

Module: Introduction

Page: W0. Introduction

W0.1

Introduction

Please give a general description 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 more than 5.3 million customers in portions of 11 states. AEP ranks among the nation's largest generators of electricity, owning 37,600 megawatts of generating capacity in the U.S. 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 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.

W0.2

Reporting year

Please state the start and end date of the year for which you are reporting data.

Period for which data is reported
Wed 01 Jan 2014 - Wed 31 Dec 2014

W0.3

Reporting boundary

Please indicate the category that describes the reporting boundary for companies, entities, or groups for which water-related impacts are reported.

Companies, entities or groups over which financial control is exercised

W0.4

Exclusions

Are there any geographies, facilities or types of water inputs/outputs within this boundary which are not included in your disclosure?

Yes

W0.4a

Exclusions

Please report the exclusions in the following table

Exclusion	Please explain why you have made the exclusion
Corporate and distribution facilities.	Only generation facilities and river operations are included in the disclosure, since these are the only ones with significant exposure to water issues.

Further Information

Module: Current State

Page: W1. Context

W1.1

Please rate the importance (current and future) of water quality and water quantity to the success of your organization

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital for operations	Important	Adequate water quantity is needed for electric generation facilities and for barge operations; adequate water quality is needed 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 supply chain).

W1.2

For your total operations, please detail which of the following water aspects are regularly measured and monitored and provide an explanation as to why or why not

Water aspect	% of sites/facilities/operations	Please explain
Water withdrawals- total volumes	76-100	
Water withdrawals- volume by sources	76-100	Only surface water withdrawals from steam electric facilities are reported here, however, groundwater withdrawals are recorded at all generation facilities.
Water discharges- total volumes	76-100	
Water discharges- volume by destination	76-100	
Water discharges- volume by	76-100	Only surface water discharges from steam electric facilities are reported here, but the

Water aspect	% of sites/facilities/operations	Please explain
treatment method		discharge volume of each facility is recorded by treatment method as per NPDES permit requirements.
Water discharge quality data-quality by standard effluent parameters	76-100	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 consumption- total volume	76-100	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.
Facilities providing fully-functioning WASH services for all workers	76-100	

W1.2a

Water withdrawals: for the reporting year, please provide total water withdrawal data by source, across your operations

Source	Quantity (megaliters/year)	How does total water withdrawals for this source compare to the last reporting year?	Comment
Fresh surface water	10198882	Higher	Value is for the entire AEP steam electric fleet. It is higher due to increased generation during 2014.
Brackish surface water/seawater			
Rainwater			
Groundwater - renewable		Not applicable	
Groundwater - non-renewable		Not applicable	
Produced/process water		Not applicable	
Municipal supply		Not applicable	

Source	Quantity (megaliters/year)	How does total water withdrawals for this source compare to the last reporting year?	Comment
Wastewater from another organization		Not applicable	
Total	10198882	Higher	Value is for the entire AEP steam electric fleet. It is higher due to increased generation during 2014.

W1.2b

Water discharges: for the reporting year, please provide total water discharge data by destination, across your operations

Destination	Quantity (megaliters/year)	How does total water discharged to this destination compare to the last reporting year?	Comment
Fresh surface water	9891004	Higher	Value is for the entire AEP steam electric fleet. It is higher due to increased generation during 2014.
Brackish surface water/seawater		Not applicable	
Groundwater		Not applicable	
Municipal treatment plant		Not applicable	
Total	9891004	Higher	Value is for the entire AEP steam electric fleet. It is higher due to increased generation during 2014.

W1.2c

Water consumption: for the reporting year, please provide total water consumption data, across your operations

Consumption (megaliters/year)	How does this consumption figure compare to the last reporting year?	Comment
312590	Lower	Value is for the entire AEP steam electric fleet.

W1.3

Do you request your suppliers to report on their water use, risks and/or management?

Yes

W1.3a

Please provide the proportion of suppliers you request to report on their water use, risks and/or management and the proportion of your procurement spend this represents

Proportion of suppliers %	Total procurement spend %	Rationale for this coverage
76-100		Many critical suppliers are queried on their water use. Potential solutions, as well as the need for possible assistance, are identified. As part of our RFP process, AEP requests that bidders provide information on their internal recycling and conservation programs. This question, as well as others on third party reviews and sustainability program involvement, identifies to AEP those suppliers with robust water sustainability programs and those who appear to have minimal programs.

W1.3b

Please choose the option that best explains why you do not request your suppliers to report on their water use, risks and/or management

Primary reason	Please explain
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W1.4

Has your organization experienced any detrimental impacts related to water in the reporting period?

