GEODYNAMICS
LIMITED

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Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Electronic Submission

AEMC Project Reference Code: ERC0100

Dear Elisabeth

RE: National Electricity Amendment (Scale Efficient Network Extensions) Rule 2010

Geodynamics welcomes the opportunity to comment on the rule change proposal for Scale Efficient Network Extensions (SENE).

Geodynamics wholeheartedly supports the continued development of the SENE. Geodynamics considers it is vital that impediments to the SENE process which could see it fail before it has begun are removed. It would be a waste of effort and resources if the SENE process were to be developed but a SENE never built. Thus SENE framework settings should be as favourable to productive SENE development as reasonably possible. Should the framework settings prove to be too generous to generation project proponents benefiting from the SENE then the SENE framework can be reviewed and revised once the National Electricity Market has some real experience with the SENE process.

Geodynamics feedback on the SENE rule change consultation paper is detailed in Attachment 1.

Issues of particular interest to Geodynamics that have not been highlighted in the SENE rule change consultation paper include:

- Development of transmission solutions has long lead times incorporating planning line routes, development approvals, optimal transmission design, easement acquisition, procurement activities and physical construction. Geodynamics believes that a period of at least 5 years is required to develop transmission lines of the size and length required to connect capacity from the Cooper Basin into the existing grid.

  Some aspects of transmission development are time intensive but relatively low cost compared to the total project. Geodynamics would support the SENE process incorporating incentives for the Network Service Providers (NSP) to undertake planning, approvals and easement acquisition at the earliest possible stage such that the physical construction can begin within the shortest possible timeframe after the first generator signs a connection agreement for the SENE.

  Geodynamics would be willing to help fund the early transmission development activities, i.e. planning, approvals and easement acquisition and considers that other generators would also have a similar willingness. As per the AEMO SENE development process diagram in their NTNDP Consultation Appendix A,

Geodynamics believes a planning, approvals and easement acquisition stage could be incorporated into the process following the “NSP response to all enquirers” stage and then proceeding in parallel with the remaining SENE development process. All generators that made a connection enquiry to the NSP in regards to the SENE should be obligated to contribute to funding the costs of the planning, approvals and easement acquisition. This contribution should be in the form of a fixed dollar amount payable as part of the connection enquiry.

The obligation to contribute to funding the costs for planning, approvals and easement acquisition should have the benefit of ensuring credible connection enquiries are put forward to the NSP enabling a more robust assessment of the likely future connections.

- Given the timeframes for transmission development under the SENE process a generator may choose to build an initial “scale inefficient” transmission connection in order to accelerate development. Consideration needs to be given to how the initial “scale inefficient” transmission asset may interact with a possible SENE.

  In this scenario Geodynamics would firstly support that the initial “scale inefficient” transmission asset did not exclude the region from being a SENE zone and thus would continue to be eligible for future SENE asset development.

- Geodynamics also supports further consideration on the issue of SENE assets transitioning into shared assets. A fully subscribed SENE asset would likely meet a layman’s definition of a shared asset (depending on the number of parties connecting). An oversubscribed SENE asset, oversubscribed through a combination of “firm” SENE connectors and “non-firm” SENE connectors, would also meet a layman’s definition of a shared asset. If two SENE assets were connected into the SENE zone but joined the shared network at distinctly separate points then the SENE zone would now form part of a new loop in the network where flow could occur into and out of the SENE zone dependent on the whole of system conditions. This would be a shared asset. As a general principle Geodynamics would support the funding of the SENE asset to transition to funding as part of the normal shared network once it met a “layman’s” definition of shared asset.

If you wish to discuss Geodynamics submission you can contact me on 07 3721 7522 or at alistair.webb@geodynamics.com.au.

Yours sincerely

Geodynamics Limited

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Attachment 1

Question 1 Will the proposed framework improve efficiency in the construction of connection assets?

1.1 Under the existing Rules, are inefficiencies likely to arise as a result of the significant new investment in renewable generation?

