PRODUCING FOR THE PLANET SOCIETY

# Animation Calculator User Guide

A tab-by-tab guide to measuring greenhouse gas emissions for animation studios and productions.

ELEVEN SECTIONS | SCOPES 1, 2 & 3 | DATA SOURCES

# Table of Contents

# Disclaimer

This calculator and accompanying guide are provided by Producing for the Planet Society as a voluntary tool to help animation studios and productions estimate greenhouse gas emissions. They are intended for general planning, internal tracking, and voluntary reporting purposes.

The accuracy of any result depends entirely on the completeness and accuracy of the data entered by the user. Producing for the Planet Society makes no warranty, express or implied, as to the accuracy, completeness, or fitness of these estimates for any particular purpose.

This tool does not constitute accounting, legal, or environmental consulting advice, and is not a substitute for third-party verification or assurance where that is required — for example, by a funder, regulator, or certification body.

Users are solely responsible for the accuracy of the data they enter, for any conclusions drawn from the results, and for any use of this tool in external reporting, applications, or disclosures.

Producing for the Planet Society accepts no liability for any loss, damage, or adverse outcome arising from reliance on this calculator's outputs.

SECTION ONE

# Purpose of the Calculator

The Drawn to Change Animation Calculator helps animation studios and productions estimate greenhouse gas emissions associate with their operations. It is designed for use in the Canadian animation industry and supports reporting across Scope 1, Scope 2, and selected upstream Scope 3 categories in alignment with industry best practices and designed to primarily align with the Greenhouse Gas Protocol.

This calculator uses emissions categories from the global Greenhouse Gas Protocol standard, which organizes emissions into “Scopes”.

## Scope 1

**DIRECT EMISSIONS**

Emissions created directly by your own equipment: fuel burned for heating (natural gas, propane, heating oil), fuel burned in vehicles or generators you run, and refrigerant leaks from your own AC or refrigeration units.

**Examples:** natural gas heating your studio; gasoline used in a van or truck you own or lease; a generator running on a location shoot for reference or mocap footage.

## Scope 2

**PURCHASED ENERGY**

Emissions created off-site by the utility that generates the electricity, heat, steam, or cooling you purchase — not by anything burned on your own site. This calculator measures purchased electricity only; purchased heating, cooling, or steam would also fall under Scope 2, but aren't currently included in this tool. Fuel burned on-site in equipment you own or operate (e.g., a gas furnace) falls under Scope 1.

**Examples:** the electricity running your workstations, render farm, and servers; power for edit bays or a recording booth; the electricity your AC draws to cool those spaces.

## Scope 3

**SUPPLY CHAIN EMISSIONS**

Indirect emissions from sources you don't own or run, but that exist in your supply chain — products and services you buy, ship, discard, and travel for. Downstream emissions — how the finished production is distributed or viewed — are not covered in this calculator.

**Examples:** hard drives, monitors, or a Cintiq you purchased; a freelance animator or rigger working from their own home setup; an overseas studio doing outsourced in-betweens or clean-up; a rented studio for voice recording sessions; cloud rendering or storage; shipping drives between studios; flights to a festival, pitch, or industry conference; staff commuting to the studio.

**HINT**

Your Scope 3 emissions are often someone else’s Scope 1 or 2 (e.g. a post house doing your colour grade — their facility energy is their Scope 2, but your Scope 3 – services). If you provide services to a client, your Scope 1 and 2 emissions are their Scope 3.

SECTION TWO

# Before You Begin

Before collecting or entering data, decide how your organization will define its reporting boundary and reporting period. A reporting boundary is simply the definition of what gets included or excluded in your data set and what you will measure. Your reporting period is the time period — a start date and end date — that marks what data is included based on when the activity occurred.

