

**Module: Introduction**

**Page: Introduction**

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**0.1**

**Introduction**

Please give a general description and introduction to your organization.

Entergy Corporation, which celebrates its 100th birthday in 2013, is an integrated energy company engaged primarily in electric power production and retail distribution operations. Entergy owns and operates power plants with approximately 30,000 megawatts of electric generating capacity, including more than 10,000 megawatts of nuclear power, making it one of the nation's leading nuclear generators. Entergy delivers electricity to 2.8 million utility customers in Arkansas, Louisiana, Mississippi and Texas. Entergy has annual revenues of more than \$10 billion and approximately 15,000 employees.

See the attached 2012 Annual Report to Shareholders, 2013 SEC Form 10-K, and 2012 Sustainability Report.

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**0.2**

**Reporting Year**

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

**Enter the period that will be disclosed.**

Sun 01 Jan 2012 - Mon 31 Dec 2012

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**0.3**

### Reporting Boundary

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

Companies, entities or groups over which financial control is exercised

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### 0.4

#### Exclusions

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

No

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### 0.4a

#### List of Exclusions

Please describe any exclusion(s) in the following table.

Exclusion	Please explain why you have made the exclusion

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### Further Information

Additional information can be found at [www.energy.com](http://www.energy.com)

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### Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012\\_sustainability\\_report.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012_sustainability_report.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012\\_Investor\\_Guide.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012_Investor_Guide.pdf)  
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[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012\\_Annual\\_Report.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/Introduction/2012_Annual_Report.pdf)

## Module: Water-Governance

### Page: Water-1-ManagementGovernance

1.1

**Does your company have a water policy, strategy or management plan?**

Yes

1.1a

**Please describe your policy, strategy or plan, including the highest level of responsibility for it within your company and its geographical reach.**

Country or region	Description of policy, strategy or plan	Position of responsible person
United States of America	Entergy's business functions are governed by corporate environmental requirements and guidelines. Adopted by the Board of Directors in 2002, Entergy's Environmental Vision Statement details the company's commitment to operate its business in ways that preserve and protect our environment. Along with the company's aspirations, the statement guides business policies and decisions. The statement establishes several commitments in the areas of sustainable development, performance excellence and environmental advocacy. Entergy also has established a Safety, Health & Environmental (SH&E) Policy and Functional Procedure that defines its overall governance structure, roles and responsibilities, and management system requirements. Each of Entergy's business functions has developed a management system that describes and defines its applicable policy/strategy, compliance requirements, risk assessment procedures, objective-setting process, programs/procedures, training process, self-assessment	Officer/manager not directly reporting to the board

Country or region	Description of policy, strategy or plan	Position of responsible person
	mechanisms and senior management review requirements. As a part of this management system, an aspect analysis/risk assessment is performed on all environmental media, including water. Impacts on both water quality and quantity are evaluated as a part of this process and ranked against other environmental aspects / impacts. Those rated as the most significant are targeted for improvement by various initiatives and projects. Additionally, it is Entergy's policy to comply with all environmental laws and regulations, including those applicable to water withdrawal, consumption, management, and discharge.	

**1.1b**

**Does the water policy, strategy or plan specify water-related targets or goals?**

Yes

**1.1c**

**Please describe these water-related targets or goals and the progress your company has made against them.**

Country or region	Category of target or goal type	Description of target or goal	Progress against target or goal
United States of America	Direct operations	Replace open cycle legacy natural gas steam electric generating capacity with closed cycle cooling combined cycle gas turbines (CCGT). The water use intensity of the Legacy Gas units is 166 M3/MWh while the water use intensity of the CCGTs is 8 M3/MWh>	This results in a water withdrawal reduction benefit of 158 M3/MWh. Entergy's Utility Portfolio Transformation Strategy and Integrated Resource Plans call for modernizing the Utility generating fleet. During 2012 Entergy invested \$459 million to acquire 1,070 MW of closed cycle cooling CCGT capacity bringing the total since 2005 to 3,991 MW of CCGT capacity in service. As a result of these investments, in 2012 there was an estimated 1,733,000,000 M3 reduction in water withdrawal from what it otherwise would have been that year (assumes the CCGT energy times the 158 M3/MWH delta water intensity between legacy gas and CCGT generation). Water

Country or region	Category of target or goal type	Description of target or goal	Progress against target or goal
			<p>withdrawal in 2012 is estimated to be 11% below what it would have been without the CCGT fleet transformation investment. Cumulative water withdrawal savings 2005 - 2012 as a result of CCGT investments are estimated to be nearly 6,750,000,000 M3. By 2020 fleet transformation calls for an additional 1,100 MW of closed cycle cooling CCGT and the retirement of 2,234 MW of open cycle cooling legacy gas units. By 2020 Fleet Transformation is expected to result in 3,150,000,000 M3 reduction in water withdrawal compared to 2012 levels. By 2020 water withdrawal is expected to be 22% below '12 water withdrawal level as a result of planned continued fleet transformation</p>
United States of America	Direct operations	Invest in Nuclear Unit uprates that increase generating capacity without requiring an incremental increase in water withdrawal requirements	<p>During 2012, Entergy invested \$874 Million in a 178 MW capacity uprate at Grand Gulf Nuclear Station bringing the total uprates since 2001 to 700 MW of new capacity that needs no incremental added cooling water. As a result of these investments, in 2012 there was an estimated 640,786,800 M3 net reduction in water withdrawal from what it otherwise would have been that year (assumes Entergy's average system water withdrawal intensity of 123.86 M3/MWh, a 90% capacity factor and a 7.75 M3/MWh additional service water requirement). Water withdrawal is estimated to be 4.2% lower than it would have been without the capacity uprates.</p>
United States of America	Supply chain	Invest in Energy Efficiency (EE) & Demand Side Management (DSM) initiatives that reduce energy consumption, water withdrawal and energy demand.	<p>Entergy invested \$40 million in EE and DSM programs during 2012 that delivered 40 MW and 159,000 MWh of annual energy savings. - As a result of these investments, in 2012 there was an estimated 15,382,000 M3 reduction in water withdrawal. Entergy has invested a total of \$120 million from 2002 to 2012 delivering a total of 202 MW and 526,000 MWh of annual energy savings and 50,885,000 M3 of water withdrawal savings (assuming Entergy's average system water intensity of 123.86 M3/MWh). The Entergy Utility companies are committed to pursuing cost effective DSM and have identified 990 MW of peak demand reduction that can be achieved through 2031 as a part of its Integrated Resources Plans.</p>

You may explain here why your company does not have a water policy, strategy or plan and if you intend to put one in place.

1.2

**Do you wish to report any actions outside your water policy, strategy or management plan that your company has taken to manage water resources or engage stakeholders in water-related issues?**

Country or region	Category of action	Description of action and outcome
United States of America	Direct operations	[Measured withdrawals and/or consumption of water] Examples of Entergy's efforts related to quantifying water consumption are the use of reclaimed wastewater for the steam process and cooling purposes at the Harrison County Power Plant near Marshall, Texas, and . Water is piped in a 30-mile pipeline from the publicly-owned treatment works (POTW) at the City of Longview and is used for all process water at the site. Entergy has sold its equity share in the plant, but still operates the facility in a manner that efficiently uses reclaimed water. Entergy's RISE plant located in Johnston, Rhode Island, also uses reclaimed waste water supplied by the town of Cranston, Rhode Island, via a 12-mile pipeline. Entergy employs cooling towers at several facilities and is developing a water balance template to maximize water use efficiency. The use of reclaimed water and cooling towers reduces the amount of surface water and groundwater used regionally. Even in Entergy's open cycle cooling systems, 99.993% of the water withdrawn is returned to the water body.
United States of America	Direct operations	[Measured water discharge volumes and/or quality] Entergy's knowledge of water discharges is based on process methodology and internal measurements. The external verification/assurance process for making sure water discharges comply with regulatory requirements (federal, state, and local) relies on the submittal of Discharge Monitoring Reports to the relevant agencies as required.
United States of America	Direct operations	[Considered water-related issues in sourcing decisions] Examples of Entergy's consideration of water sources are as follows: Entergy's Lewis Creek plant is located in Montgomery County, Texas, which is a water-restricted area as defined by the county utility district. This plant represented approximately 2% of Entergy's overall generation in 2011 and is the only plant that is currently in an area that is restricting water use. A coordinated effort to reduce groundwater consumption by 30% by 2016 was put into place in 2010. Entergy's Lewis Creek staff participates in integrated watershed management with the Lone Star Groundwater Conservation District by working with the Groundwater Reduction Plan Phase II committees and actively engaging other area stakeholders (San Jacinto River Authority, City of Willis, etc.) in a dialogue to help develop an alternative water supply for the region. Entergy currently operates the Harrison County Power Plant near Marshall, Texas, where water is piped in a 30-mile pipeline from the publicly-owned treatment works (POTW) at Longview, Texas. Entergy's RISE plant located in Johnston, Rhode Island, also uses reclaimed waste water supplied by the town of Cranston, Rhode Island, via a 12-mile pipeline. The use of this reclaimed water for all process water at the site reduces the amount of surface water and groundwater used regionally.

