Dear Sir/Madam

The Smart Energy Council strongly welcomes the announcement from the Australian Government of New Vehicle Efficiency Standards.

With the right policy settings, the New Vehicle Efficiency Standards (NVES) will lower fuel bills by $1000 for each new vehicle by 2028, and will provide Australians with a greater range of more efficient lower emissions vehicles. It is the most important mechanism to slash Australia's soaring transport emissions.

The Smart Energy Council (SEC) is the peak independent body for Australia's smart energy industry, representing over 1,300 residential, commercial, and large-scale renewable generation and storage companies, smart transport firms, as well as the renewable hydrogen and ammonia industry.

The Government's commitment to introduce fuel efficiency standards is welcome and a much needed step to drive down transport emissions. Fuel efficiency standards will reduce cost of living pressures by saving drivers money, increase the uptake and availability of electric vehicles, lower fuel use and carbon emissions and drive efficiency improvements in the vehicle fleet.

Whilst welcoming the announcement, and this consultation process, the Smart Energy Council urges the Australian Government to take an even more ambitious approach to reducing transport emissions by adopting stronger Standards.

In our original submission, the SEC called for a NVES that is:

- Legislated by the end of 2023 and in force by 1st January 2025.
- Strong and ambitious; Align with Australia's emissions reductions commitments and catch Australia up to the standards set in other car markets.
- Independent and robust; Avoid loopholes and make emissions data publicly available and robust.
- Accompanied by a smart transport strategy to encourage a shift to active and public transport, decarbonise freight, heavy vehicles and non-road transport and accelerate the local electric vehicle, battery charging and component part industry.

Following the announcement on 4 February 2024, the federal government published the *Cleaner, Cheaper to Run Cars: An Australian New Vehicle Efficiency Standard Consultation Impact Analysis*, which gave us three options.

An assessment of the options (detailed below) shows that option A is a 'do nothing' approach. There would be next to no positive benefit for Australians with this option and car manufacturers will essentially be able to continue dumping inefficient vehicles in Australia, pollution will continue to increase and it will be a damning statement on Australia on a global stage. This would result in a total CO2 intensity reduction of 14-34% in 2024-29.

Option B, the government's preference, aims for Australia to catch-up to the US standards by 2028 and then continue in-line with these. This would result in a total CO2 intensity reduction of 61-62% in 2024-2029. Option B provides the basis for a strong New Vehicle Efficiency Standard but does not provide sufficient urgency. The Smart Energy Council supports Option C, which is strong and ambitious, independent and robust.

Option C is a strong standard that is ambitious and efficient. This aims to meet the US standards around 2026 and exceed these in 2028 and 2029. This would result in a total CO2 intensity reduction of 74-77% in 2024-2029. Option C, our preferred option, strongly hits the cornerstones of timeliness, ambition and integrity.

It must be noted that key policy settings introduced in options B and C are strongly welcomed. These include the omission of supercredits and other loopholes, and including MC category off-road passenger vehicles as passenger vehicles. The integrity of these are essential for a NVES to be effective in Australia in combating climate change.

We also agree with Smart Energy Council member IEEFA (Institute for Energy Economics and Financial Analysis), who states that the benefit analysis completed by the Department does not consider the benefits realised from services that electric vehicles can provide to the electricity grid, including via vehicle-to-grid or vehicle-to-home. Electric vehicles are not only private assets as cars but also public assets as batteries on wheels and this should be recognised more strongly by the Australian Government. This is detailed at the bottom of this submission.

Should you wish to discuss this submission further, please contact:
Wayne Smith, External Affairs Manager, Smart Energy Council
[redacted]

[redacted]

Key Factors for Success of NVES

Key factors determining the success of the NVES, assessed against the impacts on Australia in regard to environmental and economic impacts, include:

