GREEN PAPER ON A NEW ROAD VEHICLE CO2 EMISSIONS REGULATORY FRAMEWORK FOR THE UK – TOYOTA CONSULTATION RESPONSE

EXECUTIVE SUMMARY

- **Toyota has a long history of challenging carbon and is committed to achieving carbon neutrality in its global operations.**
- **Toyota supports the Government's ambition to achieve net zero in 2050 and will play its full part in helping achieve that target.**
- **Since the introduction of the first Prius in 1997, Toyota's full hybrid electric cars have saved around 140 million tonnes of CO2 globally.**
- **Toyota has reduced the combined average CO2 emissions of its vehicle range in Europe by 40% since 2005. The impact of this is witnessed in Toyota having a leading vehicle fleet CO2 figure among volume car manufacturers in the European Union, an achievement driven by constant improvement of its full hybrid electric technology.**
- **Toyota believes in mobility for all, with no one left behind. Its technology multipath route to zero emissions is designed to help as many people as possible make the transition to low and zero emission vehicles (ZEVs).**
- **As part of its sustainable transition, Toyota is developing ZEVs and bringing them to the market. ZEVs are part of its global product strategy and its belief in the capability of multiple powertrain technologies to achieve carbon neutrality – including full hybrid electric, plug-in hybrid electric, battery electric and hydrogen fuel cell electric vehicles. Toyota was the first manufacturer to mass produce a hydrogen vehicle. Toyota emphasises the need for key enablers to be in place to support the introduction of ZEVs, including a clean energy matrix, a comprehensive and accessible infrastructure, including for hydrogen fuel, and the development of consumer incentives.**
- **As a key technology for the transition to low and zero CO2 vehicles, full hybrid electric vehicles will continue to be part of Toyota's product portfolio. Full hybrid electric vehicle production will continue to form a key part of Toyota's manufacturing operations in the UK and Europe. It will support the business competitiveness that can allow future investment to be made in plug-in hybrid electric and battery electric vehicles at plants in UK and elsewhere in Europe.**
- **Toyota full hybrid electric and plug-in electric hybrid vehicles can continue to play a valuable role through to 2035 in reducing CO2 emissions and help the market transition smoothly to zero emission vehicles.**

- **To enable this, the Government's definition of the required "significant zero emission capability" (SZEC) of hybrid electric vehicles post-2030 should recognise the important contribution full hybrid electric and plug-in hybrid electric vehicles can make.**
- **Third-party testing of Toyota full hybrid electric vehicles indicates their capability of zero emission performance for more than 60% of the distance and 80% of the time on urban roads. In addition, data gathered from thousands of its full hybrid electric vehicles on the UKs roads further verifies their zero emissions capability.**
- **To measure a vehicle's SZEC, Toyota proposes a new Electrification Index, a metric using data that is already freely available through the Worldwide Harmonised Light Vehicle Test Procedure (WLTP). This can be applied to determine the comparative SZEC performance of electrified vehicles, according to the distance they can be driven with zero emissions, in the driving phases used in WLTP testing.**
- **Ruling out full hybrid electric and plug-in hybrid electric vehicles risks stalling the rate of decline in CO2 emissions and making it more difficult for many consumers to make the transition to cleaner mobility. Full hybrid electric cars are convenient, practical and affordable to purchase and run.**

(Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)

ABOUT TOYOTA

1. Toyota Motor Corporation (Toyota) is one of the world's leading automotive manufacturers, producing in excess of 10.5 million vehicles a year. It has production facilities in 28 countries around the globe and its cars and commercial vehicles are sold in more than 170 countries.
2. Europe is a major centre for Toyota's manufacturing, vehicle sales and research and development. The company has consequently developed an extensive supply chain in the region. Since 1990, it has invested more than €9 billion in its European businesses.
3. The UK continues to play a significant role in Toyota's European operations. It is here that Toyota built its first European production facilities – an engine plant in Deeside, North Wales, and a car factory at Burnaston, near Derby. These plants both came on stream in 1992, since when Toyota has invested £2.75 billion in Toyota Manufacturing UK (TMUK). Today TMUK directly employs around 3,000 people.
4. Burnaston was Toyota's first plant in Europe to produce full hybrid electric vehicles. Today it is the European centre of production for the Corolla Hatchback and Touring Sports full hybrid electric models. Deeside manufactures engines, including hybrid engines, for the Corolla and Toyota C-HR models. Full hybrid electric variants account for 95% of the vehicles and 85% of the engines currently produced by TMUK.
5. The majority of production (88% in 2019) is exported, mostly to the European Union and other European markets (83.5% of the export total in 2019).

Toyota's Environmental Principles

6. Toyota supports the Government's ambitions to achieve net zero by 2050 and it will play a full part in achieving this target, leading with its portfolio of electrified models – full hybrid electric, plug-in hybrid electric, battery electric and hydrogen fuel cell electric vehicles.
7. Toyota is committed to achieving carbon neutrality for its business by 2050 and continues to invest in multiple low-carbon technologies and innovations to meet the needs of its customers in each country and region where it operates. Its commitment to carbon neutrality is for everybody, not just for selected groups or regions, true to its mobility for all principle with "no one left behind".

8. For the automotive industry, carbon neutrality means achieving zero CO2 emissions in every process throughout a vehicle's lifecycle, including manufacturing, logistics, operation, fuelling or charging and eventual recycling and disposal. This is at the heart of the Toyota Environmental Challenge – our approach for a 360-degree effort to help eliminate CO2 emissions by 2050 and ensure wider environmental protection (see slide 1).
9. For example, Toyota Manufacturing UK operations, through continuous improvement and kaizen activities, has reduced its energy usage per vehicle manufactured by 80%, water usage by 80%, the quantity of volatile organic compounds (VOCs) emitted by 78% and the waste produced per vehicle by close to 65%. It was the first UK car manufacturer to achieve ISO14001 status and the first to send zero waste to landfill. In 2016 it achieved ISO50001 standard for energy management. It continues to study a range of energy saving measures and is investigating the adoption of hydrogen in an effort to move away from the use of fossil fuels.

