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## Microsoft CDP Water Security Response 2018



## W0 Introduction

### Introduction

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

At Microsoft, our mission is to empower every person and every organization on the planet to achieve more. We strive to create local opportunity, growth, and impact in communities around the globe. Our strategy is to build best-in-class platforms and productivity services for an intelligent cloud and an intelligent edge infused with artificial intelligence (AI).

We know that water is a serious challenge that requires a global response from all sectors of society. All around the world, water resources are under increasing stress due to the combined effects of numerous challenges, including population growth, economic development, and climate change. These challenges, in turn, are driving an imbalance between water supply and demand that could jeopardize human health, agricultural productivity, economic development, and the ability to maintain sustainable ecosystems. In its 2017 Global Risks Report, the World Economic Forum ranks potential impacts from water crises higher than any other risk, including climate change, fiscal crises, and infectious disease.

In FY17 (the reporting period for this response), we began implementing a new water stewardship strategy that builds on our belief that we should be looking at water in a more holistic way. Our strategy is intended to help us understand and articulate the true value of water in our operations, as well as the relative risks as water becomes scarcer. Our approach focuses on increasing our understanding of water-related risks and impacts to our business and to the communities we serve; improving our water efficiency across datacenter, real estate, and manufacturing locations; and using our learnings to advance innovative solutions to water challenges.

Our water strategy complements our ongoing commitments to reducing our carbon footprint; searching for opportunities to minimize our environmental impact, reduce waste, and conserve other raw materials; and developing technical tools and technological approaches that facilitate the achievement of environmental sustainability objectives. In pursuing these goals, we follow strict policies to ensure that the company remains fully compliant with international environmental regulations and the specific environmental requirements of each country/region where we do business.

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

Start date	End date
07/01/2016	06/30/2017

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

Country
n/a

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

Currency
USD

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

No

## W1 Current state

### Dependence

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

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality	Vital	Important	The primary use for good quality freshwater in our direct operations is for cooling systems (depending on the cooling technology deployed) for some datacenters. This is vital to ensure

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
freshwater available for use			continuous delivery of customer services for these datacenters. It is also vital for drinking water for employees. Future water dependency for our direct operations should reduce because we are piloting various technologies that decrease freshwater reliance. The primary use for good quality freshwater for our suppliers is "life water" (hygiene, drinking). It is important to provide adequate working conditions for supplier employees. We do not anticipate any change in water dependency for our indirect operations in the future. Our products and services have minimal water impacts in other stages of the value chain.
Sufficient amounts of recycled, brackish and/or produced water available for use	Important	Important	The primary use for non-freshwater in our direct operations is for cooling systems in our datacenters. Some use recycled water as an alternative makeup water source. When process water is required, we use recycled, reused, or industrial water where available unless we require freshwater supply (e.g. with adiabatic cooling systems). Access to non-freshwater is important because it reduces our operation's dependency on limited freshwater. Therefore, future dependency on recycled water will be increasing throughout our direct operations. The primary uses for non-freshwater for our suppliers include cooling systems and manufacturing-related processes. It is important to maintain comfortable working conditions in an environment of rising outdoor air temperature, and using recycled water for processes reduces consumption of freshwater. We expect future dependency for our indirect operations to increase. Our products and services have minimal water impacts in other stages of the value chain.

## Company-wide water accounting

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

Water aspect	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100	We are reporting water withdrawals for 100 percent of our facilities. Water withdrawals are based on data from utility bills from our largest sites and, in some cases, estimations. We have a robust estimation methodology for leased sites that takes into account square footage, electricity consumption, and building type. For our datacenters, water withdrawal total volumes are monitored on a daily basis for the sites that

Water aspect	% of sites/facilities/operations	Please explain
		Microsoft owns and operates. For all other facilities, utility data at individual sites is collected monthly. The global water inventory, which includes estimations, is aggregated annually.
Water withdrawals – volumes from water stressed areas	100	Each year, we perform a water risk analysis of our global facility portfolio using the WRI Aqueduct assessment tool to determine which of our sites, if any, are in water-stressed areas. We are reporting water withdrawals for 100 percent of our facilities. Water withdrawals are based on data from utility bills from our largest sites and, in some cases, estimations. We have a robust estimation methodology for leased sites that takes into account square footage, electricity consumption, and building type. For our datacenters, in FY17 we began to monitor water withdrawal total volumes on a daily basis for a portion of the sites that Microsoft owns and operates in water-stressed areas. For all other facilities, utility data at individual sites is collected monthly. The global water inventory, which includes estimations and a water stress analysis, is aggregated annually.
Water withdrawals – volumes by source	100	We are reporting water withdrawals for 100 percent of our facilities. Water withdrawals are based on data from utility bills from our largest sites and, in some cases, estimations. We have a robust estimation methodology for leased sites that takes into account square footage, electricity consumption, and building type. For our datacenters, water withdrawal total volumes by source are tracked by monthly invoice for the sites that Microsoft owns and operates. For all other facilities, utility data at individual sites is collected monthly, but the global water inventory, which includes estimations, is aggregated annually. The vast majority of our metered withdrawals come from municipal sources. Where water withdrawals are estimated, we assume they come from municipal sources.
Water withdrawals quality	1-25	At most of our sites, water quality is monitored at the municipal level. Only at specific sites are water withdrawals monitored for quality at the site level. For example, we engage a third-party organization in China to annually check bacteria levels and other water quality metrics at water dispensers at our Beijing, Shanghai, Suzhou, and Zizhu campuses as well as our Chengdu, Fuzhou, Guangzhou, Hangzhou, JiNan, Nanjing, Shenzhen Kerry Center, and Wuxi office sites.
Water discharges – total volumes	1-25	Most of our sites do not have discharge meters. At many of our office facilities, water consumption is low, and so for these sites we know that discharges are close to withdrawals. Where there is water consumption (such as for landscaping, evaporative coolers, cooling towers, settling ponds), we adjust discharge values accordingly. We use blowdown meters in Puget Sound to track water discharges from our cooling towers and in Beijing to monitor discharge from our HVAC water treatment system. For our datacenters, water

Water aspect	% of sites/facilities/operations	Please explain
		<p>discharge total volumes are tracked monthly through utility invoices for sites that Microsoft owns and operates. For all other facilities, where they are not metered, we estimate discharges annually as part of our global water inventory aggregation process. Microsoft is undergoing a fleet update of our datacenter water meters on the intake and discharge side. We are confirming our consumption numbers to establish a solid baseline for reporting and internal goal setting.</p>
Water discharges – volumes by destination	1-25	<p>Most of our sites do not have discharge meters. At many of our office facilities, water consumption is low, and so for these sites we know that discharges are close to withdrawals. Where there is water consumption (such as for landscaping, evaporative coolers, cooling towers, settling ponds), we adjust discharge values accordingly. For the majority of Microsoft-owned datacenters, water discharges go directly to the wastewater treatment plant. Therefore, monthly utility invoices are a proxy for water discharge volumes by destination (wastewater treatment plants) for sites that Microsoft owns and operates. For all other facilities, where they are not metered, we estimate discharges annually as part of our global water inventory aggregation process. Microsoft is undergoing a fleet update of our water meters on the intake and discharge side. We are confirming our consumption numbers to establish a solid baseline for reporting and internal goal setting.</p>
Water discharges – volumes by treatment method	1-25	<p>The vast majority of Microsoft water discharges go directly to the wastewater treatment plant. Most of our sites do not have discharge meters. At many of our office facilities, water consumption is low, and so for these sites we know that discharges are close to withdrawals. Where there is water consumption (such as for landscaping, evaporative coolers, cooling towers, settling ponds), we adjust discharge values accordingly. Where discharges are not metered, we estimate them annually as part of our global water inventory aggregation process. Microsoft is undergoing a fleet update of our water meters on the intake and discharge side. We are confirming our consumption numbers to establish a solid baseline for reporting and internal goal setting.</p>
Water discharge quality – by standard effluent parameters	1-25	<p>Water discharge quality is only measured at some of our facilities, as the majority of our discharges are conveyed to municipal treatment plants. Water discharge quality effluent parameter reporting is on a site-by-site basis. Where it is required, we provide this information to the appropriate reporting agency. Water discharge quality is measured inline daily to monthly, depending on the requirements of each individual site. As part of this reporting exercise, we are identifying gaps in reporting capabilities and will be performing an analysis on what it would cost to add infrastructure to have the ability to report on this in the future.</p>

Water aspect	% of sites/facilities/operations	Please explain
Water discharge quality – temperature	Less than 1%	Temperature is reported on a site-specific basis depending upon the local, state, and federal requirements of a given region.
Water consumption – total volume	51-75	Most of our sites do not have discharge meters. For these sites, water consumption is zero unless they have landscaping that requires irrigation or cooling towers. In Beijing, we use a flow meter to regularly monitor makeup water for the cooling tower system. Currently, Microsoft datacenters are updating their discharge meter infrastructure to include real-time measurements. Where consumption is not metered, we estimate it annually as part of our global water inventory aggregation process.
Water recycled/reused	100	We measure and monitor reused water at sites that have water recycling capability, though very few of our sites reuse/recycle water. At datacenters that use recycled or reused water, meters collect real-time data on water usage. At all other facilities, where present, recycled/reused water data is collected monthly.
The provision of fully-functioning, safely managed WASH services to all workers	100	Microsoft provides fully functioning wash, sanitation, and hygiene (WASH) services for all workers at all of our sites. WASH services are cleaned and monitored as part of daily custodial services.