1. Headline CO2 g/km target levels
    - While option B does aim to make an impact on Australia's emissions, option C is the strong preference of the SEC.
    - Australia needs to catch-up to the baseline standard set by the rest of the developed world as soon as possible, for both maximised petrol savings, and environmental impact. We then need to push beyond this and make a positive impact with more ambitious targets.
2. Timing
    - The 2025 target under all three options is not up to requirements. Given that a fuel efficiency standard for Australia was announced by the federal government in August 2022, as well as specific proposals being raised for the last 15 years, there has been a considerable period of time for vehicle manufacturers to prepare for the impending fuel efficiency standards. Setting a 2025 target that is no more stringent than 2023 means making no progress for two years.
    - For this reason, Option C is the clear route to be taken and fully endorsed by the SEC, with the proposed change, to bring the targets forward by one year. This would mean the 2026 targets are where the 2025 target should begin.
        - We are aware there are calls for the NVES to be introduced from 1 July 2024, rather than the proposed date of 1 January 2025. If this timing is not feasible, the SEC calls for the targets to be brought forward by a year, i.e The 2026 target is brought forward to 2025, the 2027 target to 2026 and so forth.
        - The compounding impacts of having the emissions limits stronger, sooner will result in far greater economic and environmental impacts as the cars from 2025 will be expected to have a 20+ year lifespan.
        - The SEC reaffirms its calls for the New Vehicle Efficiency Standard to begin on 1 January 2025.

3. Classification of vehicles
    - The SEC strongly backs the government's decision to include SUVs (MC category off-road passenger vehicles) in the passenger vehicle category. This is a critical part of the success of the NVES and should not be compromised.
4. Technology credits
    - Another key factor to the success of the NVES is the decision of the government to not include supercredits, air conditioning credits, or off-cycle credits. These would significantly compromise the effectiveness of the NVES and the SEC backs the decision to not have any technology credits available. Should there be any consideration of supercredits, they should be limited to Zero Emission Vehicles under strict circumstances.
5. Penalties
    - The proposed penalties in option B are too limiting for there to be a strong enough incentive for car importers to make a change to their fuel efficiency standards that is required.
    - The SEC recommends that Australia adopts the penalty rate imposed by the EU currently, which is €95 ($185 expressed in Purchase Power Parity) per g/CO2. This should then be indexed at the rate of domestic CPI annually.
6. Fleet limit curve (mass limit curves)
    - The SEC applauds the proposed options B and C mass limit curves with breakpoints included to provide some flexibility around vehicle size; not penalising smaller cars.
    - The SEC is concerned about the environmental and other impacts that heavier vehicles have, including the economic costs of heavier costs requiring more fuel, and damaging our roads at greater rates.
    - Given these concerns, we recommend that the sizes of vehicles are carefully monitored, with a section in the first review of the NVES in 2026 to avoid unintended environmental and economic impacts.
7. Credit banking, pooling and trading
    - The SEC backs the proposed option C conditions as the preference, with option B also being viewed as acceptable standards. The ability for credits to be traded will greatly help to make more efficient vehicles, particularly EVs, more affordable for Australians.

8. Data collection and distribution
    - The collection of data from each vehicle presents a logistical challenge. Currently, the National Exchange of Vehicle and Driver Information System (NEVDIS) receives basic vehicle make, model, and variant information. Members of the Federal Chamber of Automotive Industries (FCAI) provide independent data on variants, including wheel and engine size, to FCAI who then relays some of this information to NEVDIS. Additionally, manufacturers contribute basic vehicle data to the Register of Approved Vehicles (RAV), overseen by the Department of Infrastructure. Notably, there are currently no penalties for inaccuracies in reporting to NEVDIS by either manufacturers or the FCAI as the third-party provider. However, substantial penalties exist for inaccurate reporting to the RAV. Control of this data should remain independent from the Department of Infrastructure and the influence of the vehicle manufacturers.
    - Modifications to the Department of Infrastructure's online vehicle system, known as ROVER, would be necessary to accommodate the collection of additional information. One potential solution could involve mandating that every manufacturer report the Worldwide Harmonized Light Vehicle Test Procedure (WLTP) figure for each vehicle to the RAV. This would provide the government with a significant enforcement mechanism. Subsequently, the data could be transferred to the Department of Climate Change, Energy, the Environment, and Water, enabling them to issue fees.
    - Furthermore, vehicle type approval could be contingent upon the payment of all outstanding FES fees. However, a primary concern arises from the FCAI's predominant control over information regarding the majority of vehicles entering Australia. Data control is critical. This situation poses a risk akin to allowing the fox into the henhouse, potentially compromising the integrity of the data collection process.
    - In the presentation of data, the use of compliance flexibilities (borrowing, banking and trading of credits) should be made clear alongside the actual average vehicle carbon dioxide emissions of the supplier's vehicles.