(Slide 1)

10. Concentrating resources on a single solution does not mean carbon neutrality will be achieved more quickly. Toyota firmly believes investment in multiple technologies is a more sustainable and effective way of achieving zero carbon. The mobility demands of consumers will continue to vary and will therefore require a range of technological solutions – such as full hybrid electric, plug-in hybrid electric, battery electric and hydrogen fuel cell electric – to match customer demands (see slide 2).

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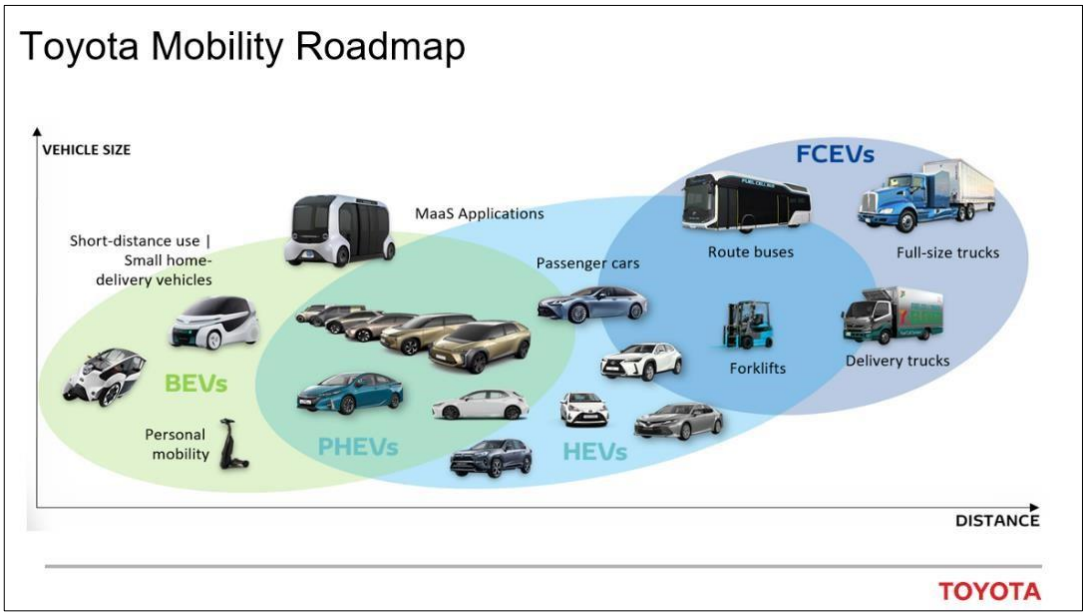

11. The introduction of ZEVs will require key enablers to succeed, including the delivery of a clean energy matrix, a compatible infrastructure, including for hydrogen fuel, and customer incentives to encourage them to make the change to ZEVs.
12. Creating low emissions electrified solutions that are affordable, accessible and suitable for the diverse mobility needs of the mass market is central to Toyota's work. Since the introduction of the first Prius in 1997, the company has sold more than 18 million electrified vehicles worldwide.
13. It calculates that together these vehicles have saved around 140 million tonnes of CO2 emissions, compared to cars of similar power/performance using internal combustion engines (see slide 3). This saving, achieved through constant technical innovation and development of products for almost all vehicle segments, is equivalent to having put 5.5 million battery electric vehicles on the road.

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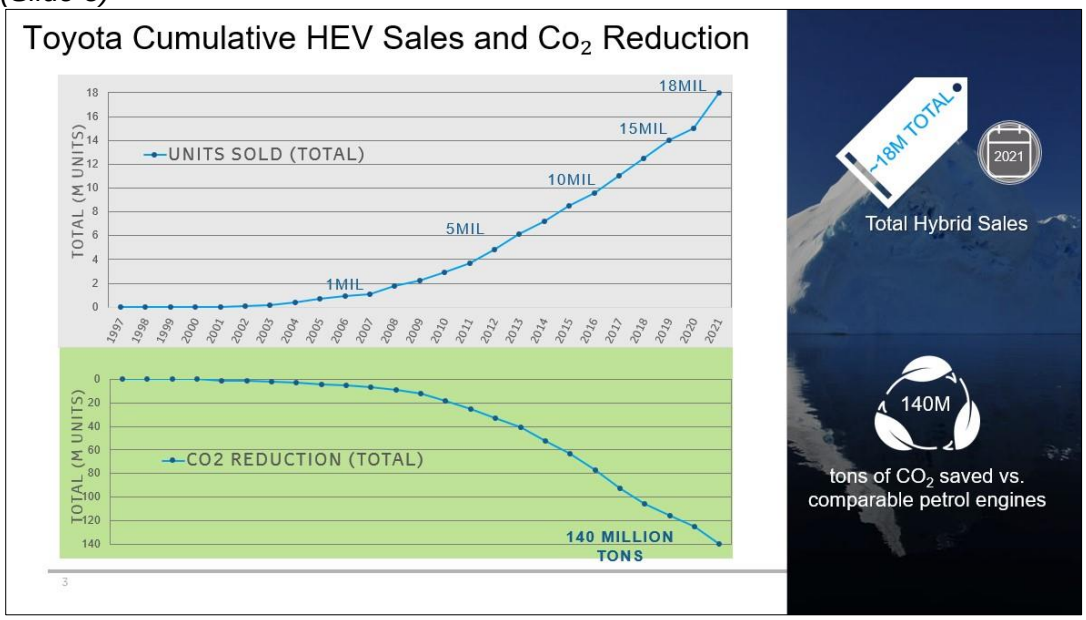

14. By 2025, Toyota expects to offer 70 electrified products globally, including at least 15 battery electric vehicles, meeting the needs of its customers while working to deliver the best technologies to minimise carbon emissions (see slide 4).

