Extreme Networks GHG Report for CY2022

Chapter 1: General description of the organization goals and inventory objectives.

This document describes and reports Extreme Networks Inc's organizational GHG Emissions inventory for the reporting period of Jan1, 2022 through December 31, 2022, in accordance with the principles of ISO14064-1.

The purpose of this document is for Extreme Networks to record our carbon footprint using standard methodology that can be referenced and compared to our 2021 baseline and future carbon inventory calculations. This report is intended to be used by internal Extreme employees as part of our CSR (corporate social responsibility) initiatives, specifically to act as a reference point to gauge the impact of future emission reductions of CO_2e.

Extreme intends, for future reporting periods, to report carbon emissions annually corresponding to the calendar year.

This report provides summarized inventory of Extreme Network's greenhouse gas emissions quantified for each CO_2, CH_4, N_2O, NF_3, SF_6 and other appropriate GHG groups (HFCs, PFCs, etc.) totaled and expressed in tons of carbon dioxide equivalents (CO2e). Extreme has no equipment under our operational control which uses NF_3 or SF_6 and as such we report zero emissions for these gases.

Reported within are direct Scope 1 direct emissions from stationary combustion and the reforming of natural gas to produce hydrogen for our Bloom Energy fuel cells, direct Scope 1 refrigerants and fugitives, indirect Scope 2 emissions from purchased electricity, and indirect Scope 3 emissions from business travel and freight.

Extreme intends to have this report reviewed and verified by an independent 3rd party to provide assurance that we are reporting in accordance with the principles of relevance, completeness, consistency, accuracy, and transparency set forth in the ISO14064-1 international standard.

About Extreme:
Extreme Networks, Inc. (EXTR) creates networking experiences that enable all of us to advance. We push the boundaries of technology leveraging the powers of machine learning, artificial intelligence, analytics, and automation. Over 50,000 customers globally trust our end-to-end, cloud-driven networking solutions and rely on our top-rated services and support to accelerate their digital transformation efforts and deliver progress like never before. For more information, visit Extreme's website at https://www.extremenetworks.com/

Chapter 2: Organizational boundaries

Extreme has consolidated emissions based on the concept of operational control. Our facilities in scope of this report are listed in Table 1 below. The major source of energy consumption associated with facilities is heating and cooling of labs and data centers where lots of equipment is powered on for product development and quality assurance testing. These are the facilities we have included in this report. Additionally, these facilities are the major locations where employees reside, representing 67% of all leased property by square footage, and the base office for 54% of our total employee population.

For this report, we have excluded small offices due to the lack of data available and low relative energy consumption in a small office environment.

Table1

Facility Name	Location (City)	Location (Country)
San Jose 1	San Jose, CA, 95119	USA
San Jose 2	San Jose, CA, 95119	USA
Salem	Salem, NH, 03079	USA
RDU	Raliegh Durham, 27506	USA
Bangalore 2 - EcoSpace	Bellandur, Bengaluru, Karnataka 56010	India
Bangalore 4 - Bagmane	Bangalore, Bagmane WTC, Outer Ring Road, 56006	India
Chennai	Chennai, TN, 60001	India
Reading	Reading, 250 Longwater Ave Green Park	England

*The Bangalore 3 - AMR Tech Park facility in India was closed.

Chapter 3: Reporting boundaries

When determining the significance and inclusion of indirect emissions in our inventory we use the following criteria…

- It is within the scope of our operational control.
- It contributes significantly to the overall GHG inventory (>2% of total).
- We have the ability or means to affect/control usage.
- We can obtain available data.

Table 2 below provides the explanation of the emissions categories included, excluded from our corporate inventory.