[redacted]

- This information should not only be publicly and freely available, but also should be free from corporate interests influencing the data to show more favourable outcomes.
- As well as this, the SEC strongly recommends that independent fuel efficiency testing used to calculate the credits and penalties imposed on car importers is transferred from WLTP to real-world testing of cars. This should be done as soon as possible by expanding the program underway in conjunction with the Australian Automobile Association, which has already identified that only 10% of cars tested achieved similar fuel consumption results to their lab tests.
- There should also be an entity to police and check the self-submitted data from the car manufacturers.

9. Reviews of the targets
    - Regular, periodic reviews of the targets need to be enforced for a regular cycle of every three years, with the option to either stick to the trajectory, or tighten the standards.
    - The SEC recommends that at the first review of the NVES in 2026, there be an extension of the timeline, aligned to a point of zero emissions for the domestic transport industry that keeps Australia committed to a 1.5 degree global warming limit, based on a fair share distribution.
        - As mentioned above in point 6, this first review should include a section on the size of vehicles, assessing whether the NVES has had any unintended consequences.

There is no time for further delay. According to The Australia Institute, if the Government had introduced fuel efficiency standards in 2016, Australia would have saved more than $6 billion in fuel costs, and avoided 4000 megalitres of imported fuel and nine million tonnes of greenhouse gas emissions – similar to the emissions footprint from domestic aviation.

The longer Australians have to wait for strong mandatory fuel efficiency standards, the longer they are locked into substantially higher fuel costs and carbon emissions, with limited access to electric models.

Below is the submission from IEEFA which the SEC strongly supports, which outlines that the V2X potentials are omitted from the benefits analysis completed by the department.

IEEFA wishes to draw the department's attention to the benefits that electric vehicles (EVs) can provide to the electricity grid, including via vehicle-to-grid, vehicle-to-load and vehicle-to-home (collectively V2X).

These benefits are likely to be considerable, and should be included in the cost-benefit analysis referenced in the NVES consultation paper.

EVs are not only lower pollution, quieter, more efficient vehicles with benefits to health. They are also batteries on wheels which can be used to provide a range of benefits to electricity markets and networks and resilience benefits as remote, transportable power supplies.

Based on several studies, IEEFA estimates the full potential revenue streams from V2X for a household with an EV could be between $1,000-$5,000/year.

Through V2X, EVs can also provide services across energy markets and networks that reduce costs for all consumers, not only EV owners. For example, enX estimates that if 10% of EV charging capacity is available for V2G in 2050, $94 billion in storage costs could be avoided.

Unlocking this full stack of opportunities will require improvements to other technical standards, regulations and market access for Distributed/Consumer Energy Resources (DER/CER). These have been identified as a priority by governments and market bodies, and we recommend that the NVES should be accompanied by updated standards and regulations. As a minimum, the department should work closely with other government CER workstreams to ensure that the NVES is relevant and successful.

IEEFA's detailed recommendations are summarised on the following pages.

EVs can provide valuable benefits to electricity consumers, that should be included in the NVES cost-benefit analysis

The cost-benefit analysis of policy options in the NVES consultation paper considers fuel savings, reduced vehicle maintenance, health benefits and emission reductions. This **excludes** a very significant category of benefits that electric vehicles (EVs) can provide via services to the electricity grid.

AEMO's Draft 2024 ISP forecasts distributed storage to make up 79% of total storage by 2050.[1] EVs are likely to present the most significant source of future flexible electricity demand and storage, providing energy market and network services that are increasingly valuable as Australia's electricity systems transition to high shares of renewable energy.

Consider, for example a household with a higher-than-average[2] daily commute of 50 km. Assuming an EV efficiency of 15 kWh/100 km, usable battery capacity of 50 kWh[3] and home charging capacity of 7 kW, it would take just over one hour for the household to charge their vehicle to full after a day's use. However, the available time window over which the vehicle could be charged in the home is likely to exceed 12 hours.

This implies a significant degree of flexibility in the timing of when that vehicle could be charged. If the EV charger were equipped with technology that enables it to respond to real-time data from the electricity grid, charging could be switched down or off at times when overall grid demand is high, and switched up or on when demand is low.

The potential is likely to be even more significant for EVs that are connected to chargers during the day, either in homes or workplaces, as charging times could be optimised in response to changes in grid solar output throughout the day.

When combined with time-of-use tariffs, such charging patterns would also lower the cost of vehicle ownership, as most charging would occur when the wholesale electricity price is low.

