

N&M Consultancy Limited

Response to Electric Vehicle Smart Charging – Issues Paper

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N&M Consultancy Limited (N&M) is a company registered in England. It was incorporated in 1991, and has advised companies on the licensing of Standards Essential Patents (SEPs) for nearly 30 years; during that period, N&M:

- was a member of the European Standards Telecommunications Institute (ETSI) promoting the use of fair, reasonable and non-discriminatory (FRAND) licensing terms and conditions;
- was closely involved in discussions regarding the ETSI Intellectual Property Rights (IPR) policy which culminated in the ETSI IPR Policy adopted in November 1994;
- published the Handbook on the Operation of the ETSI IPR Policy in 1995 following the adoption of the ETSI IPR Policy in November 1994;
- acted as the secretariat for the International Telecommunications Standards Users Group (ITSUG) whose then members included amongst others Marconi PLC, Sony, Sendo, Mitsubishi, Panasonic and Blackberry. ITSUG was established to represent the interests of standards users in the telecommunications sector, and was a member of ETSI;
- has advised many companies, small and large, on SEP licensing issues;
- was a founding member in 2015 of the Fair Standards Alliance, an organisation of approximately 50 companies involved in the licensing of standards essential patents, who seek fairer SEP licensing practices; and
- was a contributing participant in the development and approval of the 2019 CEN CENELEC Workshop Agreement that published “Core Principles and Approaches for the Licensing of SEPs”.¹

N&M welcomes the Australian Energy Security Board inviting feedback to its publication of the Issues Paper for Electric Vehicle Smart Charging dated July 2022 (the “Paper”) and giving N&M the opportunity to make these submissions.

Questions for Consultation

We note the Paper has 23 questions for which it invites feedback. N&M’s responses are limited to issues arising in relation to standards essential patents, and we have focused on responses to questions 1, 3, 4, 7 and 16, but our submissions may apply to the input for other questions.

¹ <https://2020.standict.eu/sites/default/files/CWA95000.pdf>

Question 1 Views and input on smart charging equipment standards settings including any input to inform the likely costs

Technical standard-setting is everywhere in the modern economy. As more and more industries come to rely on communications, effective deployment of standards for charging and for wireless and wired communications and interfaces has become critical to industry, government and consumer interests. When industry collaborators create technical standards, competition concerns must be considered in case standards participants might misuse their advantageous position in establishing industry standards to blacklist competitors (such as by refusing to offer access to standardized technologies) or to force customers to use only their own proprietary technologies.

To overcome potential misuse of the advantages for participants in the standardisation effort, standard-setting organisations (SSOs) commonly require that participants commit to license any patents that will be essential to use of the standard (Standards Essential Patents aka SEPs) on fair, reasonable and non-discriminatory (FRAND) terms. This commitment is designed to ensure that licenses to these patents are available, on fair and reasonable and non-discriminatory terms, to all companies that wish to use the standard. After a standard is developed and adopted, companies that hold associated SEPs can obtain significant market power as a result.

There are multiple standards that have been developed, and that are under development, in Europe and the USA and elsewhere in relation to EV charging and EV charge stations. These include but are not limited to standards such as those set out in the Issues Paper as well as many others including the EMC Directive 2014/30/EU, BS EN 61851-1, 61851-21, 61851-22, 60529, 50581, 50419, IEC 61024-3. In the UK, the Electric Vehicles (Smart Charge Points) Regulations 2021² came into force on 30th June 2022 and requires home EV chargers to be smart. Wireless connectivity could be provided by a number of wireless standards including but not limited to Wi-Fi, 2G, 3G, 4G or 5G standards.

The ESB Issues Paper seeks feedback on the standards to be adopted for smart charging equipment and the associated costs, and our feedback focuses on the problems and challenges with the licensing of SEPs in Australia which will need to be considered by the EV industry in Australia.

The global SEP licensing ecosystem in its current form does not work in a balanced way and no longer supports competition and innovation. Our view is that the SEP ecosystem, and the way it is abused by a few SEP holders, is unbalanced and increasingly inhibits competition, innovation and market entry.

The way the current SEP licensing system is being abused will likely delay the adoption of green energy and climate change solutions in Australia, will lead to excessive pricing for EVs and EV charge stations which will drive up costs for consumers, and will inhibit innovation as companies will look to alternative solutions that are less expensive and have less financial and legal risk.

Our view is that the SEP ecosystem for ETSI standards such as 3G, 4G and 5G is being abused by a few SEP holders contrary to how the broader industry envisaged the system would operate when the ETSI IPR Policy was adopted in November 1994.