Table 2		Category	Inclusion	Rational for Inclusion or Exclusion of Emission Sources
Category 1: Direct GHG emissions and removals	1.1	Direct emissions from stationary combustion	YES	Emissions from stationary combustion of natural gas in boilers, heating systems, in our Hydrogen Fuel cells to product electricity for internal consumption in San Jose. Using our Bloom Hydrogen Fuel Cells Extreme produced and exported 384,920 KWh of excess electricity in San Jose 2 that was not consumed internally. This exported energy was zeroed out and not deducted from our inventory. Accounted for in accordance with ISO14064-1 2018 Annex E section "E.3 Treatment of exported electricity." Excluded from this report are the emissions associated with the combustion of diesel oil in the three diesel generators used for backup power in RDU and Salem. It is within our operational control but does not have a significant contribution to the overall GHG inventory estimated at <0.6%.
	1.2	Direct emissions from mobile combustion	YES	We have a small number of leased cars for sales personnel in Europe. It is within our operational control but does not make a significant contribution to the overall GHG inventory estimated at <0.06%.
	1.3	Direct process emissions and removals arise from industrial processes	NA	Extreme does not have any Direct process emissions which arise from industrial processes. At Extreme we do not perform of conduct any manufacturing or industrial processes. Our facilities are used for office space and data center and product design verification labs.
	1.4	Direct fugitive emissions arise from the release of greenhouse gasses in anthropogenic systems	YES	The air conditioning equipment or our facilities (condensers and chillers) contain HFCs.

	1.5	Direct emissions and removals from Land Use, Land Use Change and Forestry	NA	Extreme's facilities are leased offices and we do not have any managed land which would result in carbon removals.
Category 2: Indirect GHG emissions from imported energy (3)	2.1	Indirect emissions from imported electricity	YES	Purchased electricity is one of the major sources of GHG emissions at Extreme. We use purchased electricity for powering our facilities and data centers and product design verification labs.
	2.2	Indirect emissions from imported energy (steam, heating, cooling, and compressed air)	NA	We do not have any imported energy other than electricity which is accounted for in 2.1
Category 3: Indirect GHG emissions from transportation	3.1	Emissions from Upstream transport and distribution for goods	YES	Prior to sale our products are transported from our suppliers to a distribution hub in El Paso Texas using some combination of air, sea, and road freight. For upstream transport of goods, we are accounting for 100% of the inbound product shipments to Extreme.
	3.2	Emissions from Downstream transport and distribution for goods	YES	After the sale, our products are transported from distribution to our direct customers or re-sellers using some combination of air and road freight. Using the concept of organizational control, we are reporting only the transport of goods to customers where Extreme manages the transportation, approximately 51% of orders. The downstream transportation of goods where freight is picked up at our distribution by our customer's carriers is excluded because it is outside Extreme's operational control. These customer pickups represent about 49% of direct customer orders. Excluded from this carbon inventory are the emissions associated with the shipment of warranty replacement units and the return of defective products from the field.
	3.3	Emissions from Employee commuting	NS	Emissions associated with employee commute are not included in our 2022 carbon inventory because of the lack of available data. Our estimated emissions for 2022 were considered as not significant, representing <2% of total emissions. For future carbon inventories beginning in 2023 we will be including commute data.
	3.4	Emissions from Client and visitor transport	NA	Lack of available data on visitor transport methods or distances. Not within our operational control and not significant.
	3.5	Emissions from Business travels	YES	We are reporting emissions from business travel associated with air and rail passenger miles taken.
Category 4: Indirect GHG emissions from products used by organization	4.1	Emissions from Purchased goods	NA	Emissions from purchased goods are not reported in this inventory due to the lack of available reliable data. The emissions associated with the manufacture of our products is an area we are focusing on and plan on including in future GHG inventories.
	4.2	Emissions from Capital goods	NA	Emissions from capital goods are not reported in this inventory due to the lack of available reliable data. This is not a significant emissions category for Extreme. We do not have any internal manufacturing or operations at our facilities that require the significant purchase of capital equipment. The capital assets we do have are our data network products powered in our data centers and labs which is already accounted for as indirect imported electricity.
	4.3	Emissions from the disposal of solid and liquid waste	NS	Extreme does not have any manufacturing or industrial process the produce liquid or solid waste. Emissions associated with recycling of office wastepaper and trash disposal are considered not significant for the purpose of the inventory.
	4.4	Emissions from the use of assets	NA	Extreme does not operate leased equipment or assets.