Business models are already emerging to enable EV owners to take advantage of low wholesale prices. For example, Amber Electric customers can already take direct advantage of low or negative wholesale prices during the day.

In the UK, EVs are already competing with gas generation to provide grid firming services. It is estimated that under current levels of EV uptake (2.8% of the total fleet)[4], the theoretical firming capacity of the fleet is already greater than the capacity of gas peaking plants. EV owners are financially incentivised by the grid operator to provide these services.[5]

These benefits are also reflected in modelling by CSIRO for Energy Consumers Australia that found electrification, with the largest contributor being EVs, would increase volumes of electricity sold more than it would increase peak demand. This resulted in lower energy system costs for all consumers.[6]

They are also reflected in an ARENA-funded report by NERA, that found a net present value (NPV) of $3 billion in energy system cost savings, plus $5 billion in consumer cost savings by 2040 under a high EV uptake scenario.[7]

The benefits of V2X are material, and should be included in the NVES cost-benefit analysis

Most of the benefits discussed in the previous section can be provided by electric vehicles with unidirectional (one-way) charging capabilities. However, there is a significant additional category of benefits that can be enabled via two-way (bidirectional) charging.

Of the top five manufacturers of EVs sold in Australia today, all either already include bidirectional charging capabilities in their cars, or have immediate plans to include this as standard in upcoming models.[8]

Bidirectional EV chargers are new to the consumer market, and currently attract a premium. One of the few bidirectional chargers on the market currently costs around $10,000, compared to $1,000-$1,500 for a unidirectional charger.[9] However, prices are expected to fall as adoption rates grow. One US manufacturer is targeting a price point of US$1,500 (AU$2,300) for its upcoming bidirectional charger.[10]

Bidirectional charging enables EVs to provide three significant new types of services:

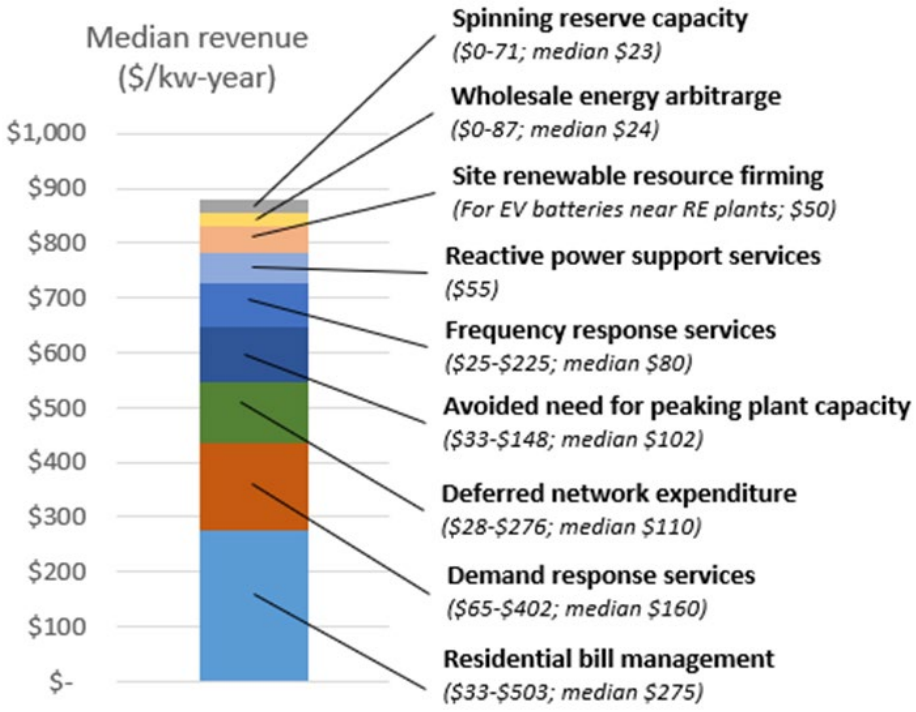
- Vehicle-to-home (V2H), where energy from the EV battery is used for household energy consumption;
- Vehicle-to-grid (V2G), where energy from the EV battery is exported to the wider energy grid; and
- Vehicle-to-load (V2L), where energy from the EV battery is used to power a specific load such as an electric appliance, or to charge another EV.

Collectively these are described as V2X.