The abuse of the SEP licensing system for ETSI and IEEE standards manifests itself in a number of ways, including but not limited to:

² <https://www.gov.uk/guidance/regulations-electric-vehicle-smart-charge-points>

a) Refusals to license all component suppliers in the value chain

There is currently a concerted practice where some SEP holders refuse to license companies that want a license to SEPs; this creates many issues in the supply chain as companies that think they have the necessary intellectual property rights to sell their products, may not in fact have them. The practice leaves those companies exposed to claims from the SEP holders, and to the potential for their customers to be sued, who in turn will make claim under the indemnity provisions in their contracts.

The current issues mean that companies buying or selling products using standards will have to consider whether to exclude warranties and indemnities for SEP claims in their contracts. This is unsatisfactory, as it is not the normal way business is done, and creates risk and uncertainty for multiple companies in the supply chain.

b) Discriminatory licensing

This manifests itself in a practice where some SEP holders refuse to grant licenses to certain companies in the supply chain; it also happens when, if they do grant licenses, they secretly grant licenses at significantly different rates to different sized companies, notwithstanding that licenses should be available on non-discriminatory terms.

Some SEP holders have been known to misrepresent the true position to prospective licensees to induce them to enter into agreements on non-FRAND terms.

c) Seeking excessive and non-FRAND licensing fees and royalties

The reasonableness of FRAND terms must in N&M's view be considered in the context of the "enhanced market opportunities which standardisation [of the SEP owner's] technologies might bring" and in view of the "greatly increased market" for licensing attributable to standardisation.³ The test to be applied to royalty rates is that they should represent a balance between the need for the owner of an SEP to obtain a fair return on his investment and the enhanced market opportunities created by standardisation. In other words, royalty rates, although they may have some connection to normal commercial rates, should be reduced because of the enhanced economic power conferred by the Standard. However, possession of an SEP should not be a passport to windfall profits.

d) Excessive cumulative fees.

There are thousands of companies claiming to have SEPs to Wi-Fi, 3G, 4G and 5G standards, and there are tens of thousands of patents claimed to be

³ EC 1992 Standards Communication <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF>, ¶ 4.3.3 and 4.3.7.

essential to those standards. Despite marketing claims of many SEP holders, there is no 'one-stop shop' where a company can get a license to all patents for one or all of the standards, and therefore each SEP holder seeks to charge the maximum they can, without reference to what all of the other SEP holders are charging, and this means that the rates that are cumulatively charged by SEP holders become excessive. For example, if each SEP holder charged 1% of the selling price of a component, then the cumulative royalties would be many multiples of the selling price of the component.

There can also be multiple claims for a product using different standards, so for example, an EV charge station might have WiFi functionality as well as 3G and 4G functionality to provide alternatives for connectivity. SEP holders will claim the same fees for dual connectivity products as for as for single connectivity products and, in addition, seek further fees for the second connectivity solution.

e) Gaming the standard setting system

Many claimed SEPs, if they are not invalid, are often tiny incremental features that do not add substantively to the technology, but they do potentially read on the standard; others are optional features; others are simple alternatives, for example choosing option A over option B because someone in the stated setting process has a patent over option A.

Some SEP holders game the system by dividing up portfolios of patents to extricate higher excessive fees; for example a patent owner A might have 100 patents and charge 1% of the sales price of a component; it then might sell 15 patents to company B. Company A still charges 1% (for 85 patents), but company B now wants 1% as well. So a patent portfolio of 100 patents that is 'worth' a royalty of 1% suddenly becomes 'worth' 2% when nothing has changed apart from the ownership of the patents.

f) Seeking injunctions to demand excessive and non-FRAND licensing fees

Many SEP holders seek injunctions ostensibly to restrain patent infringement for the purposes of maintaining a monopoly, but with the aim to force companies to pay higher fees than would be payable as a damages award. For SEPs, damages should always be an adequate remedy.

In summary, the current SEP licensing ecosystem, and particularly for ETSI/3GPP standards such as 3G, 4G and 5G, is not working in the way that it was originally intended when the ETSI IPR Policy was adopted and implemented in 1994. Many of these SEP issues and problems have been raised by companies in the energy industry in Europe, identifying them as a growing challenge for European smart energy delivery ⁴.

⁴ See for example this article at <https://www.smart-energy.com/industry-sectors/business/standard-essential-patents-a-growing-challenge-for-eu-smart-energy-delivery/> and 'IP Issues in the Energy Sector' available at <https://www.globelawandbusiness.com/storage/files/minis/36-6278fd0c2b3d6.pdf>

Potential claims for licensing fees

In relation to the potential costs for licensing of standards essential patents, there is a lack of transparency on the costs as most SEP holders try to keep their 'true' rates secret, and have not published their true licensing rates. Many will only disclose their 'headline' licensing rates under a non-disclosure agreement or when compelled to disclose them by a Court or competition authority.