	4.5	Emissions from the use of services that are not described in the above subcategories (consulting, cleaning, maintenance, mail delivery, Bank, etc.)	NS	This category is not included in our inventory. Lack of data available on emissions associated with these services. We expect this would not be a significant emissions source.
Category 5: Indirect GHG emissions associated with the use of products	5.1	Emissions or removals from the use stage of the product	NA	Excluded, outside the scope of operational control. The emissions associated with the operation of our products during the use life of the product are significant but not in scope of this inventory.
	5.2	Emissions from downstream leased assets	NA	Extreme does not have downstream leased assets.
	5.3	Emissions from end-of-life stage of the product	NA	Excluded, outside the scope of operational control. Transportation and recycling activities associated with disposal of end of service products is outside the scope of this inventory.
	5.4	Emissions from investments	NA	
	6	Category 6: Indirect GHG emissions from other sources	NA	

Chapter 4: Quantified GHG inventory of emissions and removals

Extreme does not have any biogenic emissions or removals of CO2e to report. Extreme does not have any removals, storage, or carbon offsets to report.
Total carbon emissions for Extreme in 2022 being reported here is 37,363.67 tons of CO2e (or 37,173.19 tons CO2e using location based emission factors for UK purchased electricity). Summarized below in Table 3 is the breakdown of Extreme's direct Category 1 direct emissions cells, Category 2 and 3 indirect emissions.

Extreme has no equipment under our operational control which uses NF_3 or SF_6 and as such we report zero emissions for these gases.

Table 3

EMISSIONS		Notes	2022 CO_2e TOTAL (Tonnes p.a)	Carbon dioxide (CO_2)	Methane (CH_4)	Nitrous Oxide (N_2O)	Hydrofluoro carbons (weighted average) (HFCs)	Perfluorocarbons tonnes (weighted average) (PFCs)	Sulfur Hexafluoride (SF_6)	Nitrogen Trifluoride (NF_3)	Quantitative uncertainty	Qualitative uncertainty
			GWP AR4	1	25	298	2015.86	0	23500	16,100		
1	**Category 1: Direct GHG emissions and removals in tonnes CO_2e (1)**											
1.1	Direct emissions from stationary combustion		6,421.66	6,966.97	0.13	0.01	-	-	-	-	-	Good
1.2	Direct emissions from mobile combustion	NA	23.71	23.63	0.000	0.000	-	-	-	-	-	Good
1.3	Direct process emissions and removals arise from industrial processes	NA	-	-	-	-	-	-	-	-	-	
1.4	Direct fugitive emissions arise from the release of greenhouse gasses in anthropogenic systems	[**]	334.97	-	-	-	0.172	-	-	-	-	Poor
1.5	Direct emissions and removals from Land Use, Land Use Change and Forestry	NA	-	-	-	-	-	-	-	-	-	
Direct emissions in tonnes of CO_2e from biomass												
	Indirect Emissions in tonnes of CO_2e (2)	**S/NS[*]**										
2	Category 2: Indirect GHG emissions from imported energy (3)											
2.1	Indirect emissions from imported electricity **(location based)**		8,382.77	8,330.77	0.48	0.13	-	-	-	-	-	Good
	Indirect emissions from imported electricity **(market based)**	[***]	8,573.25	8,523.69	0.45	0.13	-	-	-	-	-	
2.2	Indirect emissions from imported energy (steam, heating, cooling, and compressed air)	NA	-	-	-	-	-	-	-	-	-	
3	**Category 3: Indirect GHG emissions from transportation**											
3.1	Emissions from Upstream transport and distribution for goods		16,649.36	16,497.93	0.000	0.508	-	-	-	-	-	Good
3.2	Emissions from Downstream transport and distribution for goods		3409.29	3378.32	0.00	0.10	-	-	-	-	-	Good
3.3	Emissions from Employee commuting		-	-	-	-	-	-	-	-	-	
3.4	Emissions from Client and visitor transport	NA	-	-	-	-	-	-	-	-	-	
3.5	Emissions from Business travels		1951.429	1932.824	0.010	0.062	-	-	-	-	-	Good
4	**Category 4: Indirect GHG emissions from products used by organization**											
4.1	Emissions from Purchased goods	NA	-	-	-	-	-	-	-	-	-	
4.2	Emissions from Capital goods	NA	-	-	-	-	-	-	-	-	-	
4.3	Emissions from the disposal of solid and liquid waste	NA	-	-	-	-	-	-	-	-	-	
4.4	Emissions from the use of assets	NA	-	-	-	-	-	-	-	-	-	
4.5	Emissions from the use of services that are not described in the above subcategories (consulting, cleaning, maintenance, mail delivery, Bank, etc)	NA	-	-	-	-	-	-	-	-	-	
5	**Category 5: Indirect GHG emissionsassociated with the use of products from the organization**											
5.1	Emissions or removals from the use stage of the product	NA	-	-	-	-	-	-	-	-	-	
5.2	Emissions from downstream leased assets	NA	-	-	-	-	-	-	-	-	-	
5.3	Emissions from end of lite stage of the product	NA	-	-	-	-	-	-	-	-	-	
5.4	Emissions from investments	NA	-	-	-	-	-	-	-	-	-	
6	**Category 6: Indirect GHG emissions from other sources**	NA	-	-	-	-	-	-	-	-	-	
REMOVALS (4)												
Direct removals in tonnes CO_2e		NA	-	-	-	-	-	-	-	-	-	