## Confirm your reporting level

The Drawn to Change calculator allows you to determine what reporting level you wish to calculate. With this tool, you can determine your footprint for your entire studio, or for a single production.

| REPORTING LEVEL | DESCRIPTION |
|---|---|
| **Studio-level footprint** | Covers emissions from the studio's operations over a defined operational year — often a fiscal year. |
| **Production-level footprint** | Covers emissions associated with a specific production, season, or project lifecycle. The time period can be either a fiscal year, or the start and end dates of the production activities (e.g. prep, production, post). |

## Set your organizational boundary

Emissions should be measured for activities where the reporting entity (i.e. the production, the studio) had “operational control”. This includes activities where the cost of such activity was covered by the studio or production, the activity was directed and controlled by it, or where emissions are generated through activities required to deliver animation production services. In contrast, activities where the reporting entity has no operational control should be excluded.

SECTION TWO (CONTINUED) · BEFORE YOU BEGIN

| QUESTION | TREATMENT |
|---|---|
| **Does the production or studio own or control the emissions source?** | Include it in Scope 1 or Scope 2, depending on the source. |
| **Is the activity required for production but not directly controlled by the reporting entity?** | Include it in Scope 3 where relevant. |
| **Is the asset or activity owned by a parent company or another entity and not controlled by the production?** | Exclude it from the production-level footprint and document the reason, or use FTE-based allocation defined below. |

This test decides whether a source is inside your boundary at all — it does not tell you whether an included source is Scope 1 or Scope 2. That split depends on where the emission physically happens: if you burn the fuel yourself (heating, a company vehicle), it's Scope 1; if you're buying electricity generated off-site, it's Scope 2. Both require that you control the source.

**Examples of activities that could fall outside of an organizational boundary:**

- A freelancer hired, directed, and paid entirely by a sibling production, even if they happen to work in the same building as your team — you had no control over them and no benefit from their work.
- Studio-owned equipment reserved exclusively for another production or division during your reporting period — say, a render farm that's fully booked out to Production A, with Production B given no access at all during that window.
- A separate department's budget line that never touches your production — e.g., the studio's marketing team's laptops, if marketing isn't part of your production or studio boundary at all.

> **NOTE**
>
> Where an asset or activity is shared across multiple productions or with the broader studio, an allocation approach may be a better fit than exclusion — see “Define the reporting period” below.

SECTION TWO (CONTINUED) · BEFORE YOU BEGIN

## Define the reporting period

The reporting period (the start and end dates of included activities) should match either the studio's operational year (e.g. usually a fiscal year or calendar year) or the production period of a specific animation production.

If you are measuring a production-specific footprint, and you have studio-level data (e.g. utility bills covering the entire studio) use a reasonable allocation approach and document the assumption.

We recommend using a full-time-equivalent (FTE) or time-based allocation approach for this: the share of studio personnel, labour hours, or production hours attributable to the production is used to estimate its proportional share of studio-wide emissions. Use this allocation approach instead of, not alongside, direct assignment or exclusion for the same category — applying both to the same source will double count or miscount emissions.

## Set a materiality threshold

Not everything that falls inside your boundary is worth the effort of tracking. “Material” just means big enough to actually matter — something is material if leaving it out would meaningfully change your total footprint. Not everything that falls inside your boundary meets that bar. A category is material if it's likely to represent a meaningful share of your footprint, or if a funder, broadcaster, or partner specifically requires it. Categories that are small, one-off, or have no usable data available can be left out — as long as you document what you excluded and why (see “Documenting Assumptions and Exclusions”).

A practical way to apply this: set a materiality limit for minor or incidental costs before you start entering data — for example, office supplies under $500, or a single freelancer's home-office setup where no meaningful data exists. Anything below your limit doesn't need to be tracked down; anything above it does.

**BOUNDARY VS. MATERIALITY**

This is a different decision from the boundary test above. Boundary asks, is this ours to count at all? Materiality asks, is it worth counting, even though it's ours? Something can pass the boundary test cleanly and still fail the materiality test — a $40 annual software subscription is entirely within your boundary, but rarely worth chasing data for.

Don't spend disproportionate effort chasing a category that won't move your total. If you're not sure whether something is material, a rough estimate is usually enough to tell — if the estimate is clearly negligible, you can stop there and document it as excluded on materiality grounds.