The published rates are not necessarily the 'true' licensing rates as many SEP holders will grant preferential (discriminatory) rates to certain companies. This allows SEP holders to create an unfair and opaque licensing system which enables SEP holders to abuse their FRAND obligations, and to not grant licenses on the same (or even similar) terms to all companies that want a license⁵.

Unfortunately, there are a very few companies that have published rates for claimed SEPs that may be relevant in the EV smart charging space. Some of those are detailed below but this is not an exhaustive list:

i. MPEG LA (EV Charging) ⁶

- MPEG LA have a patent pool programme that seeks the following license fees:
 - EV-A - unit that includes EV Charging Equipment capable of receiving AC electric charging via wired connection(s) in a Road Electric Vehicle
 - *US \$20 per unit*
 - EV-D - unit that includes EV Charging Equipment capable of receiving (1) DC or (2) DC and AC electric charging via wired connection(s) in a Road Electric Vehicle
 - *US \$50 per unit*
 - AC EVSE - equipment capable of providing AC electric charging via wired connection(s) to an EV-A
 - *o Type 1 - US \$5 per connection*
 - *o Type 2 - US \$20 per connection*
 - DC-A EVSE - equipment capable of providing (1) DC or (2) DC and AC electric charging via wired connection(s) to an EV-A and/or EV-D
 - *o US \$50 per connection capable of providing only DC charging*
 - *o US \$20 per connection capable of providing only AC charging*
 - *o US \$50 per connection capable of providing both DC and AC charging where DC and AC charging cannot be provided simultaneously*

ii. MPEG LA (Qi Wireless Charging) ⁷

- Qi Receivers

⁵ http://fair-standards.org/wp-content/uploads/2020/07/170213_FSA-Position-PaperTransparency-FRAND-1.pdf

⁶ <https://www.mpegla.com/wp-content/uploads/EVCHARGINGWEB.pdf>

⁷ <https://www.mpegla.com/wp-content/uploads/Qi-Wireless-Power-Presentation.pdf>

- Capable of wireless transfer ≥ 5 watts that is not a Power Accessory, Medical Device or Power Tool (as defined in Annex E of 23 Oct 2008 Wireless Power Consortium Charter)
 - royalty waived during current term
 - Capable of wireless transfer > 5 watts or a Power Accessory, Medical Device or Power Tool (as defined in Annex E of 23 Oct 2008 Wireless Power Consortium Charter)
 - US \$0.20
- Qi Transmitters
 - Integrated assembly including up to three transmitters
 - US \$0.25
 - Integrated assembly including four to six transmitters
 - US \$0.50
 - Integrated assembly including seven to nine transmitters
 - US \$0.75
- Royalty waived on first 25,000 units of all products Sold annually; Discounts from 10% to 40% for licensees electing annual committed volumes

iii. 3G/4G (Avanci)

- A group of industry companies have created a company called Avanci to license their and other claimed 3G and 4G SEPs through a patent pool, and the Avanci patent pool is understood to have about 50% of the claimed SEPs for 3G and 4G;
- Avanci seek to charge a license fee of US\$20.00 to car companies for use of the 3G and 4G standard with each vehicle;
- The Avanci pool license does not provide a license for IEEE Wi-Fi standards, and so users of charge stations may be subject to further claims from the same companies that are members of Avanci for having Wi-Fi functionality in EV smart charge stations, as well as cellular functionality;
- There is no announced rate for 5G functionality for either vehicles or smart meters;
- Avanci are understood to be seeking a license of US\$5.00 for use of 3G and 4G in smart meters.

iv. Wi-Fi (Interdigital)⁸

- Interdigital claim a rate of US\$0.05 per unit for Wi-Fi enabled products; this would be on top of the amounts claimed through Avanci if there were multimode products (eg WiFi plus 4G/LTE).

v. WiFi 6 (Sisvel pool)⁹

- Sisvel has a patent pool for some patents alleged to be essential to the WiFi standard (IEEE 802.11ax) and patent owners include Philips,

⁸ <https://www.interdigital.com/rate-disclosure>

⁹ <https://www.sisvel.com/licensing-programs/wireless-communications/wifi6/patent-pool/introduction>

Mediatek, Huawei (although Huawei has recently announced that it has granted licenses for SEPs to Nordic Semiconductors and the rates are not publicly announced¹⁰) and others.