The method used to develop this carbon emissions inventory for most emissions categories is to identify the source of emissions, collect activity data, identify appropriate emissions factors, multiply emission factor by activity data to calculate GHG emissions (mass) for CO_2, CH_4, N_2O, NF_3, SF_6, apply the

IPCC AR4 100 year global warming potentials to express each GHG in mass of carbon dioxide equivalents (CO2e), then summarize the total in tonnes of CO2e. We used this method for natural gas consumption, travel, freight, and electricity. For these calculations we used the GHG Protocol's 2022 "GHG Emissions Calculation Tool" as our calculator *(see Appendix B).* The method used for quantifying fugitive emissions is based on EPA screening methods. *(See Appendix B)*

Uncertainty assessment for each emissions category was determined following the *GHG Protocol guidance on uncertainty assessment in GHG inventories*. Uncertainty ranking was deemed "Good" for all categories except for fugitive emissions which was determined to be "Poor" based on the uncertainty of the activity data estimation method. *(See Appendix C)* In order to improve uncertainty on future inventories we have begun collecting invoice records for air condition equipment maintenance including a record of the mass of refrigerants charged into the equipment at time of service.

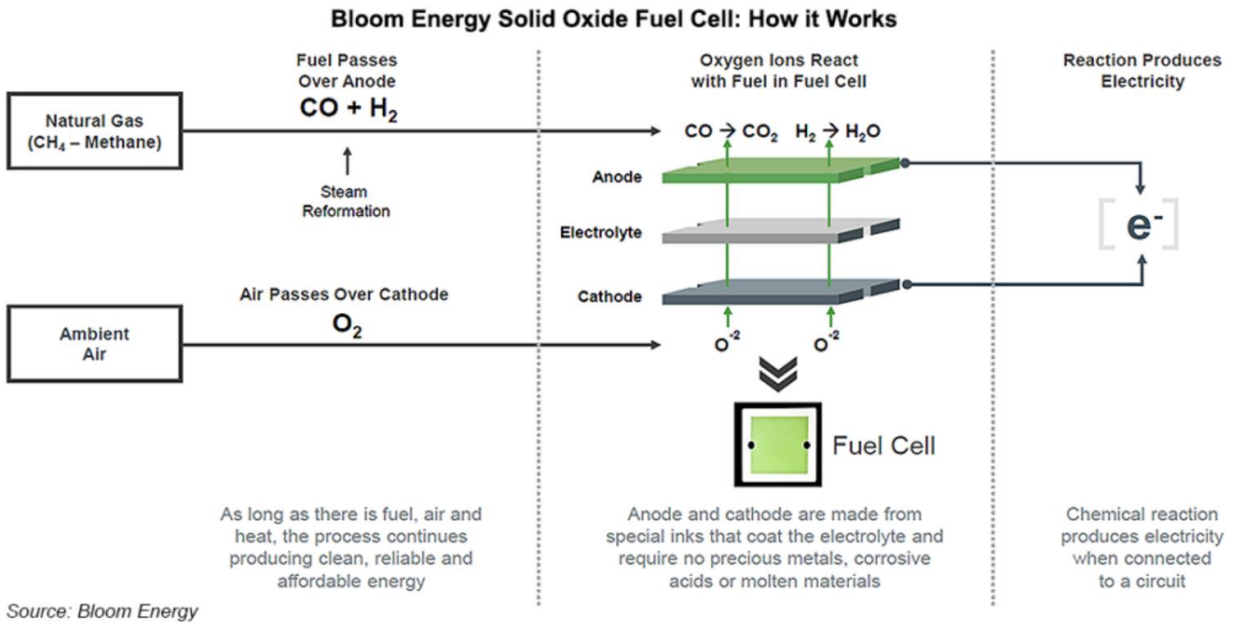
Description of each reported category, activity data, emission factors, accuracy, uncertainty.

