

# Review of the Northern Territory Generator Performance Standards



## Appendix A Responses to Stakeholder Submissions

## APPENDIX A. RESPONSES TO STAKEHOLDER CODE CHANGE SUBMISSIONS

### A.1 Responses to PWC Proposed Code Clause Changes and Supplementary Consultation Papers

The following table outlines our responses to the issues raised by stakeholders that **ONLY** relate to the Code clauses that we originally proposed to amend. Issues raised by stakeholders to other clauses that were not proposed are provided in Appendices B2, B3 and B4. Please note the issues column are in general our summarised interpretation of the issues raised by stakeholders rather than a verbatim quote from individual submissions. The submissions are available on our website. The PWC Ref# is an internal issue tracking number to ensure all issues raised have been addressed.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
126	NTC 3.3.1 Outline of Requirements	T-Gen	Queries the validity of referring to a non Code document (SSG) for determining thresholds for the application of generator registration thresholds.	This clause has been updated to reference a materiality threshold and the jurisdictional legislative instrument.
196	NTC 3.3.2 Application of Settings	T-Gen	Queries the relevance of inclusion of intra regional power transfer capability.	The wording may not be relevant for the Darwin - Katherine system. There is no harm in leaving the clause unchanged from the NER particularly in light of the imminent adoption of NER Chapter 5 for the NT. Our proposed amendment remains as originally consulted on.
118, 119, 120	NTC 3.3.5 Technical Requirements	NT Airports, Tetris, NT Solar Futures	Propose the ability to achieve performance requirements across more than one connection point.	We advise that there is a mechanism via the proposed NTC 3.3.5 that provides a process for a negotiated access standard that may not meet the automatic standard if it can be justified and is technically feasible.
162, 163, 164	NTC 3.3.5.1 Reactive Power Capability	NT Solar Futures, NT Airports	Standard is too onerous. Suggest leaving it at 0.95 power factor as per existing NTC.	In order to maintain the status quo on reactive power provided between existing generators and the network, PWC has undertaken further historical analysis of the actual reactive power supplied by generators. On the basis of this analysis PWC is prepared to take a risk-based approach and revise the automatic standard from 0.55 x active power to 0.395 x active power. Please note that this is not a power factor setting for the generating system as this reactive power capability is required at all active power outputs and that it is measured at the connection
165	NTC 3.3.5.1 Reactive Power Capability	Tetris	0.55 x rated active standard is too onerous – suggest adopting NER standard.	

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				point. This now aligns with the NER S5.2.5.1 automatic standard.
<b>197, 198</b>	NTC 3.3.5.1 Reactive Power Capability	T-Gen	Some of the existing generators may not meet the leading power factor requirement.	The revised position of adopting the NER S5.2.5.1 automatic standard is less onerous in generating reactive power and is approximately equivalent to the existing absorbing reactive power requirement. In any case grandfathering provisions under NTC 12.2 apply for existing generators.
<b>197</b>	NTC 3.3.5.1 Reactive Power Capability	T-Gen	Queries how compliance can be tested at connection point when all tests are done at the generator terminals.	Transformer impedances can be measured separately (and have been), which can then be used to calculate the effective reactive capability of the generating system at the connection point or vice versa at the generator terminals.
<b>35</b>	NTC 3.3.5.3 Generating Unit Response to Frequency Disturbance	SENER	Value of stabilization time for the "abnormal frequency band" needs to be indicated.	Following consideration of the issue raised we have reviewed the NEM Reliability Panel frequency standards and adapted to the NT. We propose to include clarification for the stabilisation time as being 10 minutes and for frequency within the abnormal range 47-52 Hz to be restored back to the normal operating frequency range. We will consequently review the SSG to ensure alignment.
<b>189</b>	NTC 3.3.5.3 (b) Generating Unit Response to Frequency Disturbance	SENER	Exclude concept of "continuous uninterrupted operation" outside the normal frequency range.	This proposal is not accepted as it would result in a very unreliable power system. Existing generators in the NT and the NEM are capable of continuous operation outside the normal operating range.
<b>190</b>	NTC 3.3.5.3 Generating Unit Response to Frequency Disturbance	SENER	Transient frequency time value for 45-47 Hz should be stated as 0.2 seconds for steam turbines.	This frequency withstand requirement in NTC 2.2.2 (c) and (d) has not been changed from the previous version of the NTC and steam generators are connected to the NT systems under this Code. PWC note the concerns raised and would consider plant technical limitations on their justified merits if a proponent proposed a negotiated access standard in this case.

