
CO₂ Standard: Rules for Calculating Brand Targets and Assessing Brand Compliance



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1.0 OVERVIEW

This document provides the rules for calculating the Brand Targets and Assessing Brand Compliance against the agreed FCAI CO₂ Standard.

The CO₂ brand targets and assessment of performance is calculated on a sales-weighted average mass per unit basis. That is, each brand's CO₂ targets (i.e. the MA Category target and the NA+MC Category target) and brand performance in each of these vehicle category groups result in 'x' gCO₂/km per unit sold as recorded in VFACTS.

NOTE: As secretariat, FCAI will assist brands to understand their specific brand targets.

FCAI will calculate each brand's individual targets (i.e. one for MA Category vehicles and another for NA+MC Category vehicles) for each calendar year as outlined in Figure 1.1 (following) and determine their compliance or otherwise with those targets. FCAI will also calculate the industry's overall achievement in terms of CO₂ emission.

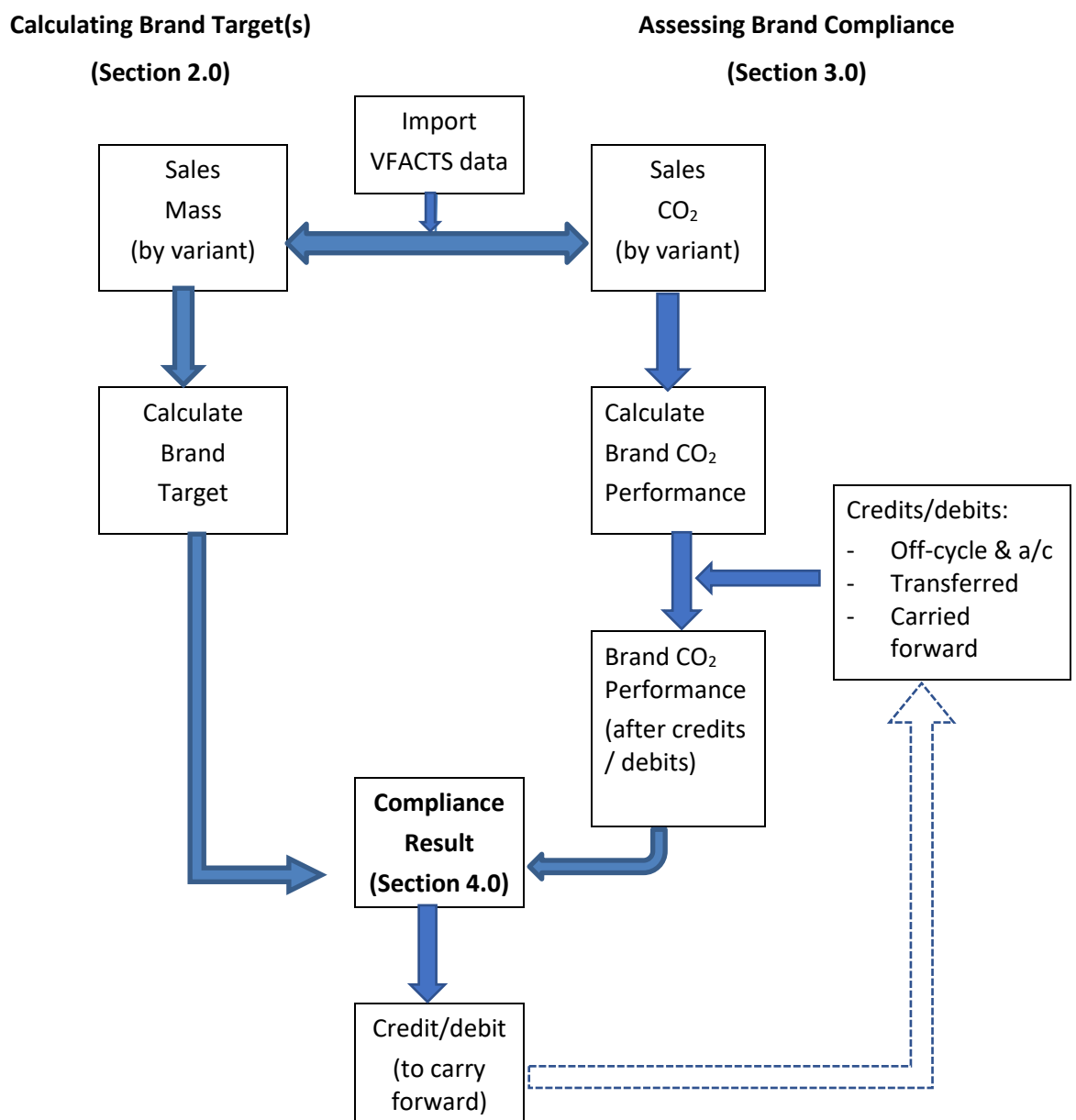


Figure 1.1 Overview

Each brand's (supplier's) own targets will be calculated (i.e. one for MA Category vehicles and another for NA+MC Category vehicles) for each calendar year from the mass-based limit value curve:

$$\text{CO}_2 \text{ Limit Value} = \text{CO}_{2\text{Target}} + \text{slope} \times (\text{Mass} - M_{\text{Ref}})$$

