Recovering the costs of gas directions and the trading fund

Australian Energy Market Operator

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FINAL REPORT

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SUMMARY

Background

To promote the reliability and adequacy of supply in the east coast gas market, governments are introducing changes to the National Gas Law, Regulations and Rules. Changes include:

- giving the Australian Energy Market Operator (AEMO) powers to direct entities such as gas producers, major gas consumers or gas pipeline owners in the east coast gas system. This extends AEMO's existing powers to direct in the Victorian Declared Wholesale Gas Market (DWGM). Entities that are directed are entitled to claim compensation for financial detriment. The costs associated with this compensation must be recovered by AEMO from other entities.
- requiring AEMO to establish and maintain a trading fund and exercise a trading function. AEMO may trade in natural gas or purchase pipeline services or services provided by a storage provider. The total funding capacity for the trading fund each financial year is $35 million (adjusted over time for inflation).

These changes are being introduced to address potential reliability issues in winter 2023 and beyond.

AEMO is required to develop procedures relating to the reforms. CEPA has been engaged to assist AEMO in developing the parts of the procedures relating to how AEMO:

- recovers compensation payments arising from directions; and
- recovers costs relating to the new trading fund.

Principles relating to cost recovery

We have identified four principles which apply to the recovery of compensation payments and the funding of the trading fund.

1. **Costs should be recovered in full (and no more).** AEMO is a not-for-profit entity and so should exactly recover costs relating to a function to avoid cross-subsidies between other services AEMO provides and to ensure that it can fund its activities.
2. **Cost recovery should encourage efficient behaviour.** The way in which costs are recovered can influence the behaviour of entities to whom costs are allocated – promoting or reducing economic efficiency. In principle, to promote economic efficiency, the costs recovered from entities should reflect the marginal costs of their actions. This is approximated by recovering costs from those market participants that caused those costs. This incentivises the "causers" of higher costs to take them into account when deciding whether to take an action which causes a cost.
3. **Cost recovery should be equitable.** AEMO is required to "minimis[e] inequitable distributional cost impacts to the extent reasonably possible" when making procedures to recover costs relating to directions.
4. **Cost recovery should be transparent, simple and auditable.** This promotes efficient decision-making, reduces administrative costs and errors, and promotes confidence.

Recovering the cost of directions

AEMO is required to develop procedures which determine the manner, form and methodology of payments to recover the cost of directions.

AEMO has indicated a requirement to us that the approach to cost determination is based on a predetermined methodology rather than undertaken on a case-by-case basis depending on the circumstances. This approach has the advantages of being transparent, as it removes judgement from AEMO, and is likely to be simple implement.

After making a direction, AEMO is required to publish information relating to the risk or threat to which the direction relates. The information that AEMO must publish includes the risk or threat's location and likely duration. Our recommended approach leverages this requirement to categorise the likely causers of the direction by geography and time. Costs are then formulaically allocated in proportion to gas withdrawals.

Recommended approach to recovering costs associated with directions

AEMO must determine the duration and location of the risk or threat to which the direction relates. Based on this determination, costs should be allocated in accordance with the table below:

Duration of risk or threat		Location of risk or threat: In one state only	In multiple states	East coast gas system wide
	< 1 month	Allocates costs to entities in proportion to the sum of their withdrawals in the **state** in the **week** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals across the **states** in the **week** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **week** prior to the end of the direction
	> 1 month	Allocates costs to entities in proportion to the sum of their withdrawals in the **state** in the **six months** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals across the **states** in the **six months** prior to the end of the directions	Allocates costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **six months** prior to the end of the directions

In the case that AEMO is unable to determine the likely duration of the risk or threat, costs should be allocated based on withdrawals over the preceding six months (ie, consistent with the bottom row of the table above).

In the case that AEMO is unable to determine the likely location of the risk or threat, costs should be allocated based on withdrawals across the east coast gas system (ie, consistent with the right-hand column of the table above).

This approach meets the principles outlined above:

- It is relatively simple and transparent although still leaves some judgement for AEMO in specifying the duration and location of the risk or threat to which the direction relates.
- By allocating costs based on the duration and location of the risk, the approach attempts to allocate costs to causers to promote efficient decision making:
    - Where the future risk or threat has an expected duration of greater than one month, it is more likely to have been caused by historic consumption over an extended period of time that has cumulatively drawn down reserves of gas in storage. Allocating costs based on historic consumption over a relatively long period (i.e. six months) captures this effect. Conversely, where the future risk or threat has a duration of less than one month it is likely to be caused by more immediate peaks in demand (or reductions in supply) and so shorter-term historic consumption (i.e. weekly) is more appropriate.
    - Where the future risk or threat is in a specific state or states, consumption within that state or states is likely to have caused the direction. Conversely, where the future risk or threat is east coast wide the likely cause is consumption across the east coast.
    - If AEMO cannot determine the duration and/or location of the risk or threat, socialising costs as widely as possible (by time and geography) is likely to have the least distortionary impact on an individual entity's decision-making.

- We consider allocating costs to causers to be equitable. There may be other equitable solutions (such as allocating costs to the beneficiaries of directions, rather than the causers), but these solutions do not satisfy the other principles – notably economic efficiency – as well.
- The approach exactly recovers the costs of directions.

Our recommendation recognises that the inefficiencies arising from inaccurate allocation of costs to causers may be modest. A relatively simple, if sometimes inaccurate, approach therefore appears to be appropriate. Furthermore, a more complex approach may do little to improve efficiency given the inherent difficulties in accurately allocating costs to causers. Nevertheless, in making our recommendations we recognise that the approach will – in some circumstances – promote inefficient consumption decisions and be considered inequitable.

Recognising the urgency, complexity and divergent stakeholder views about the reforms, governments have indicated that the solution for compensating directions will be interim. This allows additional time to develop a long-term approach and undertake further stakeholder engagement. A post-implementation regulatory impact assessment of the reforms will be completed by the Department of Climate Change, Energy, the Environment and Water within 12 months of their introduction. The Australian Energy Market Commission (AEMC) will also conduct a review within 3 years. These reviews provide an opportunity to reassess the cost recovery approach implemented by AEMO.

Recovering the costs of the trading fund

We have considered the principles of cost recovery in the context of the trading fund and make the following recommendations in relation to the source of funding, the costs to be recovered, and the entities to recover them from and the timescales for recovery.

For the **source of funding**, we recommend that AEMO should make the initial contribution to the fund from its balance sheet (most likely debt financed) or, if funding is not required immediately, through provision of a debt facility or option to the fund to obtain funding when required. Because AEMO has not incurred economic profit or loss in setting up the fund, the initial funding should not be recovered from entities.

For the **costs to be recovered**, the principle is that AEMO should (exactly) recover all its costs. We recommend that the fund should recover/redistribute (a) the interest costs on the capital provided to the fund and (b) losses/profits from trading. The return on capital is an economic cost which it is proper to remunerate. Losses/profits on trading should be measured against the total value of the fund inclusive of financial and non-financial assets. Purchases of gas or other physical or financial assets does not represent profit or loss to AEMO because it holds gas or other assets in the fund; the fund costs are losses and/or profits from trading.