- The Sisvel WiFi 6 license rate is \$0.60 per unit
- Philips and Mediatek are also members of Avanci
- Other claims may also be made for earlier versions of Wi-Fi, which would make the per unit claimed rate \$0.90

vi. Wi-Fi (Sisvel pool)¹¹

- The Sisvel Wi-Fi pool claims a royalty rate for EUR 0.30 per unit.
- Sisvel benchmark against other claimed Wi-Fi rates such as:
 - AT&T 802.11n and ac Patent Licensing Program
 - *Consumer Electronics: USD 0.12 per unit*
 - *Commercial Networking: USD 0.27 per unit*
 - Philips TV & STB program (incl. Wi-Fi -n)
 - *EU: EUR 0.13 per unit*
 - *US: USD 0.05 per unit*
 - Via Licensing 802.11 (a-j) (Electronics and Telecommunications Research Institute (ETRI) • LG Electronics, Inc. • Nippon Telegraph and Telephone Corporation)
 - *1 to 500,000: USD 0.55 per unit*
 - *500,001 to 1,000,000: USD 0.50 per unit*
 - *1,000,001 to 5,000,000: USD 0.45 per unit*
 - *5,000,001 to 10,000,000: USD 0.30 per unit*
 - Vectis Wi-Fi Licensing Program • Wi-Fi One, LLC (filed by Telefonaktiebolaget LM Ericsson and Panasonic Corporation) For all essential patents:
 - *USD 0.17 per unit*

Issues to consider for the Australian market

The above claimed rates are just some examples of the costs that may be claimed for using standards in Australia. None of these costs take into account the legal fees that will be spent in conducting due diligence and investigating claims that patents are valid, or essential or infringed, or whether the license terms are FRAND terms.

We have not yet carried out an analysis of how many potential SEPS have been granted or applied for in Australia and how many of the patent holders or patent pools will seek SEP licensing fees in Australia, and this should be subject to further study to consider the specific impact on the Australian market.

Australian energy companies may wish to seek lower licensing fees on the basis that there is likely to be less patent coverage in Australia compared to other major markets, but most SEP holders that monetise SEPs will likely say that the rates they are seeking are global rates. Whether that is compliant with the ETSI IPR Policy, the IEEE IPR Policy, and/or

¹⁰ <https://www.nordicsemi.com/News/2022/06/Huawei-and-Nordic-cellular-IoT-licensing-deal>

¹¹ https://www.sisvel.com/Wi-Fi/Wi-Fi_Royalty_Rate.pdf

Australian patent and competition law, is a separate issue that may need to be determined in due course by the Australian courts.

These outline costs (and any additional claims made against Australian companies) will be ultimately paid by the consumer in Australia. Excessive licensing fees will likely lead to charge station providers and suppliers looking for less expensive options which may be less green, will provide less choice to consumers and may be sub-optimal for consumers as being less efficient and more time consuming.

N&M would suggest action is taken by the ESB to enable a fair and balanced system for SEP licensing for Australian innovators in the EV and EV charging space, and those looking to develop products for the Australian market. This fairer and more balanced system is needed for EV charging, and also for other 'smart' infrastructure that is being explored in Australia (for example: smart grids, smart cities, smart meters etc).

The ESB might be interested to look at action taken by the UK Competition and Market Authority (UK CMA) which in 2021 published guidance on sustainability agreements and competition law¹² and stated that:

- When setting up a new standard, businesses, trade associations and/or standardisation organisations should follow these steps to comply with competition law:
- allow stakeholders to inform themselves effectively of upcoming, on-going and finalised standardisation work in good time at each stage of the development standard – for example, through the publication of regular updates in dedicated journals
- guarantee that all competitors in the markets affected by the standard can participate in the standard-setting process and join the agreement
- ensure access to the standard is on fair, reasonable and non-discriminatory terms for all businesses which comply with it
- if the standard-setting involves intellectual property rights (IPR), participants must disclose in good faith their IPR that might be essential to the implementation of the standard. They must also offer to licence their essential IPR to all third parties on fair, reasonable and non-discriminatory terms. This should be provided for in an IPR policy from the standard-setting organisation

The ESB and the Australian Competition and Consumer Commission might wish to consider whether to adopt a similar policy to the UK CMA for Australian standards that have been or might be adopted.

The UK IPO is currently undertaking a consultation on SEPs, and the outcome of the Call for Views is now available¹³. The UK IPO intends to engage with businesses and others to ensure it has understood their concerns and seek further evidence where needed. It will report its findings to UK ministers in 2023 and would expect any significant policy interventions to be subject to consultation.