Category 1.1: Direct emissions from stationary combustion

Extreme reports 6,421.66 tonnes of CO_2e emissions associated with direct stationary combustion of natural gas. This is a significant portion of our total carbon inventory at 17.19%. Activity data is tabularized in Therms of Natural gas from invoices provided by natural gas providers. (See Appendix A for activity Data).

A small portion of the natural gas we consume is used for combustion in boilers and heating systems to produce hot water and air onsite.

The major consumption of natural gas at Extreme is to feed our 2.2 MW Bloom Hydrogen Fuel Cell which we have on site in San Jose to supplement electricity supply for our operations there. The hydrogen fuel cell is categorized as stationary combustion and uses the same emission factor as direct combustion of natural gas. Because the stoichiometry of the combustion equation for natural gas has the same inputs and outputs as the Bloom Hydrogen Fuel Cell process, we used the same emission factor to estimate the CO2e emissions. * EPA, "Emission Factors for Greenhouse Gas Inventories," Table 1 Stationary Combustion Emission Factors, April 1, 2022 (https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf).



Category 1.2: Direct emissions from mobile combustion.

Extreme reports 23.71 tons of CO2e emissions associated with mobile combustion emission, which come from 9 diesel, 1 petrol and 4 hybrid leased cars in Europe. It is within our operational control but does not make a significant contribution to the overall GHG inventory estimated at <0.06%.

Category 1.4: Direct fugitive emissions arise from the release of greenhouse gases in anthropogenic systems.

Extreme reports 334.97 tonnes of fugitive CO2e arising from refrigerants in our air conditioning systems. This category accounts for 0.90% of the total carbon inventory.

There is 169.26 tonnes's CO2e we have excluded from our inventory related to fugitive emissions of R-22 (HCFC-22) Non-Kyoto Protocol gas.

These fugitive emissions were estimated utilizing "EPA' Greenhouse Gas Inventory Guidance for Direct Fugitive Emissions" using their "Screening Method for Estimating Emissions from Operation". We did not have any new installations or decommissioning of air conditioning equipment in 2022 on record.

An equipment inventory for each facility including the type of equipment, refrigerant, and capacity of refrigerant in the system was obtained. The operating emissions loss % according to the EPA guidance document and respective the IPCC AR4 100yr GWP for the refrigerant was applied to determine tonnes of CO2e lost to the atmosphere. *(See Appendix B)* It is noted that we excluded three facilities from our fugitive emissions inventory because of lack of available data. These excluded facilities are Reading and Bangalore 4. We will work to close this gap in future GHG inventories.

Category 2.1: Indirect emissions from imported electricity

Extreme reports 8573.25 tonnes of CO2e associated with imported electricity (market based UK). This is a significant portion of our overall carbon inventory at 22.95%.

For Indirect emissions from imported electricity activity data is based off invoice records of electricity purchased (kWh), and location based EPA e-grid emission factors for US facilities, and IEA

(2022) Emission factors for electricity in India and UK. Market based residual mix emission factors from AIB were used for the UK. Data collection is comprehensive, and uncertainty is "Good".

Category 3.1 & 3.2 Emissions from upstream & downstream transport and distribution of goods

Extreme reports 16649.36 tonnes of CO2e associated with the upstream transport of goods from our suppliers to a third-party distribution hub in El Paso Texas where finished goods are held prior to sale. This represents 100% of Extreme's inbound product shipments from our suppliers. It is a significant portion of the overall carbon inventory representing 44.56%.

Emissions from downstream transport of goods to our end customers and resellers are also significant at 3409.29 tonnes of CO2e representing 9.12 % of the inventory.

The activity data for emissions from both upstream and downstream transport and distribution of goods is summarized by tonne-kilometer and categorized by freight method (Aircraft, and truck). Weights in the activity data are provided by the carriers to our 3PL JUSDA and stored in JUSDA's eVMI database. Our activity data for gross weights of shipments has an accuracy error measured average error of approximately -3.8% (understating actual emissions). This error is associated with the carrier re-weigh not being recorded after the shipment is booked.