Country or region	Category of action	Description of action and outcome
United States of America	Public policy	<p>[Ensured employees have access to safe drinking water and sanitation] Entergy is required to comply with the Safe Drinking Water Act (SDWA), the federal law that ensures the quality of Americans' drinking water. Under the SDWA, regulatory agencies set standards for drinking water quality and oversee the states, localities and water suppliers who implement those standards. Five Entergy facilities (Sabine, Lewis Creek in Texas, Independence in Arkansas, Grand Gulf Nuclear Station in Mississippi and Vermont Yankee in Vermont) produce their own drinking water for plant employees and contractors. These facilities have licensed Water Treatment Operators who oversee the maintenance and operation of on-site potable water treatment and distribution systems. Utilities that provide potable water from offsite for employee and guest use also are regulated under the SDWA. Sanitation services available to Entergy employees and guests are regulated by the federal Clean Water Act, (either as a direct discharge to waters of the United States or as an indirect discharge via a publically-owned treatment works (POTW), by state and local sanitation laws, or by both. Arkansas Nuclear One in Arkansas, Grand Gulf Nuclear Station in Mississippi, River Bend Station in Louisiana, Vermont Yankee in Vermont, FitzPatrick in New York, Pilgrim in Massachusetts and Palisades in Michigan have onsite sanitary sewage systems. Public sewage treatment facilities used by Entergy facilities also are governed by the Clean Water Act as applicable to POTWs.</p>
United States of America	Watershed management	<p>[Enhanced habitat or watershed management] Entergy's construction projects are conducted in accordance with storm water pollution prevention plans and watershed protective conditions of issued wetland permits are observed. Additionally, other processes and procedures have been developed and implemented within operations organizations that have an intended goal of water quality protection. Most notably, land-based oil spill response strategies are focused on minimizing risk of oil discharges from oil-filled operating equipment to surface water, and transmission and distribution line construction processes are directed at minimizing the environmental footprint in jurisdictional waters of the United States. The Transmission and Distribution organizations' implementation of the oil spill response strategies has been effective in reducing the number of National Response Center (NRC) reportable spills. Construction management processes, such as utilizing above-grade land clearing-processes in rights-of-way development, have reduced siltation and erosion arising from the construction activities and the subsequent sediment deposition in jurisdictional waters of the U.S. Desktop evaluations are conducted to determine water and habitat impacts of transmission line construction projects during the preliminary planning phase. These impacts and associated mitigation costs are included in the project documents that provide a basis for the corporate risk assessment. This process identifies projects with potential for adverse wildlife interactions and ensures consultation occurs with the appropriate state or federal agency as required by law. This allows for the review of the most current species habitat, range, and protection status data to be utilized in the analysis. Entergy takes proactive efforts to minimize impacts to biodiversity as well. Adverse interactions with all species are monitored by business function asset operations and environmental support. In the event of a significant adverse interaction or interaction with a protected species, Entergy engages in incident reporting and action plan development.</p>
United States of America	Watershed management	<p>[Enhanced habitat or watershed management] Entergy has developed extensive databases regarding the aquatic resources from which its facilities draw cooling or service water. Extensive information has been gathered, in particular, regarding areas of the lower Hudson River, the Connecticut River, Cape Cod, Lake Ontario, and the Mississippi River near Entergy facilities. Entergy also has gathered information regarding water bodies into which it discharges, or from which it draws cooling and service water at many of its fossil-fuel facilities. Data gathering of this nature also is required during the Environmental Impact Statement process for nuclear license renewal and for the application of section 316(a) and 316(b) of the Clean Air Act to</p>

Country or region	Category of action	Description of action and outcome
		<p>Entergy facilities. Entergy has worked with NGOs and federal/state agencies to preserve significant tracts of land for the preservation of habitat and species (see the 2012 Sustainability Report for details). In 2012, Entergy sponsored the United States Business Council for Sustainable Development's (USBCSD) Water Synergy Project to identify potential water recycling and reuse across business sectors to protect this natural resource in southeast Louisiana. Other examples of projects funded by Entergy through the Environmental Initiative Fund are: floating island deployment at Isle de Jean Charles, Beach Sweep project sponsorships with the Lake Pontchartrain Basin Foundation, 11 Blue Ribbon Resilient Community forum meetings across the Gulf Coast, and verification of reforestation projects at National Wildlife Refuges in Louisiana and Arkansas. Entergy is actively engaged with state and local planning groups working on the Baton Rouge groundwater issues and the water allocation interest groups for the watershed planning in the White River and Arkansas River valleys in Arkansas. Entergy was a founding member of the Electric Utility Industry Sustainable Supply Chain Alliance (EUISSCA). Entergy remained a member through 2011. EUISSCA was formed to promote environmental stewardship and provide value to customers and shareholders. Focusing on non-fuel suppliers, EUISSCA's goal is to work with industry suppliers and other interested parties to improve environmental performance and advance sustainable business practices.</p>
United States of America	Community engagement	<p>[Enhanced habitat or watershed management] Entergy participates on the US Business Council for Sustainable Development (USBCSD) Water Synergy Project. This is a regional effort involving identifying major water users along the lower Mississippi River, cataloguing water inputs and outputs, and working to identify synergies, or opportunities for water reuse and/or recycle. In 2011 - 2012 Entergy and Americas Wetland Foundation engaged 1,100 stakeholders in a dialogue about the Gulf Coast region's vulnerability to storm surge, flooding and wind damage in eleven Blue Ribbon Resilient Community Leadership Forums. Cost effective investments to build greater resilience to these hazards were discussed and a course for cooperative action put in place.</p>
United States of America	Direct operations	<p>[Enhanced habitat or watershed management] Water Footprinting/ Optimization Study – A project originating at the Lewis Creek Power Plant in Willis, Texas, this effort focuses on development of a current, representative water balance of a power plant, evaluation of the water flows at the plant, and the identification of opportunities to optimize this water usage through reuse, recycling, etc. Evaluation of Waterford Units 1, 2, and 3 is ongoing.</p>
United States of America	Transparency	<p>Voluntary Disclosures and Benchmarking – Entergy participates in several external disclosure and benchmarking efforts that include water-related data and metrics. Among these are the Dow Jones Sustainability Index (DJSI), the CDP Water Evaluation, and the Utility Environmental Benchmarking Forum (UEBF). Entergy is a recognized leader in these evaluations (in terms of participation and/or performance) and works to improve/maintain leadership positions. Entergy also produces an annual Sustainability Report and reports on environmental matters in its 10K and 10Q Securities and Exchange Commission (SEC) disclosures.</p>
United States of America	Direct operations	<p>Environmental Performance Metrics – These metrics are collected annually and include several water-related metrics. Currently, the metrics are being expanded to include more breakdowns of water source/usage information to facilitate enhanced reporting, both internal and external. Specifically, we are seeking to collect additional details from the business functions regarding the water source (surface, ground, or municipal), water type (fresh, brackish, or saline), and water use (cooling, process, or sanitary).</p>

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## Further Information

Entergy's Water Peer Group was formed in 2002 and a formal charter was developed in 2005 (see charter document attached); this effort brings subject matter experts from all of Entergy's business units together to collaborate on water issues. Entergy Water Peer Group is comprised of water subject matter experts from each of the business units. The peer group examines water supply, and discharge issues that impact Entergy's operations, provides a forum for subject matter experts to discuss these issues, and provides coordination for path-forward strategies to influence these water issues and risks. Water risks are incorporated into the company's corporate risk management processes and SEC reporting, including the 10K "Risk Factors." For a discussion of water risks, see Entergy's 2012 SEC 10K pg 262 – 264

Entergy's spill reduction efforts include spill awareness, spill reduction, and the timely and accurate reporting of spills. In conjunction with the overall spill awareness efforts, Entergy organized an internal Spill Prevention, Control, and Countermeasure (SPCC) Team. SPCC plans are the cornerstone of EPA's strategy to prevent oil spills from reaching the nation's waters. Each plan is unique to the location it protects, must include certain elements, and must be maintained at the relevant facility.

