

Australian Energy Market Commission
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13 August 2020

AEMC ERC0290 – System Services Rule Changes Submission of Walcha Energy

Walcha Energy is the leading developer of the southern New England Renewable Energy Zone in New South Wales. In the area south of Armidale and east of Tamworth we are working to deliver

- 3,840MW of wind energy
- 700MW of solar energy
- Up to 1,500MW of pumped hydro energy storage/generation.

Walcha Energy is therefore most focussed on the Investment phase of the Consultation Paper. We consider that all measures to support large scale energy storage are critical developments at the present stage of NEM transition.

With regard to Fast Frequency Response Walcha Energy supports the introduction of the new ancillary market service so that the capability and contribution of large BESS installations can be appropriately recompensed.

With regard to both System Strength management and Inertia/synthetic inertia, Walcha Energy supports central planning by AEMO and TNSPs rather than 30 minute or 5 minute markets to deliver these essential power system operational requirements. We also support competitive tendering of the services, that can be delivered by synchronous or grid forming plant within a Region, subregion or REZ.

Responses to the Consultation Paper questions are attached

Yours faithfully,

M Waring

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Consultation paper - System services rule changes

STAKEHOLDER SUBMISSION TEMPLATE

The template below has been developed to enable stakeholders to provide their feedback on specific questions that the AEMC has identified in the Consultation paper for the System services rule changes.

The rule changes discussed in the system services consultation paper are:

- AEMO – *Primary frequency response incentive arrangements* (ERC0263)
- Hydro Tasmania — *Synchronous services markets* (ERC0290)
- Infigen Energy — *Operating reserves market* (ERC0295)
- Infigen Energy — *Fast frequency response market ancillary service* (ERC0296)
- TransGrid — *Efficient management of system strength on the power system* (ERC0300)
- Delta Electricity — *Capacity commitment mechanism for system security and reliability services* (ERC0306)
- Delta Electricity — *Introduction of ramping services* (ERC0307)

This template is designed to assist stakeholders provide valuable input on the questions the AEMC has identified in the consultation paper. However, it is not meant to restrict any other issues that stakeholders would like to provide feedback on.

Given the breadth of issues discussed in the consultation paper, it is not expected that all stakeholders respond to all the questions in this template. Rather, stakeholders are encouraged to answer any and all relevant questions.

SUBMITTER DETAILS

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CHAPTER 1 – INTRODUCTION

Question 1: Section 1.2 & 1.3 – Current ESB & AEMO work relating to the rule change requests

1) What are stakeholders' views on how the rule change processes should be integrated with ESB and AEMO work programs?	Some changes are needed as soon as possible, but may need to be superseded after 2025 in the new market design. Others might simply flow into the new market design. Do not be constrained.
2) Are there any additional processes that should be closely considered by the Commission when progressing these rule change requests?	Yes. Parts of the 2018 ISP have been superseded by the 2020 ISP and more changes will occur in 2022. The state REZ development programs will evolve further and need to be taken into account.

Question 2: Section 1.6 – Timetable for the consultation process

1) Do stakeholders have any comments on the proposed timetable for the system services rule changes?	Some changes like FFR can move quickly by expanding an existing ancillary services system. Also others like moving system strength responsibility to TNSPs and AEMO are urgent. Others will need more time.
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CHAPTER 3 – APPROACH

Question 3: Section 3.2 & 3.3 – Three work streams: dispatch, commitment and investment

1) Do stakeholders agree with the AEMC's approach to grouping the rule changes, at least for initial consideration?	No objection
2) Do stakeholders believe that Figure 3.1 captures the key issues to be considered for each rule change in each time frame?	No. New technology is not properly recognised e.g. Grid forming inverters. In some cases the best solution is not necessarily market-based but competitive tender based.
3) Do stakeholders have views on whether/which services should be procured in certain time frames and not others?	Yes. FFR should be brought into FCAS asap, even if FCAS were to be replaced by a new delivery system post-2025. Also others like moving system strength responsibility to TNSPs and AEMO are urgent. Some of the proposed services should not proceed at all.