The distances which are also provided to Extreme from JUSDA are the distance in Km calculated between the shipper address and consignee address. The emission factors applied are EPA Emission Factors for Greenhouse Gas Inventories. This activity data represents the freight under the operational control of Extreme.

3.3 Emissions from Employee commuting

Emissions associated with employee commute are not included in our 2022 carbon inventory because of the lack of available data. Our estimated emissions for 2022 were considered as not significant, representing <2% of total emissions. For future carbon inventories beginning in 2023 we will be including commute data.

3.5 Emissions from Business travels

Extreme reports 1951.429 tonnes of CO2e emissions associated with business travel which accounts for 5.22% of the total inventory.

Activity data for business travel includes air passenger-miles categorized by short medium and long haul and EPA emission factors for air travel applied *(EPA Emission factors for greenhouse gasses 2021)*. Due to lack of available data, we did not include hotel or cab fairs.

Activity data is maintained by our corporate travel group and exported from Concur, our corporate travel tool booking including all corporate passenger miles. *(See Appendix A)*

Chapter 5: GHG reduction initiative and internal performance tracking

Corporate carbon emissions reduced 8.85 % year over year from our baseline year 2021 from 40,990 to 37,363.67 tonnes CO_2e.

There are several areas in which Extreme has begun to measure and are taking initiatives to reduce carbon emissions, spanning Scopes 1,2 and three.

There are several Scope 1 and 2 carbon reduction initiatives. One of the most significant is the reduction in commercial real estate used by the company for its operations. The move to a hybrid workplace has facilitated this effort. Extreme had begun this transformation in the way we work before COVID, but it was certainly accelerated during this time. The result has been the need for much less office space. In the first quarter of CY2023, Extreme will be decreasing its footprint at several of its largest facilities, including in Salem, NH and San Jose, CA. This has resulted in less energy usage.

Most of the electricity we use is being used to power and cool our labs and data centers; therefore, we have several initiatives in that area. As we manage our product lifecycles, products that have reached their End-of-Life are being decommissioned and processed as e-waste, which is then recycled. We are also moving to standardize lab configurations and have started working on an initiative to shut down equipment when it is not being used.

Real estate consolidation and internal focus on the efficiency of our lab and data center operations resulted in a 16.44% reduction in electricity usage in 2022 over 2021. More than 3800 pieces of lab IT equipment were decommissioned in 2022 during lab cleanup and consolidation. In 2023 we expect to see these reductions continue as we move forward with more consolidation into our Salem NH facility.

In 2022 our freight activity increased significantly over the calendar year 2021 as the supply chain global component material shortages freed up allowing our ODMS to fulfill backlog orders. While our upstream freight activity increased there was a corresponding smaller decrease in downstream activity. This activity shift is attributable to an increase in Extreme's factory direct shipments (which we have categorized as upstream). Despite this increased activity (tonne-km of freight) our overall emissions were reduced by 3000 tonnes CO_2e or 13% because of lower EPA emission factors published and used for 2022.

Over the course of 2022 Business travel increased and resumed to normal level after COVID in 2022 which resulted in an increase of 1484.36 Tonnes of CO_2e.

There are also several initiatives for Scope 3 emissions. We are asking our downstream suppliers to adopt science-based carbon reduction targets and monitoring those efforts regularly through audits and reviewing at the executive level in quarterly business reviews. The hybrid work policy has reduced commuting; however, business travel has been increasing part of negotiation and business activities. In addition, once the supply chain disruptions begin to clear, Extreme will aggressively look to reduce our costs and associated carbon emissions by shifting more of our freight from air to sea. We are also reducing the energy used by our products by aggressively moving to newer products that use more advanced silicon and more efficient power supplies, which reduces power consumption.

Appendix A: Activity Data

Freight:	01_CY22%20Freight%20Activity%20Data
Electricity & Natural Gas	02_CY22_Extreme%20Networks_Jan-22_J
Travel:	03_CY22 Air Travel Activity Data.xlsx

Appendix B: Emissions

Summarized Emissions by Category	04_CY22_ANNEX%20F_Final.xlsx
Calculator w/ Emissions Factors & GWP references	05_GHG%20Emissions%20Calculation%2
Calculation of Fugitive Emissions	06_CY2022_Cooling inventory CA update

Appendix C: Uncertainty Assessment

Uncertainty Assessment	07_CY22_GHG-uncertainty%2020%20(ve