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Executive Summary

The emissions registry will allow market customers (mostly retailers, but also large loads that purchase electricity directly from the NEM) to have a share of a generator's output and associated emissions allocated to them. The allocations will be presented for the purposes of compliance.

- Market customers will allocate generation to cover their load.
- If market customers have unallocated load at the end of the compliance and reporting period, it will be assigned an emissions intensity based on the pool of unallocated generation. Any unallocated generator output and emissions within the registry would contribute to calculating the residual emissions intensity of unallocated load.
- If a market customer has an over-allocation of generation (in MWh) above its load at the end of the compliance and reporting period, it will face a penalty. The market customer will be responsible for all emissions associated with the over-allocation. In addition, it will be assigned a deemed emissions intensity for the over-allocated amount, which will be set at the level of the highest emissions intensity generator in the NEM.
- There are a range of measures to support competition such as flexible compliance, disclosure of each generator's unallocated generation and a requirement that market customers and generators not unreasonably withhold generation for anti-competitive purposes. A further measure to protect against the exercise of market power is that small market customers will be exempt for all or a proportion of their load, which would be spread amongst other market customer load.
- The registry will be administered by AEMO, as an enhancement to its existing systems. It will only be accessible to market customers and generators. The registry will disclose each generator's unallocated generation, and some market-wide information will be made public, at given intervals.
- Also recorded will be other factors relevant to a market customer's compliance including carry forward of over-achievement, deferral of compliance, non-market generation and load (embedded generation, solar PV), GreenPower, and exemptions such as the emissions-intensive trade-exposed (EITE) load.

The following flexible compliance options will be in place for the emissions reduction requirement:

- Each year, market customers would be able to carry forward up to 5 per cent of the first year's electricity emissions target per MWh of load plus a fixed amount of 60,000 tCO₂-e. No market customer would be allowed to carry forward more than 100 per cent of the emissions intensity target per MWh of load. The limit would be lifted in any year where all market customers were found to be compliant with the target.
- To provide flexibility without impacting on whether the target is achieved, market customers will be able to defer 10 per cent of the electricity emissions target per MWh of load, and this limit will be cumulative over two years, enabling market customers to make good on a deferral for the first year in the third year.

1 Introduction

On 20 April 2018, the Energy Security Board (ESB) presented the COAG Energy Council with a high-level design proposal for the National Energy Guarantee (the Guarantee). The COAG Energy Council agreed that the ESB progress the detailed design of the Guarantee for determination by the Council at its August 2018 meeting.

As part of the development process, the ESB convened Technical Working Groups to advise on certain detailed design elements of the Guarantee. The Technical Working Groups were comprised of a broad range of stakeholders with relevant expertise from more than 30 organisations.

The purpose of this paper is to outline options and preferred approaches relating to the emissions reduction requirement under the Guarantee, in particular:

- the role of the emissions registry and how it will operate
- flexible compliance options that will be in place.

These detailed design issues were considered by the Contracts Technical Working Group.

This paper provides additional detail and context to the [Draft Detailed Design Consultation Paper](#). Interested parties are encouraged to lodge a submission to the consultation by **13 July 2018** for consideration by the ESB prior to the publication of the final design of the Guarantee.

2 Overview of High-Level Design

The High-Level Design Document set out the role of the emissions registry (the registry) and broadly how it would operate:

- The registry will allow market customers to have a share of a generator's output and associated emissions allocated to them, and presented for the purposes of compliance.
- The transfer and allocation of generator output and associated emissions will be driven by contracting between market customers and generators. The design of the registry will preserve the flexibility of contracting arrangements.
- Within a corporate group, all market customer loads would be aggregated to the group's controlling corporation, and all output of generators attributed to the group would be automatically allocated to the controlling corporation. This may result in the controlling corporation being allocated more generator output (and associated emissions) than its aggregate retail load. The market customer may then choose to enter into contracts to reallocate some of these allocated amounts.
- Any unallocated generator output and emissions within the registry would contribute to calculating the residual emissions intensity of unallocated load.
- If market customers needed to adjust their portfolios after the compliance year has finished but before the reporting date, then further reallocations of generation and associated emissions could occur.
- Following each compliance period, the emissions intensity is automatically calculated for each market customer based on the allocated generation and associated emissions recorded in the registry.

The High-Level Design Document also set out the flexible compliance options that will be in place for the emissions reduction requirement:

- Market customers should be permitted to carry forward a limited amount of a previous year's over-achievement, for use in the next compliance year.
- To ensure there is adequate flexibility for market customers while ensuring the emissions reduction trajectory is met, market customers should be allowed limited deferral of compliance.
- If the Commonwealth Government determines that certain offsets may be used for compliance, the National Electricity Law and Rules could provide details regarding the use of offsets for the emissions reduction requirement.