SECTION THREE

# Data Types

To the extent possible, enter the best available data into the calculator. Use measured or source-specific data where possible. If that is not available, use estimates and document the assumptions and data sources used.

For each activity you're measuring, start with Tier 1 and only drop to Tier 2 or Tier 3 if better data genuinely isn't available for that specific activity. The table below shows the order to work through — Tier 1 first, Tier 2 as the fallback, Tier 3 as the last resort — since lower tiers trade accuracy for ease of collection. It's normal and expected to end up with different tiers for different activities in the same footprint.

| | |
|---|---|
| **Tier 1**<br>MOST RELIABLE, MOST ACCURATE | Supplier-specific or measured activity data, e.g. utility bills, direct supplier emissions data, measured fuel use, meter readings.<br>**Examples:** 500 kWh of electricity; 1,000 litres of gasoline; specific emissions factors provided by suppliers. |
| **Tier 2**<br>USE IF TIER 1 ISN'T AVAILABLE | Distance-based or weight-based estimates, e.g. travel distances, freight distances, estimated waste weights.<br>**Examples:** 1,000 km travelled; 500 kg of recycling waste. |
| **Tier 3**<br>LEAST PREFERRED, LEAST ACCURATE | Spend-based estimates, e.g. CAD spend where physical activity data is unavailable.<br>**Examples:** $1,000 spent on gasoline; $500 spent on couriers. |

SECTION FOUR

# Understanding the Calculator Layout

The calculator is organized into tabs. Each tab corresponds to a specific scope, emissions source or reporting category. Users should only enter data in cells intended for user input.

## Cell colour legend

| CELL TYPE | COLOUR | USER ACTION |
|---|---|---|
| **Data entry required** | | Enter the requested information. |
| **No data entry required** | | Do not enter data; the cell is not needed based on your selections. |
| **Automatic formula** | | Do not edit. The calculator uses this cell to perform calculations. |
| **Automatic $tCO_2e$ formula** | | Do not edit. This cell calculates emissions in tonnes of carbon dioxide equivalent. |

Look closely at the two shades of blue used in the worksheet:

- **Blue – "Enter Data":** These are the cells where you should enter your information.
- **Pale blue – "Automatic Formula":** These cells contain automatic formulas and should not be edited or changed.

You will only be able to edit cells marked "Enter Data" blue. Cells that are not this blue are locked and cannot be edited.

## General workflow

1. Confirm your reporting boundary and time period.
2. Define what is being counted.
3. Define what categories are material.
4. Match your decisions to calculator tabs.
5. Find your data, tab by tab.
6. Decide how precise your data needs to be.
7. Enter your data, tab by tab.
8. Review the Summary Total Footprint tab.
9. Document your assumptions and exclusions.
10. Run the quality check before finalizing.

SECTION FIVE

# Scope 1: Direct Emissions

Scope 1 covers emissions created directly by your own operations and equipment. It has two distinct parts, estimated in different ways: combustion — the direct burning of fossil fuel on-site for heating, vehicles, or generators — and fugitive emissions — refrigerant that leaks from air conditioning or refrigeration equipment you run. The tabs below are grouped accordingly.

## TAB 1.1 Natural Gas (NG) – Office Heating

Includes natural gas you purchase and burn at your location for heating or cooling or cooking. Natural gas that is burned offsite by a utility, which then delivers the electricity to you, is covered in Scope 2.

- Select the province where the natural gas was consumed, such as the location of the office or facility that used natural gas.
- Select whether the volume of natural gas consumed is reported in gigajoules (GJ) or cubic metres ($m^3$).
- Enter the amount of natural gas consumed using data from utility bills or meter records where available.

## TAB 1.2 Other Scope 1 fuel tabs

Use the relevant Scope 1 fuel tabs for sources such as company-owned or leased vehicles, diesel or gasoline use, generators, and other controlled combustion sources. For each fuel source, enter the quantity of fuel consumed using the unit requested in the calculator.