Where:

- $\text{CO}_{2\text{Target}}$ = is the annual target for each category as outlined in Tables 1.1 and 1.2.
- Mass = sales weighted Mass In Running Order (MIRO) of individual brand sales for that calendar year.
- Slope = slope of the line for that target year from Tables 1.1 and 1.2.
- M_{Ref} = reference sales weighted MIRO for that target year from Tables 1.1 and 1.2.

Table 1.1. Limit Curve Parameters – MA Category

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
$\text{CO}_{2\text{Target}}$	154	150	146	140	134	128	122	116	110	104	98
Slope	0.079	0.077	0.074	0.072	0.070	0.068	0.065	0.063	0.061	0.058	0.056
M_{Ref}	1558	1563	1568	1573	1578	1584	1589	1594	1599	1604	1609

Table 1.2. Limit Curve Parameters – NA+MC Category

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
$\text{CO}_{2\text{Target}}$	197	193	189	183	177	172	166	160	154	149	143
Slope	0.076	0.076	0.075	0.075	0.074	0.074	0.074	0.073	0.073	0.072	0.072
M_{Ref}	2070	2073	2076	2078	2081	2084	2087	2090	2092	2095	2098

For example, the value limit curves for each category for 2020 target year will be:

- MA category: $\text{CO}_2 \text{ Limit Value} = 154 + 0.079 (\text{Mass} - 1558)$
- NA+MC category: $\text{CO}_2 \text{ Limit Value} = 197 + 0.076 (\text{Mass} - 2070)$

And the value limit curves for each category for 2030 target year will be

- MA category: $\text{CO}_2 \text{ Limit Value} = 98 + 0.056 (\text{Mass} - 1609)$
- NA+MC category: $\text{CO}_2 \text{ Limit Value} = 143 + 0.072 (\text{Mass} - 2098)$

FCAI will assess each Brand's Compliance (section 3.0) against their Brand Target(s) (Section 2.0).

The data used in calculating brand targets and assessing brand performance will be sourced from VFACTS.

2.0 CALCULATING BRAND TARGET

2.1 Overview

FCAI will calculate each brand's (Supplier's) individual, yearly targets based on their total annual sales, using data (sales and unladen mass) recorded in VFACTS for that target (calendar) year.¹

Separate targets will be calculated for:

- All MA Category² models and sales
- All NA&MC Category models and sales

2.2 Methodology

To calculate each brand target (i.e. a MA category target and a NA&MC category target), the sales weighted average mass is needed.

Notes:

- Sales = total sales in calendar year
- Mass In Running Order (MIRO)³ = Unladen mass + 75 kg
- Unladen (kerb) mass = the mass of the vehicle in running order unoccupied and unladen with all fluid reservoirs filled to nominal capacity including fuel, and with all standard equipment.⁴

Step 2.1: Total mass for all models/variants sold in calendar year

Total mass for each variant;

- Total mass of variant (1) = Mass(variant(1)) x Sales(variant(1))
- Total mass of variant(n) = Mass(variant(n)) x Sales(variant(n))

Total mass for each model:

$$\text{Total mass of Model}_1 = \sum_{n=1}^n \text{Total mass of variant}(1) + \dots + \text{Total mass of variant}(n)$$

Step 2.2: Total sales for all models/variants sold in calendar year

Total sales for each model/variant;

- Total sales of variant (1) = Sales(variant(1))

Total sales for each model:

$$\text{Total sales of model}_1 = \sum_{n=1}^n \text{Total sales of variant}(1) + \dots + \text{Total sales of variant}(n)$$

¹ The data added to VFACTS should be consistent with the data used for the vehicle Type Approval and recorded in the RVD and Type Approval documents.

² Each vehicle model is included in the CO2 Target that corresponds to its vehicle category as per its Type Approval.

³ As per its Type Approval

⁴ Vehicle Standard (Australian Design Rule – Definitions and Vehicle Categories) 2005, compilation date 15/02/2016

Step 2.3: Calculate sales weighted average mass for brand

Total sales weighted mass for all models (in that vehicle category target group) sold by brand:

- Brand total mass = $\sum_{n=1}^n \text{Total mass of model}(1) + \dots + \text{Total mass of model}(n)$
- Brand total sales = $\sum_{n=1}^n \text{Total sales of model}(1) + \dots + \text{Total sales of model}(n)$

$$\text{Sales weighted average mass for brand} = \frac{\text{Brand total mass}}{\text{Brand total sales}}$$

Step 2.4: Calculate brand target(s)

Each brand's target(s) are calculated using the mass limit curve;

$$\text{CO}_2 \text{ Limit Value} = \text{CO}_{2\text{Target}} + \text{slope} \times (\text{Mass} - M_{\text{Ref}}) \quad (\text{Equ 2.1})$$

Where:

- $\text{CO}_{2\text{Target}}$ = is the annual target for each category as outlined in Tables 1.1 and 1.2.
- Mass = sales weighted average mass calculated in step 2.
- Slope = slope of the line for that target year from Tables 1.1 and 1.2.
- M_{Ref} = reference sales weighted mass (in running order) for that target year from Tables 1.1 and 1.2.

