

VERIFICATION REPORT

Organization verified

WaferTech, LLC
5509 NW Parker Street, Camas WA 98607-8557

Bryan Mirick, Environmental Engineer
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Subject

AWM has verified the GHG emissions in the responsible party's GHG statement for the period of reporting year 2021, which comprise the following:

- process emissions
- stationary combustion
- indirect emissions (electricity)

Responsibilities of the client

The responsible party is responsible for the preparation and fair presentation of the GHG statement in accordance with the criteria specified in this report. This includes designing, implementing and maintaining a data management system relevant to the preparation and fair presentation of a GHG statement that is free from material misstatement.

Responsibilities of AWM

AWM's responsibility is to express an opinion on the GHG inventory based on our verification. AWM conducted our verification in accordance with ISO 14064-3. This requires that we comply with ethical requirements and plan and perform the verification to obtain the agreed upon level-of-assurance that the GHG emissions in the GHG statement are free from material misstatement.

Evidence-gathering procedures

Strategic analysis

AWM did not identify any material risk from items such as the verification sector, scope of the client and the verification, or significant changes in the client.

Results of the risk assessment

AWM did not identify any material risk to the objectives of this verification as a result of the client's GHG management system or data collection systems.

Evidence gathering

Site/Activity	Verification team notes	Justification
Process emissions: CF4, CHF3, N2O, SF6	Inventory data, usage	Total of 34% of process emissions.
Electricity	Electric invoices, REC and offset evidence.	100% of S2 inventory.

Site visits

Per ISO 14064-3:2019 section 6.1.4, no special site visits were deemed necessary for this verification. Key considerations included this being a Limited assurance, previous GHG verification experience, this experience from ISO 14001 audits, and there being no significant changes to the WaferTech GHGMS.

Description of the verification work

AWM conducted recalculations of each of the sources identified in the evidence gathering section. This was conducted remotely on 3/24/2022 with the results presented below. In addition, AWM conducted an audit of the GHGMS against the cited verification criteria on 3/24/2022. Results for conformance are presented in Appendix A.

Process / Emission type	WT	AWM	% Diff
C2F6			
Byproduct from Etch CF4	1,188.3705	1,316.2342	11%
Byproduct from Etch CHF3	383.4939	383.4949	0%
Byproduct from Etch CF4	1,287.1851	2,027.3727	58%
CF4			
Etch	12,675.4580	14,039.2842	11%
Byproduct from Etch CHF3	658.1740	658.1758	0%
Byproduct from Etch SF6	1,313.5386	1,451.3390	10%
CHF3			
Etch	7908.7757	7,908.7974	0%
Byproduct from Etch CF4	3133.9778	3,471.1808	11%
Byproduct from Etch SF6	17.0346	26.8302	58%
N2O			
CVD	7,057.4044	7,083.9567	0%
Diffusion	21.8913	23.1623	6%
Electricity	50,846.2411	50,825.5196	0%
TOTAL	86,491.5450	89,215.3478	3.15%

Facility	WT	AWM	% Diff
Electricity RECs	50,846.2411	52,312.0000	3%
TOTAL	50,846.2411	52,312.0000	3%

Process / Emission type	Total	Sampled	% Sampled
Direct emissions	105,345.9977	35,645.3039	34%
Indirect emissions	50,846.2411	50,846.2411	100%
RECs / Offsets	51,333.2411	50,846.2411	99%

Verification opinion

AWM has determined that the client's emissions report(s) for the year of 2021 may be **Verified without qualifications**.

Discrepancies found during this verification total less than the materiality threshold of 5% of the total inventory.

Verification body

Advanced Waste Management Systems, Inc. (AWMS)
6430 Hixson Pike, Hixson, TN 37343
(423) 843-2206

Verification team

Lead Verifier: Rob Ellis
Verifier: Jonathan Clark
Peer Reviewer: Richard Ellis

Summary GHG statement

Total Site CO₂e MT: 105,287.866

Verification criteria

Criteria for this verification were be:

- a) ISO 14064-1 (Second edition, 2018-12)
- b) the client's GHG management system

This verification was performed to a limited / reasonable level-of-assurance.

