

Module: Introduction**Page: Introduction****CC0.1****Introduction**

Please give a general description and introduction to your organization.

Northrop Grumman Corporation is a publicly owned company whose common stock is listed on the New York Stock Exchange (NYSE: NOC). Northrop Grumman is a leading global security company providing innovative systems, products and solutions in unmanned systems, cyber; command, control, communications and computers (C4), intelligence, surveillance, and reconnaissance (C4ISR); and logistics and modernization to government and commercial customers worldwide through four business units: Aerospace Systems, Electronic Systems, Information Systems and Technical Services. Northrop Grumman's primary customer is the U.S. federal government, supporting military and civil systems and platforms to further national security. Northrop Grumman products and solutions for the military and civilian customers are responsible for provision of critical environmental, geophysical data used by the military, scientific and policy communities to understand the impacts of climate change.

Northrop Grumman established its environmental sustainability program, greeNG, to evaluate and address the company's risks and opportunities related to climate change. The greeNG program is responsible for strategic planning and driving change throughout the company to achieve the environmental sustainability goals. A foundational, strategic element of the greeNG program is the ECO-model(TM), an internally -developed model that evaluates the financial and environmental risks and returns to inform a comprehensive and balanced analysis of risks and opportunities.

Reporting year 2014 marked the completion of Northrop Grumman's first set of Environmental Sustainability goals to:

- Reduce greenhouse gas (GHG) emissions intensity (metric tonnes of carbon per \$million sales) 25% from the 2008 base year during the period of performance 2010-2014; and
- Achieve a 75 percent implementation level of solid waste reduction and water conservation best management practices (BMPs) for all large (100,000 square feet or greater) owned and leased buildings with a period of performance from 2011-2014.

We achieved our inaugural GHG reduction goal of 25% carbon intensity at year-end 2012, two years ahead of plan with a 25.3% intensity reduction. Through 2014, we sustained performance with a 26.3% intensity reduction relative to the 2008 base year. This reduction is equivalent to a 31.4% absolute reduction. We achieved our goal of 75% implementation of solid waste reduction and water BMPs, achieving a 96.5% implementation rate of solid waste reduction BMPs and a 79.3% implementation rate of water conservation BMPs.

Announced April 22, 2014, Northrop Grumman has committed to the following 2020 GHG reduction goal: to reduce absolute GHG emissions 30% from 2010 levels. Northrop Grumman was intentional in its transition to an absolute GHG reduction goal, in recognition of i) expectations to perform, ii) ability to perform and iii) climate and atmospheric science reports and models, including "The 3% Solution: Driving Profits Through Carbon Reduction" published by CDP and WWF in 2013.

CC0.2**Reporting Year**

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

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year. Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Wed 01 Jan 2014 - Wed 31 Dec 2014
Tue 01 Jan 2013 - Tue 31 Dec 2013
Sun 01 Jan 2012 - Mon 31 Dec 2012
Sat 01 Jan 2011 - Sat 31 Dec 2011
Fri 01 Jan 2010 - Fri 31 Dec 2010
Thu 01 Jan 2009 - Thu 31 Dec 2009
Tue 01 Jan 2008 - Wed 31 Dec 2008

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
United States of America
United Kingdom
Netherlands
Norway
Denmark
Germany
France
Italy
Belgium
Australia

CC0.4**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

CC0.6**Modules**

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sub-industries, companies in the oil and gas sub-industries, companies in the information technology and telecommunications sectors and companies in the food, beverage and tobacco industry group should complete supplementary questions in addition to the main questionnaire.

If you are in these sector groupings (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

The highest level of responsibility for climate change resides with Northrop Grumman's Chairman, Chief Executive Officer (CEO) and President, Wes Bush, the Policy Committee of the Board of Directors (BOD; sub-set of the Board) and the Corporate Policy Council. The Corporate Policy Council is comprised of the CEO, Chief Financial Officer, Chief Human Resources Officer, business unit (sector) presidents and the Corporate Vice Presidents of the Law Department, Government Relations, and Communications. Performance goals are established for purposes of determining executive compensation; Environmental performance is linked to executive compensation as one of six non-financial metrics. The Environmental Performance goal is directly related to achievement of the company's environmental sustainability goals, i.e., greenhouse gas (GHG) emissions reductions and implementation rates of solid waste reduction and water conservation best management practices (BMPs). The Environmental Sustainability Program (greeNG) Director leads the development of the program strategy and works with the

Environmental, Health and Safety Leadership Council (ELC) and the Facilities Working Council (FWC) to implement the sustainability strategy and tactical plans for the enterprise. The ELC is comprised of the Corporate Environmental, Health and Safety (EHS) Director, sector EHS Directors and EHS Counsel. The FWC consists of facilities management directors from each business unit and is chaired by the corporate Director of Facilities and Real Estate.

The ELC supports climate change mitigation efforts by tracking GHG emissions, leading implementation of resource reduction projects, engaging employees through greeNG Employee Resource Groups (ERGs) and working with the FWC to reduce facility GHG emissions and deploy solid waste and water use BMPs across the enterprise. The FWC supports the environmental performance objectives by implementing facilities projects that fulfil BMP requirements and reduce GHG emissions through energy-efficiency prioritization, management of the enterprise real estate footprint, process optimization and employee awareness and engagement.

The greeNG Program Director (sustainability director) is a corporate program manager, reporting to the Corporate EHS Director and Vice President of Corporate Responsibility. The greeNG Program Director's responsibilities include developing the enterprise strategic environmental sustainability approach, ensuring that all enterprise level initiatives are accomplished, and sector-coordinated activities assist in meeting reduction goals. An overall business objective of the program is the integration of greeNG as a core business value and a decision criterion at every level and throughout business process across the company.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction project Emissions reduction target	• Attainment of environmental performance targets: Environmental sustainability is one of six non-financial metrics on our corporate performance scorecard. The environmental performance metric is comprised of performance relative to three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Performance to these metrics is reported annually to the Board of Directors and factor into executive compensation.
Corporate executive team	Monetary reward	Emissions reduction project Emissions reduction target	• Attainment of environmental performance targets: Environmental sustainability is one of six non-financial metrics on our corporate performance scorecard.. The environmental performance metric is comprised of performance relative to three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Performance to these metrics is reported annually to the Board of Directors and factor into executive compensation.
Management group	Monetary reward	Emissions reduction project Emissions reduction target	• Attainment of environmental performance targets: Environmental sustainability is one of six non-financial metrics on our corporate performance scorecard.. The environmental performance metric is comprised of performance relative to three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Performance to these metrics is

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
			reported annually to the Board of Directors and factor into executive compensation.
Business unit managers	Monetary reward	Emissions reduction project	<ul style="list-style-type: none"> Attainment of environmental performance targets: Environmental sustainability performance is one of the non-financial performance metrics used to determine employee incentive program awards for those business unit managers whose performance impacts the company's environmental performance. The environmental performance metric is comprised of three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Performance to these metrics is reported annually to the Board of Directors and factor into executive compensation.
Environment/Sustainability managers	Monetary reward	Emissions reduction project Emissions reduction target	<ul style="list-style-type: none"> Attainment of environmental performance targets: Environmental performance is one of six non-financial performance metrics used to determine employee incentive program awards for the Environmental/Sustainability manager. The environmental performance metric is comprised of performance relative to three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Environmental performance is reported by each business sector to the CEO, Board of Directors (BoD) Compensation Committee, and the BoD's Policy Committee.
Facility managers	Monetary reward	Emissions reduction project Energy reduction project	<ul style="list-style-type: none"> Attainment of environmental performance targets: Environmental sustainability performance is one of the non-financial performance metrics used to determine employee incentive program awards for facility managers where performance impacts the company's environmental performance. The environmental performance metric is comprised of performance relative to three sub-metrics including reduction of GHG emissions and implementation of solid waste and water best management practices. All three components are linked to climate change. Performance to these metrics is reported annually to the Board of Directors and factor into executive compensation.
All employees	Recognition (non-monetary)	Emissions reduction project Behaviour change related indicator	<ul style="list-style-type: none"> Awards: The Chairman's Awards for Excellence are presented annually to teams that achieve extraordinary financial achievement and outstanding contributions to program excellence, operational excellence, and customer excellence, including contributions that further environmental initiatives and reduce the corporate footprint. Employees may submit GHG reducing initiatives via the company's Innovation Challenges, for which winners may receive a monetary award and recognition in company newsletters and announcements.

Further Information

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	Global	3 to 6 years	The scope of the climate change risk management process includes a) financial risks, resulting from variable costs of energy and emissions-related resources (e.g., gases, refrigerants); b) competitive advantage opportunities gained via operational efficiency and in-house energy management expertise for customers; c) regulatory risks and opportunities from international sales and operations, including countries where GHG emissions reporting and regulations are more stringent than the U.S.; d) human resources risks and opportunities related to attracting, acquisition and retention of talented employees who value the company's commitment to environmental sustainability; e) investor/shareholder risks and opportunities relative to the company's environmental performance goals and achievements; f) physical climate risks associated with severe weather intensity and frequency to our operations and those of our suppliers.

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

The risks and opportunities associated with climate change were assessed at an enterprise (company) level using historical GHG reduction performance data, current and projected business plans, energy and water markets, climate science data and current and projected regulations. The factors were integrated into a model and run using the following scenarios: a) Do Nothing (i.e., status quo), b) Minimum Impacts (all factors at lowest projected outcome) and c) Maximum Impacts (all factors at highest projected outcome). The range informed the degree of risk associated with the upper and lower boundary of the modelled outputs.

