Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

(C0.1) 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 aerospace and defense company. We use our broad portfolio of capabilities and technologies to create and deliver innovative platforms, systems and solutions in space; manned and autonomous airborne systems; including strike; strategic deterrence systems; hypersonic; missile defense; weapons systems; cyber; command, control, communications and computers, intelligence, surveillance and reconnaissance (C4ISR); and logistics and modernization. We participate in many high-priority defense and government programs in the United States and globally. We conduct most of our business with the U.S. Government, principally the Department of Defense (DoD) and intelligence community. We also conduct business with foreign, state and local governments and commercial customers. Northrop Grumman established its environmental sustainability program in 2008 to reduce the company's environmental footprint by improving operational efficiency and integrating environmental sustainability practices into all our operations. Our Environmental Sustainability Program strives to expand environmental sustainability awareness throughout our organization, supporting our corporate values and meeting the expectations of our diverse set of stakeholders. This program is a catalyst for environmentally sustainable performance that drives long-term affordability into our operations, benefiting our customers as well as our shareholders. Northrop Grumman has committed to the following 2020 environmental sustainability goals: a 30% reduction in absolute GHG emissions from 2010 levels, a 20% reduction in potable water use from 2014, and a 70% solid waste diversion rate from landfill. All quantitative data in this response represents Northrop Grumman prior to the acquisition of Orbital ATK.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for

Reporting year	January 1, 2020	December 31, 2020	Yes	3 years

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Australia
Belgium
Canada
Denmark
France
Germany
Italy
Japan
Netherlands
Norway
Poland
Republic of Korea
Saudi Arabia
Switzerland
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	The highest level of responsibility resides with Northrop Grumman's Policy Committee of the Board of Directors (BoD). The Policy Committee is comprised of five independent directors who assist the BoD in overseeing policy, government relations and corporate responsibility, which includes review and oversight of the Company's environmental sustainability program. This committee is responsible for identifying and evaluating global security, political, and budget issues as well as trends (including environmental and climate-related) that could impact the business. The BoD is responsible for overseeing our enterprise risk management activities, among other duties, and has board-level committees that assist the Board in this role. The Audit and Risk Committee is responsible for assisting the Board in its oversight of enterprise risk management overall and focuses on risks tied most directly to our financial performance, and those related to the environment, disasters, and security. The BoD and its Committees provide oversight of the Enterprise Risk Management Council (ERMC), which oversees risks, like extreme weather and natural disasters, which are climate-related. In addition, the Compensation committee establishes the annual non-financial ESG performance metrics, which includes Environmental Sustainability, specifically GHG emissions, water conservation, and solid waste diversion. The Compensation Committee approves the year-end non-financial performance metrics score, which factors into the Company Performance Factor as defined in the Proxy.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding risk management policies Setting performance objectives Monitoring implementation and	The Policy Committee oversees policy, government relations, corporate responsibility , and environmental sustainability. Generally on an annual basis, the Policy Committee is provided a comprehensive update on the environmental sustainability program. This includes financial investments; annual project completions; progress towards 2020 climate-related greenhouse gas, water, and waste goals; developments on climate-related risks; disclosure

	performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	programs; and future initiatives. In addition, the Compensation Committee of the Board of Directors oversees the annual non-financial metric for environmental sustainability which is an element of our compensation program. This metric emphasizes the importance of implementing projects to reduce GHG, water, and waste projects across the company.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Annually
Risk committee	Both assessing and managing climate-related risks and opportunities	Annually

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Per our Proxy Statement (p 14.): At the company level, the Board of Directors and its Committees provide oversight of the Company's risk management processes, including the Enterprise Risk Management Council (ERMC). The ERMC (the Risk committee referred to in question C1.2) is chaired by the CEO and is comprised of all members of the Executive Leadership Team (includes the CFO, CHRO, CGBO, General Counsel, Chief Strategy & Development Officer, VP Communications, and the five sector presidents), the Chief Accounting Officer, Chief Compliance Officer, Corporate Secretary, head of Internal Audit and Treasurer. Climate-related issues are included within the ERMC responsibilities because the ERMC oversees Northrop Grumman's integrated, company-wide risk management process. The ERMC seeks to ensure that the Company has identified the most significant risks and implemented effective mitigation plans for each; this includes climate-related risks related to natural disasters, environmental laws and regulations, and Company reputation. In addition, climate-related issues may be elevated to and addressed by the Policy Committee of the Board of Directors, which has responsibility for identifying and evaluating environmental sustainability

impacts and trends that could impact the company's business. Certain members of the ERMC have responsibility for specific risks and are responsible for assessing risks, developing and executing risk mitigation plans, and monitoring status and trends. For example, specific climate-related issues such as natural disaster, environmental and regulatory, and Security including the Business Continuity Program are the responsibility of the CFO, VP General Counsel, and President of Enterprise Services respectively as part of their duties as members of the ERMC. The ERMC meetings consist of updates from certain members on the risks they manage and includes changes in the risks since the last meeting, risk mitigation efforts, or other potential risks that have been identified. For example, natural and environmental disaster risks are monitored at the site/asset level as a part of the Business Continuity Program through the use annual inspections and risk modeling, among other actions. Specifically, risk modeling is actively used at some of our coastal sites, like those in Melbourne and St. Augustine, FL to analyze how hurricanes of different sizes and scope might disrupt business operations. Any material changes in these results, trends, or risk management approach may be included in the update provided to the ERMC as the committee regularly monitors all risk factors for the company.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment
Corporate executive team	Monetary reward	Emissions reduction project	As noted in the Proxy Statement, under our Annual Incentive Plan, we use a mix of financial and non-financial metrics to measure our performance for purposes of determining award payout to our Named Executive Officers (including the CEO, CFO, COO, and others), (or as CDP refers to it the Corporate Executive Team) annually. Environmental Sustainability is one of seven non-financial metrics that is measured in terms of reductions in absolute greenhouse gas emissions, potable water use consumption, and improvement in solid waste diversion. Performance against non-financial metrics can result only in a downward adjustment to the financial metric score.

All employees	Monetary reward	Emissions reduction project	Non-financial metrics influence bonus payments to all eligible employees. Environmental Sustainability is one of seven non-financial metrics that is measured in terms of reductions in absolute greenhouse gas emissions and potable water use consumption, and improvement in solid waste diversion.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	
Medium-term	1	5	
Long-term	5	10	

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

In our Annual Report, Item 1A: Risk Factors (pg 7), lists factors that may have material adverse effect on our financial position, results of operations and/or cash flows. Specific to the Business Impact Analysis process at the site/asset level, the impact is determined on a scale of low, medium, or high based on a percentage of the company's annual sales with medium and high impacts representing a substantive financial impact.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

The Board of Directors is responsible for overseeing our enterprise risk management activities, among other duties, and has board-level committees that assist them in this role. The BoD and its Committees provide oversight of the Enterprise Risk Management Council (ERMC) that oversees risks, like extreme weather and natural disasters, which are climate-related. The ERMC is comprised of all members of the Corporate Policy Council, the Chief Accounting Officer, Chief Compliance Officer, Secretary, head of Internal Audit and Treasurer. The ERMC seeks to ensure that the Company has identified the most significant risks and implemented effective mitigation plans for each; this includes climate-related risks such as those related to natural disasters, environmental laws and regulations, and Company reputation. Certain members of the ERMC have responsibility for specific risks and are responsible for assessing risks, developing and executing risk mitigation plans, and monitoring status and trends. The ERMC meetings consist of updates from certain members on the risks they manage and includes changes in the risks since the last meeting, risk mitigation efforts, or other potential risks that have been identified.

Through the Business Continuity Program, all asset risks are consolidated and evaluated at the site and sector leadership levels to determine if the risk is acceptable or if investment in controls is required. All risks identified, whether climate-related or not, are prioritized based on probability, business impact, and recovery time. The Business Continuity Program leverages annual physical security surveys to evaluate risks and opportunities and their potential impacts to the company, personnel, and/or operations. The survey's risk factors include climate-related risk factors such as natural disasters as well as non-climate related risk factors such as disease control and/or outbreaks. Risks are evaluated to determine if the risk is acceptable or if investment in controls is required. In addition to business continuity planning at the asset level (individual facilities), risks and opportunities are addressed by the environmental sustainability program through site-specific greenhouse gas, energy, water, and solid waste assessments. These assessments provide more thorough understanding of site-specific risks to environmental sustainability indicators (e.g. water availability) as well as opportunities to improve the efficiency, minimize emissions, and/or reduce the risks to facility operations (e.g. through water conservation initiatives).
Business Impact Analysis is performed annually to assess the potential risk size and scope, prioritize recovery order of sites and business processes, and identify gaps in recoverability. The analysis assesses the impact to the company by determining the

financial, reputational and known legal impact if recovery is not achieved. When possible, we establish contingency plans in case our personnel or buildings are unavailable due to risks such as climate-related natural disasters. When we are unable to mitigate the issues, the risk is elevated on our annual resilience report to the sector and company leadership for key decision-making on whether to accept the risk or invest in controls to transfer or mitigate. The decision is generally based on the cost of investment and the impact to the corporation.

Our Annual Report, Item 1A: Risk Factors, lists factors that may have material adverse effect on our financial position, results of operations and/or cash flows. Specific to the Business Impact Analysis process at the site/asset level, the impact is determined on a scale of low, medium, or high based on a percentage of the company's annual sales with medium and high impacts representing a substantive financial impact.
Efforts to manage climate-related risks also create opportunities for the Company. To capitalize on these opportunities, our environmental sustainability program collaborates internally to analyze, address, and pursue potential opportunities from resource efficiency to stakeholder engagement. By working towards our 2020 goals of a 30% reduction in greenhouse gas emissions from a 2010 base year, a 20% potable water use reduction from a 2014 base year, and 70% solid waste diversion from landfill, we are actively reviewing and implementing initiatives that not only reduce our environmental footprint, but are also positively influence the Company through cost savings, resiliency, or company reputation.