With regard to the **entities to recover costs from and timescales for recovery**, our recommendation depends on which of two different approaches to operating the fund is adopted:

- Under the first approach, which we will call the “trader model”, AEMO buys and sells gas and related services.
- Under the second approach, which we call the “services model”, AEMO doesn’t purchase assets such as gas or associated derivative securities, but instead purchases services from a third party. For example, AEMO may enter into a contract with a third party which requires that the third party deliver a certain quantity of gas at a certain location in pre-determined circumstances if called upon by AEMO. AEMO may pay the third party an “availability fee” for the option to exercise this contract, and/or an “activation fee” if the option is exercised.

Under the **trader model**, we consider there are significant practical challenges in determining entities that caused AEMO to trade at a loss or profit. Consequently, we recommend that profits/losses are socialised across all gas consumers across the east coast market, in proportion to how much gas they consume (including, for the avoidance of doubt, consumption in the production of liquefied natural gas). While this does not result in prices reflecting marginal costs, it distorts price signals the least given the practical challenges of pricing based on marginal costs.

Based on advice from AEMO, we understand that the rules will require AEMO to commence each financial year with access to $35m (adjusted for inflation). We recommend that as late as reasonably possible before the end of the financial year:

- AEMO determines the funding requirement as the difference between $35m (adjusted for inflation) and the forecast total value of the fund (inclusive of any amount AEMO can access via a debt facility or option) at the end of the financial year. This figure could be positive or negative, depending on whether the fund has made a profit or loss.
- AEMO divides the funding requirement in proportion to each entities' actual consumption for the preceding year to determine the amount that each entity must pay to AEMO (or be paid by AEMO)
- Each entity would pay / receive the amount calculated above before the start of the financial year.

In contrast, many of the challenges in identifying the causers of costs in the trader model are not present in the **services model**, at least for the activation fee. As such, we recommend a similar approach as for directions. AEMO will be required to identify the location and duration of the threat or risk to which the activation of contract relates. We recommend activation costs are allocated as follows:

		Location of risk or threat		
Duration of risk or threat		**In one state only**	**In multiple states**	**East coast gas system wide**
	< 1 month	Allocates activation costs to entities in proportion to the sum of their withdrawals in the **state** in the **week** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals across the **states** in the **week** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **week** prior to the end of the trade
	> 1 month	Allocates activation costs to entities in proportion to the sum of their withdrawals in the **state** in the **six months** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals across the **states** in the **six months** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **six months** prior to the end of the trade

Availability payments made by AEMO for the option of exercising the contract are sunk and so should be socialised. We recommend this is done in proportion to consumption over the time in which the contract is in place, in the state or states to which the risk or threat to which the contract relates.

1. INTRODUCTION AND CONTEXT

The *National Gas (South Australia) Amendment (East Coast Gas System) Bill 2022* (the Bill) and related changes to the National Gas Regulations and National Gas Rules (NGR) seek to improve reliability of supply in the east coast gas market.

Directions

The regulatory changes will give the Australian Energy Market Operator (AEMO) additional powers to direct entities (such as gas producers, major gas consumers or gas pipeline owners) in the east coast gas system. AEMO will be able to give directions to maintain or improve the reliability or adequacy of supply of gas.

Entities that are directed will be entitled to claim compensation for financial detriment. We understand that compensation can be claimed for some but not all directly incurred costs and no opportunity costs. The dispute resolution panel will determine whether and how much compensation is to be paid to a claimant by AEMO in accordance with procedures that AEMO is required to develop and the rules.

The costs associated with this compensation must be recovered by AEMO from other entities. The procedures that AEMO is required to develop must outline the manner, form and methodology of payments made by relevant entities to AEMO to recover compensation paid by AEMO. AEMO has indicated a requirement to us that the approach to cost determination is based on a predetermined methodology rather than undertaken on a case-by-case approach depending on the circumstances.

AEMO will be required to publish a notice containing information on the risk or threat to which the direction relates. The notice must contain, among other things, information on the risk or threat's location and likely duration.

Trading fund

AEMO is required under the Bill to establish and maintain a trading fund and exercise a trading function. AEMO may trade in natural gas or purchase pipeline services or services provided by a storage provider using funds in the trading fund to the extent necessary or desirable to maintain or improve the reliability and adequacy of the supply of natural gas within the east coast gas system. The total funding capacity for the trading fund each financial year is $35 million (adjusted over time for inflation).

Under the changes, AEMO:

- must publish a contribution rate for the trading fund for each financial year that must be paid by relevant entities to fund the trading fund, in accordance with procedures made by AEMO
- may specify the manner and timing of payments required to be made by relevant entities.

AEMO may contribute fees from entities or increase debt on its own balance sheet to fill the fund. AEMO is not required to hold $35m in funds, providing it can access the funds (for example by way of a line of credit).

As with directions, AEMO will be required to publish a notice containing information on the risk or threat to which a trade relates. The notice must contain, among other things, information on the risk or threat's location and likely duration.

CEPA's engagement

CEPA has been engaged by AEMO to assist it to develop the procedures as they pertain to the recovery of compensation payments arising from directions and the recovery of costs relating to the trading fund.

Rationale for the directions and trading fund

We understand that the powers to direct and trade are intended to address a broad range of scenarios that may threaten the reliability or adequacy of supply of gas, including:[1]

- shortfalls in gas arising over an extended period (e.g., seasonally) due to demand over that period exceeding new supply, drawing down and ultimately exhausting reserves of gas in storage.
- shortfalls in gas to meet short-term (e.g., daily), geographically specific peaks in demand or reductions in supply.

We consider that the distinction between these two types of scenarios will be material to the appropriate allocation of the costs.

Directions or trades could be made to:

- increasing supply
- decreasing demand
- increasing levels of storage
- transporting gas between locations.

Prior to the introduction of these reforms, AEMO can only direct participants of the Victorian Declared Wholesale Gas Market (DWGM) and had no trading function. It is not clear how significant a role the broader direction powers across the east coast gas market and new trading powers will play in terms of:

- quantity of gas directed or traded
- dollar size of compensation claims arising from directions
- who is likely to be directed.

Other related regulatory changes

AEMO's new powers to direct and trade are part of a suite of reforms aimed at improving reliability in the east coast gas market. In addition to directions and trading (the subject of this paper), the first stage of the reforms includes:

- measures to improve market transparency
- flexibility for AEMO to signal threats to the reliability of the market to encourage a market-based response.

The first stage is more advanced, reflecting the urgency of the reforms to manage possible supply shortfalls in winter 2023. The second stage will include consideration of demand management, storage obligations, obligations on retailers and generators and the development of reliability standards.[2]

Post implementation reviews

Recognising the urgency, complexity and divergent stakeholder views about the reforms, governments have indicated that the solution for the compensation for directions will be interim. This allows additional time to develop a long-term approach and undertake further stakeholder engagement.

A post-implementation regulatory impact assessment of the stage 1 reforms will be completed by the Department of Climate Change, Energy, the Environment and Water within 12 months of the introduction of the stage 1 reforms.

