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Department of Industry, Science, Energy and Resources
https://consult.industry.gov.au/2022-nger-scheme-proposed-updates/submission

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Dear Minister

Australian Aluminium Council response to National Greenhouse and Energy Reporting Scheme – 2022 Proposed Amendments Discussion Paper

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and downstream processing industries. The aluminium industry has been operating in Australia since 1955, and over the decades has been a significant contributor to the nation's economy. It includes five large (>10 Mt per annum) bauxite mines plus several smaller mines which collectively produce over 100 Mt per annum making Australia the world's largest producer of bauxite. Australia is the world's largest exporter of alumina with six alumina refineries producing around 20 Mt per annum of alumina. Australia is the sixth largest producer of aluminium, with four aluminium smelters and additional downstream processing industries including more than 20 extrusion presses. Aluminium is Australia's highest earning manufacturing export. The industry directly employs more than 17,000 people, including 4,000 full time equivalent contractors. It also indirectly supports around 60,000 families predominantly in regional Australia.

The Department of Industry, Science, Energy and Resources (DISER) has released a Discussion Paper (the Paper) into 2022's Proposed Amendments to the National Greenhouse and Energy Reporting Scheme (NGERS). The Council welcomes the release of this paper by DISER and recognises the consultation between DISER and industry which has led to the release of this paper. The Council believes the work done by DISER to understand and address the concerns of industry represents a high standard of stakeholder engagement which should be encouraged.

The Council has been raising these concerns with both DISER and the Clean Energy Regulator (CER) since early 2020 and believes that substantial progress has been made to improve the Scope 2 emission factor methodology since this time. The Council's concerns which have been addressed include:

1. *Removal of the three year rolling average.* The current method (using three years of a historical rolling average of NGER grid connected generators) creates a considerable time lag between the Scope 1 emissions from these generators and their publication. The three-year rolling average is a historic legacy which was aimed smoothing annual variations when NGER was developed to align with the former Carbon Pollution Reduction Scheme and Clean Energy Future policies. Removing this legacy, results in NGER Scope 2 emission factors which more appropriately reflect the evolving nature of the Australian electricity emissions profile; and

2. *Application of more complete data*. Use of data supplied by the Australian Energy Market Operator (AEMO) will provide more accurate data such as the rooftop solar generation and possibly large scale solar and wind.

The Council also welcomes the addition of the Energy Networks Australia guideline content into the measurement determination for ease of access, the inclusion of the definitions from the document would help with clarity.

There are, however, a number of outstanding issues including emissions for electricity generation which is partially used on site and partially sent out, that total generation may still be an underestimate and the inclusion of land based emissions in Scope 2 but not Scope 1 methodologies.

Methodology for Electricity Generated Onsite

The Council is concerned that the use of total emissions for electricity generation from all facilities connected to the grid are being included in the numerator regardless of if the generation is being dispatched to the grid, used internally or sent offsite not in a grid. Compared to the denominator that only includes electricity generation sent out to a grid. This does not align with the Council's understanding of the intent of the GHG Protocol. Relevant sections and interpretation of the GHG Protocol have been included in Appendix A to articulate this in detail.

While the Council agrees that the GHG Protocol requires emissions from internal electricity use for electricity generation purposes be included in in the grid factor, and it is not possible from NGERS data to determine how this is split from other electricity used on site for another purpose such as alumina refining, this amount is likely <5% of the total emissions from generation, compared to some onsite generators where the total or vast majority of electricity produced is consumed onsite for the facilities main purpose. In these cases, if total electricity emissions are used as the numerator and sent out to the grid is used as the denominator, *the emission intensity could be several orders of magnitude higher than reality*.

The Council recommends that for facilities generating electricity, of which a part is consumed on-site for purposes other than electricity generation and part is sent to the grid, an alternate method is used for aggregating emissions for on-grid facilities. All the required data for these facilities can be derived using a mix of Primary ANZSIC, sent out efficiency, and activity reported, all of which are currently reported or possible to be derived within NGERS. The proposed method is:

1. To derive the proportion of emissions associated with "not sent out to a grid" generation divided by the sum of all generation reported by the facility;
2. To multiply the Scope 1 emissions from electricity generation for that facility by that proportion to obtain the emissions associated with not sent out to a grid generation; and
3. To remove the not sent out to a grid emission at these facilities from the Scope 2 emission factor calculations.