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15. To ensure these products are both efficient and accessible, the company is continuing to make significant investments in new battery technologies, including solid state, and ever more efficient electric motors and power electronics. Its battery R&D programme, benefiting from 1.5 trillion yen investment (almost £10 billion), will deliver more powerful, durable and efficient batteries, while at the same time reducing their cost.

16. At the same time Toyota is investing strongly in its world-leading hydrogen fuel cell technology, which it believes can help clean up a large percentage of the world's transportation ecosystem, helping deliver carbon neutrality in trucks, trains, aviation, shipping and industrial processes (see slide 5).

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17. Toyota is also exploring and testing ways of minimising emissions from internal combustion engines, including the use of hydrogen fuel and other renewable e-fuel alternatives.

CONSULTATION QUESTIONS

(Q1-4, Relating to Significant Zero Emission Capability Criteria)

Question 1: What metric, or combination of metrics should be used to set eligibility for cars and vans between 2030 and 2035?

1.1. Toyota shares the UK Government's aim to minimise and ultimately eliminate carbon emissions. It believes its technologies can help the Government deliver its environmental objectives.

1.2. It welcomed the announcement last year that sales of some new full hybrid electric and plug-in hybrid electric cars may continue through to 2035, with recognition of their zero emissions capability and helping the market transition to ZEVs.

1.3. This will help maintain the natural market progress from very efficient hybrid technologies to zero emission mobility, and allow time for the development of the

infrastructure and consumer incentives needed to make the change. During this period, full hybrid electric and plug-in hybrid electric cars can further reduce CO2 emissions, increasing the momentum towards the goal of net zero.

1.4. In announcing its decision, the Government indicated that hybrid electric vehicles may continue to be sold if they have **"significant zero emission capability" (SZEC)**.

1.5. The definition of this capability is one of the key issues covered in the current consultation process: what should the parameters be for determining whether a particular hybrid electric vehicle may continue to be offered for sale in the UK. At present, no appropriate internationally recognised parameters exist.

1.6. Toyota has taken the initiative to produce a robust methodology, a new **Electrification Index**, that can be applied by the Government's testing authority to demonstrate the relative performance of different hybrid electric systems featured in specific vehicles. This can be applied not just to its own Toyota and Lexus brand products, but to any hybrid electric vehicle on the market.

Hybrid technologies

1.7. The term "hybrid" covers different systems that fundamentally deliver power from a combination of an internal combustion engine (ICE) and an electric motor or motors. They fall into three principal categories: "full hybrid", "mild hybrid" and "plug-in hybrid".

1.8. The critical difference between full and mild hybrid systems is that in a mild hybrid the electric motor(s) only operate to support the internal combustion engine. Thus, at present, mild hybrid vehicles cannot be driven on electric power alone.

1.9. By contrast, a full hybrid system, such as the technology developed by Toyota for its vehicles, is capable of powering the car purely on electric power, producing no harmful tailpipe emissions and using no fuel when in zero emission electric vehicle (EV) driving mode.

1.10. A plug-in hybrid can be connected to external power supply – at home, a workplace or public charging point – to recharge the car's hybrid battery. These vehicles can achieve even higher levels of zero emissions performance in terms of distance and time travelled. Here again, full hybrid technology offers superior performance, as when the battery becomes depleted, the vehicle will operate as self-charging hybrid.

Toyota testing and development of the Electrification Index

1.11. Toyota conducted an initial investigation into the zero emission performance of its full hybrid electric vehicles in London. The third party test, conducted by Imperial College Consultants, used an official Transport for London route with a mixture of fast and busy roads. The results were in line with similar tests Toyota has commissioned in other EU cities, showing 77.1% of the driving time and 51.6% of the driving distance over the full test route could be covered in zero emission driving (see slide 6).

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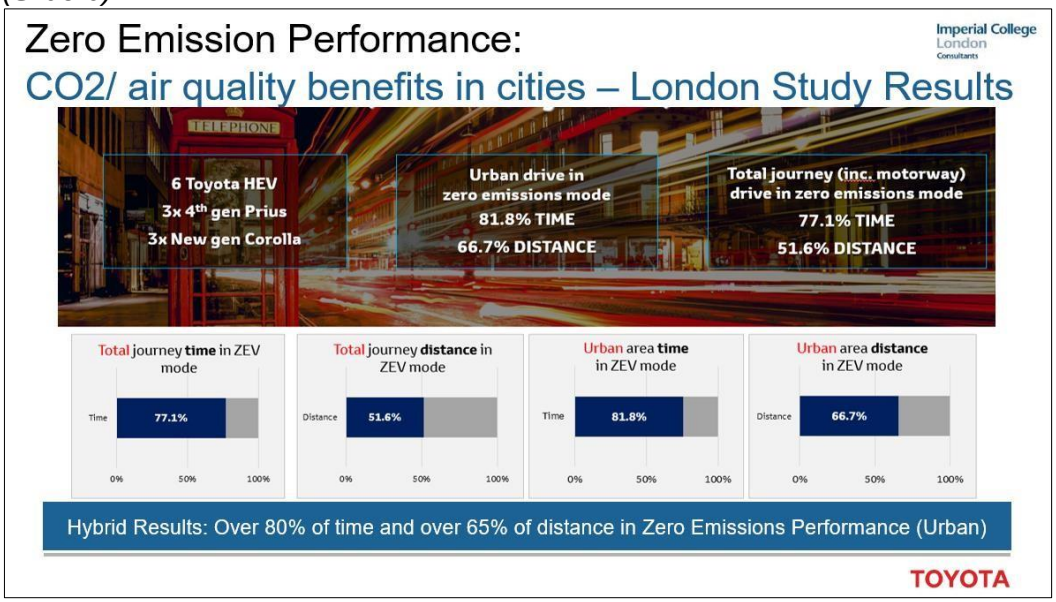

1.12. On urban sections of the route, the proportions of zero emissions running were greater: more than 80% of the driving time and more than 60% of the driving distance. However, as there is no internationally recognised testing to determine a full hybrid vehicle's zero emission driving distance capability, Toyota had to look at other options.