In Entergy's Fossil business unit, a 2005 six sigma team's work has reduced NPDES permit non-compliances by 80% in the past 7 years. In 2010, Fossil's Integrated Spill Prevention Planning Team (six sigma effort) developed recommendations that have resulted in a 30% reduction of reportable spills. Six sigma teams are utilized to develop process improvements using specific techniques in an effort to reduce costs and eliminate deficiencies.

Entergy is a member of the Utility Water Act Group (UWAG). UWAG is a voluntary, ad hoc, non-profit, unincorporated group of 212 individual energy companies and three national trade associations of energy companies: the Edison Electric Institute, the National Rural Electric Cooperative Association, and the American Public Power Association. The individual energy companies operate power plants and other facilities that generate, transmit, and distribute electricity to residential, commercial, industrial, and institutional customers. UWAG's purpose is to participate on behalf of its members in EPA's rulemakings under the Clean Water Act (CWA) and in litigation arising from those rulemakings.

EUISSCA collaborates with suppliers/contractors in a number of ways. First, an annual survey is conducted by an independent third party, CAPS Research, on behalf of EUISSCA. Each EUISSCA member submits approximately 100 suppliers that they would like included as participants in the survey. The survey is specific in trying to identify the level of environmental sustainability that each supplier practices through the use of a series of questions. The questions are divided into areas of focus: greenhouse gases, water, fleet/transportation, etc. CAPS Research aggregates the responses of all participants and provides the results back to EUISSCA as a whole. Each EUISSCA member will get specific feedback on the suppliers they invited to participate as well. Suppliers do have the option to allow CAPS Research to identify their specific results/responses in the survey to the utility that requested they participate. The supplier has the option not to allow this as well.

Second, the EUISSCA collaborates with contractors/suppliers on an annual basis during the annual sustainability conference that it holds. Suppliers are invited to attend in order to be updated on recent progress of EUISSCA, exhibit their efforts in sustainability, as well as provide input on the direction for the next areas of focus that EUISSCA will undertake.

Third, EUISSCA collaborates with contractors/suppliers by allowing them to participate in work teams. Work teams are utilized to evaluate the existing sustainability performance of a given area and come up with recommended best practices that the industry should follow. Contractor/suppliers are permitted to be members of these work teams, or to participate in regular calls discussing progress of the team.

Lastly, EUISSCA has developed a list of RFP questions that each member is to include in bid opportunities for suppliers. It is not a requirement that each RFP

include these questions; however, it is encouraged that sustainability become part of the evaluation matrix during the RFP process and when asking questions, a member should use the appropriate question included in the RFP question document. This was developed based on feedback of suppliers that stated that they would like to see the industry move towards asking the same information in the same format, as opposed to one utility asking water related questions one way and another asking for the same information in a completely different manner. The collaboration techniques directly impact Entergy in that we are able to gauge the progress our suppliers are making with respect to sustainability efforts versus the overall population of our supply base as well as include sustainability criteria in the bid evaluation decision-making process.

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## Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/1.WaterManagementandGovernance/2012 System IRP Report - Final 02Oct2012.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/1.WaterManagementandGovernance/2012%20System%20IRP%20Report%20-%20Final%2002Oct2012.pdf)  
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## Module: Water-RisksOpps

### Page: Water-2-indicators-op

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#### 2.1

**Are any of your operations located in water-stressed regions?**

Yes

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#### 2.1a

Please specify the method(s) you use to characterize water-stressed regions (you may choose more than one method).

Method used to define water stress	Please add any comments here:
Environmental assessment Internal company knowledge Regional government assessments or databases	<p>Entergy is working with local business leaders and the USBCSD in the Water Synergy Project to achieve tangible water conservation and quality improvements, and establish a long-term water collaboration plan in the region by harnessing collective industry capabilities and interests. This is a regional effort started in 2012 that identifies major water users along the lower Mississippi River, catalogues water inputs and outputs, and works with stakeholders to identify synergies, or opportunities for water reuse and/or recycling. In addition, it plans to develop a replicable work process that could be applied in other water-challenged regions.</p> <p>Entergy's Lewis Creek plant is located in Montgomery County, Texas, a water restricted area as defined by the county utility district. This plant represents approximately 2% of Entergy's overall generation in 2012. A coordinated effort to reduce groundwater consumption by 30% by 2016 was put into place in 2010. Entergy works with the Lone Star Water Conservation District and the San Jacinto Water Authority to track and monitor water availability at the local level. During 2012, Entergy worked with the U.S. Army Corp of Engineers to assess and find ways to effectively manage risks to the quality of water supply in and near New Orleans from a scenario where, during times of low flow in the Mississippi, a salt water wedge could extend 80+ miles upriver and could adversely impact drinking water supply to the city of New Orleans as well as cooling water quality for Entergy power plants. We worked out systems of information exchange and contingency plans for avoiding or minimizing the impacts. Entergy Water Peer Group is comprised of water subject management experts from each of the business units and it examines water supply, and discharge issues that impact Entergy's operations, provides a forum for subject matter experts to discuss these issues, and provides coordination for path-forward strategies to influence these water issues and risks. Water risks are incorporated into the company's corporate risk management processes and SEC reporting. For a discussion of water risks, see Entergy's 2012 SEC 10K pg 262 – 264</p>

2.1b

Please list the water-stressed regions where you have operations and the proportion of your total operations in that area.

Country or region	River basin	Proportion of operations located in this region (%)	Further comments
United States of America		1 – 10	Entergy Texas Inc. owns and operates the Lewis Creek Power Plant that operates within the water stressed San Jacinto river basin. Lewis Creek produces 2% of the Entergy Utilities electric generation. Entergy Texas, one of Entergy's six utility companies, accounts for 20% of the Utility Companies electric energy sales and 20% of its operating revenue.

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2.1a

Please specify the method(s) you use to characterize water-stressed regions.

Method used to define water stress	Please add any comments here:
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2.1c

You may explain here why you are not able to identify which of your operations are located in regions subject to water stress and whether you have plans to investigate this in the future.

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2.2

**Are there other indicators (besides water stress) which you wish to report that help you to identify which of your operations are located in regions subject to water-related risk?**

Yes

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2.2

Are there other indicators (besides water stress) which you wish to report that help you to identify which of your operations are located in regions subject to water-related risk?

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2.2

Are there other indicators (besides water stress) which you wish to report which help you to identify which of your operations are located in regions subject to water-related risk?

2.2a

Please list the regions at risk where you have operations, the relevant risk indicator and proportion of your total operations in that area.

Country or region	River basin	Risk Indicator	Proportion of operations located in this region (%)	Further comments
United States of America	Mississippi	Flooding	1-10	The Baxter Wilson and Gerald Andrus Plants, both on the Mississippi River, had to curtail operations due to flooding in 2011 due to high river flows.
United States of America	Mississippi	Poor water quality	1-10	In 2012 due to low river flows in the Mississippi a salt water wedge advanced from the mouth of the river upstream approaching New Orleans. This had the potential to adversely impact power plants near New Orleans that use Mississippi River Water for cooling purposes.
United States of America	Other: White	Flooding	1-10	Entergy's Independence Plant in Arkansas which operates within the White River Basin had to curtail operations due to flooding in 2004 and again in 2011.
United States of America	Mississippi	Flooding	1-10	All of Entergy's generation assets (nuclear, fossil, and hydro) located within the Gulf Coast region are at risk and have been affected to some extent by hurricanes and storm surge. After Hurricane Katrina in 2005 the Michoud Plant and was out-of-service for several months.