At the operational level, risks and opportunities were assessed at an asset and systems level through energy, water and solid waste assessments at our large sites with outside experts and internal process owners. Examples included building systems (e.g., HVAC, lighting), business processes and manufacturing operations (e.g., ovens, test equipment) for GHG reduction opportunities; cooling tower and business process water systems for water use reduction opportunities and solid waste disposal practices, diversion programs and efficacy of each for solid waste reduction opportunities. The opportunities were evaluated at the business unit (sector) level and prioritized based on i) feasibility, ii) magnitude of impact and iii) financial control of assets and/or systems.

Announced April 22, 2014, Northrop Grumman committed to the following 2020 GHG reduction goal: to reduce absolute GHG emissions 30% from 2010 levels. The transition to an absolute reduction goal from the prior intensity reduction goal was influenced by three main factors: i) ability to perform, ii) expectations to perform and iii) science-based GHG reduction research, including CDP and WWF's "The 3% Solution: Driving Profits Through Carbon Reduction" 2013 report.

CC2.1c

How do you prioritize the risks and opportunities identified?

Each set of opportunities were reviewed against three criteria: i) ROI, ii) environmental benefit (e.g., MTCO_{2e}, water use, solid waste reduction), and iii) risk factor. The list of opportunities is then prioritized based on their integrated assessment ranking.

The results of the risk and opportunity assessments and proposed mitigation strategies are then reported to and reviewed for technical input and counsel by the a) Environmental, Health and Safety Leadership Council (ELC): Corporate Environmental, Health & Safety (EHS) team, sector EHS Directors, and EHS Legal Counsel), b) Facilities Working Council (Facilities and Real Estate Management directors) for technical input and counsel, and c) Engineering/Manufacturing and Operations/Logistics teams. The outcome of the briefings and implementation plans are then relayed to the c) Corporate Policy Council, d) Corporate Responsibility department, and e) Board of Directors. The final list of opportunities is comprised of projects that fulfill the Board-driven requirements and provide the foundation for the greenNG 2.0 performance plans.

CC2.2

Is climate change integrated into your business strategy?

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

i) The business strategy has been influenced through: a) sustained emphasis on operational efficiency, b) support for impact assessments necessary to understand and evaluate GHG emissions associated with business plans and decisions, c) capacity-building and cross-business unit collaboration in support of customer needs and program execution, d) forecasting and strategic positioning of Northrop Grumman's capabilities in support of customer needs in climate change-relevant programs (e.g., energy security).

Northrop Grumman established environmental performance metrics to inform progress toward the corporate environmental sustainability goals, including GHG emissions reduction, as one of the six non-financial performance metrics that determine executive compensation. This commitment by the Board of Directors and executive team encourages strong support throughout the organization.

ii) Climate change aspects that have influenced the strategy include: a) regulatory requirements, b) energy costs and market vulnerabilities, c) changing weather patterns and severity, d) business continuity risks and e) uncertainty.

iii) The most important short-term strategy are a suite of GHG emissions reduction opportunities, b) return on investment of emissions-reduction initiatives, c) diversity of opportunities across functional areas and business units, d) mitigation and avoidance planning to effectively manage business growth and long-term strategic plans e) stakeholder engagement opportunities. Our short-term strategy is linked to our GHG reduction target. For example, in 2014 we implemented GHG reduction activities ranging from lighting upgrades to replacement of thermal test chambers to retirement of larger UNIX servers, all of which contributed to our GHG emissions reduction performance.

iv) The most important components of the long-term strategy that have been influenced by climate change include a) research and development investment costs and opportunities and b) human and financial resources necessary to support the research, development and sustainment efforts and c) examination of alternative and renewable energy systems on-site and through PPAs. Our long-term strategy is linked to our GHG reduction target. For example, in 2014, we conducted a business unit-wide assessment of the opportunities and potential for alternative and renewable energy systems to understand the GHG emissions reduction potential and the feasibility and prioritization of the different energy systems or combinations of energy systems at diverse sites across the United States.

v) The short-and long-term strategic planning integration has given Northrop Grumman a competitive advantage by supporting a) operational efficiency to support competitive pricing and agility to anticipate and meet customer needs, b) strategic positioning for contract competition, c) integration of climate change impacts into products and services that support Executive Orders 13423 and 13514 (succeeded by 13693 in March 2015) for U.S. government customers, and d) leveraging Northrop Grumman's capabilities in cutting-edge fields to predict and respond to climate change issues as they affect customers, now and in the future.

vi) Significant business decisions made in 2014 include: Northrop Grumman announced its commitment to an absolute GHG reduction goal to drive energy and process efficiency; purchased bulk energy to maintain cost stability of energy in energy-volatile markets and integrate more renewable energy into our portfolio to mitigate regulatory risks (e.g., AB32); continued support of the U.S. Air Force (USAF) bases' energy management program (reduce USAF's risks, energy costs, and Scope 1, Scope 2 emissions); finalized plans and initiated construction of a Northrop Grumman Center of Excellence in St. Augustine, FL, in conformance with LEED certification design criteria, including installation of solar roof PV panels.

CC2.2c

Does your company use an internal price of carbon?

No, and we currently don't anticipate doing so in the next 2 years

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

- Direct engagement with policy makers
- Trade associations
- Other

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Energy efficiency	Neutral	Northrop Grumman is a member of the National Association of Manufacturers (NAM) and engages in pertinent policy issues as they relate to our business and sustainability commitments. The NAM fully supports the ongoing national effort to protect our environment and improve public health through appropriate laws and regulations. American industry has established a strong record in environmental protection, and these achievements can generate further progress, looking forward toward reducing environmental impacts and increasing sustainability in operations.	The NAM believes that the objectives of the Clean Air Act to protect public health and welfare are desirable and supportable and believes that fostering a climate of technological innovation best achieves environmental objectives. American industry is achieving significant improvements in air quality. Because of the enormity of capital expenditure and operation and maintenance costs associated with compliance with federal air quality programs, the NAM believes that federal policymakers must seek out thorough, balanced, sound and objective scientific studies before making regulatory decisions. The NAM also recognizes that manufacturers who make market-based decisions to deploy energy efficient technology also reduce emissions that may fall under the jurisdiction of the Clean Air Act. The NAM recognizes that appropriate use of market-based mechanisms achieve environmental objectives more effectively than command-and-control programs.
Adaptation resiliency	Support	Northrop Grumman employees serve as members of scientific organizations, including the National Academy of Sciences (NAS) Board on Atmospheric Sciences and Climate. The Board advises Congress and governmental organizations such as the U.S. Global Change Research Program (USGCRP) regarding strategic decision-making on topics related to and directly impacted by global climate change.	The NAS Board advises Congress and governmental organizations such as the National Science Foundation and the U.S. Global Change Research Program (USGCRP), agencies including the Department of Defense (DoD), NASA, NOAA, and other agencies that address national security, regarding strategic decision-making on topics related to and directly impacted by global climate change.

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
International Aerospace Environmental Group	Consistent	IAEG™ is a non-profit corporation comprised of a global group of aerospace companies, established to facilitate harmonization of compliance amongst Aerospace Companies and their supply chains with the existing and emerging laws and regulations protecting human health and the environment. IAEG™ plans to achieve its objectives by promoting the development of voluntary consensus standards published by an independent standards organization harmonizing environmental requirements applicable to aerospace companies. For example, the IAEG GHG work group identified the need to develop a voluntary consensus standard for GHG Reporting, to drive common and consistent GHG reporting across aerospace companies and their suppliers, to promote improved accounting and accountability for GHG emissions reductions.	Engagement: Northrop Grumman is a founding Board member of IAEG and actively engaged in the organization's strategy and direction. Northrop Grumman representatives at the Board and Work Group levels provide strategic direction and practical solutions for achieving the goals of the organization and the work groups. During 2014 Northrop Grumman representatives were significant contributors to the development and publication of the IAEG's first milestone deliverable with the publication of the "GHG Reporting Guidance for the Aerospace Industry" (published June 2014). The Guidance was developed in consultation with the World Resources Institute (WRI) and in accordance with WRI's "Built on GHG Protocol" standards.

CC2.3g

Please provide details of the other engagement activities that you undertake

Conservation International, environmental NGO – Partner, Advisor

i) Northrop Grumman's engagement with Conservation International (CI) is a partnership that began with the formal stand-up of the corporate greeNG program in 2009. Northrop Grumman became a member of CI's Business and Sustainability Council, a forum for corporate sustainability leaders to gain access to CI's thought leadership and science, practical experience from the field and shared best practices across corporations to inform corporate sustainability strategy and drive performance. The Northrop Grumman Foundation collaborated again in 2014 on the ECO Classroom Program, a joint initiative with CI to promote awareness and enhance environmental science education for middle and high school teachers nationwide by providing a group of teachers the opportunity to study alongside CI's scientists at the La Selva Biological Station in Costa Rica.

ii) Topics of engagement with CI in 2014 included a) the greeNG 2.0 GHG reduction goal, b) greeNG 2.0 solid waste and water goals, strategy and implementation initiatives, and c) industry trends and leadership commitments such as zero waste reduction goals. In 2014, CI continued to provide guidance and counsel to the greeNG program, supporting the greeNG program's commitment to objectivity and external stakeholder perspective. With the ECO Classroom, the primary topic of engagement is Science, Technology, Engineering and Math (STEM) education awareness and promotion.