Yes

W1.4a

Please describe the detrimental impacts experienced by your organization related to water in the reporting year

Country	River basin	Impact indicator	Impact	Description of impact	Length of impact	Overall financial impact	Response strategy	Description of response strategy
United States of America	Mississippi River	Phys-Drought	Plant/production disruption leading to reduced output	Continuing drought since 2011. The drought has resulted in deteriorating water quality which has resulted in more cooling tower blowdown and a faster filling of the plant evaporation ponds. The Oklaunion Plant took a one month special	Three years	Confidential Business Information	Infrastructure investment	Construction of new evaporation pond to supplement existing capacity.

Country	River basin	Impact indicator	Impact	Description of impact	Length of impact	Overall financial impact	Response strategy	Description of response strategy
				outage in the fall to conserve evaporation pond capacity.				
United States of America	Mississippi River	Reg-Regulation of discharge quality/volumes leading to higher compliance costs	Higher operating costs	The Texas Commission on Environmental Quality implemented a requirement that certain facilities evaluate the impacts of thermal discharges to receiving streams. As a result, \$150,000 was allocated for the required studies.	one year	\$150,000	Engagement with public policy makers	Studies will be conducted and results will be shared and discussed with the Texas Commission on Environmental Quality. Requirements will be implemented in renewed NPDES permits.
United States of America	Mississippi River	Reg-Regulatory uncertainty	Higher operating costs	Due to the Freedom Industries Spill that took place in January 2014, the West Virginia legislature quickly passed legislation during the 2014 session that was faulty, over burdensome, and ambiguous. Compliance was delayed while the WVDEP issued emergency and interpretive rules guiding the registration and development of spill plans for regulated aboveground storage tanks.	months	\$54,000	Engagement with public policy makers	Although the spill was not connected with AEP in any way, the ramifications of it do impact the company.

W1.4b

Please choose the option below that best explains why you do not know if your organization experienced any detrimental impacts related to water in the reporting year and any plans you have to investigate this in the future

Primary reason	Future plans
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Further Information

Module: Risk Assessment

Page: W2. Procedures and Requirements

W2.1

Does your organization undertake a water-related risk assessment?

Water risks are assessed

W2.2

Please select the options that best describe your procedures with regard to assessing water risks

Risk assessment procedure	Coverage	Scale	Please explain
Water risk assessment undertaken independently of other risk assessments	Direct operations and supply chain	All facilities	AEP reports extensively on its water use and consumption and associated risks and mitigation efforts in its annual GRI report (see attached report). Data on water use are collected on a per plant basis in response to the annual FERC and GRI reporting questions. Discharge data are collected from NPDES discharge monitoring reports, which are also compiled on a per plant basis.

W2.3

Please state how frequently you undertake water risk assessments, what geographical scale and how far into the future you consider risks for each assessment

Frequency	Geographic scale	How far into the future are risks considered?	Comment
Annually	Facility	1 to 3 years	Varies from 1 to 2 yrs during drought conditions.
Annually	Region	>6 years	Texas requires 5 and 10 yr. water conservation goals in company water conservation plans.
Annually	Region	>6 years	State agency or industry groups periodically forecast water demands for their states that may look ahead as many as 50 yrs. Texas and Indiana have undertaken such reviews.
Sporadically not defined	Region	3 to 6 years	Texas updates its regional and state water plans every 5 years.

W2.4

Have you evaluated how water risks could affect the success (viability, constraints) of your organization's growth strategy?

Yes, evaluated over the next 5 years

W2.4a

Please explain how your organization evaluated the effects of water risks on the success (viability, constraints) of your organization's growth strategy?

When new generation facilities are planned, models are used to forecast the availability of adequate water. For example, such assessments were conducted prior to the construction of the Turk (Arkansas) and Stall (Louisiana) plants. 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. Therefore, water availability to determine future generation is not forecasted. Adjustments are made based upon USGS river gauge information. If weather forecasts indicate the potential for a significant rain event three to seven days out, those forecasts will be followed and plans will be made to modify plant operations to adapt to the expected increases in inflow and, at a few plants, provide mitigation to downstream flooding potential.

W2.4b

What is the main reason for not having evaluated how water risks could affect the success (viability, constraints) of your organization's growth strategy, and are there any plans in place to do so in the future?

Main reason	Current plans	Timeframe until evaluation	Comment

W2.5

Please state the methods used to assess water risks

Method	Please explain how these methods are used in your risk assessment
Internal company knowledge Regional government databases WRI Aqueduct Other: US Dept. of Agriculture Drought maps	

W2.6

Which of the following contextual issues are always factored into your organization's water risk assessments?