2.2a

Please list the regions at risk where you have operations, the relevant risk indicator and proportion of your total operations in that area.

Country or region	River basin	Risk Indicator	Proportion of operations located in this region (%)	Further comments
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2.2a

Please list the regions at risk where you have operations, the relevant risk indicator and proportion of your total operations in that area.

Country or region	River basin	Risk Indicator	Proportion of operations located in this region (%)	Further comments
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2.2b

You may explain here why you do not wish to report or why you do not use other indicators to identify which of your operations are located in regions subject to water-related risk.

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2.2b

You may explain here why you do not use or wish to report other indicators to identify which of your operations are located in regions subject to water-related risk.

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2.2b

You may explain here why you do not use or wish to report other indicators to identify which of your operations are located in regions subject to water-related risk.

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2.3

Please specify the total proportion of your operations that are located in the regions at risk which you identified in questions 2.1 and/or 2.2.

42%

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2.3

Please specify the total proportion of your operations that are located in the regions at risk which you identified in questions 2.1 and/or 2.2.

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2.3

Please specify the total proportion of your operations that are located in the regions at risk which you identified in questions 2.1 and /or 2.2.

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2.4

Please specify the basis you use to calculate the proportions used for questions 2.1 and/or 2.2.

Basis used to determine proportions	Please add any comments here
Production volumes	Percentage of 2012 electricity generation from power plants affected

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2.4

Please specify the basis you use to calculate the proportions used for questions 2.1 and/or 2.2.

Basis used to determine proportions	Please add any comments here
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2.4

Please specify the basis you use to calculate the proportions used for questions 2.1 and/or 2.2

Basis used to determine proportions	Please add any comments here
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### Further Information

Changes to precipitation extremes and droughts are a potential risk to Entergy because of our need for cooling water to produce electricity and discharge permit limits tied to river flows or levels. Changes to precipitation patterns can impact where cooling water is available and can impact our ability to operate due to flooding events.

Continued and future availability and quality of water for cooling, process, and sanitary uses could materially affect the financial condition, results of operations, and liquidity of the Utility operating companies, System Energy, and Entergy Wholesale Commodities' business.

Water is a vital natural resource that is critical to Entergy's business operations. Entergy's facilities use water for cooling, boiler make-up, sanitary uses, potable supply, and many other uses. Two of Entergy's Utility operating companies own and/or operate hydroelectric facilities. Accordingly, water availability and quality are critical to Entergy's business operations. Impacts to water availability or quality could negatively impact both operations and revenues.

Entergy secures water through various mechanisms (ground water wells, surface waters intakes, municipal supply, etc.) and operates under the provisions and conditions set forth by the provider and/or regulatory authorities. Entergy also obtains and operates in substantial compliance with water discharge permits issued under various provisions of the Clean Water Act. Regulations and authorizations for both water intake and use and for waste discharge can become more stringent in times of water shortages, low flows in rivers, low lake levels, low groundwater aquifer volumes, and similar conditions. The increased use of water by industry, agriculture, and the population at large, population growth, and the potential impacts of climate change on water resources may cause water use restrictions that affect Entergy and its subsidiaries.

In addition, physical risks from today's climate and future climate change include increases in sea level (from both sea level rise and subsidence), wind and storm surge damages, wetland and barrier island erosion, risks of flooding and changes in weather conditions, such as changes in precipitation, average temperatures, and potential increased impacts of extreme weather conditions or storms. Entergy subsidiaries own assets in, and serve, communities that are at risk from sea level rise, changes in weather conditions, storms, and loss of the protection offered by coastal wetlands. A significant portion of the nation's oil and gas infrastructure is located in these areas and susceptible to storm damage that could be aggravated by wetland and barrier island erosion, which could give rise to fuel supply interruptions and price spikes.

These and other physical changes could result in changes in customer demand, increased costs associated with repairing and maintaining generation facilities and transmission and distribution systems resulting in increased maintenance and capital costs (and potential increased financing needs), limits on the Entergy System's ability to meet peak customer demand, increased regulatory oversight, and lower customer satisfaction. Also, to the extent that climate change adversely impacts the economic health of a region it may adversely impact customer demand and revenues. Such physical or operational risks could have a material effect on Entergy's financial condition, results of operations, and liquidity.

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### Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/CDP2013-Final053013.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/CDP2013-Final053013.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/2012\\_Enterergy\\_Form\\_10K.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/2012_Enterergy_Form_10K.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/SaltwaterWedgev1.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/2.RiskIndicators-Operations/SaltwaterWedgev1.pdf)

**Page: water-indicators-sc**

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2.5

**Do any of your key inputs or raw materials (excluding water) come from regions subject to water-related risk?**

No

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2.5a

Please state or estimate the proportion of your key inputs or raw materials that come from regions subject to water-related risk.

Country or region	River basin	Input or material	Proportion of key input or raw material that comes from region at risk (%)	Unit used for calculating percentage	Further comments
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2.5b

You may explain here why you are not able to identify if any of your key inputs or raw materials come from regions subject to water-related risk and whether you have plans to explore this issue in the future.

**Page: water-3-riskassess-op**

3.1

Is your company exposed to water-related risks (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?

Yes

3.1a

Please describe (i) the current and/or future risks to your operations, (ii) the ways in which these risks affect or could affect your operations before taking action, (iii) the estimated timescale of these risks, and (iv) your current or proposed strategies for managing them.

Country or region	River basin	Risk type	Potential business impact	Estimated timescale (years)	Risk management strategies
United States of America		03. Physical: Increased water stress or scarcity	At the Lewis Creek plant, which operates within the San Jacinto river basin, a coordinated effort to reduce groundwater consumption by 30% by 2016 was put into place in 2010. These efforts on all facets occurring around the plant have resulted in a negative impact on operating costs and capital expenditures at this time. The increased costs of water usage could impact capital expenditures significantly.	1 – 5	Risk management strategies for addressing water scarcity issues include 1) Putting in place water management plans - At Lewis Creek a coordinated plan to reduce groundwater consumption by 30% by 2016 was initiated in 2010; 2) tracking and monitoring water availability at the local level - In the case of Lewis Creek these aspects are monitored locally through the Lone Star Groundwater Conservation District and interactions with the San Jacinto River Authority. 3) Enterprise Risk Management evaluations and 4) Scenario analyses.
United States of America		08. Regulatory: Mandatory water efficiency, conservation, recycling or process standards	Increased cost of permitting (additional studies, monitoring, etc.), and capital expenditures for Entergy. As the company also is facing an increase in water sensitive areas, this results in an increased cost of water, when one factors the cost of studies, monitoring, and the potential cost of changes in infrastructure and treatment.	6 – 10	Entergy engages stakeholders at all levels to identify risks early so they can be mitigated. Entergy works with engaged stakeholder groups on studies, research efforts and data collection activities. The company collects additional metrics related to water characteristics so that it can ascertain specific impacts to operations more effectively.
United		07. Regulatory:	Entergy's ability to operate is contingent upon the	1 – 5	The NRC requires nuclear power plants to