Verification scope

Boundaries (ISO 14043-3:2019, 5.1.6.a): WaferTech is a wholly owned subsidiary of Taiwan Semiconductor (TSMC) located at 5509 Parker St. Camas, WA. Operational boundaries are the property boundaries and include the onsite Linde Gas Yard.

Facilities, physical infrastructure, activities, technologies, and processes (ISO 14043-3:2019, 5.1.6.b): WaferTech manufactures integrated circuits (ICs) for customers. No research or design is performed at this facility,

GHG sinks, sources, and reservoirs (ISO 14043-3:2019, 5.1.6.c): Fluorinated GHGs and N₂O purchased for the semiconductor manufacturing production process.

Types of GHGs (ISO 14043-3:2019, 5.1.6.d): CO₂, CH₄, N₂O, HFCs, PFCs, SF₆.

Time period (ISO 14043-3:2019, 5.1.6.e): 2021.

Baseline (ISO 14043-3:2019, 5.1.6): 2011



Approvals

Robert Ellis

AWM Lead Auditor

Date

Appendix A: Conformance with Protocols

ISO 14064-1:2018

5 GHG inventory boundaries

5.1 Organizational boundaries	NC	Auditor
The organization shall define its organizational boundaries.		WaferTech as defined its organizational boundaries within Section 6 of the FAB11 GREEN HOUSE GAS MANAGEMENT PLAN C.I. (A-RMS-02-03-013, 3/17/2022).
The organization may comprise one or more facilities. Facility-level GHG emissions or removals may be produced from one or more GHG sources or sinks.		WaferTech reports as a single facility with multiple GHG sources within the site boundary.
The organization shall consolidate its facility-level GHG emissions and removals by one of the following approaches: a) control: the organization accounts for all GHG emissions and/or removals from facilities over which it has financial or operational control; b) equity share: the organization accounts for its portion of GHG emissions and/or removals from respective facilities.		WaferTech consolidates its facility-level GHG emissions by the control approach.
The consolidation approach shall be consistent with the intended use of the GHG inventory.		Use of the control approach is consistent with the use of the inventory (emissions the site is responsible for).
<i>NOTE 1 Guidance on applying control and equity share approaches to consolidate facility-level GHG emissions and removals to the organization level is included in Annex A.</i>		n/a.
The organization may use different consolidation approaches in the case of multiple reporting goals and requirements defined, for example, by the GHG programme, legal contract or different types of intended users.		WaferTech is not using different control approaches.
<i>NOTE 2 An organization's GHG emissions and removals are aggregated from facility-level quantification of GHG sources and sinks.</i>		n/a.
<i>NOTE 3 A GHG sink in one period might become a GHG source in another period or vice versa.</i>		n/a.
When a facility is owned or controlled by several organizations, these organizations should adopt the same consolidation approach for that facility. The organization shall document and report which consolidation approach it applies.		WaferTech is wholly owned by TSMC.
6	0	6
5.2 Reporting boundaries	NC	Auditor
5.2.1 Establishing reporting boundaries		n/a.