Issues	Choose option	Please explain
Current water availability and quality parameters at a local level	Relevant, included for some facilities/suppliers	Water availability is an issue for some western fleet facilities, particularly those in drought-prone areas.
Current water regulatory frameworks and tariffs at a local level	Relevant, included for some facilities/suppliers	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 stakeholder conflicts concerning water resources at a local level	Relevant, included for some facilities/suppliers	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.
Current implications of water on your key commodities/raw materials	Relevant, not yet included	Sufficient river water levels are needed for coal and limestone barges; gas fracking also requires significant quantities of water.
Current status of ecosystems and habitats at a local level	Relevant, included	Compliance with all water quality standards at all facilities is a corporate goal; 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.
Current river basin management plans	Relevant, included for some facilities/suppliers	AEP is a participant in the EPRI-sponsored Ohio River Water Quality Trading Program, which assesses nutrient loading on a river basin basis. AEP is also a sponsor of the EPRI Ohio River Ecological Research Program and a member of ORSANCO, both of which evaluate the health of fish populations in the Ohio River.
Current access to fully-functioning WASH services for all employees	Relevant, included	Fully-functioning WASH services are provided to all employees.
Estimates of future changes in water availability at a local level	Relevant, included for some facilities/suppliers	Water availability is expected to become a growing issue for some western fleet facilities, particularly those in drought-prone areas.
Estimates of future potential regulatory changes at a local level	Relevant, 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) and proposed (steam electric effluent guidelines) EPA regulations will affect access to water.
Estimates of future potential stakeholder conflicts at a local level	Relevant, included for some facilities/suppliers	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.
Estimates of future implications of water on your key commodities/raw materials	Relevant, not yet included	Sufficient river water levels are needed for coal and limestone barges; gas fracking also requires significant quantities of water.
Estimates of future potential changes in the status of ecosystems and habitats at a local level	Relevant, included	Compliance with all water quality standards at all facilities is a corporate goal; 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

Issues	Choose option	Please explain
		groups and expected to grow in the future.
Scenario analysis of availability of sufficient quantity and quality of water relevant for your operations at a local level	Relevant, included for some facilities/suppliers	The WRI Aqueduct and the US Drought Monitor maps were used to assess water risks for the AEP fleet, particularly those in the western part of the country.
Scenario analysis of regulatory and/or tariff changes at a local level	Not evaluated	scenario analysis not done
Scenario analysis of stakeholder conflicts concerning water resources at a local level	Not evaluated	scenario analysis not done
Scenario analysis of implications of water on your key commodities/raw materials	Not relevant, included	scenario analysis not done
Scenario analysis of potential changes in the status of ecosystems and habitats at a local level	Relevant, not yet included	scenario analysis not done
Other	Not evaluated	

W2.7

Which of the following stakeholders are always factored into your organization's water risk assessments?

Stakeholder	Choose option	Please explain
Customers	Not evaluated	
Employees	Not evaluated	
Investors	Relevant, 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, included for some facilities/suppliers	Local communities are often involved in discussions regarding water availability, particularly for recreational uses.
NGOs	Relevant, included	AEP frequently engages NGOs to discuss water-related issues.

Stakeholder	Choose option	Please explain
Other water users at a local level	Relevant, included	Local communities are often involved in discussions regarding water availability, particularly for recreational uses. Other water use sectors (water supply, agriculture) may also be discussed.
Regulators	Relevant, 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, included for some facilities/suppliers	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 evaluated	
Suppliers	Not evaluated	
Water utilities/suppliers at a local level	Not evaluated	
Other	Not evaluated	

W2.8

Please choose the option that best explains why your organisation does not undertake a water-related risk assessment

Primary reason	Please explain

Further Information

Attachment to W2.2 response - 2015_GRI-AEP.pdf.

Attachments

Module: Implications

Page: W3. Water Risks

W3.1

Is your organization exposed to water risks, either current and/or future, that could generate a substantive change in your business, operations, revenue or expenditure?

Yes, direct operations and supply chain

W3.2

Please provide details as to how your organization defines substantive change in your business, operations, revenue or expenditure from water risk

Capital and O&M expenses to comply with water-related regulations; closure of facilities and load curtailment at others in response to water-related regulations or water stressors (scarcity, flooding, etc.). Assessment is limited to the steam-electric facilities utilizing surface water withdrawals (excluding ground water sources and hydroelectric facilities) in the Mississippi, Sabine and St. Lawrence watersheds that fall within the WRI Aqueduct med-high overall water risk areas or the US drought map moderate to extreme drought areas. The WRI Aqueduct overall water risk identifies areas with higher exposure to water-related risks and is an aggregated measure of all selected indicators from the Physical Quantity, Quality and Regulatory & Reputational Risk categories.

W3.2a

Please provide the number of facilities* per river basin exposed to water risks that could generate a substantive change in your business, operations, revenue or expenditure and the proportion of total operations this represents

Country	River basin	Number of facilities	Proportion of total operations exposed to risk within river basin (%)	Comment
United States of America	Mississippi River	12	31-40	Number of steam-electric facilities utilizing surface water withdrawals (excluding ground water sources and hydroelectric facilities) in the Mississippi watershed that fall within the WRI Aqueduct med-high water risk areas or the US drought map moderate to extreme drought areas.
United States of America	St. Lawrence	1	91-100	Number of steam-electric facilities utilizing surface water withdrawals (excluding ground water sources and hydroelectric facilities) in the St. Lawrence watershed that fall within the WRI Aqueduct med-high water risk areas or the US drought map moderate to extreme drought areas.

