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NZFOMC SUSTAINABLE BIOFUELS MANDATE Submission

The New Zealand Federation of Motoring Clubs represents 106 member clubs comprising more than 150,000 owners of heritage and collector vehicles including cars, hot rods, trucks, military vehicles, motorcycles and tractors, and motor caravans. This opportunity to contribute to planning increasing use of transport biofuels is appreciated.

While owners of heritage vehicles welcome confirmation that liquid fuel options will still be provided it is essential that compatible biofuels (specifically 'drop-in' synthetic fuels and e-fuels) are made available before mineral fuels are phased out. The ethanol-based biofuels marketed in New Zealand cannot be safely used in a wide range of older vehicles. Even a blend as low as 3 per cent ethanol in biofuel can seriously corrode metal components and rubber parts in fuel systems. Denial of access to 100 per cent mineral petrol will seriously impact on classics, pre-2005 Japanese vehicles, motorcycles, hot rods, lawn mowers and chainsaws as well as marine transport and propeller aircraft, and could also create a range of recurring health and safety hazards.

There are three key areas of concern with historic and classic vehicle fuel systems:

1. Corrosion of metal components
2. Elastomer compatibility - swelling, shrinking, and cracking of elastomers (seals and flexible pipes) and other unsuitable gasket materials
3. Air/fuel ratio enleanment

Effects on engine and fuel line components

When compared to conventional petrol the increased acidity, conductivity and inorganic chloride in ethanol blends causes corrosion and tarnishing of metal components. As the ethanol molecule is smaller and more polar than the constituents of conventional petrol the ethanol diffuses into elastomer materials. When exposed to petrol/ethanol blends these materials will swell and soften, inducing a weakening of the elastomer structure. On drying out they can shrink and crack resulting in fuel leaks.

Air/fuel ratio enleanment

Ethanol contains approximately 35% oxygen by weight which causes fuel mixture enleanment and increased hydrocarbon pollution when blended into petrol for use in older vehicles. For example, a 10% ethanol blend results in a mixture-leaning effect equivalent to approximately 2.6%, which may be felt as a power loss, driveability issues (hesitations, flat spots, stalling), but also could contribute to slightly hotter running.

Modern 3-way catalyst equipped vehicles do not require mixture adjustment to operate on E10 petrol because they are equipped with oxygen (lambda) sensors that detect lean operation and the engine management system automatically corrects the fuel mixture for optimum catalyst and vehicle operation.

Alternatives to Ethanol Essential

If heritage vehicle owners are denied supplies of mineral petrol the prior development and distribution of second-generation biofuels will be necessary to create affordable carbon-neutral synthetic alternatives to petrol and diesel that are not yet available in New Zealand but can be used in all vehicles. In the absence of suitable replacements there will ongoing requirements for non-blended 95 octane petrol but the practicalities of how those will be met are likely to prove difficult to resolve.

When unleaded petrol was phased out local petrol companies could have but refused to invest in supplying a leaded option, as was done in the United Kingdom. The consequence was multiple media reports of cars catching fire or suffering serious damage to engines and fuel lines as the fuel supply industry struggled to come up with a blend of the new fuel compatible with the New Zealand vehicle fleet.

Importance of Heritage Motoring

While the full extent of the heritage motoring community in New Zealand is still being assessed, in the United Kingdom a survey by the Federation of British Historic Vehicle Clubs found there are 1.5 Million registered heritage vehicles owned by 683,967 enthusiasts. Their activities make a \$14 Billion contribution to the UK economy each year and provide jobs for 34,000 people. However, the average vehicular kilometres travelled by individual heritage vehicles is less than 2000kms, which equates to all registered historic vehicles accounting for less than 0.2% of the total distances driven on UK roads each year, so therefore making only minimal contributions to total emissions.

Based on comparisons of club membership numbers, on a proportionate per capita basis New Zealand has a larger more vibrant heritage motoring sector, with perhaps even more than a third of the number of enthusiasts in the UK. Heritage and recreational motoring in New Zealand add several billion dollars annually to the economy. cursory surveys indicate just our affiliated members alone own more than \$6 Billion worth of heritage vehicles which could become progressively valueless if access to mineral petrol or acceptable alternatives was ended. This would be a disproportionate outcome to achieve only infinitesimal reductions in emissions.

Average households in New Zealand consume around 25kwh of power per day, which adds up to approximately 8,000 to 9,000 kwh per annum. The power consumption of an average EV is around 15kwh/100km, so assuming average vehicle kilometres travelled of 20,000 per year, they will use around 3,000 kwh per annum. So, homeowners converting from ICE to EV will increase their domestic power consumption by approximately 33 per cent.

According to Statistics New Zealand's last Energy Use Survey, in the eight years between 2010 and 2018 industrial sector electricity consumption effectively tripled from 7500 Million Kilowatt Hours to more than 20,000 Million. And this preceded the commitments to replace coal-fired heating in all schools and Fonterra's processing plants

Instigated by the then Minister David Parker, the report “NZ Energy Strategy to 2050” forecast a need for another 3900MW of generation to meet growth demands. But of the new generation projects listed in the report more than 1000MW are dependent on geothermal or gas, both of which have now been ruled out as energy sources by the Climate Change Commission.

On the basis of our preliminary research, it is obvious any presumption there will be sufficient generation capacity available in the immediate to medium term to satisfy the increasing demands of industry and a growing electric vehicle fleet is completely unrealistic. As the global supply of EVs is also likely to be limited in the foreseeable future, permitting wider use of compatible biofuels by heritage vehicles and other users may offer a more sensible means of reducing the overall emissions of the much larger existing fleet.

Continuing access to alternative liquid fuels and continued use of ICE vehicles would seem to be essential to avoiding costly or even unaffordable investment in upgrading electricity generation and supply. It will also provide alternatives for the increasing numbers of New Zealanders impacted by regulatory changes which deny them access to off-street parking and facilities to recharge their EV batteries

Maintaining Supplies

While FoMC members largely support the objectives of reducing emissions and carbon pollution we submit the value of maintaining our heritage fleet exceeds any benefits likely to result from restricting or ending the use of all ICE vehicles. And our ability to utilise alternatives to mineral petrol and diesel is limited by the realities of the availability and distribution of supplies.

Clearly if it is desired, for example, to drive an historic vehicle for 300kms, but the fuel tank capacity provides a maximum range of 250kms, it will be necessary to refuel partway through the journey. Therefore, if a hypothetical strategy was introduced to make compatible fuels available for use in historic vehicles, there would need to be outlets all over New Zealand to permit unrestricted use.

But it is unrealistic to expect normal fuel retailers would be prepared to provide special blends at all service stations for a sector of the motoring public which may possibly represent less than one per cent of the total number of vehicles on the road. Demand would be low in the winter and limited even in the summer. So commercially, for the needs of the historic vehicle fleet to be met at any meaningful level of availability will require the supply of compatible advanced biofuels which can also be used by other sectors of the transport fleet.

We request the needs and safety of heritage vehicle owners be accorded appropriate and adequate consideration in the development of any strategy to increase the use of sustainable biofuels. The regulations that enable the mandate must ensure a 100% mineral grade of petrol - aka a “protection” grade – is provided.

Privacy of natural persons

Roy Hughes

Submissions Secretary NZFoMC

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