iii) The nature of the engagement with CI in 2014 included a) participation in the Business and Sustainability Council's annual member meeting with discussions related to the energy-water-food nexus, b) attendance and participation in webinars related to industry best practices, c) direct consultation with CI advisors about the planning process, proposed goals and communications related to Northrop Grumman's 2020 GHG reduction goal and d) facilitation of two workshops conducted with a cross-sector, cross-functional team to develop implementation plans in support of the greeNG 2.0 solid waste and water goals. The Northrop Grumman Foundation provided financial and administrative support for execution of the ECO Classroom, managing the application and selection process and the logistics coordination for the selected teachers for their trip to Costa Rica.

iv) In consultations with CI related to stakeholder engagement and 'expectations to perform', actions advocated via the partnership with CI included advocating for and defining transparency strategies to optimize stakeholder engagement and buy-in related to Northrop Grumman's greeNG 2.0 goals. The Northrop Grumman Foundation and CI promoted the ECO Classroom to improve awareness of the program's offering

CC2.3h

What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Through and with the Environmental, Health and Safety Leadership Council (ELC) and the Facilities Working Council (FWC), as well as through direct contact and coordination with the Government Affairs and Communications departments, the greeNG program monitors and conducts periodic (e.g., quarterly) updates and check-ins with the leaders of these organizations to ensure that open, two-way communications is maintained. Where necessary, the greeNG Program supports these organizations' efforts where policy positions are discussed, often by providing the perspective of proposed policy impacts on Northrop Grumman's environmental performance goals and the environment and climate. The cross-functional composition of the ELC and FWC allows the greeNG Leadership Team to coordinate and influence the engagement with policymakers to ensure the engagement is consistent with our overall climate change strategy. Our communications process assures that climate change-related communications are reviewed for overall consistency with our direction and strategic focus.

International Aerospace Environmental Group (IAEG): The Corporate EHS Director initiated the membership with IAEG in 2011, on behalf of Northrop Grumman, and the greeNG Program Director and Senior Environmental Legal Counsel serve on the Board of IAEG. Through monthly teleconferences and semi-annual meetings, the Northrop Grumman Board members and work group liaisons engage with IAEG on the implementation process in response to policy and regulatory requirements and voluntary programs. Northrop Grumman directly supports the Chemical Reporting, GHG Reporting and Supply Chain Environmental Harmonization Work Groups.

CC2.4

Would your organization's board of directors support an international agreement between governments on climate change, which seeks to limit global temperature rise to under two degree Celsius from pre-industrial levels in line with IPCC scenarios such as RCP2.6?

CC2.4a

Please describe your board's position on what an effective agreement would mean for your organization and activities that you are undertaking to help deliver this agreement at the 2015 United Nations Climate Change Conference in Paris (COP 21)

CC3.1

Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?

Absolute and intensity targets

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
Abs1	Scope 1+2	100%	30%	2010	734353	2020	Announced April 22, 2014, Northrop Grumman has committed to the following 2020 GHG reduction goal: to reduce absolute GHG emissions 30% from 2010 levels. The transition to an absolute reduction goal from the prior intensity reduction goal was influenced by three main factors: i) ability to perform, ii) expectations to perform and iii) science-based GHG reduction research, including CDP and WWF's The 3% Solution: driving Profits Through Carbon Reduction 2013 report.

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
Int1	Scope 1+2	100%	25%	metric tonnes CO2e per unit revenue	2008	0.000033	2014	We achieved our inaugural GHG reduction goal of 25% carbon intensity at year-end 2012, two years ahead of plan with a 25.3% intensity reduction. Through 2014, we sustained performance with a 26.3% intensity reduction through 2014, relative to the 2008 base year.

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	30.3	No change	0	The goal boundary is Scope 1 and 2 for both absolute and intensity goals.

CC3.1d

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions)	Comment
Int1	100%	100%	We achieved our inaugural GHG reduction goal of 25% carbon intensity at year-end 2012, two years ahead of plan with a 25.3% intensity reduction. Through 2014, our measured footprint represents a 26.2% intensity reduction from our 2008 baseline, meeting our goal to maintain a 25% intensity reduction for 2014.
Abs1	40%	19%	The 2014 GHG emissions reduction contributed to our performance to-date on the absolute reduction goal

CC3.2

Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?

Yes

CC3.2a

Please provide details of how the use of your goods and/or services directly enable GHG emissions to be avoided by a third party

Northrop Grumman, in partnership with L3 Communications, designed an advanced hybrid electric drive for surface combatant ships as part of the Navy's (customer) interest in understanding the feasibility of a hybrid topology in the CG Class vessels.

i) How emissions are/were avoided by the third party:

The hybrid electric drive topology results in reduced fuel saving 21,000 barrels per year, equivalent to an estimated 24 percent from traditional topology.

ii) An estimate of the amount of the emissions that are/were avoided over the time (must include timescale over which emissions are avoided or baseline year):

The hybrid electric drive system results in propulsion turbine engines emissions reduction of 4,354 tons CO₂/year, equivalent to an estimated 3,900 MTCO_{2e} annual emissions avoidance/reduction.

iii) Methodology, assumptions, emission factors and GWPs (if figure given in CO_{2e}) used for the estimations:

The estimated MTCO_{2e} reduction associated with the hybrid electric drive system assumes a ship's electrical power demand to be the a constant average 24-hour load, defined by the U.S. Navy as approximately 2,600 kW, and an 35% average of ship's operational time at 9 knots or less. To calculate the MTCO_{2e} reduction, the 24 percent annual fuel consumption savings, 21,000 barrels of fuel oil was converted into MTCO_{2e}: 21,000 barrels X 42 (1 barrel of oil is equivalent to 42 U.S. gallons) = 882,000 gallons fuel oil x 4.46 kg/CO₂ (liquefied natural gas, TCRGRP 2014) equals an estimated 3,900 kg CO₂ = 3,900 MTCO_{2e}.

CC3.3

Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO_{2e} savings

Stage of development	Number of projects	Total estimated annual CO _{2e} savings in metric tonnes CO _{2e} (only for rows marked *)
Under investigation	0	
To be implemented*	0	0
Implementation commenced*	65	24126
Implemented*	65	24126
Not to be implemented	0	

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Energy efficiency: Building services	Improvements to HVAC and mechanical equipment, boilers, lighting, electrical equipment, compressed air and motors.	5100	Scope 1 Scope 2	Voluntary	500000	3400000	4-10 years	6-10 years	The estimated lifetime of the emissions reduction activities are 5-20 years, depending on type of project. Energy efficiency projects implemented in 2014 required additional investment as the "low hanging fruit" opportunities from the first goal period efforts had been realized. Project investments for the year averaged a 6.5 year payback period; however the total program investment over the goal period averaged less than 4 years.
Process emissions reductions	Engineering, Manufacturing and Operation process improvements. Projects included equipment and process improvements related to thermal test chambers, gas abatement systems, and spray process improvements.	6000	Scope 1 Scope 2	Voluntary	0	0	4-10 years	21-30 years	Projects in engineering and manufacturing operations focused on behavioral changes and process optimization, including thermal test chambers scheduling and utilization, gas abatement systems and equipment shutdown programs.
Other	green IT initiatives, including a) client refresh at cycles of 4+ years and with EPEAT-rated equipment; b) extended refresh rate and relative improvement of energy efficiency realized via refreshed equipment, and c) retirement of larger UNIX servers and migration to Linux or Windows platforms where feasible	1300	Scope 1 Scope 2	Voluntary			<1 year	6-10 years	There was no net investment required for 2014 green IT emissions reduction activities; initiatives were integrated into core business funding.

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy purchase	Procurement of vintage year 2014 certified renewable energy certificates (RECs), retired upon purchase. Purchase of solar power from the landlord through a leased facility a power purchase agreement (PPA) NGC helped the landlord establish with the utility company.	11726	Scope 2	Voluntary			>25 years	6-10 years	Northrop Grumman considers REC purchases a long-term GHG reduction strategy and internal protocols require an 8-year minimum purchase. Therefore, we procure and retire current vintage year RECs each year.

CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	The Board of Directors approved a budget of more than \$40 million for the five years of the goal period (2010-2014) for implementation of projects to reduce GHG emissions, enterprise-wide. Approximately 8.5 % of the allocated funds were used to implement energy efficiency initiatives in 2014.
Internal incentives/recognition programs	As one of six non-financial metrics (of the nine total performance metrics) that determine executive compensation, progress toward achieving the performance (and implementation of solid waste and water BMPs); in 2014, the performance metric was linked to sustainment of the 25% GHG intensity reduction. Business units (sectors) offer financial incentives for employee contributions and innovative ideas that help further progress toward corporate environmental sustainability goals of GHG emissions reductions, solid waste reduction, and water conservation.
Employee engagement	Northrop Grumman continues to host Innovation Challenges for employees, offering financial incentives to employees whose ideas make it to the semi- and final selection. Some business units support environmental teams with dedicated budgets to explore manufacturing, engineering and operations opportunities for emissions reductions. These teams have been very successful in identifying large and small emissions reductions activities, most often by evaluating processes and work flows objectively to identify inefficiencies and/or opportunities for reduced energy and/or gas/refrigerant loads. Through improved awareness of the company's environmental sustainability goals, accomplished through targeted and expanded communications, including internal Innovation challenges and Innovation Idea lines, employees are able to submit ideas for energy and resource use reductions to the business unit and corporate greeNG program team. Where viable, these ideas are incorporated into the planning process and implemented.

Method	Comment
	Employees are then often featured in internal magazines, newsletters and websites. Through greenNG employee resource groups, Northrop Grumman employs a grassroots-approach to employee engagement, giving employees opportunities to participate in and learn more about environmental sustainability goals and supporting activities. Progress toward the GHG reduction goal has benefitted from innovative ideas that are directly attributable to these groups.