W3.2b

Please provide the proportion of financial value that could be affected at river basin level associated with the facilities listed in W3.2a

Country	River basin	Financial reporting metric	Proportion of chosen metric that could be affected within the river basin	Comment
United States of America	Mississippi River	% generation capacity	21-30	86% of the company's 2014 steam electric generation is within the Mississippi River watershed and withdrawals surface water, however, only 12 are in drought prone or water "stressed" areas.
United States of America	St. Lawrence	% generation capacity	91-100	Two steam electric facilities (Cook and Mone) are in the St. Lawrence watershed, however, only Cook is exposed to any water risks as the Mone Plant relies on groundwater.

W3.2c

Please list the inherent water risks that could generate a substantive change in your business, operations, revenue or expenditure, the potential impact to your direct operations and the strategies to mitigate them

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
United States of America	Mississippi River	Physical-Increased water scarcity	Higher operating costs	AEP steam electric facilities are exposed to water risks, however, based on the WRI Aqueduct Tool and US Drought maps, 12 are located in "stressed" areas within the Mississippi watershed and exposed to risks that could generate a substantive change in business operations. Increasing demand for water can create uncertainties and pressure on the power sector. This could be a future business risk	Current-up to 1 year	Probable	High	Increased investment in new technology	unknown	AEP participated in a research project with the Electric Power Research Institute to develop, test and deploy efficient, advanced cooling technologies. As a general rule, we apply a water consumption metric of 0.35 gal/kwh for once-thru cooled facilities and 0.70 gal.kwh for closed cycle facilities; for simple cycle, fossil steam turbines w/once-thru cooling, a water use metric of 20,000 to 50,000 gal/MWH is followed; there is a focus on

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				because of the need for water to produce electricity and an expected increase in the need for water in areas in which we operate.						maximizing operating efficiency, which in turn helps reduce the amount of water that is used for cooling and other purposes. We also consider water consumption in evaluating pollution control technology. For example, a "wet" SO2 scrubber will consume more water than a "dry" scrubber. We are investigating opportunities to reduce water use as we design new facilities; for example, wet fly ash disposal facilities are being converted to dry fly ash operations ,which will result in significant water use

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										reductions.
United States of America	Mississippi River	Regulatory-Mandatory water efficiency, conservation, recycling or process standards	Higher operating costs	In Texas, AEP operates four steam electric facilities within the Mississippi River basin. The installation of required efficiencies at the western facilities results in capital and O&M expenses.	Current-up to 1 year	Highly probable	Low	Increased investment in new technology	unknown	AEP annually files a Water Conservation Plan for power plants located in the state of Texas and installs required water efficiency devices. Examples include water reuse devices, low flow fixtures, air cooled generators, water recirculation devices, reverse osmosis units, ultra filters and dry ash conveyance.
United States of America	Mississippi River	Regulatory-Regulation of discharge quality/volumes leading to higher compliance costs	Higher operating costs	The production of electricity can affect the quality of surface water and groundwater through precipitation runoff, infiltration and collection of wastewater for	Current-up to 1 year	Highly probable	High	Increased investment in new technology	unknown, but high (millions of dollars)	We have invested heavily in water treatment systems to ensure we comply with our NPDES permits and we have an extensive

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				<p>treatment. States protect surface waters through a National Pollutant Discharge Elimination System (NPDES) permit process. Exceedances of permit effluent limits can result in violations and fines. Required treatment systems cost millions of dollars.</p>						<p>groundwater monitoring program to help us detect adverse impacts to water quality. Our design and construction practices for new landfills typically include composite liners, leachate collection systems and groundwater monitoring wells. We proactively added an additional synthetic liner to the landfill that serves the John W. Turk, Jr., ultra-supercritical coal plant in southwest Arkansas. This will bring the design up to the level included in the EPA's proposed coal combustion residuals rule</p>

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
United States of America	Mississippi River	Regulatory- Unclear and/or unstable regulations on water allocation and wastewater discharge	Higher operating costs	EPA has finalized new 316b regulations that govern cooling water intake structures and has proposed the installation of water treatment technologies at power plants (steam electric effluent guidelines). Due to the uncertainty of meeting the fish mortality standards, AEP will need to install new technologies to meet a water intake velocity standard, which could cost tens of millions of dollars per affected facility.	1-3 years	Highly probable	High	Increased investment in new technology	unknown, but high (billions of dollars)	We agree that appropriate and cost-effective measures can be taken to reduce impacts to aquatic life from cooling water intake structures but believe that, for many plants, the impacts are small. Due to the uncertainty of meeting the new 316b fish mortality standard, AEP will implement new technologies to meet a 0.5 fps water intake velocity standard. The agency has finalized a rule that lays out a process for a site-specific review of technology choices. With regards to the anticipated new