<p>The organization shall establish and document its reporting boundaries, including the identification of direct and indirect GHG emissions and removals associated with the organization's operations.</p>	<p>Operational boundaries are defined in section 6, including a list of exclusions (TSMC sales offices, offsite chemical storage, mobile sources).</p>
<p>5.2.2 Direct GHG emissions and removals</p>	<p>n/a.</p>
<p>The organization shall quantify direct GHG emissions separately for CO₂, CH₄, N₂O, NF₃, SF₆ and other appropriate GHG groups (HFCs, PFCs, etc.) in tonnes of CO₂e.</p>	<p>Section 7 of the GHGMS describes the direct GHG emissions. Examples include PFC emissions from the CVD and etch process, and boilers / VEX combustion.</p>
<p>The organization should quantify GHG removals.</p>	<p>No removals are quantified (although RECs have been purchased as offsets).</p>
<p>5.2.3 Indirect GHG emissions</p>	<p>n/a.</p>
<p>The organization shall apply and document a process to determine which indirect emissions to include in its GHG inventory.</p>	<p>Section 8 states the indirect GHG emissions as imported electricity.</p>
<p>As part of this process, the organization shall define and explain its own pre-determined criteria for significance of indirect emissions, considering the intended use of the GHG inventory.</p>	<p>Section 8 defines the indirect GHG emissions selected to be included in the inventory (electricity).</p>
<p>Whatever the intended use is, criteria should not be used to exclude substantial quantities of indirect emissions or evade compliance obligations.</p>	<p>No substantial quantities of indirect emissions are excluded.</p>
<p>Using those criteria, the organization shall identify and evaluate its indirect GHG emissions, to select the significant ones.</p>	<p>As stated, electricity has been selected as the indirect emission source included.</p>
<p>The organization shall quantify and report these significant emissions. Exclusions of significant indirect emissions shall be justified.</p>	<p>Emissions from electric consumption are included in the 2021 inventory.</p>
<p>The criteria to evaluate significance may include the magnitude/volume of the emissions, level of influence on sources/sinks, access to information and the level of accuracy of associated data (complexity of organization and monitoring). A risk assessment or other procedures (e.g. buyer requirements, regulatory requirements, concern of interested parties, scale of operation, etc.) may be used (see ISO 13065). More guidance is provided in Annex H.</p>	<p>Electric consumption is the significant contributor to indirect emissions (several small-scale electric vehicles are not included).</p>
<p>The criteria for evaluating the significance may be periodically revised. The organization should retain documented information about the revisions.</p>	<p>The GHGMS is reviewed annually.</p>
<p>5.2.4 GHG inventory categories</p>	<p>n/a.</p>
<p>GHG emissions shall be aggregated into the following categories at the organizational level:</p>	<p>The 2021 GHG inventory continues to aggregate emissions into categories.</p>
<p>a) direct GHG emissions and removals; b) indirect GHG emissions from imported energy; c) indirect GHG emissions from transportation; d) indirect GHG emissions from products used by organization; e) indirect GHG emissions associated with the use of products from the organization; f) indirect GHG emissions from other sources.</p>	<p>a) direct GHG emissions b) indirect GHG emissions from imported energy c) n/a d) n/a e) n/a f) n/a</p>

In each category, non-biogenic emissions, biogenic anthropogenic emissions and, if quantified and reported, biogenic non-anthropogenic emissions shall be separated (see Annex D).	No biogenic emissions.
The organization should document the above categories separately at the facility level.	Categories are listed as separate line items in the 2021 inventory.
GHG emissions should be further subdivided into subcategories consistent with the above categories. An example of subcategories is provided in Annex B.	Process emissions (direct) are further broken down by chemical.
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	15

6 Quantification of GHG emissions and removals

6.1 Identification of GHG sources and sinks	NC	Auditor
The organization shall identify and document all relevant GHG sources and sinks included in its reporting boundaries. The organization shall include all relevant GHGs.		Direct GHG emissions and removals as well are recorded in section 7 and indirect GHG emissions are recorded in section 8 of the GHGMS.
GHG sources and sinks shall be identified in accordance with the categories defined in 5.2.4.		AWM confirmed throughout the audit that GHG sources have been identified in accordance with the categories defined in 5.2.4.
If the organization quantifies GHG removals, the organization shall identify and document GHG sinks contributing to its GHG removals.		Removals are built into the Subpart I calculations (abatement equipment).
The detail with which sources and sinks are identified and categorized shall be consistent with the quantification approach used.		AWM confirmed throughout this verification that the detail with which the sources and sinks are identified is consistent with the quantification approach.
The organization may exclude GHG sources or sinks for which the contribution to GHG emissions or removals is not relevant. It shall identify and explain why the GHG sources or sinks are excluded in accordance with the categories and any categorical subdivisions included in the report (see 5.2.3).		No mobile sources are included in the WaferTech GHG inventory as described in section 8 of the GHGMS (not reportable to EPA).
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6.2 Selection of quantification approach	NC	Auditor
6.2.1 General		n/a.
The organization shall select and use quantification methodologies that minimize uncertainty and yield accurate, consistent and reproducible results.		AWM confirmed via recalculation that WaferTech is using quantification methodologies that minimize uncertainty and yield accurate, consistent, and reproducible results. In addition, Table 4 within section 10 of the GHGMS addresses WaferTech's assessment of uncertainty per input, data source, and estimated risk (e.g. Purchasing data for C4F8, CF4, C2F6, CH2F2, CHF3, N2O & SF6 > Purchasing records > <1%).
The quantification approach should also consider technical feasibility and cost.		These methodologies consider technical feasibility and cost (not relevant).