3 Emissions registry

3.1 Registry operations

There are several considerations around how the registry operates:

- Who should administer the registry?
- What information needs to be recorded in the registry, and when?
- Should third parties have access to the registry?
- What data should be accessible in the registry?

Who should administer the registry?

It is proposed that the registry will be administered by AEMO, as an enhancement to its existing systems. As the registry administrator, AEMO's responsibilities would include developing detailed procedures for interacting with the registry and managing IT requirements.

There are several practical advantages to this approach. AEMO has experience in developing and operating data systems. It is the main source of the required data on generation and pool purchases, ensuring efficient flows of this information to the registry. It also has some existing data exchange protocols in place with the Clean Energy Regulator (CER), which will assist with transfer of data on generator emissions and emissions-intensive trade-exposed (EITE) activities.

Additionally, feedback from the Technical Working Group indicated a preference for the registry to be implemented as an enhancement to an existing system, to limit the burden of participating in new systems (such as a newly implemented system operated by the AER).

The issues paper canvassed whether any other bodies should be considered for administering the registry. Some Technical Working Group stakeholders proposed the CER, but this would not be within the scope of its function and would not allow for effective integration of registry operations with the national energy framework.

AEMO would work jointly with the AER to ensure that the registry architecture, functionality, technical specifications and infrastructure are fit-for-purpose in respect to the AER's role in monitoring and enforcing compliance, and that it is developed at a reasonable cost. It is expected that the AER will have complete access to the registry to facilitate its role.

In terms of the quality of the registry's data inputs, this will continue to be the responsibility of the respective owner of the source data (such as AEMO and the CER).

What information needs to be recorded in the registry, and when?

The registry will operate on a financial year basis.

Market customers can use information recorded in the registry for a compliance year to monitor their compliance position. The AER will use this information when undertaking compliance activities for the compliance year.

The frequency of when data is available for entry into the registry differs by source. There is sometimes a trade-off between the time information first becomes available, and the accuracy of that information.

The registry requires the following main data elements, which are discussed below:

Description of data	Units	Purpose	Data source
Generator emissions (scope 1 emissions)	tCO ₂ -e	To calculate each generator's emissions intensity	NGER reporting
Generator output in the compliance year (net exports adjusted for losses)	MWh	Recorded first to the relevant generator's registry account To be allocated against a market customer's load, or included in the residual pool	AEMO settlement system
Market customer pool purchases (metered energy adjusted for losses)	MWh	To calculate the market customer load	AEMO settlement system
Electricity emissions target	tCO ₂ -e / MWh	Annual target for market customers	Commonwealth Government legislation
Record of agreed output allocation between market customers and generators and also between market customers	MWh	Basis for allocations of generation to market customer's registry account	Manually entered by market customers and generators
Market customer actual average emissions intensity	tCO ₂ -e / MWh	To track and assess market customer's positions relative to target	Market customer's allocations in registry

Generator emissions

Emissions data for each generator will primarily be sourced from reports submitted under the National Greenhouse and Energy Reporting (NGER) scheme. Corporations that meet the NGER threshold must report emissions data each financial year. The emissions data is reported to the CER, which administers NGER, via its Emissions and Energy Reporting System.

Using data from the NGER scheme helps align emissions accounted for in the Guarantee with the electricity sector emissions that Australia reports in the National Inventory. This can ensure that the emissions reductions achieved under the Guarantee align with the target for the sector set by the Commonwealth Government. The *National Greenhouse and Energy Reporting (Measurement) Determination 2008* provides methods, criteria and measurement standards for calculating greenhouse gas emissions and energy data under the NGER scheme. It is updated periodically to reflect improvements in emissions estimation methods. By using the data reported under the NGER scheme, the emissions under the Guarantee will reflect those methods for measuring emissions from electricity production.

In some cases, the NGER reporter is not the market participant responsible for NEM settlements in relation to that generator. It is expected that both entities will have access to the NGER data (much of which is public).

It is likely that emissions data for a small number of generators will not be captured, or cannot be uniquely identified, under the existing legislative framework for NGER reporting. Any gaps will be addressed in appropriate legislation, regulations or the Rules.