1.13. This research provided the foundation for Toyota to prepare a new methodology for obtaining data for "real world" driving performance. Information was gathered from Toyota and Lexus hybrid electric vehicles driven by thousands of UK motorists, using the data communication module (DCM) installed in new cars.

1.14. (Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)

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1.15. This data was then matched against the four driving phases used in the Worldwide Harmonised Light-vehicle Test Procedure (WLTP) (**(Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)),** the internationally recognised independent test programme for vehicle fuel consumption and CO_2 emissions. These phases – Low, Mid, High and Extra-high – relate to different speed characteristics. Low is relatively low-speed driving, for example in urban traffic; Mid covers typical main road driving; High covers open-road performance; and extra-high is higher-speed driving experienced on motorways.

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1.16. (Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)

1.17. (Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)

1.18. The results show that full hybrid electric cars are capable of being driven, with zero emissions and zero fuel consumption, in a wide range of driving scenarios. In urban traffic, the zero emissions ratio rises to **more than half the distance covered**.

1.19. If the performance were measured in **driving time** rather than distance, the figures would be higher.

1.20. Comparing the journey data obtained from Toyota and Lexus vehicles to the Department for Transport's 2019 statistics shows how they mirror the overall proportion of journey types. This reinforces the reliability of Toyota's modelling ((Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)).

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1.21. The results of these tests indicate how Toyota's full hybrid electric technology can meet the Government's requirement for a "significant zero emission capability". However, as yet there has been no accurate or reliable tool that can be used to produce a zero emission capability ratio figure so that the performance of all hybrids can be collated.

1.22. Toyota has addressed this with its own proposal for a new **Electrification Index,** a metric that can correlate an electrified vehicle's SZEC, using the data and driving cycle parameters of the WLTP.

1.23. This produces a figure for each vehicle using an equation based on its battery capacity, the power output of its electric motor(s), and its weight (see slide 10).

1.24. The values needed for this equation are all readily available, at no cost, in the public homologation data prepared for all new vehicles. This means the Electrification Index for any hybrid vehicle can be calculated in minutes. The value is in mWh/kg (milliwatt-hours per kg).

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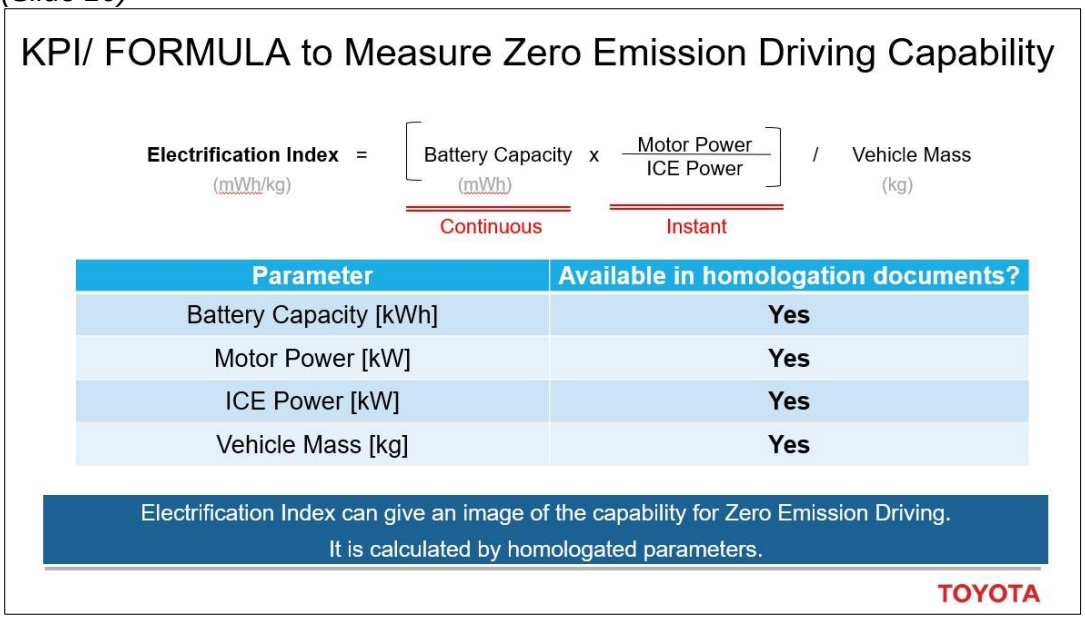

1.25. The index figure is directly linked to a vehicle's zero emission driving performance: the higher the index, the greater the vehicle's performance capability in terms of both zero emission driving distance (and time). Slide 11 shows verification of hybrid performances in terms of zero emission distance over the WLTP low phase – for mild hybrid electric, full hybrid electric and plug-in electric hybrid vehicles. As shown, full hybrid electric vehicles correlate to at least 50-60% zero emission performance (this would be higher for zero emission driving time).