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199	NTC 3.3.5.3 Generating Unit Response to Frequency Disturbance	T-Gen	Proposed frequency standard implies a generator can trip above 52Hz. T-Gen suggests this level be defined at 53Hz.	At this stage we propose to leave the status quo accepting that there is no connection requirement for uninterrupted operation above 52 Hz. However this is a technical matter to be coordinated under NTC clause 3.3.3, which would require for power system security that the over frequency protection on generators throughout each power system are graded to ensure that generator over-frequency trip events do not all occur concurrently. We are in the process of developing our system dynamic models which will assist in the coordination of technical matters such as this.
191	NTC 3.3.5.4 (a) (7), (8) Generating System Response to Voltage Disturbances	SENER	Concern that voltage ride-through capability requirements are not possible for synchronous generators.	NTC 3.3.5.4 (a) (7) and (8) are consistent with the NER which has undergone significant review and consultation and has many synchronous generators connected. Our proposed amendment remains as originally consulted on.
201	NTC 3.3.5.4 (9) Generating System Response to Voltage Disturbances	T-Gen, SENR	There is no minimum access standard. The parties query whether NTC 3.3.5.4 (a) (9) should be included with voltage disturbance clauses.	Unlike the NER, the subclauses of NTC 3.3.5 only prescribe automatic access standards. Clause 3.3.5 provides a mechanism for negotiating access standards below the automatic standard that is consistent with the NER. Grandfathering would apply as per NTC 12.2 for existing generators. Our proposed amendment remains as originally consulted on. PWC accepts that NTC 3.3.5.4 (a) (9) is adequately covered by NTC 3.3.5.5 and we have removed this subclause.
200	NTC 3.3.5.4 Generating System Response to Voltage Disturbances	T-Gen	There is a higher standard proposed overall than the existing standard.	The proposed changes are consistent with the NER following the philosophy that as far as possible generators are the last to disconnect in the supply chain following disturbances. Grandfathering would apply as per NTC 12.2 for existing generators. Our proposed amendment remains as originally consulted on.

<b>PWC Ref#</b>	<b>Clause</b>	<b>Stakeholder(s)</b>	<b>Issue</b>	<b>PWC response</b>
<b>192</b>	NTC 3.3.5.5 (c) (3) Generating System Response to Disturbances Following Contingency Events	SENER	The requirement should be coordinated with the voltage ride-through capability conditions of section 3.3.5.4.	This clause is consistent with the NER. Our proposed amendment remains as originally consulted on.
<b>193</b>	NTC 3.3.5.5 (d) Generating System Response to Disturbances Following Contingency Events	SENER	Standard too onerous - not cost effective for synchronous generators to meet this requirement.	This clause is consistent with the NER. Our proposed amendment remains as originally consulted on.
<b>194</b>	NTC 3.3.5.5 (e) (1) Generating System Response to Disturbances Following Contingency Events	SENER	Reactive current standard too onerous – will trip generator protection.	NTC 3.3.5.5 (l) (1) and (m) provide limits for reactive current to support system voltage during disturbances in relation to the proportional response to voltage change required under NTC 3.3.5.5 (e) (1). We have reviewed the limits and noted that the 200% reactive current contribution (included in the previous draft of the GPS) for asynchronous generators is not achievable without additional equipment and thus we have revised the standard to the NER limit of 100% for asynchronous generators. The limit of 250% for synchronous generators is unchanged and also consistent with the NER. However, the implication of this is as the proportion of asynchronous technologies dispatched increases, system strength will reduce and changes will be required to prevent power system instability. In the longer term assuming NER 5.20 is

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
				adopted in the NT, the Network Operator will be obliged to meet minimum requirements for both system strength and inertia and will apply the regulatory investment framework to identify the most efficient solution including network and non network options. In the short term we propose to model the impacts and apply dispatch constraints as necessary.
<b>195</b>	NTC 3.3.5.5 (m) and (n) Generating System Response to Disturbances Following Contingency Events	SENER	Unclear the circumstances of the event or disturbance conditions where the requirements of these sub clauses are to be applied.	These clauses are consistent with the NER. These clauses are not proposed to be changed in this update. Unlike the NER, the subclauses of NTC 3.3.5 only prescribe automatic access standards. Clause 3.3.5 provides a mechanism for negotiating access standards below the automatic standard if justified.
<b>145</b>	NTC 3.3.5.10 (a) (1) Protection to Trip Plant for Unstable Operation	SENER	Queries whether compliance will release generator from complying with conditions in 3.3.5.4 and 3.3.5.5.	It is intended that all requirements are met. In simple terms if a generator trips due to avoid pole slip and it has not met the other requirements then it would not be able to meet those particular automatic access standards. In accordance with NTC 3.3.5, a negotiated access standard may be permitted.
<b>202</b>	NTC 3.3.5.12 Impact on Network Capability	T-Gen	Queries whether clause is applicable to NT power systems.	The wording may not be relevant for the Darwin - Katherine system. There is no harm in leaving the clause unchanged from the NER particularly the anticipated adoption of NER Chapter 5 for the NT. Our proposed amendment remains as originally consulted on.
<b>43</b>	NTC 3.3.5.13 Voltage and Reactive Power Control	T-Gen	Queries whether application of thresholds across the three regulated power systems has been reviewed.	NTC 3.3.1 has been updated to reference a materiality threshold and a jurisdictional legislative instrument for the application of all generator performance standards.