One case study of applying this process to a physical risk includes preparation for acute risks from extreme weather events. We have significant operations located in regions that may be exposed to damaging storms and other natural disasters. An example includes our Melbourne, Florida Manned Aircraft Design Center of Excellence. This facility is located in North Florida, near coastal waterways, and subject to hurricanes and tropical storms. This physical risk is reviewed by the ERMC and assessed by the Business Continuity Program through a Business Impact Analysis, which assesses the potential risk size and scope of a hurricane disrupting operations. A response plan is developed includes detailed strategies and protocols for preemptive tactical and post-event activity. Those strategies were put into action when Hurricane Irma made landfall September 2017, impacting our Melbourne facility and tens of thousands of Northrop Grumman employees. As a result of the Business Impact Analysis, risk handling and preparation by the Business Continuity Program, and oversight by the ERMC, the company was prepared to safeguard the health and safety of its employees before, during and after the hurricane. Five days before the hurricane made landfall, crisis management teams met and messaging distributed to employees. Two days before landfall, corporate aircraft transported vital supplies to employees and fuel trucks delivered the supply needed to operate generators running mission critical systems and during the hurricane these generators kept mission critical systems online. After the hurricane passed, first response teams arrived to sites as did RVs for business resumption purposes.

One case study of applying our risk management process to a transition risk includes

increased operating costs due to compliance requirements such as California's Executive Order (EO) B-29-15 Drought Response that was signed by Governor Brown on April 1, 2015. When this EO was released, we worked with our California site teams to perform an analysis to understand the financial impacts of the EO on drought restrictions and drought utility charges on our operations. To mitigate the risk, we accelerated site water use assessments and our water conservation project investment plan which resulted in $2.5 million being authorized for water conservation measures in order to mitigate the risk and impact of any potential drought restrictions.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes current regulations as part of its risk assessment and management programs. Environmental matters, including unforeseen costs associated with compliance could have a material adverse effect on our reputation, our financial position, outputs of operations, and/or cash flows. Our operations are subject to and affected by a variety of federal, state, local and foreign environmental laws and regulations, including how those regulations change over time. Compliance with these environmental laws and regulations requires, and is expected to continue to require, significant operating and capital costs. For example, we may be subject to increased cost of emissions mitigation or reporting obligations in locations with existing climate-related regulations. We have major operations in California including our El Segundo, Manhattan Beach, Redondo Beach, Palmdale, and Sunnyvale sites, among others, that may be subject to existing climate-related regulations within the state, specifically programs like Assembly Bill 32, the California Global Warming Solutions Act (Chaptered 2006) that was updated with passage of Senate Bill 32 in 2016. Internationally, where we have major operations such as in the United Kingdom, we must comply with greenhouse gas and energy reporting requirements, like the Energy Savings Opportunity Scheme (ESOS) to ensure our in-country locations are meeting climate-related reporting requirements, as applicable.
Emerging regulation	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes emerging regulations as part of its risk assessment and management programs. Environmental matters, including unforeseen costs associated with compliance, could have a material adverse effect on our reputation and our financial position, results of operations and/or cash flows. Our operations are subject to and affected by a variety of

		federal, state, local and foreign environmental laws and regulations, including as they may be changed over time. Compliance with these environmental laws and regulations requires, and is expected to continue to require, significant operating and capital costs. We have major operations in California including our El Segundo, Manhattan Beach, Redondo Beach, Palmdale, Sunnyvale, among others that may be impacted by increased cost of emissions mitigation or reporting obligations resulting from the evolving climate-related regulatory environment within the state.
Technology	Not relevant, explanation provided	We conduct most of our business with the U.S. Government, principally the Department of Defense (DoD) and intelligence community. We also conduct business with foreign, state and local governments and commercial customers. As such, the majority of our customers define the priorities and specifications for the products and services we supply to meet their evolving mission requirements. Northrop Grumman's products and services are designed specifically to meet contractual requirements of our customers and thus, due to the nature of our business and customers' requirements this risk type is not relevant.
Legal	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council (ERMC) includes legal risks as part of its risk assessment. Potential legal risks may include the filling of legal claims due to service disruption or product delivery delays resulting from climate-related physical risks such as natural and environmental disasters that could impact our ability to meet our commitments to customers. Per CDP's definition of climate-related legal risks (climate-related litigation claims), this does not currently impact Northrop Grumman.
Market	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes market risks as part of its risk assessment and management programs, and our strategy organization continually assesses global security trends and how that may impact our customer's needs. For example, the opening of arctic shipping routes requires maritime products, such as our Marine Navigation Radar Turning Units , that can withstand the extreme temperatures in these areas. In connection with our U.S. Government contracts, we are required to procure certain materials, components and parts from supply sources approved by the customer. We also are facing increased and changing regulatory requirements, both domestically and internationally, many of which apply to our subcontractors and suppliers. In some cases, there may be only one supplier for certain components. If a sole source supplier cannot meet our needs or is otherwise unavailable, we may be unable to find a suitable alternative. Climate-related issues have an impact on global stability and security and is one of many macro-trends that are considered in

		business strategy as an influencer on the current and future needs of our customers.
Reputation	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes reputational risks as part of its risk assessment and management programs. Northrop Grumman remains committed to sustainable performance through effective environmental stewardship, strong corporate citizenship, devotion to diversity and inclusion and maintenance of high standards of ethics, business conduct and corporate governance. This reputational risk specifically impacts our ability to acquire and retain talent within the company. As stated in our 2020 Sustainability Report, talent management is key to our near- and long-term growth. Without a best culture workplace, which includes strong environmental management, we may not be able to attract and retain the most diverse talent from top colleges and the labor market. Having an environmental sustainability program and time-bound enterprise-wide goals to address climate-related issues demonstrates a commitment to environmental, social, and governance topics that are important to potential new hires, and thus reinforces Northrop Grumman's reputation as a preferred employer.
Acute physical	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes acute physical risk such as natural disasters as part of its risk assessment and management programs. Our business is subject to disruptions caused by natural disasters that could adversely affect our overall financial position. We have significant operations located in regions that may be exposed to damaging storms and other natural disasters. One example is our St. Augustine, Florida Aircraft Integration Center of Excellence where the E-2D Hawkeye aircraft is manufactured. This facility is located in North Florida, near coastal waterways, and subject to hurricanes and tropical storms. Natural and environmental disasters could also disrupt the critical infrastructure needed for normal business operations.
Chronic physical	Relevant, always included	Northrop Grumman's Enterprise Risk Management Council includes chronic physical risks as part of its risk assessment and management programs. We leverage insurance modeling systems to determine the maximum windstorm and earthquake exposure when designing new buildings and use this as a basis for annual insurance coverage. An example of considering chronic risks is represented in the design of the new Building 100 at our St. Augustine, Florida site. The design requirements included the capability to withstand an ultimate wind speed of 130 mph into the building structure design and the roof-mounted, integrated solar panels.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Per the risk factors stated in our Annual Report, our business is subject to disruption caused by natural and/or environmental disasters that could adversely affect our revenues, profitability and our overall financial position. Although preventative measures may help to mitigate damage, the damage and disruption resulting from natural disasters, the nature, frequency and severity of which we may be impacted by climate change, and delays in recovery may be significant. We have significant operations located in regions that may be exposed to damaging storms and other natural disasters. Examples include our St. Augustine, Florida Aircraft Integration Center of Excellence where the E-2D Hawkeye aircraft is manufactured and our Melbourne, Florida Manned Aircraft Design Center of Excellence. These facilities are located in coastal Florida, near coastal waterways, and are subject to hurricanes and tropical storms. Natural and environmental disasters could also disrupt the critical infrastructure needed for normal business operations.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

750,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact represents the reduced revenue impact to our Melbourne, FL operations during Hurricane Irma. We established a cost collector to track costs and reduced revenue. The $750,000 equals the sum of lost production hours, employee time off and overtime, post-event cleanup, travel costs and diesel fuel for generators.

Cost of response to risk

0

Description of response and explanation of cost calculation

The Business Continuity Program is designed to enable the company to respond effectively to unanticipated events (e.g. natural disasters) with an emphasis on the protection of people, information and assets as well as continuity of mission. At the facility (asset) level, the Business Continuity Program leverages annual physical security surveys known as a Business Impact Analysis, to evaluate risks and opportunities and their potential impacts to the company, personnel, and/or operations. The Business Impact Analysis helps prioritize the recovery order of business assets and sites, identify gaps in recoverability, and help determine potential financial, reputational, and known legal impacts if recover is not achieved. Case study: During Hurricane Irma, the company executed this process at the Melbourne, FL facility, which helped ensure important safeguards were in place to protect employees and assets during and after the hurricane. Safeguards and actions taken included proactive communication to employees five days before the hurricane; the transport of vital supplies to employees and delivering fuel trucks to operate generators for mission critical systems two days before landfall; and sending first responder teams and RVs after the hurricane to help resume business operations. As a result of the Business Impact Analysis, risk handling and preparation by the Business Continuity Program, and oversight by the Enterprise Risk Management Council (ERMC), the company was prepared to safeguard the health and safety of its employees before, during and after the hurricane. The cost of response to risk is $0 because there is no additional cost in managing risks of extreme weather events as our Business Continuity Program is part of our regular course of business.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical

Changes in precipitation patterns and extreme variability in weather patterns

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

The effects of climate change have the potential to impact the cost of utilities at our sites as cities cope with and plan for the cycles of drought, extreme heat, and flash floods which are putting a strain on natural resources and critical infrastructure. Our California sites in El Segundo, Manhattan Beach, Redondo Beach, Palmdale, and Sunnyvale, among others, account for nearly approximately 30% of both our natural gas and electricity usage and could see higher operating costs as a result of increased utility fees associated with new regulations that have recently been passed to combat these environmental changes. Furthermore, in California, water utilities are assessing drought fees on customers and adding a surcharge for users that exceed their established allocations as a way to better manage drought risks. Additionally, AB 1054 was passed in California in July of 2019. The program established by this law is designed as an insurance fund to help electric utilities cover the cost of asset damage resulting from the increasing frequency of wildfires in California. Utilities are now allowed to impose additional fees and rate increases on rate payers like our sites mentioned above and we are continuing to assess how these additional rates have impacted the operating costs at our sites.