Notes:

- Separate targets need to be calculated for MA category and NA+MC Category vehicles.

3.0 ASSESSING BRAND COMPLIANCE

3.1 Overview of Brand Compliance

FCAI will assess each brand's (Supplier's) compliance against the brand's own target(s) (Section 2.0) by calculating their sales-weighted average CO₂ emissions, using data (sales and CO₂ emissions) recorded in VFACTS for that target (calendar) year.

Compliance against the separate targets are to be calculated for:

- All MA Category models and sales
- All NA+MC Category models and sales

NOTE: Specific vehicles are excluded, refer Section 8

3.2 Methodology

To calculate the brand sales weighted average CO₂.

Notes:

- CO₂ = CO₂ emissions reported against ADR 81/02 as part of the vehicle (model/variant) type approval
- Sales = total sales (in each vehicle category target group) in calendar year ^{*1}

Step 3.1: Total CO₂ for all models/variants sold in calendar year

Total CO₂ emissions for each variant;

- Total CO₂ of variant (1) = CO₂(variant(1)) x Sales(variant(1))
- Total CO₂ of variant(n) = CO₂ (variant(n)) x Sales(variant(n))

Total mass for each model:

$$\text{Total CO}_2 \text{ of Model}_1 = \sum_{n=1}^n \text{Total CO}_2 \text{ of variant}(1) + \dots + \text{Total CO}_2 \text{ of variant}(n)$$

Step 3.2: Total sales for all models/variants sold in calendar year

Total sales for each model/variant;

- Total sales of variant (1) = Sales(variant(1))

Where a variant has a super-credit (Section 6.0), the Sales volume for that variant is multiplied by the super-credit:

- Sales(variant(n)) = Super-credit multiplier x sales volume

Total sales for each model:

$$\text{Total sales of model}_1 = \sum_{n=1}^n \text{Total sales of variant}(1) + \dots + \text{Total sales of variant}(n)$$

*1 Excludes exempt vehicles, refer Section 8.

Step 3.3: Calculate sales weighted average CO₂ for brand

Total sales weighted mass for all models (in that vehicle category target group) sold by brand:

- Brand total CO₂ = $\sum_{n=1}^n \text{Total CO}_2 \text{ of model}(1) + \dots + \text{Total CO}_2 \text{ of model}(n)$
- Brand total sales = $\sum_{n=1}^n \text{Total sales of model}(1) + \dots + \text{Total sales of model}(n)$

$$\text{Brand sales weighted average CO}_2 = \frac{\text{Brand total CO}_2}{\text{Brand total Sales}}$$

Step 3.4: Subtract credits from that target year

Any credits are then subtracted from the Brand sales weighted average CO₂ to achieve the “Brand CO₂ Performance (prelim)” – see equation 3.1 below.

$$\text{Brand CO}_2 \text{ Performance (prelim)} = \text{Brand sales weighted average CO}_2 - \text{Credits (Equ 3.1)}$$

Notes:

- Calculation of (sales weighted average) credits is from Equ 5.1 (see Section 5.4).

Step 3.5: Carried forward credits and/or debits

Any credits or debits that have been banked and are to be carried forward are then added to the Brand sales weighted average CO₂ to achieve the final “Brand CO₂ Performance (final)” – see Equation 3.2 below.

$$\text{Brand CO}_2 \text{ Performance (final)} = \text{Brand CO}_2 \text{ Performance (prelim)} - \text{Carry forward Credits} + \text{Carry forward Debits (Equ 3.2)}$$

Notes:

- Rules for banking and carry forward credits and debits are detailed in Section 7.0.

4.0 COMPLIANCE RESULT

4.1 *Overview of Compliance Result*

FCAI will assess each brand's (supplier's) compliance against the brand's target (calculated above) by calculating their sales-weighted average CO₂ emissions.

Separate compliance results are to be calculated for:

- All MA category models and sales
- All NA+MC Category models and sales

4.2 *Methodology*

To calculate the Brand Compliance Result.

$$\text{Brand Compliance Result} = \text{CO}_2 \text{ Limit Value} - \text{Brand CO}_2 \text{ Performance (final)} \quad (\text{Equ 4.1})$$

Notes:

- CO₂ Limit Value – Equ 2.1
- Brand CO₂ Performance (final) – Equ 3.2

A positive Brand Compliance Result (i.e. Brand CO₂ Performance < CO₂ Limit Value) shows that the brand has met the target and can carry forward credits.