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44	NTC 3.3.5.14 Active Power Control	T-Gen	Include definitions for all defined terms.	We have reviewed NTC 3.3.5.14 and other clauses to identify and italicise defined terms in the current update of the Codes.
158, 159	NTC 3.3.5.14 Active Power Control	NT Solar Futures	Review basis for establishing ramp rates.	As PWC are proposing that all large scale generators are scheduled , the ramp rate will be dynamically set via the dispatch target that takes into account the capabilities of all dispatched generation and consequential impacts on frequency. This is a key reason behind the removal of self dispatch. NTC 3.3.5.1.4 (a) (1) (ii) simply requires a certain level of responsiveness of a generator as a general proposition and we have tidied up the wording to make this clearer. It is expected that asynchronous technologies will have no trouble in being able to quickly respond to a dispatch target
47, 147, 153, 167, 168, 170, 171, 172, 173, 173, 179, 176, 177, 178	NTC 3.3.5.14 Active Power Control	NT Solar Futures, Alan Langworthy, Tetris, Epuron, NT Airports, T-Gen	Numerous stakeholders objected to the removal of the semi scheduled generator classification citing reasons including inconsistency with the NEM and increasing entry barriers to renewable energy. Re-instate semi-scheduled and non-scheduled classifications in the Codes.	<b>Our response is covered in the main consultation paper at chapter 4.</b>
174	NTC 3.3.5.14 Active Power Control	NT Solar Futures	Queries whether intermittent renewable energy (RE) generation would be classified as non-scheduled now that semi-scheduled generation has been removed as per SCTC 3.2.3.	No, the classification of a generating system will be based on capability, thus RE complying with the generator performance standards would be scheduled. Our proposed amendment remains as originally consulted on.
203	NTC 3.3.5.14 (c) Active Power Control	T-Gen	Concern that provisions in the NER and existing Code are chosen on basis of being advantageous to PWC, without discussion or rationale.	The proposed clauses provide internal consistency with the proposed NTC 3.3.2 last paragraph. Our proposed amendment remains as originally consulted on.

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204	NTC 3.3.5.14 Active Power Control	T-Gen	Queries whether status quo regarding absence of AGC control for Tennant Creek and Alice Springs is compliant under grandfathering clauses.	The proposed changes are consistent with the NER and there is also a mechanism for a negotiated standard under 3.3.5 where justified. Grandfathering would apply as per NTC 12.2 for existing generators. Our proposed amendment remains as originally consulted on.
205	NTC 3.3.5.14 Active Power Control	T-Gen	Queries whether provision applies to all regulated power systems.	Unless otherwise stated, all of NTC 3.3.5 and subclauses will apply to all NT regulated power systems.
45	NTC 3.3.5.15 Inertia and Contingency FCAS	T-Gen	Inertia and contingency FCAS need to be defined in the NTC.	We have included the definitions for inertia and contingency FCAS in the revised Codes.
46	NTC 3.3.5.15 Inertia and Contingency FCAS	T-Gen	Suggests modifying vertical axis of Figure 9 to 'MW.s/rated active power'.	The units for inertia on figure 9 are consistent within the industry. The horizontal axis is also correct in defining the trade off in active power with contingency C-FCAS (ie headroom) in lieu of inertia.
206	NTC 3.3.5.15 Inertia and Contingency FCAS	T-Gen	Queries whether excess inertia capability can be transferred to another generator when a generator exceeds the adequacy standard.	Connecting generator applicants need to comply with NTC 3.3.5.15. However as we have stated this is simply a demonstration of capability rather than being required to provide C-FCAS except in unplanned shortfall scenarios. The proposed suggestion may be considered by PWC as the intention of NTC 3.3.5 in negotiated access principles provides an opportunity for new generators to contract with another generator to achieve the capability outcome as a "coupled capability". However, when both generators are independently commercially supplying into the energy market, both generators would need to individually meet NTC 3.3.5.15.
215, 216	NTC 3.3.5.16 System Strength	NT Solar Futures	Raised concerns regarding increased obligations placed on generators if system strength is reduced but does not affect other users. Suggests rewording:	The assessment of system strength is to assess the adverse impact on the power system including the system standards being breached and the ability of other users to



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			“The current level of system strength may be decreased provided that it does not have an adverse impact on system strength” to provide more certainty for new generators.	meet their connection agreements by the addition of the generator. The referenced AEMO guideline is clear on this.
<b>55, 57, 58, 59, 60, 62, 63, 66, 68, 69, 70, 71, 72, 74, 75, 77, 79, 80, 81, 82, 150, 151, 152</b>	NTC 3.3.5.17 Capacity Forecasting	Epuron, NT Airports, confidential submission, Tetris, T-Gen, NT Solar Futures	The requirement for capacity forecasting appears to be one of the biggest concerns for stakeholders. Based on feedback we understand that this is likely to be due to the key differences in approach to the NEM being that we require a capacity forecast rather than an energy forecast and that the obligation has been placed onto the generator rather than predominantly with AEMO.	<b>This response is covered in the main consultation paper in chapter 3.</b>
<b>56</b>	NTC3.3.5.17 Capacity Forecasting	Epuron	Queries resolution required for (1) month ahead and (2) week ahead forecasts.	<b>This response is covered in the main consultation paper in chapter 3.</b>
<b>61, 64</b>	NTC 3.3.5.17 Capacity Forecasting	Epuron, NT Solar Futures	The parties query consequences of not meeting forecast requirements.	<b>This response is covered in the main consultation paper in chapter 3.</b>
<b>64</b>	NTC 3.3.5.17 Capacity Forecasting	NT Solar Futures	Queries format and frequency of compliance assessment reports.	<b>This response is covered in the main consultation paper in chapter 3.</b>
<b>65</b>	NTC 3.3.5.17 Capacity Forecasting	T-Gen	Requests description of the proposed forecast requirements, associated processing of forecasts and advice on when these will be finalised.	<b>This response is covered in the main consultation paper in chapter 3.</b>
<b>73, 76, 78, 121</b>	NTC 3.3.5.17 Capacity Forecasting	Epuron, NT Solar Futures, Tetris	The parties suggest load and generator side R-FCAS requirements be treated in similar manner, noting that in some	<b>This response is covered in the main consultation paper in chapter 3.</b>

