

# **‘The Fuel Efficiency Standard – Cleaner, Cheaper to Run Cars for Australia’**

**Submission in Response to Consultation Paper; 19 April 2023**

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I provide my response to the above consultation paper.

In doing so I am mindful of the urgency of the task. The previous Government released a Regulatory Impact Statement on reducing CO<sub>2</sub> emissions from the light duty vehicle fleet in 2016. That document included notional CO<sub>2</sub> emissions targets. Nothing followed. That is a lost seven years. During that time transport CO<sub>2</sub> emissions, including from light duty vehicles, have continued to increase inexorably.

Not only has the urgency in tackling climate change increased, but because of the delay the control of CO<sub>2</sub> emissions from that emissions sector has become much more challenging. Aggressive action is inevitable for Government legislation to be met.

## **1. The objective and the application of the FES**

The legislation should very clearly spell out what is the *objective* of the FES and to what it *applies*. The consultation paper fails on both counts. The title is of no help.

Neither the ‘Ministers’ forward’ nor the ‘Introduction’ give an early and unambiguous statement of the purpose of the FES. The *objective* of the proposal is the reduction, and elimination by 2050 of greenhouse gas emissions, ie. CO<sub>2</sub>-e (or abbreviated to CO<sub>2</sub>), from the Australian light duty vehicle fleet by a process that encourages increasing market penetration of low and zero emission vehicles. Or other words that contain this message.

It is annoying that a reader must know what an FES is about, or must read on, to grasp that fundamental purpose.

Issues of purported attributes of the FES being vehicles that will be cheaper to run, that it is about introducing more advanced technology, about providing even more vehicle choice, that ‘noxious’

pollutants will be reduced, that incoming vehicles will be cleaner, and that safety will be enhanced are side issues, arguable, or irrelevant. Since the FES is about CO<sub>2</sub> the benefit is *green*, not *clean*, although there is an incidental and beneficial *clean* outcome. Often in the text these matters are given primacy over the CO<sub>2</sub> reduction objective.

A statement on the *application* of the FES is vital. What is in the consultation paper is messy. The reader must wait for page 12. At 4 *Principles for Setting a Fuel Efficiency Standard* a footnote to the first of the *guiding principles* defines *light vehicles*, in part. That is not the first use of the term *light vehicles* in the consultation paper. Then under 4.1 *Design assumptions*, the first dot point adds to the definition, and another footnote provides yet more. A definition in three parts! And an important definition that should be earlier in the text, and in the *Glossary* (p.31).

I anticipate that in the legislative instrument this statement of application will necessarily be cohesive and complete.

I suggest that as far as possible the FES application should align with the wording used in ADRs. Interestingly, the term *light vehicle* or *light duty vehicle* seems not to be defined in the ADRs.

## 2. The emissions target.

The consultation paper invites responses on a number of issues relating to setting the emissions target viz.

- What should Australia's CO<sub>2</sub> FES targets be?
- How quickly should emissions reduce over what timeframe?
- Should the Australian FES start slow with a strong finish, start strong, or be a straight line or take a different approach?
- Should an Australian FES adopt a mass-based or footprint-based limit curve?
- Should an Australian FES adopt two emissions targets for different classes of vehicles?
- Is there anything else we should bear in mind as we consider this design feature?
- To what extent should the Australian FES allow credit banking, transferring and/or pooling?
- Should an Australian FES include off-cycle credits for specified technologies?
- Should the Government consider any other form of off-cycle credits for an Australian FES?
- When do you think a FES should start?
- How should the start date interact with the average annual emissions ceiling?
- How many years ahead should the Government set emissions targets, and with what review mechanism to set limits for the following period? and,
- How should the Government address the risks of the standard being found to be too weak or too strong while it is operating?

It is tempting to provide a response to these questions as they are presented by simply nominating targeted emissions intensities in g CO<sub>2</sub>/km, proposing a percentage emissions intensity decrease over nominated time intervals, positing an emissions reduction trajectory, suggesting a starting date, and discussing possible relationships between options for implementing the proposal.

To do so is to fail to consider the issues of the proposal in a broader context.

I submit that the consultation paper has a number of shortcomings in developing an emissions target, including the timing. These are surprising and disappointing.

- Government policy, now legislated, requires the overall achievement of a 43% reduction in CO<sub>2</sub> emissions below 2005 levels by 2030 and reaching net zero emissions by 2050. This policy position is referred to under 3. *Why introduce a Fuel Efficiency Standard* (p.10) in that this FES *will be critical to achieving* that target. But the paper fails to further develop this key policy to underscore the FES development.
- The paper makes no reference to the ‘inertia’ of the light duty vehicle fleet to change. There is a long delay between introducing lower CO<sub>2</sub> emissions intensity light duty vehicles to the fleet and the overall fleet impact. This has strong relevance to developing the targets and timing for an FES.
- Perhaps of lesser moment the consultation paper focuses, as it must, on reducing the emission intensity of light duty vehicles assessed in gCO<sub>2</sub>/km. It does not set the reduction of the light duty vehicle CO<sub>2</sub> emission intensities within the broader greenhouse gas emissions picture of emissions to the atmosphere in Mt/a of the light duty vehicle fleet. The only reference to that broader context is *.....three fifths (62%) of transport emissions come from light vehicles* (1. Introduction, p.7). The transport sector, and presumably the light duty vehicle sub-sector, emissions have been increasing steadily by about 1.5-2% per annum. An annual reduction in light duty vehicle CO<sub>2</sub> emission intensities of 1.5% per annum would be a reduction of emissions by that measure, but in the broader picture of reducing CO<sub>2</sub> emissions to the atmosphere there would be no decrease.

CO<sub>2</sub> emissions to the atmosphere from light duty vehicles (Mt/a) depend on a number of factors. These include the intrinsic vehicle designs that determine the CO<sub>2</sub> emissions intensity (g CO<sub>2</sub>/km), the number of vehicles and the distances travelled ie. the total vehicle kilometers travelled (VKT in km), the driving style, and where vehicles are driven. The emissions intensity is one factor, albeit a critical one, in determining vehicle CO<sub>2</sub> emissions. Of similar importance is the VKT. The VKT increase is beyond the scope of the consultation paper.