CHAPTER 4 – ASSESSMENT FRAMEWORK

Question 4: Section 4.2 – The system services objective

1) Do stakeholders agree with the AEMC's proposed system services objective being used to assess these rule changes? If not, how should it be amended or revised?	No. Both NEO and the System Services Objective need modification to recognise the medium and long term interest of electricity consumers in containing climate change impacts.
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Question 5: Section 4.3 – The planning, procuring, pricing and payment service design framework

1) Do stakeholders agree with the '4Ps' service design framework being used to assess these rule changes?	The considerations are valid. Where the optimum is situated will be debated.
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Question 6: Section 4.4 – Principles for assessment

<p>1) Do stakeholders agree with the principles proposed for assessing the rule change requests? If not, should any principles be amended, excluded or added?</p>	<p>Appropriate risk allocation is always a challenge. Investors face risks that market rules determine to be unmanageable. E.g access to the grid does not guarantee grid capacity and the access of new players can destroy the economics for the original investors. In this situation, sometimes governments need to accept the risk and invest early, for example, in grid or energy storage (PHES). Technology neutrality is critical but the decision-makers and rule-makers need to be on top of the emerging capabilities of new technology, not just rely on past experience.</p>
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CHAPTER 5 – THE RULE CHANGE REQUESTS

Question 7: Section 5.1 – Infigen – Fast frequency response ancillary service market

<p>1) What are stakeholders' views on the issues raised by Infigen in its rule change request, Fast frequency response market ancillary service?</p>	<p>Issues are valid</p>
<p>2) Do stakeholders agree with Infigen's view that a change to the NER is required to encourage efficient provision of FFR services in the NEM following contingency events?</p>	<p>Yes. However an alternative approach to expanding FCAS might need to be considered in the new post-2025 market design as a simpler solution based on competitive tendering of services might be supportable.</p>
<p>3) What are stakeholders' views on if there are any other issues or concerns in relation to frequency control in the NEM as levels of synchronous inertia decline?</p>	<p>It is not yet clear yet whether the issue will be solved by new technology deployment during a few years of PFR.</p>
<p>4) Do stakeholders consider there are alternative solutions that could be considered to improve the frequency control arrangements in the NEM for managing the risk of contingency events as the power system transforms?</p>	<p>Yes, but not in the very short term.</p>
<p>5) Do stakeholders consider that 5-minute markets for FFR ancillary services likely to be effective and efficient in the global interconnected NEM and on a regional basis?</p>	<p>Yes in the very short term. For the longer term a simpler solution should be sought. Mandatory deployment of PFR to specific generators with the capability, for (say) 3 year periods, could be an efficient solution.</p>
<p>6) Do stakeholders consider Infigen's proposal will provide adequate pricing signals to drive efficient investment in FFR capability in the NEM?</p>	<p>Probably, because the FFR FCAS function has to compete with battery arbitrage and other functions and the need will first emerge in Rgeions or sub-regions where there are no or few synchronous machines. Synchronous machines should be able to undercut batteries where synchronous plant remains in service and perhaps also where synchronous machine PHES is established.</p>
<p>7) What are stakeholders' views on, if introduced, how the costs associated with any new FFR market ancillary services should be allocated?</p>	<p>The costs should be on retailers and ultimately passed on and shared across all consumers as it is protecting their power supply.</p>
<p>8) What do stakeholders consider to be the likely costs associated with establishing two new ancillary service markets for FFR in the NEM?</p>	<p>Moderate with the alternative mandatory approach even lower cost.</p>
<p>9) What are stakeholders' views on how the proposed solution may result in any substantial adverse or unintended consequences in the NEM?</p>	<p>We think the concern that synchronous machines may be crowded out is unfounded because of other services they will provide. The main risk is that a PHES design that includes for FFR may be undercut by</p>

	batteries installed subsequently, however the synch plant can also be delivering an inertia/system strength function.
10) Are there specific issues with FFR that stakeholders think should be addressed in the NER as part of the establishment of markets for FFR services?	Need to give this more thought.