The compliance assessment will use each generator's emissions intensity for the last financial year with complete data. Accordingly, generator emissions data recorded in the registry for each compliance year (T) will be the scope 1 emissions reported under NGER for the last financial year for which NGER data is available (T-2, being the year two years prior to the compliance year). That emissions data first becomes available by 31 October of year T-1, being the NGER reporting deadline. However, more accurate data is available by 28 February of year T-1, being the deadline for the CER to publish certain emissions data (after undertaking a validation process).

Provisions will be made for new generator entry based on best available data for their likely emissions intensity. Any new fossil fuel plant is likely to have extensive documentation on the efficiency of the new plant and will probably have needed to present this information for environmental approval purposes in any event. Any gap between estimated emissions intensity and actual emissions intensity could be adjusted for in the next (or potentially later) compliance period.

In addition, if a generator undertakes a capital project that would have the effect of significantly improving its emissions intensity (above a threshold), it would be able to apply to the CER to seek nomination of a new emissions intensity figure. Appropriate evidence to support the application would be required. If the CER decides to nominate a new emissions intensity, this would be used from the date of nomination thereafter, until overtaken by an actual NGER emissions intensity.

Generator output

Output data for each market generator will be sourced from AEMO's settlement systems. This data is settled in weekly batches, and each week's data becomes available four weeks in arrears.

As discussed in the *Technical Working Paper on Market Customer Load*, generator output will be recorded in the registry as measured at the node, by applying transmission losses to metered net exports.

Although generator output is also reported under NGER, some disadvantages of sourcing the data from NGER are that it is reported as gross generation (which is more complicated to balance against pool purchases), and is only available at an annual frequency. Instead, the registry would match the generator output data sourced from AEMO with the generator emissions data sourced from NGER.

As discussed in the *Technical Working Paper on Market Customer Load*, the calculation of each generator's emissions intensity will be based on the total pool generation at the transmission node identifier (TNI) in the same year as the NGER data for consistency. The marginal loss factor applicable to the generator will be for the current compliance year.

Stakeholders have raised concerns that pre-1997 renewable generation that is currently not included in the Renewable Energy Target would be included in the emissions reduction

requirement. While the Guarantee is substantially different, the treatment of this generation will be further considered by the ESB.

Pool purchases

Pool purchases for each market customer will be sourced from AEMO's settlement systems. This data is settled in weekly batches, and each week's data first becomes available four weeks in arrears.

As discussed in the *Technical Working Paper on Market Customer Load*, pool purchase volumes will be recorded in the registry as measured at the node, by applying distribution and transmission losses to meter readings.

The AEMO settled data is subject to 20 and 30 week revisions, such that final data for the full compliance year is not available until late-January following the compliance year. It is proposed that as at 30 September following the compliance year, pool purchases data for the compliance year is taken as final for the purpose of compliance.

Agreed output allocation

Under the high-level design, the registry would record the allocation of output that has occurred from a generator to a market customer. A market customer and generator may have a contractual arrangement that promises to allocate output in the future (this could be expressed in any form they wish, for example for fixed 'blocks' of MWh or for a percentage of a generator's output in a compliance period) but this contract would not be recorded in the registry. Instead, the registry would only record the amount of output that has actually occurred (in MWh) even if this differs from the amount settled under the contract – meaning the output needs to have been produced and needs to have been transferred with agreement from both parties.

The registry would also allow reallocation of output (and associated emissions) between market customers. For example, a market customer with excess allocated output can reallocate its surplus to one or more other market customers. It is not intended that output could be directly allocated between generators.

To record an allocation (or reallocation) of generation in the registry, it must be requested by one party, and approved by the counterparty. Market participants could choose to record allocations at any time during the compliance period. They would have four months after the end of the compliance period to continue to record allocations. This includes the three months before generation and pool purchase data is taken as final at 30 September and one further month to continue to record reallocations based on this final data. The AER would commence assessing compliance for the period from 1 November onwards.

To ensure the registry operates efficiently, generators will have some administrative requirements under the emissions reduction requirement (see section 3.2).

Other

Additional information will be recorded, including carry forward of over-achievement, deferral of compliance, exempt loads, voluntary action (GreenPower), output from embedded generation and rooftop solar PV, and the use of offsets if applicable. The relevant data may come from existing sources (such as the CER for exempt EITE loads), or disclosure by market customers.

Who will have access to the registry?

Market customers and generators will need to have access to the registry in order to make allocations. Where an entity is both a market customer and a generator, it would participate in the registry in both those capacities.

It is proposed that the registry will not be accessible to parties that are not market customers or generators. That is, third parties would not be entitled to hold accounts within the registry.