Time horizon

Short-term

Likelihood

More likely than not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,300,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Estimated financial impact from increased costs is based on the company's 2014 base year water usage and projecting an average rate increase of 4.1% per year for water over 10 years (per the DOE FEMP Annual Price Escalation Rate report from September 2017). Financial Impact= [($6.00/kgal*.041)*(934,000,000gals/1000gals)*10years]

Cost of response to risk

13,000,000

Description of response and explanation of cost calculation

Northrop Grumman's 2020 environmental sustainability goals for greenhouse gas emissions reduction and potable water use reduction assist in managing the climate-related risks associated with increasing costs of utilities. Through these goals, we are driving operational efficiency and cost savings throughout our company, reducing energy consumption and conserving water; we are also reducing the future impacts of rising utility costs as a result of issues such as the California drought. Each year we have taken actions to implement potable water conservation projects to drive performance to our 2020 potable water use reduction goal. From 2015-2020, we implemented targeted conservation projects resulting in an estimated savings of 312 million gallons of water by investing approximately $13 million. This represents the sum of the capital costs for 146 of these projects, which we use as our cost of management. Case study: In 2019, the site in St. Augustine, FL site implemented a project to use the site's existing cooling tower to treat contaminated groundwater that was being treated separately by a pump and treat system on site. Using the contaminated water as makeup water for the cooling tower is saving 7 million gallons of potable water per year, and cutting 15 years off of the remediation process.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Enhanced emissions-reporting obligations

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Environmental matters, including unforeseen costs associated with regulatory compliance, particularly at our California and Australia sites, could have a material adverse effect on our reputation and our financial position, results of operations, and/or cash flows. Our operations are subject to and affected by a variety of federal, state, local and foreign environmental laws and regulations, including as they may be changed over time. We have major operations in California including our El Segundo, Manhattan Beach, Redondo Beach, Palmdale, Sunnyvale, among others that may be subject to existing climate-related regulations within the state, specifically programs like Assembly Bill 32, Global Warming Solutions Act (Chaptered 2006). Sites in the South Coast Air Quality Management District are subject to Rule 1100 which requires replacement of boilers to meet NOx concentration limits. Internationally, where we have major operations such as in Australia, we assess programs such as the Australia National Greenhouse and Energy Reporting Requirements to ensure our local operations are meeting climate-related reporting requirements, if applicable.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

18,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The estimated financial impact represents a single example of higher compliance costs as a result of new regulations from the South Coast Air Quality Management District. We are subject to Rule 1100 for NOx concentration limits. The estimated cost represents replacement of approximately 40 boilers in our California operations at an average estimated unit cost, of $450,000. Financial Impact: 18,000,000=(450,000 boiler cost *40 # of boilers)

Cost of response to risk

1,400,000

Description of response and explanation of cost calculation

Northrop Grumman manages this risk through the company's Environmental, Health & Safety (EHS) and Environmental Sustainability organizations. The EHS team heads the company's efforts to provide a safe and healthy workplace for our employees and to ensure that we conduct our operations in an environmentally responsible manner and that we conduct our business activities in accordance with applicable legal requirements such as emissions regulations. To manage potential greenhouse gas emissions reporting obligations, we established the environmental sustainability program in 2008. Our current, and second, greenhouse gas emissions-reduction goal is to reduce emissions by 30% from 2010 to 2020. A positive result of this program was exceeding our 2020 goal with a 43.7% reduction in emission during the goal period. By proactively and voluntarily reducing our emissions, we are minimizing exposure to future environmental regulations from the federal government and states (e.g. AB 32) where we do business. The cost of response to risk represents the sum of the 2020 investments in emissions reductions activities that enable the company to minimize its greenhouse gas emissions and meet its 2020 reduction goal. Last year this included 33 greenhouse gas emissions reductions projects focused on energy efficiency for building services that will reduce annual emissions by approximately 2,038 MTCO2e; these projects have an average payback between 2 and 5 years.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Resource efficiency, driven by Northrop Grumman's environmental sustainability program and 2020 goals, creates an opportunity for reduced operating costs at our sites. Each year we invest in our infrastructure through energy efficiency and greenhouse gas emissions reductions projects, reducing the cost of our operations and minimizing our environmental footprint across all of our global operations. For example, we have 18 certified green buildings in our portfolio totaling more than 2.2 million square feet of floor space certified to Energy Star and LEED standards. Investments in projects such as these drove performance towards our 2020 greenhouse gas reduction goal of 30% from a 2010 base year and reduce operation costs.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

3,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The estimated financial impact represents the lifetime cost savings of the 2020 investment in greenhouse gas emissions-reductions projects which is calculated over an estimated 10-year minimum lifespan of the projects. The simple payback for these projects is averaged to be 25 years. Financial impact 3,000,000 = (300,000 annual cost savings *10 years)

Cost to realize opportunity

1,400,000

Strategy to realize opportunity and explanation of cost calculation

Northrop Grumman manages this risk through the company's Environmental, Health & Safety (EHS) and Environmental Sustainability organizations. The EHS team heads the company's efforts to provide a safe and healthy workplace for our employees and to ensure that we conduct our operations in an environmentally responsible manner and in accordance with applicable legal requirements such as emissions regulations. The

environmental sustainability program was established in 2008 to manage potential greenhouse gas emissions reporting obligations.

Our current, and second, greenhouse gas emissions-reduction goal is to reduce emissions by 30% from 2010 to 2020. A positive result of this program was exceeding our 2020 goal with a 43.7% reduction in emission during the goal period. By proactively and voluntarily reducing our emissions, we are minimizing exposure to future environmental regulations from the federal government and states (e.g. AB 32) where we do business and capitalizing on efficiency opportunities. The cost to realize the opportunity represents the sum of the 2020 capital cost investments in emissions reductions activities that enable the company to minimize its greenhouse gas emissions and achieve its 2020 reduction goal. Last year this included 33 greenhouse gas emissions-reduction projects focused on energy efficiency opportunities for building services that will reduce annual emissions by approximately 2,038 MTCO2e; these projects have an average payback of 5.0 years. Examples of these projects include boiler replacements, LED lighting upgrades, building controls systems, and installations of variable frequency drives on motors and pumps. For example, a LED lighting upgrade project at our Palmdale, California facility reduced 400 MTCO2e and had a simple payback of less than 1 year.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Reduced water usage and consumption

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Resource efficiency, driven by Northrop Grumman's environmental sustainability program and 2020 goals, creates an opportunity for reduced operating costs at our sites. Each year we invest in our infrastructure by implementing water use reduction projects, which decreases the cost of our operations and shrinks our environmental footprint across all of our global operations. For example, the 28 projects completed in 2020 are estimated to conserve 66 million gallons annually. Investments in projects

such as these drove performance to achieve our 2020 water conservation goal of 20% from a 2014 base year as well as reduce operation costs.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

11,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The estimated financial impact represents the cost savings resulting from reducing 20% water consumption over the goal period, for 10 years (estimated average lifetime of conservation project). Estimated reduction of 186 million gallons annually to meet the goal and an average cost of water of $6/kgal. Financial impacts: 11,000,000 = (186MG/1000gal*$6price/kgal)*10 years.

Cost to realize opportunity

13,000,000

Strategy to realize opportunity and explanation of cost calculation

Northrop Grumman's 2020 environmental sustainability goals for greenhouse gas emissions reduction and potable water use reduction assist in managing the climate-related risks associated with increasing costs of utilities. Through these goals, we drove operational efficiency and cost savings throughout our company, reducing energy consumption and conserving water; we are also reducing the future impacts of rising utility costs as a result of issues such as the California drought. Each year we took action to implement potable water conservation projects to achieve performance to our 2020 potable water use-reduction goal. From 2015-2020, we implemented targeted conservation projects estimated to save 313 million gallons of water by investing approximately $13 million. This cost to realize the opportunities represents the sum of the capital costs for 146 of these projects. We use this figure as our cost of management. In 2020, we implemented a project at the Advanced Technologies Laboratories site, for example, that is estimated to save 41 million gallons of potable

water per year by treating wastewater effluent from the site and re-using it as supply water for the deionized water system.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Climate-related issues may increase demand for technologies and capabilities provided by Northrop Grumman that support environmental and weather research. Changing conditions impacting the frequency of extreme weather, movement of glaciers, and soil moisture conditions require increased monitoring and measurement. From observations to decision support, Northrop Grumman develops and operates systems and services to deliver environmental intelligence through science, sensors and enterprise services. Examples include the Global Hawk air vehicle that is being used by NASA earth science missions, sustainment services for the Air Force Weather program, the ICESat-2 satellite that measures the changing height of Earth's glaciers, ice sheets and sea ice, and the AstroMesh-Lite(R) reflector being developed for NASA JPL's Soil Moisture Active Passive spacecraft.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