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
										effluent guidelines, AEP is installing new water treatment technologies now and is allowing room for additional installations if required to do so in the future.
United States of America	Mississippi River	Regulatory- Statutory water withdrawal limits/changes to water allocation	Higher operating costs	In Texas, AEP operates six steam electric facilities (four in the Mississippi watershed). Water is critical to their operation for steam production and plant cooling purposes. Mandatory limits on water withdrawals would require the installation of expensive water-saving technologies, such as dry scrubbers, dry cooling towers or	Current-up to 1 year	Probable	Medium	Increased investment in new technology	unknown, but high (millions of dollars)	AEP is installing more water efficient devices where it is appropriate. For example, AEP will be installing "dry" pollution control systems at some facilities to comply with new air emissions control requirements.

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				dry ash disposal.						
United States of America	Mississippi River	Reputational-Litigation	Delays in permitting	AEP power plants can withdraw billions of gallons of water per day. Such withdrawals can stress aquatic systems. While such impacts are rare and most of the water is returned to the system, the general public often believes that power plant operations have a negative impact on water bodies. The public can object to permits for new or existing facilities. Delays in obtaining permits incur additional costs. Associated legal expenses can become significant.	Current-up to 1 year	Probable	High	Engagement with public policy makers	unknown but high (millions of dollars)	Water quality, use and management are important issues to our industry. While our industry faces new rules related to the Clean Water Act, we are proactively taking steps to reduce our water consumption, improve water quality and address availability issues in drought-prone regions.

W3.2d

Please list the inherent water risks that could generate a substantive change in your business operations, revenue or expenditure, the potential impact to your supply chain and the strategies to mitigate them

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
United States of America	Mississippi River	Physical-Inadequate infrastructure	Higher operating costs	More than half of the operational lock chambers run by the U.S. Army Corps of Engineers on inland waterways are over 50 years old. AEP relies on barges to deliver coal. Increasingly, broken and undependable locks raise our costs and affect our ability to deliver to our customers on time. For example, coal delivery costs increased \$1.7 million as a result of failure	Current-up to 1 year	Probable	High	Infrastructure investment	Unknown but high (millions of dollars)	The U.S. Army Corps of Engineers, which maintains and operates the inland waterways, recognizes the problem, but has not received adequate funding from Congress to address it. AEP supports the Water Resource and Reform Development Act of 2014, which required the Corps, working with the Inland Waterway Users Board, to draft a new 20-year Capital Development Plan. This plan, which is now called the Capital Investment Strategy, has been

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				of just one facility in 2010.						completed and is being reviewed by the Assistant Secretary of the Army and the Office of Management and Budget for approval/revisions. With the increase in AEP's per gallon user fee (\$.20/gallon to \$.29/gallon), some major inland waterway infrastructure projects should be started and completed within the next 8-10 years.
United States of America	Mississippi River		Other: Constraint to future growth	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	1-3 years	Probable	High	Supplier diversification	unknown	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, and hydro. Maintaining a balanced generation

Country	River basin	Risk driver	Potential impact	Description of impact	Timeframe	Likelihood	Magnitude of potential financial impact	Response strategy	Costs of response strategy	Details of strategy and costs
				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.						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.

W3.2e

Please choose the option that best explains why you do not consider your organization to be exposed to water risks in your direct operations that could generate a substantive change in your business, operations, revenue or expenditure

Primary reason	Please explain
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W3.2f

Please choose the option that best explains why you do not consider your organization to be exposed to water risks in your supply chain that could generate a substantive change in your business, operations, revenue or expenditure

Primary reason	Please explain
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W3.2g

Please choose the option that best explains why you do not know if your organization is exposed to water risks that could generate a substantive change in your business operations, revenue or expenditure and discuss any future plans you have to assess this

Primary reason	Future plans
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Further Information

Page: W4. Water Opportunities

W4.1

Does water present strategic, operational or market opportunities that substantively benefit/have the potential to benefit your organization?

Yes

W4.1a

Please describe the opportunities water presents to your organization and your strategies to realize them

Country or region	Opportunity	Strategy to realize opportunity	Estimated timeframe	Please explain
United States of America	Improved water efficiency Innovation Regulatory changes	Water stress in the western U.S. and changing regulations present two opportunities for AEP to benefit from market opportunities. In the west, trading water rights with farmers may be an effective alternative to finding new sources of water. It is often more cost effective for a farmer to sell water rights, if only for one year, than to grow crops that may fail. AEP would benefit from access to necessary water at a lower cost than developing new water sources. In the east, new regulations are resulting in the closure of many once-thru cooled power plants. AEP's water withdrawals and consumption will drop dramatically in 2015 greatly reducing the company's exposure to water issues.	1-3 years	Droughts occur on an annual basis and the plant closures will occur during 2015, hence the 1-3 year timeframe.

