Assurance Statement related to
GHG Emissions and Water Inventories for Calendar Year 2018
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) 2018 (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 GHG emissions and water use data;
- Verified the Scope 1, Scope 2 and Scope 3 GHG emissions and water use data for CY 2018 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, Northrop Grumman GHG Protocol and Northrop Grumman Water Protocol.

**LRQA’s Recommendations**

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

Signed

Dated: 15 April 2019

Andrea Bockra
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 2018

<table>
<thead>
<tr>
<th>Scope of GHG emissions</th>
<th>Description</th>
<th>MT CO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1</td>
<td>Direct GHG emissions</td>
<td>134,068</td>
</tr>
<tr>
<td>Scope 2 (Location-Based)</td>
<td>Energy Indirect – Location-Based</td>
<td>365,559</td>
</tr>
<tr>
<td>Scope 2 (Market-Based)</td>
<td>Energy Indirect – Market-Based</td>
<td>355,537</td>
</tr>
<tr>
<td>Scope 3 (business travel)</td>
<td>Other Indirect GHG emissions</td>
<td>140,280</td>
</tr>
</tbody>
</table>

Table 2. Summary of Northrop Grumman Water Use Inventories CY 2018

<table>
<thead>
<tr>
<th>Scope of Water Use Inventory</th>
<th>Description</th>
<th>Million gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Water Use</td>
<td>Municipal and Well Water</td>
<td>872.66</td>
</tr>
</tbody>
</table>

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