This is more in line with the accuracy principle of the GHG Protocol and any minor variations, such as internal electricity use for the purpose of electricity generation, will be offset by the temporal delay in the emission factors, where the emission factor for the reporting year is based on the generation from two years prior.

Generation Sent Out

The Council remains concerned about anomalies in determination of generation "sent out", which is being used in the proposed methodology. The quantum of the generation "sent out" is the denominator in calculating the emissions factors and therefore, small variations have a large impact. Potential issues with the proposed "sent out" figure as used in the calculations include:

- Using the approximate generation (sent out) data from National Electricity Market (NEM) Review, which uses target generation multiplied by an auxiliary factor, may underestimate the actual sent out generation (Table 1). The Council understand that DISER have used the NEM Review instead of NGERS sent out to a grid data for large scale solar and wind as it should include smaller facilities that are below the NGERs reporting thresholds and facilities are allocated to a state based the side of the interconnectors. However, in Table 1 the large scale solar and wind generation for the South West

Interconnected System (SWIS) are higher in NGERS. The difference could be due to behind the meter use of the electricity. This should be confirmed from the NGERS sent out figures as the data seems inconsistent at this stage.

- The sum of the fossil, large scale solar and wind sent out data used in the calculations appears to be significantly lower than total sent out as reported by the Australian Energy Market Operator (AEMO) (Table 1). For the SWIS, it has been confirmed that AEMO operational control data (Table 1) does not include rooftop solar and may slightly underestimate of Western Power meter data. Council members are happy to share this analysis with DISER, if requested. For the NEM, the AEMO CO2EII summary[1] reports also show higher sent out generation than the data used in the calculations and may be a better source for determining the denominator for emissions intensity as this may better estimate large scale renewable generation.

Table 1. Comparison of SWIS generation figures from different data sets (excluding rooftop solar)

SWIS	NGERS generation (GWh)[2]	NEM Review V7 (renewables) and NGERS sent out (fossil) (GWh)[3]	Assumed internal use based on this data	AEMO operational demand (GWh)[4]	Assumed internal use based on this data
Fossil	15,344	11,935	22%		
Large scale solar	360	221*	39%		
Wind	3,066	3,053*	0%		
Total	18,769	15,209	19%	17,483	7%

*Emu Downs solar generation may be reported under wind as there is a single grid connection shared by the solar and wind farms[5]

Inclusion of Land Based (Methane) Emissions in Scope 2

The Council is also concerned that the factors include estimates of emissions of methane in the generation of hydroelectricity. While the Council recognises that the inclusion of methane as an emission due to flooded land and reservoirs is consistent with the Greenhouse Gas Protocol, it is not included in NGER Scope 1 and inconsistent with principle of not including land based emissions in NGER.

Therefore, within the NGER reporting system this creates an inconsistency whereby the NGER Scope 1 emissions from generators does not include methane from hydroelectricity; but are added when those emissions are allocated to electricity use as Scope 2. The Council believes that as a matter of principle Generators Scope 1 should equal Consumers Scope 2. As land based emissions are not included elsewhere in NGERS, they should not be included in this case. This is particularly important for Tasmania where the Council believes they constitute around 20% of the current emission factor, with the balance being largely from electricity imports from elsewhere in the National Electricity Market (NEM).

Other Issues

Discussions with DISER have confirmed that the emission factor for WA is based on data for the SWIS only, it should be labelled as such, and a separate value is published for the NWIS to avoid confusion.

Given the need to report market based emissions under the Clean Energy Regulator's Corporate Emissions Reduction Transparency report (CERT), it would be helpful if the national residual mix factor (RMF) was

[1] https://www.aemo.com.au/-/media/files/electricity/nem/settlements_and_payments/settlements/2021/co2eii_summary_results_2021.csv?la=en

[2] http://cleanenergyregulator.gov.au/DocumentAssets/Pages/Greenhouse-and-energy-information-by-designated-generation-facility-2020-21.aspx (extracted 1 March 2022)

[3] Personal communication from DISER

[4] http://data.wa.aemo.com.au/#operational-demand

[5] https://www.apa.com.au/globalassets/our-services/other-energy-services/wind--solar-farms/emu-downs-solar-farm/emu-downs-solar-farm-factsheet.pdf

calculated at the same time as the location based factors and published in the Measurement Determination. The current method using the renewable power percentage likely overestimates the factor. The RMF could be calculated by using the national emissions divided by the national generation minus the number of LGCs surrendered in the previous reporting period, acknowledging the six month mismatch in the reporting periods.

