

# 2017 GRI Performance Indicators

## Environmental Performance



GRI Indicator	Indicator Title	2016	2017
<b>Aspect: Materials</b>			
G4-EN1	Materials used by weight or volume: Uncoated copy and printing paper only (pounds)	116,521	93,940
G4-EN2	Percentage of materials used that are recycled input materials: Uncoated copy and printing paper only	96%	95%
<b>Aspect: Energy</b>			
G4-EN3	Energy consumption within the organization (kBtu)	448,501,111	447,119,484
	a. Fuel consumption from non-renewable sources	126,545,486	128,908,346
	Natural gas	115,853,400	118,163,600
	Propane	340,869	379,316
	Gasoline (equip't)	72,838	78,500
	Diesel (equip't)	480,323	1,730,244
	Jet Fuel	5,167,395	4,100,460
	Gasoline (vehicles)	2,805,475	3,138,750
	Diesel (vehicles)	1,040,917	1,243,723
	E85 (vehicles)	117,640	73,753
	b. Fuel consumption from renewable fuel sources	666,628	417,932
	c. Purchased electricity, heating, cooling, steam	320,665,207	317,206,246
	d. Self-generated electricity, heating, cooling, steam	623,790	586,960
	e. Energy sold	0	0
G4-EN4	Energy consumption outside of the organization		
	Business air travel (passenger miles)	74,447,745	73,336,798
	Business ground travel (miles reimbursed)	1,081,193	1,010,516
	Business ground travel (rental car miles)	33,538	30,850
G4-EN5	Energy intensity of all buildings on campus (kbtu/ft <sup>2</sup> )	189	193
G4-EN6	Reduction of energy consumption	We calculate estimated energy savings relative to investment prior to implementing energy conservation measures. We only perform measurement and verification of major retrofits implemented through Energy Savings Performance Contracts due to the complexity of tracking these measures. See our Site Sustainability Plans for key the energy conservation measures we implemented in our facilities each year.	
G4-EN7	Reductions in energy requirements of products and services	PNNL sells contract research services that produce technical information for use by others. We do not manufacture or sell physical products. No direct environmental impacts are associated with the direct use of our research. Impacts associated with the production of this research are captured in other environmental performance indicators.	
Other-EUI	Energy intensity of buildings in the DOE energy use intensity (EUI) reduction goal (kbtu/ft <sup>2</sup> )	167	182
	Other-EnergyUse: Energy consumption subject to DOE EUI reduction goal (kBtu)	304,421	315,390
	Other-SF: Square footage subject to DOE EUI reduction goal (kft <sup>2</sup> )	1,823	1,733
<b>Aspect: Water</b>			
G4-EN8	Total water withdrawal (gallons)	514,245,939	532,106,483
	Municipal water	51,451,326	43,599,000
	River water	460,451,232	486,164,102
	Ground (well) water	2,343,381	2,343,381
G4-EN9	Water sources significantly affected by withdrawal of water	None	None
G4-EN10	Percentage and total volume of water recycled and reused	64%, or 293.9 million gallons	61%, or 323.3 million gallons
Other-WUI	Potable water use intensity (WUI) subject to DOE reduction goal (gallons/ft <sup>2</sup> )	24	15
Other-ILA	Water used for industrial, landscaping, and irrigation (ILA) (gallons) subject to DOE reduction goal	166,614,000	173,278,963
<b>Aspect: Biodiversity</b>			
G4-EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	<p>PNNL features a network of facilities that house offices and laboratories. The PNNL site occupies about 378 acres (1.5 km<sup>2</sup>) and is located in the Columbia Plateau ecoregion of south-central Washington State, just south of the U.S. Department of Energy (DOE) Hanford Site (586 square miles or 1,518 km<sup>2</sup>), on the north end of the City of Richland adjacent to the Columbia River. The PNNL campus lies several miles south of the Hanford Reach National Monument (HRNM), which protects the Hanford Reach of the Columbia River and the remaining surrounding shrub-steppe ecosystem that once blanketed the Columbia Plateau. The HRNM occupies about 305 square miles (790 km<sup>2</sup>) and is managed jointly by the U.S. Fish and Wildlife Service (USFWS) and U.S. Department of Energy (DOE).</p> <p>The Columbia River harbors three fish species listed under the federal Endangered Species Act of 1973, two that occur regularly in the Hanford Reach (spring-run Chinook salmon [<i>Oncorhynchus tshawytscha</i>] and steelhead [<i>Oncorhynchus mykiss</i>]), and one that occurs on a transient basis (bull trout [<i>Salvelinus confluentus</i>]). Thirteen plant species and four bird species currently listed as either endangered or threatened by the Washington State Department of Fish and Wildlife (WDFW) occur or potentially occur on the Hanford Site.</p> <p>Shrub-steppe and Columbia River riparian habitat also exist over a majority of the undeveloped portion of the PNNL site. This shrub-steppe area is approximately 306 acres (1.23 km<sup>2</sup>). Shrub-steppe features one or more layers of perennial bunchgrasses and a discontinuous layer of shrubs, the most prominent and widespread of which is big sagebrush (<i>Artemisia tridentata</i>). Shrub-steppe is listed as a priority habitat by the WDFW. Priority habitats have unique or significant value to a relatively diverse assemblage of species. Shrub-steppe has unique value to sagebrush obligate species such as the sage sparrow (<i>Amphispiza belli</i>) and sagebrush vole (<i>Lemmiscus curtatus</i>). There are currently no species federally listed or state-listed as threatened or endangered that are known to occur on the PNNL site.</p>	