[1] *Extension of AEMO functions and powers to manage supply adequacy in the east coast gas market*, Consultation paper, September 2022, pp. 3-4.

[2] *Extension of AEMO functions and powers to manage supply adequacy in the east coast gas market*, Consultation paper, September 2022, p. 4.

The Australian Energy Market Commission (AEMC) will also conduct a review of the entire framework within 3 years.

Structure of this paper

This paper:

- discusses principles for allocating costs (chapter 2)
- discusses how the principles apply in the case of directions made by AEMO in the east coast gas market (section 3.1) and makes recommendations about the recovery of the costs of directions (section 3.2)
- discusses how the principles apply in the case of the trading fund (section 4.1) and makes recommendations about cost recovery for the trading fund (section 4.2).

The appendix provides examples of how costs are recovered in other existing mechanism in the National Gas Rules and National Electricity Rules.

2. PRINCIPLES FOR ALLOCATING COSTS

Below we discuss principles for allocating costs arising from directions and the trading fund. These broadly align with the cost recovery principles applied by the Australian Energy Market Commission (AEMC) in its Rule change for the Reliability and Emergency Reserve Trader (RERT) in the National Electricity Mechanism.[3]

1. Costs should be recovered in full (and no more)
2. Costs recovery should encourage efficient behaviour
3. Cost recovery should be equitable
4. Cost recovery should be transparent, simple and auditable.

Costs should be recovered in full (and no more)

AEMO is a not-for-profit entity and so should exactly recover costs relating to a function to avoid cross-subsidies between other services AEMO provides and to ensure that it can fund its activities.

Efficiency

Cost recovery, is, in effect, the way in which services provided by AEMO are *priced*. Different pricing arrangements can impact the consumption and investment decisions of those from whom costs are recovered (or not recovered from). This can impact economic efficiency – both in the short run (allocative and productive efficiency) and in the long run (dynamic efficiency).

Setting aside a great number of practical challenges, prices should ideally reflect *marginal* costs to enhance economic efficiency:

> *"The central policy prescription of microeconomics is the equation of price and marginal cost. If economic theory is to have any relevance to public utility pricing, that is the point at which the inquiry must begin."*[4]

A price set below marginal cost can encourage an individual to consume additional units even when the benefits to the individual are outweighed by the costs to society. Conversely a price set above marginal cost can discourage individuals from consuming additional units despite the benefits to them outweighing the costs to society.

Marginal-cost based pricing is a forward-looking concept. The idea is that prices for services reflect the additional costs of providing additional services so that consumers can make informed decisions now about whether those additional costs should be incurred. It means that those that *cause* marginal costs (or benefits) to be incurred have prices which reflect those marginal costs (or benefits).

The concept of marginal cost pricing is predicated on the elasticity of demand for the services being provided. If the elasticity of demand is low, then consumers are unlikely to change their behaviour significantly, and so changes to outcomes are small. Put another way, the inefficiencies arising from not pricing at marginal costs are likely to be modest if the elasticity of demand is low.

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[3] AEMC (2019), National electricity amendment (enhancement to the reliability and emergency reserve trader) Rule 2019, section 8.4.1 – Cost recovery principles, p191, https://www.aemc.gov.au/sites/default/files/2019-05/Final%20Determination.pdf. Other cost allocation principles are discussed, for example, in: https://apo.org.au/sites/default/files/resource-files/2021-07/apo-nid313665_0.pdf; https://www.pc.gov.au/inquiries/completed/cost-recovery/report/costrecovery1.pdf.

[4] Kahn A.E., *The economics of regulation: Principles and Institutions, Volume I*, page 65.

Box 1: Causers pay versus beneficiaries pay

Some stakeholders have suggested that the beneficiaries of a direction should pay for that direction.

Often, the causers and beneficiaries of a direction will be the same entities. By consuming, an entity has:

- caused the need for the direction
- benefited from the direction if they would have otherwise been curtailed.

However, sometimes, the beneficiaries and causers can be different entities. For example, the beneficiaries of a direction include those that avoided curtailment *after* the direction. Whereas the causers of the direction may have been consumers of gas *before* the direction.

Once the direction has happened, the costs relating to that direction are sunk. Charging the sunk costs of the direction to the beneficiaries of that direction may disincentivise what would otherwise be efficient consumption given the direction has occurred. For this reason, we consider it better promotes economic efficiency for the causers of a direction to pay, rather than the beneficiaries, to the extent that the beneficiaries and causers are not the same entities. This view is also held by the AEMC, as articulated for RERT cost recovery.[5]

The beneficiaries pay approach may be considered "fair" but may not be economically efficient.

Sunk costs – to the extent they arise – are not marginal and so would ideally be excluded from the price. Clearly, not recovering sunk costs incurred by AEMO contradicts with principle 1. As noted by the AEMC in its discussion of sunk RERT costs, the recovery of these costs should be done in a manner which is as non-distortionary as possible. A sophisticated approach to this is Ramsey pricing, where consumers that have a lower elasticity of demand are charged a higher proportion of the sunk costs on the basis that their consumption – and hence efficiency – will be relatively unaffected by a relatively large perturbation to marginal cost-based pricing. Conversely, those with higher price elasticity of demand are charged a lower proportion of the sunk costs.

Ramsey pricing could be considered inequitable as it is a form of price discrimination – charging those that need an identical service more because they "need" it more. In practice – perhaps in part for this reason and because of its complexity – Ramsey pricing is not commonly applied in the Australian public policy. For the RERT, the AEMC instead smeared sunk costs as widely as possible, because this means that:

> *"the difference between the price reflecting marginal costs and the price reflecting marginal cost plus a share of residual costs is minimised. Changes in behaviour in response to this minimised change in price should, in turn, be as small as possible (noting that efficient behaviour is best incentivised were prices to reflect marginal costs only)"*[6]

Equity

AEMO is required to "minimis[e] inequitable distributional cost impacts to the extent reasonably possible" when making procedures to recover costs relating to directions.[7]

Whether a cost recovery method is more equitable than another is subjective. Some might consider that allocating costs broadly is more equitable as it spreads the costs most thinly and so has the smallest impact on individuals.

[5] AEMC (2019), National electricity amendment (enhancement to the reliability and emergency reserve trader) Rule 2019, section 8.4.1 – Cost recovery principles, p191, https://www.aemc.gov.au/sites/default/files/2019-05/Final%20Determination.pdf.

[6] AEMC (2019), National electricity amendment (enhancement to the reliability and emergency reserve trader) Rule 2019, section 8.4.1 – Cost recovery principles, p191, https://www.aemc.gov.au/sites/default/files/2019-05/Final%20Determination.pdf.

[7] Information paper: Extending AEMO's functions and powers to manage east coast gas system reliability & supply adequacy, p. 11.

Others might consider that costs should be recovered more narrowly from those that benefited from AEMO's actions, or those that caused those actions.