1.2 If so, do the costs associated with these inefficiencies justify amendments to the Rules?

1.3 Do you agree that the proposed Rule change will lessen the risk of the inefficient duplication of assets?

1.1 Yes Geodynamics is of the view that under the existing Rules inefficiencies are likely to arise. In Geodynamics case our Cooper Basin location is over 500km from the existing shared network. Under the existing Rules, the least risk approach to transmission connection for Geodynamics is likely to be the minimum capital cost investment. The minimum capital cost transmission investment is likely to be a relatively low capacity link which is likely to be a sub-optimal investment given the enormous potential of the Cooper Basin region in terms of Enhanced Geothermal Systems, Hot Sedimentary Aquifer geothermal, solar thermal and gas electricity generation potential. Even without this significant potential, the connection point for the element discussed may not be the optimal connection point from a whole of system basis, taking into account other renewable generator connections and any further system augmentations that may be required as a result of the connection.

1.2 Transmission connection for the Cooper Basin will be in the hundreds of millions of dollars for the first link and billions of dollars if the full potential of the Cooper Basin is to be realised. Clearly a small proportion of inefficiency can have a significant dollar impact. Thus Geodynamics considers the cost associated with potential inefficiencies justifies the amendments to the Rules.

1.3 Geodynamics believes that the Rule change will lessen the risk of inefficient duplication of assets. Given the proposed structure of the SENE where “Consumers would pay for any revenue requirement not recovered from generators, where fewer generators connect or connect later than was planned for” there is a clear benefit for generator project proponents to connect utilising the SENE process rather than developing their own transmission connection solution. Thus generator project proponent’s first choice for a transmission connection solution will be the SENE process. This will enable improved transmission network development planning and lessen the risk of inefficient duplication of assets.

Question 2 Will SENEs be efficiently sized and located so as to minimise risk to consumers?

2.1 Are NSPs likely to construct SENEs that are efficiently sized and located? Is there a significant risk of over-investment?

2.2 Are the risks associated with asset stranding outweighed by the potential efficiency gains from efficiently sized network extensions?

2.3 Does the Rule change, as proposed, provide sufficient checks and balances to minimise risks to consumers?

2.1 As SENEs require the NSP to make a judgement of the likely future generation connections there is the risk of both under and over investment, depending on whether the

NSP over or under estimates the future generation connections. Given that SENE will provide the NSP a regulated return underwritten by the consumer in the event of fewer or later generator connections there is likely to be a natural bias towards the NSP supporting the development of SENE and supporting the development of larger SENE. Geodynamics considers that a NSP having a natural inclination to develop and grow the transmission network is situation normal and is a risk that cannot be removed from the system. Thus the risk in the SENE process ultimately lies with the consumer as has been identified and highlighted in the development of SENE up to date and the proposed SENE Rules. Geodynamics considers that this risk has been appropriately addressed in that the review process incorporated in the SENE rules requires AEMO to review NSPs forecast generation profiles and the AER having the option to disallow a proposed SENE. The assessment on the likelihood of generation connections eventuating will be made at four levels during the SENE development process: the project proponent, the NSP, AEMO and the AER. This will place a level of rigour into the development process, but does run the risk that an overly conservative assessment at any of these levels will not deliver the intended SENE outcomes.

2.2 Yes. Given that the proposed SENE process incorporates the requirement for AEMO to review NSPs forecast generation profiles and the AER having the option to disallow a proposed SENE the risks associated with asset stranding are appropriately minimised. Thus Geodynamics is of the view the efficiency gains from efficiently sized network extensions will substantially outweigh the risks associated with asset stranding.

2.3 Geodynamics considers the proposed SENE process incorporating the requirement for AEMO to review NSPs forecast generation profiles and the AER having the option to disallow a proposed SENE provides sufficient checks and balances to minimise risks to the consumers. The fact that the AER is part of the ACCC makes it the appropriate organisation to represent consumers interests. It does however mean that the risk is increased that an overly conservative assessment of future generation potential will not deliver the intended SENE outcomes. The risk to consumers cannot be eliminated entirely.

Question 3 Are alternative risk mitigation measures more appropriate?

3.1 Who benefits from SENEs and who is best placed to manage the risk of asset stranding?

3.2 Should the framework include a more explicit economic efficiency test? If so, what form might it take?

3.3 Would a market-based approach to the sizing and location of SENEs be more appropriate? If so, what form might it take?

3.1 Geodynamics agrees with the view that ultimately the consumer will benefit from efficiently sized network extensions. The AER as part of the ACCC is the appropriate organisation to represent consumers interests and to manage the risk to consumers of asset stranding.