W4.1b

Please choose the option that best explains why water does not present your organization with any opportunities that have the potential to provide substantive benefit

Primary reason	Please explain
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W4.1c

Please choose the option that best explains why you do not know if water presents your organization with any opportunities that have the potential to provide substantive benefit

Primary reason	Please explain

Further Information

Module: Accounting

Page: W5. Facility Level Water Accounting (I)

W5.1

Water withdrawals: for the reporting year, please complete the table below with water accounting data for all facilities included in your answer to W3.2a

Facility reference number	Country	River basin	Facility name	Total water withdrawals (megaliters/year) at this facility	How does the total water withdrawals at this facility compare to the last reporting year?	Please explain the change if substantive
Facility 1	United States of America	Mississippi River	Big Sandy	11802	Higher	changes in fleet dispatch
Facility 2	United States of	Mississippi	Comanche	2346	Much lower	changes in fleet

Facility reference number	Country	River basin	Facility name	Total water withdrawals (megaliters/year) at this facility	How does the total water withdrawals at this facility compare to the last reporting year?	Please explain the change if substantive
	America	River				dispatch
Facility 3	United States of America	Mississippi River	Conesville	77529	About the same	
Facility 4	United States of America	St. Lawrence	Cook	2965937	Higher	changes in fleet dispatch
Facility 5	United States of America	Mississippi River	Dresden	3638	Higher	changes in fleet dispatch
Facility 6	United States of America	Mississippi River	Lone Star	2206	Higher	changes in fleet dispatch
Facility 7	United States of America	Mississippi River	Northeastern	16400	Much lower	changes in fleet dispatch
Facility 8	United States of America	Mississippi River	Oklaunion	7486	Lower	changes in fleet dispatch
Facility 9	United States of America	Mississippi River	Riverside	3552	Much lower	changes in fleet dispatch
Facility 10	United States of America	Mississippi River	Southwestern	2582	Much lower	changes in fleet dispatch
Facility 11	United States of America	Mississippi River	Tulsa	2453	Much lower	changes in fleet dispatch
Facility 12	United States of America	Mississippi River	Waterford	3931	About the same	
Facility 13	United States of America	Mississippi River	Wilkes	409314	Lower	changes in fleet dispatch

Further Information

Page: W5. Facility Level Water Accounting (II)

W5.1a

Water withdrawals: for the reporting year, please provide withdrawal data, in megaliters per year, for the water sources used for all facilities reported in W5.1

Facility reference number	Fresh surface water	Brackish surface water/seawater	Rainwater	Groundwater (renewable)	Groundwater (non-renewable)	Produced/process water	Municipal water	Wastewater from another organization	Comment
Facility 1	11802								
Facility 2								2347	Treated water from Lawton, OK POTW
Facility 3	77529								
Facility 4	2965937								
Facility 5	3638								
Facility 6	2206								
Facility 7	16400								
Facility 8	7486								
Facility 9	3552								
Facility 10	2582								
Facility 11	2453								
Facility 12	3931								
Facility 13	409314								

W5.2

Water discharge: for the reporting year, please complete the table below with water accounting data for all facilities included in your answer to W3.2a

Facility reference number	Total water discharged (megaliters/year) at this facility	How does the total water discharged at this facility compare to the last reporting year?	Please explain the change if substantive
Facility 1	4093	Higher	changes in fleet dispatch
Facility 2	2306	Much lower	changes in fleet dispatch
Facility 3	41500	About the same	
Facility 4	2965340	Higher	changes in fleet dispatch
Facility 5	753	Much higher	changes in fleet dispatch
Facility 6	2206	Higher	changes in fleet dispatch
Facility 7	6253	Much lower	changes in fleet dispatch
Facility 8	0	About the same	
Facility 9	3484	Much lower	changes in fleet dispatch
Facility 10	12177	Much lower	changes in fleet dispatch
Facility 11	1113	Much lower	changes in fleet dispatch
Facility 12	753	About the same	
Facility 13	407123	Lower	changes in fleet dispatch

W5.2a

Water discharge: for the reporting year, please provide water discharge data, in megaliters per year, by destination for all facilities reported in W5.2

Facility reference number	Fresh surface water	Municipal Treatment Plant	Seawater	Groundwater	Comment
Facility 1	4093				
Facility 2	2306				
Facility 3	41500				
Facility 4	2965340				
Facility 5	753				

Facility reference number	Fresh surface water	Municipal Treatment Plant	Seawater	Groundwater	Comment
Facility 6	2206				
Facility 7	6253				
Facility 8	0				
Facility 9	3484				
Facility 10	1277				
Facility 11	1113				
Facility 12	753				
Facility 13	407123				

W5.3

Water consumption: for the reporting year, please provide water consumption data for all facilities reported in W3.2a