<p><i>NOTE</i> Quantification approach is the process of obtaining data and determining the emissions or removals from a source or sink. GHG emissions or removals can be obtained through measurement or modelling.</p>	n/a.	
<p>The organization shall explain and document its quantification approach and any changes in quantification approach.</p>	Section 9 of the GHGMS explains and documents WaferTech's quantification approach.	
<p>6.2.2 Data selection and collection used for quantification</p>	n/a.	
<p>The organization shall identify and document its data for each source or sink classified as direct or indirect emissions and removals. It shall determine and document the characteristics for each relevant data used for quantification (see 5.2.3).</p>	As stated in 6.2.1, Table 4 in section 10 documents the data source for each input.	
<p><i>NOTE 1</i> Data used for quantification include primary data (including site specific) and secondary data.</p>	n/a.	
<p><i>EXAMPLE</i> Data used for quantification may include the average of truck fuel consumption and its characteristics as the standard to determine fuel consumption.</p>	n/a.	
<p><i>NOTE 2</i> In the case of GHG programmes, characteristics of data used for quantification are usually determined by the programme operator.</p>	n/a.	
<p>Annex C provides guidance on the selection and collection of data used for quantification.</p>	n/a.	
<p>6.2.3 Selection or development of GHG quantification model</p>	n/a.	
<p>Except in the case of measurement of emissions and removals, the organization shall select or develop models for the quantification approach.</p>	Per regulatory requirements, WaferTech uses EPA 40 CFR Subpart I to calculate process emissions, EPA table C-2 emissions factors for stationary combustion, and eGRID emission factors for electric consumption emissions.	
<p>A model is a representation of how the source or sink data used for quantification are converted into emissions or removals. A model is a simplification of physical processes that has assumptions and limitations.</p>	Not applicable.	
<p>The organization shall explain and document the justification for the selection or development of the model, considering the following model characteristics:</p> <ul style="list-style-type: none"> a) how the model accurately represents the emissions and removals; b) its limits of application; c) its uncertainty and rigour; d) the reproducibility of results; e) the acceptability of the model; f) the origin and level of recognition of the model; g) the consistency with the intended use. 	As stated, Section 9 of the GHGMS explains and documents the justification for the selection of the models.	
<p><i>NOTE</i> Several types of models make use of activity data multiplied by emission factors.</p>	n/a.	
8	0	8

6.3 Calculation of GHG emissions and removals	NC	Auditor
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The organization shall calculate GHG emissions and removals in accordance with the quantification approach selected (see 6.2).	Attachment 7 records WaferTech's 2021 calculations in accordance with the quantification approach selected.	
The period for which GHG emissions and removals have been calculated shall be reported.	See above (2021).	
The organization shall convert the quantity of each type of GHG to tonnes of CO2e using appropriate GWPs.	Attachment 7 presents WaferTech's 2021 inventory in tonnes of CO2e. AWM verified appropriate GWPs were used.	
The latest IPCC's GWP should be used. If not, justification shall be provided. The GWP time horizon shall be 100 years. Other GWP time horizons may be used, but reported separately.	See above.	
<i>NOTE GWP might be part of a model (including emissions factors).</i>	n/a.	
The organization shall quantify biogenic emissions or removals in accordance with Annex D.	No biogenic emissions reported for RY2021.	
The organization shall quantify emissions or removals from imported electricity that is consumed by the organization, and of exported electricity generated by the organization, in accordance with Annex E.	Electricity consumption was quantified in the RY2021 inventory, and there was no electricity exported from generation.	
<i>Specific guidance concerning emissions or removals from agriculture is provided in Annex G.</i>	n/a.	
6	0	6