### **Government policy.**

I submit that the starting point for responding to this consultation paper must be the Government policy of achieving a 43% reduction in CO<sub>2</sub> emissions below 2005 levels by 2030 and reaching net zero emissions by 2050.

My submission is that the FES must be grounded in this Government policy. That policy provides the essential reference point for the numerical light duty vehicle CO<sub>2</sub> emissions intensity reduction targets, and for assessing progress towards the achievement of those targets.

I submit that the light duty vehicle sector must take its share of CO<sub>2</sub> emissions reduction in Australia required by this Government policy. It is a significant contributor to overall CO<sub>2</sub> emissions, it has been growing steadily (about 1.5-2% pa) over many years, and the sector has been a laggard in moderating and reversing that growth by changing the ICE vehicle mix and introducing low emission (hybrid) and zero emission (electric) vehicles.

The light duty vehicle sector might argue that it is not obliged to meet the ....43% reduction in CO<sub>2</sub> emissions below 2005 levels by 2030.... target since that applies to overall CO<sub>2</sub> emissions, but that it will play constructive role. However, it cannot reasonably contend that it is not bound by the ....reaching net zero emissions by 2050....., or that new vehicles introduced to the in-service light duty vehicle fleet must have zero CO<sub>2</sub> emissions intensity well before 2050.

### **The starting time.**

I suggest that the commencement time for the legislated FES should be January 2026 at the latest, but better if it could be 2025. That timeline requires urgent action. That allows about two and half years for the necessary legislative processes, for establishing the regulatory system, and for collecting the light duty vehicles CO<sub>2</sub> emissions intensity data for the reference year 2025. That *reference year* data is needed to provide the foundation for measuring progress of the light duty vehicle emission intensity reduction and ensuring compliance with targets. The greater the delay the steeper the hill becomes unless in the immediate future there is a dramatic change in the vehicle mix to favour lower fuel consumption internal combustion engine vehicles, and a surge in supply of low and zero CO<sub>2</sub> emission vehicles.

### **The finishing time.**

The Government's legislated policy is clear; CO<sub>2</sub> emissions must reach net zero emissions by 2050. That is for all sources; *ipso facto* light duty vehicles CO<sub>2</sub> emissions intensity of the fleet must, too, be zero at that date. The light duty vehicle fleet takes time to change. Hence zero CO<sub>2</sub> emissions intensity of new vehicles entering the fleet must be zero before 2050.

If we assume a turnover for the fleet of, say, 15 years that means that new vehicles entering the fleet must be zero CO<sub>2</sub> emissions intensity by 2035. I note that that 2035 time limit is consistent with the EU projection at Charts 1 and 2 (pp.15-16) in the consultation report. At 2050 the remaining CO<sub>2</sub> emitting light duty vehicles would be expected to be much reduced in number and these older vehicles would have a much diminished VKT. A 2040 phase out would be too late; it would be expected that a substantial number of light duty vehicles running up considerable VKT would remain.

Detailed modelling would be required to refine these estimates.

However, the conclusion is clear. There is a short time to cease introducing CO<sub>2</sub> light duty vehicles to the market, possibly 10 years.

## The broader context.

It may be useful to place the objective of the consultation paper in a broader context.

The legislated Government policy is about reducing *CO<sub>2</sub> emissions*, and it sets targets and times. It is not about reducing *CO<sub>2</sub> emissions intensities*. These terms are not synonymous. In this case of light duty vehicle CO<sub>2</sub> emissions, a change in emissions intensities does not track with emissions reductions because of the continuing increase in VKT until they converge at zero emissions intensities/zero emissions. As mentioned earlier a decrease of about 1.5-2% pa in the emissions intensity is needed to just stabilise emissions.

The transport (that is all transport including light duty vehicles) CO<sub>2</sub> emissions for 2005 taken from the *National Greenhouse Accounts* by summing the quarterly data, is 82.5 Mt/a. A 43% reduction below that level as is required for the 2030 target is 47.0 Mt/a for the transport sector as a whole. Given that light duty vehicles, as reported in the consultation paper, contribute 62% of the transport sector CO<sub>2</sub> emissions, and assuming that that applies across the 2005-to-2030-time frame, those light duty vehicle emissions were 51.2 Mt/a in 2005 and the 43% reduction on that as the 2030 target is 29.2 Mt/a.

Transport CO<sub>2</sub> increased steadily until 2019 until the Covid pandemic led to a drastic decrease in emissions. There has been an increase since restrictions were lifted. The end of the December 2019 quarterly emissions account is on the cusp of that reduction. Since the most recent reporting year, 2022, is atypical I have taken 2019 as representing the most recent transport sector CO<sub>2</sub> emissions at trend. Those emissions were 100.2 Mt/a sourced from the *National Greenhouse Accounts* annual data to December 2019. That corresponds to 62.1 Mt/a for light duty vehicles.

I have posited 2026 as the first year of the FES. Hence 2025 becomes the CO<sub>2</sub> light duty vehicle emissions reference year for implementing the FES. Assuming that emissions are now returning to trend, then by extrapolation of the 2005 to 2019 trend to that 2025 reference year, the emissions would be about 107.6 Mt/a for all transport, or 66.7 Mt/a for light duty vehicles. Similarly, extrapolation to that Government policy target year of 2030 suggests an emissions level of 113.9 Mt/a, that is 70.6 Mt/a for the light duty vehicle component; but noting that the further such an extrapolation is extended, the less confidence can be had in it.

That analysis shows that for light duty vehicles business as usual would have CO<sub>2</sub> emissions reach 70.6 Mt/a by 2030. By contrast the Government policy of achieving a 43% reduction on the 2005 emissions by 2030 would require 29.2 Mt/a. That is, the emissions would exceed the target by 41.4 Mt/a, say 41 Mt/a.

Meeting the Government target for 2030 would require a reduction year-on-year over the five-year period between 2026 and 2030 of 6.9 Mt/a, say 7 Mt/a, from the projected 66.7 Mt/a level at 2025. That is 59% CO<sub>2</sub> emissions decrease on business as usual. It would require an about 10% annual reduction in CO<sub>2</sub>.