**(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?**

Water aspect	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	5271	About the same	Water withdrawals are based on data from utility bills from our largest sites and, in cases where metered data is unavailable, estimations. We have a robust estimation methodology for leased sites that takes into account square footage, electricity consumption, and building type. Even so, there exists uncertainty of +/-5 percent in the data as a result of data gaps, metering/measuring constraints, and extrapolation methodology. Despite business growth, our total measured water withdrawals grew less than 10 percent from the previous reporting period. We anticipate withdrawals to increase along with our business over the next several years. Total withdrawals equal total discharges plus total consumption (5,161 + 110 = 5,271).
Total discharges	5161	About the same	Most of our sites do not have discharge meters. At many of our office facilities, water consumption is low, and so for these sites we know that discharges are close to withdrawals. We estimate discharge at a global level by subtracting metered consumption from total withdrawals. Therefore, as with our withdrawal volume, our total estimated water discharges grew less than 10 percent from the previous reporting period. We anticipate an increase in proportion to withdrawals as our business grows over the next several years.
Total consumption	110	About the same	Metered consumption consists of non-potable (recycled) water use in landscaping at several of our campuses. We estimate consumption to be zero for our other sites. Growth in metered consumption is less than 10 percent from the previous reporting period. We anticipate a slight increase in consumption as our business grows over the next several years.

**(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
47	About the same	WRI Aqueduct	Each year, we conduct annual water risk assessments that consider the near future for our business facilities (for example, offices and labs), datacenters, and manufacturing sites using the WRI Aqueduct tool because it reveals a broad spectrum of key water-related risks at the level of



% withdrawn from stressed areas	Comparison with previous reporting year	Identification tool	Please explain
			individual river basins. We consider sites to be in a "water stressed area" if they sit in a water basin rated as having at least "High (40-80%)" baseline water stress according to the WRI Aqueduct tool. There was a less than 10 percent change in this value from the previous reporting period.

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

Source	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	26	About the same	This source is relevant to Microsoft as we capture rainwater at two of our office locations. These withdrawal volumes are metered and remain roughly the same (depending on annual rainfall) each year. We expect future withdrawal volumes from fresh surface water to remain roughly the same.
Brackish surface water/seawater	Not relevant			This source is not relevant to Microsoft as we do not withdraw any brackish surface water/seawater. We expect future withdrawal volumes from brackish surface water/seawater to remain unchanged (that is, we do not anticipate withdrawing from this source in the future).
Groundwater – renewable	Relevant	17	About the same	This source is relevant to Microsoft as we withdraw groundwater at several of our office campuses. These withdrawal volumes are metered and decreased less than 10 percent from the previous year. We expect future withdrawal volumes from renewable groundwater to remain relatively flat.
Groundwater – non-renewable	Not relevant			This source is not relevant to Microsoft as we do not withdraw any nonrenewable groundwater. We expect future withdrawal volumes from nonrenewable groundwater to remain unchanged (that is, we do not anticipate withdrawing from this source in the future).
Produced water	Relevant	110	About the same	This source is relevant to Microsoft because municipally treated wastewater is used for landscape irrigation at several of our office campus

Source	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
				locations. These withdrawal volumes are metered and increased less than 10 percent from the previous year. We expect future withdrawal volumes from produced/process water to increase as more sites start to use it.
Third party sources	Relevant	5118	About the same	This source is relevant to Microsoft because most of our water withdrawals come from the local municipal supply. These water withdrawals are based on data from utility bills from our largest sites and, in cases where metered data is unavailable, estimations. We have a robust estimation methodology for leased sites that takes into account square footage, electricity consumption, and building type. Despite business growth, our total measured water withdrawals grew less than 10 percent from the previous reporting period. We anticipate withdrawals to increase along with our business over the next several years.

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

Destination	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Not relevant			This destination is not relevant to Microsoft as we do not discharge any water to fresh surface water sources.
Brackish surface water/seawater	Not relevant			This destination is not relevant to Microsoft as we do not discharge any water to brackish surface water/seawater sources.
Groundwater	Not relevant			This destination is not relevant to Microsoft as we do not discharge any water to groundwater sources.
Third-party destinations	Relevant	5161	About the same	This destination is relevant to Microsoft, as the water that is not consumed in our facilities is discharged to local municipal treatment plants (we are unaware if municipally treated water is

Destination	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
				recycled for further use). Most of our sites do not have discharge meters. In most cases, water consumption is low, and so for these sites we know that discharges are close to withdrawals. We estimate discharge at a global level by subtracting metered consumption from total withdrawals. Our total estimated water discharges grew less than 10 percent from the previous reporting period, though we anticipate an increase in proportion to withdrawals as our business grows over the next several years.

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

% recycled or reused	Comparison with previous reporting year	Please explain
Less than 1%	About the same	We measure and monitor reused water at sites that have water recycling capability, though very few of our sites reuse/recycle water. The proportion of water recycled at Microsoft sites changed by less than 10 percent from the previous reporting period. Recycling/reusing water at these sites enables us to reduce our dependence on freshwater withdrawals. We anticipate an increase in recycled/reused water as our business grows over the next several years.

**Value-chain engagement**

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

Yes, our suppliers

Yes, our customers or other value chain partners

**(W1.4a) 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?**

% of suppliers by number	% of total procurement spend	Rationale for this coverage	Impact of the engagement and measures of success	Comment
Less than 1%	26-50	We focus engagements on suppliers that represent the bulk of our supplier spend because they represent our areas of greatest reliance and potential impact. In FY17, we participated in the CDP Supply Chain program for water security, requesting responses from 120 suppliers, 100 of which responded. We encouraged manufacturing/direct supplier participation through our sourcing managers. We did not offer any specific incentive because we have determined there to be a low level of water-related risk with our suppliers.	Through CDP, we request information from participating suppliers on their water accounting, impacts, and risks. We use this data to fully understand supplier water usage and exposure to risk. We measure success by the CDP response rate. Our preliminary targets were as follows: a 100 percent response rate from requested manufacturing/direct suppliers representing 80 percent of our manufacturing/direct supplier spend; and a greater than 80 percent response rate from requested nonmanufacturing/indirect suppliers. For our nonmanufacturing/indirect suppliers, our goal is ongoing evolution of the program, to have our suppliers share their practices and then ultimately segment and reward suppliers based on their CDP-rated performance.	In FY17, we requested that 103 manufacturing/direct suppliers respond to CDP, and 84 responded. For our nonmanufacturing/indirect suppliers, we requested 17 to respond, and 16 responded.

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

Type of engagement	Details of engagement	% of suppliers by number	% of total procurement spend	Rationale for the coverage of your engagement	Impact of the engagement and measures of success	Comment
Innovation and collaboration	Educate suppliers about water stewardship and collaboration  Other: Provide expertise and	Less than 1%	Less than 1%	We completed a third-party audit of water efficiency among selected direct/hardware manufacturing and packaging suppliers. We selected 100 percent of our Tier 1 suppliers to ensure conformance on life water requirements based on the China standard. For Tier 2 suppliers, we concentrated the audit on those with relatively high volumes of water	We measured the success of the audit program by the successful completion of an audit, implementation of the gauges, application of a water balance concept, and installation of new devices at all participating suppliers. This process enabled us	

Type of engagement	Details of engagement	% of suppliers by number	% of total procurement spend	Rationale for the coverage of your engagement	Impact of the engagement and measures of success	Comment
	support to improve water efficiency			consumption, such as printed circuit board suppliers, as they represented the greatest water impact and therefore the most important targets for improvement. The audit process included the following steps: (1) Completed the process study to calculate the baseline water consumption. (2) Installed gauges to measure water consumption in various locations. (3) Used the water balance concept to detect possible water leakages. (4) Installed new devices to reuse/recycle the water.	to understand whether the program would successfully identify efficiency opportunities and next steps for the suppliers to implement at the factories.	
Innovation and collaboration	Educate suppliers about water stewardship and collaboration  Other: Provide expertise and support to improve water recovery	Less than 1%	Less than 1%	Water coolants must be recovered before water is discharged to a wastewater treatment plant. Suppliers who use a water-based coolant have a risk of polluting water systems if the water is not properly treated and recovered. To help mitigate this risk, we ran a pilot project that involved working with one supplier to install a water recovery system. This system is also able to reuse 80 percent of the water recovered. We focused on a single supplier to start with to ensure that the system was effective before expanding its use among our suppliers.	The water recovery system was successfully implemented. We are extending use of this practice to other suppliers with the same process.	

