temperature criteria. Routinely, state agencies require that AEP provide a re-justification of this finding, based on recent water quality and biological studies. AEP voluntarily conducts ecological assessments at some once-through cooled power plants located on the Ohio River as part of an ongoing Ohio River Ecological Research Program.
Coal combustion residuals	Two types of ash are produced during the combustion of coal: bottom ash and fly ash. After collection, the fly ash and bottom ash may be managed separately or together in landfills or in wet surface impoundments. If managed in surface impoundments, water is used to sluice the ash to these ponds. Fly ash and bottom ash sluices typically contain heavy metals and inorganic constituents. If present in excessive amounts, these can be harmful to aquatic life or human health.	Compliance with effluent quality standards	Bottom ash and fly ash ponds are used to treat ash sluice water and are primarily settling basins that allow ash constituents and suspended solids to settle out before the transport water reaches the discharge point or is recycled. Some iron co-precipitation also occurs in these ponds, aiding with the removal of pollutants such as arsenic. The control of pond pH also helps to precipitate out metals, such as copper. In some cases, aeration-mixing or treatment chemicals are used to maximize pond effectiveness. The operation of a wet FGD system typically results in the generation of a chloride purge stream, which must be treated to manage pH and solids levels. The treatment process is based on three broad principles: • removal of the bulk of the suspended solids in a primary clarification step, • conversion of constituents into solid precipitates, and • removal of solids remaining after primary clarification, including precipitated solids. Once treated, this effluent is

			generally directed to a bottom ash pond for further settling before final discharge to a receiving/source water body. All AEP facilities that discharge such effluents have National Pollutant Discharge Elimination System (NPDES) permits that have been issued by the appropriate state agencies. These permits govern the discharge of the treated wastewaters and ensure compliance with all applicable water quality standards. The Clean Water Act requires facilities that discharge process wastewaters into receiving waters to control these discharges according to technology-based effluent guidelines and water quality-based effluent limits specified in NPDES permits. The Steam Electric Effluent Limitation Guidelines (ELGs) specify limits for various pollutants found in power plant waste waters. These limits are based on the available and economically achievable technologies that can be implemented at steam electric facilities. Monitoring is conducted at each AEP facility to ensure that the discharges comply with these limits.

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

Coverage

Full

Risk assessment procedure

Water risks are assessed as a standalone issue

Frequency of assessment

Annually

How far into the future are risks considered?

1 to 3 years

Type of tools and methods used

Databases

Tools and methods used

Regional government databases

Comment

AEP reports extensively on its water use, consumption and associated risks and mitigation efforts in its annual Corporate Accountability and GRI reports. Data on water use is collected on a per-plant basis in response to the annual FERC and GRI reporting questions. Discharge data is collected from NPDES discharge monitoring reports, which are also compiled on a per plant basis. State agency or industry groups periodically forecast water demands for their states that may look ahead as far as 50 years.

Supply chain

Coverage

Partial

Risk assessment procedure

Water risks are assessed as a standalone issue

Frequency of assessment

Annually

How far into the future are risks considered?

1 to 3 years

Type of tools and methods used

Databases

Tools and methods used

Regional government databases

Comment

When new generation facilities are planned, models are used to forecast the availability of adequate water. Electric generation forecasts are also used to predict the need for water. For AEP hydro operations, most facilities operate as run-of-river and thus are operated to match inflow. Adjustments are made based upon USGS river gauge information and weather forecasts.

Other stages of the value chain

Coverage

None

Comment

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, sometimes included	Water availability is an issue for some western fleet facilities, particularly those in drought-prone areas.
Water quality at a basin/catchment level	Relevant, always included	The quality of source water is an important issue at all steam-electric generation facilities as it affects our ability to use it for generation, treatment processes and to comply with discharge effluent standards.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, sometimes included	During drought conditions, the lack of water can make it difficult to fully utilize water rights; in addition, concerns about threatened and endangered species can limit access to water. These issues are expected to grow in the near future.
Implications of water on your key commodities/raw materials	Relevant, sometimes included	Sufficient river water levels are needed for coal and limestone barges; gas fracking also requires significant quantities of water.
Water-related regulatory frameworks	Relevant, always included	Regulatory compliance is a corporate goal for all facilities; during drought conditions, the lack of water can make it difficult to fully utilize water rights; current 316b, steam electric effluent guidelines, and coal combustion residue regulatory requirements will affect access to, and use of, surface and groundwater.
Status of ecosystems and habitats	Relevant, always included	Compliance with all water quality standards at all facilities is a corporate mandate; construction projects can be limited or curtailed due to wetland or threatened or endangered species impacts, which are very much a

		concern of many stakeholder groups and expected to grow in the future.
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	Fully-functioning WASH services are provided to all employees.
Other contextual issues, please specify	Not considered	

W3.3c

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

	Relevance & inclusion	Please explain
Customers	Relevant, always included	Customers are informed of water issues through the company's annual Corporate Accountability Report, which includes references to the company's GRI and CDP reports. Water use graphics are included in the reports.
Employees	Relevant, always included	Employees are informed of water issues through internal communications, the company's annual Corporate Accountability Report, which includes references to the company's GRI and CDP reports.
Investors	Relevant, always included	Investors are informed of water issues through the company's annual Corporate Accountability Report, which includes references to the company's GRI and CDP reports.
Local communities	Relevant, sometimes included	Local communities are often involved in discussions regarding water availability, particularly for recreational uses.
NGOs	Relevant, sometimes included	AEP frequently engages NGOs to discuss water-related issues.
Other water users at a basin/catchment level	Relevant, sometimes included	Other water use sectors (water supply, agriculture) may be engaged to address water issues.
Regulators	Relevant, always included	It is a corporate goal to always comply with water quality standards and the company works with local, state and federal regulators to achieve this goal.
River basin management authorities	Relevant, always included	AEP is a member of the Ohio River Valley Sanitation Commission's (ORSANCO) Power Industry Advisory Committee. While the Commission does not address water quantity issues, it does address water quality in the Ohio River.

		AEP also participates in regional water planning organizations that cover western and northeastern Texas, Arkansas, and the Illinois River watershed.
Statutory special interest groups at a local level	Not considered	
Suppliers	Not considered	
Water utilities at a local level	Relevant, sometimes included	When water supplies are potentially affected by outside spill events, AEP will communicate with local water utilities and assess the need to temporarily seek alternate sources of water or implement remedial measures.
Other stakeholder, please specify	Not considered	

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.

AEP engages in the legislative and regulatory process associated with the U.S. Congress, the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), the Federal Energy Regulatory Commission (FERC), state legislatures and regulatory agencies, among others. We do this to mitigate our risk exposure and to help us achieve our business objectives. AEP is also a member of industry organizations and trade associations (e.g. Utility Water Act Group, Edison Electric Institute) which provide a venue for reviewing potential new water-related regulatory and legislative programs.. For example, AEP is a member of the Ohio River Valley Sanitation Commission's (ORSANCO) Power Industry Advisory Committee. While the Commission does not address water quantity issues, it does address water quality in the Ohio River. AEP also participates in regional water planning organizations that cover western and northeastern Texas, Arkansas, and the Illinois River watershed. Once water-related risks are identified within our direct operations, capital and O&M expenses to comply with water-related regulations are assessed through our RBTO (risk based technology option) process. Additional information on how AEP identifies, assesses and responds to water-related risks can be found in the company's Corporate Accountability Report.