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			instances they will cancel each other out.	
212	NTC 3.3.5.17 Capacity Forecasting	T-Gen	<ul style="list-style-type: none"> <li>Is the scope of this requirement intended to include synchronous thermal generation?</li> <li>If this is to include synchronous thermal generation, is there intended to be grandfathering provisions for existing generation?</li> </ul>	<p>The capacity forecasting standard is technology agnostic and would apply to all generators. As per NTC clause 12.2 grandfathered generators would be assessed against the required standards.</p> <p>We observe that static capacity forecasting for a synchronous generator could be achieved with no significant cost by mapping a single capacity figure from the generator's interface with SCADA to all of the capacity forecasting figures in System Control's SCADA interface.</p>
207	NTC 3.3.6.1 Remote Monitoring	T-Gen	Suggest separating remote monitoring and remote control conditions into separate clauses.	We have updated the title of clause 3.3.6.1 to incorporate both elements.
208	NTC 3.3.6.1 Remote Monitoring	T-Gen	Retain existing provisions for remote control under the existing NTC 3.3.3.2 in entirety to provide alternate arrangements if the proposed clause cannot be met.	This is retained via the application of clause 3.3.5 negotiated access standards in justifiable circumstances.
127	NTC 4.5.1 (e) Network voltage control	T-Gen	Queries appropriateness of the NTC deferring to a subsidiary document of the SCTC.	Paragraphs (a), (b) and (c) of NTC clause 4.5.1 establish the head of power for determining the network voltage limits. Recording those limits in the SSG document which is subject to consultation is good practice because the limits will be used by the System Controller and the limits are publicly transparent within that document.
128	NTC 4.7.6 Directions by the Network Operator	T-Gen	Queries how proposed change fits within the regulatory powers bestowed on the Network Operator, why the change was proposed and how it will work in practice.	The System Controller only has authority to direct licensed electricity entities granted to it within the Electricity Reform Act. The codes as they are now are not fit for purpose on this specific matter. The alterations in the System Control Technical Code and Network Technical Code facilitate an arrangement where the System Controller directs the Network Operator to undertake

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				actions (by the Network Operator subsequently directing unlicensed Network Users) for issues related to security of a power system when required.
209	NTC 4.7.7 Disconnection of Generation Units and/or associated loads	T-Gen	The proposed amendment moves the authority to disconnect from the Power System Controller to the Network Operator. This proposed change is not detailed in the Consultation Paper. Can PWC explain the rationale behind this proposed change?	The Code amendments reflect the authority and interactions to disconnect for licensed and unlicensed users to the Power System Controller and Network Operator respectively.
97, 98, 103, 104, 116, 129	NTC 12 Derogations from the Code	Confidential submission, T-Gen, EDL	Feedback was received in relation to grandfathering seeking to clarify the application of grandfathering regarding the requirements to meet the new GPS for generators currently connected to the power system as well as generators that are currently under construction.	<b>This response is covered by main consultation paper in chapter 6.</b>
92	NTC 12 Derogations from the Code	T-Gen	Questions how breaches of the GPS will be managed and dispute mechanism.	Breaches of the GPS is two-fold: 1) during the initial connection process the connection would not reach final approval by the Network Operator if an agreed performance against each of the access standards. 2) during normal operation, if a breach of the GPS against the connection agreement is identified, the Electricity Reform Act, as noted in the SCTC authorises the System Controller to constrain or disconnect the non-compliant generating system and follow NT NER 5.7.3. In both cases disputes would be subject to arbitration by the Utilities Commission as per NTC 1.6.
101	NTC 12 Derogations from the Code	T-Gen	Concern that modifying part of an existing generating system will require compliance to all of the GPS effectively	PWC intends to apply the notification and assessment requirements for modifying existing generators under NT NER 5.3.9 and 5.3.10. These clauses provide clarity that