The Council is happy to provide further information on any of the issues raised in this submission and would appreciate the opportunity to continue to work with DISER to resolve these remaining outstanding issues ahead of the 2022/23 reporting year; noting that the Scope 2 issues raised by the Council do not require legislative change.

Kind regards,

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Appendix A – Greenhouse Gas Protocol

Extract from World Resources Institute and the World Business Council for Sustainable Development, 2004, The Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard Revised Edition (GHG Protocol). Chapter 4. Coloured font has been added by the Council for highlight.

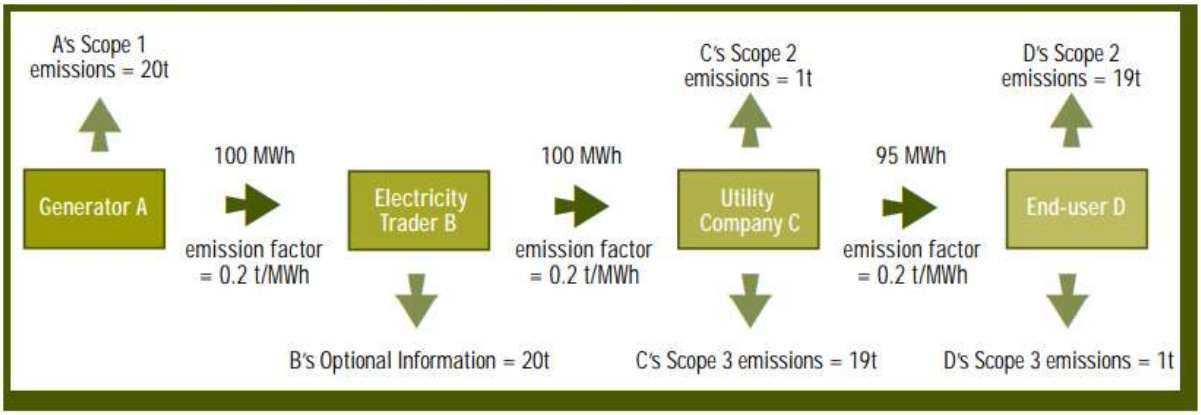
OTHER ELECTRICITY-RELATED INDIRECT EMISSIONS Indirect emissions from activities upstream of a company's electricity provider (e.g., exploration, drilling, flaring, transportation) are reported under scope 3. Emissions from the generation of electricity that has been purchased for resale to end-users are reported in scope 3 under the category "generation of electricity that is purchased and then resold to end users." Emissions from the generation of purchased electricity for resale to non-end-users (e.g., electricity traders) may be reported separately from scope 3 in "optional information."

The following two examples illustrate how GHG emissions are accounted for from the generation, sale, and purchase of electricity.

Example one (Figure 4): Company A is an independent power generator that owns a power generation plant. The power plant produces 100 MWh of electricity and releases 20 tonnes of emissions per year. Company B is an electricity trader and has a supply contract with company A to purchase all its electricity. Company B resells the purchased electricity (100 MWh) to company C, a utility company that owns / controls the T&D system. Company C consumes 5 MWh of electricity in its T&D system and sells the remaining 95 MWh to company D. Company D is an end user who consumes the purchased electricity (95 MWh) in its own operations. Company A reports its direct emissions from power generation under scope 1. Company B reports emissions from the purchased electricity sold to a non-end-user as optional information separately from scope 3. Company C reports the indirect emissions from the generation of the part of the purchased electricity that is sold to the end-user under scope 3 and the part of the purchased electricity that it consumes in its T&D system under scope 2. End-user D reports the indirect emissions associated with its own consumption of purchased electricity under scope 2 and can optionally report emissions associated with upstream T&D losses in scope 3. Figure 4 shows the accounting of emissions associated with these transactions.

Example two: Company D installs a co-generation unit and sells surplus electricity to a neighbouring company E for its consumption. Company D reports all direct emissions from the co-generation unit under scope 1. Indirect emissions from the generation of electricity for export to E are reported by D under optional information separately from scope 3. Company E reports indirect emissions associated with the consumption of electricity purchased from the company D's co-generation unit under scope 2.