3.2 At this stage Geodynamics is comfortable with the test of the efficiency of the SENE undertaken by the AER being based on an assessment of reasonableness. Geodynamics considers that the AER has the integrity as well as the resources to undertake the assessment of reasonableness responsibly and adeptly. Should the assessment of reasonableness be found to perform poorly, an explicit economic efficiency test should be considered. An explicit economic efficiency test is likely to add further time and complexity into the SENE process which Geodynamics considers is not warranted until such time the AER assessment of reasonableness is found to be not performing.

3.3 Geodynamics considers the currently proposed SENE process has the crucial benefit of simplicity whilst still maintaining the appropriate incentives on participants. A market-based approach is likely to be significantly more complex. Geodynamics considers it appropriate that the simple approach, i.e. the currently proposed SENE process, is adopted and tried and tested before a more complex approach is attempted.

Question 4 Will generators be able to connect to the SENEs in the most efficient configuration?

4.1 Should the draft Rule allow for configurations other than a "hub and spoke"?

4.2 If so, how could the charging arrangements best promote efficient locational decisions by generators and by NSPs in locating SENEs?

4.3 Should the costs of the SENE be spread across all generators irrespective of where they locate?

4.1 Geodynamics supports the draft Rule allowing for configurations other than a hub and spoke. Given Geodynamics Cooper Basin location is over 500km from the existing shared network a potential SENE in the Cooper Basin is likely to pass several potential generation sites.

4.2 Generators connecting to a SENE will be charged for a share of SENE costs as well as the cost for connection assets to connect from their plant to the SENE. Geodynamics considers that the cost of the connection assets to connect from the plant to the SENE will lead to efficient locational decisions by generators. Clearly each generator will want the SENE hub to be located as close as possible to their generating asset. Thus Geodynamics considers the NSPs to be best placed to locate the SENE hubs and for the SENE hub locational decisions being made irrespective of charging arrangements. Geodynamics considers the NSPs have the necessary integrity and experience to locate the SENE hubs without further charging arrangements to act as incentives.

4.3 Geodynamics supports the proposition that the costs of the SENE be spread across all generators irrespective of where they locate. From the generators perspective the primary value of the SENE is the efficiency in developing the transmission asset as a group rather than an individual. Geodynamics acknowledges that in a relative sense this benefit will be greater for some SENE connectors than other SENE connectors, but all SENE connectors will benefit relative to developing their own transmission asset. Clearly a generator connected to the end of a SENE benefits more than a generator connected to the middle of a SENE. Similarly a generator connecting to the SENE on day one will benefit more than a generator connecting to the SENE 3 years down the track. Calculating relative benefits from the SENE and thus relative cost allocations for the SENE presents the problem of defining an appropriate reference case. Would the SENE be developed without the most remote generator? Would the SENE be developed without the least remote generator? Would the SENE be developed without the first projected generator? Would the SENE be developed without the last projected generator? Geodynamics considers this added complexity is not justified and does not benefit the SENE primary objective of developing scale efficient network extensions.

Question 5 Will capacity be efficiently allocated to connecting generators?

5.1 Will the framework promote the efficient allocation of capacity on the SENE?

5.2 More generally, will the SENEs framework result in efficient outcomes in the wholesale market?

5.3 Could an interruptible generator connect to the SENE? If so, what arrangements would need to be in place to ensure the full cost of the SENE can be recovered?

5.1 Under the proposed Rule change, generators negotiate an agreed power transfer capability with the NSP as part of the connection agreement. If the generator is unable to access its agreed capacity, it is entitled to compensation. Geodynamics does not support the proposed compensation for constrained utilisation and does not support the proposed agreed power transfer capability more generally.

Firstly with respect to potential compensation, if there were agreed power transfer capabilities then the NSP could choose not to sell line capacity in excess of the rated capacity. If the actual real time line availability is less than the rated capacity due to network conditions then this is a risk that currently sits with the generators and should also sit with generators who have connected to a SENE.

More generally with respect to the proposed agreed power transfer capability, although Geodynamics as a possible SENE connector would likely be a beneficiary from an agreed power transfer capability with compensation for constrained utilisation, Geodynamics sees this as incompatible with the rest of the shared network given that:

1. No existing generator connected to the shared network has similar “capacity rights”; and
2. The NEM is an open access market.

Geodynamics also envisages complexities in defining and settling the compensation arrangements. Issues include:

- Was the transmission line at reduced capacity due to planned or forced transmission outages?
- Was the transmission line at reduced capacity due to system conditions, voltage stability etc?
- Was a firm access generator constrained off or unavailable?