AEMO has a general requirement under the National Gas Law to have regard to the National Gas Objective (NGO).[8] Our view is that the NGO as currently constructed relates to economic efficiency. This view is confirmed by the second reading speech of the National Electricity Law (2005) which introduced a near identically constructed objective for the electricity sector:

> *"The market objective is an economic concept and should be interpreted as such... The long-term interest of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. If the National Electricity Market is efficient in an economic sense the long-term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised."*[9]

An advantage of the NGO is that it focuses AEMO's decision-making into matters that are, in principle, objective. As noted in the Review of Governance Arrangements for Australian Energy Markets ("Vertigan Review" 2015):

> *"Focus (that is, limited scope) means that regulators are not asked to resolve major policy trade-offs that, in a democratic system, are the proper responsibilities of parliaments."*[10]

This is not to say that equity is not an important consideration – just one that is better dealt with by parliaments and not delegated to agencies such as AEMO.

Without further guidance from governments as to what they consider to be "inequitable", this report will note whether we consider a particular approach could reasonably be considered equitable.

Transparent, simple and auditable

Cost recovery should transparent, simple and auditable. This:

- reduces administrative costs for both AEMO and market participants, noting that these costs are socialised and recovered from market participants
- reduces the prospect of errors and costly disputes
- promotes an efficient response to price signals, including investment and disinvestment
- better enables market participants to understand their likely exposure and manage risk
- promotes confidence.

Cost recovery for directions or the trading fund should also be consistent with other mechanisms in the market unless there are justifiable reasons for differences. The appendix to this document provides an overview of existing cost recovery mechanisms for directions in the gas and electricity markets. Cost recovery for funds in the gas rules are outlined in box 2 on page 19.

Trade-offs between the principles

There may be trade-offs between the principles. For example:

- marginal-cost based pricing to promote efficiency is inconsistent with recovering all costs when there are sunk costs
- identifying the causers of costs may be complex

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[8] National Gas Law, 91A(2).

[9] Hansard, SA House of Assembly 9 February 2005.

[10] Review of Governance Arrangements for Australian Energy Markets, p. 24.

- Ramsey pricing to recover sunk costs is a form of price discrimination that is often considered inequitable
- Ramsey pricing is complicated as it requires knowledge of the elasticity of demand of consumers

Evidence of the relative merits of options which trade-off these principles may be limited, and determining the appropriate approach may require judgement.

3. DIRECTIONS

3.1. APPLICATION OF THE PRINCIPLES TO COST RECOVERY FOR DIRECTIONS

Should consumers, producers and/or pipeline owners be allocated costs?

In a sense, producers and/or pipeline owners could be considered to be the causer of marginal costs arising from some directions. Had they produced more gas or enabled more gas to be shipped around the country, then perhaps a direction could have been averted.

However, we do not consider it appropriate for producers or pipeline owners to be charged:

- Recovering costs associated with directions from producers or pipeline owners increases their risks and costs. This in turn could reduce their incentive to participate in the market over the long-term – exacerbating the reliability problems that the reforms are trying to address
- Producers already have a strong incentive to increase supply when the market is tight, either to fulfil contractual obligations or sell at high spot prices.
- There are practical challenges to determine what the pipeline owner or producer should otherwise have done in order to determine the quantum of the charge. The counterfactual – what they did not do but might have – is inherently unknowable. It might be complex to calculate and controversial.

Instead, we recommend that the consumer side of the market exclusively contribute to the cost of directions incurred by AEMO. Note that we consider liquefied natural gas producers to be consumers of natural gas. This may also be considered to be fair, given that consumers are the ultimate beneficiaries of the intervention. It is also consistent with the majority of approaches taken in the NGR and National Electricity Rules (NER) (see appendix).

It is more practical to charge wholesale market participants which purchase gas for their own use or retail to end-consumers that attempt to recover costs directly from small-end consumers. Wholesale market participants could then factor in these charges to the price they charge end consumers.

Which market participants should be charged, and on what basis?

In well-functioning markets, today's prices reflect the market's expectations of future supply and demand conditions at a given location. Prices reflects marginal costs – including the opportunity costs associated with foregone consumption later. Market participants which cause a marginal cost to be incurred already face this cost through the price they pay (or choose not to pay). This incentivises efficient supply, demand, investment, disinvestment and contracting, and means that directions – in a well-functioning market – are unnecessary.

The issue that the governments are trying to address is that the market – for whatever reason – is not functioning to their satisfaction. This might be because it cannot deliver appropriate outcomes in an emergency (such as an outage of equipment), cannot deliver an outcome deemed to be equitable, a market failure giving rise to economic inefficiencies (including, for example, a lack of transparency in the price signal), or a disconnect between the value that governments and consumers place on reliability.

In principle, to promote economic efficiency we should attempt via the cost recovery mechanism to replicate the prices that would arise in a well-functioning market. However, this is likely to be inherently challenging. Prices that emerge through the market distil a great deal of information about expectations of future supply and demand by location. It is difficult to derive simple heuristics to replicate the market. At best, the cost recovery process is likely to approximate ideal prices that would arise in well-functioning markets.

For example, AEMO has powers to direct in a variety of circumstances where the causers of the intervention – and the resulting marginal cost – may be difficult to determine. In the case where there is a shortfall in energy arising over a period of time and across the east coast, the causers of this shortfall include all those that have consumed historically, regardless of their location. This suggests that costs should be allocated on the basis of total historic consumption (over a period of months, say) regardless of location. Consumers (or their representatives in the wholesale market – retailers) could then factor in the probability of compensation costs being recovered from them in their consumption decisions (or reflected into retail prices for end-consumers), incentivising a reduction in consumption to the extent that this consumption is inefficient.

In contrast, if there is a shortfall in energy to a specific location at a specific time (such as a peak demand day in Sydney), the causers of the direction – and resulting marginal cost – are more concentrated. Reducing consumption in a location geographically remote from, or historic to, the shortfall will make little or no difference to whether the direction is required, because of the time it takes to transport gas across the system or pipeline constraints. Recovering compensation costs from these parties may deter otherwise efficient consumption. Instead, costs should be recovered in a more targeted manner from those consuming geographically and temporarily close to the shortfall in gas. Peak consumption at the time of the direction (e.g., GJ/day), rather than consumption over time (e.g. GJ/year) is more appropriate.

In the case of some directions there may be clear causers of marginal costs. Transporting gas between locations does not increase the overall supply of gas across the east coast market (reducing it in one location and increasing it in another). Assuming, for the reasons outline above, that for the purpose of cost allocation the causers of directions are consumers and not producers or pipeline owners, the specific consumers which cause a direction to transport gas are consumers at the location to which the gas is being transported to. Indeed, those that are in the location from which gas is transported from will themselves incur costs in the form of higher prices in that location. The Victorian DWGM already has mechanisms – such as the uplift payments – which allocate costs to causers to incentivise efficient behaviour.

However, in other circumstances there is unlikely to be a bright line between these two scenarios, made more challenging by the “contract carriage” market design outside of the DWGM which relies on contracts, rather than rules, to allocate costs and risks between market participants. For example, “shallow” storage near to a major demand centre may be low going into a peak demand day, meaning that AEMO is required to direct to ensure that the supply meets demand. Was the direction and resulting marginal costs caused by those consuming on the peak demand day at the load centre? Or was it because of recent historic consumption in the demand centre which has drained the storage to its current level? Or perhaps even more broadly it was because of historic consumption across the east coast gas market over a period of time which has meant that the price of gas to refill the tank is too high?