Country or region	River basin	Risk type	Potential business impact	Estimated timescale (years)	Risk management strategies
States of America		Increased difficulty in obtaining operations permit	receipt of relevant regulatory permits and permissions. This ability may be compromised if the relevant regulatory agencies and affected stakeholders do not have confidence in the company's ability to comply with environmental requirements.		regularly monitor and report the presence of radioactive material in the environment. Entergy joined other nuclear utilities and the Nuclear Energy Institute in 2006 to develop a voluntary groundwater monitoring and protection program. This initiative began after detection of very low levels of radioactive material, primarily tritium, in groundwater at several plants in the United States. Tritium is a radioactive form of hydrogen that occurs naturally and is also a byproduct of nuclear plant operations. In addition to tritium, other radionuclides have been found in on site ground water at nuclear plants. As part of the groundwater monitoring and protection program, Entergy has: (1) performed reviews of plant groundwater characteristics (hydrology) and historical records of past events on site that may have potentially impacted groundwater; (2) implemented fleet procedures on how to handle events that could impact groundwater; and (3) installed groundwater monitoring wells and began periodic sampling. The program also includes protocols for notifying local officials if contamination is found.
United States of America		15. Other: Reputational damage	Entergy's ability to operate is contingent upon the receipt of relevant regulatory permits and permissions. This ability may be compromised if the relevant regulatory agencies and affected stakeholders do not have confidence in the company's ability to comply with environmental requirements.	1 – 5	Entergy engages stakeholders at all levels to identify risks early so they can be mitigated. Entergy works with stakeholder groups on studies, research efforts and data collection activities. The company collects metrics related to water characteristics, so that we can ascertain specific impacts to operations more effectively.
United States of America		10. Regulatory: Regulatory uncertainty	Entergy's ability to operate is contingent upon the receipt of relevant regulatory permits and permissions. This ability may be compromised if the relevant regulatory agencies and affected stakeholders do not have confidence in the company's ability to comply with environmental requirements.	1 – 5	Currently, Entergy is dealing with issues related to EPA's interpretation of 316(b) guidelines, which could significantly impact cooling water processes at several facilities, and EPA's development of effluent guidelines for electricity generating units (EGUs).

Country or region	River basin	Risk type	Potential business impact	Estimated timescale (years)	Risk management strategies
United States of America		04. Physical: Other	Entergy could experience increased infrastructure damage and lost sales revenue from flooding and storm surge related to sea level rise and extreme weather events. In recent years, hurricanes Katrina, Rita, Ike, Gustav and Isaac have provided a glimpse into what impacts the increased frequency and severity of hurricanes could have on the regions we serve.	Current	Entergy manages these risks by 1) putting in place vibrant business contingency plans; 2) conducting storm recovery drills and assessments; 3) participating in mutual aid efforts with other utilities; 4) investing in T&D storm hardening 5) conducting a \$4 million Gulf Coast Adaptation Study to identify cost effective investments Entergy and our communities can invest in to increase resilience; 6) organizing and participating in 11 Blue Ribbon Resilience Community Leadership Forums and 2 Coastal Resilience Technical Forums to work with stakeholders on reducing business interruption losses and ensuring prosperity, safety and a high quality of life for our communities. See Entergy's 2013 CDP Report section 5 & 6

3.1b

Please explain why you do not consider your company to be exposed to any water-related risks that have the potential to generate a substantive change in your business operation, revenue or expenditure.

3.1c

Please explain why you do not know if your company is exposed to any water-related risks that have the potential to generate a substantive change in your business operation, revenue or expenditure, and if you have plans to assess this risk in the future.

3.2

**What methodology and what geographical scale (e.g. country, region, watershed, business unit, facility) do you use to analyze water-related risk across your operations?**

Risk methodology	Country or geographical scale
<p>Entergy manages water issues at the local level and is committed to working collaboratively with local officials to address water issues. Entergy also participates in various industry groups that monitor both water quantity and quality issues at the national and state level. These groups meet on a regular basis to update members on emerging issues and assist members with compliance and leadership initiatives. The Electric Power Research Institute (EPRI) is an example of these groups with which Entergy is engaged to conduct research into these areas.</p>	<p>Business unit</p>

**Further Information**

Changes to precipitation extremes and droughts are a potential risk to Entergy because of our need for cooling water to produce electricity and discharge permit limits tied to river flows or levels. Changes to precipitation patterns can impact where cooling water is available and can impact our ability to operate due to flooding events.

Continued and future availability and quality of water for cooling, process, and sanitary uses could materially affect the financial condition, results of operations, and liquidity of Entergy's business.

Water is a vital natural resource that also is critical to Entergy's business operations. Entergy's facilities use water for cooling, boiler make-up, sanitary uses, potable supply, and many other uses. Two of Entergy's Utility operating companies own and/or operate hydroelectric facilities. Accordingly, water availability and quality are critical to Entergy's business operations. Impacts to water availability or quality could negatively impact both operations and revenues.

Entergy secures water through various mechanisms (ground water wells, surface waters intakes, municipal supply, etc.) and operates under the provisions and conditions set forth by the provider and/or regulatory authorities. Entergy also obtains and operates in substantial compliance with water discharge permits issued under various provisions of the Clean Water Act. Regulations and authorizations for both water intake and use and for waste discharge can become more stringent in times of water shortages, low flows in rivers, low lake levels, low groundwater aquifer volumes, and similar conditions. The increased use of water by industry, agriculture, and the population at large, population growth, and the potential impacts of climate change on water resources may cause water use restrictions that affect Entergy and its subsidiaries.

In addition physical risks from today's climate and future climate change include increases in sea level, wind and storm surge damages, wetland and barrier island erosion, risks of flooding and changes in weather conditions, such as changes in precipitation, average temperatures, and potential increased impacts of extreme weather conditions or storms. Entergy subsidiaries own assets in, and serve, communities that are at risk from sea level rise, changes in weather conditions, storms, and loss of the protection offered by coastal wetlands. A significant portion of the nation's oil and gas infrastructure is located in these areas and susceptible to storm damage that could be aggravated by wetland and barrier island erosion, which could give rise to fuel supply interruptions and price spikes.

These and other physical changes could result in changes in customer demand, increased costs associated with repairing and maintaining generation facilities and

transmission and distribution systems resulting in increased maintenance and capital costs (and potential increased financing needs), limits on the Entergy's ability to meet peak customer demand, increased regulatory oversight, and lower customer satisfaction. Also, to the extent that climate change adversely impacts the economic health of a region it may adversely impact customer demand and revenues. Such physical or operational risks could have a material effect on Entergy's financial condition, results of operations, and liquidity

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## Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Coastal Resilience 1 .pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Coastal%20Resilience%201%20.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Gulf Coast Adaptation Study Final report.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Gulf%20Coast%20Adaptation%20Study%20Final%20report.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/2012\\_sustainability\\_report.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/2012_sustainability_report.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/091212-AWF-BRRCFinalReportEmailVerson.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/091212-AWF-BRRCFinalReportEmailVerson.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Building\\_a\\_Resilient\\_Gulf\\_Coast.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Building_a_Resilient_Gulf_Coast.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/2012\\_Entergy\\_Form\\_10K.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/2012_Entergy_Form_10K.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Jeff Williams for Extreme Weather.pptx](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/Jeff%20Williams%20for%20Extreme%20Weather.pptx)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/CDP2013-Final053013.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/3.RiskAssessment-Operations/CDP2013-Final053013.pdf)

## Page: water-riskassess-sc

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### 3.3

**Do you require your key suppliers to report on their water use, risks and management?**

Yes

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### 3.4

**Is your supply chain exposed to water-related risks (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?**

Yes

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3.4a

Please describe (i) the current and/or future risks to your supply chain, (ii) the ways in which these risks affect or could affect your operations before taking action, (iii) the estimated timescale of these risks and, (iv) your current or proposed strategies for managing them.

Country or region	River basin	Risk type (to supplier)	Potential business impact (to responding company)	Estimate timescale (years)	Risk management strategies (by responding company)
United States of America		02. Physical: Flooding	Entergy's fossil generation facilities are at risk for obtaining fuel supplies during severe weather events. Examples of such occurrences are flooding in the Midwest to the extent the rail shipments of coal were curtailed and during hurricane event when natural gas supplies were curtailed.	Current	Alternate sources of fuel are identified and acquired to maintain generation activities at the sites. Most of Entergy's gas units can also burn fuel oil and reserves are maintained to provide an alternative source of fuel. An inventory of coal is stockpiled onsite to minimize impacts from temporary supply interruptions.

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3.4b

Please explain why you do not consider your supply chain to be exposed to any water-related risks that have the potential to generate a substantive change in your business operation, revenue or expenditure.