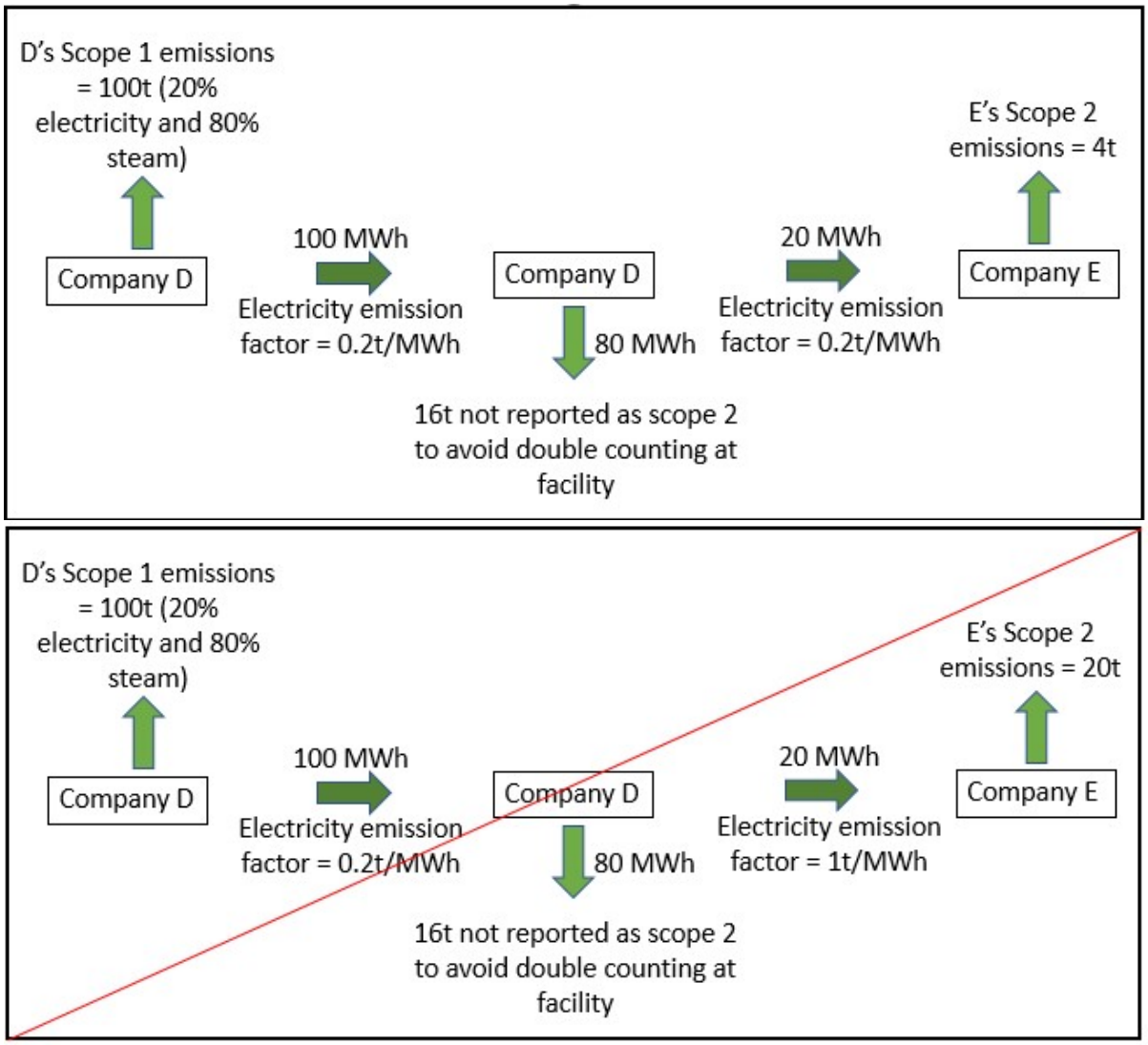
FIGURE 4. GHG accounting from the sale and purchase of electricity



For example 2 from the GHG Protocol above, we have included two pictorial interpretations below. We believe that the example implies that only the proportion of emissions related to the distributed electricity should be reported as Scope 2 at Company E (or the grid) and not the full emissions related to electricity

generation. This is further expanded upon in the extract from the GHG Protocol Scope 2 Guidance below with the most relevant passages highlighted.