Identifying causers of marginal costs may be somewhat challenging after the direction has occurred. But it is likely to be even more challenging to identify ahead of time the various circumstances that might arise to differently allocate costs to causers depending on the circumstance.

How efficient can cost recovery be in practice?

Promoting economic efficiency through cost recovery for directions may also be difficult given the elasticity of demand for gas. We speculate that small end-consumers (e.g., households) on fixed price retail contracts have relatively low short-run elasticity of demand: they are unlikely to change their behaviour significantly, if at all, if their retailer incurs a charge relating to a direction. This suggests that there may be relatively limited economic benefits in attempting to allocating costs to small end-consumers in a manner which closely reflects the marginal costs of directions their consumption causes.

Another issue is that the costs incurred by AEMO (i.e., the compensation claims made by market participants) only relate to direct costs associated with a gas service and not opportunity costs. To best promote economic efficiency prices would reflect all economic costs, including all direct costs and the opportunity cost of market participants who – by being directed – forego benefits. In isolation, this suggests that the charges faced by market participants will only partially reflect costs and so only partially promote economic efficiency.

Should the contract or physical gas positions of market participants impact cost recovery?

One option is to limit the recovery of costs from those consumers (or their retail representatives in the wholesale market) who are "short" of gas. By "short", we mean those entities that consume more gas that they produce and/or have bought financial or physical contracts for, and so are buying gas on the spot market. Charges would be recovered based on how short the entity is (with the shortest entities facing higher charges). Entities that have a "long" position (produce or have bought contracts in excess of their own consumption) would not be charged.

This is broadly the approach taken in the Retailer Reliability Obligation (RRO) in the National Electricity Market. In certain circumstances, entities are required to contract for certain amounts of electricity. Costs associated with AEMO's actions as Procurer of Last Resort (PoLR) are recovered from those entities that have a net contractual position that is less than their requirements.

The RRO approach may incentivise more efficient outcomes over the long term by incentivising more efficient levels of production. Indeed, we understand this to be the rationale of the RRO.

Conversely, the marginal effect of reducing demand is the same regardless of an entity's physical or contractual position (i.e., regardless of whether it is long, short or "in balance"). On this basis, the same charge should be imposed on these entities to encourage all market participants to adjust their consumption to the extent it is efficient. Charging only those entities that are short may encourage otherwise efficient consumption to be curtailed by these parties, and otherwise inefficient consumption by long entities to continue, rather than curtailing the lowest value demand.

Regardless, such an approach seems more appropriate in stage 2 of the government's work on improving reliability in the east coast gas market. Stage 2 reforms potentially include:

> *"requiring retailers and generators to provide information on the arrangements they have in place to meet their own needs and the expected needs of their customers, including during periods of peak demand. Consideration will also be given to whether certain parties should be required to contract sufficient storage or additional sources of supply and/or demand reduction to manage extreme demand peaks and/or critical supply shortfalls."*[11]

Allocating the cost of directions to short market participants seems to pre-suppose the outcomes of stage 2. On this basis we do not recommend recovering the cost of directions in this manner at this stage.

Should a directed market participant face costs associated with directions?

We understand that the rules will require that a directed entity does not fund compensation. On this basis we do not discuss this matter further.

3.2. Directions cost recovery: recommendations and rationale

Under the new framework applying across the east coast, after making a direction, AEMO is required to publish information relating to the risk or threat to which the direction relates. The information that AEMO must publish includes the risk or threat's location and likely duration. Our recommended approach leverages the requirement to catagorise the likely causers of the direction by geography and time. Costs are then formulaically allocated in proportion to gas withdrawals.

[11] *Extension of AEMO functions and powers to manage supply adequacy in the east coast gas market*, Consultation paper, September 2022, p.30.

Recommended approach to recovering costs associated with directions

AEMO must determine the duration and location of the risk or threat to which the direction relates. Based on this determination, costs should be allocated in accordance with the table below:

Table 1: allocating the costs of directions

		Location of risk or threat		
		In one state only	**In multiple states**	**East coast gas system wide**
Duration of risk or threat	**< 1 month**	Allocates costs to entities in proportion to the sum of their withdrawals in the **state** in the **week** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals across the **states** in the **week** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **week** prior to the end of the direction
	> 1 month	Allocates costs to entities in proportion to the sum of their withdrawals in the **state** in the **six months** prior to the end of the direction	Allocates costs to entities in proportion to the sum of their withdrawals across the **states** in the **six months** prior to the end of the directions	Allocates costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **six months** prior to the end of the directions

In the case that AEMO is unable to determine the likely duration of the risk or threat, costs should be allocated based on withdrawals over the preceding six months (ie, consistent with the bottom row of the table above).

In the case that AEMO is unable to determine the likely location of the risk or threat, costs should be allocated based on withdrawals across the east coast gas system (ie, consistent with the right-hand column of the table above).

This approach meets the principles outlined above:

- It is relatively simple and transparent although still leaves some judgement for AEMO in specifying the duration and location of the risk or threat to which the direction relates.
- By allocating costs based on the duration and location of the risk, the approach attempts to allocate costs to causers to promote efficient decision making:
    - Where the future risk or threat has an expected duration of greater than one month, it is more likely to have been caused by historic consumption over an extended period of time that has cumulatively drawn down reserves of gas in storage. Allocating costs based on historic consumption over a relatively long period (i.e. six months) captures this effect. Conversely, where the future risk or threat has a duration of less than one month it is likely to be caused by more immediate peaks in demand (or reductions in supply) and so shorter-term historic consumption (i.e. weekly) is more appropriate.
    - Where the future risk or threat is in a specific state or states, consumption within that state or states is likely to have caused the direction. Conversely, where the future risk or threat is east coast wide the likely cause is consumption across the east coast.
    - If AEMO cannot determine the duration and/or location of the risk or threat, socialising costs as widely as possible (by time and geography) is likely to have the least distortionary impact on an individual entity's decision-making.
- We consider allocating costs to causers to be equitable. There may be other equitable solutions (such as allocating costs to the beneficiaries of directions, rather than the causers), but these solutions do not satisfy the other principles – notably to promote economic efficiency.

- The approach exactly recovers the costs of directions.

The various settings (i.e. a risk/threat duration of less than or greater than one month result in basing the cost recovery on one week's or six months' of historic consumption) are intended to approximate the allocation of costs to causers. Other settings may reasonably be used.

Our recommendation recognises that the inefficiencies arising from inaccurate allocation of costs to causers may be modest. A relatively simple, if sometimes inaccurate, approach therefore appears to be appropriate. Furthermore, a more complex approach may do little to improve efficiency given the inherent difficulties in accurately allocating costs to causers. Nevertheless, in making our recommendations we recognise that the approach will – in some circumstances – promote inefficient consumption decisions and be considered inequitable. Our methodology specifies clear a delineation of the duration and location of the risk/threat to which the direction relates and the cost allocation method. In practice the causers of costs are unlikely to so clearly attributable. This may promote inefficient consumption decisions and be considered inequitable.