9,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact of $9,000,000 of increased revenue represents the lowest contract value from the examples provided below. Financial impacts vary based on individual contract value. Example programs include the $300 million Air Force contract for the Systems Engineering, Management and Sustainment III, the $121 million Advanced Technology Microwave Sounder for NOAA's Joint Polar Satellite System, and the $9 million Scalable Space Inertial Reference Units for the Korea Aerospace Research Institute GEO-KOMPSAT-2 space satellite program.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Northrop Grumman's business development and customer relationship management practices provide the opportunity to increase demand for climate-related technologies and capabilities. Northrop Grumman has supported NASA environmental data missions since the 1980s and our support continues to mature and evolve as NASA seeks innovative solutions for new challenges and opportunities. Through this long-standing relationship, we have worked with NASA to support their needs by providing an expanded suite of technical capabilities and supporting IT platforms, including those designed for environmental and climate monitoring. We have created demand for these types of product through press releases and by creating a dedicated page on our public website that describes our environmental and weather information solutions, capabilities, and our other initiatives that support weather and environmental science. As a result of maintaining positive customer relationship and through a focused marketing strategy, Northrop Grumman was able to extend the NASA Space Act Agreement into 2018 to continue joint use and shared cost of the Northrop Grumman-produced Global Hawk unmanned aircraft for science missions, hurricane surveillance, atmospheric research and exploration of new mission capabilities. There is no additional cost to realize the opportunity as engaging with customers to demonstrate our capabilities is part of our regular course of business.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes

C3.1b

(C3.1b) Does your organization intend to publish a low-carbon transition plan in the next two years?

	Intention to publish a low-carbon transition plan	Comment
Row 1	No, we do not intend to publish a low-carbon transition plan in the next two years	

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
Other, please specify WWF 3% solution	Northrop Grumman recognizes the impacts of climate change on global stability, both near (<5 years) and long-term (>5 years); it is one of many macro-trends that is considered in business and product strategies, influences the future needs of our customers, and may increase demand for disaster relief and climate-monitoring systems such as the Global Hawk. Business Continuity analyzes acute physical climate change impacts within a short (<1 year) and medium-term (1-5 years) time horizon. Consistent with Question 2.3a, we have operations located in regions that may be exposed to increased severity of natural disasters (e.g. coastal Florida). We use weather trends to perform quantitative analyses that includes the period of time within which operations must be recovered and the financial implications through loss of work-hours, revenue, asset values and insurance claims. We perform additional qualitative analyses to understand any reputational implications due to potential product delivery delays as a result of business disruption from natural disasters. An case study of where we integrated climate related issues into business decisions was during development of our 2020 greenhouse gas goal. The WWF 3% Solution scenario analysis was used to inform development of the corporate-wide goal as it was one of the only tools available for science-based projections in 2013 when this goal was developed. The 2020 greenhouse gas reduction of goal 30% from a 2010 base year reflects consideration of science- based climate change projections, inclusive of sources such as The 3% Solution, to ensure our reduction goal is impactful. The WWF 3% Solution calculator identified 19-24% as a the range for total percentage emissions reduction based on Northrop

	Grumman's base year emissions, industry classification, business unit emissions distribution/attribution and expected market share change over the goal period time horizon (2010-2020). This GHG goal is inclusive of all scope 1 and 2 emissions from our full portfolio of facilities where we have operational control and represents 98% of our global floor space. By setting an ambitious GHG target beyond what was projected by the 3% Solution, we prioritized large scale efficiency projects, such as boiler replacements, at our operations and invested in renewable energy installations, like onsite solar, that have enabled us to surpass our GHG emissions reduction goal well before the end of the goal period.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Climate-related issues may increase demand by our customers for technologies and capabilities provided by Northrop Grumman that support environmental and weather research. From observations to decision support, Northrop Grumman has made the strategic business decision to develop and operate systems and services to deliver environmental intelligence through science, sensors and enterprise services. The time horizon for these activities is ongoing (short-, medium-, and long-term as specified in C2.1a). Northrop Grumman provides an array of products that support climate and earth monitoring activities being completed by our customers. The data acquired from the systems we develop provide important information that is required to better understand the Earth's changing climate. The continued need for these systems provides further opportunity to leverage Northrop Grumman capabilities (Opportunity #3) which we have used to meet demand and support the needs of our customers. For example, the JPSS-1 satellite was launched carrying two Northrop Grumman-developed sensors that monitor atmospheric data and the NASA Global Hawk developed by Northrop Grumman is used for various climate monitoring missions. As a result, our technology has supported customers in the monitoring of hurricanes as well as aided in disaster relief efforts.

Supply chain and/or value chain	Yes	Climate/natural disaster issues are one of many characteristics integrated into our Global Supply Chain Risk Management strategy . We have a committee that meets monthly to identify, assess and monitor medium-term (1 to 5 years) supply chain risks across the enterprise in order to manage issues on an ongoing basis. Our strategy is influenced by the fact that our suppliers and subcontractors are subject to natural and environmental disasters that could affect their performance to our contracts and ultimately impact our operations. As an example, when a Climate/natural disaster supply chain risk has been identified (i.e. hurricanes, wildfires), our committee assesses for probability of supply chain disruption as well as severity of impact to our business operations and programs. Detailed mitigation plans are established at the local or enterprise level, in collaboration with our internal stakeholders and suppliers as appropriate. Case study: During Hurricane Irma, our facilities in Melbourne and St. Augustine experienced availability and delivery issues for diesel fuel required to power emergency generators as a result of limited supply, high-demand and damaged infrastructure caused by the storm. A decision based on our risk mitigation strategy included leveraging our geographically diverse supply base in order to coordinate alternative sources of supply from outside of the impacted area in order to continue operational continuity of our facilities.
Investment in R&D	No	Climate-related risks and opportunities have not directly impacted our investment in R&D due to the nature of our business. Our products and services are designed to meet contractual requirements of our customers, primarily the U.S. Government and principally the Department of Defense and intelligence community. Company-sponsored R&D investment strategy includes significant investment to support future technologies and mission solutions primarily related to government programs.
Operations	Yes	Our business is subject to disruption caused by natural and/or environmental disasters that could adversely affect our profitability and overall financial position. Therefore, we use the Business Impact Analysis, performed annually, as part of our strategy to assess the potential size and scope of climate-related risks posed to our operations, to prioritize recovery order of sites and business processes, and to identify gaps in recoverability. We have significant

		operations located in regions that may be exposed to hurricanes and other damaging storms and natural disasters. For example, Hurricanes Irma and Maria impacted our St. Augustine, Florida and Melbourne, Florida operations and resulted in employee evacuations, lost work-hours, and limited infrastructure damage. During annual planning for these events, our robust Business Continuity Program, as described in 2.2, deploys an array of preventative and active measures that help to mitigate and adapt to impacts from natural and/or environmental disasters on our employees, operations, and physical infrastructure. Furthermore, we consider these risks in our new building design and construction. Mitigation efforts during the construction of the new Building 100 at our St. Augustine, Florida site required additional investment to incorporate the capability to withstand an ultimate wind speed of 130 mph into the building structure design and the roof-mounted, integrated solar panels. We are also aware that policy and legal risks such as climate-related regulations could have a material adverse effect on our reputation and our financial position, results of operations, and/or cash flows. We have implemented greenhouse gas, water and waste reduction goals from 2010-2020 to anticipate these risks, and we are also implementing additional strategies in parallel. Case Study :A substantial business decision made as a result of integration of climate-related issues, specifically related to greenhouse gas emissions reductions, was the decision to look beyond just our 2020 goals and minimize our impact to the environment as our operations expand. This is being accomplished through investing in LEED certification for new construction to ensure our business operations minimize greenhouse gas emissions, water use, and solid waste generation. In 2020, one LEED building in Linthicum, MD was added to our inventory.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence

Row 1	Revenues Indirect costs Capital expenditures Assets	Our business is subject to disruption caused by natural and/or environmental disasters that could adversely affect our revenues, indirect costs, profitability, assets and our overall financial position. We have significant operations located in regions that may be exposed to hurricanes and other damaging storms and natural disasters such as our St. Augustine, Florida and Melbourne, Florida sites. Our subcontractors and suppliers are also subject to natural and environmental disasters that could affect their ability to deliver or perform under a contract. Although preventative measures may help to mitigate damage, the damage and disruption resulting from natural and environmental disasters may be significant. If insurance or other risk-transfer mechanisms are unavailable or insufficient to recover all costs or if we experience a significant disruption to our business due to a natural or environmental disaster, the magnitude of the impact could be a material adverse effect on our financial position, results of operations and/or cash flows. On an annual basis, our Business Continuity program analyzes acute physical climate-related issues and uses weather trends to perform quantitative analyses that include financial implications of business disruption from natural disasters. This analysis drives various risk management programs to be implemented across the company. As described in C2.3a Risk #1, proactive assessments and planning for Hurricane Irma resulted in a low impact on our Melbourne, Florida operations. As outlined in C2.4a Opportunities #1 and #2, Northrop Grumman drives resource efficiency through capital expenditures required to achieve environmental sustainability program goals and objectives as well as to reduce operating costs. This includes expenditures for energy efficiency, LEED certified buildings, onsite renewable energy systems, water conservation, and solid waste diversion. In 2020, we completed 33 GHG emissions reduction projects, focused on energy efficiency, that will reduce annual emissions by approximately 2,038 MTCO2e and have an average payback of 4.6 years. In addition, 18 of our buildings, representing 2.2 million sq. ft. of the company's footprint have received a LEED or Energy Star rating.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Northrop Grumman's environmental sustainability program was established in 2008 in response to the growing stakeholder expectations surrounding environmental sustainability including climate and greenhouse gas emissions, water conservation, and solid waste management. To ensure integration into the business and business strategy, environmental sustainability and specifically greenhouse gas emissions reductions projects, were established as one of the Company's six non-financial performance metrics that influence compensation for