A negative Brand Compliance Result (i.e. Brand CO₂ Performance > CO₂ Limit Value) shows that the brand has not met the target and needs to carry forward a debit.

5.0 CREDITS

5.1 Credits

The FCAI CO₂ Standard provides for a range of Credits for both:

- Air-conditioning credits
- Off-cycle credits

Credits will be calculated annually against each brand's annual target.

Credits are to be calculated for:

- All MA category models and sales
- All NA+MC Category models and sales

This section details how to calculate credits and the methodology for transferring credits between MA and NA+MC targets (within a single Supplier) and between Suppliers at a high level.

5.2 Air-conditioning credits

An air-conditioning (A/C) credit is included to encourage the introduction of low GWP air conditioning gas.

The following credits are available for each unit sold with an air condition system charged with a gas with a GWP < 10;

- 10 g/km for MA category vehicles.
- 15 g/km for NA+MC category vehicles.

Note: For Low and Zero Emission Vehicles, it is acceptable for these vehicles to achieve a negative CO₂ result for credit calculation purposes.

5.2.1 Methodology to calculate A/C credits

To calculate the air-conditioning credits.

Step 5.2.1: Total A/C credits for each model:

Total A/C credits for each model

- Total A/C credit of variant (1) = A/C credit(variant(1)) x Sales(variant(1))
- Total A/C credits of variant(n) = A/C credit(variant(n)) x Sales(variant(n))

$$\text{Total A/C credits of Model}_1 = \sum_{n=1}^n \text{Total A/C credits of variant}(1) + \dots \text{Total A/C credits of variant}(n)$$

Notes:

- Where the model is an MA Category vehicle the A/C credit is 10g/km.
- Where the model is an NA or MC Category vehicle the A/C credit is 15g/km
- Where a variant has a super-credit (Section 6.0), the Sales volume is multiplied by the super-credit:
 - Sales(variant(n)) = Super-credit multiplier x sales volume

Step 5.2.2: Calculate sales weighted average A/C credit for brand

Total sales weighted A/C credit for all models (in that vehicle category target group) sold by brand:

$$\text{Brand total A/C credit} = \sum_{n=1}^n \text{Total A/C credit of model}(1) + \dots + \text{Total A/C credit of model}(n)$$

$$\text{Brand total sales} = \sum_{n=1}^n \text{Total sales of model}(1) + \dots + \text{Total sales of model}(n)$$

$$\text{Brand sales weighted average A/C credit} = \frac{\text{Brand total A/C credit}}{\text{Brand total Sales}}$$

5.3 Off-cycle credits

Credits for other eco-innovation and fuel saving technology not measured on the ADR 81/02 drive cycle are to be included.

To be consistent with overseas markets, up to a maximum of 7g/km per unit of off-cycle credits can be claimed by each brand towards their target.

Any off-cycle credit technology e.g. eco-innovation, fuel saving technology that is accepted in either the US or EU will be accepted, and the same credit level will apply.

5.3.1 EU Off-cycle Credits

While the EU continues to utilise the NEDC test for their CO₂ standard, the value provided for off-cycle credits can be directly used in the Australian CO₂ Standard.

Once the EU adopts the WLTP test only for their CO₂ standard, a conversion factor will need to be developed.

5.3.2 US Off-cycle Credits

The US provides a menu of technology and credits in their regulation (in Table II-22 and Table II-23⁵). These technology and values (converted to g/km – see Tables 5.1 and 5.2) are to be directly used in the Australian CO₂ Standard.

⁵ US Federal Register/Vol. 77, No. 199/Monday, October 15, 2012/Rules and Regulations; Department of Transportation, National Highway Traffic Safety Administration, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards: Final Rule

Table 5.1 Off-Cycle Technologies and Credits

Off-cycle Technology ¹	Credit for MA Category Vehicles		Credit for NA&MC Category Vehicles	
	US (g/mile)	Aust (g/km) ²	US (g/mile)	Aust (g/km) ²
High efficiency exterior lights	1.0	0.6	1.0	0.6
Waste heat recovery	0.7	0.4	0.7	0.4
Solar panels – battery charging only	3.3	2.0	3.3	2.0
Solar panels – active cabin ventilation and battery charging	2.5	1.6	2.5	1.6
Active aerodynamic improvements (for a 3% aerodynamic drag reduction)	0.6	0.4	1.0	0.6
Engine idle stop/start – with heater circulation system	2.5	1.6	4.4	2.7
Engine idle stop/start – without heater circulation system	1.5	0.9	2.9	1.8
Active transmission warm-up	1.5	0.9	3.2	2.0
Active engine warm-up	1.5	0.9	3.2	2.0
Solar/thermal control ³	3.0	1.9	4.3	2.7