Further Information

Page: CC4. Communication

CC4.1

Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s)

Publication	Status	Page/Section reference	Attach the document
In voluntary communications	Underway - previous year attached	25-30	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC4.1/2013-noc-cr-report.pdf
In mainstream financial reports but have not used the CDSB Framework	Complete	6, 9,12-13, 15	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC4.1/NorthropGrumman_10K_20150202.pdf

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Emission reporting obligations	Northrop Grumman is subject to federal/national, state, and local GHG reporting requirements. For example, we are subject to facility emissions reporting to the California Air Resource Board (CARB) for applicable facilities in California in accordance with Assembly Bill 32 (AB32).	Increased operational cost	3 to 6 years	Direct	Likely	Low	The potential financial implications of cap and trade schemes (e.g., AB32) include increased energy costs for applicable facilities/operations and potential cap-and-trade emissions purchases. The potential financial implications include applicability of the cap-and-trade value of credits for emissions above the industry threshold. In 2014, the cap-and-trade credits cost approximately \$12 per MTCO _{2e} which would increase future operating costs to mitigate emissions and purchase offsets. (Not applicable in 2014)	The methods used to manage these risks include implementation of energy efficiency and GHG reduction assessments to identify energy optimization opportunities. We conducted assessments across the enterprise in 2013 and 2014, and implemented an energy efficiency shop-floor training tailored to the specific manufacturing operations (e.g., compressed air, equipment use schedules).	The cost of the assessments and training totaled approximately \$62,000.
Emission reporting obligations	The United Kingdom (UK) CRC Energy Efficiency Scheme poses potential financial risks because Northrop Grumman has operations in the UK and potential for expansion. Expansion of our	Increased operational cost	>6 years	Direct	More likely than not	Low	The potential financial implications would be increased operational costs for applicable UK facilities and potentially increase capital costs for new or expanded facilities. Under the current tax structure, increased costs are projected to be recoverable based on Northrop	The methods used to manage this risk include strategic infrastructure planning and energy management. We maintain an energy use and GHG inventory for our global operations and	The costs associated with these risks are currently net zero (\$0) as Northrop Grumman monitors energy use amounts through our energy reporting system

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	real estate footprint and/or operational intensity may result in exceedance of the energy use threshold, making us subject to the tax and increasing operational costs.						Grumman's energy efficiency investment calculus which has averaged less than a 4 year ROI since 2010.	monitor regulatory and/or tax applicability regularly.	(estimated annual operating costs = \$150,000) to monitor energy use, averages and anomalies, to mitigate regulatory, use rate and systemic risks.
Fuel/energy taxes and regulations	An increase in fuel and/or energy prices from shifts in the energy market will have direct financial impacts on Northrop Grumman. These costs would create increased operational costs if the through increased operational costs.	Increased operational cost	>6 years	Direct	About as likely as not	Medium	The potential financial implications of an increase in energy prices include increased operating costs, which could affect Northrop Grumman's cost structure and competitive rate advantage. In accordance with California energy requirements, Northrop Grumman must buy renewable portfolio standard (RPS) credits from CA-certified sources. These credits/units are 3-4 times more expensive than national green-e certified RECs at approximately \$12/MTCO _{2e} . Therefore, the financial implications are energy management prices at 3-4x the cost for a certain proportion of our energy demands, with the expectation that the costs of the RPS credits will continue to increase	Management methods deployed to address the California energy market requirements included addition of a GHG clause into energy procurement broker contracts to ensure purchases fulfill CA energy specifications. Northrop Grumman bulk purchases electrical energy to provide our operations a fixed energy price 24/7/365, allowing us flexibility for managing internal peak energy demands.	Northrop Grumman estimates that performing energy conservation on back shifts saves approximately 2,000,000 kWh per year, or 600 metric tons of CO ₂ per year, and \$170,000 in energy savings.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							in the short-term.		

CC5.1b

Please describe your inherent risks that are driven by change in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	Northrop Grumman has operations worldwide, including manufacturing operations located in regions that are at risk for water scarcity and increasing water availability risk. Certain processing operations are water-dependent operations within the company; a moderate proportion of that production is conducted in California where drought conditions peaked in 2014.	Increased operational cost	3 to 6 years	Direct	More likely than not	Low-medium	The financial implications of significant changes in precipitation are driven by rising costs of water and the need for utilities to diversify their electricity sources to reduce reliance on hydropower in water stressed areas such as California. For example, from FY2013-2014 to FY2014-2015, a period of significant drought in California, water prices increased 10% in the West Basin Municipal Water District (\$46/cfs to \$51/cfs monthly service fee) which serves a large part of Los Angeles County	Methods used to manage the growing risks associated with significant changes in precipitation include implementation of water conservation best management practices (BMPs) across the company, and focused initiatives in water scarce areas to drive water use. For example, in 2014, irrigation control systems and low-flow appliances were implemented to reduce water use.	In 2014, Northrop Grumman invested an estimated \$3.4 million on energy reduction initiatives and anticipates a similar level of investment through the 2020 goal period in support of our GHG reduction goal.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							where Northrop Grumman has manufacturing operations. If drought conditions continue, we expect to see increased water rates which could have a meaningful impact on operational costs.		
Change in temperature extremes	Northrop Grumman has significant operations located in regions that may be affected by extreme temperature changes. For example, in 2014, across the enterprise, we saw an increase in heating/cooling days from prior years, resulting in increased utility costs.	Increased operational cost	1 to 3 years	Direct	About as likely as not	Low-medium	The potential financial implications of extreme temperature changes would be direct energy costs from increased cooling/heating demands and operational costs. Without energy cost mitigation strategies, we could see energy cost increases of at least \$3-\$11 million between 2013-2015. In 2014, that increase could have been approximately \$1-3.3 million.	The methods used to manage this risk include energy cost mitigation strategies, investment in energy-efficient buildings, HVAC systems, and business process enhancement to minimize practicable costs and risks associated with temperature extremes. In 2014, we expanded use of our energy management system to include international operations for energy utility bills and data accounting as well as water utility bill and use accounting for our U.S. operations. The system allows us to monitor energy and water use on a monthly basis with more fidelity, and conduct predictive modelling using the system's 20-year history of	The costs associated with these actions include capital and expense funding to support implementation of Northrop Grumman's energy management system. The costs were factored into the ROI calculation, equivalent to a savings of approximately \$4 million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								heating/cooling days to anticipate demand increases/decreases as well as have more immediate visibility to increases in water utility prices, particularly in regions such as California, where drought conditions are significantly impacting water availability.	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behaviour	Demand for energy efficient products and services are increasing, most often where customer policy drives demand. For example, Executive Order 13514 (superseded by EO 13693 in March 2015) requires Northrop Grumman's largest customer, the U.S. Federal government, to	Reduction in capital availability	>6 years	Indirect (Client)	Likely	Medium	Financial implications associated are directly attributed to the U.S. federal budget, as the U.S. government is our largest customer. In 2014, our sales decreased 3% from 2013 levels due to various drivers, including federal budget reductions.	The methods applied to manage these risks included scheduled and ongoing engagement with U.S. federal customers and policymakers to discuss the risks associated with budget reductions, and impacts to priority programs. Northrop Grumman collaborates with industry peers through industry	The costs of management are accounted for in standard business operations, including industry association memberships. In 2014, Northrop Grumman reported unallocated costs of \$169 million, comprised of a portion of management and administration, legal, environmental, compensation costs, retiree benefits, and

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	reduce GHG emissions by 2020. However, agency budgets do not typically have the necessary level of capital investments available to implement effective energy efficiency initiatives.							associations such as the Aerospace Industries Association to relay the industry's perspective and analysis on proposed legislative and budget activities.	certain unallowable costs such as lobbying activities.
Fluctuating socio-economic conditions	The U.S and European recessions, in conjunction with the U.S. federal budget reductions, have created budgeting challenges in the U.S. and EU. In particular, large budget items (e.g., satellite systems, weapons systems) are vulnerable to the potential financial constraints.	Reduced demand for goods/services	1 to 3 years	Direct	Very likely	Medium-high	Fluctuating socio-economic conditions create uncertainty for contract execution and/or sustainment. In 2014, our sales decreased 3% from 2013 levels (\$24.6B to \$23.9B) due to various drivers, including federal budget reductions. If federal budgets continue to decline, we may face increasing pressure for lower margins, which reduces overhead budget, including R&D funds.	Northrop Grumman manages these risks through scheduled and ongoing engagement with policymakers and senior administration and DoD officials to discuss the risks associated with budget reductions, and impacts to priority programs, current and planned.	Northrop Grumman calculates management costs quarterly and cumulatively on an annual basis. The aggregate is referred to as "operating income" [sales - (operating costs + expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totaled \$664 million (net positive).

