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Ms Anna Collyer
Chairperson
Australian Energy Markets Commission
Sydney
By email aemc@aemc.gov.au

Dear Ms Collyer

I am writing to you in response to AEMC's "Draft Rule Deterimination" to allow distribution network service providers to charge solar homes to inject surplus solar production into the grid. I set out my concerns in this submission and summarise the key points at the end.

1. The AEMC incorrectly construes network charges for solar homes as an issue of equity

The Australian Council of Social Services has repeatedly asserted that rooftop solar results in cross subsidies from poor households to rich households. Most recently Kellie Caught, ACOSS's Senior Energy and Climate Advisor claimed on a 7/30 Report that "*ABS data shows that people with the highest wealth have more solar*".[1] Kellie Caught has also claimed that research that ACOSS commissioned says that "*Solar is most prevalent amongst high wealth households*[2] citing a 2018 report from the ANU's Centre for Social Research and Methods.

[1] https://iview.abc.net.au/video/NC2101H066S00
[2] https://reneweconomy.com.au/the-sun-tax-debate-misconception-and-false-accusation/

I do not think that these claims are correct and submit the following evidence in this regard:

1. The ANU research cited by ACOSS actually finds that ""*ownership of solar panels is fairly consistent across income levels*".
2. Econometric research (Best et al (2019)[3]) using 2015-16 ABS data finds an "inverse-U" relationship between wealth and solar uptake and that households with pensions and that choose Greenpower are more likely to install solar. The report also finds that the log of income is not significant in explaining solar uptake.
3. Later economic research Best et al (2019a)[4] examining the total stock of small-scale solar systems as at 31 December 2018 finds statistically significant relationships (1%) with mortage and the proportion aged over 60. But there was a *negative* relationship to income (statistically significant at 1%) and no relationship to superannuation balance.
4. Our analysis[5] in 2019 of 2062 solar homes (out of a dataset of 10,051 households that provided their bills to customer group **CHOICE)** across the south and eastern states of Australia found that solar uptake was similar in households in the lowest seven ABS socio-economic deciles, but much lower in the three highest socio economic deciles. In fact solar uptake was proportionately the highest in the lowest socio economic deciles and lowest in the highest. Our research went further than aggregate ABS socio-economic zone segmentation to also establish the house price (as recorded on domain.com.au). From this we see proportionately the highest solar uptake in the households in the lowest decile ranked by value and the lowest solar uptake amoungst households in the highest decile ranked by house price

We point this out because the AEMC appears to rely heavily on claims of equity as the basis of its decision – in fact it draws attention to this 38 times in the Draft Decision. Similarly, when challenged to defend its decision, AEMC's CEO was quick to point out that its Draft Decision was in response to an application by ACOSS.

We note also that the AEMC selectively cites Best et al (2019), for example in respect of the relationship between renters and solar uptake (that renters typically do not live in dwellings with solar). This does not in any way provide the basis to a general claim (by ACOSS and AEMC) that households with rooftop solar impose costs on households without rooftop solar.

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[3] Best, R., P.J. Burke and S. Nishitateno, 2019. "Understanding the determinants of rooftop solarinstallation: evidence from household surveys in Australia", Australian Journal of Agricultural and Resource Economics, 63, pp. 922–939.

4 Best, R., P.J. Burke and S. Nishitateno, 2019(a). "Evaluating the effectiveness of Australia's Small-scale Renewable Energy Scheme for rooftop solar", Energy Economics, 2019

[5] Mountain, B., and Kars, A. (2018). Using electricity bills to shine a light on rooftop solar photovoltaics in Australia. Victoria Energy Policy Centre, Victoria University, Melbourne, Australia.Available from https://243b2ed8-6648-49fe-80f0-f281c11c3917.filesusr.com/ugd/92a2aa_d22b284823314d88a1b2ec79aa3e6ba5.pdf

Not only is ACOSS (and the AEMC's) claims on equity unfounded, but the framework of the AEMC's analysis is parochial and incomplete. Specifically, AEMC focusses only on the minor network price effects associated wth lower distribution volumes ignoring the evidence that these are off-set many fold by the wholedsale price effects. It is now popularly accepted[6] that rooftop solar is one of the main reasons for the sharp decline in wholesale electricity prices. Our research finds that these wholesale price effects completely overwhelm the tiny network effects. Furthermore, relative to no-solar households, solar homes are disproportionately impacted by the reduction in wholesale prices since they are exposed to these through the price paid for their exports.