The ESB considered giving third parties access to accounts in the registry. However, this approach would create a risk that third parties may have generator output allocated to them at the reporting deadline, but are not subject to compliance requirements. This would mean that there would be insufficient generation left in the registry to be allocated to market customers for compliance. (The premise of the registry is that all generation should be allocated to market customers.) To the extent that third parties held large allocations of emissions-intensive generation, targets would not be achieved in practice. Restricting access to the registry is the simplest way to mitigate this risk.

What data should be accessible in the registry?

The level of information available to different parties accessing the registry can influence the effectiveness of the Guarantee. Greater transparency will help smaller market customers find more opportunities to allocate output within the registry.

It is proposed that the registry operates such that it will disclose each generator's unallocated generation, to inform market customers of what generation is available. This could occur on a weekly basis.

Some market-wide information will be made public. This would include, for each compliance year:

- the emissions intensity of each generator to be used in the compliance year – published prior to the compliance year commencing
- the total volume of output (MWh) that has been allocated to market customers – updated regularly, and
- the outcomes of each compliance year, including overall scheme outcomes, and the emissions intensity of each market customer – published in the year following the compliance year as stated in the *Technical Working Compliance and Penalties under the Emission Reduction Requirement*.

Preferred approach

- The registry will be administered by AEMO, as an enhancement to its existing systems.
- For each compliance year:
 - The emissions intensity for each generator will be calculated using emissions reported under NGER (or otherwise) for two years prior, and generator output data from AEMO's settlement systems for the same year as the NGER data.
 - Output data for each generator and pool purchases for each market customer will

be sourced from AEMO's settlement systems, and taken as final as at 30 September following the compliance year.

- Allocations must be recorded in the registry by the reporting deadline of 31 October each compliance year, but can also be recorded at any earlier time.
- The registry will only be accessible to market customers and generators.
- The registry will regularly disclose each generator's unallocated generation.
- Some market-wide information will be made public. This would include, for each compliance year:
 - the emissions intensity of each generator to be used in the compliance year – published prior to the compliance year commencing
 - the total volume of output (MWh) that has been allocated to market customers – updated regularly, and
 - the outcomes of each compliance year, including overall scheme outcomes, and the emissions intensity of each market customer – published in the year following the compliance year.

3.2 Applying the emissions reduction requirement

The high-level design proposed that where one or more market customers are members of a corporate group:

- All of the market customer loads would be aggregated to the group's controlling corporation.
- All output of generators which are members of the group would be automatically allocated to the group's controlling corporation.

By automatically allocating all output from generators in a corporate group to the controlling corporation, this approach aimed to mitigate concerns of potential misuse of market power.

However, feedback through the Technical Working Group has raised a number of challenges with this approach:

- Defining how different ownership structures are captured or not captured within the corporate group is complex.
- There is potential for different incentives for generation captured within the definition of a corporate group versus generation that is not, and that this could create incentives to shift generation out of the definition of a corporate group. Alternatively, for large generators with small retail arms, they might choose to cease retail activities altogether.
- Some market customers will be automatically allocated output that significantly exceeds their load and may still be over-allocated at the end of the reporting period.

The ESB is therefore proposing to remove the corporate group automatic allocation requirement.

Competition concerns are addressed through a range of other measures:

- Limits on the carry forward of over-achievement against the emissions intensity target will limit anti-competitive stockpiling. These limits bind more on larger retailers and less on smaller retailers (and other market customers) to more effectively target stockpiling that can most impact the market (see section 4.1).
- Allowing limited deferral of compliance provides market customers flexibility (see section 4.2).
- To ensure that a competitive market is fostered, there will be a legal requirement that market customers and generators do not unreasonably withhold any generation for anti-competitive purposes. These requirements are detailed further in the *Technical Working Paper on Compliance and Penalties for the Emissions Reduction Requirement*. The AER may take enforcement action for breaches of these requirements.
- Reasonable steps taken to meet allocation requirements would be taken into account for compliance purposes.
- The registry will disclose each generator's unallocated generation to inform market customers what generation is available (see section 3.1).

An additional measure to support retail market competition will be included such that the first 50,000 MWh of any market customer's load will be exempt from the emissions reduction requirement, and instead spread over other market customer load on a proportional basis (this is the same as the approach used for exempt EITE load). This level has been set such that small market customers will be exempt for some or all of their load. As a market customer's load increases above 50,000 MWh, their exempt proportion decreases. This measure will help smaller market customers meet the emissions reduction requirement, while not having a material impact on overall coverage.