6.4 Base-year GHG inventory	NC	Auditor
6.4.1 Selection and establishment of base year	n/a.	
The organization shall establish a historical base year for GHG emissions and removals for comparative purposes or to meet GHG programme requirements or other intended uses of the GHG inventory.	WaferTech has selected RY2011 as the baseline year (as stated in section 1.1 of the GHGMS).	
Base-year emissions or removals may be quantified based on a specific period (e.g. a year or part of a year where seasonality is a feature of the organization's activity) or averaged from several periods (e.g. several years).	This baseline year is quantified on the same calendar year basis as all other inventory years.	
If sufficient information on historical GHG emissions or removals is not available, the organization may use its first GHG inventory period as the base year.	Reporting year 2011 was the first year reported under the ISO 14064-1 GHGMS.	
In establishing the base year, the organization: a) shall quantify base-year GHG emissions and removals using data representative of the organization's current reporting boundary, typically single-year data, a consecutive multi-year average or a rolling average; b) shall select a base year for which verifiable GHG emissions or removals data are available; c) shall explain the selection of the base year; d) shall develop a GHG inventory for the base year consistent with the provisions of this document.	Section 12 of the GHGMS records WaferTech's decision on selecting 2011 as the base-year inventory as well as the criteria that would prompt a rebaseline. There has been no trigger to re-baseline.	
The organization may change its base year, but shall justify any change to the base year.	See above.	
6.4.2 Review of base-year GHG inventory	n/a.	

<p>To ensure the representativeness of the base-year GHG inventory, the organization shall develop, document and apply a base-year review and recalculation procedure to account for substantial cumulative changes in base-year emissions resulting from:</p> <ul style="list-style-type: none"> a) a structural change in reporting or organizational boundaries (i.e. merger, acquisition or divestiture), or b) a change in calculation methodologies or emission factors, or c) the discovery of an error or a number of cumulative errors that are collectively substantial. 	<p>As stated in 6.4.1, WaferTech has established a set of criteria prompting recalculation of the base-line inventory (e.g. EPA revised GHG reporting regulations require changed reporting for 2011).</p>
<p>The organization shall not recalculate its base-year GHG inventory to account for changes in facility production levels, including the closing or opening of facilities.</p>	<p>Not applicable.</p>
<p>The organization shall document base-year recalculations in subsequent GHG inventories.</p>	<p>RY 2011 baseline calculations are included in the GHGMS as Attachment 1.</p>
<p style="text-align: center;">8</p>	<p style="text-align: center;">0</p>

7 Mitigation activities

7.1 GHG emission reduction and removal enhancement initiatives	NC	Auditor
<p>The organization may plan and implement GHG reduction initiatives to reduce or prevent GHG emissions or enhance GHG removals.</p>		<p>RY2021 RECs were purchased to cover electrical consumption, and Carbon Offsets were purchased to cover natural gas usage.</p>
<p>If implemented, the organization should quantify GHG emission or removal differences attributable to the implementation of GHG reduction initiatives.</p>		<p>see above.</p>
<p><i>NOTE GHG emission or removal differences resulting from GHG reduction initiatives are usually reflected in the organization's GHG inventory, but can also result in GHG emission or removal differences outside GHG inventory boundaries.</i></p>		<p>n/a.</p>
<p>If quantified and reported, the organization shall document GHG reduction initiatives and associated GHG emission or removal differences separately, and shall describe:</p> <ul style="list-style-type: none"> a) the GHG reduction initiatives; b) the spatial and temporal boundaries of the GHG reduction initiatives; c) the approach (appropriate indicators) used to quantify GHG emission or removal differences; 		<p>Reductions are made through the use of abatement equipment, described in Section 11.6 GHG Emission Reductions and Removal Actions, but have not been modified or added to over the previous year.</p>
<ul style="list-style-type: none"> d) the determination and classification of GHG emission or removal differences attributable to GHG reduction initiatives as direct or indirect GHG emissions or removals. 		<p>see above.</p>

EXAMPLE GHG reduction initiatives might include the following:

- energy demand and use management;
- energy efficiency;
- technology or process improvements;
- GHG capture and storage in, typically, a GHG reservoir;
- management of transport and travel demands; n/a.
- fuel switching or substitution;
- afforestation;
- waste minimization;
- alternative fuels and raw materials (AFR) use to avoid landfilling or incinerating the wastes;
- refrigerant management.

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7.2 GHG emission reduction or removal enhancement projects

NC

Auditor

If the organization reports offsets purchased or developed, the organization shall list such offsets separately from GHG reduction initiatives.

Attachment 12 lists these separately

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7.3 GHG emission reduction or removal enhancement targets

NC

Auditor

The organization may set targets to reduce GHG emissions.