## TAB 1.3 HFC-Refrigerants

This tab estimates fugitive emissions — refrigerant that slowly leaks from air conditioning or refrigeration equipment over time. It works differently from the fuel tabs: you don't need to know how much refrigerant is in your system or how much has leaked. The calculator estimates both from standard industry benchmarks (from a U.S. EPA reference methodology), based on your building type and size.

**For each facility being measured, enter:**

- A name for the building or facility.
- The building type (e.g., office, industrial, apartment).
- The facility's floor area, in square feet.

The calculator looks up a typical refrigerant charge and annual leakage rate for that building type, then converts it to $tCO_2e$ using the refrigerant's global warming potential. If a facility has no air conditioning or refrigeration equipment, leave its area blank or enter 0.

SECTION SIX

# Scope 2: Purchased Energy

Scope 2 includes indirect emissions from purchased electricity — emissions created off-site, at the utility that generates the electricity you buy, rather than anything burned on your premises. This calculator does not currently cover purchased district heating, cooling, or steam. If your building relies on a third-party district energy network, you should contact your utility provider directly to obtain their plant-specific greenhouse gas emission factors.

## TAB 2.1 Electricity

- Select the province where the electricity was consumed.
- Enter the electricity consumption amount using the unit requested in the calculator.
- Use utility bills, landlord-provided data, or metered electricity data where possible.
- If electricity is included in rent or shared with other tenants, estimate the production or studio share using a reasonable method such as floor area, headcount, or time used. Document the method.
- If your studio uses a supplier-specific electricity emission factor (for example, a green power contract) or renewable energy certificates (RECs), select “Yes” to the relevant question near the top of the tab, in addition to entering your location-based electricity consumption.

> For a supplier-specific factor, select the applicable province and enter the emission factor provided by your electricity supplier. For Renewable Energy Certificates (“RECs”), select the applicable province and enter the amount of electricity (kWh) covered by your certificates.

### What are Renewable Energy Certificates?

RECs are purchased certificates that let you claim the environmental benefits of clean energy. In Canada, these are often provided through vendors such as Bullfrog Power. Similar to offsets, what a REC does is let you claim the environmental attribute of that renewable generation separately, and apply it against your own electricity use for reporting purposes. The calculator asks for RECs as a distinct, optional entry alongside your regular (location-based) electricity consumption, rather than as a replacement for it.

SECTION SEVEN

# Scope 3: Upstream Emissions

Scope 3 covers indirect emissions from your supply chain — sources you don't own or run, but that only exist because of your production or studio's activities — what you buy, ship, discard, and travel for.

| CATEGORY | EMISSIONS SOURCE |
|---|---|
| 3.1 | Purchased goods and services |
| 3.2 | Capital goods |
| 3.3 | Fuel- and energy-related activities |
| 3.4 | Freight |
| 3.5 | Waste generated in operations |
| 3.6 | Business travel |
| 3.7 | Employee commuting |

Category 3.3 (fuel- and energy-related activities) is automatically calculated for you based on data you have entered elsewhere in the calculator. You will not need to find any additional data for it (see Tab 3.3 instructions in Section Eight).

Downstream Scope 3 categories are excluded (e.g. the distribution and exhibition of a production) because these operations are generally outside of the scope of production or studio activities and are managed by different parties. If your operations include distribution and exhibition, please reach out to **info@producingfortheplanet.com** for additional support.

SECTION EIGHT

# Tab-by-Tab Instructions for Scope 3

## TAB 3.1(A) Purchased Goods

Use this tab when goods are accounted for as expenses during the reporting period. Use Tab 3.2 if you are reporting on capital assets (goods recorded as physical assets on your financial reporting).

Note that only select categories of goods are included, and may not represent a full/complete dataset for Scope 3, Category 1.

EXAMPLES

| | |
|---|---|
| **Paper** | Printed storyboards, script pages, general office use paper |
| **Hardware** | Monitors, Wacom tablets or Cintiqs, keyboards, workstation towers — bought as a regular expense, not a capital purchase (if it's capitalized, it goes in 3.2 instead) |
| **Office supplies** | Pens, whiteboards, staples (subject to your materiality thresholds) |

- Enter the weight or CAD spent (as applicable to the goods category) in column C.
- If Yes for supplier-specific emission factors: fill in Type of Good and Amount purchased in columns B & C, and enter the applicable supplier-specific emission factor in column F, per data from your supplier.

