17 February 2020

To whom it may concern,

Thank you for the opportunity to provide feedback on the *Whole of House* issues paper.

Renew (Alternative Technology Association Inc trading as Renew Australia) is a national, not-for-profit organisation that supports residents and consumers to live sustainably. We have been providing expert, independent advice on sustainable solutions for the home to households, government and industry since 1980.

We thank the project consultant team for their work in developing the issues paper.

In our view, the priority when developing compliance pathways should be to ensure that a genuine step-change in energy performance can be delivered by an increase in stringency in the 2022 NCC.

Our specific comments on issues raised by the paper authors are as follows.

Assumed levels of service provision

We support the proposed assumptions on heating and cooling in order to ensure clear comparisons and minimise identified gaming issues.

We support the recommended input assumptions for hot water.

However, it remains unclear to us what the ultimate benchmark/target will be for hot water and other major appliances and how the overall structure of the modelling will work. We would be interested in further information about the overall modelling approach for hot water, lights, and pool pumps and their potential interplay with on-site renewables as part of the net zero energy use option.

Thermal simulation assumption issues

In our view, using dual profiles is likely to more accurately reflect energy usage patterns. Our understanding is that given long standing assumptions within the NatHERS tools, that heating/cooling loads are typically overstated. More realistic patterns of day time behaviour and overnight heater/cooler use are likely to be beneficial in this regard.

Financial issues

It is not clear to us what the overall structure of the modelling that will use the relevant financial assumptions discussed in the issues paper will look like.

It is our understanding that the financial issues discussed will form a part of the assumptions for cost-benefit analysis of measures including increases to stringency and measures to achieve net-zero energy use for services. It is furthermore our understanding that this cost-benefit analysis will apply to modelled individual homes. We have been informed by ABCB that this cost-benefit analysis is separate to society-wide analysis to be conducted when developing the Regulatory Impact Statement. We would be interested to have more information about the ways in which this analysis will be used and will feed into other aspects of the NCC 2022 process.

Tariffs

We acknowledge the complexity of Time of Use modelling but note that it is catered for by modelling tools[1]. We believe that including a simply-structured TOU tariff and flat rate tariff is likely to be more accurate overall and should be able to be done without causing too much complexity. We would be happy to provide input if useful.

Energy Prices

We support the principle of assuming cost changes as predicted by AEMO alongside sensitivity analysis, noting that even AEMO forecasts can be very unsophisticated more than two or three years out into the future. In the absence of better data however, AEMO is likely the only data source that can be relied upon

Learning Rates

We have a significant concern regarding the intended base case assumption for industry learning rates. To assume the industry learning rate when a step change in energy performance is implemented will be zero will not reflect reality.

There will, and always has been, learning rates in the industry each time a standard is introduced or improved. Whilst what that rate should be can be debated and should be sensitivity tested, the only thing we know for sure is that it won't be zero. We are concerned that assuming zero learning rates will result in the modelling presenting unreasonably high costs for improved energy performance in the code.

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[1] Such as Renew's in-house model: https://renew.org.au/resources/sunulator/

STCs

It is expected that STCs will reduce during the period of modelling. We agree that sensitivity studies are required to assess the impact of rebate programs. As a default we consider it would be appropriate to use current prices, as reductions in STCs are likely to be cancelled out by price reductions over time.

PV Issues

In our view, modelling of solar outputs, costs and benefits should be conducted based on modelling consumption data in half-hourly intervals across a full year period in order to produce accurate findings. Modelling should also consider more than one type of household[2].

The practical limit for solar capacity on detached homes should reasonably be set at 6.6kW, rather than 6kW. 6.6kW is a common solar panel capacity as it is the maximum generally allowable panel power with a 5kW inverter. Furthermore, as time progresses, 6.6 kW will fit on roofs more easily, because power per panel is increasing.

The authors note that further study is required for practical limits on solar capacity for high rise units. We look forward to engaging with this issue during the development process.

It is our understanding that the assumption of 10% of PV panels facing south is likely to be higher than the reality. Anecdotally, Renew has provided advice to close to 10,000 residents on PVs and we would be surprised if even 1% of our clients considered or installed south-facing panels. Furthermore, we think it is likely that closer to 40% of panels face north.

Regarding PV cost projections, we support the approach of conducting sensitivity studies based on reductions in the cost of PV. We note that countering the expected cost reductions in PV there may be a reduction in STCs and these two effects may cancel each other out. It is our view that alongside import tariffs, Feed-in Tariffs will affect costs. We recommend modelling different FiT sensitivities including time-variant FiTs.

We note that the paper discusses maximum PV capacity for Class 2 buildings. There are an increasing number of approaches that will allow in practice Class 2 dwellings to access solar. They include separate systems per residence, sharing via a system like Allume and setting up

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[2] Renew has longstanding expertise in solar modelling for consumers and clients, in particular via our Sunulator platform: https://renew.org.au/resources/sunulator/. Sunulator uses half-hourly consumption and generation data over a whole year to estimate how much solar generation will be consumed onsite versus exported. Based on electricity tariff information, it then calculates the impact on consumers' electricity bills and projects the savings over a 30-year time frame. Financial results include payback period, net present value and return on investment. We would be happy to provide further details as required.

as an embedded network. Also, future reform may allow Virtual Net Metering to achieve the Allume benefits without hardware.

Greenhouse gas intensity of fuels

A societal cost weighting should be applied to greenhouse gas emissions associated with energy use. As a default, modelling could use the Victorian Essential Services Commission's assumption used in Feed in Tariff calculations. We further note that a holistic view of costs and benefits would include avoided health costs due to better household energy performance. Sustainability Victoria have attempted to capture this value in recent work and we attach their report for information (Section 3.5).

Concluding remarks

We look forward to continuing our engagement in this process. Please do not hesitate to contact us at any time to discuss any issue.

Yours faithfully,

Damien Moyse
Acting CEO
Renew