Given these potential limitations, it is timely that a post-implementation regulatory impact assessment will be completed by the Department of Climate Change, Energy, the Environment and Water within 12 months of the introduction of these reforms. The Australian Energy Market Commission (AEMC) will also review the framework within three years. These reviews provide an opportunity to reconsider whether the specific cost recovery formulation implemented by AEMO is appropriate.

4. TRADING FUND

4.1. Application of the principles the trading fund

How should the trading fund initially be funded?

Based on the principle that AEMO should recover its costs (and no more or less) we consider that it is not appropriate for AEMO to recover the initial fund from entities. AEMO should instead fill the fund by increasing debt on its own balance sheet, or provide the fund with a facility or option to obtain funding so that it has access to $35m. In the former case, AEMO would have $35m of cash within the fund, and outside the fund structure AEMO would have $35m increased debt / lower net cash, for example. While in theory additional finance could be partially financed by equity, in AEMO's circumstances we consider that financing through a change in net debt is most likely. In the case of the latter, it will have no assets in the fund but AEMO will have no debt. Either way, the overall change in AEMO's net assets from putting capital into the fun dis zero. The reasons for our recommendation are:

- When the fund is initially created AEMO has not incurred costs, or made a profit or loss, which only occurs over time and when fund is invested.
- Recovering the initial fund from entities (for example as an uplift charge on the price they pay for gas) may distort their consumption decisions, and so detract from economic efficiency.
- Provision of funding by AEMO from its own corporate resources allows the funding to take place quickly, which is consistent with urgent policy intent of the reforms.

Over time, AEMO should maintain the principal in the fund at $35m in real terms (or have access to $35m of debt in real terms).

How should the debt costs on capital used to finance the initial trading fund be funded?

The only cost associated with filling the trading fund initially (or gaining access to an equivalent amount of money through an option for debt) is an appropriate return on capital on the funds provided. Although the assets held by the fund may be risky, the cost of financing the fund is likely to be lower than the expected return of assets like those held within the fund. This is because the cost recovery rules should ensure that AEMO makes no profit (or loss) other than a reasonable return on capital irrespective of trading performance. Indeed, the rules may provide for the fund to recover any additional costs from bad debt. The appropriate return to AEMO for financing the fund may therefore be the cost of debt. It is also likely that given AEMO's corporate ownership structure, it would finance the trading fund through raising additional debt. Nevertheless, this relatively low cost must still be recovered from consumers for AEMO to cover its costs.

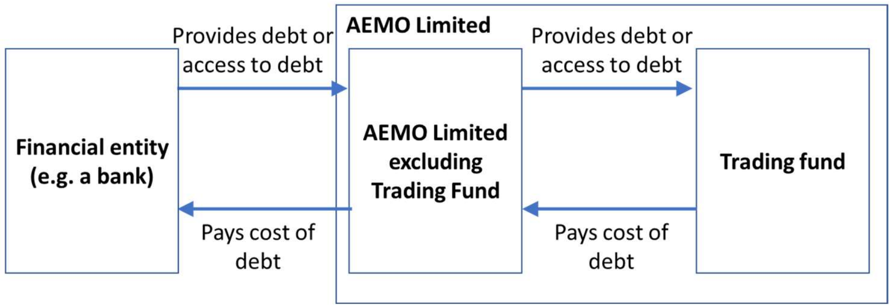
There are two options for how these debt costs on capital provided to the fund might be recovered:

- AEMO recovers these costs directly from consumers, for example via participant fees. This would be outside of the mechanism by which trading fund profits and losses are funded (discussed below).
- AEMO recovers these costs from the trading fund. These costs are treated as a loss for the trading fund and are recovered from consumers.

We favour the latter option, because it means that the cost of debt offsets any interest or other profit made by the trading fund.

We consider it may be easier, for the purpose of explanation, from now on to consider the fund to be a separate entity to the rest of AEMO (although owned by AEMO). The rest of AEMO has provide the initial funding $35m and requires payment of the debt costs for financing the fund. This is illustrated in figure 1:

Figure 1: relationship of trading fund to AEMO



What happens if the trading fund buys some gas?

We consider that the fund should be considered to comprise of both financial and non-financial assets, as both of these types of assets allows AEMO to perform the function of the fund.

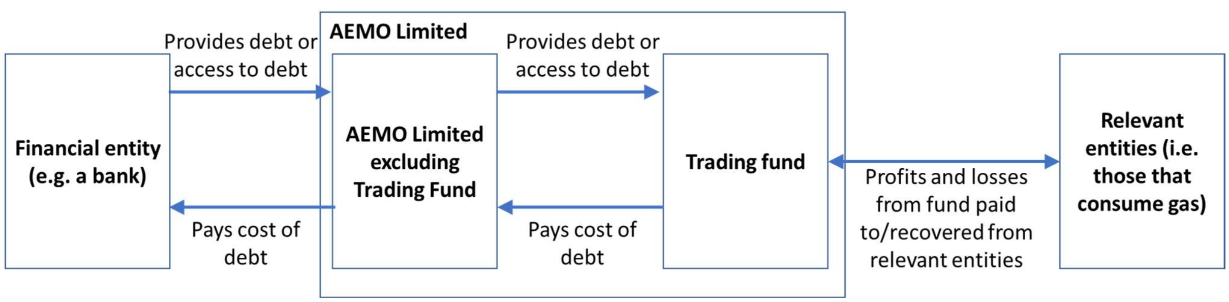
At the point that the trading fund purchases gas, no economic costs have been incurred by the trading fund. It has not made a profit or loss, and there are no costs to be recovered by the fund. If the fund purchases $5m of gas, then it has $5m less cash but $5m more gas, with no overall change to the value of the fund.

What happens if the fund makes a trading profit or loss?

Over time, the fund may make a loss or profit because the value of all the financial and non-financial assets in the fund go up or down. As noted above, we also consider it appropriate that the debt costs associated with the initial funding of the fund be treated as a cost to the fund.

Consistent with the principle that AEMO should exactly cover its costs, losses should be recovered by the fund and profits redistributed by the fund from other entities, as illustrated in figure 2 (which expands on figure 1):

Figure 2: Profits and losses recovered from relevant entities



Economic efficiency will be enhanced if the prices that entities face reflect marginal costs. Conceivably, it may be possible to determine who, through their actions, caused AEMO to trade at a loss (profit), and allocate the costs (proceeds) to these entities.

We understand that AEMO is considering two different approaches to how it operates the trading fund. Which approach it takes impacts our recommended approach to how trading profits/losses are funded.

Under the first approach, which we will call the "trader model", AEMO buys and sells gas and related services. Under this model we consider there are significant practical challenges from allocating costs (and proceeds) to entities that are determined to cause AEMO to trade at a loss or profit:

- Over time the fund may gain or lose value based on the market's view on the value of each of the assets in the fund. It is difficult to determine entities who through their actions caused these gains and losses, given they are a function of price movements in the market (other than AEMO, which as a not-for-profit entity cannot bear unfunded losses).
- AEMO may be entering into multiple, overlapping trades, complicating the assessment of who caused profits or losses.