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

Our strategy for engaging with customers and other stakeholders is to address water-related challenges by activating multisector partnerships to advance solutions; developing new solutions with cloud-based technologies; and enabling people and organizations to quantify and address water-related risks. We have identified and tested ideas within our own datacenters with the goal of sharing best practices and, where applicable, developing commercial offerings. We prioritize engagements with potential to amplify our impact on global water challenges. Guiding our engagement process is our overarching water stewardship strategy, which focuses on (1) reducing water use, (2) investing to alleviate water stress in the areas in which we operate, (3) developing tools/technology that enable our customers and partners to improve efficiency, and (4) accelerating research breakthroughs with our AI for Earth program. For example, we supported the development of the Ecolab Water Risk Monetizer (WRM), a publicly available financial modeling tool that helps businesses

fully quantify water risks to support decision making. Success is measured in our ability to quantify our own operational water-related risks and the number of external users who download the WRM tool. Similarly, our AI for Earth program builds on our commitment to use AI technology to amplify human ingenuity and advance sustainability. Our strategy is to engage customers and other stakeholders through ongoing projects and partnerships that use AI to accelerate people's ability to observe environmental systems and convert data into useful information, which enables better management of water and other natural resources. Through the AI for Earth grant program, individuals and organizations gain access to cloud and AI computing resources to create more efficient environmental solutions. Success is measured by the number of grants awarded and applications developed, as well as the impact of AI for Earth-supported projects.

## **W2 Business impacts**

### **Recent impacts on your business**

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

No

### **Compliance impacts**

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

No

## **W3 Procedures**

### **Risk identification and assessment procedures**

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

Yes, water-related risks are assessed

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

Value chain stage	Coverage	Risk assessment procedure	Frequency of assessment	How far into the future are risks considered?	Type of tools and methods used	Tools and methods used	Comment
Direct operations	Full	Water risks are assessed as part of an enterprise risk management framework	Six-monthly or more frequently	> 10 years	Tools on the market Enterprise Risk Management International methodologies Databases Other	Ecolab Water Risk Monetizer WRI Aqueduct Regional government databases IPCC Climate Change Projections Internal company methods External consultants Other: Federal Emergency Management Agency (FEMA) data Other: Proprietary modeled flood data Other: Regulatory restrictions Other: ISO 14001 significant aspect and impacts review process Other: Business continuity testing	
Supply chain	Full	Water risks are assessed as part of other company-wide risk assessment system	Annually	> 10 years	Databases Other	Maplecroft Global Water Security Risk Index Internal company methods External consultants Other: Proprietary modeled flood data Other: CDP Supply Chain Program	
Other stages of the value chain	Full	Water risks are assessed as part of other company-wide risk assessment system	Not defined	> 10 years	Other	Internal company methods Other: Customer surveys Other: Business continuity testing	

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

Contextual issue	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	<p>When selecting locations, access to freshwater or industrial supply is a basic and fundamental criterion. For our existing locations, we use the WRI Aqueduct tool to assess the issue for our offices, labs, datacenters, and manufacturing sites. For our datacenter projects, we engage with utilities (water/sewer/power/fiber) prior to concluding a transaction. Capacity and quality are vetted and service agreements put in place prior to completing the transaction. Where future expansion plans are unknown, where possible we obtain commitment letters from the utilities indicating that they can provide for future demand (often subject to expansion of existing infrastructure) (tool: internal company methods). In 2017, we assessed our vulnerabilities to the physical impacts of climate change, including the potential for diminished water availability at the local level. The assessment included a scenario analysis based on the IPCC RCP 8.5 projection out to 2030 (tools: FEMA flood data, IPCC data on future precipitation and sea-level rise, WRI Aqueduct tool, downscaled sea-level rise estimates provided by regional and local government authorities, and proprietary flood modeling products). We concluded that we do not have a substantive risk at the enterprise level, though we do have several important sites that are being monitored for potential water availability risks in the future and we are currently taking proactive steps to manage those risks. We are integrating the results into our siting and operational planning to mitigate the identified risk. Our extended water stewardship team is using the Water Risk Monetizer tool to evaluate water-related issues at global datacenters as a part of our goalsetting and water stewardship strategy for FY17 and beyond. We are expanding this work to quantify the financial risk associated with operating in water-scarce regions of the world (at the facility level).</p>
Water quality at a basin/catchment level	Relevant, always included	<p>When selecting locations, access to freshwater or industrial supply is a basic and fundamental criterion. For our existing locations, we use the WRI Aqueduct tool and/or the Water Risk Monetizer (WRM) to assess the issue for our offices, labs, datacenters, and manufacturing sites. For our datacenter projects, we engage with utilities (water/sewer/power/fiber) prior to concluding a transaction. Withdrawal/discharge capacity and water quality are vetted and service agreements put in place prior to completing the transaction. Where future expansion plans are unknown, where possible we obtain commitment letters from the utilities indicating that they can support future demand (tool: internal company methods). If those conditions change, we reevaluate our impact at the basin level and how we can address the issue. For example, we have acted upon improving the quality of our discharge and that of other industrial users by providing significant additional infrastructure to meet regulatory quality requirements. We also engage communities and local stakeholders in high-priority regions facing water risks. For example, we partnered with the City of Quincy in 2011 to create a water reuse</p>



Contextual issue	Relevance & inclusion	Please explain
		system using excess water from food processing plants to provide water for datacenter cooling systems, which offsets our freshwater demand, reserving it for use by the local community.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, sometimes included	We assess the risk of stakeholder conflicts as applicable for our facilities globally; where required, we conduct a more detailed analysis. The Environmental Sustainability governance model brings leaders from across the corporation—including finance, regulatory/policy, technology, and environmental professionals, as well as external subject matter experts—together to identify risks. Where applicable, it transitions identified risks to subsidiaries for further evaluation. Since our offices, labs, and manufacturing sites are not significant users of water, there is generally no need for further assessment of stakeholder conflicts for these facilities; were an issue to be identified, it would be assessed through this model. For our datacenters, water supply and discharge are preapproved during site selection due diligence processes (tool: internal company methods); we meet with key local representatives to determine the likelihood of future potential issues and site viability. Microsoft engages communities and local stakeholders in high-priority regions facing water risks on an ongoing basis. For example, we partnered with the City of Quincy in 2011 to create a water reuse system using excess water from food processing plants to provide water for datacenter cooling systems. Benefits of the initiative include a dramatic reduction in potable water needed for commercial use; a larger portion of potable water reserved for municipal users; 2–4 million gallons of water preprocessed each day by the water treatment plant and returned to the local aquifer or used to supplement local irrigation needs; and more customers integrated into the city’s reused water system. Without Microsoft’s intervention, the City of Quincy would have exhausted its freshwater supply within 5 years.
Implications of water on your key commodities/raw materials	Relevant, always included	The effect of our manufacturing suppliers’ operations on water sources is covered in the CDP reporting through the CDP Supply Chain program. In addition, for key raw materials in our supply chain, we assess the current and future risk of impact on water sources at the materials’ extraction sites (tool: internal company method). For all other suppliers, the issue is not relevant because we do not source commodities/raw materials from these suppliers.
Water-related regulatory frameworks	Relevant, always included	The Environmental Sustainability governance model brings leaders from across the corporation—including finance, regulatory/policy, technology, and environmental professionals, as well as external subject matter experts—together to identify risks. Where applicable, it transitions identified risks to subsidiaries for further evaluation. Since our offices, labs, and manufacturing sites are not significant enough users of water to be exposed to unique regulations and tariffs compared with any other standard office building, there is generally no need for further assessment of water-related regulatory risks for these facilities; were an issue to be identified, it would be assessed through this model. For our datacenters, we also explore this as part of site

Contextual issue	Relevance & inclusion	Please explain
		<p>selection due diligence (tool: internal company methods). Where permits or water rights are required, we obtain those as part of the process. Monitoring regulatory restrictions is a useful risk assessment tool in and of itself—water-related requirements implemented by a municipality, local, regional, or federal agency provide a good indicator for risk to our facilities. For example, the Bureau of Reclamation (a US federal agency) required the City of Quincy, where we operate one of our largest datacenters, to improve the quality of its discharge. The city did not have adequate resources to build the required water reuse system to comply with this new regulation. Had Microsoft not been aware of the regulation and financed the system, we may not have been able to complete a planned expansion to our datacenter, and other water users also would have been impacted.</p>
Status of ecosystems and habitats	Relevant, always included	<p>The status of ecosystems and habitats are considered by default based on the federal, state, and local permitting regulations. Typically, an environmental impact assessment must be performed before a construction permit is granted for our datacenters and office buildings. Furthermore, amphibian population health is a good indicator of the status of ecosystems. For our existing locations, we use the WRI Aqueduct tool (which assesses whether or not amphibians are threatened in watersheds) to assess this issue for our offices, labs, datacenters, and manufacturing sites. We do not see this as a highly relevant risk for our offices, labs, or manufacturing sites because they are not significant users of water.</p>
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	<p>For our existing locations, we use the current water availability metrics within the WRI Aqueduct tool to assess this issue for our offices, labs, datacenters, and manufacturing sites. Facilities identified as being at risk for water shortages are also considered at risk for access to wash, sanitation, and hygiene (WASH) services.</p>
Other contextual issues, please specify		