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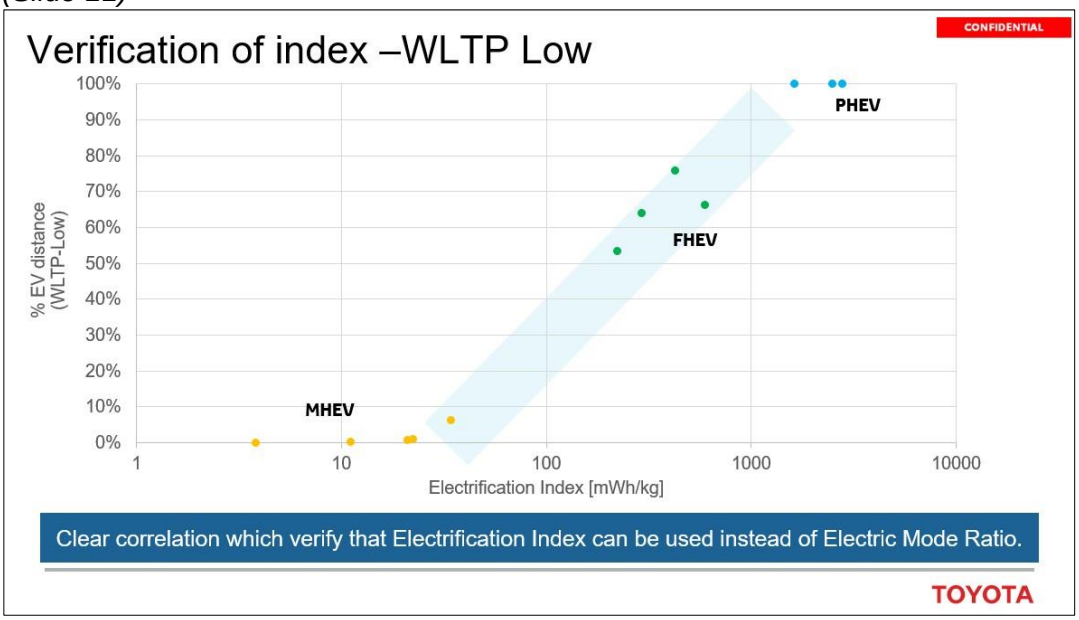


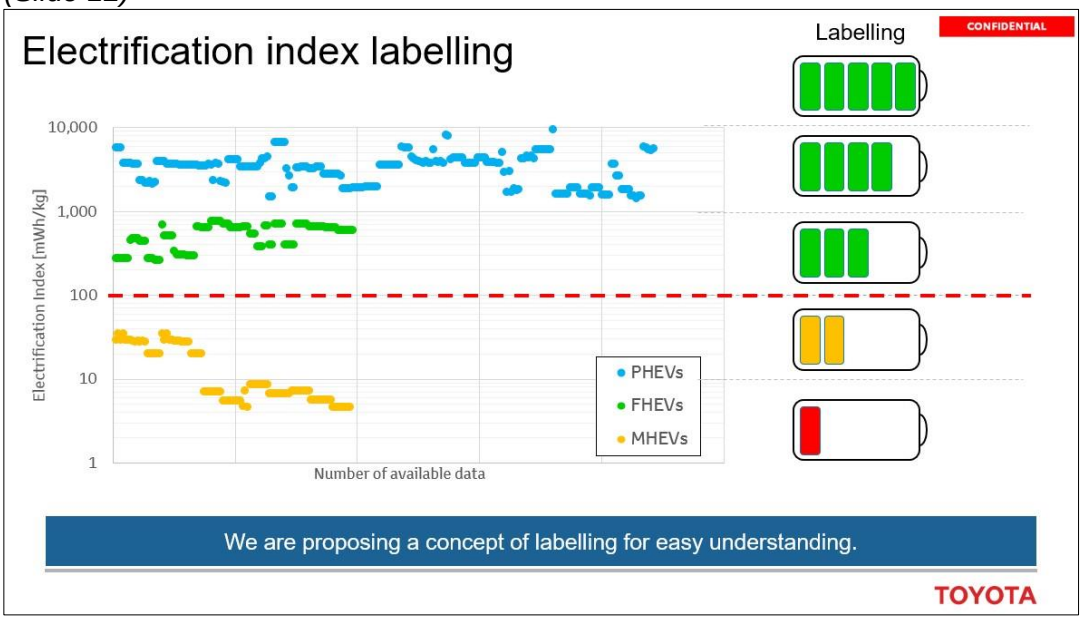
1.26. The Electrification Index is a simple tool for vehicle classification using readily available WLTP type-approval data. It provides a simple, consistent, data-based approach that does not require exceptional costs or testing burden to establish and operate for a five-year period. It can also be applied and presented in a way that is accessible and easy to understand for the consumer.

1.27. If the Government declines to use the Electrification Index, alternative metrics could be used based on the WLTP to measure the time or distance a hybrid electric or plug-in hybrid electric vehicle can be driven with zero emissions. This could be based on the time or distance during which the vehicle's internal combustion engine is not rotating (hence with zero emissions) especially during the Low (urban) and Mid phases.

Question 2: For your chosen metric, what threshold should new cars and vans be required to meet from 2030?

2.1. Toyota believes the Electrification Index would be simple to apply to determine which electrified vehicles meet the Government's SZEC requirements and to show consumers the relative merits of the models available to them in terms of zero emission capability, using a highly visible "traffic light" system (see slide 12).

(Slide 12)



2.2. The best-performing vehicles, such as battery electric and fuel cell electric vehicles, would have an index of above 10,000mWh/kg, denoted by five green bars.

2.3. Those with an index of between 1,000 and 10,000mWh/kg – a band occupied plug-in hybrid electric vehicles (indicated by the blue dots on slide) – would be classified with four green bars.

2.4. The next band, 100 to 1,000mWh/kg, achieved by full hybrid electric vehicles (green dots on slide), would show three green bars.

2.5. An index between 10 and 100mWh/kg, including mild hybrid electric vehicles (orange dots on slide), would be denoted by two amber bars. And vehicles with an index rating below 10mWh/kg would be marked with a red bar.