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			defeating grandfathering and disincentive to upgrade.	limit the assessment to changes that impact negatively on performance standards incorporated in the connection agreement. In simple words – the alteration shouldn't cause the generator to be unable to meet the performance standard impacted by the alteration. These clauses are expected to be activated in the NT from 1 July 2019.
<b>210</b>	NTC 16.3 Frequency stability criteria	T-Gen	The term rate of change of frequency needs a definition and is referenced in other areas of the NTC including 3.4.10.1.2 and 3.3.5.3	A definition of rate of change of frequency (ROCOF) has been included in the updated NTC.
<b>217, 218</b>	NTC Attachment 5 Test schedule	NT Solar Futures	Suggests a test schedule for forms of generation beyond synchronous generation required, including inverter coupled solar generation	The existing Attachment 5 is an indicative list and not a complete list of tests that would be expected to demonstrate capability against the performance standards. Generally the obligation is on the generator to develop test plans to demonstrate compliance.
<b>144</b>	SCTC General	T-Gen	Improved governance suggestions to provide greater transparency in decisions and operations of Systems Control through publishing a suite of suggested operating procedure documents.	We see merit in these issues and following full consideration and other priorities include in our future suite of published operational documents.
<b>175, 181</b>	SCTC 3.2.3 Generation components of a power system	NT Solar Futures, T- Gen, Tetris	Does not agree with removal of the semi-scheduled classification, places cost burden on new intermittent generators	<b>This response is covered by main consultation paper in chapter 4.</b>
<b>211</b>	SCTC 3.3.3 Responsibility of the Network Operator	T-Gen	Queries if a licensed generator fails to renew a licence, or has its license removed, does this proposed amendment provide some opportunity for that entity to continue generating?	Certain classifications of Network Users are required to be licenced (see clause 14(3) of the Electricity Reform Act). In the NTC, the term 'unlicensed' Network User applies to any entity not listed in clause 14(3) of the Act. An entity that is required to be licenced must not carry out operations if it is NOT licenced (a civil penalty applies).

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211	SCTC 3.3.3 Responsibility of the Network Operator	T-Gen	Queries SCTC 1.7.4(d) places the onus on the Power System Controller to establish an operating protocol, the current drafting indicates that the obligation is on the un-licensed Network User.	Clause 3.3.3 (f) has been updated to clarify that un-licensed users are required .... <i>"to comply with any operating protocol and arrangements determined from time to time by the Power System Controller in accordance with clause 1.7.4."</i>
214	SCTC 6.7.4 Protocols for protection or control system abnormality	T-Gen	Requests 'Operating Protocol' be defined and supporting documentation to demonstrate the protocol be developed	PWC has now included the defined the Operating Protocol content in the SCTC.
99, 102, 105	SCTC 6.14 PLANT NUMBERING, NOMENCLATURE AND DRAWINGS	T-Gen	Proposed grandfathering to apply in the SCTC for plant nomenclature provisions transferred from the NTC.	It is agreed that the grandfathering provision made available to Generators in the current version of the NTC in regard to nomenclature should be preserved in the SCTC (as a result of the transfer of the nomenclature clause). The SCTC clause 6.14 has been updated to reflect this intent.
113	C-FCAS Supplementary Paper	T-Gen	Suggests accreditation of compliance with NTC rests with Network Operator and queries regulatory authority of System Controller to exercise testing	SCTC Clause 6.24 (d) gives the Power System Controller the relevant authority.
18	C-FCAS Supplementary Paper	NT Solar Futures	During the information session held on the 18th February 2019, it was stated that it was the intent of the System Controller that ancillary services "shall be available from generators". This is contrary to the current wording. In addition, the current wording needs to be modified based on the proposed NTEM arrangements. The requirement to provide ancillary services should be	<b>This response is covered by main consultation paper in chapter 0.</b>

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			optional and be procured as per the NTEM.	
3	C-FCAS Supplementary Paper	T-Gen	This section introduces a phrase 'security constrained load following' and states it is the existing arrangement and expected to remain. TGen does not understand what is meant by this. PWC to explain what is meant by this phrase and under what regulatory basis it is determined?	This is not a new mode of operation. Please refer to the unchanged SCTC clause 4.4c for a description of the arrangements for Tennant Creek and Alice Springs.
15	C-FCAS Supplementary Paper	T-Gen	Seeks clarification regarding statements made regarding reserves carried for loss of generator vs recent Commission generator licence consultation where System Control suggests higher reserves may be required for tripping of the Darwin – Katherine line.	The issue in relation to reserves for the Darwin-Katherine radial line are in relation to a fault that would cause the tripping of the line and associated loss of connected generation on that line. This is credible contingency event and therefore appropriate reserves need to be dispatched. This is a different scenario to cloud events that impact an asynchronous solar PV generator output which are not considered a credible contingency event by PWC and would be managed in a different way.
106	Ancillary services	T-Gen	There is no mention of inertia dispatch constraints that are currently operating under the spinning reserve and proposed under C-FCAS arrangements. TGen understands, from System Control publications, that Inertia and C-FCAS are inextricably linked	The details of the current spinning reserve and future C-FCAS / Inertia operating arrangements are outlined in the SSG. The Generator Performance Standards specifies capability requirements via NTC 3.3.5.15. The Generator Performance Requirements including the trade-off between inertia and C-FCAS will be re-visited periodically as the power system transitions to higher levels of renewables.
148	Supplementary Paper	NT Solar Futures	"GPS Overarching Paper v0.7" shows a great deal of bias to support the position taken, and it is our view that a number of the statements of fact are simply opinion and arguably wrong.	The proposed changes to the Codes have been made to enable to the achievement of the NT RET on a "no regrets" pathway rather than impose barriers. The changes have leveraged the learnings from the NEM and adapted to the scale of the NT power systems. The changes may appear