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, both in direct operations and the rest of our value chain

W4.1a

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

AEP's common stock is publicly traded and the company is subject to the jurisdiction of the Securities and Exchange Commission (SEC). In addition to its regularly filed financial reports, AEP is required to advise the SEC and the public within four business days of any event or development which would have a material impact on the companies. Generally these levels range between 5 to 15 percent of certain financial measures (revenues, assets, or income) based on the most recent audited financial statements for the affected company. Developments that have an impact equal to or in excess of the applicable threshold must be reported within four days to the SEC and publicly announced.

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	17	51-75	Seventeen steam electric generation facilities have been identified during 2018-2019 as having a medium to high overall water risk as per the WRI Aqueduct tool or due to exposure to water-related regulatory compliance programs (ELG and CCR rules). This represents 63% of our steam electric fleet or 33% of all generation facilities operated by AEP (steam electric, hydro, wind and solar).

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?

Country/Region

United States of America

River basin

Mississippi River

Number of facilities exposed to water risk

6

% company-wide facilities this represents

1-25

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

1-25

% company's total global revenue that could be affected

Unknown

Comment

This response is based on the number of steam-electric facilities utilizing surface water and groundwater withdrawals (excludes hydroelectric facilities) in the Mississippi River watershed that fall within the WRI Aqueduct med-high water risk areas. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the number of steam electric facilities. In previous years, the Weleetka Plant was listed, however, it was assumed that ground water was used to generate electricity. The Weleetka facility does not use surface water or ground water, therefore, it will no longer be assessed and included in this report.

Country/Region

United States of America

River basin

St. Lawrence

Number of facilities exposed to water risk

1

% company-wide facilities this represents

1-25

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

1-25

% company's total global revenue that could be affected

Unknown

Comment

This response is based on the number of steam-electric facilities utilizing surface water and groundwater withdrawals (excludes hydroelectric facilities) in the St. Lawrence River watershed that fall within the WRI Aqueduct med-high water risk areas. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the 27 steam electric facilities operated by AEP during 2018.

Country/Region

United States of America

River basin

Mississippi River

Number of facilities exposed to water risk

8

% company-wide facilities this represents

26-50

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

51-75

% company's total global revenue that could be affected

Unknown

Comment

AEP owns and operates 8 steam electric generation facilities in the Mississippi River watershed with the potential to be impacted by the 2015 steam electric effluent guidelines. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the 27 steam electric facilities operated by AEP during 2018

Country/Region

United States of America

River basin

Mississippi River

Number of facilities exposed to water risk

12

% company-wide facilities this represents

26-50

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

51-75

% company's total global revenue that could be affected

Unknown

Comment

The EPA's Coal Combustion Residuals (CCR) Rule established new requirements for how coal ash – the material that is left over after coal is burned to make electricity – is

stored at our power plants. While we've previously monitored groundwater at many of our coal ash storage sites, the CCR rule created new requirements to install more wells and test for additional substances at coal-fired power plants. We completed the first phase of testing and will do additional monitoring and evaluations during 2019. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the 27 steam electric facilities operated by AEP during 2018. All of our activities related to this are posted to a public website -- https://www.aep.com/environment/ccr

Country/Region

United States of America

River basin

Sabine River

Number of facilities exposed to water risk

1

% company-wide facilities this represents

1-25

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

1-25

% company's total global revenue that could be affected

Unknown

Comment

The EPA's Coal Combustion Residuals (CCR) Rule established new requirements for how coal ash – the material that is left over after coal is burned to make electricity – is stored at our power plants. While we've previously monitored groundwater at many of our coal ash storage sites, the CCR rule created new requirements to install more wells and test for additional substances at coal-fired power plants. We completed the first phase of testing and will do additional monitoring and evaluations during 2019. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the 27 steam electric facilities operated by AEP during 2018. All of our activity related to this is posted to a public website -- https://www.aep.com/environment/ccr

Country/Region

United States of America

River basin

Sabine River

Number of facilities exposed to water risk

1

% company-wide facilities this represents

1-25

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

1-25

% company's total global revenue that could be affected

Unknown

Comment

AEP owns and operates 1 steam electric generation facilities in the Sabine River watershed with the potential to be impacted by the 2015 steam electric effluent guidelines. The percentage of company-wide facilities and annual electricity generation that could be affected is based on the 27 steam electric facilities operated by AEP during 2018.

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.

Country/Region

United States of America

River basin

Mississippi River

Type of risk

Physical

Primary risk driver

Increased water scarcity

Primary potential impact

Increased operating costs

Company-specific description

AEP steam electric facilities are exposed to water risks, however, based on the WRI Aqueduct Tool, seven are located in "stressed" areas within the Mississippi and St. Lawrence watersheds and exposed to risks that could generate a substantive change in business operations. This could be a future business risk because of the need for water to produce electricity.

Timeframe

Current up to 1 year

Magnitude of potential impact

Medium-low

Likelihood

About as likely as not

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

Unknown at this time.

Primary response to risk

Adopt water efficiency, water re-use, recycling and conservation practices

AEP files water conservation plans in TX

Description of response

In the past, AEP has participated in research with the Electric Power Research Institute to develop, test and deploy efficient, advanced cooling technologies. It has also examined the benefits that AEP can and has realized while using alternate water supplies or management practices at the Comanche, Oklaunion, Pirkey, and Turk Plants. At Comanche, the use of municipal POTW water in lieu of surface or ground water has allowed the plant to increase generation and for the city to benefit from an income stream. The economic and regulatory value of water diversions at Oklaunion and Pirkey have also been confirmed by EPRI. At Turk, flooding and high TDS concentrations in the Little and Red River basins during 2015 prevented the plant from using the water, necessitating a generation curtailment at a loss of approximately $8 million. A storage pond was built at a cost of $2 million to prevent future curtailments, but EPRI has determined that working with the USACE to optimize releases of water from Millwood Reservoir would provide an additional net benefit of nearly $5 million over building a second storage pond. The local ecosystem and community may also benefit from the watershed solution.

Cost of response

2,000,000

Explanation of cost of response

AEP spent approximately $2 million to construct a storage pond to provide an alternated water source and prevent future curtailments.

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 capital costs

Company-specific description
EPA establishes wastewater discharge limits for new and existing power plants that use steam to generate electricity from various fuel sources (coal, oil, gas and nuclear). In November 2015, the agency revised national effluent guidelines and set stricter performance standards that must be achieved at AEP's steam electric generating facilities. The rule was challenged in the U.S. Court of Appeals and, in March 2017, the electric industry filed a Petition for Reconsideration of the rule with EPA. In April 2017, EPA issued a stay of the rule's compliance deadlines and granted reconsideration of several aspects of the rule. In September 2017, EPA finalized a rulemaking that postponed the compliance dates for scrubber wastewater and bottom ash transport water (BATW) discharges. EPA has initiated a new rulemaking to address the scrubber wastewater and BATW discharges, which it expects to finalize in 2020. We continue to work with the agency and utility industry groups to help secure reasonable revisions to the guidelines.

