

**Assurance Statement related to
GHG Emissions and Water Inventories for Calendar Year 2017
Prepared for Northrop Grumman, Incorporated**

Terms of Engagement

This Assurance Statement has been prepared for Northrop Grumman, Incorporated (Northrop Grumman).

Lloyd's Register Quality Assurance, Inc. (LRQA) was commissioned by Northrop Grumman to assure its greenhouse gas (GHG) Emissions and Water Use Inventories for the calendar year (CY) 2017 (hereafter referred to as "the Report").

The GHG Emissions Inventory includes direct (Scope 1) GHG emissions, energy indirect (Scope 2) GHG emissions and other indirect (Scope 3) GHG emissions. The Scope 2 GHG emissions were adjusted to account for the purchase of Renewable Energy Credits (RECs). The Scope 3 GHG emissions include air travel, rental cars, and hotel accommodation for business travel. The Water Use Inventory includes municipal and well water use.

The following sources were excluded from the GHG Emissions and Water Use Inventories on the basis of their de minimis contribution and sense-checked during the engagement:

- Scope 1 emissions from non-utility data fuel usage for buildings less than 100,000 square feet;
- Mobile emissions at sites with less than 10 vehicles;
- Process emissions for buildings less than 100,000 square feet;
- Process and fugitive emissions of all HFCs;
- Fugitive emissions from PFCs in fire suppression systems; and
- The Water Use Inventory excludes municipal reclaimed water use and water usage for buildings less than 10,000 square feet.

Management Responsibility

Northrop Grumman's management was responsible for preparing the Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with Northrop Grumman.

Ultimately, the Report has been approved by, and remains the responsibility of Northrop Grumman.

LRQA's Approach

Our verification was conducted in accordance with ISO14064 – 3:2006 *Specification with guidance for validation and verification of greenhouse gas assertions*, to provide limited assurance that the Scope 1, Scope 2 and Scope 3 GHG data, and water use data, as presented in the Report have been prepared in conformance with the World Resource Institute/World Business Council for Sustainable Development (WRI/WBCSD) GHG Protocol: *A Corporate Accounting and Reporting Standard*, the Northrop Grumman GHG Reporting Protocol (NG GHG Protocol), *Version 2.5* and the Northrop Grumman Reporting Protocol 102b Water Inventory *Version 2.1* (NG Water Protocol).

To form our conclusion, the assurance was undertaken as a sampling exercise and covered the following activities:



- Reviewed an overview of the processes, used at the corporate level and by each Northrop Grumman operating sector, for the management of data and information related to the Scope 1, Scope 2, and Scope 3 GHG emissions and water use;
- Interviewed relevant staff responsible for managing and maintaining data and information and for preparing the Report at the corporate level;
- Reviewed Northrop Grumman procedures for defining and collecting Scope 1, Scope 2, Scope 3 and Water use data;
- Verified the Scope 1, Scope 2 and Scope 3 GHG emissions and Water Use data for CY 2017 through a review of aggregated level data and information calculation spreadsheets provided by Northrop Grumman; and
- Verified the Scope 2 RECs through review of the REC certificates and verification of the emission calculations.

Level of Assurance & Materiality

The opinion expressed in this Assurance Statement has been formed on the basis of a limited level of assurance and at a materiality of the professional judgement of the verifier.

LRQA's Opinion

Based on LRQA's approach, nothing has come to our attention that would cause us to believe that the Scope 1, Scope 2 and Scope 3 GHG emissions and Water Use Inventory disclosed in the Report, as summarized in Tables 1 and 2 below, are not materially correct or that the Report has not been prepared in conformance with the WRI/WBCSD GHG Protocol, NG GHG Protocol and NG Water Protocol.

LRQA's Recommendations

Consider clarifying water use definitions and categories within the NG Water Protocol.

Signed

Dated: 30 March 2018

A handwritten signature in blue ink, appearing to read 'Andrea Bockrath'.

Andrea Bockrath
Lead Verifier

On behalf of Lloyd's Register Quality Assurance, Inc.,
1330 Enclave Parkway, Suite 200,
Houston, TX 77077

LRQA reference number: UQA00000935

Table 1. Summary of Northrop Grumman GHG Emissions Inventory CY 2017

Scope of GHG emissions	Description	MT CO2e
Scope 1	Direct GHG emissions	140,537
Scope 2 (Location-Based)	Energy Indirect – Location-Based	370,677
Scope 2 (Market-Based)	Energy Indirect – Market-Based	361,725
Scope 3 (business travel)	Other Indirect GHG emissions	143,331

Table 2. Summary of Northrop Grumman Water Use Inventories CY 2017

Scope of Water Use Inventory	Description	Million gallons
Global Water Use	Municipal and Well Water	878

This Assurance Statement is subject to the provisions of this legal section:

This Assurance Statement is only valid when published with the Report to which it refers. It may only be reproduced in its entirety.

Lloyd's Register Group Limited, its affiliates and subsidiaries, including LRQA, Inc., and their respective officers, employees or agents are, individually and collectively, referred to in this Legal Section as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Due to inherent limitations in any internal control, it is possible that fraud, error, or non-compliance with laws and regulations may occur and not be detected. Further, the verification was not designed to detect all weakness or errors in internal controls so far as they relate to the requirements set out above as the verification has not been performed continuously throughout the period and the verification carried out on the relevant internal controls were on a test basis. Any projection of the evaluation of control to future periods is subject to the risk that the processes may become inadequate because of changes in conditions, or that the degree of compliance with them may deteriorate.

The English version of this Assurance Statement is the only valid version. Lloyd's Register assumes no responsibility for versions translated into other languages. In the case of any conflict between the English and other versions of this legal section, the English version shall prevail.