Question 8: Section 5.2 – Infigen – Operating reserves market

1) Do stakeholders agree with Infigen that tight capacity conditions and increasing uncertainty in market outcomes are problems that an operating reserve would address?	We think the concern is unfounded. By far the biggest risk to supply/demand imbalance has been unforeseeable (to the market) breakdowns of old fleet high capacity generators. This does not happen with inverter/converter connected plant and N-1 dispatch of grid.
2) Are there alternative solutions that could be considered to address tight capacity conditions and increasing uncertainty in market outcomes?	Not needed
3) Do stakeholders consider Infigen’s proposal would provide adequate pricing signals to drive efficient use of and investment in operating reserve services now and in the future?	
4) How do stakeholders think separate operating reserves arrangements would affect available capacity in the spot, contracts and FCAS markets now and in the future?	
5) How do stakeholders think separate operating reserves arrangements would affect prices in the spot, contracts and FCAS markets now and in the future?	
6) How could the design of an operating reserve market (e.g. criteria for eligible capacity) best support competitive outcomes both in the operating reserves market but also energy and FCAS markets?	
7) What are the factors that should be considered when seeking to set and procure efficient levels of operating reserve?	
8) Would Infigen's proposed operating reserve market result in any substantial adverse or unintended consequences in the NEM?	
9) What are the costs associated with establishing an operating reserve market in the NEM? If introduced, how should these costs be allocated?	
10) What kind of incentive/penalty arrangements would be necessary to be confident the operating reserves procured are available when needed?	

Question 9: Section 5.3 – Delta Electricity – Introduction of ramping services

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1) Do stakeholders agree with Delta that price volatility that occurs when dispatchable generators ramp through their energy bid stacks in response to predictable, daily, high rates of change from solar ramping up and down is a problem that needs addressing?	This problem is a side-effect of transition to the new more economical and environmentally friendly renewable energy technology. It is not a problem that needs to be solved. It is being solved by the economics of new plant. Any measures to restrain this change are not in the interests of consumers.
2) Do stakeholders think that a new raise and lower 30-minute FCAS would address the price volatility at these times? Are there alternatives that could be considered to address this problem?	Not needed
3) Do stakeholders consider Delta's proposal would provide adequate pricing signals to drive more efficient use of and investment in ramping services thanks existing price signals and information provided through the PASA and pre-dispatch processes?	
4) How do stakeholders think a separate 30 minute ramping product would affect available capacity in the spot, contracts and FCAS markets now and in the future?	
5) How do stakeholders think a separate 30 minute ramping product would affect prices in the spot, contracts and FCAS markets, now and in the future?	
6) How could the design of a ramping FCAS product (e.g. criteria for eligible capacity) support competitive outcomes in both energy and FCAS markets?	
7) What are the factors that should be considered when seeking to set and procure efficient levels of ramping services?	
8) Would Delta's proposed new 30-minute raise and lower FCAS products result in any substantial adverse or unintended consequences in the NEM?	
9) What are the costs associated with establishing new 30-minute raise and lower FCAS products in the NEM? If introduced, how should these costs be allocated?	Very huge costs to consumers due to more expensive electricity.
10) What kind of incentive/penalty arrangements would be necessary to be confident the new 30-minute raise and lower FCAS products procured are available when needed?	

Question 10: Section 5.4 – Delta Electricity – Capacity commitment mechanism for system security and reliability

1) Do stakeholders agree with Delta that there is an increasing risk that capacity capable of providing reserves or services may not be available at times when the power system may need them to respond to unexpected events because of increasing incentives to de-commit?	This is a very temporary problem in the transition that will be resolved by the rapid construction of a large quantity of renewable energy generators which will in future supply an export market, and of pumped hydro storage which will provide reserves and services back up. In the interim AEMO can intervene when required which will be not all that often.
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2) Do stakeholders think that a mechanism to commit capacity one day ahead of time would deliver the reserves or services needed? Are there alternatives that could be considered to address this problem?	Don't know
3) Do stakeholders consider Delta's proposal would provide adequate pricing signals to drive more efficient use of and investment in reserves and system services?	Don't know
4) How do stakeholders think Delta's capacity commitment payment would affect available capacity in the spot, contracts and FCAS markets now and in the future?	It could become a means of market manipulation
5) How do stakeholders think Delta's capacity commitment mechanism would affect prices in the spot, contracts and FCAS markets now and in the future?	It could become a means of market manipulation.
6) How would a capacity commitment mechanism and payment affect entry, exit and competition in the NEM over the short and long term?	It may have a negative unhelpful impact
7) What are the factors that should be considered when deciding how much capacity to commit ahead of time?	This is not the right approach
8) Would Delta's proposed capacity commitment mechanism result in any substantial adverse or unintended consequences in the NEM?	Probably – as above
9) What are the costs associated with establishing a capacity commitment mechanism in the NEM? If introduced, how should these costs be allocated?	
10) What kind of incentive/penalty arrangements would be necessary to be confident that the committed capacity would be available throughout the commitment period and/or when called upon?	