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3.4c

Please explain why you do not know if your supply chain is exposed to any water-related risks that have the potential to generate a substantive change in your business operation, revenue or expenditure, and if you have plans to assess this risk in the future.

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**Further Information**

During 2012, Entergy engaged key Tier 1 suppliers on water-related risks through EUISSCA. This alliance was formed to promote environmental stewardship amongst utility suppliers and provide value to customers and shareholders. This alliance addresses water-related risks in the supply chain. Focusing on non-fuel suppliers, the Alliance's goal is to work with industry suppliers and other interested parties to improve environmental performance and advance sustainable business practices.

Entergy was a founding member of the Electric Utility Industry Sustainable Supply Chain Alliance (EUISSCA).

**Page: Water-4-Impacts**

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**4.1**

**Has your business experienced any detrimental impacts related to water in the past five years?**

Yes

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**4.1a**

**Please describe these detrimental impacts including (i) their financial impacts and (ii) whether they have resulted in any changes to company practices.**

Country	Impact indicator	Description of impact	Response strategy
United States of America	Flooding	Entergy's Independence Plant in Arkansas faced flooding risk and curtailed operations in 2004 and again in 2011. The Baxter Wilson and Gerald Andrus plants, both located in Mississippi on the Mississippi River, had to curtail operations due to flooding in 2011. These three facilities have high water-related risk from too much water.	Shifted energy production to other reserve generating units
United States of America	Poor water quality	In January 2010, at Entergy's Vermont Yankee nuclear power plant, tritium was found in a groundwater monitoring well on the power station site. In March 2010, the source of the tritium leak was identified, the leak was stopped and initial remediation work	Entergy has: (1) performed reviews of plant groundwater characteristics (hydrology) and historical records of past events on site that may have impacted groundwater; (2) implemented fleet procedures on how to handle events that could impact

Country	Impact indicator	Description of impact	Response strategy
		was begun. As part of the groundwater monitoring and protection program. To date, radionuclides such as tritium have been detected at Entergy's FitzPatrick, Indian Point, Palisades, Pilgrim, Grand Gulf, Vermont Yankee, and River Bend plants. Based on current information, the concentrations and locations of tritium detected at these plants pose no threat to public health or safety.	groundwater; and (3) installed groundwater monitoring wells and begun periodic sampling. The program also includes protocols for notifying local officials if contamination is found.
United States of America	Water Stress	The Lewis Creek Plant in Montgomery County, Texas, operates within the water stressed San Jacinto river basin. In 2010 & 2011 drought conditions existed within this area of Texas and posed a threat to having an adequate supply of cooling water.	At the Lewis Creek Plant in Montgomery County, Texas, a coordinated effort to reduce groundwater consumption by 30% by 2016 was initiated in 2010. This effort includes all facets and interactions occurring around the facility located in the water-stressed area. To meet this goal, Entergy engaged experts to help review current water usage at this plant and identify opportunities to optimize this usage. Water balances, equipment upgrades and reuse/recycling opportunities that are likely to help Entergy exceed this reduction target were identified.
United States of America	Poor water quality	In 2012 due to low river flows in the Mississippi a salt water wedge advanced from the mouth of the river upstream approaching New Orleans. This had the potential to adversely impact power plants near New Orleans that use Mississippi River Water for cooling purposes.	Risks identified were the potential for chlorides to corrode stainless steel condensers and the salt water could adversely impact ion exchange water purification system relied upon for maintaining boiler feed-water supply. Early warning for operations when these conditions arise, maintaining open communication with the COE as the situation and mitigation actions unfold and putting in place contingency plans to shift energy supply and protect power plant equipment were all recommendations made as a result of this scenario analysis. (See attached "Salt Water Wedge document)

4.1b

Please explain why you do not know whether your business has experienced any detrimental impacts related to water in the past five years and if you have any plans to explore this in the future?

Attachments

**Page: Water-5-Opportunities**

**5.1**

**Do water-related issues present opportunities (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?**

Yes

**5.1a**

**Please describe (i) the current and/or future opportunities, (ii) the ways in which these opportunities affect or could affect your operations (iii) the estimated timescale and (iv) your current or proposed strategies for exploiting them.**

Country or region	Opportunity type	Potential business impact	Estimated timescale	Strategy to exploit opportunity
United States of America	Cost savings	Entergy has the opportunity to invest in more efficient methods of generating electricity that also reduce water use requirements while reducing customers cost of energy.	11 – 20	Entergy, through its fleet transformation strategy and Integrated Resource Plans is making investments that are reducing Entergy's water footprint. These investments include 1) acquiring closed cooling cycle, natural gas fired Combined Cycle Gas Turbine (CCGT) generating capacity while retiring legacy gas fired steam electric generating units; 2) conducting capacity uprates at existing nuclear power plants; and 3) investing in cost effective demand side management and energy efficiency initiatives. The company will continue to collect additional metrics related to water characteristics so that it can ascertain and manage specific water availability and water quality impacts to operations more effectively.

**5.1b**

Please explain why you do not consider water-related issues to present opportunities to your company that have the potential to generate a substantive change in your business operation, revenue or expenditure or supply chain.

5.1c

Please explain why you do not know whether water-related issues present opportunities to your company that have the potential to generate a substantive change in your business operation, revenue or expenditure.

**Page: Water-6-tradeoffs**

6.1

**Has your company identified any linkages or trade-offs between water and carbon emissions in its operations or supply chain?**

Yes

6.1a

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

Linkage or trade-off	Policy or action
Linkage	Investments in clean, efficient, closed cycle cooling, natural gas fired CCGT units provides more efficient heat rates, less CO2 per MWh of generation and lower water use intensity than open cycle cooling, legacy gas fired steam electric generating units. CCGT units have a 35% lower heat rate and reduce water withdrawal intensity from 166 M3/MWh to 8 M3/MWh, a twenty fold decrease.

**Further Information**

Entergy has procured 3,991 megawatts of highly efficient closed cycle cooling natural gas fired combined cycle gas turbine CCGT capacity since 2005. Entergy's Integrated Resource Plans call for investing in an additional 1,130 megawatts of closed cycle cooling CCGT capacity by 2020 while retiring 2,234 megawatts of open cycle gas fired steam electric generating capacity. This will reduce CO2 emissions while also significantly reducing water resource requirements for Entergy's Utility Generating fleet. Entergy's generating fleet CO2 intensity is 585 lb CO2/MWh and is one of the lowest in the U.S. During 2012, 61% of Entergy's generation was produced by non CO2 emitting nuclear and 9% from efficient, natural gas fired CCGT units with an average CO2 intensity of 818 lb CO2/MWh. By comparison, the legacy gas units have a CO2 intensity of 1,452 lbs CO2/MWh. Please see the attached "2013 Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States."

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## Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2012\\_EAL\\_IRP\\_Filing\\_103112.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2012_EAL_IRP_Filing_103112.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2013Benchmarking-f.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2013Benchmarking-f.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2012 System IRP Report - Final 02Oct2012.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/6.ManagingTrade-offsbetweenWaterandCarbonEmissions/2012%20System%20IRP%20Report%20-%20Final%2002Oct2012.pdf)

## Module: Water-Accounting

### Page: Water-7-Withdrawals

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#### 7.1

**Are you able to provide data, whether measured or estimated, on water withdrawals within your operations?**

Yes

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#### 7.1a

**Please report the water withdrawals within your operations for the reporting year.**

Country or region	River basin	Withdrawal type	Quantity (megaliters/year)	Proportion of data that has been verified (%)	Comments
United States of America	Other: Municipal Closed Cycle	Wastewater	3871	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes municipal wastewater source from the City of Cranston, Rhode Island Water Pollution Control Facility and is used in a closed cycle cooling system at Entergy's Rhode Island State Energy power plant
United States of America	Other: Salt Water - Open Cycle	Surface	798578	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes water withdrawal from the Atlantic Ocean for Pilgrim Nuclear Power Plant.
United States of America	Other: Brackish - Open Cycle	Surface	5147279	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes water withdrawals from the Gulf Intercoastal Waterway, Sabine Lake and the Hudson River
United States of America	Other: Freshwater Open Cycle	Surface	8143627	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes water withdrawals from Connecticut River, Mississippi River, Lake Ontario, Lake Ferguson, Lake Dardenelle and Lake Catherine. Vermont Yankee which withdraws water from the Connecticut River actually has "hybrid" mechanical cooling towers that can operate from 100% open cycle to 100% closed cycle, and they do change positions often in response to operating conditions, river flow levels, and river temperature.
United States of America	Other: Freshwater Closed Cycle	Surface	470742	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes water withdrawals from Lake Michigan, Lake Conroe, Pearl River, Sunflower River, Arkansas River, Big Black River, Mississippi River, Ouachita River, Pearl River and Sabine River Authority
United States of America	Other: Ground Water Closed Cycle	Groundwater	3851	0	Value calculated using total water withdrawal, EIA 860 plant specific data and power plant capacity factors. Includes groundwater wells at Hinds Energy Facility and Grand Gulf Nuclear Station in Mississippi

Please explain why you are not able to provide data for water withdrawals.