Given the significant difference in size between large and small retailers (and other market customers) in the market, this exemption can make a significant difference to small retailers and have little effect on the load large retailers would be responsible for. As discussed in the *Technical Working Paper on Compliance and Penalties for the Emissions Reduction Requirement*, the ESB is considering the merits of introducing an anti-avoidance regime which could address matters like the risk of a market customer splitting into multiple market customers to gain the benefit of this exemption and avoid responsibility for meeting the electricity emissions target.

To ensure the registry operates efficiently, generators will have some administrative requirements under the emissions reduction requirement. They will be required to enter or confirm allocations in a timely manner to allow AEMO to provide regular updates of the contents of the unallocated pool and its emissions intensity. They will have an administrative requirement to allocate all generation and associated emissions by the reporting and compliance date.

Preferred approach

- Market customers and generators will be responsible under the emissions reduction requirement, rather than corporate groups.
- Market customers are responsible for meeting the electricity emissions target and will be obliged to have sufficient generation allocated to cover their load.
- To ensure the registry operates efficiently, generators will have some administrative requirements under the emissions reduction requirement. They will be required to enter or confirm allocations in a timely manner to allow AEMO to provide regular updates of the contents of the unallocated pool and its emissions intensity. They will have an administrative requirement to allocate all generation and associated emissions by the reporting and compliance date.
- There will be a legal requirement that market customers and generators do not unreasonably withhold any generation for anti-competitive purposes.
- The first 50,000 MWh of a market customer's load will be exempt. The exempt load would be shared amongst all non-exempt load as proposed for EITE exemptions.

3.3 Over-allocation

Over-allocation refers to an instance in which a market customer allocates more generation than it has load. This is distinct from over-achievement where the generation matches the load but the emissions intensity is less than the electricity emissions target.

Since total generation must equal total load in the registry for each compliance period, there would only be under or over-allocations at the end of the reporting period where there was non-compliance.

Market customers may have more generation allocated to them than their load during the compliance year because they accepted allocations that exceed their load (such as due to uncertainties around load and production). They would be expected to reallocate this output before the reporting date. If they did not, it would necessarily mean that other market customers will not be able to allocate sufficient generation to cover their load (either through allocations or from the residual unallocated generation).

A market customer will be responsible for all emissions associated with any over-allocation and in addition, it will be assigned a deemed emissions intensity for the over-allocated amount. The deemed emissions intensity would be set at the level of the highest emissions intensity generator in the NEM. This would act as a disincentive to over-allocation.

In addition, a market customer that has over-allocated generation compared to their load at the end of a reporting period would face a penalty. The penalty would be applied up to a maximum level and will take account of the market impact; consistent with the enforcement approach discussed in the *Technical Working Paper on Compliance and Penalties for the Emissions Reduction Requirement*. The penalty would not be expected to apply in cases of small

over-allocations, however, and reasonable steps to comply would be taken into account by the AER.

Preferred approach

- Market customers would be responsible for meeting the electricity emissions target for over-allocated generation based on a deemed emissions intensity set at the level of the highest emissions intensity generator in the NEM.
- Market customers that over-allocate generation compared to their load would face a penalty.
- Penalties would not be expected to apply in cases of small over-allocations, and reasonable steps to comply would be taken into account by the AER.

3.4 Emissions intensity of residual unallocated generation

Market customers that do not have generation output allocated for any part of their load by the end of the reporting period would be assigned the emissions intensity of the residual unallocated generation. As lower emissions intensity resources are more likely to be contracted, any unallocated generation is likely to be relatively more emissions intensive and the residual emissions intensity may be above the annual electricity emissions target.

The residual emissions intensity could be determined in a number of ways:

- A floating residual emissions intensity, updated on an ongoing basis or at the end of the period.
- A floating residual emissions intensity, but fixed after some date (for example after the compliance period has ended but before the AER assesses compliance).
- A fixed residual emissions intensity, from the beginning of the compliance period.

Determining a fixed residual emissions intensity in advance would allow market customers to 'deem' allocations for their unallocated load. This would increase certainty for market customers in managing their portfolios, but creates complexity in setting the emissions intensity at the optimal level – risking either being too punitive, or being too low and disincentivising contracting with generation.

A floating residual emissions intensity provides less certainty of a market customer's exposure, but provides stronger incentives for allocations to be contracted ahead of time and may help ensure efficient price signals for investment and operation. Regular updates of the emissions intensity of unallocated generation would assist market customers to manage their positions. The total volume of output and the average emissions intensity of generation could be published weekly. This information would also be broken down by generator.