That is, from inception of the FES in 2026 a reduction in CO<sub>2</sub> light duty vehicle emissions of about 35 Mt/a would be required to meet the 2030 target, and thereafter roughly another 35 Mt/a by 2035 to meet the 2050 zero target. That is a daunting challenge based on experience.

Note: The analysis that I have presented above is based on data that I could source. I identified some differences among sources, such as with annual CO<sub>2</sub> emissions. The estimates may be able to be refined, but I believe such minor variations will not have a substantive impact.

## How might the FES implementation targets be structured?

I suggest that the structure for implementing the FES needs to meet a number of criteria including the following.

- Effectiveness. It must provide the CO<sub>2</sub> emissions reductions from new light duty vehicles to meet the targets required of the in-service fleet;
- Efficiency. The measures should create the least cost impact for industry and customers;
- Clarity. The FES should be unambiguous;
- Equitable. It must be as equitable as possible across new light duty vehicle brands;
- No effect on choice. The Department requires that customer choice not be impacted by the FES having disproportionate impact on any light duty vehicle models;
- Free of perverse impacts. The FES structure should not lead to untoward adverse outcomes such as increasing dieselisation of the light duty vehicle fleet;
- Enforceable. It must be structured so that it can be enforced; and,
- Enforced. It must be enforced with a compliance assessment protocol and penalties for non-compliance.

### Application of the FES - By Brand

I submit that CO<sub>2</sub> emissions reductions can only be implemented across all the light duty models marketed by *brand*. This is a separate issue from the *regulated entity* which is discussed later. A *brand* is the stable of products marketed under that name; the regulated entity is the party with legal responsibility for characteristics of the brand.

A CO<sub>2</sub> emissions reductions measure that applies to a single model or type may not be useful since models may be short lived. By contrast a brand is likely, at least in most cases, to consist of more than one model and have some longevity.

It is the brand of a vehicle that consumers are accustomed to. It is brands that are aggregated for retail presentation for sale. The Green Vehicle Guide documents vehicles by brand. It is the manufacturer of a brand that is responsible for reducing the CO<sub>2</sub> emission intensity of the various light duty vehicle models in its' range, and of the model range as a whole. A brand has an obvious identity and visibility.

A question in the consultation paper asks about adopting a mass- or footprint-based limit curve. I do not see why an approach to CO<sub>2</sub> emissions reduction needs to be dependent on the mass or dimension of a vehicle model. I suggest an approach with straight forward numerical reduction targets, ie. g/km, that would impact all vehicle brands equally regardless of mass or size. You may wish to integrate my suggestion with one of those approaches if feasible.

### One or two CO<sub>2</sub> emissions intensity targets?

A further question asked is whether an Australian FES should adopt two emissions targets for different categories of vehicles, and a linked question asking what else might be considered if this design feature is implemented.

I strongly oppose adopting two emissions targets, one for passenger vehicles and another for the larger vehicles in that class. There is a risk of this somewhat arbitrary division being unduly influenced by the suppliers that might compromise the FES objective. That risk should be avoided.

These less than 3.5t vehicles are all light vehicles. The ADRs have separate categories for different vehicle categories where necessary, but for the emissions, noise, and fuel consumption labelling ADRs, to which the FES is most analogous, these less than 3.5t light duty vehicles are considered as a single class.

The consultation paper correctly identifies the risk of having two classes causing sales to migrate to the larger and heavier vehicles and thus frustrating the objective of the FES.

But there is another risk *viz.* the increase in dieselisation. The heavier vehicles in the light duty vehicle class are disproportionately diesel engine powered, and probably travel greater distances per vehicle than many lighter vehicles in this vehicle class. We can ill afford this risk. Diesel vehicles are higher emitters than petrol vehicles of particulate matter and nitrogen oxides. Particulate matter and nitrogen dioxide are linked to adverse health impacts; they are the two air pollutants of greatest current health concern. Indeed, the consultation paper acknowledges the health impacts of transport 'noxious' air pollutant emissions in the penultimate paragraph of *1. Introduction* (p.7).

Having two separate emissions targets may provide other opportunities to game the FES objective.

#### CO<sub>2</sub> emissions intensity assessment methodology

To set targets I suggest that a light duty vehicle CO<sub>2</sub> emissions intensity reference of new vehicle sales must be fixed for the year immediately prior to the first year of operation of the FES. That then becomes the fixed point from which the targets are set, and compliance determined.

Each subsequent year during the life of the FES an identical assessment methodology of new light duty vehicles sold must be implemented. That ensures that the effectiveness of the FES can be determined, compliance identified, enforcement action taken as needed, and program adjustments made if indicated and feasible.

I suggest that the key elements of the year-by-year CO<sub>2</sub> emissions intensity calculation would first require the collection of the CO<sub>2</sub> emissions intensity for each of the vehicle models sold for that year. From those figures the CO<sub>2</sub> emissions intensity performance for each brand can be calculated. Vitrally, that must not be a simple arithmetic average of the vehicle models, it must be sales weighted. To use a simple average is to invite the opportunity to focus on disproportionate reduction in CO<sub>2</sub> emissions from lower selling models.

The new vehicle fleet CO<sub>2</sub> emissions intensity can then be calculated using the raw data of the individual models CO<sub>2</sub> emissions intensities and the sales of each of those.

I submit that in that way the performance of individual brands can be established for compliance, and the overall CO<sub>2</sub> emissions intensity of the new light duty vehicle fleet for meeting the FES targets can be determined. Adjustments would need to be made for any credits traded. The consultation paper does acknowledge that developing an FES is complex!

The new vehicle sales data should not be difficult to come by; and it should be credible.

The CO<sub>2</sub> emissions intensity data by light duty vehicle model may be more difficult. I assume that the source of this data will be the same as that for the informational fuel consumption and CO<sub>2</sub>

emissions intensity labelling requirement of ADR 82/02, and of that used in the Green Vehicle Guide. If the current test method and data style is used the combined figure should be used. Using the separate urban and extra urban figures adds unnecessary complexity and uncertainty; even more so if two light duty vehicle class targets are decided on. Hopefully, CO<sub>2</sub> emissions intensity data will be available for the WLTP protocol for use. The data from the whole four phase cycle should be used.

