

THE CARBON DISCLOSURE PROJECT GREENHOUSE GAS VERIFICATION REPORT

Reporting Year: 01 January - 31 December 2019

Lucideon report number: AS 20200821

Company name: American Axle Manufacturing Inc.

Company address: One Dauch Drive
Detroit,
MI 48211-1198
USA

Company representative: Lynn Socha
Regional EHS Manager

Report Date: 21st August 2020

REPORT COMPLETED BY



Andrew Shepherd
Lead Auditor

Table of Contents

Section	Page
1.0 Introduction.....	3
2.0 Summary	3
3.0 Verification Team.....	4
4.0 Scope of Verification Activities.....	4
4.1 Standard Used.....	4
4.2 GHG Reporting Boundaries.....	5
4.3 Core Verification Activities	5
5.0 Compliance with Standards	6
5.1 Boundary Review.....	6
5.2 Review of Methodologies and Management System	6
5.3 Compliance with Key Principles	7
5.4 Materiality	7
6.0 Conclusion and Recommendation	8

Appendices

Appendix A – Kick-off Meeting Agenda

Appendix B – Verification Plan

Appendix C – Lucideon Issues List

Appendix D – CDP Summary Workbook

1.0 Introduction

Lucideon CICS Limited is a private limited company with headquarters based in Stoke-on-Trent, UK and is an established leading verification & certification body with a long history of accreditation under the European and the United Kingdom Emissions Trading Schemes. Lucideon CICS Limited is a wholly owned subsidiary of the Lucideon Group, an international materials testing and consultancy company based in Stoke on Trent, UK.

Lucideon was contracted by American Axle Manufacturing Inc. (“AAM”) to undertake the actions necessary to provide limited assurance verification of their scope 1 & Scope 2 GHG emissions for submission to the Carbon Disclosure Project (“CDP”), reporting under operational control criteria, for the period 1st January 2019 to 31st December 2019. The verification was carried out against the requirements of ISO 14064-3 for organizational level reporting. This was Lucideon’s 2nd year of verifying the AAM CDP report.

2.0 Summary

The Reporter

AAM has reported on an operational control basis for their Scope 1 and Scope 2 emissions. Scope 3 water has been reported on a consumption basis only.

Verification Plan

After reviewing the reporter’s data, Lucideon:

- Developed a draft verification plan (see appendix B).
- Held a kick-off meeting with the reporter (remotely) (see Appendix A).
- Finalized the verification plan.
- Conducted the verification activities.
- Informed the reporter of any issues (see Appendix C).
- Incorporated changes to the inventory by the reporter into the final verification review.
- Carried out an independent technical review of the calculations and verification report.

The verification plan was defined during an initial phase of Strategic Review and Risk Assessment to establish the verification process. The plan identified sites to be sampled for source data as selected from a risk evaluation, and identified supporting evidence to be reviewed as part of the verification of the GHG assertion.

Ultimately, Lucideon issued a positive verification opinion statement.

Conclusions

Lucideon has verified the reported emissions from the operations of AAM Inc. as being consistent with the requirements of ISO 14064-3 and provides limited assurance that CO₂ emissions for the reporting year are verified, meeting the requirements of CDP.

3.0 Verification Team

The Lucideon verification team comprised:

- **Andrew Shepherd - Lead Auditor**
- **Fiona Carter - Internal Peer Reviewer**

Both members of the Lucideon verification team have significant GHG verification experience.

The AAM team included:

- **Lynn Socha, Regional EHS Manager, AAM Inc.**
- **Afif Bitar, Director, Global Power & Energy, AAM Inc.**

4.0 Scope of Verification Activities

4.1 Standard Used

The verified GHG inventory summary was provided as a summary report (see Appendix D), developed using CDP Guidelines. The summary report was supported by an underlying spreadsheet with monthly activity data and emissions provided for each facility.

The GHG inventory was verified pursuant to the requirements of ISO 14064-3.

The following verification qualifications are noted:

Qualification	Comment
tCO ₂ vs tCO _{2e}	The inventory is declared on a CO ₂ only basis. Some electricity calculations use a CO _{2e} (including CH ₄ and N ₂ O) emission factors. This is not assessed to be material with slightly higher emissions being associated with source streams / facilities reporting on a tCO _{2e} basis.
Sites / facilities within inventory boundary.	The boundary extends to significant large manufacturing sites within the operational control of AAM Inc. Smaller non-significant facilities such as sales offices are not included within the reporting boundary.
Locational and Market based reporting.	Electricity uses market based emission factors where available. Therefore inventory is reported on market basis.
HWT (district heating)	HWT is sourced from energy combusted off-site and should therefore be classed as a scope 2 source stream. When completing the CDP form, HWT should be reported under Scope 2. A conservative electricity emission factor from the supplier has been applied to calculate the CO ₂ emissions associated with HWT. It is recommended that a district heating steam / hot water factor is sourced that would probably result in lower overall emissions for HWT. The HWT contribution to scope is small (less than

	1%) and therefore the impact on scope emissions assessed to be immaterial.
Water	Water is reported on a consumption only basis.
Water	Lyon (France), Decines (France) and GMF (Scotland) are not included in the water inventory due to invoices not being available at the time of reporting.

4.2 GHG Reporting Boundaries

Organizational Boundary

AAM reported under operational control criteria. The boundary extends to significant large manufacturing sites within the operational control of AAM Inc. Smaller non-significant facilities such as sales offices are not included within the reporting boundary.