executives and eligible employees. The Board of Directors Policy Committee has oversight of the environmental sustainability program and is updated annually on the environmental sustainability program, 2020 goal performance, and stakeholder-engagement activities. The company's current 2020 environmental sustainability goals for 30% greenhouse gas emissions reductions from 2010, 20% potable water use reduction from 2014, and 70% solid waste diversion from landfill continue our commitment to addressing climate-related issues.
• We have operations located in regions that may be exposed may be exposed to hurricanes and other damaging storms and natural disasters (e.g. coastal Florida). Our Business Continuity program analyzes acute physical climate-related issues and uses weather trends to perform quantitative analyses that include financial implications of business disruption from natural disasters. This analysis drives various risk management programs to be implemented across the company. Climate-related issues also have an impact on global stability, both near and long-term. It is one of many macro-trends that are considered in business strategies as an influencer on the future needs of our customers and may increase demand for some Northrop Grumman capabilities and products such as the Global Hawk that can be used for disaster relief efforts and climate monitoring.
• The company's strategy includes our 2020 environmental sustainability goals for greenhouse gas emissions reductions of 30% from a 2010 base year.
• A substantial business decision made as a result of integration of climate-related issues, specifically related to the aspect of greenhouse gas emissions reductions, was the decision to look beyond just our 2020 goals and minimize our impact to the environment as our operations expand. This is being accomplished through investing in LEED certification for new construction to ensure our business operations minimize greenhouse gas emissions, water use, and solid waste generation.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2014

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2010

Covered emissions in base year (metric tons CO2e)

732,736

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2020

Targeted reduction from base year (%)

30

Covered emissions in target year (metric tons CO2e) [auto-calculated]

512,915.2

Covered emissions in reporting year (metric tons CO2e)

512,915.2

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition

Please explain (including target coverage)

This is Northrop Grumman's second greenhouse gas and first absolute-reduction goal. This goal reflects consideration of science- based climate change projections, inclusive of sources such as the 3% Solution, to ensure our goal is impactful. The analysis was conducted prior to the development of CDP's standards that define a science-based goal as including a Scope 3 target and WRI's publication of the updated Scope 2 Accounting Guidance. The WWF 3% Solution calculator identified 19-24% as a the range for total percentage emissions reduction based on Northrop Grumman's base year emissions, industry classification, business unit emissions distribution/attribution and expected market share change over the goal period time horizon (2010-2020).

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2014

Target coverage

Company-wide

Target type: absolute or intensity

Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

Waste management

metric tons of waste diverted from landfill

Target denominator (intensity targets only)

metric ton of waste

Base year

2014

Figure or percentage in base year

52.2

Target year

2020

Figure or percentage in target year

70

Figure or percentage in reporting year

69.2

% of target achieved [auto-calculated]

95.5056179775

Target status in reporting year

Expired

Is this target part of an emissions target?

No.

Is this target part of an overarching initiative?

Other, please specify

Environmental Sustainability: 2020 Goals

Please explain (including target coverage)

This goal is to increase solid waste diversion from landfill in our global operations by diverting via various alternative strategies such as recycling, composting, etc. In 2020, our solid waste diversion rate was 69.2% diversion from landfill.

Target reference number

Oth 2

Year target was set

2014

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify

Other, please specify

Potable Water Use (Million Gallons)

Target denominator (intensity targets only)

Base year

2014

Figure or percentage in base year

0

Target year

2020

Figure or percentage in target year

20

Figure or percentage in reporting year

20

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this target part of an emissions target?

No.

Is this target part of an overarching initiative?

Other, please specify

Environmental Sustainability: 2020 Goals

Please explain (including target coverage)

The goal is a 20% reduction in potable water use within our global operations. In 2020, our potable water use reduction was 20.0%.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	33	2,038
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings

Other, please specify

Energy Efficiency: Building Services

Estimated annual CO2e savings (metric tonnes CO2e)

1,949

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

344,063

Investment required (unit currency – as specified in C0.4)

2,062,692

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Building efficiency projects include HVAC, lighting, motors, compressed air systems, and boilers. Additional GHG savings of 2,755 MT CO2e are achieved through maintenance and other activities that have higher investments and extended ROIs. The additional cost for energy efficiency gains beyond standard replacement is difficult to isolate and is not included in this line item. The approximate avoided electricity by implementing these building services projects is estimated to be 4278 MWh, based on the average U.S. grid emission factor (lb GHG/MWh) calculated from EPA eGrid's 2018 release. As outlined in our 2020 Sustainability Report, we realized total emissions reductions of 2,038 MT CO2e from energy efficiency (building services and production processes), maintenance and other activities in 2020.

Initiative category & Initiative type

Energy efficiency in production processes

Other, please specify

Incudes process optimization, equipment

Estimated annual CO2e savings (metric tonnes CO2e)

89

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

37,840

Payback period

No payback

Estimated lifetime of the initiative

11-15 years

Comment

Process efficiency efforts include manufacturing changes and chemical substitution. The approximate avoided electricity by implementing these building services projects is estimated to be 221 MWh, based on the average U.S. grid emission factor (lb GHG/MWh) calculated from EPA eGrid's 2019 release. As outlined in our 2020 Sustainability Report, we realized total emissions reductions of 2,038 MT CO2e from energy efficiency (building services and production processes), maintenance and other activities in 2020.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	We make annual financial investments in energy efficiency projects in our buildings and operations to support progress towards our 2020 greenhouse gas emissions reductions, potable water use reductions, and solid waste diversion goals.
Dedicated budget for other emissions reduction activities	We make annual financial investments in projects that increase efficiency and directly or indirectly result in GHG emissions reductions to support progress towards our 2020 greenhouse gas emissions reductions, potable water use reductions, and solid waste diversion goals.
Internal incentives/recognition programs	Environmental sustainability (measured in terms of reductions in absolute greenhouse gas emissions, potable water use consumption and improvement in solid waste diversion) is one of the Company's seven non-financial metrics that influence compensation for executives and eligible employees and can result only in a downward adjustment to the financial metric score.
Employee engagement	Employee awareness and behavior is an important element of efficiency and emissions-reductions activities. We engage with

	employees through our environmentally focused Employee Resource Group, signage in our facilities, webinars, and voluntary training.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Advanced Composite material for military and commercial aircraft and launch structures offer a lightweight alternatives to traditional materials. Using lighter materials on flight systems increases the performance and efficiency thus avoiding the emissions that would result from the fuel required to move a heavier aircraft.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

internal methods for calculating avoided emissions

% revenue from low carbon product(s) in the reporting year

0

Comment

Level of aggregation

Product

Description of product/Group of products

The T6 radio reduces whole- life costs. Efficiency is increased and power consumption is decreased, reducing the initial and ongoing emissions and costs of power and air conditioning. The combination of up to a ten-year service interval and fifteen-year service lifetime also brings down cost of ownership.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

internal methods for calculating avoided emissions

% revenue from low carbon product(s) in the reporting year

0

Comment

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2010

Base year end

December 31, 2010

Base year emissions (metric tons CO2e)

171,412

Comment

Scope 2 (location-based)

Base year start

January 1, 2010

Base year end

December 31, 2010

Base year emissions (metric tons CO2e)

561,324

Comment

Scope 2 (market-based)

Base year start

January 1, 2010

Base year end

December 31, 2010

Base year emissions (metric tons CO2e)

561,324

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other, please specify
IAEG Aerospace GHG Reporting Guidance

C5.2a

(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

IAEG GHG Reporting Guidance for the Aerospace Industry a supplement to the GHG Protocol Corporate (Scope1&2) and Value Chain (Scope 3) Accounting and Reporting Standards

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

109,741

Start date

January 1, 2020

End date

December 31, 2020

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

145,156

Start date

January 1, 2019

End date

December 31, 2019

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY 2019

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)

134,173

Start date

January 1, 2018

End date

December 31, 2018

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY 2018

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)

140,928

Start date

January 1, 2017

End date

December 31, 2017

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY 2017.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

313,927

Scope 2, market-based (if applicable)

305,162

Start date

January 1, 2020

End date

December 31, 2020

Comment

Past year 1

Scope 2, location-based

339,904

Scope 2, market-based (if applicable)

330,247

Start date

January 1, 2019

End date

December 31, 2019

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY2019.

Past year 2

Scope 2, location-based

365,593

Scope 2, market-based (if applicable)

355,532

Start date

January 1, 2018

End date

December 31, 2018

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY2018.

Past year 3

Scope 2, location-based

370,127

Scope 2, market-based (if applicable)

361,175

Start date

January 1, 2017

End date

December 31, 2017

Comment

This figure is a restatement due to the historical data correction process capturing a more complete annual inventory for RY2017.

C6.4

(C6.4) 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

C6.4a

(C6.4a) 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

Mobile emissions for small fleets (<10 vehicles)

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions excluded

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is 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 limited assurance through third party verification.

Source

Non-utility fuel data for sites less than 100,000 square feet

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions excluded

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is 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 limited assurance through third party verification.

Source

Process emissions excluded for buildings less than 100,000 square feet

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions excluded

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is 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 limited assurance through third party verification.

Source

Refrigerant emissions of HFCs

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions excluded

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is 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 limited assurance through third party verification.