Example 2. The Councils interpretation of GHG accounting for the sale and purchase of electricity. Only the emissions associated with exported electricity should be reported as Scope 2.



Extract from World Resources Institute and the World Business Council for Sustainable Development, 2015, GHG Protocol Scope 2 Guidance. Section 5.4.

1. ***If the consumed electricity comes from owned/operated equipment (Figure 5.1)*** *If energy is produced and consumed by the same entity (with no grid connection or exchanges), no scope 2 emissions are reported, as any emissions occurring during the power generation are already reported in scope 1. This scenario may apply to large industrial facilities that generate their own energy on-site in owned/operated equipment.*
2. ***If the consumed electricity comes from a direct line transfer (Figure 5.2)*** *In this example, energy production is fed directly and exclusively to a single entity—here, Company B. This applies to several types of direct line transfers, including:*
    - *An industrial park or collection of facilities, where one facility creates electricity, heat, steam, or cooling and transfers it directly to a facility owned or operated by a different party. • For*

energy produced by equipment installed on-site (e.g. on-site solar array or a fuel cell using natural gas) that is owned and operated by a third party.

- *For electricity, heat, steam, or cooling produced within a multi-tenant leased building (by a central boiler, or on-site solar) and sold to individual tenants who do not own or operate the building or the equipment. Tenants may pay for this energy as part of a lump rental cost and the tenant may not receive a separate bill. In any of these scenarios:*
- *The company with operational or financial control of the energy generation facility would report these emissions in their scope 1, following the operational control approach, while the consumer of the energy reports the emissions in scope 2.*
- *Any third-party financing institution that owns but does not operate the energy generation unit would not account for any scope 1, 2, or 3 emissions from energy generation under the operational control approach, since they do not exercise operational control. Only the equipment operator would report these emissions in their scope 1 following an operational control approach. Equipment owners would account for these generation emissions in scope 1 under a financial control or equity share approach, however.*
- *If all the energy generation is purchased and consumed, then Company B's scope 2 emissions will be the same as Company A's scope 1 emissions (minus any transmission and distribution losses, though in most cases of direct transfer there will be no losses).*

4. ***If some consumed electricity comes from owned/operated equipment, and some is purchased from the grid (Figure 5.4).*** *Some companies own, operate, or host energy generation sources such as solar panels or fuel cells on the premises of their building or in close proximity to where the energy is consumed. This arrangement is often termed "distributed generation" or "on-site" consumption, as it consists of generation units across decentralized locations (often Figure 5.3 Electricity distribution on a grid Electric grid Energy generation Scope 1 emissions Energy consumer Scope 2 emissions Energy generation Scope 1 emissions Energy consumer Scope 2 emissions Energy consumer Scope 2 emissions 38 Scope 2 Guidance on the site where the energy output will be consumed, as opposed to utility-scale centralized power plants). The company may consume some or all of the energy output from these generation facilities; sell excess energy output back to the grid; and purchase additional grid power to cover any remaining energy demand.*

   The owners/operator of a distributed generation facility may therefore have both scope 1 emissions from energy generation, as well as scope 2 emissions from any energy purchased from the grid, or consumed from on-site generation where attributes (e.g. certificates) are sold. This arrangement impacts activity data as follows:

   ***Activity data**. Determining the underlying activity data (in MWh or kWh) in these systems may be challenging given the flux of electricity coming in or flowing out. Many markets utilize "net metering" for these systems, which allows grid purchases to be measured only as net of any energy exported to the grid. This net number may also be the basis for how costs are assessed.*

   For accurate scope 2 GHG accounting, companies shall use the total—or gross—electricity purchases from the grid rather than grid purchases "net" of generation for the scope 2 calculation. A company's total energy consumption would therefore include self-generated energy (any emissions reflected in scope 1) and total electricity purchased from the grid (electricity). It would exclude generation sold back to the grid.

   If a company cannot distinguish between its gross and net grid purchases, it should state and justify this in the inventory.

   Table 5.1 illustrates the difference between total energy consumption and net energy consumption (if the reporter is a net grid consumer rather than producer). A negative consumption number for net energy exporters demonstrates the challenge of using net consumption information as activity data.

Because scope 2 reflects energy purchased from a separate entity outside the inventory boundary, energy consumed from owned/operated facilities may not be reported in scope 2, depending on the sale of attributes.

Figure 5.4 Facility consuming both energy generated on-site and purchased from the grid