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

Stakeholder	Relevance & inclusion	Please explain
Customers	Relevant, always included	<p>Customers are indirectly or directly relevant to everything Microsoft does. Our customers are concerned about how we treat the environment and therefore their perspectives are relevant when we make decisions about how deeply we engage the community, for example for grant opportunities from Microsoft related to improving local water quality and quantity. If we do not engage with our customers in the areas of our operations—in particular, in the areas where we operate datacenters, where our presence will have the most impact—the result could be a loss of local goodwill, negative effects on our brand value, and a loss of business. We primarily engage with these customers through surveys. For example, we recently performed a survey of customers in strategic locations where our datacenters are located. A water risk indirectly related to our customers would be if a water-related impact (such as flooding, extreme weather, drought, sea level rise/storm surges) compromised the reliability of our cloud services, which would be unacceptable to Microsoft and damaging to our customers. We have an ongoing global business continuity program to monitor those risks and have in place business continuity measures to help ensure continued reliability. The program conducts annual testing of Microsoft’s critical infrastructure, applications, services, and business processes; scenarios vary but can involve loss of facilities, loss of systems, loss of workforce, loss of critical third-party suppliers of goods/services, cybersecurity events, or a combination of two or more of those scenarios. Beyond our datacenters and cloud services, the water-related customer impact of our operations is minimal and indirect, because our products are not water intensive in creation or use. Method of engagement: surveys, direct engagement.</p>
Employees	Relevant, always included	<p>When selecting locations, access to freshwater is a basic and fundamental criterion. Microsoft provides fully functioning wash, sanitation, and hygiene (WASH) services for all workers at all of our sites (in compliance with all local legal requirements). Access to freshwater is important for employee consumption, restrooms, and cooking (some locations). If we didn’t provide potable water for our employees, we would not be able to operate our facilities, which would jeopardize our ability to provide continuous customer services; this risk is particularly relevant to water-stressed areas where we have facilities, such as in India. In areas with water restrictions, it is also important that our employees understand and prioritize any water conservation measures that are in place. We engage with employees through surveys (requesting their views on Microsoft environmental sustainability performance), and employees use certain water-savings tools such as automatic bathroom sink faucets daily. The Microsoft Sustainability Speaker Series gives visibility to topics such as global water sustainability issues to employees across Microsoft through in-person and online seminars. Method of engagement: surveys, daily use of office water systems, website, in-person speaker series.</p>

Stakeholder	Relevance & inclusion	Please explain
Investors	Relevant, always included	Investors are increasingly concerned about the environmental performance and impact of the companies that they invest in, including water-related issues. Since Microsoft's business strategy is based on our cloud services, which depend on having a global network of datacenters for which water supply is vital for cooling, our ability to attract capital investment could be affected if we did not publicly share information about our water usage, governance, strategy, and risks and opportunities. We have reported our annual water use, water-related risks, and governance of water publicly through CDP since 2012 at the request of investors. We also published detailed information on our water stewardship commitment and action on our website. Method of engagement: CDP, website.
Local communities	Relevant, always included	The health of the communities in which we operate is highly relevant for Microsoft. If we did not engage with the local communities in the areas of our operations—in particular, in the areas where we operate datacenters, where our presence will have the most impact—the result could be a loss of local goodwill and negative effects on our brand value. We also have an ethical responsibility to give back to the communities in the areas in which our operations have the greatest impact. As a part of our commitment to water stewardship, we engage communities and local stakeholders in high-priority regions facing water risks. For example, Microsoft Cloud Infrastructure and Operations (MCIO)—responsible for the datacenters that power the Microsoft Cloud—has a dedicated team and budget to support local partnerships to solve critical local environmental issues, focusing on each community's priorities. In another example, we partnered with the City of Quincy in 2011 to create a water reuse system using excess water from food processing plants to provide water for datacenter cooling systems. Benefits of the initiative include a dramatic reduction in potable water needed for commercial use; a larger portion of potable water reserved for municipal users; 2–4 million gallons of water preprocessed each day by the water treatment plant and returned to the local aquifer or used to supplement local irrigation needs; and more customers integrated into the city's reused water system. Method of engagement: Chamber of Commerce, Water Risk Monetizer, surveys, educational outreach, focus groups.
NGOs	Relevant, always included	The mission of NGOs seeking to preserve water resources is relevant to Microsoft. For our offices, labs, and manufacturing sites, we are not substantial water users in the river basins in which we operate. However, datacenters can at times be large users of water. The most significant water-related risk that we face regarding NGOs is reputational. We would be subject to criticism and scrutiny from any local NGOs that advocate for ecosystem preservation or social justice if one of our datacenters were operating with sufficient water but the local community ecosystem were not. This would be amplified if our demands for municipal water were a contributing factor to loss of ecosystem assets or shortages in disadvantaged communities. Water supply and discharge for our datacenters are preapproved; therefore, quantity and quality requirements are vetted in advance and are often included in our service agreements with the local utility company. We factor the role of NGOs in protecting water resources into our risk assessment by virtue of ensuring that we assess, identify, and mitigate any potential impact on susceptible river basins. We also engage with NGOs in

Stakeholder	Relevance & inclusion	Please explain
		<p>high-priority regions facing water risks. Microsoft committed \$1 billion to bring cloud computing resources to nonprofit organizations around the world. We believe nonprofits should have access to the same computing power as industry and that the ability to harness insights from big data will lead to new discoveries. As part of that commitment, every day we donate nearly \$2 million in products and services to nonprofits like World Wildlife Fund, Rocky Mountain Institute, CDP, Wildlife Conservation Society, and the United Nations Framework Convention on Climate Change (UNFCCC) Climate Neutral Now initiative, as well as a number of local organizations, to advance solutions that benefit both people and the planet. Method of engagement: direct engagement, multi-stakeholder meetings with NGOs and other stakeholders.</p>
Other water users at a basin/catchment level	Relevant, sometimes included	<p>For our offices, labs, and manufacturing sites, Microsoft is not a substantial water user in the river basins in which we operate. Therefore, we do not have a significant impact on the water sources for other water users. However, datacenters can at times be large users of water. Water supply and discharge for our datacenters are preapproved; therefore, quantity and quality requirements are vetted in advance and are often included in our service agreements with the local utility company. During our risk assessments we continue to assess whether the demands for water from other users will affect the available supply for our datacenters in high-priority regions facing water risks (such as in Quincy, WA), and we engage communities and local stakeholders as appropriate. For example, as part of our commitment to sustainable practices, we partnered with the City of Quincy in 2011 to start creating a water reuse system using excess water from food processing plants to provide water for datacenter cooling systems. Benefits include a dramatic reduction of potable (drinking) water needed for commercial use; a larger portion of potable water reserved for residents, schools, hospitals, and other users; 2–4 million gallons of water to be preprocessed each day by the water treatment plant and returned to the groundwater to help recharge the local aquifer or used to supplement local irrigation needs; and the ability for the city to integrate more customers into its reused water system. Methods of engagement: direct engagement.</p>
Regulators	Relevant, always included	<p>For our offices, labs, and manufacturing sites, Microsoft is not a substantial water user in the river basins in which we operate. Therefore, water regulators do not play a significant role in our water risk assessments for these locations. Where applicable, we work directly with regulators when installing and upgrading water systems (for example, we recently engaged with regulators to obtain permits for our Silicon Valley Campus water reuse system). For datacenters, quantity and quality requirements are vetted in advance and are often included in our service agreements with the local utility company. However, a potential risk that we factor into our ongoing risk assessments is the likelihood that, in cases of severe or extended droughts, our water allocations may be revised. Accordingly, our datacenter teams continue to work with appropriate agencies following the site selection, construction, and commissioning phases, in case new circumstances dictate a reduction in water availability and therefore a change in operations. Another risk that we factor</p>