However, the CO<sub>2</sub> emissions intensity data for each model must be credible. The data will be used in a legislative instrument in contrast to an informational program as in ADR 82/02 and the Green Vehicle Guide. There must be no room for any doubt. That may require a well-developed and implemented program of quality assurance and auditing. The type approval data for each model must relate exactly to the vehicles that are landed in Australia. Vehicle emissions testing at points of vehicle entry may have to be considered.

I believe what I have proposed above meets the criteria that I have laid out at the beginning of this part 'How might the FES implementation targets be structured?'

### **Emissions intensity and the development of targets.**

I hypothesise that within a light duty vehicle brand a target could be set to reduce the CO<sub>2</sub> emissions intensity of individual vehicle models either by a percentage reduction year-on-year in the emissions intensity, or an absolute reduction in g CO<sub>2</sub>/km in the emissions intensity. It is not feasible to apply a percentage reduction approach to a brand. A reduction in the CO<sub>2</sub> light duty vehicle emission in g CO<sub>2</sub>/km is feasible. For example, an electric vehicle supplier could not meet a CO<sub>2</sub> percentage reduction target of x% pa, but could comply with a CO<sub>2</sub> reduction to x g CO<sub>2</sub>/km.

To reduce the light duty vehicle CO<sub>2</sub> emissions, I recommend that the CO<sub>2</sub> emissions intensity of the new vehicles entering the fleet be reduced by one tenth of the 2025 reference year CO<sub>2</sub> emissions intensity for each year from 2026 to 2035.

That is, a linear decrease in CO<sub>2</sub> emissions intensity of new light duty vehicles. It is not a linear decrease in CO<sub>2</sub> emissions. I expect that the CO<sub>2</sub> emissions curve would be above the CO<sub>2</sub> emissions intensity line, always decreasing but diverging above it initially and then converging to coalesce in 2035.

The Consultation paper provides a BITRE estimate '*.....that new vehicles sold in Australia in 2021 have a CO<sub>2</sub> intensity of 173.6 g CO<sub>2</sub>/km.*' at 5.1. *The average annual emissions ceiling*' (p.14). I note that 2021 was a year in which transport was heavily impacted by Covid restrictions. The transport CO<sub>2</sub> emissions were substantially depressed. However, the light duty vehicle traffic mix may have been similar to usual.

To illustrate my recommendation, assume that at 2025 the CO<sub>2</sub> emissions intensity is 150 g CO<sub>2</sub>/km. My recommendation would have this reducing by 15 g CO<sub>2</sub>/km each year from 2026 to 2035, that is 10% pa based on the 2025 reference level.

My position is designed to substantially meet the net zero by 2050 target. Although it will much reduce the CO<sub>2</sub> emissions intensity of the new vehicles entering the fleet by 2030 the 2030 target of a 43% reduction on 2005 CO<sub>2</sub> emissions levels for the light duty vehicle sector will not be met. That target applies to the in-service fleet. I doubt that entirely zero CO<sub>2</sub> vehicles from 2026 would achieve that target.



Detailed modelling would provide a more refined understanding of the magnitude and timing of CO<sub>2</sub> emissions intensity targets and the influence of CO<sub>2</sub> emissions of the in-service light duty vehicle fleet. I do not expect that such work would materially change my estimates. Critically, any further delay in implementing the FES will see the challenge escalate.

I submit that an attribute system of using vehicle mass or footprint is unnecessarily complex. It requires the collection and analysis of much information on vehicle characteristics, and adjustment of limit curves. Sales weighted quantitative targets are easily understood, should be effective and equitable across vehicle classes, and amenable to enforcement.

A further matter for the effective management of CO<sub>2</sub> emissions intensity reduction targets for the light vehicle fleet is a prohibition on the sale of new, and the importation of used, light duty vehicles from the finishing date of the FES. I suggest that legislation should prohibit the sale of new, and the importation of used CO<sub>2</sub> emitting light duty vehicles from 1 January 2036. Only zero emission vehicles would be permitted.

This CO<sub>2</sub> reduction is a very substantial task. I expect that these CO<sub>2</sub> emissions intensity targets would be vigorously opposed by the vehicle industry. It requires very aggressive action; but that is what is required if the light duty vehicle sector is to make progress towards meeting the Government policy of achieving a 43% reduction in CO<sub>2</sub> emissions below 2005 levels by 2030 and of reaching net zero emissions by 2050.

That this task seems so daunting may be a result of the failure of earlier Government intervention, and that the light duty vehicle sector has not pro-actively made substantial inroads into CO<sub>2</sub> emissions intensity reductions.

I submit that what must now be done is for the Government to put in place an aggressive as is possible CO<sub>2</sub> emissions intensity reduction targets supported by strong compliance and enforcement protocols.

I suggest that over the period 2025 to 2035 tracking retail sales of petrol, and perhaps less so of diesel, at retail outlets might provide some supporting information on the effectiveness of the program.

### **The questions and responses.**

#### How quickly should emissions (intensities) reduce over what timeframe?

Over 10 years from 2026 to 2035 inclusive with a reduction each year of one tenth of the CO<sub>2</sub> emissions intensity of the 2025 reference year.

#### Should the Australian FES start slow with a strong finish, start strong, or be a straight line or take a different approach?

Ideally there should be a strong start because that reduces the cumulative CO<sub>2</sub> burden, a point acknowledged in the consultation paper, but starting the FES as soon as possible is critical without getting delayed by this issue.

Should an Australian FES adopt a mass-based or footprint-based limit curve?

I have suggested a sales weighted approach for effectiveness and simplicity. There may be some way of supplementing that with an attribute-based approach. The approach should be effective, as simple as possible, easily understood, enforceable, readily administered, and equitable.

Should an Australian FES adopt two emissions (intensities) targets for different classes of vehicles?

No.

Is there anything else we should bear in mind as we consider this design feature?

Yes. Perverse outcomes, notably increased dieselisation and frustration of achieving CO<sub>2</sub> reduction targets.