Table 5.2 Off-Cycle Solar/Thermal Control and Credits

Off-cycle Technology ⁴	Credit for MA Category Vehicles		Credit for NA&MC Category Vehicles	
	US (g/mile)	Aust (g/km) ²	US (g/mile)	Aust (g/km) ²
Glass or glazing	2.9	1.8	3.9	2.4
Active seat ventilation	1.0	0.6	1.3	0.8
Solar reflective paint	0.4	0.2	0.5	0.3
Passive cabin ventilation	1.7	1.1	2.3	1.4
Active cabin ventilation	2.1	1.3	2.8	1.7

Notes:

1. Off-cycle technology approved under US CO₂ Standard
2. US (g/mile) converted to Aust (g/km) at 0.62 mile = 1 km. The conversion is calculated using 2 significant figures and rounded to 1 significant figure.
3. Off-cycle solar/thermal control technology credits (outlined in Table 5.2) have credits limits as shown in Table 5.1.
4. These are the off-cycle solar/thermal control technology credits allowed under US CO₂ Standard (further details included in Annex B).

5.3.3 Calculation of sales weighted average off-cycle credits

Step 5.3.3.1: Total Off-cycle credits for each model:

Total off-cycle credits for each model

- Total off-cycle credit of variant(1) = Off-cycle credit(variant(1)) x Sales(variant(1))
- Total off-cycle credits of variant(n) = Off-cycle credit(variant(n)) x Sales(variant(n))

Notes:

- Off-cycle credit value is taken from relevant row/column form Table 5.1
- Where a variant has a super-credit (Section 6.0), the Sales volume is multiplied by the super-credit:
 - Sales(variant(n)) = Super-credit multiplier x sales volume

$$\text{Total Off-cycle credits of Model}_1 = \sum_{n=1}^n \text{Total Off - cycle credits of variant}(1) + \dots \text{Total Off - cycle credits of variant}(n)$$

Step 5.3.3.2: Calculate sales weighted average Off-cycle credit for brand

Total sales weighted Off-cycle credit for all models (in that vehicle category target group) sold by brand:

- Brand total Off-cycle credit = $\sum_{n=1}^n \text{Total Off - cycle credit of model}(1) + \dots \text{Total Off - cycle credit of model}(n)$
- Brand total sales = $\sum_{n=1}^n \text{Total sales of model}(1) + \dots \text{Total sales of model}(n)$

$$\text{Brand sales weighted average Off-cycle credit} = \frac{\text{Brand total Off-cycle credit}}{\text{Brand total Sales}}$$

5.4 Calculation of total credits

A/C credits and off-cycle credits are then combined to reach a total credit per unit sold:

$$\text{Total (sales weighed average) credit} = \text{Brand sales weighted average A/C credit} + \text{Brand sales weighted average off-cycle credit} \pm \text{Credits transferred} \quad (\text{Equ 5.1})$$

5.5 Transfer of credits/debits

Credits (and debits) are calculated against either target (i.e. MA Category or NA+MC Category), on a "total sales" basis.

After calculating the Compliance Result;

- Any credit to be transferred between targets (or between brands) are converted from a "per unit" basis to "total sales" gCO₂/km.
- Any credit or debit to be carried forward are calculated on "total sales."

See Example 5.1 following.

Example 5.1: Calculation and Transfer of Credits (and/or debits)

Total Brand Credits for MA Category in 2025

$$\text{Sales weighted average mass} = \frac{\text{Brand total mass}}{\text{Brand total sales}} = \frac{240,000,000}{150,000} = 1600\text{kg}$$

$$\text{CO}_2 \text{ Limit Value} = \text{CO}_{2\text{Target}} + \text{slope} \times (\text{Mass} - M_{\text{Ref}}) = 128 + 0.068 \times (1600 - 1584) = 129\text{g/km}$$

$$\text{Sales weighted average CO}_2 = \frac{\text{Brand total CO}_2}{\text{Brand total Sales}} = \frac{18,600,000}{150,000} = 124\text{g/km}$$

Compliance Result = CO₂ Limit Value – Sales weighted average CO₂ = 129 – 124 = 5g/km
(i.e. brand complies with MA target with 5g/km per unit credit)

$$\begin{aligned} \text{Total MA CO}_2 \text{ Credit} &= \text{Compliance Result} \times \text{Brand total sales} \\ &= 5 \times 150,000 \\ &= 750,000\text{g/km} \end{aligned}$$

Total Brand Credits/Debits for MC+NA Category in 2025

$$\text{Sales weighted average mass} = \frac{\text{Brand total mass}}{\text{Brand total sales}} = \frac{210,000,000}{100,000} = 2100\text{kg}$$

$$\text{CO}_2 \text{ Limit Value} = \text{CO}_{2\text{Target}} + \text{slope} \times (\text{Mass} - M_{\text{Ref}}) = 172 + 0.074 \times (2100 - 2084) = 173\text{g/km}$$

$$\text{Sales weighted average CO}_2 = \frac{\text{Brand total CO}_2}{\text{Brand total Sales}} = \frac{17,800,000}{100,000} = 178\text{g/km}$$