Stakeholder	Relevance & inclusion	Please explain
		<p>into our assessments is that regulations may impede the implementation of innovative water-saving strategies due to risk aversion on the part of the regulators (for example, cross-contamination); we work with regulators to help ensure that any strategies we pursue address regulator concerns. Methods of engagement: direct engagement.</p>
River basin management authorities	Relevant, sometimes included	<p>A potential water-related risk that we face regarding river basin management authorities is if any were to impose restrictions on water rights or use that would restrict our ability to operate our facilities—particularly for our datacenters, for which access to sufficient freshwater is vital for operations. For example, the Bureau of Reclamation (a US federal agency) required the City of Quincy, where we operate one of our largest datacenters, to improve the quality of its discharge. The city did not have adequate resources to build the required water reuse system to comply with this new regulation. Had Microsoft not financed and helped design and build the system, we may not have been able to complete a planned expansion to our datacenter, and other users also would have been affected. Only where water rights are required do we engage with bureau or basin management agencies. In those cases, the water permits are regulated and coordinated with those authorities. For example, the Columbia River Basin is the only US location where we use water rights for some of our datacenter water needs.</p>
Statutory special interest groups at a local level	Relevant, sometimes included	<p>For our offices, labs, and manufacturing sites, Microsoft is not a substantial water user in the river basins in which we operate. However, datacenters can at times be large users of water. The quantity and quality requirements of our water supply and discharge are vetted in advance and are often included in our service agreements with the local utility company. We also engage statutory special interest groups at a local level in high-priority regions facing water risks. We consider a threat to watersheds not only in the context of our operations, but also to other water users. For example, nitrate runoff near our Texas facility is of great concern, and we are actively seeking ways to partner with statutory special interest groups to address this issue. Through the Microsoft Community Development Fund, we have actively sought out organizations that we could assist in improving the watershed. We review applications for assistance to improve the watershed from statutory special interest groups such as conservancy groups located in the area of our Texas operations. Method of engagement: direct engagement.</p>
Suppliers	Relevant, always included	<p>We always consider suppliers in our water risk assessments and then engage those suppliers where we deem it important based on water risks or level of priority to Microsoft. We focus engagements on suppliers that represent the majority of our supplier spend. We annually request our top manufacturing/direct suppliers and some nonmanufacturing/indirect suppliers to participate in the CDP Supply Chain water security program. We monitor select manufacturing suppliers' water management practices and wastewater compliance (prioritizing suppliers that make up the majority of our manufacturing spend, including Tier 1 and Tier 2 suppliers) to ensure that their water risks are minimized. For our nonmanufacturing suppliers, we also assess water risk biennially using the Verisk Maplecroft risk</p>

Stakeholder	Relevance & inclusion	Please explain
		<p>index in combination with spend, brand proximity, and 23 other indicators. An example of a risk considered is the risk of higher operating costs and of plant/production disruption leading to reduced output from increased water risk or projected water scarcity; in FY17, 33 percent of our indirect suppliers responding to the CDP Supply Chain water questionnaire reported these risks, but they did not rate them as high impact or virtually certain. Based on our analysis, this does not represent substantive risk to Microsoft. For our datacenter projects, we engage with utilities (water/sewer/power/fiber) prior to concluding a transaction. Capacity and quality are vetted and service agreements put in place prior to completing the transaction. Where future expansion plans are unknown, where possible we obtain commitment letters from the utilities indicating that they can provide for future demand (often subject to expansion of existing infrastructure). Method of engagement: CDP, surveys, training, audits, collaboration on water efficiency, water recovery projects, internal company methods.</p>
Water utilities at a local level	Relevant, sometimes included	<p>For our offices, labs, and manufacturing sites, Microsoft is not a substantial water user in the river basins in which we operate; therefore, since we have determined that there is no risk associated with these stakeholders, we do not consider water utilities any further in our water risk assessments for these facilities. Our datacenter teams work with local water utilities throughout the lifecycle of each building's construction and operations. For datacenters, water supply and discharge are preapproved; therefore, quantity and quality requirements are vetted in advance and are often included in our service agreements with the local utility company. An example of a risk considered during our assessments is the risk of water scarcity where we operate a datacenter, such as in Quincy, WA. As part of our commitment to sustainable practices, we partnered with the City of Quincy in 2011 to start creating a water reuse system using excess water from food processing plants to provide water for datacenter cooling systems. Benefits include a dramatic reduction of potable (drinking) water needed for commercial use; a larger portion of potable water reserved for residents, schools, hospitals, and other users; 2–4 million gallons of water to be preprocessed each day by the water treatment plant and returned to the groundwater to help recharge the local aquifer or used to supplement local irrigation needs; and the ability for the city to integrate more customers into its reused water system. Without Microsoft's intervention, the City of Quincy would have exhausted its freshwater supply within 5 years. Method of engagement: direct engagement.</p>
Other stakeholder, please specify		

**(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.**

Tool selection and process reflect both companywide and unit-specific needs: (1) Environmental Sustainability governance model, including monthly meetings with subject matter experts in policy, regulation, technology, legal affairs, marketing/branding, climate change risk assessment, and value chain, in part to identify and transition risks for further evaluation. (2) Biannual Enterprise Risk Management (ERM) program, which identifies, assesses, and prioritizes risks and reports material risks to senior management (time horizon 24 months). (3) Companywide assessment of vulnerabilities to the physical impacts of climate change, using IPCC RCP 8.5 scenario (to 2030). We are integrating the results into our siting and operational planning to mitigate identified risk. (4) WRI Aqueduct and/or Water Risk Monetizer (WRM), to evaluate facility risks in the near term (to 2040). (5) Microsoft Treasury annual property risk assessments to value global property insurance; our insurance broker uses industry-standard risk models to estimate probable impact from hazards like hurricanes, floods, supply chain disruptions (time horizon 1-3 years). (6) Datacenter site selection due diligence, using internal company methods and information on water quality/quantity targets from economic development agencies and water utilities (on an ongoing basis). (7) Microsoft Devices ISO 14001 certification, identifying risk using the Significant Aspects and Impacts review process (time horizon 1 year). (8) Annual CDP Supply Chain water program and biennial nonmanufacturing supplier risk assessment using Verisk Maplecroft risk index, spend, brand proximity, and 23 other indicators (time horizon 2 years). (9) Customer surveys to evaluate potential risk related to loss of local goodwill, negative effects on brand, and loss of business in strategic locations (as needed).

## **W4 Risks and opportunities**

### **Risk exposure**

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

No

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

Microsoft defines substantive strategic or financial impact from water-related risks as follows:

- For offices and labs, an impact that would require significantly altering or relocating the operations of a facility or group of facilities that would affect our ability to deliver continuous customer services. Our operational analysis includes a three-part filter to identify those facilities representing the greatest potential risk: (1) location in water basins with current or future potential for high baseline water stress; (2) annual average electricity use more than 60 kWh/square foot (large electricity users being datacenters); and (3) if the facility represents more than 1 percent of total companywide electricity use (using electricity as proxy for the size or relative importance of the facility to our company). This applies to direct operations.



- For datacenters, an impact that would require significantly altering or relocating a datacenter that would affect our ability to deliver continuous customer services. The reliability tier can vary in the Microsoft service level agreements or contracts with customers. A substantive impact would be one that would prevent a datacenter from delivering the customers' contracted reliability tier. This applies to direct operations.
- For our manufacturing sites, an impact that is managed under the Environmental Management System, in alignment with our ISO 14001 Significant Aspects and Impacts process. The Significant Aspects and Impacts process requires the Environmental Management Team to rate each known impact of all our aspects using set criteria including, but not limited to, our ability to deliver continuous customer services or products, force a change in our business strategy, and impact local communities, employees, or contractors. Impacts are considered "significant" when they exceed a defined numerical value. This applies to direct operations.
- For our suppliers, an impact that would block or delay the delivery of contracted goods or services to the extent that it would affect our ability to deliver continuous customer services or force a change in our business strategy (including, but not limited to, when supplier working conditions no longer meet requirements for the supplier's workplace as a result of a water-related impact). This applies to our supply chain.
- For our business overall, an impact that would lead us to alter our business strategy as a result of changes in return on investment, capital expenditures, or the cost of key supplies. This applies to both direct operations and supply chain.

Our products and services have minimal water impacts in other stages of the value chain.

We review our approach biannually as part of the Microsoft Enterprise Risk Management (ERM) program, as well as when we respond to the CDP water questionnaire. The ERM program has a formal process for assessing the size, scope, and relative significance of the various risks that Microsoft faces, including those related to water. The process involves categorizing risks according to their inherent impact on a scale of 1 (minimal) to 5 (critical) in four categories: trust or reputational; operational scope; legal, compliance, or environmental; and enterprise value. Risks are then rated according to their inherent likelihood on a scale of 1 (remote) to 5 (expected). These two ratings are used to produce a "risk impact" score, and any risk for which the risk impact score exceeds a defined threshold is considered material for reporting to senior management. The rating of specific risks by inherent impact and likelihood is made through consultation with subject matter experts from across the company; in the case of risks related to water, this subject matter leadership resides with the Environmental Sustainability (ES) team, led by the Chief Environmental Strategist. The ES team consults across the company and uses formal risk assessments to inform the process.

An example of a substantive impact considered is the potential for facility damage from an acute weather event, such as flooding. To mitigate this risk, Microsoft has an established Enterprise Business Continuity Management (EBCM) program, to help ensure the existence of effective, reliable, well-tested plans, systems, and processes that can be counted on during a disruptive event to support continuity of business operations and minimize adverse impacts. The EBCM program works with the ERM team to ensure consistent alignment among risks and risk ratings. (Note that this risk is not substantive; central to Microsoft cloud services design is geographic redundancy, which reduces our vulnerability to physical impacts, including flooding, and offers customers the option of a resilient alternative to on-premises datacenters.)