Timeframe
1 - 3 years

Magnitude of potential impact
High

Likelihood
Virtually certain

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Unknown, but modest (millions of dollars)

Primary response to risk

Increase investment in new technology

Description of response

AEP continues to engage EPA during the development of the revised steam electric effluent guidelines. In addition, it is working with the Electric Power Research Institute to determine the effectiveness of new technologies that would be required to meet the new limits. AEP is conducting pilot studies as well to investigate the effectiveness of the new required technologies.

Cost of response

Explanation of cost of response

Unknown, but modest (millions of dollars)

Country/Region

United States of America

River basin

Mississippi River

Type of risk

Regulatory

Primary risk driver

Tighter regulatory standards

Primary potential impact

Increased compliance costs

Company-specific description

AEP's initial CCR sampling data show potential groundwater impacts. The fact that one or more groundwater samples may show higher concentrations of some substances does not mean that the drinking water in the surrounding area is impacted or unsafe. There is still a lot left to learn. We will do additional monitoring and analysis to determine if there are any areas where groundwater outside the immediate site is being affected and if any impacts are coming from the ash storage facility. It's important to remember that samples so far have been taken very close to the ash storage sites where any

groundwater impacts would be most significant. AEP posts the data related to this on a public website -- https://www.aep.com/environment/ccr

Timeframe

1 - 3 years

Magnitude of potential impact

High

Likelihood

Very likely

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Unknown , but modest (millions of dollars)

Primary response to risk

Engage with local communities

Description of response

AEP is proactively reaching out and meeting with plant neighbors and community leaders to answer questions about the data collected so far and to discuss next steps. We've begun additional monitoring and evaluation to determine if there is any impact beyond the plant boundaries. If we determine that changes in water quality are coming from one of our ash storage sites, we will put in place a mitigation plan specific to that site to address the changes, including potential closure of the storage site. That process will include the opportunity for public input.

Cost of response

Explanation of cost of response

Unknown at this time, but modest (millions).

W4.2a

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

Country/Region
United States of America

River basin
Mississippi River

Stage of value chain
Supply chain

Type of risk
Reputation & markets

Primary risk driver
Increased stakeholder concern or negative stakeholder feedback

Primary potential impact
Constraint to growth

Company-specific description
The development of shale gas has made natural gas an economically viable fuel source for AEP generating units; however, the drilling of these gas wells requires large amounts of water. During these operations, there is a risk of contaminating local underground sources of drinking water. Improper discharge of waste waters can also negatively impact surrounding surface waters. As a result, regulators are considering restrictions, which would lead to increased costs for this important fuel source.

Timeframe
1 - 3 years

Magnitude of potential financial impact
Low

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

Unknown

Primary response to risk

Supplier diversification

Description of response

AEP is transitioning its generation fleet to take advantage of the benefits of shale gas; however, it will maintain a balanced portfolio that utilizes several energy sources, including coal, gas, renewables, energy efficiency, nuclear, solar and hydro. Maintaining a balanced generation portfolio helps to minimize the impacts of a changing energy infrastructure. If shale gas development is slowed, it could affect the electric sector's reliance on gas and create price volatility for customers and potentially affect system reliability.

Cost of response

Explanation of cost of response

unknown

Country/Region

United States of America

River basin

Mississippi River

Stage of value chain

Supply chain

Type of risk

Regulatory

Primary risk driver

Regulatory uncertainty

Primary potential impact

Constraint to growth

Company-specific description

As AEP builds and maintains new and existing infrastructure across our service territory, such as transmission or renewable generation facilities, we are mindful of the potential impacts we might have on wildlife species protected under the Endangered Species Act (ESA), the Migratory Bird Treaty Act and the Bald Eagle and Golden Eagle Protection

Act and we take the necessary steps to ensure their protection. These same impacts can apply to our supply chain as well limiting or delaying new sources of fuel, treatment chemicals, or materials needed for the construction of new generation or transmission facilities.

Timeframe

1 - 3 years

Magnitude of potential financial impact

Unknown

Likelihood

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

Unknown

Primary response to risk

Promote greater due diligence among suppliers

Description of response

AEP assists potential commercial-scale customers with environmental due-diligence and other environmentally related activities. AEP also works with its major stakeholders and suppliers to ensure that they comply with all relevant environmental regulations.

Cost of response

Explanation of cost of response

unknown

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

Resilience

Primary water-related opportunity

Other, please specify

Transition to renewable energy

Company-specific description & strategy to realize opportunity

AEP is transitioning to a balanced, diverse portfolio which will help mitigate risk for our customers and shareholders and ensure a more resilient and reliable energy system. We are doing this through our regulated energy companies and through company-owned and long-term contracted renewables. Our competitive renewables businesses plan to invest up to $1.2 billion in contracted renewables during the next three years. By 2030, our current integrated resource plans project we will add more than 8,000 MW of wind and solar to our regulated portfolio. Between 2018 and 2020, we will invest in renewable wind and solar in our regulated utilities. These investments will reduce our reliance on water-dependent sources of electricity generation. As the grid changes, our resource planning process is changing with it. Once dominated by coal-fueled, water-dependent, generating capacity to meet demand, today's resource plans are now largely comprised of wind, solar and natural gas generating resource investments. In 2019, AEP announced it is seeking regulatory approval to purchase three wind projects, totaling 1,485 MW, currently under development in Oklahoma to serve customers in Arkansas, Louisiana, Oklahoma and Texas. (news release -- https://www.aep.com/news/releases/read/1600/AEP-Seeks-to-Add-1485-MW-of-New-Wind-Generation-from-Three-Wind-Facilities-in-Oklahoma). In 2019, AEP expanded its contracted renewable portfolio by 951 MWs with additional acquisitions.

Estimated timeframe for realization

>6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

Billons of dollars in new investments.

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.

Facility reference number

Facility 1

Facility name (optional)

Amos

Country/Region

United States of America

River basin

Mississippi River

Latitude

38.47306

Longitude

-81.82333

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

42,410

Comparison of withdrawals with previous reporting year

Lower

Total water discharges at this facility (megaliters/year)

31,281

Comparison of discharges with previous reporting year

Lower

Total water consumption at this facility (megaliters/year)

11,129

Comparison of consumption with previous reporting year

Lower

Please explain

Weather and changes in plant dispatch

Facility reference number

Facility 2

Facility name (optional)

Big Sandy

Country/Region

United States of America

River basin

Mississippi River

Latitude

38.17147

Longitude

-82.61406

Primary power generation source for your electricity generation at this facility

Gas

Total water withdrawals at this facility (megaliters/year)

615

Comparison of withdrawals with previous reporting year

Much lower

Total water discharges at this facility (megaliters/year)

226

Comparison of discharges with previous reporting year

Much lower

Total water consumption at this facility (megaliters/year)

389

Comparison of consumption with previous reporting year

Much lower

Please explain

Much lower water use values are due to the retirement of coal-fired units and replacement with a gas-fired unit.