Question 11: Section 5.5 – Hydro Tasmania – Synchronous services markets

1) Do stakeholders consider this rule change proposal presents a viable model for the provision synchronous services? a) Could this proposed model be used to provide the essential levels of system strength (and / or inertia and voltage control) needed to maintain security and the stable operation of non-synchronous generation? b) Could this proposed model be used to provide levels of system strength (and / or inertia and voltage control) above the essential level required for security?	This is an interesting suggestion. Although the description as “synchronous services” assumes old technology is the solution. A technology neutral name should be adopted. However it seems likely that the need for SSG in Tasmania could be averted by grid strengthening towards the north west and north east which will in any case be needed to connect new generation and loads. At present it seems that batteries, solid state plant and syncons are the path on the mainland although PHES required for other reasons may be the solution. No further comments at this time.
2) Do stakeholders consider that the creation of a synchronous services market could have any adverse impacts on other markets in the NEM? If so, what are these impacts?	Unless very carefully framed, it may prolong the life of the unreliable aged fleet.

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3) Would the proposed model set out in the rule change request efficiently price and allocate costs for synchronous services in the NEM?	No further comment
4) Do stakeholders consider the model set out in the rule change request to be capable of sending price signals sufficient to encourage new investment in synchronous capacity?	
5) Do stakeholders consider the rule change provides an appropriate incentive mechanism for existing synchronous generators to make operational decisions to provide synchronous services?	
6) Do stakeholders consider the rule change provides the appropriate locational signals for the provision of synchronous generators to provide synchronous services?	
7) What do stakeholders see as the primary opportunities / limitations of the mechanism as proposed by Hydro Tasmania?	
8) Would the model proposed in the rule change request enable effective competition in the market for the provision of synchronous services?	
9) What suggestions do stakeholders have in relation to the first order changes that would be required in NEMDE to facilitate this proposal and any second order changes that may be required as a result of this rule change proposals' implementation?	

Question 12: Section 5.6 – TransGrid – Efficient management of system strength on the power system

1) Do stakeholders consider that TransGrid's approach addresses all issues related to system strength currently experienced in the NEM?	This is a thoughtful proposal from a hands-on TNSP managing many connection applications.
2) Do stakeholders consider that a system strength planning standard met by TNSPs would effectively and pro-actively deliver adequate system strength?	Yes
3) Do stakeholders consider TransGrid's proposal will provide useful and timely locational and financial signals to new entrants?	Yes. The tricky thing is chicken and egg. Really one wants commitment in advance to secure system strength for Renewable Energy Zones more remote than the existing old fleet generators to which the strong grid was constructed in the past.
4) Do stakeholders agree that the 'do no harm' obligations should be removed? a) If so, do stakeholders consider an alternative mechanism is required to regulate or incentivise the minimisation of a new connecting generator's impact on the local network and proximate plant?	In this respect YES provided that system strength is being properly managed in a centralised manner by the TNSPs and AEMO.

5) What are stakeholder's views regarding generators' being required to make a financial contribution for provision of system strength services?	This is acceptable as the alternative is to pay for your own remediation. Again the key point is the timing as it is easiest to obtain the contributions at the time a Generator connects but the need may be down the track some years when others connect.
6) Would stakeholders be supportive of the ownership of existing private system strength assets being transferred to TNSPs, as suggested in TransGrid's rule change request?	Ok if fairly purchased.
7) Would the proposed, TNSP-led solution to system strength result in any adverse or unintended consequences for market participants in the NEM?	None recognised.