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7.2

Are you able to provide data, whether measured or estimated, on water recycling/reuse within your operations?

No

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7.2

Are you able to provide data, whether measured or estimated, on water recycling/reuse within your operations?

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7.2a

Please report the water recycling/reuse within your operations for the reporting year.

Country or region	River basin	Quantity (megaliters/year)	Proportion of data that has been verified (%)	Comments
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7.2a

Please report the water recycling/reuse within your operations for the reporting year.

Country or region	River basin	Quantity (megaliters/year)	Proportion of data that has been verified (%)	Comments
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**7.2b**

**Please explain why you are not able to provide data for water recycling/reuse within your operations.**

Entergy's Lewis Creek power plant in Montgomery County, Texas is the only power plant in Entergy's generating fleet that operates in a water stressed area. However there are no recycling/reuse initiatives utilized at this plant. Lewis Creek draws surface water from Lake Conroe to maintain adequate water levels in a cooling pond used by the plant as its source of cooling water. Cooling water is drawn from and discharged back to the cooling pond. House service water is supplied from groundwater wells. See 7.4a below and attachments for a description of the water conservation plan put in place at Lewis Creek in 2010 that's designed to reduce groundwater consumption 30% by 2016.

Entergy's Rhode Island State Energy Facility uses treated municipal wastewater from the City of Cranston, Rhode Island's wastewater treatment facility as its source of cooling and house service water.

Even in open cycle cooling systems it's estimated that 99.993% of water withdrawn is returned to the water body and is not consumed. Closed cycle cooling systems, which accounted for 53% of Entergy's energy production in 2012, reduce the amount of water required for cooling purposes by reusing the water for up to five cycles before returning it to the water body. Evaporative losses from closed cycle cooling systems are estimated to be between 480 - 720 gal/MWh.

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**7.2b**

**Please explain why you are not able to provide data for water recycling/reuse within your operations.**

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**7.3**

**Please use this space to describe the methodologies used for questions 7.1 and 7.2 or to report withdrawals or recycling/reuse in a different format to that set out above.**

An estimate of the individual plant's water withdrawal was calculated using EIA 860 water withdrawal rates and individual power plant capacity factors. The individual plant water withdrawal estimates were then grouped by cooling water system, the type of water source and the type of water used.

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**7.3**

Please use this space to describe the methodologies used for questions 7.1 and 7.2 or to report withdrawals or recycling/reuse in a different format to that set out above.

7.4

Are any water sources significantly affected by your company's withdrawal of water?

Yes

7.4a

Please list any water sources significantly affected by your company's withdrawal of water.

Country or geographical reach	River basin	Water source	Impact	Company action and outcomes
United States of America	Other: Catahoula Aquifer	Lone Star Groundwater Conservation District	The area surrounding Entergy's Lewis Creek Plant in Montgomery County, Texas, has been designated a water-stressed area by the Lone Star Groundwater Conservation District.	At the Lewis Creek Plant in Montgomery County, Texas, a coordinated effort to reduce groundwater consumption by 30% by 2016 was put into place in 2010. This effort includes all facets and interactions occurring around the facility located in the water-stressed area. To meet this goal, Entergy engaged experts to help review current water usage at this plant and identify opportunities to optimize this usage. Using a water balance optimization process, equipment upgrades, and reuse/recycling opportunities were identified as factors that are likely to help Entergy exceed this reduction target. Entergy manages water issues at the local level and is committed to working collaboratively with local officials to address water issues. The referenced reports from the Lone Star Groundwater Conservation District are the basis for the current water restrictions and reduction targets. Entergy has conducted extensive water optimization studies in order to meet the requirements of the water reduction target.

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7.4b

You may explain here why your company's withdrawal of water does not significantly affect any water sources.

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7.4c

Please explain why you do not know if any water sources are significantly affected by your company's withdrawal of water.

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#### Further Information

Entergy is involved in an administrative permitting process with the New York State Department of Environmental Conservation (NYSDEC) for renewal of the Indian Point 2 and Indian Point 3 water discharge permits. Entergy also submitted its application for a water quality certification to the NYSDEC in April 2009 which is still pending. The permit and Water Quality Certification issues relate largely to what constitutes Best Technology Available for minimizing impingement and entrainment impacts resulting from water withdrawn from the Hudson River and whether cooling towers will be required in a renewed permit. For a discussion of these issues, please see Entergy's 2012 SEC 10K at page 238 - 239.

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#### Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/URS Well Water System Modifications Report ETSD 29655-235.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/URS%20Well%20Water%20System%20Modifications%20Report%20ETSD%2029655-235.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/Final Lewis Creek - Water Conservation\\_5\\_5\\_10.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/Final%20Lewis%20Creek%20-%20Water%20Conservation_5_5_10.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/2012\\_Entergy\\_Form\\_10K.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/7.WithdrawalsandRecycling/2012_Entergy_Form_10K.pdf)

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#### Page: Water-8-Discharges

8.1

**Are you able to identify discharges of water from your operations by destination, by treatment method and by quantity and quality using standard effluent parameters?**

Yes

8.1a

Please explain why you are not able to identify discharges from your operations by destination, treatment method , quantity and quality, and whether you have any plans to put in place systems that would enable you to do so.

8.2

**Did your company pay any penalties or fines for significant breaches of discharge agreements or regulations in the reporting period?**

Yes

8.2a

**Please describe the location and impact of the discharge that was the subject of the significant breach(es), the associated fines and any actions taken to minimise the risk of future non-compliance.**

Country or region	River basin	Impact	Fines and penalties	Company action and outcomes
United States of America	Hudson	In November 2010 a transformer at the Indian Point facility failed, resulting in a fire and the release of non-PCB oil to the ground surface. The fire was extinguished by the facility's fire deluge system along with the site's fire brigade. No injuries occurred due to the transformer failure or Entergy's response. Non-PCB oil and deluge water were released into the	As a result of this discharge of non-PCB oil, Entergy in March 2012 agreed to a settlement with the New York State Department of Environmental Conservation under which Entergy paid a civil penalty of \$625,000, will pay another \$600,000 to environmental benefit programs in the region, and a possible additional payment of \$275,000 that is suspended contingent	The March 2012 Consent Order establishes a Schedule for Compliance that includes remedial activities and milestones. A Remedial Investigation Work Plan, a Secondary Containment System Engineering Plan and Specifications and recommendations have been prepared by Entergy and approved by the NYSDEC. Entergy is on schedule for completing all repairs and improvements called

Country or region	River basin	Impact	Fines and penalties	Company action and outcomes
		facility's discharge canal and the environment surrounding the transformer and discharge canal, including the Hudson River, as a result of the failure, fire, and fire suppression.	upon Entergy's compliance with the other terms of the settlement. Entergy also paid \$67,000 in natural resource damages and oversight costs.	for in these plans.

**8.3**

**Are any water bodies and related habitats significantly affected by discharges of water or runoff from your operations?**

No

**8.3a**

Please list any water bodies and associated habitats which are significantly affected by discharge of water or runoff from your operations.