In summary not only are the "equity" and implicit cross-subsidy claims on which the AEMC's construction rests, not valid, in fact the evidence suggests the truth of the matter is the exact opposite of what the AEMC claims.

2. AEMC's claims of network congestion are unsubstantiated and ignore evidence to the contrary

The AEMC's statement of the problem (para 15 and 16 of the Executive Summary) is as follows:

"While there is no doubt that distributed energy resources provide many benefits to consumers and the energy system, without a change to the regulatory framework, consumers will face growing limitations to the amount of energy they can export. This is because distribution networks have a base level of hosting capacity for distributed energy resources. But most distribution networks were built when energy only flowed one way. Now, they are increasingly being used to export energy from customers and approaching the limit of their 'intrinsic hosting capacity'. As a result of these two-way flows, the ability of networks to transport and deliver electricity safely, securely and reliably is being challenged. These challenges raise medium- to long-term planning and investment issues."

AEMC has not provided any evidence to substantiate these claims for example that networks are approaching their "*intrinsic hosting capacity*" or that as a result "*the ability of networks to transport and deliver electricity safely, securely and reliably is being challenged?*" In fact the last sentence "*These challenges raise medium- to long-term planning and investment issues"* contradicts this. If networks are approaching their "intrinsic hosting capacity" then surely this is a short term, not "*medium- to long-term planning and investment issue.*"

The available evidence– from the distributors' proposals to the AER for their approval of distributed energy integration expenditure – shows that to the extent that there is an problem, it is easily resolved with expenditure proposals (and the AER's approvals) for amounts that are trivial (around 1 to 2% of distributors' expenditure proposals) and that have an inconsequential impact on prices. We are not aware of any analysis that defines quite what the "long term" investment issue might be. Surely before recommending the major changes to access arrangements there should be robust evidence of a problem?

[6] See for example: https://www.afr.com/companies/energy/coal-the-loser-as-power-prices-smashed-20210427-p57mra

3. AEMC's assessment fails to consider benefits and makes substantive errors in its analysis of costs

In response to Energetic Communities, AEMC rejected consideration of customers' willingness to pay as an "*assessment criteria*" and said instead that " *... these types of analysis and analytical tools can be used to identify the benefits and costs of the proposed rule changes which can inform our decision*".

AEMC in fact makes no serious attempt to quantify benefits of its decision and the examination of the costs of its decision is a case study of a 5 kW solar home in Sydney which AEMC asserts is currently better off by around $900 per year as a result of its rooftop solar. So the $100 annual charge that AEMC suggest it should be charged to inject its solar surplus to the grid is, AEMC concludes, easily affordable. This is not plausible for the following reasons:

- First, as explained in the attached report in detail, AEMC assumes the 5 kW solar home self-consumes 5 MWh, and so can be expected to export at most 2.1 MWh per year. This means an export charge of at least 4.8 cents per kWh ($100/2.1 MWh), not 2 c/kWh as the AEMC claims. In the report we countenance the possibility that the AEMC meant that the case study exports 5 MWh, but the AEMC has responded that it "stands by" its analysis and so we presume it means what it says. Even if the AEMC changes its mind to say that it meant 5 MWh export, as we note in the report the AEMC's numbers in the case study add up (at 2 cents per kWh export) but the rest of the AEMC's numbers still do not add up.