To what extent should the Australian FES allow credit banking, transferring and/or pooling?

Allow credits for CO<sub>2</sub> emissions intensity reductions overperformance to be traded or banked. It is the converse of providing for penalties.

Should an Australian FES include off-cycle credits for specified technologies?

No. It is a distraction from achieving the CO<sub>2</sub> reduction targets and may weaken them.

Should the Government consider any other form of off-cycle credits for an Australian FES?

No. including refrigerant gas.

When do you think a FES should start?

2026, better if it could be 2025.

How should the start date interact with the average annual emissions (intensities) ceiling?

Refer first question and response.

How many years ahead should the Government set emissions (intensities) targets, and with what review mechanism to set limits for the following period?

Ten years, from 2026 to 2035 with CO<sub>2</sub> emission intensity targets set in legislation for that period. There may be limited opportunity to review and make changes over that period. I would expect progress to be publicly reported annually. Perhaps a formal review might be considered in 2029 and 2031.

How should the Government address the risks of the standard being found to be too weak or too strong while it is operating?

I presume *too weak* or *too strong* means at variance with the established CO<sub>2</sub> emission intensity targets. If evidence shows that it is *too weak*, ie. not achieving the targets, the Government has penalties at its disposal. But can it be *too strong*? Perhaps having credits available would automatically provide a stabiliser.

### **3. Enforcement.**

The consultation paper invites responses on questions bearing on enforcement viz.

- Are these the right guiding principles? Are there other principles that you think we should keep in mind?
- Are there any particular FES features that you think we need to take particular care with?
- What principles should we consider when setting the targets.
- What reasons are there to depart from the standard regulatory tool kit for an Australian FES?
- Should an Australian FES use WLTP test results in anticipation of the adoption of Euro 6 and if so, what conversion should be applied to existing NEDC test results, or how might such a factor be determined?

There is much commonality in these questions. Enforcement is an element of all these.

Self-evidently, if the FES is to deliver on the numerical light duty vehicle CO<sub>2</sub> emissions intensity reduction targets, the FES must be enforceable, and it must be enforced.

*Enforceable* implies that the CO<sub>2</sub> emissions intensity reduction targets required of the regulated entity (the supplier) are clear, that reporting requirements are spelled out, that sanctions for non-compliance are articulated, and that the protocol for determining compliance is set out in the legislative instrument.

*Enforced* requires that there is no doubt about the suppliers' obligations, that compliance assessment can be, and is, carried out, and that penalties can be, and are, applied.

The consultation paper proposes that CO<sub>2</sub> emission intensity reduction targets and the timing of those will be established, that reporting requirements will be legislatively specified, and that penalties for non-compliance will also be in legislation.

But! The paper is silent on how that vital element, *compliance assessment*, that is essential to the FES provisions being enforceable and enforced, is to be undertaken.

Reducing the CO<sub>2</sub> emissions intensity of light duty vehicles is critical to meeting the Government's CO<sub>2</sub> reduction policy. I submit that a compliance program is an essential, but a missing, part of the FES.

Aggressive emissions reduction, as my analysis suggests is needed, requires strong compliance measures. The consultation paper also acknowledges the need for *a strong standard* to catch up with peers (*Ministers' foreword*) (p.3)), and of *aggressive emissions reductions* (5.4 *When should a FES start?*) (p.26).

The consultation paper has a sub-heading 5.5 *Penalties for non-compliance and enforcement mechanisms* (my emphasis) (p.26).

The consultation paper says;

*The best possible outcome is for no penalties to be applied, because all suppliers comply with, or exceed, the target..... (5.5 Penalties for non-compliance and enforcement mechanisms. p.26), and;*

*Each year, suppliers would have to report to the Government the actual average emissions of the vehicles they sold over the last year.*

*The legislation to put in place a FES will need to provide a penalty in the event that a supplier provides misleading or false information..... (5.6 information disclosure. p.28)*

Really?

Notwithstanding the sub-chapter 5 heading that that section contains *enforcement mechanisms*, it does not. It is about penalties, plus the possible exemption of small volume manufacturers from the scheme. It says nothing about identifying non-compliance and the necessary enforcement mechanism. It relies entirely on self-regulation and self-reporting of non-compliance.

Indeed, as stated in the text cited above, the best outcome is for no penalties to be issued because of complete compliance. But how can the regulator know that compliance is achieved?

The suppliers will have to report on compliance and a penalty will be applied for incorrect information. How is the regulator to know?

Is it to be expected that suppliers will comprehensively report non-compliance of CO<sub>2</sub> emissions performance and reporting obligations and forward the requisite penalties?

Self-regulation and self-reporting are not appropriate compliance enforcement mechanisms. I submit that the legislative instrument must include a compliance provision that is independent of the suppliers. The regulator must ensure CO<sub>2</sub> emissions intensity compliance is achieved, and that there is provision of accurate results by audit or independent testing, as appropriate. Moreover, if

credits are to be used, the regulator must have accurate emissions and vehicle sales information to administer that provision.

I submit that the regulator has a responsibility that goes beyond ensuring that the suppliers provide reports on new light duty vehicle CO<sub>2</sub> emissions intensities as required by the legislation. That responsibility must be to ensure that the information is accurate and complete. What value is there in having CO<sub>2</sub> emissions intensity targets with time frames, and legislated penalties for non-compliance, if there is no protocol to ensure compliance?

### **Compliance considerations**

The consultation paper says;

*It has been established that generally regulators need a standard 'tool kit' to maintain an effective regulatory posture, covering investigatory powers, enforcement tools, and other matters. The Regulatory Powers (Standard Provisions) Act 2014 has been established with this in mind... Our starting position is that the standard provisions be available to the FES regulator. (Other regulatory powers (pp.29-30).*

Quite so. That Act seems to provide a wide range of powers that are broadly applicable for enforcing legislation. I do not suggest a need to depart from it. But the text cited above notes that that is ....*our starting position*..... I suggest that the FES requires the Act to be complemented by some specific requirements to enforce compliance.

So, what might be the important elements for consideration in ensuring compliance? I suggest the following for consideration. Some have been presented earlier but are repeated here for completeness.

