

Assurance Statement related to Greenhouse Gas Emissions Inventory and Greenhouse Gas Emissions Assertion for Calendar Year 2013 prepared for Northrop Grumman Systems Corporation

Terms of Engagement

This Assurance Statement has been prepared for Northrop Grumman Systems Corporation. (Northrop Grumman).

Lloyd's Register Quality Assurance Inc. (LRQA) was commissioned by Northrop Grumman to assure its Greenhouse Gas (GHG) Emissions Inventory and GHG Assertion for the calendar year (CY) 2013.

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 following were excluded from the GHG Emissions Inventory 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
- Scope 1 emissions of CH₄ and N₂O from the combustion of fossil fuels.

Management Responsibility

The management of Northrop Grumman was responsible for preparing the GHG data and information disclosed in the GHG Emissions Inventory and GHG Assertion and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the GHG data and information, as presented in the GHG Emissions Inventory and GHG Assertion, in accordance with our contract with Northrop Grumman.

Ultimately, the GHG Emissions Inventory and GHG Assertion have been approved by, and remain 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 reasonable assurance that the GHG data as presented in the GHG Emissions Inventory and GHG Assertion for Northrop Grumman have been prepared in conformance with the World Business Council for Sustainable Development/World Resources Institute (WBCSD/WRI) GHG Protocol: *A Corporate Accounting and Reporting Standard* and the internal Northrop Grumman GHG Reporting Protocol, Version 2.3.

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

- Conducted site visits to Northrop Grumman domestic and international facilities and reviewed primary data and information related to the Scope 1 and Scope 2 GHG emissions for 2013 included in the entity level GHG Emissions Inventory;
- Reviewed the processes for the management of data and information related to the Scope 1, Scope 2, and Scope 3 GHG emissions used at the corporate level and by each Northrop Grumman operating sector;

- Interviewed relevant staff responsible for managing and maintaining data and information and for preparing the GHG Emissions Inventory at the sector and corporate levels;
- Verified the Scope 1 and Scope 2 GHG emissions for CY 2013 included in the GHG Emissions Inventory back to source using data and information made available at the facility level; and
- Verified the Scope 3 GHG emissions for CY 2012 through a review of aggregated level data and information and calculation spreadsheets provided by Northrop Grumman.

Level of Assurance and Materiality

The opinion expressed in this Assurance Statement for Scope 1 and Scope 2 GHG emissions has been formed on the basis of a reasonable level of assurance and at a materiality of 5%.

For Scope 3 GHG emissions, the opinion has been formed on the basis of a limited level of assurance and at a materiality of the professional judgment of the verifier.

LRQA's Opinion

Based on LRQA's approach, the total Scope 1 GHG emissions and Scope 2 GHG emissions disclosed by Northrop Grumman in the GHG Emissions Inventory and GHG Assertion for CY 2013, as summarized in Table 1 below, are materially correct, and the GHG Emissions Inventory has been prepared in accordance with the WBCSD/WRI GHG Protocol and the NG GHG Protocol.

In addition, LRQA did not find any evidence that the data and information presented by Northrop Grumman in its Scope 3 GHG Emissions Inventory and GHG Assertion for CY 2013 are not materially correct and prepared in accordance with the WBCSD/WRI GHG Protocol and the NG GHG Protocol.

LRQA's Recommendations

To improve its GHG Emissions Inventory and data and information management systems, it is recommended that Northrop Grumman should:

- Clarify guidance in the NG GHG Protocol, Version 2.3 on when and how emission factors will be updated.
- Consider development of sector specific guidance for the application of Northrop Grumman's GHG Reporting Protocol in order to increase transparency and ensure consistency from year to year.
- Update the REC and Offsets calculation procedure in the Northrop Grumman GHG Reporting Protocol, Version 2.3 to provide more clarity on the appropriate emission factors to use for REC purchases.
- Use the actual natural gas heat content factor provided in utility bills when calculating Scope 1 GHG emissions from natural gas combustion in place of default heat content factors.

Signed

Dated: April 23, 2014



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Table 1. Summary of Northrop Grumman GHG inventory CY 2013

Scope	Description	tCO ₂ e
Scope 1	Direct GHG emissions	148,470
Scope 2	Energy Indirect GHG emissions	472,645
Scope 1 & 2	Total GHG emissions	621,114
Adjusted Scope 1 & 2	Total with RECs	609,047
Scope 3 (business travel)	Other Indirect GHG emissions	124,749

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