- Secondly AEMC fails to set its injection charge against contemporary feed-in rates. From 1 July these will be 6.7 cents per kWh in Victoria (including the 2.5 cents per kWh emission benefit). The median feed-in rate[7] in NSW, QLD and SA is currently 7, 6 and 8 cents per kWh and is likely to reduce to less than 5 cents per kWh in these states from 1 July when retailers typically reset feed-in rates.[8] We note in New South Wales, IPART has recently suggested a lower bound feed-in rate of 4.4 cents per kWh. At such rates, a network injection charge of even 2 cents per kWh will mean more than a 40% reduction in feed-in income.

An injection charge of 4.8 cents per kWh is likely to leave solar homes outside of Victoria with effectively no income from the injection of their surplus electricity to the grid after accounting for

[7] This is the median rate obtained from all publicly available residential offers scraped from the official price comparision websites.

[8] Retailers typically adjust feed-in rates mid-year and will almost certainly revise them down significantly – to 5 cents per kWh or less - in response to sharply lower 2021/2022 contract prices. We note in particular the Q1 2022 Base Load Contracts (typically by far the most liquid and most expensive quarterly contract) are currently trading at $47 / $58 / $55 / $49 per MWh in VIC / NSW / QLD / SA.

likely retail feed-in rates that will soon apply. Even in Victoria, a 4.8 cent export charge will leave income of just 1.9 cents per kWh or a little over $30 per year for the typical solar home.

If households do not get paid for the surplus rooftop solar they inject into the grid (and solar homes typically export much more of the production of their solar systems than they self-consume) I think it is reasonable to imagine that they will be very much less inclined to install solar. For the 2.7 million households that have already installed solar, an injection charge of 4.8 cents per kWh will expropriate a substantial part of their investment.

I note that AEMC has been presented with the information summarised above in our report[9] and in response has "stood by" its analysis[10]. Accordingly our critique remains.

4. AEMC's decision will distort generation investment and production in favour of distant large scale producers and in particular fossil fuelled electricity production

The decision to charge for injections to the grid applies only to retail customers - i.e. households or small businesses[11] . Large generators, whether connected to distribution or transmission networks, will however not be charged when they inject electricity into the grid. This discriminates against small producers, whose production is close to the point of load, in favour of large producers whose production is distant from the load. It will drive costs up by substituting cheap local generation with more expensive remote generation who production requires far more infrastructure to deliver to customers than locally sourced production.

To the extent that the proposal undermines residential rooftop solar uptake (as we suggest is likely) the proposal will therefore undermine cheap local generation in favour of more expensive distant generation. AEMC recognises the importance of avoiding such distortions: "*Competitive balance distortions are an important consideration, especially given the broader policy goal is to support the transition to a fully integrated electricity system".* But then AEMC asserts " *... enabling export charges creates additional flexibility to 'level the playing field'".* How can charging small retail producers to inject to the grid possibly be construed as "*level(ing) the playing field"* when it does exactly the opposite?[12]

[9] https://243b2ed8-6648-49fe-80f0-f281c11c3917.filesusr.com/ugd/92a2aa_87d87ade4e6349a59af847e9b7853278.pdf
[10] https://reneweconomy.com.au/facts-matter-and-so-do-the-size-of-the-tariffs-proposed-for-the-solar-export-tax/
[11] And the small handful micro embedded generators who will be defined as retail customers for the purpose of this rule.
[12] We note in particular the obviously false equivalence AEMC draws between the "system strength" charge that some renewable generators have been charged (following AEMC's failed "do no harm provisions) with AEMC's proposed retail customer injection charges. Only tiny fraction of all electricity produced in the NEM (probably less than 0.5%, albeit new renewable generators) have been charged for system strength. The remaining 99.5% of production – and all fossil fuel generators and the new Snowy 2..0 pumped hydro do not pay at all for use of the shared network.