CHAPTER 6 – SYSTEM STRENGTH

Question 13: Section 6.1 – Evolving the regulatory definition of system strength

1) Do stakeholders consider that the AEMC's working description of the effects of system strength, and related problem description of system strength and its components accurately represents all elements of system strength, as experienced in the NEM?	I think so. Definitely an improvement over the simple equation with fault level.
2) If not, are there other components of system strength that the AEMC should include?	Maybe not. What do others think?
3) What measures might be used to define system strength? Is fault level the only measure that can be used practically, or are other measures available?	Perhaps a parameter related to network impedance and damping is needed as well. The Inverter susceptibility is NOT part of system strength but of inverter control weakness. A measure for this would also be useful to investors but it is not part of system strength. Weak inverter controls should be upgraded.

Question 14: Section 6.2 – Mechanisms to provide system strength above the essential levels that are necessary for security

1) Do stakeholders consider the centrally coordinated model, as proposed by TransGrid, is the preferable option for providing system strength above the essential levels required for secure operation?	YES, although perhaps a measure of Model 4 Access standard, could be combined with Model 1 to progressively upgrade inverter controls.
2) Do stakeholders consider the decentralised, market-based model proposed by HydroTasmania to be the preferable option for providing system strength above the essential levels required for secure operation?	No.
3) Could a hybrid of these models be used to deliver system strength above the essential level?	Not needed
4) What do stakeholders perceive to be each model's strengths and weaknesses?	A great strength of TransGrid's model is to clear hurdles in the path for investors in new generation.

5) Do stakeholders consider there are other, alternative models for delivering system strength above the minimum levels required for secure operation?	Model 1 can also provide for a higher grade of system strength. This might be a way for early connecting Generators to contribute to the ultimate cost of a more substantial strengthening.
6) What do stakeholders perceive to be the biggest benefits and risks to introducing a mechanism to deliver system strength above the minimum levels required for secure operation?	It might encourage acceptance of weak inverter control systems. This could be prevented if a global ranking of those systems were established and a combination of Model 1 and Model 4 went into the Rules, but that would have to be some years down the track.

CHAPTER 7 – OPERATING RESERVE SERVICE

Question 15: Section 7.1 – Requirement for a dedicated in-market reserve service, mechanism or market

1) What do stakeholders see as the key drivers or changes in the NEM that could be addressed by introducing an explicit in-market reserve arrangement?	None
2) Do stakeholders think there is a need for an explicit in-market reserve arrangement in the NEM. If yes, do stakeholders consider the need to be permanent or transitional?	No
3) How would an explicit in-market reserve mechanism or market impact stakeholders? What would be the key benefits and costs? Would it effect stakeholders' operational or investment decisions?	It would increase prices.
4) Do stakeholders see there to be an explicit need for a capacity commitment mechanism as proposed by Delta? Do stakeholders see this as a separate need to an in-market reserve service?	No

Question 16: Section 7.2 – Achieving security and reliability using dedicated in-market reserves

1) Do stakeholders have views on whether an in-market reserve market or mechanism should solve primarily for reliability outcomes and security outcomes second? Or can this be more effectively co-optimised?	It will be more effectively optimised by investments in storage
2) How do stakeholders see an explicit in-market reserve market or mechanism interacting with the existing NEM reliability framework? What are the policy design priorities for a new operating reserves arrangement that would deliver the reliability needs of the power system?	Do not do this.
3) How do stakeholders see an explicit in-market reserve market or mechanism interacting with the existing NEM security framework? What are the policy design priorities for a new in-market reserve market or mechanism that would deliver the security needs of the power system?	Not necessary

CHAPTER 8 – FREQUENCY CONTROL

Question 17: Section 8.1 – Reforms related to the provision of synchronous inertia

1) Do stakeholders consider that the issues relating to declining levels of synchronous inertia have been adequately and accurately described?	Yes, except for the fact that AEMO's generation information is not informed of the large number of BESS systems and the PHEs systems that are under development.
2) Are there any other issues related to the provision of synchronous inertia that have not been adequately described?	YES, as above, the BESS and PHEs under development but need more support pending a better remuneration system that FFR might provide for BESS and that needs to be established for larger scale PHEs storage.
3) What are stakeholders' views on the approach to considering the interaction between FFR and inertia in the NEM?	We need some very fast FFR <0.5s at appropriate places on the grid. Let the centralised system strength function, that we support being with TransGrid and AERMO, also manage this one.