Compliance Result = CO₂ Limit Value – Sales weighted average CO₂ = 173 – 178 = -5g/km
(i.e. brand does not comply with MC+NA target with 5g/km per unit debit)

$$\begin{aligned} \text{Total MC+NA CO}_2 \text{ Debit} &= \text{Compliance Result} \times \text{Brand total sales} \\ &= -5 \times 100,000 \\ &= -500,000\text{g/km} \end{aligned}$$

Brand result

The credits from the MA Compliance Result (750,000 g/km) can be transferred to the MC+NA Compliance Result (-500,000 g/km) to give:

MA Compliance Result =	COMPLIES carrying a 750,000 g/km credit forward
MC+NA Compliance Result =	DOES NOT COMPLY in its own right but COMPLIES by transferring credit from MA compliance
Overall Brand compliance =	MA CO ₂ Credit + MC+NA CO ₂ Debit COMPLIES 750,000 + (-500,000) = 250,000 g/km
Credits to be carried forward =	250,000 g/km

Therefore, the brand meets both MA and MC+NA targets and has 250,000 g/km that can be carried forward (or transferred to another brand).

Note: During the report phase (2020 – 2023), only credits are recorded and banked for future use. Considering the same Example 5.1 above but where MA+NA compliance result is (-800,000):

MA Compliance Result = **COMPLIES** carrying a 750,000 g/km credit forward

MC+NA Compliance Result = Does **NOT COMPLY** in its own right

And does **NOT COMPLY** by transferring all existing credit from MA result

Overall Brand compliance = MA CO₂ Credit + MC+NA CO₂ Debit

Does **NOT COMPLY** 750,000 + (-800,000) = -50,000 g/km

But not reported as non-compliance in period 2020 ~ 2023

Debits to be carried forward = 0 g/km

Report Phase	MA	MC+NA	Net	Carry Forward
2020	+	+	++	✓
2021	+	-	-	×
2022	+	+	+	✓
2023	+	+	+	✓
2024	-	+	-	✓ (debit)

6.0 SUPER-CREDITS

6.1 Super-credits

Credits for zero-emission vehicles (ZEV) and low emission vehicles are to be included. These are referred to as “super-credits” in both the EU and US CO₂ standards.

Super-credits are to be calculated separately for:

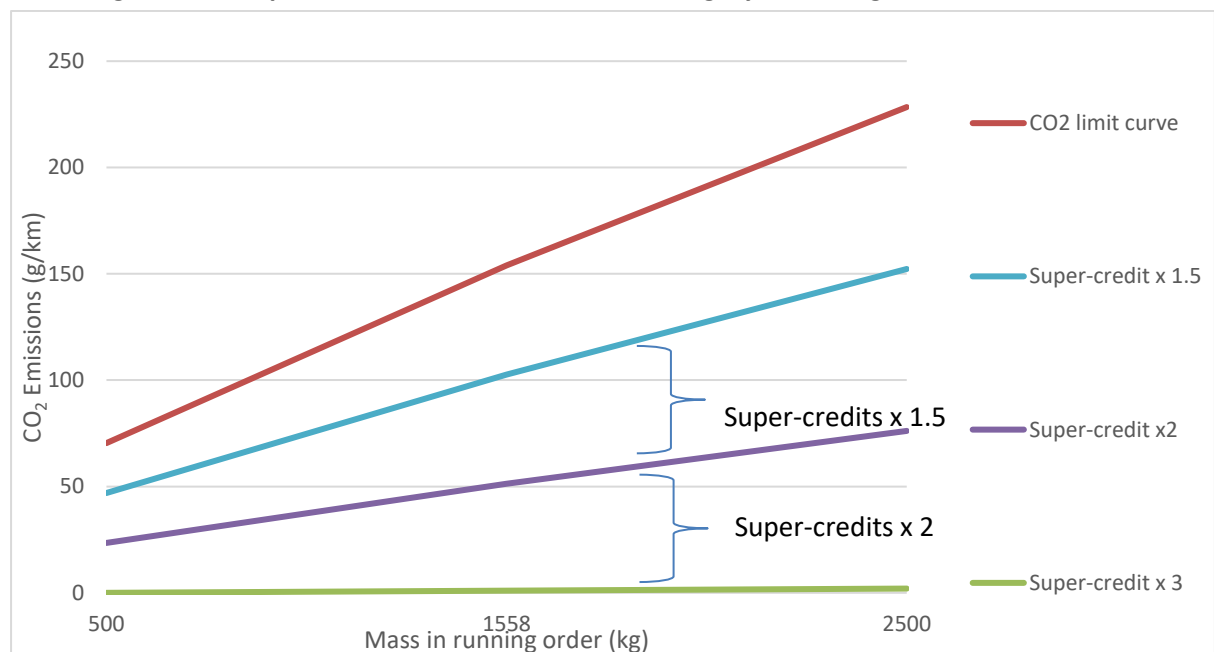
- All MA category models and sales
- All NA+MC category models and sales

The super credit boundaries are linked to the targets and value limit curve for each target year for the MA category targets and the NA+MC category targets:

- Vehicles emitting 0g/km will be counted as 3 vehicles.
- Vehicles between 1-33% of value limit curve for that target year will be counted as 2 vehicles.
- Vehicles between 34-66% of value limit curve for that target year will be counted as 1.5 vehicles.