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

Primary reason	Please explain
Risks exist, but no substantive impact anticipated	<p>The Microsoft Enterprise Risk Management (ERM) program, consultation with subject matter experts across the organization, and other water risk assessments (including our FY17 assessment of physical climate risks and our use of the WRI Aqueduct tool) have not revealed any substantive water risk across our global portfolio. None of the identified risks have the potential to affect our ability to deliver continuous customer services or force a change in our business strategy. For our offices, labs, and manufacturing sites, each local operation is a relatively small contributor and most functions are mobile. Potential risks include water rationing, which would first impact landscaping and, in extreme cases, reduce work hours, though remote work locations would be available to employees. For our datacenters, although access to freshwater is vital for cooling, central to our cloud services design is geographic redundancy, which inherently reduces our vulnerability to water impacts (whether from excess water or drought). We also have an ongoing global business continuity program to monitor those risks and have in place business continuity measures to help ensure continued reliability. Furthermore, capacity and quality are vetted with utilities and service agreements put in place prior to construction. Where future expansion plans are unknown, where possible we obtain commitment letters from the utilities indicating that they can provide for future demand. The Columbia River Basin is the only US location where we use water rights for some of our datacenter water needs. We have partnered with the City of Quincy to design and build a reuse water treatment system (using some of our infrastructure) that provides both the city and our industrial neighbors with reuse water.</p>

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

Primary reason	Please explain
Risks exist, but no substantive impact anticipated	<p>Although freshwater is important to our supplier operations, none of the identified risks have the potential to affect our ability to deliver continuous customer services or force a change in our business strategy. We annually request our top manufacturing/direct and some nonmanufacturing/indirect suppliers to participate in the CDP Supply Chain water security program. For our nonmanufacturing/indirect suppliers, we also assess water risk biennially using the Verisk Maplecroft risk index in combination with spend, brand proximity, and 23 other indicators. From these analyses, in combination with business importance and spend, we have determined that there are no substantive water risks. For example, in FY17, 33 percent of our indirect suppliers responding to the CDP Supply Chain water questionnaire reported a risk of higher operating costs and of plant/production disruption leading to reduced output from increased water risk or projected water scarcity, but they did not rate these risks as high impact or virtually certain. Based on our analysis, this does not represent substantive risk to Microsoft. For our datacenter projects, we engage with utilities</p>

Primary reason	Please explain
	(water/sewer/power/fiber) prior to construction. Capacity and quality are vetted and service agreements put in place prior to completing the transaction. Where future expansion plans are unknown, where possible we obtain commitment letters from the utilities indicating that they can provide for future demand (often subject to expansion of existing infrastructure). Our products and services have minimal water impacts in other stages of the value chain.

## Water-related opportunities

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

Type of opportunity	Primary water-related opportunity	Company-specific description & strategy to realize opportunity	Estimated timeframe for realization	Magnitude of potential financial impact	Potential financial impact	Explanation of financial impact
Products and services	New R&D opportunities	Our opportunity is twofold: (1) Provide IT services resilient to physical impacts of climate change, such as flooding from sea level rises/extreme precipitation. With a cloud provider with georedundant datacenters, customers affected by a weather-related disaster can resume operations as soon as they restore Internet access. We are investing in cloud solutions across our product lines; two of our most significant services for businesses are Microsoft Office 365 and Microsoft Azure. Our global cloud service operations are supported by one of the largest physical networks in the world, with several industry certifications including ISO/IEC 27001:2005 and SAS70 Type II. We use geo-replicated customer workloads to improve reliability. (2) Help accelerate the world's understanding and management of critical water-related resources through technology innovation using IoT scenarios and AI computing on the Azure platform. Our	Current – up to 1 year	Low-medium	\$2,900,000,000	It is difficult to quantify the potential financial implications. Theoretically if we were to win—for example—3 percent additional business because we offered technology to help organizations and governments manage the water-related impacts of climate change (through resilient cloud services and AI

Type of opportunity	Primary water-related opportunity	Company-specific description & strategy to realize opportunity	Estimated timeframe for realization	Magnitude of potential financial impact	Potential financial impact	Explanation of financial impact
		strategy consists of testing solutions in our operations, activating multisector partnerships to advance solutions to water challenges; developing new solutions that take advantage of cloud-based technologies to address water challenges; and enabling people and organizations to quantify and address water-related risks. For example, our AI for Earth program empowers people and organizations to solve global environmental challenges—including in water—by increasing access to AI tools and educational opportunities while accelerating innovation.				computing resources), the impact based on FY17 (the reporting period) revenue of \$96.571 billion would have been an increase of \$2.9 billion.

## W6 Governance

### Water policy

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

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

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

Scope	Content	Please explain
Companywide	<ul style="list-style-type: none"> <li>Description of business dependency on water</li> <li>Description of business impact on water</li> <li>Description of water-related performance standards for direct operations</li> <li>Description of water-related standards for procurement</li> <li>Reference to international standards and widely-recognized water initiatives</li> </ul>	Our water policy is available on the environmental sustainability portion of our website. We have a water stewardship strategy with four main objectives: (1) understand water risk and business impact in places where we operate; (2) set goals and improve water use; (3) drive local engagement and stewardship; and (4) advance innovative solutions to water challenges. Having a companywide water policy is essential to achieving our

Scope	Content	Please explain
	<p>Company water targets and goals</p> <p>Commitment to align with public policy initiatives, such as the SDGs</p> <p>Commitments beyond regulatory compliance</p> <p>Commitment to water-related innovation</p> <p>Commitment to stakeholder awareness and education</p> <p>Commitment to water stewardship and/or collective action</p> <p>Recognition of environmental linkages, for example, due to climate change</p>	<p>objectives. Each of the elements selected in the Content column directly supports our efforts to go beyond regulatory compliance and achieve our water stewardship strategy. Each provides guidance to help ensure alignment internally (from the corporate level down to the facility level) and externally (in how our business groups engage suppliers, customers, and other partners) in all water-related decisions and actions. By including this information on our website, it also makes us publicly accountable to our objectives and the supporting targets and commitments.</p>

## Board oversight

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

Yes

**(W6.2a) Identify the position(s) of the individual(s) on the board with responsibility for water-related issues.**

Position of individual	Please explain
<p>Other: Regulatory and Public Policy Committee</p>	<p>The charter for the Regulatory and Public Policy Committee of our Board of Directors includes the responsibility to “review and provide guidance to the board and management about the company’s policies and programs that relate to corporate social responsibility, including human rights, environmental sustainability, responsible sourcing, and philanthropy.” The committee oversees the broad set of Microsoft’s public responsibilities and corporate social responsibility (CSR) issues, and environmental sustainability issues such as water fit into this mandate. Each year, our President and Chief Legal Officer (CLO) presents to this committee on these topics, including climate change (and associated water-related issues), as appropriate. The membership of the committee consists of at least two directors of the board and currently includes five directors.</p>

**(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
Scheduled – some meetings	Reviewing and guiding major plans of action	The Regulatory and Public Policy Committee meets three times a year with a varied agenda covering a breadth of corporate social responsibility (CSR) issues including updates on the company’s commitments to environmental sustainability. At least one meeting each year, our President and Chief Legal Officer (CLO) and our Chief Environmental Strategist present to this committee on our overall sustainability agenda and solicit high-level input on new and emerging initiatives. In FY17 (the reporting period), for example, the committee received a briefing on the company’s scope and launch of our AI for Earth program (which has water as one of its key pillars). Reviewing and guiding major plans of action ensures the board remains abreast of our water strategy and commitments. The water-related information presented to the board is vetted and approved by the Chief Environmental Strategist and President/CLO.

**Management responsibility**

**(W6.3) Below board level, provide the highest-level management position(s) or committee(s) with responsibility for water-related issues.**

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on water-related issues	Please explain
Other C-Suite Officer: Chief Legal Officer	Both assessing and managing water-related risks and opportunities	Annually	In FY17 (the reporting period), the President and Chief Legal Officer (CLO) was responsible for our Corporate, External, and Legal Affairs (CELA) group. The CELA group is the company’s legal, public policy, and social responsibility arm of the company, focused on building and maintaining trust with customers, investors, and stakeholders that Microsoft operates responsibly, including in the area of environmental sustainability. Each year, our President/CLO presents to the Regulatory and Public Policy Committee of the Board of Directors on the company’s policies and programs that relate to corporate citizenship, including environmental sustainability as appropriate. The President/CLO monitored water-related issues and the company’s progress toward water objectives

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on water-related issues	Please explain
			through quarterly business reviews and in more frequent individual meetings as appropriate.
Other: Corporate Vice President, Technology and Civic Engagement	Both assessing and managing water-related risks and opportunities	Annually	In FY17 (the reporting period), our Corporate Vice President (CVP) of Technology and Civic Engagement (TCE) was responsible for governance of environmental issues across the organization, including water. This role also had executive-level oversight of the Chief Environmental Strategist and Environmental Sustainability team, including the company's water actions, and received updates on water strategy/issues monthly.
Environment/Sustainability manager	Both assessing and managing water-related risks and opportunities	Annually	In FY17 (the reporting period), our Chief Environmental Strategist reported into the Corporate, External, and Legal Affairs (CELA) Technology and Civic Engagement (TCE) group. Our Chief Environmental Strategist leads the Environmental Sustainability team, the charter of which includes assessment and management of issues related to water. The team's mission is to empower people and organizations around the planet to thrive in a resource-constrained world. The Environmental Sustainability team assesses progress on our environmental sustainability programs and supports our overall commitment to environmental sustainability goals, including those related to water.