Facility reference number	Consumption (megaliters/year)	How does this compare to the last reporting year?	Please explain the change if substantive
Facility 1	7709	Higher	changes in fleet dispatch
Facility 2	41	Much lower	changes in fleet dispatch
Facility 3	36029	About the same	
Facility 4	0	About the same	
Facility 5	2885	Higher	changes in fleet dispatch
Facility 6	3	About the same	
Facility 7	10148	Much lower	changes in fleet dispatch
Facility 8	7486	Lower	changes in fleet dispatch
Facility 9	69	Lower	changes in fleet dispatch
Facility 10	1305	Much lower	changes in fleet dispatch
Facility 11	1340	Much lower	changes in fleet dispatch

Facility reference number	Consumption (megaliters/year)	How does this compare to the last reporting year?	Please explain the change if substantive
Facility 12	3178	About the same	
Facility 13	2226	About the same	

W5.4

For all facilities reported in W3.2a what proportion of their water accounting data has been externally verified?

Water aspect	% verification	What standard and methodology was used?
Water withdrawals- total volumes	76-100	FERC reporting
Water withdrawals- volume by sources	76-100	NPDES permitting
Water discharges- total volumes	76-100	NPDES permitting
Water discharges- volume by destination	76-100	NPDES permitting
Water discharges- volume by treatment method	76-100	NPDES permitting
Water discharge quality data- quality by standard effluent parameters	76-100	NPDES permitting
Water consumption- total volume	Not verified	

Further Information

Module: Response

Page: W6. Governance and Strategy

W6.1

Who has the highest level of direct responsibility for water within your organization and how frequently are they briefed?

Highest level of direct responsibility for water issues	Frequency of briefings on water issues	Comment
Senior Manager/Officer	Other: Bi-weekly	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.

W6.2

Is water management integrated into your business strategy?

Yes

W6.2a

Please choose the option(s) below that best explain how water has positively influenced your business strategy

Influence of water on business strategy	Please explain
Greater due diligence	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

Influence of water on business strategy	Please explain
Water management incentives established for employees	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.
Water management incentives established for senior management	AEP's corporate environmental compliance goal, including compliance with water requirements, is a key part of its business strategy.
Water resource considerations are factored into location planning for new operations	Non-water dependent transmission facilities are located to minimize any physical impacts to water (spills, wetland impacts, etc.).

W6.2b

Please choose the option(s) below that best explains how water has negatively influenced your business strategy

Influence of water on business strategy	Please explain
Closure of operations	Partially due to the impact of water-related regulations (316(b) and steam electric effluent guidelines), facilities will be prematurely retired.
Increased capital expenditure	Due to the impact of water-related regulations (316(b) and steam electric effluent guidelines), water-treatment or water intake facilities will need to be retrofitted or installed.

W6.2c

Please choose the option that best explains why your organization does not integrate water management into its business strategy and discuss any future plans to do so

Primary reason	Please explain
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W6.3

Does your organization have a water policy that sets out clear goals and guidelines for action?

Yes

W6.3a

Please select the content that best describes your water policy (tick all that apply)

Content	Please explain why this content is included
Publicly available Company-wide Performance standards for direct operations Incorporated within group environmental, sustainability or EHS policy Acknowledges the human right to water, sanitation and hygiene	AEP has management systems, policies and environmental experts in place to achieve its goal of zero environmental enforcement actions. The company is proactive in its efforts to protect people and the environment by committing to: maintain compliance with all applicable environmental requirements while pursuing the spirit of environmental stewardship; ensure that people working for or on behalf of AEP understand and integrate environmental responsibilities into their business functions; and support continual improvement of environmental performance and pollution prevention. AEP also locates and develops facilities to minimize any physical impacts to water (spills, wetland impacts, etc.).

W6.4

How does your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) during the most recent reporting period compare to the previous reporting period?

Water CAPEX (+/- % change)	Water OPEX (+/- % change)	Motivation for these changes
		This information is not collected by AEP.

Further Information

Page: W7. Compliance

W7.1

Was your organization subject to any penalties, fines and/or enforcement orders for breaches of abstraction licenses, discharge consents or other water and wastewater related regulations in the reporting year?

Yes, not significant

W7.1a

Please describe the penalties, fines and/or enforcement orders for breaches of abstraction licenses, discharge consents or other water and wastewater related regulations and your plans for resolving them

Facility name	Incident	Incident description	Frequency of occurrence in reporting year	Financial impact	Currency	Incident resolution
Dolet Hills Mine	Fine	In 2014, the Louisiana Office of Conservation issued a fine of \$3,400 at the AEP Dolet Hills Mine for insufficient storm water runoff controls.	1	3400	USD(\$)	AEP mine management resolved the issue implementing a compliance improvement plan and holding meetings with the Louisiana agency to reaffirm our commitment to compliance.