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		<p>PNNL's Marine Sciences Laboratory consists of general-purpose, analytical, and wet lab space located on a campus covering 150 acres (0.61 km<sup>2</sup>) located in the Puget Lowland ecoregion on Sequim Bay in Washington's Puget Sound. MSL is located several miles from the Protection Island Aquatic Reserve, which occupies 23,778 acres (9,623 hectares) and is managed by the Washington State Department of Natural Resources for environmental, scientific, and educational purposes. The reserve encompasses 364-acre (147-hectare) Protection Island, the larger portion of which is operated by the USFWS as a National Wildlife Refuge, the other part of which consists of 48 acres (19 hectares) managed by the WDFW as the Zella M. Schultz Seabird Sanctuary. USFWS manages a 343-acre (139-hectare) marine buffer area located within 200 yards (183 meters) around the perimeter of Protection Island. The island and buffer area support large nesting seabird and seal populations. The Marine Sciences Laboratory campus supports a nesting area for bald eagles (<i>Haliaeetus leucocephalus</i>).</p>	
G4-EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	<p>The annual field biological survey of the PNNL site was completed in June, 2016. The vegetation map for the PNNL site was improved and updated, but no significant changes to baseline ecological conditions that had not been previously accounted for were identified.</p>	<p>The annual field biological survey of the PNNL site was completed in June, 2017. The vegetation map for the PNNL site was improved and updated to include lands reassigned from DOE-RL in January 2017, but no significant changes to baseline ecological conditions that had not been previously accounted for were identified.</p>
G4-EN13	Habitats protected or restored	<p>PNNL is contracting through the National Fish and Wildlife Federation to restore habitat on the Arid Lands Ecology Reserve in Benton County, Washington as mitigation for approximately 16 acres of sagebrush steppe habitat that was lost to allow construction of the Physical Sciences Facilities on the PNNL Site. The USFWS is the partnering agency and started initial work during the fall of 2015, planting of sagebrush seedlings at the restoration sites occurred in November 2016; site monitoring will continue until at least 2021.</p>	
G4-EN14	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	<p>Species listed as endangered, threatened, candidate, or of concern to the USFWS, the National Marine Fisheries Service, WDFW, or Washington Department of Natural Resources are listed in Chapter 1 of the PNNL Annual Site Environmental Report (PNNL-26735). Most of the listed species or species of concern at the PNNL site and the MSL site either have not been evaluated for the IUCN Red list or are listed as "least concern." The Townsend's ground squirrel (<i>Spermophilus townsendii</i>), which occurs on or near the PNNL site, is listed as "vulnerable". PNNL prepares biological assessments and works with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service to evaluate potential impacts of proposed PNNL research and other activities to species listed under the federal Endangered Species Act.</p>	
<b>Aspect: Emissions</b>			
G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1) (MTCO <sub>2</sub> e)	11,455	12,145
G4-EN16	Energy indirect GHG emissions (Scope 2) (MTCO <sub>2</sub> e)	29,443	39,042
G4-EN17	Other indirect GHG emissions (Scope 3) (MTCO <sub>2</sub> e)	22,804	23,215
G4-EN18	GHG emissions intensity		
	Scope 1 & 2 emissions (lbs of CO <sub>2</sub> e) per dollar of operating budget	0.10	0.11
	Scope 3 (MTCO <sub>2</sub> e) per employee	5.1	5.2
G4-EN19	Reduction of GHG emissions	<p>Most of PNNL's scope 1 and 2 GHG emissions are from energy use in our buildings, therefore initiatives to manage these emissions focus on building energy conservation measures. Scope 3 emissions are managed through efforts to reduce commute and business travel.</p> <p>See Focus Areas and Goals for total reductions in building energy use and scope 1, 2, and 3 GHG emissions. Specific conservation measures are described in the annual Site Sustainability Plans. GHG emission reporting is done in accordance with the Revised Federal Greenhouse Gas Accounting and Reporting Guidance and includes CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>.</p>	
G4-EN20	Emissions of ozone-depleting substances by weight (in CFC-11 Equivalent, Tonnes)	0.0028	0.0122
	R12	0.00021	0.000028
	R22	0.00187	0.00996
	R123	0.00054	0.00218
	403B	0	0
	414B	0.000179	0
Other-Scope1&2	Direct (Scope 1) and energy indirect (Scope 2) GHG emissions subject to DOE reduction goals, before renewable energy credits (MTCO <sub>2</sub> e)	40,898	51,187
Other-Scope1&2_RECs	Direct (Scope 1) and energy indirect (Scope 2) GHG emissions subject to DOE reduction goals, after renewable energy credits (MTCO <sub>2</sub> e)	2,233	35,764
Other-Scope3	Other indirect GHG emissions (Scope 3) subject to DOE reduction goals (MTCO <sub>2</sub> e)	22,804	23,215
G4-EN21	NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emissions by type and weight (Kg)		
	NO <sub>x</sub>	3,694	4,439
	SO <sub>2</sub>	33	40
	VOC	800	814
	HAPs	357	300
	PM	451	545
CO	5,723	6,980	
<b>Aspect: Effluents and Waste</b>			