To demonstrate how the super-credits work, Figure 6.1 (following) shows the super-credit limit curves for the MA Category 2020 target year mass limit curve.

Figure 6.1 – Super-Credit Limit Curves for MA Category 2020 Target Year Mass Limit Curve



Models/variants with super-credits use the super-credit multiplier when Assessing Brand Compliance (section 3.0).

When Assessing Brand Compliance (section 3.0):

- Multiplying the number of sales of the variant by the super-credit multiplier when calculating the “Brand Total Sales” (for Step 3.2).

6.2 Worked Examples

To demonstrate how Super-credits work, and may change from year to year, following are examples.

Example 1: To demonstrate calculation of super-credit value and how this will change with changes to the CO₂ Limit Value curve each year

MA category vehicle with unladen mass of 1400 kg and CO₂ emissions of 90 g.

2020: To calculate the 2020 CO₂ limit value for this vehicle:

Mass in running order = 1400 + 75 = 1475kg

CO₂ limit value = 154 + 0.079(1475-1558) = 147.443

The super-credit limits are:

Super-credit value of 2 for CO₂ over 0 grams and up to 49 g (1/3 x 147)

Super-credit value of 1.5 for CO₂ values over 49 g and up to 98 g (2/3 x 147)

Therefore, this model will receive a super-credit value of 1.5 in 2020 and sales of this model/variant will be multiplied by 1.5.

2025: The same vehicle in 2025 will have a different (lower) CO₂ limit value and super-credit boundaries would also change (decrease).

CO₂ limit value = 128 + 0.068(1475-1584) = 120.588

The super-credit limits are:

Super-credit value of 2 for CO₂ over 0 grams and up to and including 40 g (1/3 x 120)

Super-credit value of 1.5 for CO₂ values over 40 g and up to and including 80 g (2/3 x 120)

Therefore, this model will not receive a super-credit in 2025.

Example 2: Pure battery electric vehicle with 0g/km tail pipe emissions.

Super-credit = 3

All sales for this model are multiplied by 3 regardless of year of target.

7.0 BANKING AND CARRY FORWARD OF CREDITS & DEBITS

7.1 *Overview*

Credits and debits can be banked and carried forward for up to 5 years.

Credits and debits are banked and carried forward on a “total sales” basis (Section 5.5)

7.2 *Banking and carry forward of credits*

Credits can be banked and carried forward for up to 5 years (from the year of accruing the Credit) starting in 2020.

For example, Credits accumulated against the 2020 target can be used for compliance against targets in any of the following five (5) yearly targets, i.e. up to and including the 2025 target year.

7.3 *Banking and carry forward of debits*

Debits can be banked and carried forward for up to 5 years (from the year of accruing the debit) starting in 2024.

NOTE: For the scheme’s phase-in period, 2020 ~ 2023, net debits are counted as zero.

All debits must be cleared within 5 years.

For example, Debits accumulated against the 2024 target can be banked and then acquitted against targets in any of the following five (5) yearly targets, i.e. up to and including the 2029 target year.

8.0 EXEMPTIONS

Emergency services and the Defence Forces rely heavily on the use of light commercial vehicles tailored for specific requirements. Any vehicles eligible for exemption under the Commonwealth Department of Environment and Energy Product Emissions Standards Rules 2017 will be exempt under the CO₂ standard to ensure no disruption is caused to these valuable services.

Refer: <https://www.legislation.gov.au/Details/F2019C00388>

Sales of vehicles for Emergency Services and Defence Forces may be excluded from the data used to Calculate Brand Targets (section 2.0) and Assessing Brand Compliance (section 3.0). Any vehicles not included in Assessing Brand Compliance also cannot be used for calculation of Credits (section 5.0).

For illustrative purposes

- Products that will be used only by the Australian Defence Force or a law enforcement or security agency (within the meaning of the *Independent National Security Legislation Monitor Act 2010*) and only for national security purposes; and
- Products that will be used only by an *emergency services organisation* and only for rescue or emergency services purposes

An ***emergency services organisation*** is a body that:

(a) is, or is part of a body that is:

- (i) established for a public purpose by or under a law of the Commonwealth, of a State or of a Territory; or

(b) is any of the following:

- (i) a police force or service;
- (ii) a fire service;
- (iii) an ambulance service;
- (iv) a coast guard service, rescue service or emergency service;
- (v) a surf lifesaving organisation.