- Determining the timing of profits or losses in order to recover/redistribute money is arbitrary. The value of the assets in the fund will change continuously based on, for example, the price of gas. Losses today may become gains tomorrow.

Given these challenges, we consider it more appropriate to minimise the difference between the price reflecting marginal costs (which in a well-functioning market is equal to the price that would otherwise arise) and the price inclusive of recovering/redistributing trading fund losses/profits. This is achieved by socialising the costs as widely as possible across consumers (including, for the avoidance of doubt, consumption in the production of liquefied natural gas). While this does not result in prices reflecting marginal costs, it distorts price signals the least given the practical challenges of pricing based on marginal costs.

Based on advice from AEMO, we understand that the rules will require AEMO to commence each financial year with access to $35m (adjusted for inflation). We recommend that AEMO recovers/redistributes the difference between $35m (adjusted for inflation) and the value of the fund at the end of the financial year in proportion to each entities' gas consumption in the preceding year.

This approach is relatively simple and allocates losses/profits to those that consumed in the year that they arose.

If AEMO must commence each financial year with access to $35m (adjusted for inflation) then it may need to calculate ahead of that time the payment required by each entity. For example, one month before the end of the financial year (31 May) it could estimate the value of the fund at the end of the year and recover/redistribute in proportion to actual consumption over the previous 12 months (1 June – 31 May). AEMO should undertake these calculations as late as reasonably practicable.

This approach differs from the approach taken for the existing participation compensation funds in the NGR, outlined in box 2. We understand from AEMO that unlike for the trading fund, there is no requirement on AEMO to have access to the participation compensation funding requirement at the start of each financial year.

Box 2: Participant compensation funds in the NGR

AEMO is required to determine a contribution rate for participant compensation funds by dividing the funding requirement for each fund for the forthcoming financial year by AEMO's reasonable forecast of the aggregate quantity of gas which it expects all Market Participants will withdraw from market for the financial year. The contribution rate is then applied on a $/GJ basis of gas actually withdrawn.

Taking the DWGM's participant compensation fund as an example, the funding requirement for a given year is the difference between $1m and AEMO's reasonable expectation of the balance of the fund at the end of year, capped at $500k. By way of illustration, assuming no other income or outgoings from the fund and assuming gas withdrawn over the year is consistent with the forecast:

- if the fund is expected to be at $900k at the start of the financial year then the funding requirement will be $100k (which will accumulate into the fund monthly over the forthcoming financial year).
- if the fund is expected to be at $300k then the funding requirement will be $500k in the first financial year (which will accumulate into the fund monthly over the financial year) and $200k in the subsequent financial year (which will accumulate monthly into the fund over the second financial year)
- if the fund is expected to be at $0 then the funding requirement will be $500k in the first financial year (which will accumulate monthly into the fund over the financial year) and $500k in the subsequent financial year (which will accumulate monthly into the fund over the second financial year)

This means that the fund can take up to approximately two years to be refunded to $1m.

The same approach is taken for the short term trading markets (STTMs) (although with different dollar amounts). We understand that there were no transitional arrangements at the start of the STTM in 2010 with respect to the funding of the fund, meaning with the funds accumulating from zero over approximately two years.

As noted above, AEMO is considering an alternative approach to operating the trading fund, which we will call the "services model". In this model, AEMO will not purchase assets such as gas, but instead purchase services from a third party. For example, AEMO may contract with a third party which requires that the third party deliver a certain

quantity of gas at a certain location in pre-determined circumstances if called upon by AEMO. AEMO may pay the third party an "availability fee" for the option to exercise this contract, and/or an "activation fee" if the option is exercised. Under this model we do not expect there to be any material debt
because AEMO is not purchasing and holding gas, so the question of how to recover this cost (discussed above) is likely to be moot.

Many of the challenges in identifying the causers of costs in the trader model are not present in the services model. As AEMO is not buying or selling gas, there is no prospect of AEMO making a profit, and the "losses" in the fund are simply the costs of the availability and activation fees described above. While it may still be challenging to exactly identify the causers of these costs, we consider it of similar difficulty to the case of directions, and so recommend a similar approach.

AEMO will be required to identify the location and duration of the risk or threat to which a trade relates (by which we mean in this context purchasing a service using the fund). As with directions, we recommend that "activation fees" are recovered based on the location and duration of the risk or threat to which the activation of a contract relates:

Table 2: allocating the activation costs of contracts struck through the trading fund

		Location of risk or threat		
		In one state only	**In multiple states**	**East coast gas system wide**
Duration of risk or threat	**< 1 month**	Allocates activation costs to entities in proportion to the sum of their withdrawals in the **state** in the **week** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals across the **states** in the **week** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **week** prior to the end of the trade
	> 1 month	Allocates activation costs to entities in proportion to the sum of their withdrawals in the **state** in the **six months** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals across the **states** in the **six months** prior to the end of the trade	Allocates activation costs to entities in proportion to the sum of their withdrawals **across the east coast system** in the **six months** prior to the end of the trade

If the risk or threat's location or duration cannot be identified, the activation costs should be socialised widely (i.e., consistent with the right column and bottom row of the table above, respectively).

The rationale for this recommendation, and caveats, are the same as for directions: it provides a relatively simple and transparent allocate of costs to those that – approximately – allocates the costs to causers to promote economic efficiency. It also allows costs to be recovered quickly.

Furthermore, consistency in the approach between directions and the trading fund may be beneficial. It avoids cost recovery approaches differing depending on whether AEMO directs a third party or contracts with a third party, even when the physical outcomes from these two mechanisms may be identical.

Unlike directions, contracting services using the trading fund may also come with upfront "availability fees" which AEMO incurs regardless of whether it exercises its option under the contract. These costs should not be recovered in the same way as activation fees because:

- if the option in the contract is never exercised then the availability costs would never be recovered
- at the time that the contract option is exercised availability costs are sunk, and so not caused by those whose consumption caused the activation of the contract.

Instead, we recommend the same approach as taken by the AEMC for RERT contracts.[12] Availability fees should be recovered over the length of the contract in the state or states to which the contract relates, in proportion to consumption over that time period. Costs could be recovered monthly (for example) in proportion consumption within each month that the contract is active.

This recovers the sunk costs widely, and so minimises the extent to which prices differ from those that would arise via the free operation of the market, promoting efficiency.