W7.1b

What proportion of your total facilities/operations are associated with the incidents listed in W7.1a

2%

W7.1c

Please indicate the total financial impacts of all incidents reported in W7.1a as a proportion of total operating expenditure (OPEX) for the reporting year. Please also provide a comparison of this proportion compared to the previous reporting year

Impact as % of OPEX	Comparison to last year
0	Higher

Further Information

The \$3400 fine is so small relative to AEP's annual operating expenses that it is well below 1%, hence a value of zero percent has been reported. However, no fines or penalties were assessed during 2013, so the 2014 amount is "higher." In addition, the Dolet Hills facility represents 2% of AEP's total number of generation facilities.

Page: W8. Targets and Initiatives

W8.1

Do you have any company wide targets (quantitative) or goals (qualitative) related to water?

Yes, targets and goals

W8.1a

Please complete the following table with information on company wide quantitative targets (ongoing or reached completion during the reporting period) and an indication of progress made

Category of target	Motivation	Description of target	Quantitative unit of measurement	Base-line year	Target year	Proportion of target achieved, % value
Water pollution prevention	Risk mitigation	AEP's water use is primarily regulated under environmental statutes such as the Clean Water Act. As such, AEP's formal environmental policy applies and acts as AEP's water policy. In addition to a target of zero environmental enforcement actions, the company undertakes additional water-related activities intended to improve and protect water quality. For example, the company is funding EPRI-related research to improve methods of treating FGD waste waters.	Other: 100% compliance and no violations.	2014	2014	99%
Absolute reduction of water withdrawals	Risk mitigation	AEP's water use is primarily regulated under environmental statutes such as the Clean Water Act, but it is very much dependent on water availability. The company makes efforts to improve water efficiencies and to recycle water where possible to reduce discharges and mitigate	% reduction per unit of production	2010	2014	100%

Category of target	Motivation	Description of target	Quantitative unit of measurement	Base-line year	Target year	Proportion of target achieved, % value
		water availability risks. Tracking water withdrawals per MWhr produced is a primary goal. This information has been reported in our GRI submittals since 2010.				
Community engagement	Water stewardship	A primary goal of AEP's Environmental Services Department is to "conduct research on the environmental effects of power generation and energy delivery on water and ecological resources." AEP has sponsored research on Ohio River fisheries for over 40 consecutive years.	Other: Consistent support of R&D	1970	2014	100%

W8.1b

Please describe any company wide qualitative goals (ongoing or reached completion during the reporting period) and your progress in achieving these

Goal	Motivation	Description of goal	Progress
Watershed remediation and habitat restoration, ecosystem preservation	Water stewardship	A primary goal of AEP's Environmental Services Department is to "conduct research on the environmental effects of power generation and energy delivery on water and ecological resources." AEP has sponsored organizations, such as Living Lands and Waters (http://livinglandsandwaters.org/).	AEP was a member of the Electric Power Research Institute and sponsored environmental organizations, such as Living Lands and Waters and the Ohio Environmental Professionals Network.

W8.1c

Please explain why you do not have any water-related targets or goals and discuss any plans to develop these in the future

Further Information

Module: Linkages/Tradeoff

Page: W9. Managing trade-offs between water and other environmental issues

W9.1

Has your organization identified any linkages or trade-offs between water and other environmental issues in its value chain?

Yes

W9.1a

Please describe the linkages or trade-offs and the related management policy or action

Environmental issues	Linkage or trade-off	Policy or action
Water-energy nexus	Linkage	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. New technologies being developed, such as carbon capture and storage, will also require large amounts of water.
Water Treatment Technologies	Linkage	New regulatory requirements to install dry or hybrid cooling could be required in states such as Texas, which is responding to recent droughts. These cooling systems are less efficient than once-through cooled facilities and create an energy "penalty." In addition, new wastewater treatment requirements that will likely result from the revised steam electric effluent guidelines, could 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

Environmental issues	Linkage or trade-off	Policy or action
		yet more water. 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. For example, dry sorbent injection has been installed at the Rockport Plant in Indiana. This flue-gas treatment technology will not generate waste water, which would normally require expensive treatment prior to discharge.
Emission Controls	Trade-off	New air quality regulations have resulted in the closure of many coal-fired, steam electric power plants across the country. 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, will increase.

Further Information

Module: Sign Off

Page: Sign Off

W10.1

Please provide the following information for the person that has signed off (approved) your CDP water response

Name	Job title	Corresponding job category
John McManus and Sandy Nessing	VP Environmental Services; Managing Director, Sustainability & ESH Design & Strategy (respectively)	Environment/Sustainability manager

W10.2

Addressing water risks effectively, in many instances, requires collective action. CDP would like to support you in finding potential partners that are also working to tackle water challenges in the river basins you report against. Please select if your organization would like CDP to transfer your publicly disclosed risk and impact drivers and response strategy data from questions W1.4a, W3.2b, W3.2c, W4.1a and W8.1b to the United Nations Global Compact Water Action Hub.

Yes

Further Information

CDP