Geographical Boundary

AAM operates globally, with manufacturing sites throughout the world. A significant portion of the facilities are in the USA / Mexico. The reported data includes all geographical areas.

Source Stream Summary

The following table defines the source streams within the verification boundary.

SCOPE	Subscope
1	Natural Gas
1	Propane
2	Electric Power
2	HWT (district heat)
3	Water (m3 only)

4.3 Core Verification Activities

Lucideon held a remote kickoff meeting with AAM covering the following items:

- Introduction of the Verification Team
- Review of verification activities and scope
- Transfer of background information
- Clarifications on data presented
- Explanation of expected documentation
- Review and confirmation of verification schedule

Lucideon reviewed the inventory summary (Appendix D). Lucideon reviewed the data provided, performed independent sampling / cross checks and compared the results to those in the summary report. Where possible, activity data was sampled back to source (invoices) as provided by AAM.

Lucideon notified AAM of issues arising from the initial verification activities as described above, all of which were satisfactorily resolved or transferred to this verification report for future consideration. No issues identified were assessed to be material.

5.0 Compliance with Standards

Lucideon assessed that the GHG inventory reported by AAM was developed in compliance with the required reporting protocols specified in Section 4.1. This section describes the particulars of the findings.

5.1 Boundary Review

Geographic Boundary Review

Lucideon assessed the reported sites/facilities to be correct and complete in the context of “large manufacturing facilities” within the operational control boundary. .

Organizational Boundary Review

Lucideon assessed the reported sites to be within AAM’s operational control.

Completeness of Sources and Emissions

Lucideon assessed the sources and emissions to be complete.

Exclusions, estimations and limitations

- See section 4.1 for reporter’s chosen exclusions
- The data inputs and the calculation methodologies used are deemed to be based on the best available information subject to the qualifying comments within this report

5.2 Review of Methodologies and Management System

Based on review of the GHG inventory summary (Appendix D), Lucideon believes the data reported is sufficiently robust.

Data Management

Source streams reported are identified in Section 4.2.

The CDP inventory is maintained within a spreadsheet. A utilities tracking spreadsheet is used on an on-going basis to track energy consumption representing the main source of data for the CDP calculations. The utility tracking spreadsheet is supported by invoices.

Emissions factors used to calculate emissions were assessed to be appropriate to the fuel used, geographical location and to be from robust/recognised references.

5.3 Compliance with Key Principles

PRINCIPLE	COMPLIANCE
RELEVANCE	Yes – the GHG emissions have been appropriately reflected
COMPLETENESS	Yes – GHG emission sources within the reporting year have been reported subject to the qualifications stated
CONSISTENCY	Yes – consistent methodologies have been used
TRANSPARENCY	Yes – GHG submissions and methodologies are transparent. Assumptions are disclosed
ACCURACY	Yes- use of primary data and calculation methodologies confirm robustness of approach subject to the qualifications stated

5.4 Materiality

Material Misstatements

Lucideon’s review found no material misstatements.

Non-Material Misstatements

The following non-material discrepancies were identified during the verification process and were not rectified at final data.

- Electricity: Czech Republic is using the 2018 Residual Mix (Market Based) emission factor. The EF used in calculations (604 gco2/kwh) is slightly different to the factor stated in Table 1 of the "European Residual Mixes 2018" publication from AIB (607.16 gCO2/kwh). This is assessed to not be material.

6.0 Conclusion and Recommendation

As a result of the verification activities, Lucideon has identified opportunities for improvement. Lucideon recommends that AAM Inc. consider the following:

- Consider development of GHG Inventory reporting procedures
- HWT is sourced from energy combusted off-site and should therefore be classed as a scope 2 source stream. When completing the CDP form, HWT should be reported under Scope 2.
- A conservative electricity emission factor from the supplier has been applied to calculate the CO₂ emissions associated with HWT. It is recommended that a district heating steam / hot water factor is sourced that would probably result in lower overall emissions for HWT. The HWT contribution to scope is small (less than 1%) and therefore the impact on scope emissions assessed to be immaterial.

Notwithstanding the above recommendations, Lucideon concludes that AAM’s reported GHG assertion meets the scheme requirements and may be verified without qualification as per the submitted verification opinion statement.

Below is the reporting entity’s information.

Reporter:	American Axle Manufacturing Inc. One Dauch Drive Detroit, MI 48211-1198 USA
Reporting period	2019 (1 st January – 31 st December Inclusive)
Geographic boundaries	Global
Organizational boundaries	Operational management control
GHGs reported	CO ₂ Market Basis
Assurance level	Limited

A summary of the verified inventory is provided below:

SCOPE	Subscope	tCO2	Scope CO2%	% Total
1	Natural Gas	132,320	98.26%	13.85%
1	Propane	2,339	1.74%	0.24%
2	Electric Power (Market Based)	819,628	99.83%	85.77%
2	HWT	1,366	0.17%	0.14%

	Totals	CO2
	Scope 1:	134,659
	Scope 2	820,994
	All Scopes	955,653

	Other	ccf
	Water	1,205,242

SIGNED



Andrew Shepherd - Lead Auditor

21st August 2020



Fiona Carter - Internal Peer Reviewer

22nd August 2020

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This report will be distributed to the client representative, the Lead Verifier and the Business Support Team (for archiving) unless otherwise specified.

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