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Voluntary agreements	Northrop Grumman facilitated a PPA with a California-based landlord for solar installation. The opportunity presented via the PPA provides us with stable, lower cost electricity from the landlord; the landlord benefitted from the tax credit(s) and income generated from the sale of electricity to Northrop Grumman; and both demonstrate support for	Reduced operational costs	1 to 3 years	Indirect (Client)	Virtually certain	Low	The financial implications related to voluntary agreements such as the power purchase agreement (PPA) with the California-based landlord, include reduced annual energy costs that are between 1-5% below traditional energy prices. There are no net-additional costs (\$0) to facilitate the PPA; rather we expect to realize up to a 5% annual savings on energy costs.	The methods being used to manage voluntary agreements include limited Northrop Grumman labor and limited consultant engagement. For example, Northrop Grumman established a 'tiger team' for one business unit to comprehensively evaluate alternative and renewable energy opportunities; in another business unit, a nationwide assessment was conducted to identify eligible tax incentives and energy savings for the business unit's facility footprint.	The costs associated with voluntary agreements are expense (vs. capital); i.e., Northrop Grumman labor costs. These costs are nominal and represent less than \$10,000 annually.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	renewable energy.								
Fuel/energy taxes and regulations	Northrop Grumman to strategically leverages its purchasing power to minimize energy costs and take advantage of electricity grids in regions outside the locality of certain facilities to purchase cleaner, less expensive electricity for Northrop Grumman operations in unregulated energy markets localities.	Reduced operational costs	1 to 3 years	Direct	Virtually certain	Low	Financial implications related to fuel/energy taxes and regulations include cost stability realized via strategic bulk energy purchases. Northrop Grumman expects to save approximately than \$3.2 million annually, for the short-term, through this energy financial management.	The method used to manage fuel/energy taxes and regulations include dedicated expert energy market knowledge. In 2014, we conducted bulk energy purchases to stabilize the energy prices, particularly in areas with high MWh-energy use.	The costs associated with fuel/energy taxes are expense (vs. capital); i.e., Northrop Grumman labor costs. In 2014, there were no net-additional costs (\$0) to facilitate the PPA. In 2014 and over the short term, we expect to realize up to a 5% annual savings on energy costs.

CC6.1b

Please describe the inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Induced changes in natural resources	Northrop Grumman-built Global Hawks were deployed in 2014 to	Increased demand for existing products/services	3 to 6 years	Indirect (Client)	Very likely	Medium	The financial implications of changes induced by climate	The methods being used to manage these opportunities begin with Northrop Grumman's business	Northrop Grumman calculates management costs

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	conduct the ATTREX mission, wherein the Global Hawk collected composition data for NASA scientists from the upper atmosphere for their studies of the impacts of pollutants and gases entering the stratosphere on climate change. The unique data collection attributes of the Global Hawk present significant opportunity for Northrop Grumman to win future contracts and initiatives.						change are primarily indirect. Northrop Grumman supports Global Hawk environmental monitoring missions for NASA and DoD. In 2013, we were awarded a \$169 million contract for contract logistics support for the RQ-4 Global Hawk by the U.S. Air Force.	development/customer relationship management practices. Northrop Grumman has supported NASA environmental data missions since the 1980s. For example, Northrop Grumman hosted its an annual Tech Expo in 2014 to showcase technical capabilities and supporting IT platforms, including those specifically design for environmental monitoring.	quarterly and cumulatively on an annual basis. The aggregate is referred to as "operating income" [sales - (operating costs + expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totaled \$664 million (net positive).
Other physical climate opportunities	Northrop Grumman supports the calibration and validation of the data from the Suomi National Polar-orbiting Partnership (NPP) satellite which collects geophysical data for NASA and NOAA. The Suomi	Increased demand for existing products/services	3 to 6 years	Indirect (Client)	Likely	Low-medium	The financial implications of these opportunities include contract values to support NOAA's earth observing systems. For example, Northrop Grumman was awarded a 10-year	The methods being used to manage these opportunities begin with Northrop Grumman's business development/customer relationship management practices. Northrop Grumman has supported NASA environmental data missions since the 1980s. For example, Northrop Grumman hosted its an annual	Northrop Grumman calculates management costs quarterly and cumulatively on an annual basis. The aggregate is referred to as "operating income" [sales - (operating costs +

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>NPP is equipped with two Northrop Grumman-built instruments: 1) Cloud and the Earth's Radiant Energy System (CERES) (version 6) and 2) Advanced Technology Microwave Sounder (ATMS). Suomi NPP is the first next-generation polar-orbiting satellite mission to address the challenge of acquiring a wide range of land, ocean, and atmospheric measurements for Earth system science while simultaneously preparing to address operational requirements for weather forecasting.</p>						<p>\$44.5 million contract by NASA in 2009 to support the design, manufacture, assembly, test and calibration of the CERES Flight Model 6 instrument. The instrument was delivered to NASA in June 2014.</p>	<p>Tech Expo in 2014 to showcase technical capabilities and supporting IT platforms, including those specifically design for environmental monitoring. Northrop Grumman also develops and maintains long-standing customer relationships with NASA and supporting organizations. In 2014, Northrop Grumman collaborated with climate-monitoring agencies, in particular, NASA and NOAA, to understand customer needs in order to provide appropriate capabilities.</p>	<p>expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totalled \$664 million (net positive).</p>

Please describe the inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Northrop Grumman continues to demonstrate environmental performance to stated commitments and gains additional reputational benefits from the company's public disclosure and transparency initiatives. The integrity of the environmental sustainability program and initiatives demonstrates a broader spectrum of our capabilities, including GHG reduction and technology applications that offer global environmental benefits.	Wider social benefits	>6 years	Direct	Very likely	Medium-high	Northrop Grumman supports global environmental monitoring and data collection for the U.S. federal government, including NASA, NOAA and DoD. Future financial implications include renewed and increased contract funding to maintain and analyze atmospheric and climate data for policymaker environments.	The methods being used to manage this opportunity include continued execution of Northrop Grumman's commitment to environmental stewardship, ethical behaviour, and transparency. In April 2014, we announced our continued commitment to GHG reduction: to reduce absolute emissions 30% by 2020 from 2010 levels.	Northrop Grumman calculates management costs quarterly and cumulatively on an annual basis. The aggregate is referred to as "operating income" [sales - (operating costs + expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totaled \$664 million (net positive).
Increasing humanitarian demands	Northrop Grumman designs and builds instruments and sensors for satellite sensors and instruments for the Air Force's Defense Meteorological	Increased demand for existing products/services	3 to 6 years	Indirect (Client)	Likely	Low-medium	Estimated financial impacts are primarily indirect via our contracts for support of the technological systems that gather and process	The methods being used to manage these opportunities leverage Northrop Grumman's business development practices, technical	Northrop Grumman calculates management costs quarterly and cumulatively on an annual basis. The aggregate is referred to as

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Satellite Program (DMSP), the primary provider of terrestrial and space weather information for the U.S. military. The USAF works with NOAA and NASA to improve and deploy the weather data collected and forecasted for DoD mission planners and weather and climate scientists in NOAA and NASA for climate science applications. Northrop Grumman-built microwave sensors on both DMSP and NOAA platforms support significant scientific contributions and there will be opportunities for improvements in both sensor technology and ground software algorithms to support the need for continuing improvements in</p>						<p>climate, security and predictive data to support national security and humanitarian response organizations. In 2014, Northrop Grumman supported operations and maintenance of the DMSP, a contract value of approximately \$30 million.</p>	<p>expertise and customer relationships. Northrop Grumman works closely with DoD to understand operational needs and provides appropriate technical and support program staff to fulfill program objectives. In 2014, DoD published two strategic reports that identify the significance of climate change to current and future mission planning and operations: the 2014 Quadrennial Defense Review and the 2014 Climate Adaptation Plan.</p>	<p>“operating income” [sales - (operating costs + expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totaled \$664 million (net positive).</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	these remote sensing products.								
Induced changes in human and cultural environments	Northrop Grumman is the prime contractor for the Systems Engineering, Management and Sustainment (SEMS) program for the U.S. Air Force Weather Agency (AFWA). AFWA is the Lead Military Meteorological Center for the United States Air Force. In this role, AFWA processes and utilizes environmental data from satellites, atmospheric sensing, surface sensing, and in situ observation. Northrop Grumman developed the Air Force Weather WEBS (AFW-WEBS) in partnership with AFWA to leverage large amounts of weather data for DoD mission planning.	Increased demand for existing products/services	1 to 3 years	Indirect (Client)	Likely	Medium-high	The financial implications of changes induced by climate change are primarily indirect via our service and product support of global monitoring platforms. Northrop Grumman supports the SEMS contract for the U.S. Air Force, renewed in 2014 for \$300 million. Northrop Grumman's proven performance with AFWA since 2002 indicates that future financial potential is at least similar to this contract award.	The methods used to manage induced changes in environments include utilizing internal Northrop Grumman subject matter expertise to develop, implement, support and enhance the intelligence, surveillance, reconnaissance (ISR) platforms to support global monitoring platforms. In 2014, Northrop Grumman won the award continue to facilitate enterprise-level systems engineering, systems management and sustainment services.	Northrop Grumman calculates management costs quarterly and cumulatively on an annual basis. The aggregate is referred to as "operating income" [sales - (operating costs + expenses)]. Changes in estimated contract operating income at completion are recorded using the cumulative catch-up method of accounting. In 2014, the cumulative catch-up adjustments totaled \$664 million (net positive).

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO ₂ e)
Scope 1	Tue 01 Jan 2008 - Wed 31 Dec 2008	209581

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 2	Tue 01 Jan 2008 - Wed 31 Dec 2008	641300

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

GHG Reporting Guidance for the Aerospace Industry - A Supplement to the GHG Protocol Corporate Accounting and Reporting Standard (International Aerospace Environmental Group – Working Group 3)

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Second Assessment Report (SAR - 100 year)
CH4	IPCC Second Assessment Report (SAR - 100 year)
N2O	IPCC Second Assessment Report (SAR - 100 year)
HFCs	IPCC Second Assessment Report (SAR - 100 year)

Gas	Reference
PFCs	IPCC Second Assessment Report (SAR - 100 year)
SF6	IPCC Second Assessment Report (SAR - 100 year)
NF3	IPCC Second Assessment Report (SAR - 100 year)

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference

Further Information

Emissions Factors used for GHG inventory attached as Excel file.