- The *regulated entity* for legal purposes might appropriately be the *supplier*. However, some suppliers may distribute more than one brand of vehicle. I suggest that the CO<sub>2</sub> emissions intensity data and the reporting should be managed and reported by brand. That relates directly back to the manufacturer, and it is understandable to the community.
- The CO<sub>2</sub> emissions intensity result for the brand overall should be reported by the supplier as the sales weighted average in g CO<sub>2</sub>/km. The result of previous reporting periods and the *reference year* (see earlier) must be reported, and the absolute, and perhaps percentage changes, presented. The result must be reported against the target. Over-performance, if any, must be identified if claiming a credit is permitted by the legislation and a credit is being claimed.
- The results should be provided on a calendar year basis and reported by the end of January the following year. I suggest that initially the regulator may wish to have six monthly reports to assist with managing the system.
- I have suggested that the FES should commence in 2026, although 2025 would be preferable. In that event 2025 becomes the *reference period* (if a later year than 2026 becomes the FES commencement date the year prior to that becomes the reference period). The suppliers must provide data that enables the regulator to prepare the best estimate of

the sales weighted CO<sub>2</sub> emissions intensity result for each brand, and for the new light duty vehicle fleet overall, for that reference year.

- The CO<sub>2</sub> emissions intensity result for each brand and the sales data must be accurate, reliable, and complete. That requires independent auditing and, if necessary, testing, to ensure that the information is beyond reproach and that the program is achieving its aims.
- The sales data should not be too challenging. The CO<sub>2</sub> emissions intensity results are more difficult. All new vehicles are now imported (perhaps a few niche vehicle converters excepted).

I understand that all vehicle models are extensively tested for emissions, including CO<sub>2</sub>, at the point of manufacture for the necessary ADR type approval. That data would be available. But, I suggest, there is a need to ensure that for each vehicle model that has type approval, that that is exactly the model that is landed in Australia. There may be no simple way to do this. The current SDR procedures may be appropriate. At an extreme the Department may have to consider establishing test facilities at points of vehicle imports to Australia. These would have the further advantage of providing data on 'noxious' vehicle pollutant emissions.

- I am aware that the *Green Vehicle Guide* provides data on CO<sub>2</sub> emissions intensity for a wide range of light duty vehicles (I have not been able to find if that Guide includes all light duty vehicles up to 3.5 t gross vehicle mass and hence aligns with the scope of this FES). I presume that these data derive from the ADR type approval system. If so, they may have been subject to some level of certification. At present those data are used in Australia only for information, including an informational ADR. That contrasts with this FES in which the data would be central to legislation.

The current reporting provides for an urban test cycle and an extra urban cycle from which a combined CO<sub>2</sub> emissions intensity is derived. I suggest that the FES regulation be based on a single CO<sub>2</sub> emissions intensity, preferably the WLTP protocol.

- The emission laboratory test method to be used for CO<sub>2</sub> emissions intensity measurements of light duty vehicles is a difficult issue. It is a critical compliance matter. I offer only limited comments.

On -road vehicle CO<sub>2</sub> emissions intensities are not reproducible; they cannot and do not measure the intrinsic performance of the vehicles but are influenced by a number of external and variable factors. Emission laboratory tests using standardised drive cycles are used to remove these variables and provide reproducible information. The results may be used to compare the CO<sub>2</sub> emissions intensity performances of different vehicle models and to assess changes to those emission intensities with technological changes.

Test cycles have evolved over some decades to better represent the CO<sub>2</sub> emissions intensities realised in practice. However, because of those method changes the measurement results will change; in this case the CO<sub>2</sub> emissions intensity results for the same vehicle will differ between the new and superseded tests. Change the test method, and change the results! The outcome is loss of continuity in the data.

This poses a particular conundrum for the regulator. If the test method changes so that some vehicle models in a year, or over more than one yearly period, have been tested by different methods there may be uncertainty as to whether some vehicle models are compliant or not. It might be that by testing vehicles by both new and superseded tests some correlations could be established; but that is likely to have to be done on a model-to-model basis. To avoid this problem it would be desirable that the method now in use remains unaltered over the life of the FES.

The consultation paper refers to.....*a conversion factor could be developed to record NEDC results as a WLPT results. (5.7 Governance arrangements and other matters) (p.30).* I am doubtful of that proposition. As presented above, I doubt that a single conversion factor could apply across all light duty vehicle models. It may involve much testing of new vehicles using both tests to obtain the needed data. Other parties may have knowledge in this area.

But I offer a possible solution, or part solution, for consideration. Governments have procrastinated for ten years or so in introducing Euro 6 (petrol) and Euro VI (diesel) standards for 'noxious' emissions. The most recent barrier seems to be the higher than recommended sulfur level in some petrol supplied in Australia, a matter that is being rectified with further processing capability being installed at the two remaining Australian refineries.

Automotive diesel fuel meets the fuel specifications for Euro VI. There seems to be no obvious impediment to introducing Euro VI for light duty diesel vehicles, as has been recently done heavy duty vehicles, as an ADR as soon as possible and thereby bring with it the WLTP test cycle for the 2025 CO<sub>2</sub> light duty vehicles emissions intensity reference year. If the lower sulfur petrol is planned to be available by 2025 the ADR might be able to be promulgated for the petrol vehicles and thus bring the WLTP into play for all light duty vehicles.

- The matter of credits falls with, at least in part, within compliance assessment and possibly the role of the regulator. The regulator may be required to administer that as part of the CO<sub>2</sub> emissions data management. The consultation paper seeks views on CO<sub>2</sub> emissions credits. Intuitively I am attracted to overperformance contributing to reducing CO<sub>2</sub> emissions from light duty vehicles. However, since provision is to be made for imposing penalties for underperformance, as must be, it is reasonable that credits be recognised. A credit scheme is supported. I suggest that credits should apply for the life of the FES scheme, that is from 2026 to 2035.
- The provision of information on CO<sub>2</sub> emissions intensity compliance for light duty vehicles to the public should be provided for. This should be made available annually. It should report on compliance with the overall light duty vehicle CO<sub>2</sub> emissions target and that of individual brands. Given that transport is a substantial and growing contributor to CO<sub>2</sub> emissions, that this would be the first legislated foray into that sector, and that it may raise concerns of an impact on the mix of light duty vehicles available, there may be considerable public interest.