Source

Emissions of PFCs from fire suppression systems

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

No emissions excluded

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions excluded

Explain why this source is 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 limited assurance through third party verification.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, not yet calculated

Please explain

Not Applicable

Capital goods

Evaluation status

Relevant, not yet calculated

Please explain

Not Applicable

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

23,185

Emissions calculation methodology

Northrop Grumman calculated metric tonnes of CO2e due to distribution loss using the average U.S. nation-wide loss provided by the EIA (https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid-questions-and-answers). The nation-wide loss was approximately 7.96%. Based on Northrop Grumman's purchased electricity for 2020 (1,069,438.52 MWh), we calculated the amount of electricity that would have been needed to deliver those kWh taking into consideration a 7.96% loss. We then calculated the kWh that were lost during distribution and applied the eGRID 2019 U.S. average emission factor of 889.35 lb/kWh CO2e, which resulted in 23,185 metric tonnes of CO2e due to transmission and distribution loss.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The primary kWh data used by Northrop Grumman comes from bill pay IT system. However, a 5.10% assumed distribution loss comes from EIA. Therefore, stating 0% of data comes from suppliers or value chain partner.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

768,411

Emissions calculation methodology

Northrop Grumman is an EPA SmartWay partner and utilizes ground shipment data collected, managed and provided by our partner logistics organization. The primary domestic shipment and mileage data is tracked through our partner's FBAP. The GWPs are consistent with our Scope 1 and Scope 2 emissions inventory and come from the IPCC Fourth Assessment Report (AR4). Our logistics partner applies the SmartWay program's emission factors based on classification of each carrier and mode type to the primary mileage data per shipment. Approximately 99.8% of the emissions reported in this category are covered by SmartWay carrier partners.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Northrop Grumman's domestic shipments are all tracked and managed through our logistics partner's FBAP. Shipments and mileage made by SmartWay carriers and nonSmartWay carriers are consolidated in the FBAP and EPA SmartWay standard emission factors (g/mile) are applied to generate a total inventory.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,125

Emissions calculation methodology

Northrop Grumman auditable sites track their annual waste by category (commodity, product, unit, etc.) and by management method. Northrop Grumman waste categories were mapped to corresponding categories using the EPA WARM model, which generates emissions in MTCO2e for each material category and management method. The reported emissions represent the actual waste data collected that was sent to landfill in 2020 as calculated by the EPA WARM model.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

83

Please explain

The primary data collected comes from waste hauler-provided receipts demonstrating actual tonnage and the remainder is estimated based on applying a standard factor to facility headcount.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

62,388

Emissions calculation methodology

All activity data related to business travel is provided by Northrop Grumman's central travel management system. Activity data include number of hotel nights booked, rental car miles travelled and emissions, train miles travelled, and number of air miles travelled. The emissions from air travel and train travel are calculated using emission factors from the U.S. EPA Center for Corporate Climate Leadership GHG Emission Factors Hub. Emissions from hotel stays are calculated using the respective emission factor from Carbon Fund. Emissions from car rentals are provided by the central travel management system. The GWPs are consistent with our Scope 1 and Scope 2 emissions inventory and come from the IPCC Fourth Assessment Report. The GHG inventory for business travel achieved Limited Assurance via Third Party Verification from LRQA America’s Sustainability, Inc.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

99

Please explain

A portion of emissions from car rentals are extrapolated based on spend data.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

253,358

Emissions calculation methodology

Employee commuting accounts for the emissions associated with Northrop Grumman employee commutes to/from work. The GWPs are consistent with our Scope 1 and Scope 2 emissions inventory and come from the IPCC Fourth Assessment Report. The emissions are calculated using emission factors from the U.S. EPA Center for Corporate Climate Leadership GHG Emission Factors Hub. Employee headcount is primary data from the Annual Report (10K) filing. Estimating factors and averages are used from reputable public sources (e.g., EPA). 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.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

6.5

Please explain

National averages for commute miles to work, MPG, and AVR are used to calculate employee commuting emissions. Approximately 6.5% of our data is considered actual data from value chain because it is reported through compliance mechanisms. This does not account for virtual workforce due to Covid during the calendar, so emissions may be lower than reported for this category.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Northrop Grumman reports emissions from leased spaces as part of Scope 1 and Scope 2 inventories since we consider leased space within our operational control. Therefore, we do not have additional emissions to report as part of this Scope 3 category.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

According to the Voluntary GHG Reporting Guidance for the Aerospace Industry (IAEG, 2016), downstream transportation and distribution emissions are most often captured in a customer's Scope 1 emissions or are more appropriately quantified in Scope 3 Category 4. Therefore, Category 9 is irrelevant to the aerospace industry. The International Aerospace Environmental Group (IAEG) is a non-profit organization of global aerospace companies created to collaborate on and share environmental solutions for the industry.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Products and services provided by Northrop Grumman 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

Evaluation status

Relevant, not yet calculated

Please explain

Not Applicable.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Northrop Grumman's customer base is primarily the U.S. Government, principally the Department of Defense and intelligence community. We also conduct business with foreign, state and local governments, as well as commercial customers. Our products and services are designed to meet contractual requirements of our customers. Products are sold to government customers who take formal possession of the product. Customers have their own property disposition process for owned-property, especially products used for military and defense operations. Due to the nature of our business and customer requirements, Northrop Grumman believes that "not relevant, explanation provided" is the most appropriate available response.

Downstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

1,476

Emissions calculation methodology

As of December 2020, Northrop Grumman had approximately 51 million square feet of floor space of which approximately 189,000 square feet were leased to third parties. By multiplying the average MWh/sq ft, we derived electricity usage for the facilities Northrop Grumman leases to third parties. Using the U.S. national average CO2e emission factor from eGRID2018, we calculated GHG emissions from downstream leased assets.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

Emissions for this category are immaterial. As of December 2020, Northrop Grumman had approximately 51 million square feet of floor space, of which approximately 189,000

square feet was leased to third parties. Source: 2020-Annual-Report-Northrop-Grumman.pdf (northropgrumman.com) (p22)

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Northrop Grumman does not own or operate franchises.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

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)

Evaluation status

Please explain

Other (downstream)

Evaluation status

Please explain

C-CG6.6

(C-CG6.6) Does your organization assess the life cycle emissions of any of its products or services?

	Assessment of life cycle emissions	Comment
Row 1	No, and we do not plan to start doing so within the next two years	

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00005282

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

423,668

Metric denominator

unit total revenue

Metric denominator: Unit total

27,722,000,000

Scope 2 figure used

Location-based

% change from previous year

12.66

Direction of change

Decreased

Reason for change

Implemented in 2020 a wide range of emissions-reduction activities including building and process efficiency projects , such as multiple lighting upgrades resulting in approximately 869 MTCO2e savings and process to reduce solvent use that resulted in approximately 89 MTCO2e. The 2019 gross combined Scope 1 and 2 emissions have been adjusted since RY 2019 for increased accuracy and completeness, and that figure is 485,060 MTCO2e. The company's 2019 revenue was used to calculate the 2020 intensity figure because energy and greenhouse gas emissions data excludes Orbital ATK through year-end 2020. The company's 2020 revenue data is inclusive of Orbital ATK and cannot be separated out; thus accurate intensity figures for energy and greenhouse gas emissions cannot be calculated.

Intensity figure

0.0119

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

423,668

Metric denominator

square foot

Metric denominator: Unit total

35,483

Scope 2 figure used

Location-based

% change from previous year

13.07

Direction of change

Decreased

Reason for change

Implemented in 2020 a wide range of emissions-reduction activities including building and process efficiency projects. Square footage represents owned and leased square footage and excludes subleased space as reported in the Annual Report, as well as square footage owned or leased by the Innovation Systems sector, which is outside the current goal period boundary.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	105,536	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	49	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	185	IPCC Fourth Assessment Report (AR4 - 100 year)

HFCs	2,553	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify CF4	138	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	828	IPCC Fourth Assessment Report (AR4 - 100 year)
NF3	58	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify Methylene Chloride	0.2	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify C2F6	335	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify C4F8	59	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify Chloroform	0.73	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	108,273
United Arab Emirates	0
Japan	0
Republic of Korea	27
Saudi Arabia	0
Belgium	19
Germany	468
Denmark	0.1
France	384
United Kingdom of Great Britain and Northern Ireland	293
Italy	117
Netherlands	59

Australia	0
Norway	0
Canada	102
Poland	0

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Aeronautics Systems	34,023.8
Mission Systems	45,236.5
Enterprise Services	4,130.6
Defense Systems	1,517.9
Space Systems	24,832.5

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Canada	16	16	400	0
United States of America	305,185	296,422	1,050,212	21,395
United Arab Emirates	55	55	92	0
Japan	88	88	159	0
Republic of Korea	137	137	239	0
Saudi Arabia	36	36	49	0
Belgium	26	26	108	0
Switzerland	1	1	32	0

Germany	4,889	4,889	9,096	0
Denmark	11	11	22	0
France	174	174	2,097	0
United Kingdom of Great Britain and Northern Ireland	1,206	1,206	2,925	0
Italy	1,224	1,224	2,858	0
Netherlands	49	49	94	0
Norway	0	0	13	0
Australia	661	661	827	0
Poland	168	168	215	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Aeronautics Systems	67,236	67,236
Defense Systems	28,023	27,111
Enterprise Services	8,740	1,668
Mission Systems	131,053	130,426
Space Systems	78,875	78,722

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) 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.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	Northrop Grumman has consistently maintained purchases of Renewable Energy Certificates at 20,857 MWh and accounts for the associated emissions reductions using the most recent eGRID emission factors. We continue to operate small on-site solar power systems and now have four installations operating at our sites. Emissions reductions associated with minor fluctuations in annual solar output, eGRID emission factor variance, and the addition of a small installation (~15 MWh/year) are negligible.
Other emissions reduction activities	61,392	Decreased	14.4	The emissions-reduction activities undertaken in RY 2020 resulted in a decrease of 61,392 MT CO2e. The total gross S1 + S2 emissions in RY 2019 was 485,060, therefore (61,392/485,060) = 14.4% total reduction in emissions due to emissions-reduction activities.
Divestment				Not applicable.
Acquisitions				Not applicable.
Mergers				Not applicable.
Change in output				Not applicable.
Change in methodology				Not applicable.
Change in boundary				Not applicable.
Change in physical				Not applicable.

operating conditions				
Unidentified				Not applicable.
Other				Not applicable.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C-CG7.10

(C-CG7.10) How do your total Scope 3 emissions for the reporting year compare to those of the previous reporting year?