A SENE connector would only be constrained from their “agreed capacity” once the SENE was oversubscribed. Geodynamics would instead support a SENE becoming part of the shared transmission network once the SENE was oversubscribed. Oversubscribed could be defined as when the nominal generation capacity physically connected to the SENE exceeds the nominal SENE transmission capacity. The following financial year, after the definition of oversubscription has been met, cost recovery for the SENE asset would then no longer be from the SENE connectors but would now be through the normal TUOS system. Although this would then directly pass the cost from the connecting generators to the end users, this cost would already largely be indirectly passed through to the end users as generators try to recoup this cost through the wholesale electricity market. In the event that a SENE is oversubscribed the consumer will have received the full economic benefit of scale efficient network extensions. In addition an oversubscribed SENE would likely trigger further transmission investment, either as a SENE or as per normal transmission investment, which is the appropriate response to transmission congestion. Finally an oversubscribed SENE

asset is likely to have several generators as well as possibly several customers connected to it and would meet a layman's definition of a shared asset if not necessarily the Rules definition.

5.2 Acknowledging the challenges presented by dispatching and clearing the NEM, in general Geodynamics considers the dispatch and clearing process in the NEM does promote efficient allocation of capacity on transmission assets and that SENE would be no different and should not be treated different in the NEM Dispatch Engine. If the SENE were to be treated like other network elements in the NEM Dispatch Engine then the SENE framework would result in efficient outcomes in the wholesale market.

5.3 The NEM is an open access market and an interruptible generator must be allowed to connect to a SENE. An allowance for the interruptible nature of a generator should not be incorporated into the cost recovery allocation for the SENE. This would add complexity to the SENE, and given Geodynamics does not support the proposal for an agreed power transfer capability with compensation for constrained utilisation an allowance for the interruptible nature of a generator is not necessary. Further this allowance would also potentially present incentives to game the SENE funding structure with a generator choosing between declaring itself interruptible or non-interruptible and choosing firm or non-firm access to the SENE.

Question 6 How could loops to the shared network and load connections to SENEs best be accommodated?

6.1 Should SENEs be "ring fenced" from the shared network to enable the framework to operate? If so, should a time limit apply to such ring fencing arrangements?

6.2 Alternatively, how could SENEs best be incorporated into the shared network? In particular, how could the challenges arising from capacity rights to the former SENE best be addressed?

6.1 SENEs should not be ring fenced from the shared network. Load connections to SENEs should be allowed and should be treated and charged like any other load connection to the shared network. Generators connected to the SENE will benefit from load connection to the SENE as it will reduce the loading on the SENE transmission line as well as improve the Marginal Loss Factor of the SENE connection point. Once load starts connecting to the SENE connection point a proportion of the SENE cost recovery should be through the normal TUOS system. As more load connects the more the SENE cost recovery should be through TUOS. This is consistent with the additions to the MCE endorsed draft Rule which added "an obligation on NSPs to consider explicitly any benefits that may accrue to consumers as a result of the SENE. Where such benefits exist, parts (or all) of the SENE may be permanently funded by consumers."

Loops to the shared network should also be encouraged as they will benefit the SENE connectors as well as system security and the market generally. Clearly there is a benefit if there are more network flow paths for electricity supply to meet demand both in terms of system security as well as the ability for the lowest cost generation being able to meet demand.

Once a SENE becomes part of a looped network SENE cost recovery should be through the normal TUOS system. Realistically a SENE would only become part of the looped network once the SENE was close to "full" utilisation thus the consumer will have received the full economic benefit of scale efficient network extensions. Once part of the looped network, the cost recovery through TUOS would be consistent with the additions to the MCE endorsed draft Rule, which added "an obligation on NSPs to consider explicitly any benefits that may

accrue to consumers as a result of the SENE. Where such benefits exist, parts (or all) of the SENE may be permanently funded by consumers."

6.2 Although Geodynamics as a possible SENE connector would likely be a beneficiary from an agreed power transfer capability with compensation for constrained utilisation, Geodynamics does not support "capacity rights". A SENE part of a looped network is clearly part of the shared network with flow on the loop being determined by system conditions. No existing generator has "capacity rights" for transmission through the shared network. Similarly a SENE connector where the SENE later becomes part of a loop should not have "capacity rights" either.