Another approach would be to freeze the floating residual emissions intensity at a fixed time; for example, at the end of the compliance period, but before the AER assesses compliance. In this approach no further emissions would be allowed to be allocated from the residual unallocated generation pool after this point, but market customers could allocate between themselves with

certainty around the emissions intensity for any unallocated load. This approach would also provide a fixed emissions intensity for deeming allocations if insufficient MWh of generation is available in the residual unallocated generation pool for all market customers (for example, if some market customers are non-compliant and have over-allocated generation by the reporting date). However, this approach may prevent economically efficient reallocations at the end of the scheme.

The ESB considers that a floating residual emissions intensity, without freezing it at any point in time, is appropriate given the intention of the registry is that by the end of a compliance year total generation should match total load.¹ A pre-determined residual emissions intensity should only be required where there is over-allocation and can be developed for these limited circumstances. Feedback from the Technical Working Group indicated that a floating residual emissions intensity should be manageable for market customers and generators.

Preferred approach

- The residual emissions intensity of unallocated generation will be floating with regular updates of the emissions intensity of unallocated generation to assist market customers to manage their positions.

3.5 Other factors

Compliance calculations will take account of other factors including non-market generation (embedded generation, solar PV, batteries), the GreenPower scheme and exemptions for emissions-intensive trade-exposed (EITE) load.

As discussed in the *Technical Working Paper on Market Customer Load*:

- Embedded generation and rooftop solar photovoltaic (PV) will be treated similarly to the approach used in the Renewable Energy Target (RET). The net exports will be added to both the total generation available to the market customer and to the market customer's total load.
- Only embedded generation above 5 MW (and, for non-renewable generators, above an emissions threshold of 25,000 tCO₂-e) will be required to be included in the calculation of a market customer's emissions intensity.
- Where a generator imports energy it will be netted against the generator's exports.
- So that GreenPower represents additional emissions reductions, at compliance time, market customers that have sold GreenPower will have their GreenPower load and associated renewable generation occurring in the compliance year deducted from its total liable load and allocated generation. Since GreenPower arrangements were developed before the emissions reduction requirement of the Guarantee was contemplated, the

¹ Subject to adjustments, including the scaling of load to account for exempt EITE load and exempt small market customers.

Board will work with GreenPower to help facilitate an appropriate treatment to recognise additionality.

As discussed in the *Technical Working Paper on Exempt Load* there will be a mechanism to exempt EITE and small market customer load. The preferred approach is to spread the exempt load across all other non-exempt load, with each market customer's total load being first reduced by the exempt load in a compliance year. Then, each MWh of a market customer's non-exempt load is scaled up, so that market customers' non-exempt load is equal to total load in aggregate.

4 Flexible compliance options

4.1 Carry forward of over-achievement

The ability to carry forward over-achievement has been supported by a broad cross-section of stakeholders. Carrying forward over-achievement preserves the signal to invest by allowing investors in new low emissions capacity to realise the full value of the emissions reduction they achieve. While this outcome has merit, there is a real concern that carrying forward of over-achievement would lead to anticompetitive stockpiling. This practice could make it difficult for other market customers to comply with the emissions reduction requirement of the Guarantee.

The high-level design outlined the ESB's policy to apply limits to the amount market customers can carry forward to mitigate the risk of anti-competitive stockpiling while still aiming to avoid constraining the ability of market customers to carry forward for genuine, non-anti-competitive business purposes.

Balancing these two objectives requires providing the rule-maker with the ability to update the way limits are applied in response to changing market conditions.

Therefore, the following options on how a carry forward limit could be applied should be seen as a starting point for the mechanism, with specific limits capable of being updated through rule-change processes in future to remain appropriate to market conditions.

There would be no need to apply a carry forward limit if all market customers comply in a given compliance period. However, this can only be assessed once the compliance position of each market customer is known. There would still be value in allowing the market to carry forward over-achievement in this scenario so the emissions reductions can be recognised and not extinguished. However, it would be difficult for market customers to know in advance if all other market customers will be compliant and so they would need to behave as if the limit applied. This would create the right incentives throughout a compliance period for market customers to make available a proportion of their over-achievement to other market customers.

In addition to having a limit on the amount of over-achievement market customers can carry forward, there will be a legal requirement that market customers and generators do not unreasonably withhold generation from other market participants (as detailed further in the *Technical Working Paper on Compliance and Penalties for the Emissions Reduction Requirement*).

Option 1: Carry forward of a percentage of the electricity emissions target

This option would limit carry forward to a specific percentage of the electricity emissions target per MWh of load. Setting the percentage based on the electricity emissions target per MWh of market customer load would achieve two outcomes:

1. Any over-allocation (excess generation above the retail load at the end of the compliance period) would not count towards the amount that can be carried forward.
2. Only a proportion of the over-achievement of the market customer's emissions intensity compared with the electricity emissions target could be carried forward. This creates a strong incentive for market customers to make a proportion of any over-achievement available to the other potential counterparties, otherwise the benefit is extinguished.