2.6. **Based on its research, Toyota would recommend that any vehicle with an index higher than 100mWh/kg would meet Government performance requirements for sale beyond 2030 to 2035, as this figure correlates with a significant distance-based SZEC.**

2.7. If the Government does not consider the Electrification Index appropriate for adoption, Toyota's preference is for the SZEC to be based on the distance or time for which a hybrid electric can be driven with zero emissions (with its engine not rotating), in the WLTP Low and Mid phases. Toyota could support an SZEC level set at 50 per cent of the driving time in the Low and Mid phases.

Question 3: What other requirements could be introduced, if any, to maximise zero emission capability?

3.1. At the heart of the issue is the consumer and how they can be encouraged and enabled to make the change to low and ultimately zero emission mobility. The issues of cost and access to a clean energy matrix and a reliable, nationwide charging infrastructure are paramount.

3.2. As stated previously, Toyota recommends incentives to be offered to encourage people to switch to cleaner vehicles during the transition period, together with investment to ensure an adequate infrastructure is established.

3.3. The SMMT recommends that 2.3 million charging points for battery electric and plugin hybrid electric vehicles should be in place by 2030, ensuring easy user access in all parts of the country, including remote, rural areas. The infrastructure development should include support for the manufacture, distribution and sale of hydrogen fuel for fuel cell electric vehicles. Currently there are fewer than 15 hydrogen fuel filling stations; continued development is needed to establish effective hydrogen clusters in the UK.

3.4. Toyota has learned from its experience introducing the Mirai hydrogen fuel cell electric saloon how new technologies require significant support, investment and incentives if they are to succeed. This demonstrates how longer-term consumer incentives may be needed, such as grants, low vehicle duty rates and tax advantages, to encourage motorists to move to low and zero emission vehicles.

3.5. This could be further supported by purchase incentives such as scrappage schemes, where customers can receive a discounted price on a new vehicle in return for giving up their older, higher polluting vehicle for disposal.

Question 4: What would be the impact on different sectors of industry and society in setting an SZEC requirement?

4.1. If the Government adopts an SZEC requirement that causes an early end to the sale of new full hybrid electric and plug-in hybrid electric vehicle sales in 2030, there would be an impact on a number of areas:

- On Toyota's manufacturing, retail and other business activities in the UK
- On its future investment in the UK
- On the local communities and regions where Toyota has manufacturing operations, affecting the levelling-up agenda

- On the UK’s overall CO2 emissions performance and the rate of progress towards net zero
- On the customer and their ability to make the transition to low and zero emission mobility

(Redacted – Regulation 12(5)(e) of the Environmental Information Regulations 2004)

The impact on communities and the levelling-up agenda

4.14. An impact would also be felt in the local and regional communities where the TMUK plants operate.

4.15. Worldwide, Toyota believes in playing an active role in supporting people, businesses and the environment in the communities where it operates. TMUK has a proud record of community engagement at all levels.

4.16. It takes a leading role in helping the wider business community with training facilities and opportunities, for example showing them how to benefit from the principles of the Toyota Production System. In education, the company regularly gives advice and access to young people at all levels of education, playing an active role in encouraging the uptake of STEM subjects, careers for women in engineering and technology and apprenticeships. Millions of pounds have been raised for local

charities and good causes and TMUK continues to lead initiatives to promote biodiversity and the quality of the local environment at its sites.

4.17. TMUK is working closely with local authorities close to its plants to develop a strategy for sustainable and accessible “mobility for all,” helping those most in need to have access to mobility and employment opportunities.

The impact on overall CO2 emissions

4.18. Toyota believes its full hybrid electric (and plug-in hybrid electric) models have an important role to play during the period of transition to ZEVs and can help Government in reducing emissions.

4.19. Achieving full transition calls for a sustainable, clean energy supply to be created and for a comprehensive supporting infrastructure for vehicle charging to be established nationwide. As that ecosystem is developed, ever-cleaner full hybrid electric and plug-in hybrid electric vehicles can provide a viable low emissions mobility option for consumers for whom an earlier change to ZEVs is not practical or unaffordable.

4.20. This multi-path technology approach can help ensure that the momentum of reduction in CO2 emissions can be maintained towards the goal of net zero in 2050.

4.21. Toyota has created a resilient business model with its full hybrid electric technology that has proven its value in accelerating and maintaining reductions in CO2 emissions. Removing it as an option by setting the SZEC figure too high for 2030 would risk stalling that performance and the market shift to cleaner vehicles.

4.22. More than half a million Toyota and Lexus full hybrid electric vehicles were sold in Europe in 2019 and currently (end June 2021) they account for 70% of the group’s new car sales mix in Western Europe. In the UK, sales of the two brands’ hybrid electric models reached almost 78,500 units in 2019, delivering a 63.7% sales mix.

4.23. Their success is helped by their affordability, their practicality and their availability across all the principal market segments. Today, hybrid vehicles are within the reach of almost all new car customers, available in a range that extends from small hatchbacks to large seven-seat SUVs.

4.24. The impact of this is witnessed in Toyota having a leading vehicle fleet CO2 figure among volume car manufacturers in the European Union. Provisional data for 2020 shows the company achieving fleet CO2 of 92.183g/km – three g/km ahead of its target performance. Since 2005, Toyota has reduced its fleet CO2 level by almost 40%.

The impact on consumers – mobility for all/leave no one behind

4.25. Toyota is committed to meeting the needs and preferences of its customers. Its guiding principle is to provide mobility for all and to leave no one behind.

4.26. It has steadily increased its fully hybrid electric model range for Europe, bringing these vehicles within the reach of almost all new car customers. Demand has accelerated as Toyota's constant improvement to its hybrid electric technology has delivered a winning combination of low emissions, fuel efficiency and high levels of reliability in cars that are affordable to buy and run.

4.27. The affordability of Toyota full hybrid electric vehicles is demonstrated in current offers for retail customers using a PCP (personal contract purchase) agreement, the most popular method for buying a new car.