Facility reference number
Facility 3

Facility name (optional)
Clinch River

Country/Region
United States of America

River basin
Mississippi River

Latitude
36.93333

Longitude
-82.19972

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

Total water withdrawals at this facility (megaliters/year)

Comparison of withdrawals with previous reporting year
Lower

Total water discharges at this facility (megaliters/year)
4,632

Comparison of discharges with previous reporting year
Lower

Total water consumption at this facility (megaliters/year)
7,293

Comparison of consumption with previous reporting year
Lower

Please explain
Weather and changes in plant dispatch

Facility reference number
Facility 4

Facility name (optional)

Comanche

Country/Region

United States of America

River basin

Mississippi River

Latitude

34.36247

Longitude

-97.97959

Primary power generation source for your electricity generation at this facility

Gas

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)

1,499

Comparison of discharges with previous reporting year

About the same

Total water consumption at this facility (megaliters/year)

27

Comparison of consumption with previous reporting year

About the same

Please explain

Water from the City of Lawton POTW is used as source water for the Comanche Plant, hence no water withdrawals.

Facility reference number

Facility 5

Facility name (optional)

Conesville

Country/Region

United States of America

River basin

Mississippi River

Latitude
40.18447

Longitude
-81.89191

Primary power generation source for your electricity generation at this facility
Coal - hard

Total water withdrawals at this facility (megaliters/year)
79,902

Comparison of withdrawals with previous reporting year
About the same

Total water discharges at this facility (megaliters/year)
44,058

Comparison of discharges with previous reporting year
Higher

Total water consumption at this facility (megaliters/year)
38,251

Comparison of consumption with previous reporting year
Higher

Please explain
Weather and changes in plant dispatch

Facility reference number
Facility 6

Facility name (optional)
Cook

Country/Region
United States of America

River basin
St. Lawrence

Latitude
41.97563

Longitude
-86.56592

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

Total water withdrawals at this facility (megaliters/year)
2,929,826

Comparison of withdrawals with previous reporting year
About the same

Total water discharges at this facility (megaliters/year)
2,929,433

Comparison of discharges with previous reporting year
About the same

Total water consumption at this facility (megaliters/year)
381

Comparison of consumption with previous reporting year
About the same

Please explain

Facility reference number
Facility 7

Facility name (optional)
Dresden

Country/Region
United States of America

River basin
Mississippi River

Latitude
40.09273

Longitude
-82.0151

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

Total water withdrawals at this facility (megaliters/year)
3,592

Comparison of withdrawals with previous reporting year
About the same

Total water discharges at this facility (megaliters/year)
743

Comparison of discharges with previous reporting year
About the same

Total water consumption at this facility (megaliters/year)
2,849

Comparison of consumption with previous reporting year
About the same

Please explain

Facility reference number
Facility 8

Facility name (optional)
Flint Creek

Country/Region
United States of America

River basin
Mississippi River

Latitude
36.17861

Longitude
-94.73458

Primary power generation source for your electricity generation at this facility
Coal - hard

Total water withdrawals at this facility (megaliters/year)
461,094

Comparison of withdrawals with previous reporting year
Lower

Total water discharges at this facility (megaliters/year)
461,094

Comparison of discharges with previous reporting year
Lower

Total water consumption at this facility (megaliters/year)
4,283

Comparison of consumption with previous reporting year
About the same

Please explain

Weather and changes in plant dispatch

Facility reference number

Facility 9

Facility name (optional)

Mitchell

Country/Region

United States of America

River basin

Mississippi River

Latitude

39.82972

Longitude

-80.81528

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

21,224

Comparison of withdrawals with previous reporting year

Much lower

Total water discharges at this facility (megaliters/year)

6,296

Comparison of discharges with previous reporting year

Much lower

Total water consumption at this facility (megaliters/year)

14,927

Comparison of consumption with previous reporting year

Much lower

Please explain

Weather and changes in plant dispatch

Facility reference number

Facility 10

Facility name (optional)
Mountaineer

Country/Region
United States of America

River basin
Mississippi River

Latitude
38.97944

Longitude
-81.93444

Primary power generation source for your electricity generation at this facility
Coal - hard

Total water withdrawals at this facility (megaliters/year)
15,751

Comparison of withdrawals with previous reporting year
About the same

Total water discharges at this facility (megaliters/year)
3,226

Comparison of discharges with previous reporting year
Lower

Total water consumption at this facility (megaliters/year)
9,394

Comparison of consumption with previous reporting year
Lower

Please explain
Weather and changes in plant dispatch

Facility reference number
Facility 11

Facility name (optional)
Northeastern

Country/Region
United States of America

River basin
Mississippi River

Latitude

36.42619

Longitude

-95.70136

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

11,076

Comparison of withdrawals with previous reporting year

Much higher

Total water discharges at this facility (megaliters/year)

4,933

Comparison of discharges with previous reporting year

Higher

Total water consumption at this facility (megaliters/year)

6,143

Comparison of consumption with previous reporting year

Much higher

Please explain

Weather and changes in plant dispatch

Facility reference number

Facility 12

Facility name (optional)

Oklaunion

Country/Region

United States of America

River basin

Mississippi River

Latitude

34.12953

Longitude

-99.14285

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

7,250

Comparison of withdrawals with previous reporting year

Higher

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)

7,250

Comparison of consumption with previous reporting year

Higher

Please explain

Oklaunion is a zero discharge facility utilizing evaporation ponds and recycling to eliminate all discharges.

Facility reference number

Facility 13

Facility name (optional)

Pirkey

Country/Region

United States of America

River basin

Sabine River

Latitude

32.50722

Longitude

-94.53333

Primary power generation source for your electricity generation at this facility

Lignite

Total water withdrawals at this facility (megaliters/year)

583,114

Comparison of withdrawals with previous reporting year

About the same

Total water discharges at this facility (megaliters/year)

519,313

Comparison of discharges with previous reporting year

About the same

Total water consumption at this facility (megaliters/year)

6,709

Comparison of consumption with previous reporting year

About the same

Please explain

Facility reference number

Facility 14

Facility name (optional)

Southwestern

Country/Region

United States of America

River basin

Mississippi River

Latitude

37.92556

Longitude

-87.03722

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

31,976

Comparison of withdrawals with previous reporting year

About the same

Total water discharges at this facility (megaliters/year)

8,729

Comparison of discharges with previous reporting year

Lower

Total water consumption at this facility (megaliters/year)

16,799

Comparison of consumption with previous reporting year

Lower

Please explain

It is not clear why water withdrawals were about the same, while discharges and consumption were lower. It could be due to differences in water use estimates (these are estimated nominal values) or changes in plant processes.