The carry forward value would apply within a given year and would not be cumulative to effectively mitigate the risk of anti-competitive stockpiling. The limit could be 10 per cent of the first year's electricity emissions target. This would generate a static value that would apply each year. If the 10 per cent value was based on a static emissions intensity value, the amount market customers could carry forward per MWh of load would not decline as the electricity emissions target declines.

For example, if hypothetically the electricity emissions target in the first year was set at 0.8 tCO₂-e/MWh, a 10 per cent limit would allow each market customer to carry forward 0.08 tCO₂-e/MWh of over-achievement for each MWh of a market customer's load. This could allow market customers to carry forward enough over-achievement to cover a number of years of reductions in the electricity emissions target, depending on the slope of the trajectory the Commonwealth Government sets.

At a fixed percentage, the amount of over-achievement that can be held by large market customers may limit access to low emissions generation that others in the market require to deliver full compliance under the emissions reduction requirement. Conversely, small market customers may not be able to count enough over-achievement to make investments or contracting arrangements worthwhile.

Option 2: Carry forward of a percentage of the electricity emissions target, differentiated by market customer load

The drawback of applying a uniform carry-forward limit is that it would be difficult to set a number that effectively limits anti-competitive stockpiling where such stockpiling could have a large market impact while still allowing market customers to obtain the value of their investments. Keeping 10 per cent of the electricity emissions target has a large impact on the availability of low emissions generation when the market customer's load is large, and a small impact when the market customer's load is small.

Option 2 seeks to address this issue by applying differentiated percentages based on market customer size, while building on the other features of Option 1.

The difference is that the percentage of over-achievement that can be carried forward will be applied to a market customer based on their load aggregated at a corporate group level. The differentiation based on the relative size allows for the banking of over-achievement to more effectively limit anticompetitive stockpiling of over-achievement, while allowing smaller market customers the flexibility they may need to meet compliance at a reasonable cost.

By way of example, a broad estimate could be that the largest market customers could account for more than half of total load. The top 10 or so market customers could account for around 80 per cent of total load. The next 15 or so could make up almost all the load, and the remaining market customers, around 40, could account for around 2 per cent. Given this distribution, five thresholds could be applied, each with a different percentage carry forward limit.

The thresholds and their relevant percentages could be as described in the table below.

Example threshold (MWh)	Example carry forward limit
More than 18,000,000	5%
18,000,000 – 3,000,000	10%
2,999,999 – 500,000	20%
499,999 – 100,000	50%
Less than 100,000	100%

The disadvantage to this approach is that it is defined based on the current distribution and arrangements of market customers. It would create artificial divisions which could see market customers just above the threshold facing one limit and just below facing another.

Option 3: Carry forward of a percentage of the electricity emissions target and an additional absolute amount

Option 3 seeks to achieve a similar outcome to Option 2 but without creating the artificial divisions of the thresholds. Like Option 2, it builds on the other features of Option 1.

To achieve this outcome, each market customer would be able to carry forward up to 5 per cent of the electricity emissions target per MWh of load plus a fixed amount of 60,000 tCO₂-e. A cap would also be in place so that no market customer would be allowed to carry forward more than 100 per cent of the electricity emissions target per MWh of load. This ensures that while the largest market customers would face a carry forward limit of effectively 5 per cent of the target, smaller market customers would face effectively a higher percentage limit. The smaller the load gets the greater the effective carry forward percentage limit becomes.

For example, if hypothetically the electricity emissions target was set at 0.8 tCO₂-e/MWh a market customer with 1,000,000 MWh² of load could carry forward 5 per cent, which is 40,000 tCO₂-e, plus the 60,000 tCO₂-e. This equates to an effective carry forward limit of 10 per cent of the electricity emissions target per MWh. A market customer with 50,000 MWh of load could *not* calculate carry forward as 5 per cent, which is 2,000 tCO₂-e, plus the 60,000 tCO₂-e. This would equate to an overall carry forward of 155 per cent of the electricity emissions target per MWh – the cap would apply so that they could only carry forward 40,000 tCO₂-e.

² All loads referenced are the non-exempt amounts remaining after the small market customer exemption and the emissions-intensive trade-exposed (EITE) exemption.