We note further that the issue here is not just one of general principle (fairness) but also one of efficiency and that the magnitudes are significant. Specifically we know from the AER's decisions that expenditure to integrate customer generation (usually referred to by the industry and regulators as "distributed energy") is counted in the sub tens of millions of dollars per distributor per year. Snowy Hydro's Snowy 2.0 will precipitate $4bn of interconnector development all of which consumers will bear. In fact on almost exactly the same day that the AEMC released its Draft Determination to charge for injections to the grid from retail customers, the Federal Minister of Energy and Emmissions Reductions was in Tasmania and said "*Australians lived in a market economy, 'where customers pay for services'* "[13] in response to the question of who should pay the $3.5bn needed for the Marinus Link between Tasmania and Victoria.

The AEMC's bias against small retail generators in favour of large central generators means it stands accused of imposing a tax on small producers.

5. AEMC incorrectly describes its decision as one that enhances pricing flexibility and gives consumers and governments a greater say

AEMC describes its decision as one that "*allows flexible pricing decisions*" and "*Give(s) consumers and jurisdiction governments a greater say*". AEMC's decision gives distributors the discretion to introduce injection charges if they wish to. The only regulatory requirement is that such charges are consistent with the distributors "Tariff Structure Statement" and so follows the "consultation" process of that statement. How can it be plausible to claim (as the AEMC does) that such process allows for genuine "negotiation" with customers: what can a customer do if it refuses to pay an injection charge? Similarly, if AEMC's rule are implemented jurisdictional governments will have no legal basis to disallow distributors in their jurisdictions from charging for injections. Jurisdictional governments that disagree with the rule will have no alternative but to derogate from it. AEMC's decision fundamentally changes access arrangements to one where customers have no legal basis to refuse injection charges and if jurisdictional governments are opposed to it, the onus will rest with them to derogate. How does this provide consumers and governments with a greater say?

Summary

I think AEMC has erred in its draft determination as follows:

1. AEMC has no basis to conclude that rooftop solar is inequitable and regressive. This is a foundational claim of the AEMC's Draft Decision and the falliability of the AEMC's claim here is important.

[13] https://www.theadvocate.com.au/story/7189315/feds-absolutely-committed-on-marinus-link-angus-taylor-says/

2. AEMC fails to provide evidence of a problem that justifies a change as far reaching as it is proposing
3. AEMC ignores the evidence that apparent challenges associated with customer generation are easily met with relatively trivial levels of capital expoenditure;
4. AEMC makes material errors in its calculation which, when corrected, suggest an average injection price of 4.8 cents per kWh, not zero to 2 cents as AEMC claims. AEMC has had an opportunity to correct the apparent errors but has "stood-by" its analysis;
5. AEMC fails to appreciate the distortion it will introduce by charging small distributed generators to inject to the grid while leaving large producers inject for no fee.
6. AEMC fails to appreciate that with its suggested injection charges and with revised feed-in prices soon to take effect most households are likely to earn little or nothing from their export of surplus rooftop solar and this may undermine the expansion of rooftop solar. This will drive up production and shipping costs and prices for all customers to the advantage of network service providers and distant, particularly fossil fueled, producers;
7. AEMC falsely describes its decision as one that enhances flexibility and gives consumers and governments greater say. It does precisely the opposite.

For these reasons I conclude that the AEMC's Draft Determination is irreparably flawed. Nonetheless I am mindful of the concern by customers and environmental advocates that some customers are being deprived of the benefit of rooftop solar as a result of distributors' refusal to allow injections, and that this may become more common in future. To deal with this I submit the following recommendations for your consideration:

1. Establish whether distributors are exercising their monopoly to unreasonably refuse solar injections[14], by gathering (and publishing) data on the number of network injection refusals and the reasons provided for those refusals;
2. Establish the extent to which distributors are complying with jurisdictionally determined voltage standards;
3. Establish a body of independent peer-reviewed research on the relationship between distribution voltage and distributed energy production.
4. Establish a body of independent peer reviewed research on the possible amount of network expenditure needed to accommodated rising amounts of customer generation.

[14] This was my personal experience as documented here: https://reneweconomy.com.au/the-sun-tax-debate-misconception-and-false-accusation/

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Yours sincerely,

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