No GHG reduction targets have been set for RY 2021.

If the organization reports a target, the following information shall be specified and reported:

- period covered by the target, including the target reference year and the target completion year;
- type of target (intensity or absolute);
- category of emissions included in the target;
- the amount of reduction and its unit expressed in accordance with the type of target. For setting the target, the following criteria should be considered:
- climate science;
- reduction potential;
- international, national context;
- sectorial context (e.g. voluntary sectorial commitment, cross-sectorial effect).

see above

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8 GHG inventory quality management

8.1 GHG information management

NC

Auditor

8.1.1 The organization shall establish and maintain GHG information management procedures that:

- a) ensure conformity with the principles of this document;
- b) ensure consistency with the intended use of the GHG inventory;
- c) provide routine and consistent checks to ensure accuracy and completeness of the GHG inventory;
- d) identify and address errors and omissions;
- e) document and archive relevant GHG inventory records, including information management activities and GWPs.

- a) GHGMP overall contains these procedures, specifically Section 13 GHG Information Management, and FAB11 EMS Records Management O.I.
- b) see above
- c) Section 14 Auditing & Verification, Section 15 Management Review, and Section 16 corrective Action
- d) see above
- e) Section 13.2 Records Management and Reducing Uncertainty contains information on retention of records, which were available as requested during the re-calculation.

8.1.2 The organization's GHG information management procedures shall document their consideration of the following:

- a) identification and review of the responsibility and authority of those responsible for GHG inventory development;
- b) identification, implementation and review of appropriate training for members of the inventory development team;
- c) identification and review of organizational boundaries;
- d) identification and review of GHG sources and sinks;
- e) selection and review of quantification approaches, including data used for quantification and GHG quantification models that are consistent with the intended use of the GHG inventory;
- f) review of the application of quantification approaches to ensure consistency across multiple facilities;
- g) use, maintenance and calibration of measurement equipment (if applicable);
- h) development and maintenance of a robust data-collection system;
- i) regular accuracy checks;
- j) periodic internal audits and technical reviews;
- k) periodic review of opportunities to improve information management processes.

- a) Section 13.3.3 states the EH&S Manager and Facilities Director are responsible for the final review and approval.
- b) Section 13.3.2 covers formal and informal training for identified roles in preparing the report
- c) Section 14 Auditing and Verification & Section 15 Management Review, EH&S Staff review annually, and senior management review annually.
- d) see above
- e) see above
- f) see above
- g) Section 11 Data Management contains information on collection of data
- h) see above
- i) internal audit - see above
- j) internal audit - see above
- k) management review - see above

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8.2 Document retention and record keeping	NC	Auditor
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The organization shall establish and maintain procedures for document retention and record keeping.

Wafertech utilizes the EDW (Extensive Document and Record Control System) to maintain control of documented information.

The organization shall retain and maintain documentation supporting the design, development and maintenance of the GHG inventory to enable verification. The documentation, whether in paper, electronic or other format, shall be handled in accordance with the organization's GHG information management procedures for document retention and record keeping.

Section 11 Data Management lays out processes for maintaining information on the GHG inventory. Per verification activities, all required documentation was available to complete re-calculations.

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8.3 Assessing uncertainty	NC	Auditor
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<p>The organization shall assess the uncertainty associated with the quantification approaches (e.g. data used for quantification and models) and conduct an assessment that determines the uncertainty at the GHG inventory category level.</p>	<p>Uncertainty is assessed in Section 10 Assessment of Uncertainty - Table 4.</p>	
<p>Where quantitative estimation of uncertainty is not possible or cost effective, it shall be justified and a qualitative assessment shall be conducted.</p>	<p>Quantitative estimates are available for each, ranging from less than 1% (purchasing records) to 15% (facilities trends and kitchen use assumptions).</p>	
<p>The organization may apply the principles and methodologies of ISO/IEC Guide 98-3 in completing the uncertainty assessment.</p>	<p>n/a</p>	
<p>3</p>	<p>0</p>	<p>3</p>