Facility reference number

Facility 15

Facility name (optional)

Southwestern

Country/Region

United States of America

River basin

Mississippi River

Latitude

35.10228

Longitude

-98.35228

Primary power generation source for your electricity generation at this facility

Gas

Total water withdrawals at this facility (megaliters/year)

3,210

Comparison of withdrawals with previous reporting year

About the same

Total water discharges at this facility (megaliters/year)

1,312

Comparison of discharges with previous reporting year

About the same

Total water consumption at this facility (megaliters/year)

1,898

Comparison of consumption with previous reporting year

About the same

Please explain

Facility reference number
Facility 16

Facility name (optional)
Welsh

Country/Region
United States of America

River basin
Mississippi River

Latitude
33.05475

Longitude
-94.84116

Primary power generation source for your electricity generation at this facility
Coal - hard

Total water withdrawals at this facility (megaliters/year)
943,192

Comparison of withdrawals with previous reporting year
Higher

Total water discharges at this facility (megaliters/year)
935,395

Comparison of discharges with previous reporting year
Higher

Total water consumption at this facility (megaliters/year)
13,029

Comparison of consumption with previous reporting year
About the same

Please explain
Weather and changes in plant dispatch result in year to year differences.

W5.1a

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

Facility reference number

Facility 1

Facility name

Amos

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

42,410

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 2

Facility name

Big Sandy

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

615

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number
Facility 3

Facility name
Clinch River

Fresh surface water, including rainwater, water from wetlands, rivers and lakes
11,925

Brackish surface water/seawater
0

Groundwater - renewable
0

Groundwater - non-renewable
0

Produced/Entrained water

Third party sources

Comment

Facility reference number
Facility 4

Facility name
Comanche

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

Third party sources

1,525

Comment

Intake water is sourced from the City of Lawton's POTW facility.

Facility reference number

Facility 5

Facility name

Conesville

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

79,902

Brackish surface water/seawater

0

Groundwater - renewable

2,118

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 6

Facility name

Cook

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

2,929,826

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 7

Facility name

Dresden

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

3,592

Brackish surface water/seawater

0

Groundwater - renewable

4.54

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number
Facility 8

Facility name
Flint Creek

Fresh surface water, including rainwater, water from wetlands, rivers and lakes
461,094

Brackish surface water/seawater
0

Groundwater - renewable
0

Groundwater - non-renewable
0

Produced/Entrained water

Third party sources

Comment

Facility reference number
Facility 9

Facility name
Mitchell

Fresh surface water, including rainwater, water from wetlands, rivers and lakes
21,224

Brackish surface water/seawater
0

Groundwater - renewable
23.15

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 10

Facility name

Mountaineer

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

15,751

Brackish surface water/seawater

0

Groundwater - renewable

1,305

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 11

Facility name

Northeastern

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

11,076

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 12

Facility name

Oklaunion

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

7,250

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 13

Facility name

Pirkey

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

583,114

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 14

Facility name

Rockport

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

31,976

Brackish surface water/seawater

0

Groundwater - renewable

3,542

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 15

Facility name

Southwestern

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

3,210

Brackish surface water/seawater

0

Groundwater - renewable

0.57

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

Facility reference number

Facility 16

Facility name

Welsh

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

943,192

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

Third party sources

Comment

W5.1b

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

Facility reference number

Facility 1

Facility name

Amos

Fresh surface water

31,281

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 2

Facility name

Big Sandy

Fresh surface water

226

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 3

Facility name

Clinch River

Fresh surface water

4,632

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 4

Facility name

Comanche

Fresh surface water

1,499

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 5

Facility name

Conesville

Fresh surface water

44,058

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 6

Facility name

Cook

Fresh surface water

2,929,433

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 7

Facility name

Dresden

Fresh surface water

743

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 8

Facility name

Flint Creek

Fresh surface water

461,094

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 9

Facility name

Mitchell

Fresh surface water

6,296

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 10

Facility name

Mountaineer

Fresh surface water

3,226

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 11

Facility name

Northeastern

Fresh surface water

4,933

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 12

Facility name

Oklaunion

Fresh surface water

0

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

This is a zero-discharge facility.

Facility reference number

Facility 13

Facility name

Pirkey

Fresh surface water

519,313

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 14

Facility name

Rockport

Fresh surface water

8,729

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 15

Facility name

Southwestern

Fresh surface water

1,312

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

Facility reference number

Facility 16

Facility name

Welsh

Fresh surface water

953,395

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

Comment

Amount of waste water directed to third party destinations was not determined for this report.

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

Amos

% recycled or reused

11-25%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 2

Facility name

Big Sandy

% recycled or reused

Less than 1%

Comparison with previous reporting year

About the same

Please explain

Gas-fired steam electric facilities provide fewer opportunities to recycle water.

Facility reference number

Facility 3

Facility name

Clinch River

% recycled or reused

Less than 1%

Comparison with previous reporting year

About the same

Please explain

Gas-fired steam electric facilities provide fewer opportunities to recycle water.

Facility reference number

Facility 4

Facility name

Comanche

% recycled or reused

26-50%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems. Water is also recycled at many of the western plants that are on cooling water reservoirs (i.e. Comanche, Flint Creek, Pirkey, Welsh). These reservoirs were specifically built in order to be both the source and receiving water body for the cooling water used at these plants. Assuming negligible loss of water due to evaporation, these facilities “recycle” nearly 100% of the water that they withdrawal. Since the cooling lakes are typically large, open bodies of water, they also provide public fishing and recreational boating.

Facility reference number

Facility 5

Facility name

Conesville

% recycled or reused

11-25%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely "closed," as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 6

Facility name

Cook

% recycled or reused

Less than 1%

Comparison with previous reporting year

About the same

Please explain

Nuclear facilities present fewer opportunities to recycle water, particularly an once-thru cooled facility such as the AEP Cook Plant.

Facility reference number

Facility 7

Facility name

Dresden

% recycled or reused

11-25%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Facility reference number

Facility 8

Facility name

Flint Creek

% recycled or reused

26-50%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems. Water is also recycled at many of the western plants that are on cooling water reservoirs (i.e. Comanche, Flint Creek, Pirkey, Welsh). These reservoirs were specifically built in order to be both the source and receiving water body for the cooling water used at these plants. Assuming negligible loss of water due to evaporation, these facilities “recycle” nearly 100% of the water that they withdrawal. Since the cooling lakes are typically large, open bodies of water, they also provide public fishing and recreational boating.

Facility reference number

Facility 9

Facility name

Mitchell

% recycled or reused

Less than 1%

Comparison with previous reporting year

About the same

Please explain

Facility reference number

Facility 10

Facility name

Mountaineer

% recycled or reused

26-50%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 11

Facility name

Northeastern

% recycled or reused

11-25%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle

cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 12

Facility name

Oklaunion

% recycled or reused

1-10%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 13

Facility name

Pirkey

% recycled or reused

Comparison with previous reporting year

Please explain

Differences in the recycling rate at this facility are likely due to errors in the 2017 estimate.

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely "closed," as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems. Water is also recycled at many of the western plants that are on cooling water reservoirs (i.e. Comanche, Flint Creek, Pirkey, Welsh). These reservoirs were specifically built in order to be both the source and receiving water body for the cooling water used at these plants. Assuming negligible loss of water due to evaporation, these facilities "recycle" nearly 100% of the water that they withdrawal. Since the cooling lakes are typically large, open bodies of water, they also provide public fishing and recreational boating.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

Facility reference number

Facility 14

Facility name

Rockport

% recycled or reused

11-25%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely "closed," as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for treatment. After treatment, this water is directed to reclaim ponds from which a

significant portion is recycled and used again.