Attachments

<https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/ClimateChange2015/CC7.EmissionsMethodology/7.4 Emissions Factors.xlsx>

Page: CC8. Emissions Data - (1 Jan 2008 - 31 Dec 2008)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

641300

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received limited assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received limited assurance for our GHG

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
			inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Limited assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/CY08 Assurance Statement.pdf	1-3	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Limited assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/CY08 Assurance Statement.pdf	1-3	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC8. Emissions Data - (1 Jan 2009 - 31 Dec 2009)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

203187

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

585489

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

No third party verification or assurance

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

No third party verification or assurance

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC8. Emissions Data - (1 Jan 2010 - 31 Dec 2010)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

172269

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

562084

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/NG - Assurance Statement - EY2010 - Reasonable-061412.pdf	1-3	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
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CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/NG - Assurance Statement - EY2010 - Reasonable-061412.pdf	1-3	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC8. Emissions Data - (1 Jan 2011 - 31 Dec 2011)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

154642

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

537934

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/NG - Assurance Statement - EY2011 - Reasonable-061412.pdf	1-3	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/NG - Assurance Statement - EY2011 - Reasonable-061412.pdf	1-3	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC8. Emissions Data - (1 Jan 2012 - 31 Dec 2012)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

135360

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

484309

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.
Process Emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
			assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/CY12 Assurance Statement - Northrop Grumman.pdf	2	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
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CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/CY12 Assurance Statement - Northrop Grumman.pdf	2	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

148787

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

462419

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
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Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/NGC CY 2013 - Assurance Statement rev 1.pdf	2	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
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CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/NGC CY 2013 - Assurance Statement rev 1.pdf	2	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: **CC8. Emissions Data - (1 Jan 2014 - 31 Dec 2014)**

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

142879

CC8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

451611

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
Mobile emissions for small fleets (<10 vehicles)	Emissions are not relevant	No emissions excluded	Fuel consumption (diesel, gasoline and propane) for all reporting sites comprises 0.64% of the baseline total inventory. Therefore, it was concluded that emissions associated with sites that have fewer than 10 vehicles are immaterial to the GHG inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Non-utility fuel data for sites less than 100,000 square feet	Emissions are not relevant	No emissions excluded	For sites less than 100,000 square feet, fuel deliveries that are not utility based (e.g., natural gas and propane) are excluded because they are not common at Northrop Grumman and are immaterial to the baseline inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process Emissions excluded for buildings less than 100,000 square feet	Emissions are not relevant	No emissions excluded	A majority of manufacturing and testing is performed at the Northrop Grumman sites and campuses that are greater than 100,000 sq.ft. The majority of buildings in the Northrop Grumman real estate portfolio that are less than 100,000 sq. ft are used primarily as office space and not for manufacturing operations. Thus, any process emissions related to operations in these sites are considered immaterial. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Process and fugitive emissions of all HFCs	Emissions are not relevant	No emissions excluded	Baseline assessments of refrigerant (HFC) emissions were made for both processes (e.g. thermal chambers) and fugitive (e.g. facility HVAC equipment) and were considered immaterial to the inventory. This was reassessed in 2012 and immateriality threshold is still met. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Fugitive emissions from PFCs in fire suppression systems	Emissions are not relevant	No emissions excluded	Northrop Grumman tracks fire suppression system leaks and releases. In our baseline year, releases accounted for less than 0.05 percent of the GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the GHG inventory that received reasonable assurance through third party verification.
Direct emissions of CH4 and N2O from the combustion of fossil fuels	Emissions are not relevant	No emissions excluded	CH4 and N2O emissions are excluded for mobile and stationary combustion of natural gas, diesel, gasoline, jet fuel and aviation gas. For the baseline year, these emissions would have accounted for 0.119 percent of GHG inventory and were deemed immaterial to the inventory. This category is continuously monitored and was reflected in the NGC GHG inventory that received reasonable assurance through third party verification.

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.
Scope 2	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	Northrop Grumman uses primary data sources for non-utility and process emission sources. Uncertainty associated with these data sources results primarily from data translation errors and is considered immaterial to the inventory. Northrop Grumman uses primary data (utility bills) for purchased energy GHG accounting. For sites where precise utility data is not available (e.g., flat rate lease), utility usage is estimated using a standard estimating procedure based on square footage, location and operation type. The level of uncertainty is immaterial to Northrop Grumman's overall GHG inventory. We received reasonable assurance for our GHG inventory, affirming the completeness and accuracy of our GHG data management processes and calculations.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance complete

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.6a/CY14 NGC Assurance Statement.pdf	2	ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

CC8.7a

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Reasonable assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC8.7a/CY14 NGC Assurance Statement.pdf	2	ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
No additional data verified	

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2008 - 31 Dec 2008)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
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Country/Region	Scope 1 metric tonnes CO2e
Belgium	20
Germany	452
Denmark	0
France	941
United Kingdom	447
Italy	81
Netherlands	286
Norway	3
United States of America	207350

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division
By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	64920
NGES - Electronic Systems	123149
NGIS - Information Systems	7055
NGTS - Technical Servies	1959
NGESS/CORP - Enterprise Shared Services/Corporate	12497

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	138816
HFCs	2534
N2O	8
NF3	351
PFCs	1130
NF3	66741

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2009 - 31 Dec 2009)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	23
Germany	464
Denmark	0
France	923
United Kingdom	398
Italy	202
Netherlands	287
Norway	3
United States of America	200887

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division
By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	73462
NGES - Electronic Systems	107819
NGIS - Information Systems	9410
NGTS - Technical Services	1666
NGESS/CORP - Enterprise Shared Services/Corporate	10830

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	142746
HFCs	1621
N2O	35
NF3	351
PFCs	3045
SF6	55389

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: **CC9. Scope 1 Emissions Breakdown - (1 Jan 2010 - 31 Dec 2010)**

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	23
Germany	556
Denmark	0
France	963
United Kingdom	555

Country/Region	Scope 1 metric tonnes CO2e
Italy	148
Netherlands	390
Norway	3
United States of America	169630

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

- By business division
- By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	66544
NGES - Electronic Systems	82285
NGIS - Information Systems	9551
NGTS - Technical Services	1956
NGESS/CORP - Enterprise Shared Services/Corporate	11932

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	139969
HFCs	2996
N2O	17
NF3	34
PFCs	1371
SF6	27881

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	17
Germany	467
Denmark	0
France	740
United Kingdom	514
Italy	623
Netherlands	357
Norway	3
United States of America	151921

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division
By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	61642
NGES - Electronic Systems	71763
NGIS - Information Systems	7666
NGTS - Technical Services	1857
NGESS/CORP - Enterprise Shared Services/Corporate	11714

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	128061
HFCs	2000
N2O	25
NF3	32
PFCs	1863
SF6	22661

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: **CC9. Scope 1 Emissions Breakdown - (1 Jan 2012 - 31 Dec 2012)**

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	131
Germany	617
Denmark	0
France	820
United Kingdom	548
Italy	167
Netherlands	312

Country/Region	Scope 1 metric tonnes CO2e
Norway	3
United States of America	132762

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

- By business division
- By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	53514
NGES - Electronic Systems	62398
NGIS - Information Systems	7577
NGTS - Technical Services	1553
NGESS/CORP - Enterprise Shared Services/Corporate	10318

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	121045
HFCs	1222
N2O	27
NF3	41
PFCs	1149
SF6	11876

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2013 - 31 Dec 2013)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	139
Germany	568
Denmark	3
France	834
United Kingdom	380
Italy	180
Netherlands	144
Norway	3
United States of America	146535

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division
By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	60462
NGES - Electronic Systems	69753
NGIS - Information Systems	7054
NGTS - Technical Services	1874
NGESS/CORP - Enterprise Shared Services/Corporate	9643

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	122829
HFCs	2060
N2O	17
NF3	30
PFCs	1483
SF6	22367

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: **CC9. Scope 1 Emissions Breakdown - (1 Jan 2014 - 31 Dec 2014)**

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Belgium	124
Germany	582
Denmark	55
France	584
United Kingdom	603
Italy	183
Netherlands	201

Country/Region	Scope 1 metric tonnes CO2e
Norway	0
United States of America	140547

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

- By business division
- By GHG type

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	53115
NGES - Electronic Systems	71560
NGIS - Information Systems	6443
NGTS - Technical Services	1978
NGESS/CORP - Enterprise Shared Services/Corporate	9783

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude

CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CH4	0
CO2	114566
HFCs	2159
N2O	18
NF3	30
PFCs	1191
SF6	24915

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
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CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
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Further Information

Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2008 - 31 Dec 2008)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	853	926	0
Belgium	7	26	0
Germany	3665	9080	0
Denmark	0	0	0
France	313	3683	0
United Kingdom	2987	5315	0
Italy	1276	3160	0
Netherlands	0	0	0
Norway	0	0	0
United States of America	632200	1317021	0

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	215510
NGES - Electronic Systems	208186
NGIS - Information Systems	181548
NGTS - Technical Services	16202
NGESS/CORP - Enterprise Shared Services/Corporate	19855

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	853	926	0
Belgium	7	25	0
Germany	3905	9675	0
Denmark	80	234	0
France	319	3750	0
United Kingdom	2845	5062	0
Italy	1268	3143	0
Netherlands	70	176	0
Norway	1	88	0
United States of America	576140	1240264	0

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	196854
NGES - Electronic Systems	206148
NGIS - Information Systems	140469
NGTS - Technical Services	21730
NGESS/CORP - Enterprise Shared Services/Corporate	20287