9 GHG reporting

9.1 General	NC	Auditor
<p>The organization should prepare a GHG report, consistent with the intended uses of the GHG inventory, to facilitate GHG inventory verification. For example, a GHG report may be necessary for participation in a GHG programme or to inform external or internal users.</p>	<p>Wafertech has prepared a report in accordance with procedures in GHGMP 17.3, and is included as Attachment 13 to the GHGMP.</p>	
<p>A GHG report shall be prepared if the organization chooses to have its GHG inventory verified or makes a public GHG statement claiming conformity with this document.</p>	<p>see above.</p>	
<p>GHG reports shall be complete, consistent, accurate, relevant, transparent and planned in accordance with 9.2.</p>	<p>Per review of the program and verification of the data, the GHG report was complete and accurate.</p>	
<p>If the organization's GHG statement has been independently (third-party) verified, the verification statement shall be made available to intended users.</p>	<p>Verification statement can be requested to EHS.</p>	
<p>If confidential data are withheld from inclusion in a GHG report, this shall be justified. If the organization decides to prepare a GHG report, 9.2 and 9.3 apply.</p>	<p>No confidential data is withheld from the report.</p>	
<p>5</p>	<p>0</p>	<p>5</p>

9.2 Planning the GHG report	NC	Auditor
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The organization shall explain and document the following in planning its GHG report:

- a) purpose and objectives of the report in the context of the organization's GHG policies, strategies or programmes, and applicable GHG programmes;
- b) intended use and intended users of the GHG inventory;
- c) overall and specific responsibilities for preparing and producing the report;
- d) frequency of the report;
- e) report structure and format;
- f) data and information to be included in the report;
- g) policy on availability and methods of dissemination of the report.

- a) GHGMP purpose and objectives are included in Section 1 Purpose.
- b) GHGMP intended use and users are documented in Section 17.3 Reporting of GHG: US EPA and Washington State Dept of Ecology.
- c) the responsibilities preparing and producing the report are delegated to the Environmental Engineer in GHGMP Section 17.3.
- d) GHGMP Section 17.3 defines this as annually.
- e) GHGMP Section 17 defines the structure and format, including included emissions by GHG and product, HTF emissions, removals (or lack thereof).
- f) see above
- g) see above, plus TSMC and potentially Semiconductor Industry Association (SAI).

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9.3 GHG report content	NC	Auditor
9.3.1 Required information	n/a.	
The organization's GHG report shall describe the organization's GHG inventory. Its content may be structured as recommended in Annex F.	see below:	

GHG report content shall include the following:

- a) description of the reporting organization;
- b) person or entity responsible for the report;
- c) reporting period covered;
- d) documentation of organizational boundaries (5.1);
- e) documentation of reporting boundaries, including criteria determined by the organization to define significant emissions;
- f) direct GHG emissions, quantified separately for CO₂, CH₄, N₂O, NF₃, SF₆ and other appropriate GHG groups (HFCs, PFCs, etc.) in tonnes of CO₂e (5.2.2);
- g) a description of how biogenic CO₂ emissions and removals are treated in the GHG inventory and the relevant biogenic CO₂ emissions and removals quantified separately in tonnes of CO₂e (see Annex D);
- h) if quantified, direct GHG removals, in tonnes of CO₂e (5.2.2);
- i) explanation of the exclusion of any significant GHG sources or sinks from the quantification (5.2.3);
- j) quantified indirect GHG emissions separated by category in tonnes of CO₂e (5.2.4);
- k) the historical base year selected and the base-year GHG inventory (6.4.1);
- l) explanation of any change to the base year or other historical GHG data or categorization and any recalculation of the base year or other historical GHG inventory (6.4.1), and documentation of any limitations to comparability resulting from such recalculation;
- m) reference to, or description of, quantification approaches, including reasons for their selection (6.2);
- n) explanation of any change to quantification approaches previously used (6.2);
- o) reference to, or documentation of, GHG emission or removal factors used (6.2);
- p) description of the impact of uncertainties on the accuracy of the GHG emissions and removals data per category (8.3);
- q) uncertainty assessment description and results (8.3);
- r) a statement that the GHG report has been prepared in accordance with this document;
- s) a disclosure describing whether the GHG inventory, report or statement has been verified, including the type of verification and level of assurance achieved;
- t) the GWP values used in the calculation, as well as their source. If the GWP values are not taken from the latest IPCC report, include the emissions factors or the database reference used in the calculation, as well as their source.