Preferred approach

- Each year, market customers would be able to carry forward up to 5 per cent of the first year's electricity emissions target per MWh of load plus a fixed amount of 60,000 tCO₂-e. No market customer would be allowed to carry forward more than 100 per cent of the electricity emissions target per MWh of load.
- The limit would be lifted in any year where all market customers were found to be compliant with the electricity emissions target.

4.2 Deferring compliance

Allowing a portion of compliance to be deferred aims to achieve the benefits of flexibility for market customers and their customers without undermining delivery of the emissions reduction requirement or delaying necessary investment in the NEM.

Given the lag between an investment in a new generation asset and its first generation, a limited amount of deferral could be required in order for a market customer to manage its compliance obligations. While build times are decreasing for new investments, an asset could take between 18 months and several years to be built, with the majority of recent generation facilities taking between two and three years.

Market customers might also need a limited amount of deferral to manage annual variability in demand and variable renewable generation (including hydro production). This would allow for some smoothing across multiple years and avoid market participants seeking low emissions intensity allocations to account for possible but unlikely single-year scenarios.

The rate allowed for deferral could be cumulative over two years, such that market customers could under-achieve for two years, and make good in the third year to give enough lead time for market customers to make investments in generation needed to meet the target.

Unlike carry forward limits, it may be appropriate to start the scheme with a greater proportional deferral limit which becomes smaller over time. This would provide greater flexibility for market customers to adjust to settings when the scheme commences. This could be achieved by applying a limit based on a percentage of the electricity emissions target per MWh. As the target declines, so does the amount that could be deferred.

For example, if hypothetically the Commonwealth Government sets an electricity emissions target that starts at 0.8 tCO₂-e/MWh in the first year, a limit of 10 per cent would allow market customers to reach 0.88 tCO₂-e/MWh and defer 0.08 tCO₂-e/MWh, and make good in the following two years. At a future point, when the target reaches 0.7 tCO₂-e/MWh, a 10 per cent limit would allow market customers to carry forward around 0.07 tCO₂-e/MWh, which would amount to around 9 per cent of the hypothetical first year target.

This limit is the bound by which a market customer's emissions intensity can differ from the electricity emissions target for a compliance year. Any additional increase in the market customer's emissions intensity will mean the entity is non-compliant.

The above options on how a deferral limit could be applied should be seen as a starting point for the mechanism, with specific limits capable of being updated through rule-change processes in future to remain appropriate to market conditions.

Preferred approach

- To provide flexibility without impacting on whether the target is achieved, market customers will be able to defer 10 per cent of the electricity emissions target per MWh of load.
- This limit will be cumulative over two years, with the market customer required to make good in the third year on the first year's deferral amount.

4.3 Offsets

The Commonwealth Government is continuing to consider whether market customers should be able to use external offsets as a flexible compliance option to meet the emissions reduction requirement, and if included, whether to apply conditions on the types of offsets and cap the number of offsets that could be used.

If offsets are allowed, then there will need to be a mechanism for linking offsets surrendered in the Australian National Registry of Emissions Units (ANREU) for this purpose to compliance calculations for market customers. In addition, if the Commonwealth Government sets an overall limit on the use of offsets by the electricity sector, the Rules may address how to allocate that limit between market customers.

There is an interrelationship between the flexible compliance options. If a relatively large amount of compliance deferral were to be allowed then there may be less desire for the use of offsets, and vice versa.

Preferred approach

- The Commonwealth Government will decide whether offsets should be allowed under the Guarantee, and if so, which types of offsets and whether there would be a cap on the number of offsets that could be used. If offsets are allowed, the emissions reduction requirement will need to incorporate a mechanism for linking surrendered offsets with compliance calculations and may address how to allocate an overall limit on the use of offsets between market customers.

A Abbreviations and defined terms

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ANREU	Australian National Registry of Emissions Units
CER	Clean Energy Regulator
COAG	Council of Australian Governments
Compliance period	The twelve-month period across which compliance with the emissions reduction requirement is assessed. The compliance period will align with the financial year.
EITE	Emissions-intensive trade-exposed
ESB	Energy Security Board
Guarantee	National Energy Guarantee
Market customer	NEM customers, which are mostly electricity retailers (note that this is different to the definition of a liable entity for compliance with the reliability requirement under the Guarantee).
MW	Megawatt
MWh	Megawatt-hour
NEL	National Electricity Law
NEM	National Electricity Market
NGER	National Greenhouse and Energy Reporting scheme
RET	National large-scale renewable energy target currently in place under the <i>Renewable Energy (Electricity) Act 2000 (Cth)</i>
Rules	National Electricity Rules
tCO ₂ -e	Metric tonnes of carbon dioxide equivalent

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