4.2. Trading fund cost recovery: summary of recommendations and rationale

Summarising the discussion above, we recommend the following:

- AEMO should make the initial contribution to the fund by increasing debt on its balance sheet or through a debt facility or debt option.
- Because AEMO has not incurred economic profit or loss in setting up the fund, the initial funding should not be recovered from entities.
- AEMO should recover the debt interest cost on capital provided by AEMO to the fund from the fund itself. In effect, the fund pays AEMO the cost of capital each year, which is treated as a loss to the fund and recovered from entities.
- The fund should recover/redistribute losses/profits (including debt costs on capital provided to the fund) from entities based on the principle that AEMO should (exactly) recover its costs. Consequently, losses/profits should be measured against the total value of the fund inclusive of financial and non-financial assets.
- Ideally, the prices that AEMO charges/pays entities to recover/redistribute costs would reflect the marginal costs/benefits that those entities caused via their actions.
- In practice, there are substantial challenges to pricing in this manner if the “trading model” approach to the trading fund is taken by AEMO. Consequently, we recommend that fund profits/losses are socialised across all gas consumers. While this does not result in prices reflecting marginal costs, it distorts price signals the least given the practical challenges of pricing based on marginal costs. Specifically, we recommend that as late as reasonably possible before the end of the financial year:
    - AEMO determines the funding requirement as the difference between $35m (adjusted for inflation) and the forecast total value of the fund (inclusive of any amount AEMO can access via a debt facility or option) at the end of the financial year. This figure could be positive or negative, depending on whether the fund has made a profit or loss.
    - AEMO divides the funding requirement in proportion to each entities’ actual consumption for the preceding year to determine the amount that each entity must pay to AEMO (or be paid by AEMO)
- Each entity would pay / receive the amount calculated above before the start of the financial year. If instead the “services model” is implemented for the trading fund whereby AEMO contracts for services then we recommend:
    - the costs of activating a contract should be recovered in the same way as for directions. AEMO identifies the location and duration of the threat or risk to which the activation of contract relates and allocates costs based on the table 2 above.
    - availability payments made by AEMO for the option of exercising the contract are sunk and so should be socialised. We recommend this is done in proportion to consumption over the time in

[12] AEMC, *Enhancement to the Reliability and Emergency Reserve Trader, Rule determination*, 2 May 2019, section 8.4

which the contract is in place, in the state or states to which the risk or threat to which the contract relates.

APPENDIX: COST RECOVERY EXAMPLES ACROSS AUSTRALIAN GAS AND ELECTRICITY

The below illustrates various mechanisms in the National Gas Rules (NGR), National Electricity Rules (NER) and National Energy Retail Law (NERL) through which costs of intervention are recovered.

Example	Sources	Overview[13]
AEMO intervenes in the Declared Wholesale Gas Market (DWGM) due to a threat to system security	NGR: 344 – Participant claims in respect of intervention Victorian Wholesale Gas Market Compensation Procedures (section 5).	Allocated to the causers in proportion to the estimated contribution each causer contributed (where this can be reasonably identified and estimated by the dispute resolution panel). Where this is not possible, the dispute resolution panel will allocate the costs to Market Participants in proportion to their actual daily gas withdrawals in the settlement cycle 18 business days after the end of the calendar month.
AEMO has applied the administered price cap in the DGWM	NGR: 350 - Registered participant claims in respect of application of administered price cap Victorian Wholesale Gas Market Compensation Procedures (section 5).	Allocated to Market Participants and the declared transmission system service provider (DTSSP) in direct proportion to uplift payments allocated to those parties for that gas day.
AEMO buys and sells LNG reserves in the DWGM.	NRG: 282, 286, 286B LNG Reserve Procedures (draft to be in effect from March 2023)	Allocated to Market Participants for each calendar year in proportion their total withdrawals of gas in the previous financial year. E.g., Market Participant A's allocation factor for the 2023 calendar year is based on their withdrawal allocations for the 2021-22 financial year.
Reliability and Emergency Reserve Trader (RERT)	NER: 3.15.9 – Reserve settlements	Variable costs allocated to Market Customers in proportion to regional consumption in the trading intervals that the RERT was activated. Sunk costs allocated to Market Customers in proportion to regional consumption over the length of the RERT contract.

[13] This overview is a summary and is not a complete description of the calculations/methodology. Please refer to the relevant rules or procedures.

Example	Sources	Overview[13]
Retail Reliability Obligations (RRO) – Procurer of Last Resort (PoLR)	NER: 3.15.9A – Procurer of last resort cost allocation [PoLR Cost Procedures]	The allocation of costs under the PoLR has multiple steps and nuances. Broadly: • Fixed costs allocated in proportion to a PoLR liable entity's highest uncontracted MW position in the reliability gap period • Variable costs allocated in proportion to a PoLR liable entity's uncontracted MW position for the trading interval in which the PoLR costs were incurred. Once costs have been recovered, AEMO will rebate the proceeds from PoLR debts to all Market Customers who already paid fees under the RERT for that region during the reliability gap period, to avoid over recovery from Market Customers.
Energy direction compensation recovery	NER: 3.15.8(b) – Funding for Compensation of Directions [NEM Direction Compensation Recovery]	The compensation amount, interest, and any applicable independent expert fees are recovered from Market Participants in proportion to their respective shares of total customer energy across each region that benefited from the direction (as determined by AEMO).
Market Ancillary Services Direction Compensation Recovery	NER: 3.15.8(f) – Funding for Compensation of Directions [NEM Direction Compensation Recovery]	Recovered using the same recovery process applicable to the recovery of market ancillary services costs, except that the recovery is done over all the trading intervals during which the direction applied. Recovery costs are calculated in accordance with clauses 3.15.6A(c8), (c9), (d), (e), (f), (g), (h) or (i), depending on which ancillary service was the subject of the direction. Generally, costs are allocated across Market Customers in proportion to their respective shares of energy consumed or generated.
Other Service (System Security) Direction Compensation Recovery	NER: 3.15.8(g) – Funding for Compensation of Directions [NEM Direction Compensation Recovery]	Compensation determined for directions other than for energy (3.15.8(b)) and ancillary services (3.15.8(f)) are recovered from Market Customers, Market Generators, and Market Small Generation Aggregators in proportion to the customer energy, generator energy, and small generation aggregator energy respectively.
Administered price cap	NER: 3.14 – Administered price cap 3.14.6 – Compensation due to the application of an administered price cap or administered floor price 3.15.10 – Administered price cap or administered floor price compensation payments	The cost of administered price cap compensation is recovered from Market Customers, in proportion to their adjusted gross energy in their cost recovery region.

Example	Sources	Overview[13]
Market suspension	NER: 3.14 – Administered price cap 3.14.5A – Payment of compensation due to market suspension pricing schedule periods 3.15.8A – Funding for compensation for market suspension pricing schedule periods	The cost of market suspension compensation is recovered from Market Customers in proportion to their adjusted gross energy and the region benefit assigned by AEMO. AEMO may also recover from a Market Suspension Compensation Claimant an administrative fee to assist in recouping some of the costs incurred in carrying out its functions (currently $3,500).
Retailer of Last Resort (RoLR)	NERL: Division 9 – RoLR cost recovery schemes Sections 164 – 167	The Australian Energy Regulator (AER) makes a RoLR cost recovery scheme distributor payment determination that one or more distributors are to make payments towards the costs of the scheme. Distributors are then allowed to pass this onto their customers: • in the case of electricity—positive pass-through amounts approved under the NER; • in the case of gas—approved cost pass throughs allowing variation of the distributor's reference tariffs.

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