Increased

C-CG7.10a

(C-CG7.10a) For each Scope 3 category calculated in C6.5, specify how your emissions compare to the previous year and identify the reason for any change.

Fuel and energy-related activities (not included in Scopes 1 or 2)

Direction of change

Decreased

Primary reason for change

Other emissions reduction activities

Change in emissions in this category (metric tons CO2e)

2,006

% change in emissions in this category

7.96

Please explain

Northrop Grumman purchased fewer MWh of electricity delivered from the grid in 2020 (1,069,439 MWh) than in 2019 (1,080,209 MWh). Emissions from this category are derived from Transmission & Distribution loss associated with electricity delivered from the grid, and fewer MWh purchased from the grid also reduces the associated emissions corresponding from grid delivery. Furthermore, another contributing factor is that the nation-wide loss factor provided by the Energy Information Agency increased from 4.87 to 5.10 demonstrating less efficiency in electricity delivery.

Upstream transportation and distribution

Direction of change

Decreased

Primary reason for change

Other, please specify

Change in data accuracy

Change in emissions in this category (metric tons CO2e)

339,634

% change in emissions in this category

30.65

Please explain

Prior to 2019, upstream shipping and transportation data was provided through 2 sources. Approximately 30% of the total emissions reported in previous years was derived from applying an estimated emission factor to total number of shipments based on an estimated average mileage per shipment factor, whereas 70% of the total emissions from our logistics partner's FBAP was calculated based on EPA SmartWay categorization of carriers, actual mileage, and emission factors. This year we have consolidated all shipment tracking within a single data source and, as a result, have significantly increased our data quality and limited the assumptions applied to the primary data. As such, we have an increased inventory in this category, but the data is much more accurate.

Waste generated in operations

Direction of change

Decreased

Primary reason for change

Other emissions reduction activities

Change in emissions in this category (metric tons CO2e)

700

% change in emissions in this category

24.78

Please explain

Waste diversion strategies have resulted in fewer tons of material being sent to landfill, thus generating fewer emissions from decomposition in landfill.

Business travel

Direction of change

Decreased

Primary reason for change

Other, please specify

Decrease in Activity

Change in emissions in this category (metric tons CO2e)

103,401

% change in emissions in this category

62.37

Please explain

There was a significant decrease in business travel in 2020 due to COVID-19 pandemic related travel restrictions imposed by Northrop Grumman to promote a commitment to employee health and to support efforts to limit spread of the virus. In addition, 2020 business travel data is inclusive of legacy Orbital ATK data. The company migrated legacy Orbital ATK into the Northrop Grumman business travel system, and we are unable to separate heritage NGC data from Orbital ATK data for 2020. Orbital ATK data will be completely included in Northrop Grumman's environmental goals and metrics starting in the 2021 reporting year.

Employee commuting

Direction of change

Increased

Primary reason for change

Other, please specify

Change proportion commuting and shorter commute time

Change in emissions in this category (metric tons CO2e)

80,578

% change in emissions in this category

46.64

Please explain

Total emissions from employee commuting increased over last year as we use the national averages for commute miles to work, MPG, and AVR to calculate employee commuting emissions. Approximately 6.5% of our data is considered actual data from value chain because it is reported through compliance mechanisms. In 2020, changes to our reporting systems prevent exclusion of Orbital ATK employee commuting as was possible in 2019, which could contribute to additional emissions reported this year. In addition, reported emissions for this category may be higher than actuals because we did not discount for virtual workforce due to Covid during the calendar year.

Downstream leased assets

Direction of change

Increased

Primary reason for change

Other, please specify

Increase in downstream leased square footage

Change in emissions in this category (metric tons CO2e)

158

% change in emissions in this category

11.9

Please explain

Emissions in this category are directly tied to square footage leased to a third party by the company. We have increased our subleased square footage from 169,000 square feet in 2019 to 189,000 square feet in 2020.

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

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

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	Unable to confirm heating value	0	556,658	556,658
Consumption of purchased or acquired electricity		21,395	1,069,439	1,090,834
Consumption of self-generated non-fuel renewable energy		689		689
Total energy consumption		22,084	1,626,097	1,648,181

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Aviation Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

89.29

Emission factor

8.52

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

10,114.07

Emission factor

10.23

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Jet Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

38,760.9

Emission factor

9.84

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

247.14

Emission factor

5.7

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

9,661.5

Emission factor

8.91

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Propane Liquid

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

4,836.63

Emission factor

5.74

Unit

kg CO2e per gallon

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

492,948.89

Emission factor

0.58

Unit

kg CO2e per GJ

Emissions factor source

US EPA eHub Center for Corporate Climate Leaders

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	689	689	689	689
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Solar

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

20,857

Comment

C-CG8.5

(C-CG8.5) Does your organization measure the efficiency of any of its products or services?

	Measurement of product/service efficiency	Comment
Row 1	No, and we do not plan to start doing so within the next two years	

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

69.2

Metric numerator

Tons of solid waste diverted from landfill.

Metric denominator (intensity metric only)

Total tons of solid waste generated (div + disp)

% change from previous year

9.8

Direction of change

Increased

Please explain

We track percentage of solid (non-hazardous) waste from our operational boundary that is diverted from landfill via alternative disposal methods. We have a goal of 70% diversion by 2020, and have achieved 69.2% in RY2020, a 9.8% change increase from our RY2019 diversion rate, which was 62.4% after data correction [(69.2-62.4)/69.2 =9.8%]

Description

Other, please specify

Water

Metric value

20

Metric numerator

Percent reduction of potable water use achieved.

Metric denominator (intensity metric only)

% change from previous year

48.6

Direction of change

Increased

Please explain

Our 2020 potable water use reduction goal of 20% is managed as an absolute reduction target, therefore the metric provided is reduction against our baseline year 2014 potable water use. In RY2020, we are reporting a 20.0% reduction of potable water use (gallons), whereas in RY2019 after data correction for accuracy we are reporting a 10.2% reduction against the baseline. Therefore, we have achieved a 48.6% improvement this year [(20.0-10.2)/20.0 = 48.6%].

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	Northrop Grumman provided a significant investment in a partnership with the California Institute of Technology (Caltech) for the development of the Space Solar Power Initiative (SSPI). This program brought together top researchers from Caltech and top engineers from Northrop Grumman to develop scientific and technological innovations to enable a space-based solar power system capable of generating electric power at cost parity with grid-connected fossil fuel power plants. Northrop Grumman provided up to $17.5 million to support this project and is collaborating with the Caltech team to develop solutions, build prototypes and obtain experimental and numerical validation concepts that could allow for development and eventual implementation to new deep space solar technology.

C-CG9.6a

(C-CG9.6a) Provide details of your organization's investments in low-carbon R&D for capital goods products and services over the last three years.

Technology area

Renewable energy

Stage of development in the reporting year

Basic academic/theoretical research

Average % of total R&D investment over the last 3 years

≤20%

R&D investment figure in the reporting year (optional)

Comment

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020 GHG and Water Verification Statement.pdf

Page/ section reference

Page 2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020 GHG and Water Verification Statement.pdf

Page/ section reference

Page 2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020 GHG and Water Verification Statement.pdf

Page/ section reference

Page 2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020 GHG and Water Verification Statement.pdf

Page/section reference

Page 2

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C9. Additional metrics	Other, please specify Potable Water Usage	ISAE 300 and 3410 and Northrop Grumman data collection procedures.	Northrop Grumman's annual potable water use is verified to limited assurance level. Our 2020 potable water use reduction goal of 20% and its performance is included in C9.1. [1]

[1] 2020 GHG and Water Verification Statement.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit purchase

Project type

Forests

Project identification

Mississippi Valley Reforestation Project, Green Trees Advanced Carbon Restored Ecosystem.

Verified to which standard

ACR (American Carbon Registry)

Number of credits (metric tonnes CO2e)

11,000

Number of credits (metric tonnes CO2e): Risk adjusted volume

11,000

Credits cancelled

Yes

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Offer financial incentives for suppliers who reduce your upstream emissions (Scopes 3)

% of suppliers by number

0.42

% total procurement spend (direct and indirect)

0.94

% of supplier-related Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

This engagement focuses on our domestic shipping and logistics suppliers. Northrop Grumman is an EPA SmartWay Transport Partner and strives to leverage SmartWay certified carriers for US domestic ground shipments as these partners have committed to demonstrating improvements in efficiency and reporting emissions metrics. The SmartWay program also provides supplier emissions data that supports internal benchmarking and informs our supplier selection process.