Facility reference number

Facility 15

Facility name

Southwestern

% recycled or reused

11-25%

Comparison with previous reporting year

Lower

Please explain

Changes in weather, plant dispatch or plant configuration are likely responsible for the reduced rate of recycling.

Facility reference number

Facility 16

Facility name

Welsh

% recycled or reused

26-50%

Comparison with previous reporting year

About the same

Please explain

A large amount of the water withdrawn for use at power generating facilities is recycled or reused, such as water that is used for cooling at facilities that have closed-cycle cooling. While these systems are not entirely “closed,” as some water is lost due to evaporation in the cooling towers, they do withdraw significantly less water than once-through or open cooling systems. Water is also recycled at many of the western plants that are on cooling water reservoirs (i.e. Comanche, Flint Creek, Pirkey, Welsh). These reservoirs were specifically built in order to be both the source and receiving water body for the cooling water used at these plants. Assuming negligible loss of water due to evaporation, these facilities “recycle” nearly 100% of the water that they withdrawal. Since the cooling lakes are typically large, open bodies of water, they also provide public fishing and recreational boating.

Water used for other non-cooling purposes is also recycled. For example, water used for bottom ash transport and other processes is directed to waste water ponds for

treatment. After treatment, this water is directed to reclaim ponds from which a significant portion is recycled and used again.

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?

Values are verified through FERC reporting

Water withdrawals – volume by source

% verified

76-100

What standard and methodology was used?

Values are verified through NPDES permitting submittals

Water withdrawals – quality

% verified

76-100

What standard and methodology was used?

Plant staff monitor the quality of water as it is used in the steam electric generation process.

Water discharges – total volumes

% verified

76-100

What standard and methodology was used?

Values are verified through NPDES permitting submittals

Water discharges – volume by destination

% verified

76-100

What standard and methodology was used?

Values are verified through NPDES permitting submittals

Water discharges – volume by treatment method

% verified

76-100

What standard and methodology was used?

Values are verified through NPDES permitting submittals

Water discharge quality – quality by standard effluent parameters

% verified

76-100

What standard and methodology was used?

Values are verified through NPDES permitting submittals

Water discharge quality – temperature

% verified

76-100

What standard and methodology was used?

Temperature limits are monitored at all once-thru cooled facilities. Results are submitted to the appropriate state agencies.

Water consumption – total volume

% verified

Not verified

What standard and methodology was used?

Water recycled/reused

% verified

Not verified

What standard and methodology was used?

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 dependency on water Description of business impact on water Description of water-related performance standards for direct operations Company water targets and goals Commitment to water-related innovation Commitment to stakeholder awareness and education Commitment to water stewardship and/or collective action Acknowledgement of the human right to water and sanitation Recognition of environmental linkages, for example, due to climate change	Water use is an important issue for AEP and we are taking steps to reduce our water consumption, improve water quality and address water availability. Currently, 91 percent of the power generated by AEP requires water. AEP meets all water quality standards while discharging billions of gallons of wastewater per day, meeting all water quality standards. Water is also essential for agriculture, drinking water and economic growth; therefore, we work to protect water availability within watersheds. Our facilities are subject to a variety of regulatory requirements. Our goal is zero violations and zero enforcement actions. AEP uses metrics tied to incentive compensation to encourage self-reporting of events and to improve environmental performance. AEP has developed sustainability goals, which focus on issues such as climate change, carbon risk, energy efficiency, and renewable energy. While not specifically targeting water, the carbon reduction goals will result in less water use as the company increases its renewable generation capacity. AEP participates in collaborative industry research, particularly with the Electric Power Research Institute (EPRI), to find new ways to reduce the use and consumption of water. AEP extensively reports on its usage and management of water through both required and voluntary reporting efforts, such as the U.S. Energy Information Administration and the Global Reporting Initiative. As AEP continues to diversify its generating portfolio and retire coal generation capacity, our water use will continue to decrease. AEP provides potable water for each employee that is sufficient and continuous for personal and domestic uses, is safe and free of hazards, is of an

			acceptable color, smell and taste, and is physically accessible within the workplace. AEP agrees that climate change is a significant issue. As the company transitions to a clean energy economy, its water use will also decrease.

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
Other, please specify AEP Policy Comm (Board of Directors)	AEP's board and board committees consider water-related issues when reviewing and guiding their business strategy, major plans of action, risk management policies, annual budgets, and budget plans, as well as setting the organization's performance objectives, monitoring implementation and performance, and overseeing major capital expenditures, acquisitions, and divestitures throughout the year.

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	Sporadic - as important matters arise	Overseeing acquisitions and divestiture Overseeing major capital expenditures Providing employee incentives Reviewing and guiding business plans Reviewing innovation/R&D priorities	

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)

Other, please specify

Vice President of Environmental Services

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

AEP's Vice President of Environmental Services has direct responsibility for water quality and quantity issues within the company. He is briefed on all water-related issues as they arise and is regularly kept apprised on a regular basis, not less than every other week.

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?

Yes

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

(W-FB6.4a/W-CH6.4a/W-EU6.4a/W-OG6.4a/W-MM6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Who is entitled to benefit from these incentives?	Indicator for incentivized performance	Please explain
Monetary reward	Board/Executive board Corporate executive team Other, please specify All employees, the CEO and Board 1	Reduction of water withdrawals Reduction of product water intensity Effluent quality improvements Water-related community project	AEP's compensation program is based on the fundamental premise of pay for performance. This compensation can come in several forms including, base pay and incentive pay. AEP offers both annual and long-term incentive programs to reward outstanding performance and achievement of business goals. AEP's business goals include achieving financial goals as well as longer-term strategic goals. Achieving annual financial goals are predicated upon successful execution of AEP's business strategy, which includes proactive deployment of emission abatement measures such as energy efficiency, highly efficient new generation and renewable energy, which reduces our need for water. Furthermore, AEP includes

			strategic goals which are based on core commitments to AEP's business model that may have less of an immediate financial return as part of its incentive compensation plan. AEP's mission and vision include commitments to culture and business transformation can be found at (https://www.aep.com/about/mission/).
Recognition (non-monetary)	Board/Executive board Corporate executive team Other, please specify All employees, the CEO and Board [2]	Reduction of water withdrawals Reduction of product water intensity Effluent quality improvements Water-related community project	AEP's compensation program is based on the fundamental premise of pay for performance. This compensation can come in several forms including, base pay and incentive pay. AEP offers both annual and long-term incentive programs to reward outstanding performance and achievement of business goals. AEP's business goals include achieving financial goals as well as longer-term strategic goals. Achieving annual financial goals are predicated upon successful execution of AEP's business strategy, which includes proactive deployment of emission abatement measures such as energy efficiency, highly efficient new generation and renewable energy, which reduces our need for water. Furthermore, AEP includes strategic goals which are based on core commitments to AEP's business model that may have less of an immediate financial return as part of its incentive compensation plan. Achievements are recognized through employee notifications, media announcements, meeting presentations, and other awards. AEP's mission and vision include commitments to culture and business transformation can be found at (https://www.aep.com/about/mission/).
Other non-monetary reward			

[1]All employee,s including the CEO and Board can benefit.