## TAB 3.1(B) Services

Use this tab for purchased services. Enter the CAD spent in column C for each applicable service category using invoices, accounting records, or procurement reports where available.

EXAMPLES

| | |
|---|---|
| **Motion Picture & Sound Services** | Voice recording studios, ADR, sound mixing, foley, composing, services outsourced to a third party, closed-captioning, storyboards |
| **Insurance Services** | General liability |
| **Legal Services** | Script clearance, E&O review, license negotiations |
| **Data Hosting** | Cloud rendering, storage, project-management software, AI tools or subscriptions. |

SECTION EIGHT (CONTINUED) · TAB-BY-TAB INSTRUCTIONS FOR SCOPE 3

## TAB 3.2 Capital Goods

Use this tab when goods are accounted for in the financial records of the reporting entity being measured as capital goods purchases (i.e. assets) during the reporting period rather than expensed goods. Do not enter the same purchase in both Tab 3.1 and Tab 3.2.

- Identify capital goods purchased during the reporting period.
- Match each item to the closest applicable category.
- Enter the required weight or CAD spend in column C, depending on the goods category.
- Add a note if a significant capital good is not represented by the available categories.

**EXAMPLE**

If the production company bought 100 computers and used them on the production, they would be recorded in this tab. If the studio bought 100 computers and rented them to a production:

- The studio footprint would record the 100 computers in Tab 3.2.
- The production footprint would use the FTE-based allocation in Tab 3.1.

## TAB 3.3 Upstream Fuel

This tab automatically calculates upstream emissions associated with electricity and fuel already entered elsewhere in the calculator.

- Select the province where electricity or fuel was consumed.
- Ensure this province matches the province selected in the relevant Scope 1 and Scope 2 tabs.
- Do not manually enter other data in this tab. Data entered in the related tabs will populate the calculations automatically.

## TAB 3.4 Freight

- Enter the cost of freight transport in CAD in column B for each shipment paid for by the reporting entity during the reporting period.
- Select the applicable mode of transportation in column C.
- If a shipment involves multiple modes of transport, select the mode that represents the largest proportion of the overall cost.
- Select the province that the freight departed from in column D.

SECTION EIGHT (CONTINUED) · TABS 3.5 – 3.6

## TAB 3.5 Waste

- Identify the types of waste generated during operations.
- Enter the total weight in kilograms for each waste type in column C.
- Use measured weights where available. If actual measured weights are unavailable, use the best reasonable estimates available and document the method.

Use these tabs for business travel associated with the production or studio: accommodations, flights, and ground transportation. This section is split across three tabs — 3.6(a) Accommodations, 3.6(b) Flights, and 3.6(c) Taxis — so you can enter each type of travel separately. Use actual booking records or expense reports where available. If exact details aren't available, use reasonable estimates and document them.

## 3.6(A) Accommodations

Enter the total number of rooms booked and nights stayed per trip. Then select where the stay took place:

Select the country or province and the type of hotel (Economy, Midscale, Upscale, Luxury, Apartment, Average house, Large house). The calculator applied the albert methodology here - albert is the UK screen industry's carbon-calculation standard, backed by BAFTA - a single set of global energy-intensity benchmarks by hotel type, multiplied by that country or province's electricity emission factor.

SECTION EIGHT (CONTINUED) · TABS 3.6 – 3.7

## 3.6(B) Flights

Select the type of flight (Short- or Long-haul) and the cabin class (average passenger, economy, business, first class). Average passenger is selected when the cabin class is unknown or not listed. Enter the number of passengers, whether the flight was one-way or return (round trip), and the total distance travelled in kilometres.