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				dramatic compared to the existing Codes that have not been changed since 2013 however PWC believe they are justified considering the anticipated rate of change of energy supply technology.
149, 154	Overarching Supplementary Paper	NT Solar Futures	Assert that PWC's statement that asynchronous technologies do not provide inertia is not true as inverters also resist changes in frequency. Assert that PWC's statement that asynchronous technologies have lower reactive power range capabilities is not true.	We are of the view that the characteristic being described by NTSF is a response to frequency changes rather than the physical property of inertia. These responses to frequency are required under the proposed 3.3.5.11 and 3.3.5.15. We accept that new technologies have faster response capabilities than existing synchronous generators with mechanical inertia. It was in recognition of this that the NTC 3.3.5.15 was introduced to provide an alternative form of frequency control capability. In regard to reactive power capability, the steady state capabilities are similar, but dynamic responses on inverters are more limited. Accordingly we have revised reactive power NTC Clauses as follows. NTC 3.3.5.1 requirement for steady state reactive power contribution has been reduced from 0.55 to 0.395 x rated active power at all levels of active power output to align with the NER setting. The NTC 3.3.5.5 limit for dynamic reactive current support during disturbances for asynchronous generators has been reduced from 200% to 100% of the rated continuous current which is less than the 250% requirement for synchronous generators.
187	Capacity Forecasting Supplementary Paper	T-Gen	It is stated on page 21 of the Consultation Paper that 'The Power System Controller will not undertake daily plant production forecasting'. <ul style="list-style-type: none"> <li>Advise how System Control is proposing to utilise the forecasts of</li> </ul>	The System Controller will utilise the active power capability forecasts in its security constrained economic dispatch (SCED) routine. Put simply, the generator provides its capacity forecast and following the SCED turns that into a dispatch target for the generator to follow. PWC is pursuing improving distributed rooftop solar forecasting.

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			<p>active power plant capability provided by generators</p> <ul style="list-style-type: none"> <li>Advise how System Control is proposing to change its own forecasting practices</li> </ul>	
<b>85, 87</b>	General	T-Gen	TGen is of the understanding that other technologies, such as batteries, are proposed to be classified as generators. New technologies are available for specific ancillary services and for energy storage, or even both. TGen suggests that additional classifications be considered for these new technologies rather than a 'one size fits all' approach.	Initially, any technology that exports sufficient levels of instantaneous power into the grid, operates as a generator (for periods of time) will be required to meet the provisions in the GPS - this would be the case for any FCAS ancillary service technology. It would also be required to meet technical requirements for a load if drawing power from the network. The NEM are looking to introduce a separate category for storage technology. PWC will take the learnings from this to consider adoption/adaptation into our codes.
<b>27</b>	General	EDL	Deeply concerned about the prospect of PWC and generators collectively being able to complete the power system modelling required before the NTEM can commence and, by implication, our ability to meaningfully assess the impact of the proposed GPS changes.	Although system modelling may provide some insights into power system issues. Power and Water is unsure how the system modelling directly impacts EDL's capability to contribute meaningfully to the consultation on the GPS.
<b>28</b>	General	NT Airports	With the commitment given in 2015 to migrate toward NER, pushing the last 6 months of that period with the stakeholder responses from draft to finalised document is unreasonable. More time would allow further consultation.	The current Code changes are primarily driven by establishing generator access standards (ie the technical requirements for connecting generators) in relation to the Roadmap to Renewables Implementation Plan developed by the NT Government and the current generator connection applications being processed by PWC. It is not driven by the NT adoption of the NER.
<b>36, 40</b>	General	T-Gen	There appears to be confusion and inconsistency regarding the	This response covers two points:



PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
			classifications of Generation. The Network Technical Code discusses semi scheduled or non scheduled generation while the proposed changes to the SCTC removes one but maintains the other.	<p>1. 'Confusion and inconsistency'. Contrary to the stated view, no reference to the term 'semi-scheduled' generation (or generating unit) exists in the current version of the NTC nor the proposed version.</p> <p>2. 'Non-scheduled' generation. The SCTC has retained the term 'non-scheduled generating unit' as this label specifically covers generating units connected prior to the revised Generator Performance Standards in the NTC. The definition of non-scheduled generating unit is not suitable for application to any generating system that is required to meet the GPS.</p>
<b>31</b>	General	NT Solar Futures	Who will evaluate consultation submissions and what is the process of deciding on their inclusion into the Codes?	The consultation submissions will be made public and unedited unless requested by the submitter. The evaluation of the submissions will be undertaken by PWC as the Code change requester. The approval of the Code changes is the Utilities Commission who will have access to all submissions.
<b>124</b>	General	T-Gen	<p>TGen currently fulfils the role of supplier of last resort. As such TGen has often provided uneconomic services to address system emergencies. TGen is therefore concerned regarding the compliance with code obligations under consultation.</p> <p>A process to quickly and fairly resolve disputes arising from noncompliance with Generation Performance requirements should be part of the consultation. Clear guidelines regarding how entities can appeal decisions by either the Network Operator or System Controller should be considered.</p>	We have reviewed NTC 12.2 and provided further clarification regarding existing generator against the proposed GPS in the context of grandfathering. Any dispute will follow NTC 1.6 and be arbitrated by the Utilities Commission.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
131	General	EDL	Concerned that there has been no modelling provided to demonstrate that the proposed GPS is the most efficient outcome and in the best interest of customers. The principle of “do no harm” should not equate to an approach of “at an unreasonable (net) cost”.	We have taken on board stakeholder feedback regarding specific areas of change in the GPS. These have been addressed more thoroughly in the main consultation paper. We will also provide further information at the workshops to be held on 26 June 2019 to support our revised positions on the GPS.
185	General	NT Airports	Suggests allowing use of existing generators to provide sufficient operating margins via out of balance mechanism to relax scheduling and ramp rates for non synchronous generators.	<b>This response is covered by main consultation paper in chapter 4.</b>
32	General	Tetris	Encourages PWC to finalise the GPS as soon as possible as Tetris is planning to commence construction of Batchelor and Manton solar farms during the 2019 dry season.	We are working diligently to review and respond to stakeholder issues raised and finalise the Code changes in the quickest timeframe possible. The Code changes also require consideration and approval by the Utilities Commission.
33	General	T-Gen	Summarise the practical changes in the new standards from the current standards and how they depart from the NEM, in particular: <ul style="list-style-type: none"> <li>• Reactive Power Capability, new 3.3.5.1</li> <li>• Generating System Response to Voltage Disturbances, new 3.3.5.4</li> <li>• Frequency Control, new 3.3.5.11</li> </ul>	<ul style="list-style-type: none"> <li>• Reactive power capability follows the NER S5.2.5.1 automatic standard.</li> <li>• Generating system response to voltage disturbances is the same as the NER automatic standard.</li> <li>• Frequency control is the same as the NER automatic access standard except for droop settings applicable to the NT and removal of NER S5.2.5.11 (i) (4) as all generators will be required to operate in frequency control (droop) mode.</li> </ul>
24	General	Tetris	Tetris requests that once the GPS is agreed, that the requirements do not change, allowing the investors an element of stability.	Although the GPS may need to be re-visited in future our philosophy of “Framework for the Future” and the associated GPS are designed to minimise the risk of short term re-visiting of the GPS.

## A.2 Accepted Stakeholder Proposed Code Clause Changes

The following table summarises suggestions to other Code clauses proposed by stakeholders that were not under consultation, but which following an initial assessment on the degree of complexity and impact on other stakeholders have been accepted and incorporated into the latest Code update.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
<b>5, 38, 41</b>	Various	T-Gen	NTC sections 2.2.2, 13.9 and 16.3 all reference the term 'spinning reserve' - will these be modified to C FCAS?	The term "spinning reserve" will be modified to C-FCAS as implemented for each regulated power system.
<b>6, 7</b>	SSG	T-Gen	Incorporate C-FCAS specification into a guideline.	It is proposed that the specification and assessment process for C-FCAS will be contained in a guideline which is a similar approach to the NEM where AEMO has published a guideline.
<b>37</b>	Definitions	T-Gen	Include definition of C-FCAS in Codes.	C-FCAS definition has been included in both the NTC and SCTC.
<b>39, 42</b>	Various	T-Gen	There are several instances where the proposed changes have used the National Electricity Rules (NER) as the basis of a proposed clause. In many such instances the NER wording includes defined terms and the proposed NTC clause uses the same terms but does not provide the NER definitions or, in some cases, any definition of the terms at all.	We have reviewed the proposed Code changes and italicised and provided definitions for any NER adopted terms in the relevant Codes.
<b>86, 139</b>	SSG Appendix A	T-Gen	SSG Appendix A – refers to a constraint that is no longer applicable due to reconfiguration of connections at CIPS.	We have removed Appendix A from the SSG.
<b>100</b>	General	T-Gen	Propose that PWC develop guideline for assessment of existing generators against the new GPS and avoiding tests wherever possible.	PWC will develop guidelines to facilitate the process and methodology of assessment and documentation of existing generator capabilities against the GPS. The process to reach agreement under 12.2 will require a 3 way sign off between the Network Operator, System Controller and the generator.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
				Any dispute will follow NTC 1.6 and be arbitrated by the Utilities Commission. Each party will bear its own costs in applying NTC 12.2 (a). Generators will be required to provide evidence of ongoing compliance to the agreed performance standards as per NTC 5.7.3.
125	Various	T-Gen	Review of legislative alignment is required – e.g. references in the NTC to the Third Party Access Act which is going to be repealed 1 July 2019.	We have reviewed the Codes and updated impacted clauses to ensure legislative alignment.

### A.3 Deferred Stakeholder Proposed Code Clause Changes

The following clauses summarise the issues that have been raised by stakeholders that have been deferred for future consideration.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
135	NTC 2.2	T-Gen	The current form of ‘normal operating’ frequency band has hard limits. TGen recommends adopting limits similar to the NEM where there is a limit required to be achieved for a percentage of time. TGen observes that in Alice Springs, the normal frequency band in Alice Springs is frequently breached with no abnormal conditions apparent. This is usually observed when there is high solar PV variability apparent. To comply with the current hard limit standard could no doubt be achieved, but would require additional expense. There does not seem to be any concern with short	PWC does not propose to review this under the current consultation but does not rule this out in the future.