[2]All employees, including the CEO and Board

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?

Evolving U.S. environmental policy considerations have not changed our plans for complying with all applicable environmental regulations. While some regulations, such as the Disposal of Coal Combustion Residuals from Electric Utilities rule or the Steam Electric Effluent Guidelines, have an unclear path forward, there are many more regulations that we must comply with and new ones that are still being finalized. As the scope and stringency of environmental regulations evolve, we are faced with technical, operational and financial challenges that are common for our industry. These challenges, including uncertainties with timing, scope and magnitude of future environmental regulations, influence our decisions to upgrade or retire generating units. They also affect the planning process for new generation and transmission projects across our industry. AEP's active participation in the development of regulations helps to ensure that new requirements are achievable, based on sound science, consistent with statutory authority, balanced with other rulemakings, weigh the cost of compliance for customers, and can be implemented in a rational time frame. Compliance is important to us, but we also have a responsibility to our investors who make the required capital investment and to our customers, who will ultimately pay for the implementation of compliance strategies.

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)

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	5-10	AEP's corporate environmental compliance goal, including compliance with water requirements, is a key part of its business strategy. Potential changes to water regulatory programs have, for many years, been included in the company's long-term capital forecast,

			which includes our best assessment of the financial exposure due to water-related issues. This forecast is incorporated into our business strategy and communicated to the investment community. AEP's corporate environmental compliance goal, including compliance with water requirements, is a key part of its business strategy.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	5-10	Water quality, availability, use and management are increasingly important sustainability issues for AEP. We are continuing to take steps to reduce our water consumption, improve water quality and address water availability issues as we comply with current regulations and prepare for new ones.
Financial planning	Yes, water-related issues are integrated	5-10	AEP's corporate environmental compliance goal, including compliance with water requirements, is a key part of its business strategy. Potential changes to water regulatory programs have, for many years, been included in the company's long-term capital forecast, which includes our best assessment of the financial exposure due to water-related issues. This forecast is incorporated into our business strategy and communicated to the investment community.AEP's corporate environmental compliance goal, including compliance with water requirements, is a key part of its business strategy.

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)

170

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

5,000

Water-related OPEX (+/- % change)

-7.6

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

-6

Please explain

Changes in AEP's spending on major capital ELG and CCR projects affect CAPEX trends. As projects begin during the 4th quarter of 2019, CAPEX may increase 170%. Major projects beginning in 2020, may increase CAPEX by 5000%. Capital project decisions are not final. Costs include those for testing, technology studies, regulatory outcomes, and / or business evaluations. From 2017 to 2018, AEP's water-related OPEX decreased 2.37%. Examples of water-related OPEX include permit renewals, water quality testing, consulting services, surface and groundwater monitoring, and regulatory compliance support. A decline of 6.0% in OPEX is anticipated for 2019, based on the first six months of budget information. Estimates are based on expenses for the steam electric fleet that was operated by AEP during 2017, 2018 and 2019. The declining trends are indicative of plant retirements and ownership transfers.

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	AEP's scenario planning process accounts for varying assumptions around climate change policy and regulation to plan for a variety of futures, including one with significant restrictions on the use of fossil fuels. AEP has evaluated a number of scenarios related to potential climate regulation through its integrated resource planning process, which evaluates the generation resources required to meet customer demand. The scenarios involved include a variety of assumptions related to underlying carbon policy and the associated pricing impacts that would influence the composition of our generating fleet and subsequently emissions. Generally the resource planning process has a 15-20 year time horizon, though AEP took a longer approach in setting a 2050 carbon target. As the overwhelming majority of AEP's emissions are associated with fossil generation, the resource planning scenarios capture almost the entirety of AEP's carbon footprint.

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	Other, please specify Please see response to 7.3	As a result of running these scenarios, AEP has seen increased value in potential investment in renewable energy with decreased value in continuing to operate fossil generation. As a result, AEP has been able to reduce its emissions by 59% since 2000 and its water use by nearly 43% since 2013. It is anticipated that a reduced reliance on water in the long run will increase resilience.	Looking forward, these scenarios have led AEP to announce plans for adding several thousand megawatts of renewable energy to its system over the next decade and to set a 2050 carbon reduction goal that is consistent with global carbon scenarios. Consistent with this future scenario, water withdrawals and consumption are projected to significantly decline as older fossil generation is retired and replaced with sources such as wind and solar that do not require water for energy production. AEP will continue to monitor future scenarios for issues of water availability and quality.

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

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	Company-wide targets and goals Business level specific targets and/or goals	Targets are monitored at the corporate level Goals are monitored at the corporate level	AEP's water use is closely related to its generation portfolio and fleet of steam electric facilities. AEP has developed sustainability goals, which focus on issues such as climate change, carbon risk, energy efficiency, and renewable energy. While not specifically targeting water, the carbon reduction and renewable energy goals will result in less water use and water intensity as the company meets these goals. Water use itself is primarily regulated under environmental statutes, such as the Clean Water Act. In addition to a target of zero environmental enforcement actions, the company undertakes water-related activities to improve and protect water quality. It also implements stewardship projects to improve and protect watersheds. The implementation of these projects is tracked and reported as part of a strategic generation stewardship goal which requires AEP to implement 25 such projects over the next 5 years.

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

Product water intensity

Level

Company-wide

Primary motivation

Climate change adaptation and mitigation strategiess

Description of target

AEP has developed goals focused on issues such as climate change, carbon risk, energy efficiency, and renewable energy. While not specifically targeting water, the carbon reduction and renewable energy goals will result in less water use and water intensity as the company meets these goals. AEP’s carbon goal is to reduce carbon dioxide emissions from AEP generating units by 60 percent by 2030 and 80 percent by 2050 — both from a 2000 baseline. Its renewable energy goal is to grow regulated renewables by approximately 8,000 MW (per IRPs and pending regulatory approval) by 2030 and continue expansion of competitive, contracted renewables (from a 2018 baseline).

Quantitative metric

Other, please specify

Percent reduction of carbon emissions

Baseline year

2000

Start year

2011

Target year

2030

% achieved

59

Please explain

Through 2018, AEP has reduced its CO2 emissions by 59 percent since 2000. AEP has retired approximately 7,800 MW of coal-fueled generating capacity since 2011 and plans to retire an additional 1,900 MW by 2020. In early 2019, AEP announced the acquisition of Sempra Renewables, LLC, which adds 724 MW to our contracted renewable portfolio with seven wind farms. This acquisition, and completion of the Santa Rita East Wind Project in Texas, boosts AEP's total renewable portfolio by 1,302 MW, making it the seventh largest utility owner of competitive wind generation in the U.S. At the same time, since 2013, AEP has reduced its water use from 7,349 million gallons/day (MGD) to 4,173 MGD – a reduction of nearly 43 percent. During that same time period, we have reduced our water consumption by almost 58 percent from 315 MGD to 132 MGD. Water intensity was also reduced from an average of 57,165 gal/MWh to 55,718 gal/MWh (based on steam electric generating facilities using surface water).