In the case of V2H and V2G, the EV functions as a mobile battery storage system for homes or businesses. Use of the EV battery can be optimized by, for example, charging EV batteries when solar output (especially directly from rooftop solar) is high, and discharging the battery at times when renewable generation is low.

A meta-analysis by RACE for 2030 found that the median annual revenue for EVs providing V2X services could be $879/kw-year. The maximum was $1,817/kw-year (Figure 1).[11]

Figure 1: Median potential revenue from various V2X revenue streams (RACE for 2030 2023)



These revenue streams are a mix of consumer savings, and system wide benefits.

For example, median revenue for residential bill management alone was $275/kW-year. This represents households optimizing their bills by charging their EV battery when prices are low, or they have surplus rooftop solar needs, and discharging for use in the home or grid when wholesale prices are high.

Other revenue streams are related to overall reductions in cost across the energy system, such as deferred expenditure on new network or generation capacity assets. These cost

reductions are shared across all users of the energy system, not only EV owners, and are important to consider in the NVES cost-benefit analysis

A report by enX found, for example, that if only 10% of the EV fleet charging capacity is available for V2G by 2050, this could provide 37% of total storage in the NEM, offsetting $94 billion in storage capex for other batteries.[12]

The actual revenue a single household could receive from V2X services would depend on a wide range of factors including: Battery charging capacity, availability during peak times or days, and the degree to which regulatory reform enables households to be compensated for providing distribution network services.

However, considering even a portion of the value stack in Figure 1 for a standard home EV setup[13], and other external estimates of revenue streams for various customer types[14], IEEFA expects a reasonable potential range of $1,000-$3,700/year.

Recommendation: The NVES cost-benefit analysis should be extended to consider the benefits that EVs can provide to households and the grid, including via V2X.

The NVES will be most successful if accompanied by new and updated standards and regulations and market access for EVs

The technology to unlock the potential of grid flexibility services and broader V2X revenue streams from EVs is available today. However, current standards and regulations in Australia unintentionally prohibit access to many of these revenue streams.

Nonetheless, Distributed or Consumer Energy Resources (DER or CER) is a rapidly-evolving space in Australia, and has emerged as a key priority for Australian governments and market bodies. The Energy Security Board (ESB) has noted “CER policy is at a critical juncture” in Australia, and “[…] it is timely for CER integration to progress from a demonstration and incubation phase to a reform design, delivery and implementation phase.”[15]

In 2023, energy ministers agreed to develop a National Consumer Energy Resources Roadmap – which presents a logical forum to investigate the reforms necessary to maximise the potential of EV grid services. [16]

For the NVES to operate as a successful and relevant policy, it is essential that it be aligned to current and likely future developments in CER.

Previous IEEFA analysis[17] has highlighted the significant potential of services that EVs can provide to the grid, including via V2X, and identified several key recommendations that could unlock this, including but not limited to:

- Development of an EV-grid integration plan;
- Establishment of a body to set CER technical standards, including demand response requirements for EV chargers[18];
- Removal of static limits on household energy exports in favour of Dynamic Operating Envelopes; and
- Commissioning a thorough, independent review of distribution network revenue regulation to ensure the regulation supports the integration of DER including EVs.

Recommendation: The NVES should be accompanied by actions on technical standards, regulatory reforms and market access to support the provision of EV grid services, including V2X.

As a minimum, the NVES should be designed in a way that supports the deployment of DER/CER in Australia, which has been identified as a priority by government.

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[1] AEMO. Draft 2024 ISP generation and storage outlook.

[2] The average Australian passenger vehicle travels 34.5 kilometres/day (ABS 2018).

[3] This is likely to be conservative; the new BYD seal for example will have a battery capacity of at least 60 kWh, and capacities may grow in future.

[4] IEA. Global EV Data Explorer. EV stock share – Cars – United Kingdom – 2022.

[5] Bloomberg. EV Chargers Take On Natural Gas for Power System Flexibility. 14 February 2024.

[6] CSIRO. Consumer impacts of the energy transition: modelling report. July 2023. Page v.

[7] NERA. Load Flexibility Study Technical Summary. April 2022. Page 8.

[8] Top 5 manufacturers are Tesla, BYD, MG, Volvo and Polestar. Tesla intends to include bidirectional charging as standard by 2025. BYD already supports bidirectional charging. The MG 4 already supports bidirectional charging. Volvo will include bidirectional charging as of their EX90 model, and Polestar (owned by Volvo) includes bidirectional charging capabilities in their Polestar 3..