GRI Indicator	Indicator Title	2016	2017
G4-EN22	Total water discharge by quality and destination (Gallons)	514,245,939	530,937,850
	Discharge to Municipal Sewer	25,435,732	21,051,692
	Discharge to Ground	168,293,098	165,834,330
	Discharge to River	293,876,391	323,340,102
	Discharge to Air	26,640,718	20,711,726
G4-EN23	Total weight of waste by type and disposal method (Tons)		
	Recycled	646	591
	Recycled Demolition	309	403
	Landfilled	562	387
	Compost	16	8
	Regulated Hazardous Waste	34	33
	Rad-Containing Waste - Landfilled	295	8.7
G4-EN24	Total number and volume of significant spills	0	0
G4-EN25	Weight of waste deemed hazardous under the terms of the Basel Convention and percentage of transported waste shipped internationally	0	0
G4-EN26	Water bodies and related habitats significantly affected by the organization's discharges of water and runoff	<p>PNNL has a small discharge from Hanford 300 Area Facilities to the Columbia River. This discharge does not meet any criteria requiring a discharge permit therefore it does not have a significant impact on the Columbia River. It is extremely small compared to average flow of the Columbia River, which is not considered to be a sensitive or unusually diverse water body.</p> <p>The MSL has a small permitted discharge into Sequim Bay. This water goes through a multistage treatment process prior to discharge, rendering it insignificant. Sequim Bay is a relatively large receiving water body, connected to the marine environment. It is not considered to be sensitive or unusual in biodiversity, thus this discharge does not significantly affect the receiving water body.</p>	
Other-Waste	Rate of recycling and composting of non-hazardous waste	54%	60%
<b>Aspect: Compliance</b>			
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	0	0
<b>Aspect: Environmental Grievance Mechanisms</b>			
G4-EN34	Number of grievances about environmental impacts	0	0