Question 18: Section 8.2 – Reforms related to frequency control during normal operation

1) Do stakeholders consider that the issues relating to frequency control during normal operation have been adequately and accurately described?	No. The AEMC commitment to the "causer pays" model has created a nightmare for those who have to implement it. It is time an alternative approach be adopted. Primary frequency control was never a problem before the NEM. It was simply allocated to particular well-located generators suited to the task. This should guide the future arrangement. Perhaps acceptance of the dispatch of PFR by AEMO to nominated scheduled and semi-scheduled generators suited to the task should be a mandatory obligation. It could be spread across several generators to reduce the impact on any one of them. It could be limited in time of deployment to (say) an aggregate of 3 years of fulfilling the function. Such a system could be commenced at the sunset of the present scheme.
2) Are there any other issues related to frequency control during normal operation that have not been adequately described?	Causer pays is expensive and complicated to deliver and it is very challenging to get it right.
3) What are stakeholders' views on the proposed approach to reforming the process for the allocation of the costs of regulation services (Causer pays)?	Disagree.
4) Is the level of specification of regulation services in the NEM fit for purpose as the power system transforms?	No. Simpler systems that are easier to administer should be adopted. Ask engineers for their opinions and you will get practical solutions.

Question 19: Section 8.3 – Reforms related to frequency control following contingency events

1) Do stakeholders consider that the issues relating to frequency control following contingency events have been adequately and accurately described?	Yes.
2) Are there any other issues related to frequency control following contingency events that have not been adequately described?	
3) What are stakeholders' views on the best way to address the challenges to managing system frequency following contingency events, including reforms to value and reward FFR?	FFR should be introduced to FCAS via revised MAAS.

4) Is the level of specification for contingency services in the NER fit for purpose as the power system transforms?	Needs updating regularly. Also impacted by the impact of grid outages and generation tripping schemes as well as runback schemes.
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CHAPTER 9 – INTERACTIONS BETWEEN SYSTEM SERVICES

Question 20: Section 9.1 Technological and temporal issues for system service provision

1) What are stakeholders' views on how the arrangements for system services can be developed, to best utilise the capability of both established, as well as new and emerging technologies?	As noted in relation to several previous questions, the ancillary services markets are unduly complex and lead to substantial aggregate costs across AEMO and participating generators. It is not certain that each one actually reduces overall costs through the competition it engenders. Each scheme needs to be reviewed for its effectiveness and economy in delivery.
2) Do stakeholders have any initial thoughts on how the arrangements for system services can be best coordinated over dispatch, commitment and investment time frames?	

Question 21: Section 9.2 – Aheadness and commitment

1) Do stakeholders agree with the characterisation of arrangements for aheadness and commitment, including the potential benefits?	No
2) What are stakeholders' views on the potential downsides of introducing arrangements for commitment of capability ahead of dispatch?	There are clear downsides with paying for energy not to be in the market.
3) Are there alternative arrangements that can reduce the increasing uncertainty associated with power system operation in the NEM?	Yes. NEM must make use of all forms of energy storage, especially batteries in the community.

Question 22: Section 9.3 – Cost recovery arrangements

1) What are stakeholders' views on the appropriate approach to cost recovery for each of the system services discussed in this paper?	By and large security of supply is a service to grid-connected energy consumers.
2) In each case, how can the cost recovery arrangements be developed to lower the overall costs of the NEM?	See comments opposing some of these new services.

Question 23: Section 9.4 – Implementation considerations

1) What are the challenges or implications associated with implementing proposed arrangements discussed in this paper?	Slow AEMC response. Giving TNSP control of system strength etc needs to be done quickly.
2) What are stakeholders' views on the prioritisation or staging of the reforms to address the issues discussed in this paper?	As above but also FFR