### **The questions and response.**

Are these the right guiding principles? Are there other principles that you think we should keep in mind?

No. I submit that important principles that are missing are that;

- The RES legislation must have provisions for enforceability;
- That provision must explicitly provide for and describe a compliance protocol;
- The RES must provide for the enforcement of the requirements for data integrity and reliable reporting; and,
- A total reliance on self-regulation and self-reporting must be avoided.
- I suggest that the final dot point under 4. *Principles for Setting a Fuel Efficiency Standard* (p.12) viz.;

*Enable vehicles with the best emissions and safety technology to be available to Australians. It is important that Australians have access to the best and latest vehicle technology, as good as or better than what is available internationally. We want to avoid increasing the average age of vehicles in the fleet so there are no inadvertent safety impacts.*

be deleted with the arguable exception of the last sentence which might be retained as *guiding principle*.

This is not a principle, it seems to be an obsession, since this notion permeates the consultation paper. The FES is not about achieving improved light duty vehicle technology. It is about reducing CO<sub>2</sub> emissions intensity from light duty vehicles. By requiring that CO<sub>2</sub> emission intensity reduction the appropriate enabling technology will be adopted for the light duty vehicles imported into Australia. We know from experience elsewhere that technology is available to meet the FES requirements. Technology is the enabler; it is not the purpose. I see no justification to give any recognition or credits to particular technologies. The manufacturer can select the technologies that are appropriate to meeting the goal. (At p.4 we learn that we learn that Australians may have access to technology that not only *best*, but *is better* than what is available internationally!)

Given the aggressive program that will be required for all new light duty vehicle sales to be zero CO<sub>2</sub> emissions by 2035 it is considered unlikely that the average age of the in-service light duty vehicle fleet will increase.

Are there any particular FES (design) features that you think we need to take particular care with?

Yes. The FES design features must flow from the principles and the design assumptions (conditions?). As argued above, the feature that particular care is needed with is the development and incorporation of a compliance assessment mechanism that does not rely on self-regulation and self-reporting.

What principles should we consider when setting the targets.

Meeting the goals of the Government's legislated policy and particularly reaching net zero emissions by 2050 for all CO<sub>2</sub> emission sectors, implementing a CO<sub>2</sub> emissions reduction program that is equitable across all brands of light duty vehicles, and informs the community of the program and progress.

What reasons are there to depart from the standard regulatory tool kit for an Australian FES?



None. There is no need for departure, but a need to develop a detailed compliance assessment program that reflects the needs of this particular regulatory task.

Should an Australian FES use WLTP test results in anticipation of the adoption of Euro 6 and if so, what conversion should be applied to existing NEDC test results, or how might such a factor be determined?

This has been discussed above. I have suggested using the WLTP test and expediting the promulgation of Euro 6/VI.

## **4. Other considerations**

### **4.1 An Australian Design Rule?**

The consultation paper is silent on the role of ADRs other than a reference to ADR 82/02 for the fuel consumption labelling requirements.

The paper fails to specify a test method for determination of light duty vehicles CO<sub>2</sub> emission intensities. The legislative instrument must. A stipulated test method is crucial for obtaining objective data for implementing the FES.

I suggest that, in part, the FES proposal to regulate CO<sub>2</sub> emissions intensities from light duty vehicles may be able to be done by extension to the existing ADR 79-*Emission Control for Light Vehicles*. That ADR is applicable to light duty vehicles, less than 3.5t GVM, as for the FES. It provides, in the current version, ADR 79/04, emissions standards for carbon monoxide, total hydrocarbons, non-methane hydrocarbons, nitrogen oxides, the sum of total hydrocarbons and nitrogen oxides, particulate matter, and the number of particles. These are all emission intensities in g/km other than the last which is the number of particles/km. It rigorously specifies the vehicle certification test method to be applied, as is essential.

Although not a specific requirement of the ADR I expect that the vehicle CO<sub>2</sub> emission intensity is generated as part of the emission certification test.

Indeed, the ADR 81/02-*Fuel Consumption Labelling for Light Vehicles* uses the same test method for measuring the fuel consumption and CO<sub>2</sub> emissions intensities from the same light duty vehicles as ADR 79/04.

The CO<sub>2</sub> emissions intensity of a vehicle model is an intrinsic vehicle design issue as is ADR 79/04 and the other ADRs, other than ADR 81/02. That ADR 81/02 is an information ADR; it does not specify a design or performance feature that must be met.

My submission is that some of the regulatory instrument be added to ADR 79. That could deal with the type approval issues. That would include the test method, and the CO<sub>2</sub> emissions intensities results by type (ie. model) performance requirements for CO<sub>2</sub> emissions intensities which would have to have specified requirements that reduce year-on-year. Ideally, Euro 6/VI would be adopted,

and this would become an ADR 79/05 including the WLTP emission test cycle that is needed for light duty vehicle CO<sub>2</sub> emissions intensities continuity over the FES lifetime.

The Department would have to pick up those issues beyond the type approval system which deals with compliance by vehicle model. That would include the performance requirements for CO<sub>2</sub> emissions intensities by brand which would have to have specified requirements that reduce year-on-year, with the regulated entities, and with the enforcement issues of compliance and penalties.

#### **4.2 The regulated entities: who are they?**

The consultation paper asks;

- How should the regulated entity be defined in an Australian FES?

This is presented in consultation paper at 5.7 *Governance arrangements and other matters* (p.29).

That sub-section describes the complexities of light vehicle manufacture, distribution, and sale. It settles on adopting the *supplier*, that being '.....the entity that manages the distribution and sale of vehicles in Australia (that is the manufacturers Australian distributor....)'.

I have some reservations with the *supplier* being identified as the regulated entity. But there may be no choice. This concept might require further considerable development of definition and legal status.