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	853	926	0
Belgium	8	31	0
Germany	3874	9598	0
Denmark	17	51	0
France	292	3443	0
United Kingdom	3077	5476	0
Italy	1374	3404	0
Netherlands	69	186	0
Norway	2	224	0
United States of America	552519	1237963	0

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	181879
NGES - Electronic Systems	196035
NGIS - Information Systems	141861
NGTS - Technical Services	22029
NGESS/CORP - Enterprise Shared Services/Corporate	20281

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	853	926	0
Belgium	8	30	0
Germany	3766	9331	0
Denmark	18	54	0
France	282	3321	0
United Kingdom	3007	5351	0
Italy	1451	3595	0
Netherlands	84	186	0
Norway	2	242	0
United States of America	528464	1190555	0

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	180484
NGES - Electronic Systems	188781
NGIS - Information Systems	128446
NGTS - Technical Services	18261
NGESS/CORP - Enterprise Shared Services/Corporate	21963

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	978	1132	0
Belgium	5	21	0
Germany	4323	10043	0
Denmark	13	42	0
France	294	3275	0
United Kingdom	2716	5656	0
Italy	1481	3833	0
Netherlands	81	227	0
Norway	4	242	0
United States of America	474414	1154960	9334

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	173969
NGES - Electronic Systems	167737
NGIS - Information Systems	107123
NGTS - Technical Services	16662
NGESS/CORP - Enterprise Shared Services/Corporate	18818

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	1246	1437	0
Belgium	6	27	0
Germany	4425	10278	0
Denmark	13	41	0
France	239	2658	0
United Kingdom	2098	4690	0
Italy	1305	3376	0
Netherlands	96	268	0
Norway	2	118	0
United States of America	452990	1128559	21412

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	173311
NGES - Electronic Systems	161425
NGIS - Information Systems	104021
NGTS - Technical Services	16051
NGESS/CORP - Enterprise Shared Services/Corporate	7612

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)
Australia	1841	2189	0
Belgium	15	17	0
Germany	4677	10145	0
Denmark	13	35	0
France	197	2491	0
United Kingdom	2029	4105	0
Italy	1143	2815	0
Netherlands	133	330	0
Norway	0	0	0
United States of America	441564	1101750	21397

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
NGAS - Aerospace Systems	163337
NGES - Electronic Systems	161116
NGIS - Information Systems	103123
NGTS - Technical Services	16238
NGESS/CORP - Enterprise Shared Services/Corporate	7798

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions (metric tonnes CO2e)

CC10.2d

Please break down your total gross global Scope 2 emissions by legal structure

Legal structure	Scope 2 emissions (metric tonnes CO2e)

Further Information

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

CC11.2

Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Fuel	588922
Electricity	1124446
Heat	0
Steam	0
Cooling	0

CC11.3

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Diesel/Gas oil	21523
Motor gasoline	8448
Jet gasoline	63295
Liquefied petroleum gas (LPG)	12
Natural gas	495644

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the Scope 2 figure reported in CC8.3

Basis for applying a low carbon emission factor	MWh associated with low carbon electricity, heat, steam or cooling	Comment
Non-grid connected low carbon electricity not owned by company, no instruments created	540	Solar power purchased from the landlord of a leased facility via a power purchase agreement (PPA) Northrop Grumman helped the landlord establish with the utility company.
Tracking instruments, RECS (USA)	20857	

Further Information

Page: CC12. Emissions Performance

CC12.1

How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased

CC12.1a

Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year

Reason	Emissions value (percentage)	Direction of change	Comment
Emissions reduction activities	3.90	Decrease	Emissions decrease resulted from a wide range of emissions reduction activities, including: building and process efficiencies, green IT initiatives, real estate optimization and renewable energy. Carbon offsets are addressed in 13.1 and are not included in our emissions reduction activity performance response for this question.
Divestment	0	No change	
Acquisitions	0	No change	
Mergers	0	No change	
Change in output	2.20	Decrease	Reduction in business operations (sales, real estate square footage, and employee population) from the previous year resulted in emissions reductions.
Change in methodology	0	No change	
Change in boundary	0	No change	
Change in physical operating conditions	2.80	Increase	Increase in total (heating and cooling) degree days in regions where Northrop Grumman has operations.
Unidentified	0.6	Increase	Increase in emissions resulting from unidentified sources.
Other			

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
0.0000247735	metric tonnes CO2e	unit total revenue	0.31	Increase	Sales reduction (%) slightly exceeded the absolute emissions reduction (%) for 2014. Increased total degree days (weather impact) in regions of Northrop Grumman operations as well as minimal reduction in real estate footprint relative to sales minimized the impact of emissions reductions projects had on the total emissions for 2014, resulting in a slight increase in GHG intensity from 2013.

CC12.3

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
9.25	metric tonnes CO2e	FTE employee	1.2	Decrease	Headcount reductions decreased at a rate less than emissions reductions. Emissions reductions activities resulted in an improvement in intensity per FTE.

CC12.4

Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
0.01735	metric tonnes CO2e	square foot	2.1	Decrease	Emissions reductions projects and a concentrated effort on efficient use of real estate reduced the intensity per square footage of space.

Further Information

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

No, but we anticipate doing so in the next 2 years

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

Northrop Grumman tracks pending, existing and proposed changes to regulations related to emissions trading schemes to identify the program structure(s) and mitigation options. We have operations in several regions where emissions trading schemes exist and are proposed, including California and the United Kingdom (UK). Our strategy for compliance is to analyze the regulations and identify opportunities for operational modifications to remain below threshold emissions levels, including implementation of emissions avoidance and/or reductions activities. Simultaneously, the greeNG program and managers at potentially impacted site(s) analyze the costs and economic impacts and develop an action plan, as needed. This plan is briefed to the business unit's management and the Corporate Policy Council (comprised of corporate executives) for review and approval.

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance
Credit Purchase	Forests	Mississippi Valley Project	Other: American Carbon Standard (ACS)	11000	11000	Yes	Voluntary Offsetting

Further Information

Page: **CC14. Scope 3 Emissions**

CC14.1

Please account for your organization’s Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, not yet calculated		[optional but not required]		Northrop Grumman is exploring methods for identifying, accounting and quantifying the emissions associated with this Scope 3 category. It is a complex category of data to collect and requires a careful approach for accurate and consistent accounting.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Capital goods	Relevant, not yet calculated		[optional but not required]		Northrop Grumman is exploring methods for identifying, accounting and quantifying the emissions associated with this Scope 3 category. It is a complex category of data to collect and requires a careful approach for accurate and consistent accounting.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Not relevant, explanation provided	0	[optional but not required]	0.00%	Northrop Grumman does not produce fuels or energy. Therefore, in accordance with the WRI Scope 3 Protocol, this category of emissions is not relevant.
Upstream transportation and distribution	Relevant, calculated	558923	i) DESCRIPTION: Northrop Grumman is an EPA SmartWay partner and utilizes ground shipment data collected, managed and provided by our partner shipping organization. It is broken down into two categories: i) tracked mileage data through our partner's Freight Bill Audit Program (FBAP) and ii) number of shipments based on receipts not input into FBAP. GWPs used are the same as those for NGC's Scope 1 and Scope 2 emissions: 1 for CO2, 21 for CH4 and 310 for N2O all sourced from the IPCC Second Annual Report. Emission factors are provided by our shipping partner. ii) DATA QUALITY: The information is tracked from by our shipping partner and 58% of the emissions reported for upstream distribution use primary data from the Smart Way program and thus, is of high quality. The remaining data is based on receipts, and averages developed from the primary data are then applied to calculate emissions. Therefore, some uncertainty exists in the remaining emissions. iii)The shipping partner tracks mileage data for exact ground miles travelled and converts it to emissions using a CO2/mile emission factor by carrier. Non-SmartWay receipt data uses an average miles per shipment (based on tracked shipments) to get total miles travelled. The estimated mileage data is converted to MTCO2e using an average CO2/mile emission factor.	58.40%	[optional but not required]

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Waste generated in operations	Relevant, not yet calculated		Northrop Grumman auditable sites track their monthly waste generated in a central database. Waste is categorized to distinguish non-hazardous solid waste, hazardous waste, universal waste and recycling. A diversion rate (from landfill) is calculated based on Recycled and/or Avoided /Total Waste to calculate a diversion rate. When accurate conversion factors are available and verified, Northrop Grumman can convert waste stream quantities into MTCO2e.	0.00%	Northrop Grumman is exploring methods to accurately account for emissions in this Scope 3 category.
Business travel	Relevant, calculated	119542	i) DESCRIPTION: All primary business travel data is received from our central travel management system, including the number of hotel nights booked, rental car miles travelled and emissions, and number of air miles travelled. The emission factors used include air domestic average for jet fuel in business travel from the DEFRA emission factor set, emissions per gallon of fuel consumed from the EPA, and hotel stays using the CarbonFund methodology. GWP used are the same as our Scope 1 and Scope 2 emissions, 1 for CO2, 21 for CH4 and 310 for N2O all sourced from the Second Annual Report. ii) DATA QUALITY: The GHG inventory for business travel achieved Limited Assurance via Third Party Verification from LRQA America's Sustainability, Inc. iii) METHODOLOGY: Air travel: exact miles travelled were used to calculate the emissions. Rental car emissions: exact miles driven and the average fuel economy per vehicle type were provided by the rental car company. This data was then converted to CO2 emissions. Hotel stays: the number of hotel nights was converted to emissions using the CarbonFund methodology.	99.30%	[optional but not required]
Employee commuting	Relevant, calculated	180020	i) DESCRIPTION: Employee commuting accounts for the emissions associated with Northrop Grumman employee commutes to/from work. GWPs used are the same as Northrop	25.50%	[optional but not required]