GLOSSARY

Term	Abbreviation	Description
Australian Design Rule	ADR	National Standards for vehicle safety, emissions and theft reduction.
Mass in running order	MIRO	Unladen mass + 75 kg
Road Vehicle Descriptor	RVD	Form used by the Government (DIRDC) to record information used to assess compliance of a vehicle with some of the requirements of the Australian Design Rules. It also provides information required for bulk registration and other purposes to the State and Territory registering authorities.
Type Approval		A Type Approval is granted by the Administrator of Vehicle Standards to a vehicle that meets the relevant ADRs
Unladen Mass		ADR Definition: the mass of the vehicle in running order unoccupied and unladen with all fluid reservoirs filled to nominal capacity including fuel, and with all standard equipment. The Unladen mass is recorded in VFACTS.

Following is an extract from the US EPA Report “Greenhouse Gas Emission Standards for Light-Duty Vehicles, Manufacturer Performance Report for the 2016 Model Year” (pp.45-46), Section E. Credits Based on “Off-Cycle” Technology;

1. Off-Cycle Credits Based on the Menu

The regulations clearly define each technology and any requirements that apply for the technology to generate credits. The definitions may be summarized as follows:

- Active aerodynamics – These technologies are automatically activated to improve the aerodynamics of a vehicle under certain conditions. These include grill shutters, which allow air to flow around the vehicle more efficiently, and suspension systems that improve air flow at higher speeds by reducing the height of the vehicle. Credits are variable and based on the measured improvement in the coefficient of drag, a test metric that reflects the efficiency of airflow around a vehicle.
- Thermal control technologies – These systems reduce the air temperature of the vehicle interior, lowering GHG tailpipe emissions by reducing the fuel demand on the A/C system. Thermal control technologies are subject to a per-vehicle cap on credits of 3.0 g/mi for cars and 4.3 g/mi for trucks.
 - Active and passive cabin ventilation – Active systems use mechanical means to vent the interior, while passive systems rely on ventilation through convective air flow. Credits range from 1.7 to 2.8 g/mi.
 - Active seat ventilation – These systems move air through the seating surface, transferring heat away from the vehicle occupants. Credits are 1.0 g/mi for cars and 1.3 g/mi for trucks.
 - Glass or glazing – Credits are available for glass or glazing technologies that reduce the total solar transmittance through the glass, thus reducing the heat from the sun that reaches the occupants. The credits are calculated based on the measured solar transmittance through the glass and on the total area of glass on the vehicle.
 - Solar reflective surface coating – Credits are available for solar reflective surface coating (e.g., paint) that reflects at least 65 percent of the infrared solar energy. Credits are 0.4 g/mi for cars and 0.5 g/mi for trucks.
- Active engine and transmission warmup – These systems use heat from the vehicle that would typically be wasted (exhaust heat, for example) to warm up key elements of the engine, allowing a faster transition to warm operation. A warmed up engine and/or transmission consumes less fuel and emits less tailpipe CO₂. Systems that use a single heat-exchanging loop that serves both transmission and engine warmup functions are eligible for either engine or transmission warmup credits, but not both.
 - Active engine warmup – Uses waste heat from the engine to warm up the engine. Credits are 1.5 g/mi for cars and 3.2 g/mi for trucks.
 - Active transmission warmup – Uses waste heat from the engine to warm up the transmission. Credits are 1.5 g/mi for cars and 3.2 g/mi for trucks.

- Engine idle stop-start – These systems allow the engine to turn off when the vehicle is at a stop (e.g., at a stoplight), automatically restarting the engine when the driver releases the brake and/or applies pressure to the accelerator. If equipped with a switch to disable the system, EPA must determine that the predominant operating mode of the system is the “on” setting (defaulting to “on” every time the key is turned on is one basis for such a determination). Thus some vehicles with these systems are not eligible for credits. Credits range from 1.5 to 4.4 g/mi, and depend on whether the system is equipped with an additional technology that allows heat, when demanded, to continue to be circulated to the vehicle occupants when the engine is off during a stop-start event.
- High efficiency exterior lights – These lights reduce the total electric demand, and thus the fuel consumption and GHG emissions, of the lighting system in comparison to conventional lighting technologies. Credits are based on the specific lighting locations, ranging from 0.06 g/mi for turn signals and parking lights to 0.38 g/mi for low beams. The total of all lighting credits may not exceed 1.0 g/mi.
- Solar panels – Vehicles that use batteries for propulsion, such as electric, plug-in hybrid electric, and hybrid vehicles may receive credits for solar panels that are used to charge the battery directly or to provide power directly to essential vehicle systems (e.g., heating and cooling systems). Credits are based on the rated power of the solar panels.