[9] SolarQuotes. EV Bi-Directional Chargers Will Enable Home Batteries on Wheels. 16 February 2022.

[10] TechCrunch. Are bidirectional EV chargers ready for the home market? 28 April 2022.

[11] RACE for 2030. My V2X EV: Informing strategic electric vehicle integration. April 2023. Page 12.

[12] enX. V2X.au Summary Report – Opportunities and Challenges for Bidirectional Charging in Australia. Page 3.

[13] Based on Figure 1, a 3.6 kW charging capacity (well below the standard capacity of most EV models) could be enough to see revenue of $1,000/year from residential bill management alone.

[14] For example Jones et al. 2022 modelled a maximum revenue of $3,744 for a vehicle charged at a workplace under dynamic prices and accessing FCAS revenue.

[15] ESB. Consumer Energy Resources and the Transformation of the NEM. February 2024.

[16] Energy and Climate Change Ministerial Council. Meeting Communique: 24 November 2023. Page 2.

[17] IEEFA. Growing the sharing energy economy. 13 October 2023.

[18] See also: IEEFA. Mandating AS4755 Ignores Households and Widely Supported International Solutions. August 2021.

Organisation questionnaire response

Privacy Setting: I agree for my response to be published with my name and position.

What organisation do you represent? (required)	Smart Energy Council
What is your name? (required)	Wayne Smith
What is your position at the organisation? (required)	External Affairs Manager
Please rank the proposed options in order of preference. (optional)	Option A - 3rd, Option B - 2nd, Option C - 1st
Briefly, what are your reasons for your choice? (optional, 3000 character limit)	The Smart Energy Council supports option C first and option B second. An assessment of the options (detailed in the attached submission) shows that option A is a 'do nothing' approach. There would be next to no positive benefit for Australians with this option and car manufacturers will essentially be able to continue dumping inefficient vehicles in Australia, pollution will continue to increase and it will be a damning statement on Australia on a global stage. This would result in a total CO2 intensity reduction of 14-34% in 2024-2029. Option B, the government's preference, aims for Australia to catch-up to the US standards by 2028 and then continue in-line with these. This would result in a total CO2 intensity reduction of 61-62% in 2024-2029. Option B provides the basis for a strong New Vehicle Efficiency Standard but does not provide sufficient urgency. The Smart Energy Council supports Option C, which is strong and ambitious, independent and robust Option C, stated as the fastest feasible approach, is a strong standard that is ambitious and efficient. This aims to meet the US standards around 2026 and exceed these in 2028 and 2029. This would result in a total CO2 intensity reduction of 74-77% in 2024-2029. Option C, our preferred option, strongly hits the cornerstones of timeliness, ambition and integrity. It must be noted that key policy settings introduced in options B and C are strongly welcomed. These include the omission of supercredits & other loopholes, and including MC category off-road passenger vehicles as passenger vehicles. The integrity of these are essential for a NVES to be effective in Australia in combating climate change. More information can be found in our submission.

Do you support the Government's preferred option (Option B)? (optional)	Yes
Do you have any feedback on the analysis approach and key assumptions used? (optional, 3000 character limit)	We identified that there is an absence of the benefits to be gained via vehicle-to-grid, vehicle-to-load and vehicle-to-home (collectively V2X). These benefits should be included in the benefits analysis which should make for a stronger argument for option C. Based on several studies, IEEFA estimates the full potential revenue streams from V2X for a household with an EV could be between $1,000-$5,000/year. Through V2X, EVs can also provide services across energy markets and networks that reduce costs for all consumers, not only EV owners. For example, enX estimates that if 10% of EV charging capacity is available for V2G in 2050, $94 billion in storage costs could be avoided. More information can be found in our submission.
Briefly, describe how the NVES might impact your organisation (optional, 3000 character limit)	The Smart Energy Council, as a peak industry body for the Smart Energy Industry including electric vehicles, is here for ambitious action. We're bold partners and a vital voice for the industry, bringing a proactive, hands-on approach that drives real progress. If a strong NVES is implemented, it would mean that the Smart Energy Council is able to further work for the country due to having more electric vehicles available on the market, along with the potentials for 'batteries on wheels' that EVs pose as a benefit to households and the energy grid.
Who should the regulated entity be? (optional, 3000 character limit)	NULL