Target reference number

Target 2

Category of target

Water pollution reduction

Level

Company-wide

Primary motivation

Risk mitigation

Description of target

An Environmental Performance Index (EPI) was established to set annual goals related to opacity, water discharge permits and oil and chemical spills at our generating facilities. In the past, the EPI tracked only events where we had immediate and

significant control. Incentive compensation within the Generation group is also tied to EPI performance. In 2017, the EPI was expanded to include all reported events specific to National Pollutant Discharge Elimination System (NPDES) permit expectations and spill events. We set annual targets focusing on continuous improvement as we strive for zero enforcement actions and zero events.

Quantitative metric

Other, please specify

100% compliance and no violations

Baseline year

2014

Start year

2014

Target year

2018

% achieved

99

Please explain

Two violations with a fine during 2018. Despite these two violations, AEP achieved a compliance rate of >99% based on the number of potential violations that could occur during the year. Hundreds of samples are collected at steam electric facilities subject to this target and there are hundreds, if not thousands, of opportunities to violate a regulatory requirement (i.e failure to sample, failure to report, failure to comply with limits, failure to properly report or remediate).

Target reference number

Target 3

Category of target

Watershed remediation and habitat restoration, ecosystem preservation

Level

Business

Primary motivation

Water stewardship

Description of target

In 2018, the AEP Generation organization included in its business plan a commitment to execute at least 25 new targeted environmental stewardship projects over a five-year period. Work is underway to determine how this target will be met, however, several of them will involve projects that improve watersheds and water quality. While AEP

completes many environmental stewardship projects each year, this target is focused on new projects.

Quantitative metric

Total number of watershed remediation and habitat restoration, ecosystem preservation activities

Baseline year

2018

Start year

2019

Target year

2023

% achieved

4

Please explain

A pollinator habitat related project was completed during 2019 which involved recognition of Pollinator Week. In addition, a portion of the Scioto River stream bank was improved following a river clean-up event involving AEP's Water and Ecological Resources staff.

W8.1b

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

Goal

Other, please specify

In 2018, AEP announced Corporate Sustainability Goals

Level

Company-wide

Motivation

Commitment to the UN Sustainable Development Goals

Description of goal

AEP's sustainability goals are guided by it's Strategic Framework for Sustainable Development, which provides context for its core business and a roadmap to implement throughout the value chain. AEP supports the goals with metrics and methodologies to measure performance against its business plan and across its operations. AEP employee teams developed the goals to ensure we effectively assess and communicate the return on investment (ROI) and shared value we create for AEP and all our stakeholders. We mapped our sustainability goals to the United Nations Sustainable

Development Goals (SDGs) to further demonstrate how we create shared value for our business and society. In 2020, we will begin to report on the connections between AEP's performance and the SDGs. (2019 Performance Summary of Sustainability Goals -- https://www.aepsustainability.com/sustainability/goals)

Baseline year

2018

Start year

2019

End year

2020

Progress

Please refer to the report, "AEP's Sustainability Goals for the Future - 2019 Performance Update" at https://www.aepsustainability.com/sustainability/docs/2019-AEPs%20Sustainability%20Goals%20For%20The%20Future_Brochure.pdf

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.

Linkage or tradeoff

Linkage

Type of linkage/tradeoff

Other, please specify

Water-energy nexus -- water is necessary to produce electricity and

Description of linkage/tradeoff

AEP fully understands the linkage between water and energy. As a power generator, AEP requires large quantities of water to produce electricity and electricity is needed to acquire, treat and distribute water.

Policy or action

AEP is collaborating with The Ohio State University to create a new modeling framework that incorporates key human (economic, behavioral, social) and environmental (physical, natural) linkages across local, regional, and global scales to examine the potential effects of uncertain deglobalization on the sustainability of regional food, energy and water systems. AEP has also worked with EPRI to study the linkages between water use and electricity generation. In a study of the recent drought in California, it was determined by Dr. Frank Loge of the University of California, that during the recent extended drought, the amount of electricity conserved through water conservation exceeded the combined impact of all energy efficiency programs offered by major investor-owned utilities in the state at less than a third of the cost.

Linkage or tradeoff

Linkage

Type of linkage/tradeoff

Other, please specify

Water treatment technologies

Description of linkage/tradeoff

New wastewater treatment requirements that will result from the revised steam electric effluent guidelines may require the installation of dry bottom ash disposal, FGD wastewater treatment and similar technologies. While it is true that the installation of dry bottom ash disposal requires much less water, it does incur an energy "penalty," as do additional wastewater treatment facilities. These "penalties" can only be met through the generation of additional power, which requires yet more water.

Policy or action

AEP is working closely with state and federal regulators, as well as its own industry groups, such as the Utility Water Act Group and the Electric Power Research Institute, to help shape and influence regulations that are technically sound and have a positive cost-benefit ratio. We are also planning well in advance to ensure that the most water and energy efficient treatment technologies are installed in response to the new regulations.

Linkage or tradeoff

Tradeoff

Type of linkage/tradeoff

Other, please specify

Emission Controls

Description of linkage/tradeoff

Due to a number of factors related to energy markets, environmental regulations, etc., many coal-fired, steam electric power plants across the country have been retired. Typically, these plants were once-through cooled facilities that withdrew large amounts

of cooling water, but consumed very little. With the closure of these plants, water withdrawals for the industry will be dramatically reduced, however, due to a greater reliance on gas-fired generation, which utilizes closed-cycle cooling, water consumption rates, on a per facility basis, may increase.

Policy or action

Just this year, AEP completed the purchase of seven wind farms with a combined 724 MWs of generation from Sempra Energy. AEP also took major steps forward in 2017 to expand its regulated renewable portfolio throughout its service territory. There are clear environmental benefits associated with these projects. Wind and solar projects do not produce carbon emissions and do not require water to generate electricity, which is important in drought-prone regions. AEP is transitioning to a balanced, diverse portfolio which will help mitigate risk for our customers and shareholders and ensure a more resilient and reliable energy system. We are doing this through our regulated energy companies and through company-owned and long-term contracted renewables. Between 2018 and 2020, we will invest approximately $500 million in renewable wind and solar in our regulated utilities. These investments will reduce our reliance on water-dependent sources of electricity generation.

W10. Verification

W10.1

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

Yes

W10.1a

(W10.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W1. Current state	Though only the first section of the CDP survey has been indicated, all portions of the survey have been verified thorough an AEP auditing process.	Other, please specify Institute of Internal Auditors	AEP auditors followed the standards and guidance of the Institute of Internal Auditors as they conducted the audit of the company's Corporate Accountability Report, from which much of the information used in this response was obtained.

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.

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 Environmental Services	Other C-Suite Officer

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)].

Yes

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 confirm below

I have read and accept the applicable Terms