## Public policy engagement

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

Yes, trade associations

Yes, funding research organizations

Yes, other: community organizations

Yes, other: indirect engagement with policy makers through local events

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

We strive to ensure that our participation in the political process is open, transparent and based on reasons that are clear and justifiable to our shareholders and the public. We are pleased that Microsoft gained the second highest rating given by the CPA-Zicklin Index of Corporate Political Accountability and Disclosure for our policies that ensure the accountability and transparency of our public policy engagement. (Full guidelines governing our policy engagement and details of campaign contributions and advocacy spending are available through the corporate social responsibility section of the Microsoft website.) Our Director of Sustainability Policy role (responsible for the company's policy efforts on sustainability issues) and our Water Program Manager (within our corporate Environmental Sustainability team) coordinate using regular communication to ensure that our advocacy work is consistent with our water stewardship and sustainability strategy. Both roles are part of our Microsoft Corporate, External, and Legal Affairs (CELA) organization, which helps ensure consistency in our programmatic and policy work related to water. Should any inconsistency between Microsoft activities that influence public policy on water and our water stewardship strategy and commitments be discovered, we would first ensure that these roles were aware of the inconsistency and determine whether they were able to resolve it. If not, the issue would be escalated to the office of the President.

**W7 Business strategy**

**Strategic plan**

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

Aspect of strategic business plan	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	> 30	Microsoft has opportunities to significantly improve our water use and stewardship with a cross-company water strategy and specific goals. Our opportunity is to both fulfill our broader sustainability commitments to mitigate our risk and create long-term value around water stewardship. Water is considered in long-term Microsoft real estate and datacenter investments. There is strategic value in these long-lived assets, and investment decisions are made on a time horizon greater than 30 years. Our water stewardship strategy includes long-lived assets and facilities as well as technologies and service offerings. Our strategy has four main objectives: (1) understand water risk and business impact in places where we operate; (2) set goals and improve water use; (3) drive local engagement and stewardship; and (4) advance innovative solutions to water challenges. We have an opportunity to understand our water-related risks, improve water stewardship, and accelerate our customer's and society's understanding and management of water resources through technology. The cloud and Internet of Things (IoT) can improve water metering, infrastructure monitoring and water resource management. Combined with the potential for AI to anticipate and respond to resource



Aspect of strategic business plan	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
			challenges, there is opportunity for digital transformation within Microsoft and in the water sector over the next decade. Our ability to deliver these transformational experiences will be enhanced by our water stewardship efforts.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	> 30	We expanded our water risk assessment across our operations and supply chain in FY17. This has enabled us to prioritize resources on the water basins, facilities, and suppliers that have the greatest potential for water risk, both now and in the future (time horizon greater than 30 years), and engage facilities, suppliers, and communities to improve water stewardship and mitigate potential risks. The cloud-based Ecolab Water Risk Monetizer tool has helped us to assess risks in financial terms. To understand our water-related impacts and improve performance, we are expanding and standardizing data collection and layering insights atop the results of our water risk assessment. In FY17 and continuing in FY18, we increased water metering within our Microsoft Cloud Infrastructure and Operations (MCIO) division to improve data collection. We engage stakeholders in high-priority regions facing water risks, including engagement with the community in Quincy, WA, to address local water supply issues. We will continue to identify and pursue opportunities to engage communities on local water issues as part of our corporate water stewardship and datacenter community engagement efforts. Key activities to advance innovative technology solutions to water challenges include identifying opportunities for technology innovation, establishing demonstration pilot projects, sharing best practices and evaluating scalability, and identifying commercialization opportunities.
Financial planning	Yes, water-related issues are integrated	> 30	Water is one consideration included in our long-term real estate and datacenter investments. There is strategic value in these long-lived assets, and investment decisions are made with consideration of water issues on a long-term time horizon greater than 30 years. In addition, our water stewardship strategy includes both long-lived assets and facilities as well as technologies and service offerings. For example, we partnered with the City of Quincy in 2011 to help create a water reuse system using excess water from food processing plants to provide water for datacenter cooling systems. This investment demonstrates our long-term financial planning and investment in water stewardship.

## Capex/Opex

**(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?**

Water-related CAPEX (+/- % change)	Anticipated forward trend for CAPEX (+/- % change)	Water-related OPEX (+/- % change)	Anticipated forward trend for OPEX (+/- % change)	Please explain
0		37	-2.5	The water-related CAPEX change reported here (0%) reflects Microsoft datacenters within the Microsoft Cloud Infrastructure and Operations (MCIO) group only. Microsoft invested \$1 million in the installation of supply-side water meters for these datacenters. Because our offices and labs (within the Real Estate and Facilities [REF] division) are not water intensive, we do not track water CAPEX for them separately. The water-related OPEX change reflects both MCIO and REF. MCIO OPEX increased, while REF water utility OPEX decreased. The REF decrease is due in part to a reported consumption reduction of 7.3%. The anticipated forward trend for MCIO for the next reporting year will be to increase OPEX and CAPEX based upon datacenter growth projections; REF does not forecast water-related CAPEX separately. The anticipated forward trend for OPEX provided (-2.5%) is based on forecasted REF volume decreases and unchanged water utility rates only; this does not include MCIO projections.

## Scenario analysis

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

Use of climate-related scenario analysis	Comment
Yes	

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

Yes

**(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
Other: RCP 8.5	During FY16, we initiated a scenario analysis focused on the risks associated with the physical impacts of climate change. We relied on RCP 8.5 because it is the publicly available and peer-reviewed scenario with the greatest potential physical risk. Although our analysis did not reveal any material risks, it did present the possibility of water shortages at several of our facilities from extended drought and increased flooding risk from intense precipitation events. During FY18, we will begin evaluating scenarios for our assessment of transition risk.	Our response to possible water-related outcomes is multifaceted. We are rigorous about creating redundancy in our datacenter operations, using geo-replicated customer workloads (keeping multiple copies of workloads in multiple locations) to improve reliability. We are also currently exploring and implementing approaches to reduce our water usage. We also identify alternative sources for water that do not require the provision of municipal water, including water reuse. And we take water stresses into account when we relocate older facilities or site new facilities; any office construction projects in water-stressed regions prioritize water reduction and reuse strategies. We plan to increase capital investment in water conservation projects, including large-scale campus redevelopment projects in Silicon Valley (FY20). Microsoft’s response to water-related outcomes is ongoing.

**Water pricing**

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

Does your company use an internal price on water?	Please explain
No, but we are currently exploring water valuation practices	As a first step in exploring water valuation practices, Microsoft is using the Water Risk Monetizer (WRM) tool to evaluate the full cost of water to the company. We have deployed the WRM tool in our San Antonio datacenter and found that the risk-adjusted water bill, representing the full value of water to Microsoft operations, is more than 11 times greater than the current water bill presented by the San Antonio Water System. This type of information could help Microsoft in setting an internal price on water, although the context-based value of water doesn’t lend itself particularly well to one globally applicable price of water. Discussions are currently underway regarding the pros and cons of incorporating an internal price

Does your company use an internal price on water?	Please explain
	on water into our existing sustainability fund and exploring the potential objectives of setting an internal water pricing system (that is, raising funds for water stewardship initiatives versus incentivizing water conservation measures).

## W8 Targets

### Targets and goals

#### (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
<p>Company-wide targets and goals</p> <p>Business-level specific targets and/or goals</p> <p>Site/facility specific targets and/or goals</p>	<p>Targets are monitored at the corporate level</p> <p>Goals are monitored at the corporate level</p>	<p>Motivated by our commitment to water stewardship, we are working towards developing specific, measurable goals and targets at the site/facility, business group, and corporate levels. At the site/facility level, our approach is focused on our datacenters: developing intelligent systems to gather real-time data; monitoring and servicing those systems to ensure that the data accurately represents site-level conditions; and using the data to justify additional investments in water-related efficiency projects. At the business group level, in FY18, our Real Estate and Facilities (REF) division initiated water audits at major campuses to uncover opportunities to reduce water use and improve efficiency. This information is being used in FY18 and beyond to inform a goalsetting process resulting in measurable goals and targets monitored at the corporate level. The Microsoft Cloud Infrastructure and Operations (MCIO) division is undergoing a parallel SMART goalsetting process that will result in a volumetric water reduction goal specific to its water use patterns and targets that represent a meaningful reduction across our most water-stressed sites. At the corporate level, we are currently setting a company-wide operational volumetric water reduction goal. This process has included consultation with REF and MCIO to determine volumetric reduction targets tied to meaningful metrics for each business group, monitored at the corporate level. We have determined that a volumetric goal indexed to the activities of each business group will result in the most meaningful corporate-wide goal. REF will track absolute water use reduction based on a baseline year, and MCIO will track water use reduction based on volume and water use effectiveness (WUE [liters of cooling water per kilowatt-hour of IT energy]). An indexed approach will allow us to combine these targets into one corporate-level volumetric reduction goal.</p>

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

Target reference number	Category of target	Level	Primary motivation	Description of target	Quantitative metric	Baseline year	Start year	Target year	% achieved	Please explain
Target 1	Other: Reduction in real estate water intensity	Business	Cost savings	In FY17, the Microsoft office and labs division had a target to limit our real estate water intensity at large sites—as measured by cubic meter of water withdrawn per square foot of included buildings. We set a goal to keep our intensity essentially flat to baseline (no more than 0.5 percent increase). Drivers (beyond cost savings) for this target include water security, brand value protection, water stewardship, and that it is a recommended sector best practice. At the end of FY17, we had reduced water use intensity at our large campus locations by 6.7 percent compared with our baseline year (FY14).	Other: % reduction per square foot of included buildings	2014	2015	2017	100	Quantitative metric: % reduction per square foot of included buildings  Note that the baseline and target years refer to Microsoft fiscal years (baseline of FY14, from July 1, 2013, to June 30, 2014, and target year of FY17, from July 1, 2016, to June 30, 2017).