4.28. The Yaris small hatchback is available from £189 per month (0% APR representative) and the family-size Corolla hatchback and C-HR SUV from £239 per month (0% APR representative, terms and conditions apply, details at Toyota.co.uk).

4.29. The affordability and popularity of Toyota's models is reflected in strong sales growth: in the year-to-date (end August 2021), Toyota has sold more than 61,000 Toyota and Lexus full hybrid electric and plug-in hybrid electric passenger cars. This performance has helped the Toyota brand increase its share of the UK new car market by almost a quarter (23.96%) year-on-year to 5.83%, earning it sixth place among manufacturers (Society of Motor Manufacturers and Traders data, published 6 September 2021).

4.30. Toyota's roadmap for electrification in Europe forecasts that in 2025, its new car market will comprise 70% hybrid electric vehicles and 20% plug-in hybrid electric vehicles, with the share taken by cars with internal combustion engines reduced to just 10%. As CO2 regulations become more stringent with delivery of CAFE 2030, it expects its market share to adjust to 50% equally between full hybrid electric and plug-in hybrid electric/ZEVs.

4.31. This reflects the anticipated enduring market demand for full hybrid electric vehicles from customers for whom plug-in hybrid electric and battery electric vehicles will remain either too costly to purchase, or impractical for their transport needs. In this scenario, it makes sense for full hybrid electric vehicles to remain on sale beyond 2030 so they continue to support CO2 emissions reduction. The alternative would be likely to see consumers holding on to their higher emissions vehicles longer, until ZEVs become a more affordable and practical proposition.

4.32. Following its mobility for all principle, Toyota believes it is important to provide motorists with the opportunity to transition to clean, affordable and practical full hybrid

technology if that remains the best, or only, option for them. While some markets may develop at a quicker pace, Toyota believes 100% of new car sales being zero emission vehicles by 2030 is unlikely – and therefore clean full hybrid electric technology can continue to play an effective role to 2035.

4.33. The adoption of an SZEC that precludes the sale of full hybrid electric and plug-in hybrid electric vehicles from 2030 would remove a key low emissions mobility option from the market. This would risk slowing consumer transition to ZEVs, through issues of affordability, practicality and confidence in the technology.

4.34. An announcement of an early end to the sales would also diminish the residual value of these vehicles, so they would be worth less money when their owners seek to trade them in for new models.

CONSULTATION QUESTIONS (Q5-26, Options for a New CO2 Regulatory Framework & Zero Emissions Mandate)

Question 5: Do you have any comments regarding Option 1, to replicate the current regulatory framework, albeit with strengthened targets, to meet our wider carbon reduction targets and phase out dates?

5.1. Toyota supports replication of the existing regulatory framework. This will provide alignment as far as possible with the position in Europe, which is an important consideration for the smooth operation of an integrated, international industry.

5.2. Toyota is already supporting and contributing to emissions reductions with an electrification strategy that can help set a glide path towards further reductions, in a predictable and logical framework that can help deliver the Government's objective of zero tailpipe emissions by 2035.

5.3. Toyota would highlight the fact that, in addition to current targets, the automotive industry also relies on the delivery of external enablers that are outside its control, such as infrastructure provision (including hydrogen), a clean energy matrix and consumer incentives.

Question 6: Do you have any comments regarding Option 2, to introduce a ZEV Mandate or sales target alongside a CO2 regulation?

6.1. Toyota's preference is for a CO2 based regime only. It believes the same result can be achieved using CO2 regulations alone, as this implicitly imposes ZEV take up over time: more zero emission vehicles will be needed as the UK draws closer to its zero carbon target. While a separate mandate would achieve additional uptake, because it would be a legal requirement, it would in effect impose double regulation on the same

fleet of vehicles, increasing administrative and cost burdens. Toyota favours a more natural and sustainable market transition, supporting consumers to make critical changes in their behaviours and developing clean mobility enablers.

6.2. Within the current framework, Toyota has successfully reduced its vehicle fleet CO2 emissions in Europe by almost 40% since 2005. Its progress has been consistently ahead of targets.

6.3. Additionally, the industry relies on the delivery of external enablers that are outside its control, such as a clean energy matrix, provision of a compatible infrastructure (including for hydrogen) and consumer incentives.

Question 7: Do you have any views on the government's initial preference for the regulatory approach set out in Option 2?

7.1. Toyota believes similar result can be achieved using CO2 regulations alone. Such regulations that call for a stepped approach to reducing emissions already require the introduction of zero emission vehicles, so any additional mandate would make the situation even more complex and burdensome, and require additional administration.

7.2. A ZEV mandate would also make it more difficult for consumers, particularly those on low incomes, to make the transition to ZEVs in a way that's viable or appropriate for them. The imposition of a mandate would also likely require more costly Government incentives to support it.

Question 8: Are there alternative approaches that could deliver on the government's carbon budget and 2030/2035 commitments?

8.1. Key enablers are needed to introduce zero emission and plug-in vehicles to deliver the Government's carbon commitments, such as a clean energy matrix, a compatible infrastructure (including for hydrogen) and consumer incentives. These will be critical factors in supporting the transition to zero emissions.

Question 9: Do you have any views on how either, or both, of the options could be implemented?

9.1. Toyota only supports the continuation of Option 1 – for a well-constructed framework that can deliver the Government's CO2 ambitions without complexity and any additional burdens and administration.

Question 10: Do you have any further comments or evidence which could inform the development of the new framework?

10.1. Toyota recommends that any new framework should address the following key principles of:

- Being simple to implement and following the Better Regulation guidance
- Reflecting the short timeline in its proportionality and flexibility
- Ensuring affordability for both the industry and consumers
- Conditionality with key enablers such as a clean energy matrix, a compatible infrastructure (including hydrogen) and consumer incentives
- Alignment as far as possible with the existing European framework
- Delivering CO2 reduction from cars and vans by maintaining consumer choice, stimulating fleet renewal.