¹² <https://www.gov.uk/government/publications/environmental-sustainability-agreements-and-competition-law/sustainability-agreements-and-competition-law>

¹³ <https://www.gov.uk/government/consultations/standard-essential-patents-and-innovation-call-for-views/outcome/standard-essential-patents-and-innovation-executive-summary-and-next-steps>

Question 3 ESB understands that EVSEs on the market today come with smart charging as a minimum functionality – is this the case or do stakeholders see this as still an emerging functionality?

As mentioned in the Answer to Question 1, in the UK the Electric Vehicles (Smart Charge Points) Regulations 2021¹⁴ came into force on 30th June 2022. The UK Government state that:

“The regulations ensure charge points have smart functionality, allowing the charging of an electric vehicle when there is less demand on the grid, or when more renewable electricity is available. The regulations also ensure that charge points meet certain device-level requirements, enabling a minimum level of access, security and information for consumers”¹⁵.

In the EU the European Commission¹⁶ is looking at the creation of new Regulations for the deployment of alternative fuels infrastructure. This initiative “seeks to ensure the availability and usability of a dense, widespread network of alternative fuels infrastructure throughout the EU. The specific objectives are: (i) ensuring minimum infrastructure to support the required uptake of alternative fuel vehicles across all transport modes and in all Member States to meet the EU’s climate objectives; (ii) ensuring the infrastructure’s full interoperability; and (iii) ensuring full user information and adequate payment options”. This may include smart functionality.

Question 4 What are stakeholder views regarding the adoption of these standards in the Australian context? Do stakeholders consider the OCCP1.6(J) the most appropriate international standard to adopt? Are there any additional standards or options that should be considered in the short term?

As outlined in the Answer to Question 1, N&M would suggest that, as part of the adoption of new standards, action is taken by the ESB and/or ACCC and/or Australian Government to create a fair and balanced system for SEP licensing for Australian innovators in the EV and EV charging space, and those looking to develop products for the Australian market. This fairer and more balanced system is needed for EV charging, and also for other ‘smart’ infrastructure that is being explored in Australia (for example: smart grids, smart cities, smart meters etc).

Question 7 The ESB welcomes stakeholder views on the appropriate timing considerations to enable a roll out of minimum technical standards for domestic EV charging systems. Do stakeholders see other considerations that need to be taken into account to facilitate jurisdictional policy settings?

As outlined in the Answer to Question 1, N&M would suggest that, as part of the adoption of any new standards, action is taken by the ESB and/or ACCC and/or the Australian

¹⁴ <https://www.gov.uk/guidance/regulations-electric-vehicle-smart-charge-points>

¹⁵ <https://www.gov.uk/guidance/regulations-electric-vehicle-smart-charge-points>

¹⁶ https://ec.europa.eu/info/sites/default/files/revision_of_the_directive_on_deployment_of_the_alternative_fuels_infrastructure_with_annex_0.pdf

Government to create a fair and balanced system for SEP licensing for Australian innovators in the EV and EV charging space, and those looking to develop products for the Australian market. This fairer and more balanced system is needed for EV charging, and also for other 'smart' infrastructure that is being explored in Australia (for example: smart grids, smart cities, smart meters etc).

Question 16 the ESB welcomes stakeholder views on barriers in existing regulatory and legislative frameworks that may be acting to limit the introduction of more advanced EV services such as Vehicle-to-home (V2H), Vehicle-to-grid (V2G) and Vehicle-to-Anything (V2X)?

The barriers to entry created by the current unfair SEP licensing practices need to be addressed and as outlined in the Answer to Question 1, N&M would suggest that, as part of the adoption of any new standards, action is taken by the ESB and/or ACCC and/or the Australian Government to create a fair and balanced system for SEP licensing for Australian innovators in the EV and EV charging space, and those looking to develop products for the Australian market. This fairer and more balanced system is needed for EV charging, and also for other 'smart' infrastructure that is being explored in Australia (for example: smart grids, smart cities, smart meters etc).

The ESB might be interested to look at action taken by the UK Competition and Market Authority (UK CMA) which in 2021 published guidance on sustainability agreements and competition law ¹⁷ and the ESB and/or the Australian Competition and Consumer Commission might wish to consider whether to adopt a similar policy to the UK CMA for Australian standards that have been or might be adopted.

N&M welcomes the opportunity to provide submissions to the Energy Security Board and would be happy to answer further questions.

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¹⁷ <https://www.gov.uk/government/publications/environmental-sustainability-agreements-and-competition-law/sustainability-agreements-and-competition-law>