- a) included in section 2 Scope
- b) Section 17.3 - Environmental Engineer
- c) 2021 - Attachment 13
- d) Section 2 Scope
- e) Section 6 Operational Boundaries, Section 7 Direct GHG Emissions, and Section 8 Indirect GHG Emissions
- f) Section 7 Direct GHG Emissions contains mentions of all of these
- g) no biogenic sources or removals
- h) no removals
- i) no significant sources were excluded
- j) these are included in Attachment 12
- k) base year selection is determined to be 2011 in Section 12
- l) no changes have been made to the base year
- m) Section 9 Quantification of GHG Emissions and Removals contains all of these
- n) no changes have been made to the quantification approaches
- o) no removals are made
- p) uncertainties are detailed in Section 10 Assessment of Uncertainty - Table 4, including 14 different areas of uncertainty
- q) see above
- r) Section 1 Purpose lists ISO 14064-1 as a criteria for reporting
- s) Section 14.2 External Validation and Verification states that AWM will perform the verification
- t) GWPs are included in Attachment 12, and Section 9.1.1.7 contains sources for all (40 CFR 98 Subpart A Table A-1, 2006 IPCC Guidelines for National Greenhouse Gas Inventories Vol 3 Table 6.5.

9.3.2 Recommended information

n/a.

The organization should consider including in the GHG report:

- a) description of the organization’s GHG policies, strategies or programmes;
- b) if appropriate, description of GHG reduction initiatives and how they contribute to GHG emission or removal differences, including those occurring outside organizational boundaries, quantified in tonnes of CO2e (7.1);
- c) if appropriate, purchased or developed GHG emission reductions and removal enhancements from GHG emission reduction and removal enhancement projects, quantified in tonnes of CO2e (7.2);
- d) as appropriate, description of applicable GHG programme requirements;
- e) GHG emissions or removals disaggregated by the facility; f) total quantified indirect GHG emissions;
- g) description and presentation of additional indicators, such as efficiency or GHG emission intensity (emissions per unit of production) ratios;
- h) assessment of performance against appropriate internal and/or external benchmarks;
- i) description of GHG information management and monitoring procedures (8.1);
- j) GHG emissions and removals from the previous reporting period;
- k) if appropriate, explanation of GHG emissions differences between the present inventory and the previous one.

Considerations were made to include recommended information were applicable. For example, EHS policy is include in Section 5 Environmental, Health and Safety Policy, but explanations of differences in previous and current periods was not included, as there were no emissions differences.

The organization may aggregate direct emissions and direct removals.

9.3.3 Optional information and associated requirements

n/a.

The organization may report optional information separately from the required information and the recommended information. Each type of optional information described below should be reported separately from the others.

see below

The organization may report the results of contractual instruments for GHG attributes (market based approach), expressed in GHG emissions (tCO2e) as well as in the unit of transfer (e.g. kWh). The organization may report the amount purchased compared to the amount consumed.

No contractual instruments were noted.

The organization may report offsets or other types of carbon credits. If so, the organization:
 — shall disclose the GHG scheme under which they were generated;
 — may add offsets or other types of carbon credits together if they originate from the same GHG scheme and are of appropriate vintage;
 — shall not add or subtract offsets or other types of carbon credits from the organization’s inventory of its direct or indirect emissions.

RECs were purchased to offset electrical consumption, and Carbon Offsets were used to cover natural gas usage. These are included in Attachment 12.

The organization may report GHGs stored in GHG reservoirs.

no GHGs are stored in reservoirs.

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10 Organization's role in verification activities

10 Organization's role in verification activities	NC	Auditor
The organization may decide to conduct a verification.		AWM has been contracted to conduct an independent verification of EY2021 data.
To review GHG emissions and removals information, impartially and objectively, the organization shall conduct a verification consistent with the needs of the intended user. Principles and requirements are described in ISO 14064-3.		AWM conducts independent verifications to ISO 14064-3.
Requirements for verification bodies are described in ISO 14065.		AWM is accredited to ISO 14065.
Requirements for the competence of validation teams and verification teams are described in ISO 14066.		Per the AWM Verification Program, verifiers meet the requirements of ISO 14066.
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