Use the following flight-length categories:

| Short haul | Long haul |
| --- | --- |
| ≤3,700 km | >3,700 km |

## 3.6(C) Taxis

The calculator distinguishes between gasoline and electric vehicle trips. For gasoline trips, enter the total distance travelled in kilometres. For electric vehicle trips, enter the total distance travelled in kilometres and select the province where the trip took place, since the emission factor for electric vehicles depends on that province's electricity grid.

## TAB 3.7 Employee Commuting

Use this tab to estimate emissions from employee commuting. Gather commuting information from staff surveys, HR records, or reasonable estimates. Include commute mode, distance, frequency, and hybrid work patterns where applicable. Work from home emissions are automatically calculated based on the number of work from home days inputted.

SECTION NINE

# Summary Total Footprint

The Summary Total Footprint tab brings together emissions from the relevant calculator tabs. Use this tab to review total emissions by scope and category, check whether expected sources are included, identify missing or unusual results, and add prior-year or lifecycle totals when reporting at the production level.

SECTION TEN

# Quality Check Before Finalizing

## Data completeness check

- [ ] Natural gas and other heating fuels.
- [ ] Purchased goods and purchased services.
- [ ] Business travel.
- [ ] Electricity.
- [ ] Capital goods.
- [ ] Employee commuting.
- [ ] Refrigerants (HFCs).
- [ ] Company-owned or leased vehicles.
- [ ] Freight.
- [ ] Accommodations, if applicable.
- [ ] Generators or other fuel combustion sources.
- [ ] Waste.
- [ ] Prior-year production lifecycle data, if applicable.

## Formula and reasonableness check

- Confirm required selections such as province and units are complete.
- Check for wrong units, missing province selections, duplicate entries, missing travel or commuting records, and omitted prior-year production data.

SECTION TEN (CONTINUED)

# Understanding your Footprint

Once you've completed the calculator, the Summary Total Footprint tab will show a total figure in tonnes of $CO_2e$, broken down by scope and category. A few things to keep in mind when interpreting it:

## It's an estimate, not a precise measurement.

Your total is only as accurate as the data behind it. A footprint built mostly from Tier 1 data (utility bills, metered readings) is a tighter estimate than one built mostly from Tier 3 spend-based figures — and most real footprints are a mix of both. Treat the number as a reasonable, defensible estimate for the reporting period, not an exact figure.

## A high Scope 3 share is normal, not a warning sign.

For most animation studios and productions, Scope 3 will be the largest slice of the total by far — often the majority of it. That's expected: animation is service- and purchasing-heavy work, with freelancers, outsourced studios, software, and vendors doing much of the activity that generates emissions. A Scope 1 and 2 footprint that looks small by comparison doesn't mean you've missed something; it usually just reflects how little direct fuel and electricity a desk-based production actually uses.

## Don't compare your total directly to another studio's or production's.

This figure isn't a rate or ranking — it isn't normalized per episode, per minute of finished content, per employee, or per dollar of budget. A larger production will almost always show a larger total than a smaller one, regardless of how efficient either one is. If you want to compare performance over time or against another entity, compare like-for-like — the same production year-over-year, or figures that have been normalized to the same unit — rather than the raw totals side by side.

SECTION ELEVEN

# Recommended Data Sources

| DATA NEEDED | POSSIBLE SOURCE |
|---|---|
| **Natural gas use** | Utility bills, landlord data, meter readings. |
| **Electricity use** | Utility bills, submeter data, landlord data. |
| **Fuel use** | Fuel cards, receipts, vehicle logs, generator records. |
| **Refrigerants** | Equipment service/recharge records, HVAC vendor logs, building floor area. |
| **Purchased goods** | Procurement reports, invoices, accounting records. |
| **Purchased services** | General ledger, vendor invoices, accounting reports. |
| **Capital goods** | Fixed asset register, capital expenditure reports. |
| **Freight** | Shipping invoices, courier records, procurement records. |
| **Waste** | Waste hauler reports, building management records, estimates. |
| **Business travel** | Travel booking systems, expense reports, HR records. |
| **Employee commuting** | Staff survey, HR location data, hybrid work assumptions. |