I come from the premise that the targets must be applied across *brands*. A vehicle brand may have many models. A brand is the property of a single manufacturer. But a single manufacturer may have more than one brand. It is the brand of a vehicle that consumers are accustomed to. It is brands that are aggregated for retail. The Green Vehicle Guide documents vehicles by brand. I submit that it is the manufacturer of a brand that is responsible for reducing the CO<sub>2</sub> emission intensity of the various models in its range to ensure the model range as a whole complies with CO<sub>2</sub> emission reduction requirements.

Consider some scenarios about a supplier. If a supplier distributes only one vehicle brand, if that supplier is the distributor for that brand for all vehicle import points to Australia, and if that supplier remains unchanged during the lifetime of the FES, then *supplier* is synonymous with *brand*. But with various combinations of a supplier distributing more than one brand, different suppliers for a brand in different parts of Australia, or suppliers changing during the duration of the FES, the role of *supplier* as a *regulated entity* may become challenging. The consultation paper seems to acknowledge this conundrum with the comment '.....both the type approval holder and the local distributor would need to work together to ensure regulatory requirements were met.' (5.7 *Governance arrangements and other matters* (p.29)).

I note that the *Australian industry voluntary FES* (Attachment E p.40) uses *suppliers* for its' collection of light vehicle CO<sub>2</sub> emissions intensities.

#### **The question and response**

How should the regulated entity be defined in an Australian FES?

It does seem that it is appropriate that the Australian based *supplier* of new light duty vehicles to the market should be the regulated entity. I am unable to suggest how that entity might be legally defined to make it legally responsible for the emission performance by brand. I have raised some issues above that may be more hypothetical than real.

### **4.3 Exemptions.**

A consultation paper question asks;

- Are the exclusions for military, law enforcement, emergency services, agricultural equipment and motorcycles the right ones?

The consultation paper simply refers to this at *4.1 Design assumptions* (p.13) without comment or explanation. (I suggest that the items listed under that title are not *assumptions*; they are *conditions* or *boundary conditions*.) They are statements of specific positions. That quibble notwithstanding I question these proposed exemptions.

I suggest that any such exemptions should be aligned with those, if any, in the ADRs. I do not believe such exemptions are justified. Light duty vehicles for road use for these possible exempted activities seem to be overwhelmingly ADR category M and N vehicles.

#### **The question and response.**

Are the exclusions for military, law enforcement, emergency services, agricultural equipment and motorcycles the right ones?

No. Any exemptions should align with those, if any, in the ADRs for category M and N vehicles under 3.5t GVM.

Military, law enforcement and emergency services light duty road vehicles appear to be either standard passenger vehicles or goods vehicles, or with bodies built on light duty goods vehicles eg. ambulances. I see no justification for an exemption.

Agricultural road use equipment is likely to be greater than 3.5t GVM such as trucks carrying agricultural materials. Farm machinery would be challenging to consider as light duty road vehicles or being registered. Perhaps there may be a few road registered tractors, but they are neither passenger or goods vehicles. Exemption irrelevant.

The FES is for ADR category M and N vehicles, see footnote on p.12. Motorcycles are L category vehicles and are specifically excluded by that footnote. Oops!..No exemption need be considered.

I suggest abandoning this issue and aligning with the ADRs.

### **4.4 Small volume and niche manufacturers.**

The consultation paper asks viz;

What, if any, concessional arrangements should be offered to low volume manufacturers and why? If so, how should a low volume manufacturer be defined?

The same, if any, offered by the ADR system.

#### **4.5 The regulator.**

The consultation paper invites a response on the regulator viz;

Should the regulator be the department? What other options are there?

The regulator should be the same as the regulator of the ADRs. That is, the Department.

Consider. The ADR regulator could ensure the provision of the light duty vehicle CO<sub>2</sub> emission intensity data from ADR 79/04 for each vehicle model (type). Further the ADR system would ensure the rigour and appropriateness of the test method, and of the data quality assurance. The further regulatory task would appear to be the application of any emission credit system. That may be outside scope for the ADR regulator.

The next seems to be administrative. There is the need to obtain vehicle sales data, calculate the sales weighted CO<sub>2</sub> emissions intensities by brand, and the overall light duty vehicle CO<sub>2</sub> emissions intensities, and report the results.

The regulator needs to assess non-compliance, if any, and enforce by penalties if indicated.

There does not seem to be a logical alternative, although the Department being the regulator does mean that the policy developer is also the enforcer.

#### **The question and response.**

Should the regulator be the department? What other options are there?

Yes. There seems to be no suitable alternative. But the Department may need to separate the policy development and regulatory functions.

#### **4.6 Used light duty vehicle imports.**

This matter is mentioned in the footnote on p.12 *4.1 Design assumptions* but receives no apparent attention in the text. Perhaps it should.

Curiously, the second dot point of *4.1 Design assumptions* says 'The Australian FES will only apply to new vehicles..... It will not apply to vehicles in the domestic used car market.' But the footnote 4 includes .....*'this includes used vehicles imported for immediate sale.'* So, what is it? A CO<sub>2</sub> emission intensity would not apply to a single vehicle. Perhaps this might not be an important issue. How can the Department know that an imported used vehicle is intended for immediate sale. I suggest that this needs sorting as part of the FES.

## 5. Conclusion.

I submit that, in summary, the FES should, among other things;

- clearly state the objective, and frame that in terms of the Government's legislated policy objective;
- unambiguously define the field of application;
- deal with all light duty vehicles as single class;
- avoid actions that might increase dieselisation of the light duty vehicle fleet;
- have the supplier as the regulated entity;
- manage emissions intensity reductions by brand;
- hasten the introduction of Euro6/VI for light duty vehicles to access the WLTP emission test cycle;
- commence operation at the beginning of 2026 at the latest;
- conclude at the end of 2035;
- reduce CO<sub>2</sub> emissions intensities of new light duty vehicles by 10% pa based on a 2025 reference year emissions intensity level;
- allow CO<sub>2</sub> emissions intensity reduction overperformance credits for being trading or being banked or banked, but no of-cycle or refrigerant gas credits ;
- not be dependent solely on self-regulation and self-reporting;
- have a rigorous compliance enforcement program; and
- publish regular reports on progress.

Doug Munro

30/05/2023