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

Goal	Level	Motivation	Description of goal	Baseline year	Start year	End year	Progress
Other: Reduce use of	Business	Water stewardship	Promote the reduction of potable water use inside buildings and for landscaping through installation of low-water use fixtures and native landscaping. This goal is set at the business level as it is	2014	2014	2017	This is an ongoing goal, measured annually. We assess our progress against this goal by monitoring our withdrawal of water, using the indicator of water use intensity (cubic meters of water withdrawn per square foot) at our

Goal	Level	Motivation	Description of goal	Baseline year	Start year	End year	Progress
potable water			identified in the Microsoft Real Estate and Facilities Environmental Sustainability Guiding Principles related to water quality. It serves as the foundation for our global water use measurement tool (launched in FY13), which was our first step of a “manage what you measure” plan, enabling ongoing global reporting of water use at the site level. This goal is important to our company because we believe that Microsoft is an integral part of the communities in which we operate, and we want to minimize our impact on a vital resource. With Microsoft’s corporate oversight and guidance, each region and site is empowered to set its own water reduction targets and identify opportunities for savings.				primary locations. Our threshold for success is achieving a reduction in water use intensity. In FY14, we expanded our data collection efforts for greater coverage and established a baseline to inform data-driven targets for reducing water use. In FY16, we set unique targets for each of the large campuses based on local conditions that drive usage. In FY17 (reporting year), we reduced our water use intensity at our large campus locations by 6.7 percent compared with our baseline year (FY14).
Other: Minimize pesticide/herbicide use	Business	Water stewardship	Use organic landscaping techniques to minimize pesticide and herbicide use wherever possible, thus reducing the potential for harmful chemicals in our stormwater runoff. This goal is set at the business level because it is identified in the Microsoft Real Estate and Facilities Environmental Sustainability Guiding Principles related to water quality. It is important to our company because we are an active member of the communities in which we operate and want to do our part to maintain water	2014	2014	2017	This is an ongoing goal, measured annually. We assess our progress against this goal by monitoring the use of pesticides/herbicides and stormwater management, as self-reported by facility management teams during annual assessments. The indicator that we use to assess progress against this goal is the percentage of sites that report limiting the use of pesticides and herbicides. Our threshold for success is when every Microsoft campus is utilizing non-toxic pesticides and herbicides. In FY14, we focused on establishing a baseline to support reporting for this goal. In FY17

Goal	Level	Motivation	Description of goal	Baseline year	Start year	End year	Progress
			quality. Microsoft's local landscaping subcontractors use non-toxic pesticides and herbicides as a primary method to address pest and weed management goals.				(reporting year), about 70 percent of applicable global locations reported limiting use of herbicides and using only sustainability-certified landscaping products.
Engagement with suppliers to help them improve water stewardship	Business	Water stewardship	Require our Tier 1 manufacturing suppliers to "water balance." This means to perform an analysis to map water inflows, outflows, and intermediate reuse between production and support areas in a manufacturing plant. This goal is set at the business level because it is specific to our manufacturing suppliers. It is important to our company as the analysis provides valuable information to our suppliers leading to improved water management and cost reductions while helping meet our requirement that they have management systems for environmental aspects. We verify the suppliers' implementation of this requirement across all Tier 1 suppliers through onsite audits. Suppliers must show completion and demonstrate the effectiveness of their "water balance" implementation.	2016	2016	2018	The first stage includes data collection, program design, and defining the site organization to support the program. The second stage focuses on capability building and water balance analysis. The third stage focuses on engineering and administrative improvements. Our threshold for success is when all Tier 1 sites have achieved all the three stages. We assess our progress against this goal by verifying completion and the effectiveness of implementation through onsite audits. The program was piloted in 2013 with a supplier in Dongguan, China. During the first two months, our Microsoft Social and Environmental Accountability (SEA) team trained the site management on the local water consumption standard and how to use the water balance tool and monitoring methodology. This helped the factory to develop the water flow map and install meter gauges. Within eight months, the site saved 42,520 cubic meters of water. In FY16, we standardized this program in the three stages defined above based on lessons learned and launched the water balance project at all Tier 1 factories. By Q4 FY16, all six Tier 1 sites had completed the first program stage and one site had completed the second stage. In FY17

Goal	Level	Motivation	Description of goal	Baseline year	Start year	End year	Progress
							(the reporting period), all sites had completed the second stage. The Microsoft SEA team will continue to work with the suppliers to achieve the third stage by the target year.
Engagement with suppliers to help them improve water stewardship	Business	Water stewardship	Implement a water monitoring program at our Tier 1 manufacturing supplier sites for "human water" consumption, used by the workers in the factory for drinking, cooking, hygiene, and other sanitation purposes. This goal is set at the business level as it is specific to our Tier 1 manufacturing supplier sites. This goal is important to our company because it helps us ensure that our suppliers' working conditions conform with life water requirements based on the China standard.	2016	2016	2017	We assess our progress against this goal by monitoring the water consumption at our Tier 1 supplier sites, using the indicator of kilograms of water per person per working hour. Using the China government standards as guidance, we have set our threshold for success as 12kg of water use per person per working hour. By the end of FY16, five of six Tier 1 suppliers had achieved this target. In FY17 (the reporting year), the final supplier had achieved the target.

## W9 Linkages and tradeoffs

### Managing linkages and tradeoffs

**(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) Describe the linkages or trade-offs and the related management policy or action.**

Linkage/trade-off	Type of linkage/tradeoff	Description of linkage/trade-off	Policy or action
Tradeoff	Other: Increased water use at facility level	More energy-efficient adiabatic cooling systems are associated with increased water use. Chillers, cooling towers, and adiabatic cooling enable us to cool our datacenters, labs, and offices more efficiently than air, thereby using less energy and reducing emissions. However, they use more water than air-cooled systems. For example, a typical chilled water system requires 1.6 to 3.0 gallons per minute (gpm) per ton. The tradeoff with chilled systems is that while they consume more water than a direct expansion (DX) system (onsite), they require less physical space. The reduced physical space requirement is a benefit to the environment. In FY17 (reporting year), Microsoft began investing in more advanced design techniques to deploy more advanced technologies as they become available.	We are able to design systems that allow us to manage which resource will be best used given the location and the resource availability and sustainability for that location. In some cases, we can even manage this on a day-to-day basis by altering our operational programming to use more or less power or water on a given day. We do this based on factors like how hot or cool the outside air is, drought status in the surrounding area, loading of the current power grid, and even whether or not those power sources are carbon offset capable so as to minimize use of nonrenewable or high-carbon-output grid power suppliers. Towards the end of FY17, the Microsoft Cloud Infrastructure and Operations (MCIO) division committed to a new Director of Water Strategy position to elevate water's importance in the design and management of its datacenters.
Tradeoff	Other: Increased water use at utility level	With the use of current waterless technologies in Microsoft datacenters, our energy demand increases. While Microsoft relies minimally on air-cooled equipment, this results in an increase in water consumption at the utility level. Power plants require 2 gallons of water for every 1 kilowatt-hour (kWh) of energy consumed. To offset this tradeoff, Microsoft has procured renewable energy commitments of over 600 megawatts. In FY17 (reporting year), Microsoft's new datacenters did not use air-cooled equipment.	Microsoft increasingly relies on free-cooling systems with supplemental cooling from adiabatic or waterless cooling systems throughout our portfolio of datacenters. Under certain outdoor environmental conditions, the majority of our datacenters mix fresh outside air with indoor air, allowing us to bypass the more energy- and water-intense cooling systems. Towards the end of FY17, the Microsoft Cloud Infrastructure and Operations (MCIO) division committed to a new Director of Water Strategy position to elevate water's importance in the design and management of its datacenters.

## W10 Verification

### Verification of water information

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

Yes

**(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	Total withdrawals	ISAE3000	Microsoft annually verifies total global water withdrawals. Of Microsoft water data, withdrawal data is the most accurate and complete, as a large portion is metered, and we estimate withdrawals for sites that are not metered.

## W11 Signoff

### Signoff

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

Job title	Corresponding job category
President and Chief Legal Officer	President

## Water Action Hub

**(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.**

Yes