Additional Issues for Consideration

Stringency of the CO2 Target

Question 11: If deploying a combined ZEV Mandate and CO2 regulatory framework, how should the CO2 element be set?

11.1. Toyota recommends maintaining the CO2 regulatory framework with a stepped approach towards reaching the Government's 2035 target for zero emission vehicles.

11.2. Existing and future CO2 regulations at European level should also be taken into consideration.

Question 12: Should the focus be on delivering the largest possible CO2 savings, or the quickest possible switch to zero emission mobility?

12.1. Toyota's stance has always been to take a sustainable, longer-term approach to achieve the largest possible CO2 savings. This is why it supports using a range of different clean, electrified vehicle technologies to meet customers' different mobility requirements. It believes that moving as many people as possible into clean vehicles will make a critical contribution to meeting targets for reducing and ultimately eliminating CO2 emissions.

Question 13: How do we ensure that the target allows for sufficient supply of low and zero emission vehicles; supports investment in the UK; and delivers our carbon reduction commitments?

13.1. Toyota believes the Government's carbon commitments can be supported using CO2 regulations. Having regulations that require a stepped approach to emissions reduction already requires the introduction of zero emission vehicles.

13.2. It also believes a technology neutral approach should be taken, embracing all forms of electrified vehicle technologies, including full hybrid electric, plug-in hybrid electric, battery electric and hydrogen fuel cell electric. Key enablers will also be required for this approach to succeed, including a clean energy matrix, a compatible infrastructure (including hydrogen) and consumer incentives.

13.3. Actual CO2 target and levels should be the subject of further Government consultation with industry stakeholders.

Derogations and Exemptions

Question 14: Should the new regulatory framework include exemptions or modified targets for certain specialist vehicles and/or niche and small volume manufacturers?

14.1 Toyota is neutral regarding derogations but recognises there may be cases for certain specialist/small volume vehicles. Any criteria to define eligible stakeholders should be fair and not favour any particular brands. Toyota believes it is important all stakeholders play a role in the journey to emission reduction.

Credit Levels

Question 15: Should credits be awarded to vehicles that meet the SZEC definition?

15.1. Toyota supports credits being awarded to vehicles that meet the SZEC definition. It envisages that these will include all forms of clean, electrified transport, such as full hybrid electric, plug-in hybrid electric, battery electric and hydrogen fuel cell electric vehicles.

Question 16: If so, should this be a fixed number of credits, or should there be a sliding scale that recognises the difference in CO2 efficiency of various SZEC-compliant vehicles?

16.1. Toyota believes these credits could be awarded on a sliding-scale basis for different technologies (including all forms of clean electrified transport, such as full hybrid

electric, plug in hybrid electric, battery electric, and hydrogen fuel cell electric vehicles), according to their zero emission capabilities.

Credit Banking and Trading

Question 17: Should this be considered within the new framework?

17.1. Credit banking and trading should be included in the new framework. It would provide flexibility, helping manufacturers meet targets across their whole fleet.

Question 18: If so, over what timeframe should they remain usable and should credits and debits be treated the same or differently?

18.1. Credit banking and trading should remain usable throughout the lifetime of the regulations.

Question 19: Within the trading element of the new scheme, should there be limits on the number of certificates/grams of CO2 that can be bought or sold?

19.1. There should be no limits on the trading scheme to allow maximum flexibility of the market transition while maintaining the desired performance across the overall new vehicle fleet. The trading scheme should not be subject to limits. This will allow maximum flexibility for the market transition, helping maintain the desired performance across the overall new vehicle parc.

Question 20: Should such a market cover the whole of road transport or should there be some constraints imposed on trading across manufacturing sectors (eg cars and Heavy Duty Vehicles)?

20.1. Toyota believes all transport sectors should play their part in reducing emissions. However, trading should be restricted within specific categories, for example for cars and vans where there are common targets and emissions performance trajectories. This gives the maximum flexibility for those vehicle fleets to meet their targets.

20.2. Credit trading across all forms of road transport would not help those sectors with later non-zero emission vehicles phase-out dates to progress towards their targets in a sustainable way. For example, an unexpected acceleration in the market transition for cars and vans could delay progress in other transport sectors.

Levels of Fines for Non-compliance

Question 21: How, and at what level, should fines be set in the new UK regulatory framework and should this vary for different vehicle types?

21.1. Car and van fines should be maintained at their levels in the existing frameworks (£86 x the grams of exceedance x the number of vehicles sold in that year). These were designed to act as a suitable incentive to help meet current targets.

Target-setting Process

Real-world Emissions

Question 22: Would there be benefits in seeking to ensure any CO2 targets in the new UK regulatory framework take into account real-world emissions data alongside the lab-tested WLTP CO2 emissions figures? If so, how might the two be linked?

22.1. WLTP, while being a laboratory cycle, has been developed to reduce the gap between real-world emissions and the data derived from type approval tests. It provides comparative data between different models and representative data for individual vehicles.

22.2. New vehicles are now required to be fitted with a fuel consumption monitoring device, to measure their real-world performance against WLTP data. Information from these devices will be used to evaluate the need for amendments to the WLTP's parameters.

22.3. Toyota believes it would be inappropriate and disproportionate to try to include realworld emissions in fleet average targets, due to people's very different driving styles and the comparatively short time these regulations will be in place. The WLTP is best placed to monitor and address these issues as they develop over time.

Extending the Framework to all Road Vehicles

Questions 24/25: Heavy Duty Vehicles

24.1. Toyota has no specific comments to make at this stage. However, we would emphasise that all vehicles have a role to play in the journey to zero emissions.

24.2. Toyota is actively developing its zero emission hydrogen fuel cell technology for use in heavy duty road haulage and is supporting research into how it can also be used for other large-scale transport applications, including rail and marine.