Country or region	River basin	Water body	Impact	Company action and outcomes

**8.3b**

**You may explain here why your company's discharge of water does not significantly affect any water bodies or associated habitats.**

Point Source discharges of pollutants from an Entergy facility into the waters of the United States requires a State or National Pollution Discharge Elimination System permit issued by either the U.S. Environmental Protection Agency (EPA) or a delegated state permitting authority pursuant to the requirements of the federal Clean Water Act. The Clean Water Act and its implementing regulations require that permits protect the water quality standards developed by the state, and approved by EPA, for each water body segment or, for thermal discharges, as allowed pursuant to section 316(a) of the Clean Water Act. These water quality standards or variances are required to protect both the water quality criteria and the uses of the water body segment. States also are allowed to be even more

stringent that the federal act if they so choose. Water body segments that do not meet water quality standards are subject to a more stringent regulatory system under the Total Maximum Daily Load requirements of Section 303 of the Clean Water Act. Entergy's compliance with these permits is a requirement of the respective state and federal laws.

Non point source discharges are regulated by state and federal regulation to minimize impact on water quality. Entergy's construction projects are conducted in accordance with storm water pollution prevention plans and watershed protective conditions of issued wetland permits are observed. Additionally, other processes and procedures have been developed and implemented within operations organizations that have an intended goal of water quality protection. Most notably, land-based oil spill response strategies are focused on minimizing risks of oil discharges from oil-filled operating equipment to surface water, and transmission and distribution line construction processes are directed at minimizing the environmental footprint in jurisdictional waters of the United States. Construction management processes, such as utilizing above-grade land clearing processes in rights-of-way development, have reduced siltation and erosion arising from the construction activities and the subsequent sediment deposition in jurisdictional waters of the U.S.

There are situations where, due to equipment malfunction, vehicle accidents or extreme weather events oil filled transmission or distribution equipment have oil spills. The remedial response for these spills and spill reporting requirements are governed by state and federal regulation. The Transmission and Distribution organizations' implementation of the oil spill response strategies has been effective in reducing the number of National Response Center (NRC) reportable spills. Desktop evaluations are conducted to determine water and habitat impacts of transmission line construction projects during the preliminary planning phase. These impacts and associated mitigation costs are included in the project documents that provide a basis for the corporate risk assessment. Oil storage and handling facilities have Spill Prevention Contingency Countermeasures (SPCC) plans. That help minimize and contain adverse impacts that could result from these spills.

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8.3c

Please explain why you do not know if any water bodies and associated habitats are significantly affected by discharge of water or runoff from your operations.

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#### Further Information

Entergy is involved in an administrative permitting process with the New York State Department of Environmental Conservation (NYSDEC) for renewal of the Indian Point 2 and Indian Point 3 water discharge permits. Entergy also submitted its application for a water quality certification to the NYSDEC in April 2009 which is still pending. The permit and Water Quality Certification issues relate largely to what constitutes Best Technology Available for minimizing impingement and entrainment impacts resulting from water withdrawn from the Hudson River and whether cooling towers will be

required in a renewed permit. For a discussion of these issues, please see Entergy's 2012 SEC 10K at page 238 - 239.

## Attachments

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/Executed Order on Consent-Entergy Nuclear Indian Point 2 3 LLC.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/Executed%20Order%20on%20Consent-Entergy%20Nuclear%20Indian%20Point%203%20LLC.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/2012\\_Entergy\\_Form\\_10K.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/2012_Entergy_Form_10K.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/2012\\_sustainability\\_report.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/8.Discharges/2012_sustainability_report.pdf)

## Page: Water-9-Intensity

### 9.1

Please provide any available financial intensity values for your company's water use across its operations.

Country or region	River basin	Financial metric	Water use type (megaliters)	Currency	Financial intensity (Currency/mega-liter)	Please provide any contextual details that you consider relevant to understand the units or figures you have provided.
United States of America	Other: Total Gen Fleet	Revenue	Withdrawals	USD(\$)	1.417	Entergy's water withdrawal financial intensity for 2012 was 1.417 megaliters / thousand USD Operating revenue. 2012 Operating Revenue was \$10,320,000,000 and water withdrawal was 14,600,000 megaliters. See 2012 Annual Report

### 9.2

Please provide any available water intensity values for your company's products or services across its operations.

Country or region	River basin	Product	Product unit	Water unit	Water intensity (Water unit/product unit)	Water use type	Please provide any contextual details that you consider relevant to understand the units or figures you have provided.
United States of America	Other: Salt Water Open Cycle	Electricity Generation	Other: GWh	megaliters	135.2	Withdrawals	Pilgrim Nuclear Power Plant utilizes a once through cooling system and withdrew 798,578 megaliters of water from the Atlantic Ocean during 2012. The plant generated 5,906.3 gigawatt hours (GWh) electricity.
United States of America	Other: Brackish Water Open Cycle	Electricity Generation	Other: GWh	megaliters	230.4	Withdrawals	Michoud, Sabine and Indian Point Power Plants utilize once through cooling systems and withdrew 5,147,279 megaliters of brackish water from the Gulf Intercoastal Waterway, Sabine River and Hudson River during 2012. These power plants generated 22,339.7 GWh of electricity.
United States of America	Other: Fresh Water Open Cycle	Electricity Generation	Other: GWh	megaliters	191.5	Withdrawals	13 power plants utilize once through cooling systems or hybrid systems and withdrew 8,143,627 megaliters of fresh water during 2012. These power plants generated 42,519.8 GWhs of electricity.
United States of America	Other: Ground Water Closed Cycle	Electricity Generation	Other: GWh	megaliters	5.3	Withdrawals	Hinds and Grand Gulf utilize closed cycle cooling systems and withdrew 35,923 megaliters of alluvial aquifer groundwater during 2012. These power plants generated 6,799.2 GWh of electricity
United States of America	Other: Fresh Water Closed Cycle	Electricity Generation	Other: GWh	megaliters	7.9	Withdrawals	17 power plants utilize closed cycle cooling systems and withdrew 470,742 megaliters of fresh water during 2012. These power plants generated 59,572.7 GWhs of electricity.
United States of America	Other: Wastewater Closed Cycle	Electricity Generation	Other: GWh	megaliters	1.5	Withdrawals	Entergy's Rhode Island State Energy (RISE) power plant utilizes a closed cycle cooling system and used 3,851 megaliters of treated municipal wastewater during 2012. RISE generated 2,495.8 GWhs of electricity
United States of America	Other: Total Generating Fleet	Electricity Generation	Other: GWh	megaliters	104.6	Withdrawals	Entergy's entire generating fleet withdrew 14,600,000 megaliters of water during 2012. Entergy's power plants generated 139,633.6 GWh of electricity

#### Further Information

As part of its Fleet Transformation initiative, Entergy continues to improve its withdrawal intensity by adding intermediate load, closed cycle cooling CCGT capacity with an intensity of 8.2 while retiring intermediate load, open cycle cooling legacy gas units with an intensity of 166.1. Since 2005 Entergy has added 3,991 MW of Closed Cycle CCGT capacity. Entergy's Integrated Resource Plans call for adding an additional 1,070 MW of CCGT capacity by 2020 while retiring 2,324 MW of Open Cycle Legacy Gas Units.

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#### **Attachments**

[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012\\_Investor\\_Guide.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012_Investor_Guide.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012 System IRP Report - Final 02Oct2012.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012_System%20IRP%20Report%20-%20Final%2002Oct2012.pdf)  
[https://www.cdproject.net/sites/2013/53/5653/CDP Water Disclosure 2013/Shared Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012\\_EAI\\_IRP\\_Filing\\_103112.pdf](https://www.cdproject.net/sites/2013/53/5653/CDP%20Water%20Disclosure%202013/Shared%20Documents/Attachments/CDPWaterDisclosure2013/9.WaterIntensity/2012_EAI_IRP_Filing_103112.pdf)

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**Please enter the name of the individual that has signed off (approved) the response and their job title**

Chuck Barlow  
Vice President Environmental Strategy & Policy

**CDP**