Impact of engagement, including measures of success

Northrop Grumman leverages the EPA SmartWay program to select shipping and logistics suppliers who have committed to the carrier partner program. SmartWay carrier partners commit to providing documented emissions metrics, demonstrating efficiency improvements and optimizing fuel economy. Northrop Grumman prioritizes selection of SmartWay carrier partners, and we have seen measured success with this engagement as about 99.8% of our U.S. domestic ground shipments are completed by SmartWay carrier companies. By incentivizing SmartWay partners, Northrop Grumman is prioritizing suppliers committed to lowering emissions as a best practice. The impact of the engagement with SmartWay shipping carriers can be quantified by the average CO2/mile versus that of non-SmartWay carriers, based on supplier emission factors provided by the EPA. In 2020, the SmartWay carriers averaged approximately 0.00145 tons CO2/mile, whereas the non-SmartWay carriers averaged 0.00244 tons CO2/mile; this results in a 40% reduction in greenhouse gas emissions per mile by selecting SmartWay carrier partners.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number

84

% of customer - related Scope 3 emissions as reported in C6.5

0

Please explain the rationale for selecting this group of customers and scope of engagement

As stated in our annual report, 84% of our sales are to the U.S. government, and as such, we engage significantly with them on a variety of environment-related topics including climate. Recent climate-related engagement activities with the U.S. Government include responding to the General Services Administration request to disclose climate-related activity via the CDP Supply Chain Program and responding to the Council on Environmental Quality's Federal Supplier Greenhouse Gas Management Scorecard. These activities enable our customers to better understand our environmental sustainability performance and the climate-related programs we have developed.

Impact of engagement, including measures of success

We measure customer engagement to help understand our impact. Contributing in these climate-related requests has been impactful because it has enabled us to engage with 84% (based on sales) of our customer base. Another way we measured the success and impact of this engagement is based on the rating we receive on the Council on Environmental Quality's Federal Supplier Greenhouse Gas Management Scorecard. As an example of this impact, we earned a green rating on the 2016 scorecard in all three categories of emissions disclosure, targets, and climate risk.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Our methods for engagement with partners include membership-based involvement with non-profit organizations. For example, Northrop Grumman is a founding member of the International Aerospace Environmental Group (IAEG), which was formed to develop collaborative approaches for global aerospace companies in the realm of environmental compliance and sustainability. Our strategy is to engage with partners is to leverage groups or organizations that provide added value to our business. For example, IAEG member companies recognized that there was no aerospace and defense specific guidance for reporting on Scope 3 categories, but that it was needed. Through collaboration with our peers in the GHG Management and Reporting Workgroup #3, IAEG has developed GHG Reporting Guidance for the Aerospace Industry, a supplement to the GHG Protocol. The measure of success for this partner engagement is collaboration in development and adoption of the Guidance as well as the improvement in consistency in GHG emissions reporting within the aerospace industry.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify Emissions and Air Quality	Support	Northrop Grumman works with utilities and peers as a part of a local resource group to track and collaborate on regulations with the South Coast Air Quality Management District (SCAQMD) in California. The SCAQMD promotes programs to combat climate change and adopted the 2011 Air Quality-Related Energy Policy that integrates air quality, energy, and climate issues in a coordinated and consolidated framework that guide the District's mission and efforts.	The SCAQMD is the regulatory agency responsible for improving air quality for large areas of Los Angeles, Orange County, Riverside and San Bernardino counties, where we have major operations. The SCAQMD promotes programs to combat climate change and adopted the 2011 Air Quality-Related Energy Policy that integrates air quality, energy, and climate issues in a coordinated and consolidated framework that guide the District's mission and efforts.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Business Roundtable

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Business Roundtable believes, as stated on its website that steps to address the risks of global warming are prudent and supports collective actions that will lead to the reduction of greenhouse gas emissions on a global basis. It also believes that harnessing America's abundant renewable energy resources in a cost-effective manner diversifies U.S. energy supplies, enhances U.S. energy security and advances environmental stewardship. Business Roundtable CEOs are committed to sustainability

and making life better in the communities in which their companies operate, while also creating greater prosperity by driving economic growth and job creation.

How have you influenced, or are you attempting to influence their position?

Northrop Grumman actively participates in the Business Roundtable . In particular, we engage in conversations around the subject of climate change and other environmental priorities. In 2020, the Business Roundtable released new principles and policies on climate change, which, among other topics, address topics such as carbon pricing, science-aligned emissions reduction targets, and calling on businesses and government to limit global temperature rise in alignment with the Paris Agreement.

Trade association

International Aerospace Environmental Group

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

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. As a non-lobbying organization (as defined in the by-laws), IAEG™ seeks 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.

How have you influenced, or are you attempting to influence their position?

Engagement: Northrop Grumman is a founding Board member of IAEG and actively engaged in the organization's governance, strategy and objectives. 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.

Trade association

Aerospace Industries Association

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Aerospace Industries Association (AIA), founded in 1919 only a few years after the birth of flight, is a trade association representing major aerospace and defense

manufacturers and suppliers in the United States. AIA was one of four industry groups to write a collective statement on fuel efficiency and carbon dioxide (CO2) emissions to clarify that the International Civil Aviation Organization goals involve participation by the whole aviation sector using a broad array of measures, not just aircraft technology.

How have you influenced, or are you attempting to influence their position?

Northrop Grumman participates in the AIA Committee on the Environment.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

Northrop Grumman is a member of the Conservation International (CI) Business Sustainability Council (BSC). The BSC is a forum for corporate leaders taking positive environmental actions in their businesses and provides members a blend of CI thought leadership and science, practical experience from the field, and shared best practices across corporations and cultures. BSC offers members an annual meeting for collaboration amongst members, online learning and employee engagement tools, and technical and advisory support. Conservation International informs policy development by serving as a trusted advisor to local, regional and national governments around the world. CI data, methods and tools assist governments in understanding the value of oceans, forests, croplands, water supplies and wildlife populations, and help to inform actions necessary to protect these vital natural resources.

C12.3f

(C12.3f) 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?

Northrop Grumman ensures consistency of strategy through collaboration and regular updates with leadership and stakeholder engagement groups within our organization including the Vice Presidents of Operations/Quality (Environmental Sustainability Executive Sponsors), Environmental, Health and Safety Leadership Committee (ELC), the Facilities Working Group (FWG), Government Relations, and Communications. Government Relations monitors and tracks state legislation, regulations, and local government ordinances related to environmental policy development and provides regular updates and guidance through facility operations management team meetings to ensure that Northrop Grumman can adhere to regulations and policies. Government Relations also engages with environmental stakeholders of sector EHS teams to share knowledge and ideas on how best to manage environmental regulation and policy development as part of our larger public and private partnerships. The environmental sustainability program also tracks environmental policy developments and regularly engages with the Government Relations organization in organized quarterly and monthly meetings. These meetings provide the environmental sustainability program with further insights into local and state policy activities and also provide the Government Relations team a go-to resource for environmental sustainability topics. Environmental technical experts also maintain regular communication with Northrop Grumman representatives serving within industry groups to ensure the activities are consistent with the company’s strategy.

C12.4

(C12.4) 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
In mainstream reports

Status
Complete

Attach the document
2020 Annual Report.pdf

Page/Section reference
Pages 6-19

Content elements
Risks & opportunities
Emissions figures
Other metrics

Comment

Publication
In other regulatory filings

Status
Complete

Attach the document
2021 Proxy Statement.pdf

Page/Section reference
Pages 14, 26; 49-50

Content elements
Governance
Emission targets
Other metrics

Comment

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2020 Sustainability Report.pdf

Page/Section reference

Pages 42-51; A-13-14

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	VP Global Corporate Responsibility	Other, please specify VP Global Corporate Responsibility

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

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 aerospace and defense company. We use our broad portfolio of capabilities and technologies to create and deliver innovative platforms, systems and solutions in space; manned and autonomous airborne systems; including strike; strategic deterrence systems; hypersonic; missile defense; weapons systems; cyber; command, control, communications and computers, intelligence, surveillance and reconnaissance (C4ISR); and logistics and modernization. We participate in many high-priority defense and government programs in the United States and globally. We conduct most of our business with the U.S. Government, principally the Department of Defense (DoD) and intelligence community. We also conduct business with foreign, state and local governments and commercial customers. Northrop Grumman established its environmental sustainability program in 2008 to reduce the company's environmental footprint by improving operational efficiency and integrating environmental sustainability practices into all our operations. Our Environmental Sustainability Program strives to expand environmental sustainability awareness throughout our organization, supporting our corporate values and meeting the expectations of our diverse set of stakeholders. This program is a catalyst for environmentally sustainable performance that drives long-term affordability into our operations, benefiting our customers as well as our shareholders. Northrop Grumman has committed to the following 2020 environmental sustainability goals: a 30% reduction in absolute GHG emissions from 2010 levels, a 20% reduction in potable water use from 2014, and a 70% solid waste diversion rate from landfill. All quantitative data in this response represents Northrop Grumman prior to the acquisition of Orbital ATK.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	36,799,000,000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	US	6668071029

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	Northrop Grumman's customer base is primarily the U.S. Government, principally the Department of Defense and intelligence community. We also conduct business with foreign, state and local governments, as well as commercial customers. Our portfolio of products and solutions include autonomous systems, cyber, C4ISR, strike, and logistics and modernization. Due to the nature of our business, broad product portfolio, and customer requirements the allocation of emissions to an individual product or customer is difficult. Consequently, we provide our full GHG inventory so that customers may allocate in accordance with their methodology.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

No

SC1.4b

(SC1.4b) Explain why you do not plan to develop capabilities to allocate emissions to your customers.

Northrop Grumman's customer base is primarily the U.S. Government, principally the Department of Defense and intelligence community. We also conduct business with foreign,

state and local governments, as well as commercial customers. Our broad portfolio of capabilities and technologies deliver innovative platforms, systems and solutions in space; manned and autonomous airborne systems; including strike; strategic deterrence systems; hypersonic; missile defense; weapons systems; cyber; command, control, communications and computers, intelligence, surveillance and reconnaissance (C4ISR); and logistics and modernization. Due to the nature of our business, broad product portfolio, and customer requirements ,the allocation of emissions to an individual product is difficult.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain questions?
I am submitting my response	Investors Customers	Public	Yes, I will submit the Supply Chain questions now

Please confirm below

I have read and accept the applicable Terms