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			Grumman's Scope 1 and Scope 2 emissions: 1 for CO2, 21 for CH4 and 310 for N20 all sourced from the IPCC Second Annual Report. EMISSIONS FACTORS for emissions per mile gallon consumed are sourced from The Climate Registry General Reporting Protocol. ii) DATA QUALITY: Employee headcount is primary data from the Annual Report (10K) filing. Estimating factors and averages are used from reputable public sources (e.g., EPA). iii) METHODOLOGY: Each business sector provides an average vehicle ridership (AVR) value for the sector. If not available, an average is used. The AVR value is multiplied by the number of employees per sector and an average fuel economy; it is then multiplied by the emission factor for the total commuting emissions.		
Upstream leased assets	Not relevant, explanation provided	0	[optional but not required]	0.00%	Emissions from leased assets including real estate, vehicles, and equipment are included within our operational control boundary and Scope 1 and 2 emissions inventory. Therefore, this category of Scope 3 emissions does not apply.
Downstream transportation and distribution	Relevant, calculated	217620.3	i) DESCRIPTION: Northrop Grumman is an EPA SmartWay partner and utilizes ground shipment data collected, managed and provided by our partner shipping organization. Mileage data is tracked through our partner's Freight Bill Audit Program (FBAP). GWPs used are the same as our Scope 1 and Scope 2 emissions, 1 for CO2, 21 for CH4 and 310 for N20 all sourced from the IPCC Second Annual Report. Emission factors (CO2/mile) are provided by our shipping partner and are specified by carrier through SmartWay. ii) DATA QUALITY: Data used is 100% primary data (miles travelled) and is tracked by our shipping partner through the SmartWay program. The shipping partner calculates emissions for downstream distribution and is of high quality. iii) METHODOLOGY: The shipping partner tracks		[optional but not required]

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			mileage data for exact ground miles travelled and converts it to emissions using a CO2/mile emission factor by carrier.		
Processing of sold products	Not relevant, explanation provided	0	[optional but not required]	0.00%	In most cases, products and services provided by Northrop Grumman sold products do not require further processing, transformation or inclusion in another product before use by the end consumer. This status is a function of Northrop Grumman's role as a prime contractor to the U.S. and allied governments. Where Northrop Grumman is a supplier to another prime contractor, post-processing is minimal and considered immaterial.
Use of sold products	Not relevant, explanation provided	0	[optional but not required]	0.00%	Due to the security implications associated with the products and services sold in the defense industry, Northrop Grumman believes the emissions derived from this category meet an additional criterion for determining materiality, based on the classified nature of our products and services. In accordance with the GHG Protocol Scope 3 standard Table 6.1 - Relevance Criteria, Northrop Grumman considers this category of Scope 3 emissions immaterial.
End of life treatment of sold products	Not relevant, explanation provided	0	[optional but not required]	0.00%	Due to the security implications associated with the products and services sold in the defense industry, Northrop Grumman believes the emissions derived from this category meet an additional criterion for determining materiality, based on the classified nature of our products and services. In accordance with the GHG Protocol Scope 3 standard Table 6.1 - Relevance Criteria, Northrop Grumman considers this category of Scope 3 emissions immaterial.
Downstream leased assets	Not relevant, explanation provided	0	[optional but not required]	0.00%	Northrop Grumman's downstream leased assets represent less than 2% of our total owned footprint and the associated emissions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					are not material to Northrop Grumman's Scope 3 GHG emissions inventory.
Franchises	Not relevant, explanation provided	0	[optional but not required]	0.00%	Northrop Grumman does not own or operate franchises.
Investments	Not relevant, explanation provided	0	[optional but not required]	0.00%	Northrop Grumman is not a financial institution or financial services organization. Therefore, in accordance with the WRI Scope 3 Protocol, this category of emissions is not relevant to Northrop Grumman.
Other (upstream)	Not relevant, explanation provided	0	[optional but not required]	0.00%	There are no additional upstream emissions categories applicable to Northrop Grumman.
Other (downstream)	Not relevant, explanation provided	0	[optional but not required]	0.00%	There are no additional downstream emissions categories applicable to Northrop Grumman.

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance complete

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of Scope 3 emissions verified (%)
Limited assurance	https://www.cdp.net/sites/2015/88/13488/Climate Change 2015/Shared Documents/Attachments/CC14.2a/CY14 NGC Assurance Statement.pdf	2	ISO14064-3	11

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Business travel	Change in methodology	4.2	Decrease	Northrop Grumman uses the DEFRA published emission factors for all air passenger travel miles. For 2014, DEFRA changed the data source for the aircraft specific fuel economy from the AEIG (2006) to a more recent source - the EUROCONTROL small emitters tool. This new sources improves the accuracy of the factor as it includes fuel burn for the entire flight, is updated regularly, and covers a wider range of aircraft.

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

Strategy for Prioritizing Engagements:

Northrop Grumman's strategy for prioritizing engagement with suppliers emphasizes a "light touch", i.e., non-intrusiveness. We prioritize use of existing information and tools that do not require direct inquiries of our suppliers beyond existing communications to the maximum extent possible. For example, Northrop Grumman employs the following practices:

1) Contract terms and conditions: Northrop Grumman has instituted requirements in contract terms & conditions to explicitly require behaviors, products and/or services of our suppliers that support our environmental sustainability goals and practices. We leverage Northrop Grumman's Procurement and Global Supply Chain quality assurance process to ensure suppliers are providing the required products and services.

CDP Supply Chain Program: using our program membership, we utilize the GHG data from reporting companies to obtain GHG inventory data for Northrop Grumman suppliers. Our engagement in the CDP Supply Chain program is deliberately indirect, so as to assess the scope and level of data currently available via this public channel, to inform us of gaps in GHG data availability prior to reaching out to suppliers via the module offered by CDP.

Industry trade associations: Northrop Grumman is a member of the International Aerospace Environmental Group (IAEG), a non-profit corporation comprised of a global group of aerospace companies, established to facilitate harmonization of compliance among Aerospace Companies and their supply chains with the existing and emerging laws and regulations protecting human health and the environment. Within IAEG, Northrop Grumman is an active participant in the GHG Accounting & Reporting work group and Supply Chain Sustainability Harmonization work group with the objective of creating a standard industry approach to accounting for and reporting GHG emissions data and streamline inquiries made of suppliers, as the aerospace industry has a significant proportion of shared suppliers, to minimize the administrative burden.

Northrop Grumman uses these strategies to extract relevant GHG data from suppliers, and will, as needed, deploy additional avenues to capture desired data.

Measures of Success:

Contract terms and conditions: The scope of operations and comprehensiveness of the contract (i.e., enterprise-wide vs. select operations) deployed with explicit environmental sustainability requirements.

CDP Supply Chain: The proportion of our supply chain - in actual numbers and spend - that are currently reporting to CDP.

IAEG: The proportion of participating IAEG member companies relative to the aerospace industry; a strategy and final product that will effectively capture GHG data from the common aerospace supply chain companies.

Methods of Engagement:

SUPPLIERS: Northrop Grumman engages with supply chain companies directly via contract negotiations, quality assurance reviews, and ongoing support dialogue. Via the CDP Supply Chain program, Northrop Grumman is using an indirect engagement route, electing to capture data already reported rather than add additional administrative burdens by way of additional questions.

CUSTOMERS: DoD - sLCA (Use of sold products, End of life treatment of sold products) Northrop Grumman has been engaged in discussions with representatives from the Department of Defense's Office of the Secretary of Defense regarding a proposed framework for sustainability lifecycle accounting (sLCA) in support of mutual interest in defining a relevant sLCA framework. We support the sLCA concept and the desired objective - to drive a paradigm shift in the design, engineering, manufacturing and maintenance of defense products to account for the lifecycle of the product to demonstrate that sustainable components and designs have a lower lifecycle cost. Northrop Grumman has participated in industry meetings established to identify effective methods for testing proposed methodologies and defining an implementation strategy.

PARTNERS: International Aerospace Environmental Group: The International Aerospace Environmental Group (IAEG) was formed to develop collaborative approaches for global aerospace companies in these following areas: 1) Chemical Reporting; 2) GHG Reporting & Accounting; and 3) Supply Chain Sustainability Harmonization. The objective is to coordinate information gathering across the common industry and supplier networks to respond to regulatory requirements and voluntary reporting initiatives in a consistent manner. The objective is to create a streamlined and minimally burdensome approach for suppliers and member organizations through fostering consistency in data reporting. Northrop Grumman is a founding Board member of IAEG and actively engaged in the strategy and direction of IAEG and its work groups.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Number of suppliers	% of total spend	Comment
178	62%	These figures reflect Northrop Grumman's preliminary analysis of suppliers employing the strategies described in 14.4a., i.e.,

Number of suppliers	% of total spend	Comment
		non-intrusive. We prioritize use of existing information and tools that do not require direct inquiries of our suppliers beyond existing communications to the maximum extent possible

CC14.4c

If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data

How you make use of the data	Please give details
Other	Northrop Grumman is in the process of developing our strategy and methodology to identify Supply Chain "hot spots", including environmental risk criteria and mitigation priorities.

CC14.4d

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

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

Name	Job title	Corresponding job category
Mark Caylor	Corporate Vice President and President, Enterprise Shared Services Chief Strategy Officer	Chief Operating Officer (COO)

Further Information

CDP