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
			movements outside the existing limits. So TGen proposes that the standard be adjusted to a form that allows this and is consistent with the NEM.	
<b>136</b>	NTC 2.2 (b)	T-Gen	TGen proposes that the removal of time error correction requirement be considered. As identified by AEMO, it would enhance system security and reduce requirement of ancillary services. The only concern is that there may be some unknown impact on customers and consultation should be undertaken first.	PWC does not propose to review this under the current consultation but does not rule this out in the future.
<b>25</b>	NTC Attachment 6.4	NT Solar Futures	The time frame for completion of a Preliminary Assessment needs to be stated in this clause A6.4. A time period of 90 days from Access Applicants acceptance of cost estimate provided in the Initial Response would be appropriate.	The NT will soon be transitioning from the connection processes under the Third Party Access Act to the NER Chapter 5 and 5A processes. These will be similar to existing arrangements where a preliminary program will be produced outlining key milestones including an Offer to Connect and Finalisation of Connection Agreements that will be tailored to each project.
<b>26</b>	NTC Attachment 6.6	NT Solar Futures	a timeframe for the Network Operator to provide an Access Agreement should be stated in this clause. A time period of 30 days from provision of Access Offer is reasonable.	
<b>49, 184</b>	SCTC 4.4B, 4.7, 4.8	NT Solar Futures	Clauses 4.4B, 4.7 and 4.8 need to be revised in light of the NTEM specification and best sit with the NTEM market documentation. They should be relocated and updated.	Any Code clauses that require review in terms of reflecting NTEM final design and decisions regarding the appropriate regulatory instrument will be undertaken during the NTEM finalisation process.
<b>213</b>	SCTC 6.5.1	T-Gen	Requests amendment include requirements on the Power System	PWC does not propose to review this under the current consultation but does not rule this out in the future. PWC is

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
			Controller to produce, publish and maintain procedures, templates and guidelines on Plant Outage requirements.	seeking to provide further transparency on dispatch and planning processes and will progressively document and publish a number of procedures/guidelines.
<b>34, 137, 138</b>	SCTC various	T-Gen	In 2015 PWC consulted on changes to the SCTC prior to the I-NTEM commencement. In the response released by PWC, there were 14 instances where the response statement identified as 'Power System Controller Response' was: This matter has been noted for future review of the Code. TGen requests that the comments submitted in 2015 be re-considered as part of this consultation as agreed in the response made in 2015.	PWC acknowledge that it has inadvertently overlooked the suggestions from T-Gen at the previous consultation in 2015 and undertake to consider these under a subsequent consultation and will engage with T-Gen and other stakeholders on relevant proposals.
<b>96</b>	SCTC various	T-Gen	Concerns about the hierarchy of Code and the SSG. Suggest a review to review and ensure appropriate aspects are Codified.	Power and Water is of the view that this is not a significant issue in the context of the current consultation.
<b>8</b>	SSG	T-Gen	Section 8 of the SSG currently states that all three regulated power systems are not operating under C-FCAS requirements, rather all are still operating under 'spinning reserve' requirements. Will all three power systems be changed over to C-FCAS prior to the GPS being enacted?	The GPS quantifies the capability to connect, not the mode of operation. It ensures the right equipment is available to manage a system in a stable manner. This is unchanged and is not under consultation. The System Secure Guidelines highlighted a transition to C-FCAS for the DKIS, exact dates have yet to be confirmed but unlikely to be before the finalisation of the GPS.
<b>9, 22</b>	C-FCAS Supplementary Paper	T-Gen	AS and TC The second paragraph states that there is no 'mechanism to pay another	We acknowledge the need to formalise the regulatory mechanism for the procurement of ancillary services in the Alice Springs and Tennant Creek power systems under SCTC

PWC Ref#	Clause	Stakeholder(s)	Issue	PWC response
			generator to provide a greater share of C-FCAS'. TGen suggests that SCTC clause 5.1 provides the requirement for the Power System Controller to develop and implement a framework of procurement that would negate the need for a generator to pay another generator for such services.	5.1. Although the NTEM will not apply to these power systems, PWC will continue to work with the Department of Treasury and Finance in developing wholesale market policy.
<b>142</b>	General	Repower Alice Springs	Questions how PWC can accurately develop demand forecasts without a way of forecasting distributed energy sources.	Although not part of this round of consultation, PWC is aware of the current and increasing challenges of managing power system security with increased penetration of rooftop solar (micro embedded generators) and is investigating mechanisms including forecasting to manage power system security.
<b>143</b>	General	Repower Alice Springs	The GPS appear to have not accounted for emerging technologies including electric vehicles and blockchain in the overall supply chain.	Although not part of this round of consultation, PWC appreciates there are many new technologies associated with the electricity supply chain that maybe utilised in the future to assist in maintaining a secure and reliable power supply with increased renewable energy. The GPS are not "cast in stone" forever and will be further considered and adapted as technologies emerge and are feasible.
<b>188</b>	General	T-Gen	Will all 3 regulated power system change over to C-FCAS from "spinning reserve" prior to the GPS being enacted?	The System Secure Guidelines highlighted a transition to C-FCAS for the DKIS, exact dates have yet to be confirmed but unlikely to be before the finalisation of the GPS.

#### A.4 NTEM and Regulatory Framework Related Issues

A number of stakeholders raised issues in relation to the NTEM or Regulatory frameworks of the NT. In addition to the stakeholder submissions being made public, we also provide the following summary of issues as a mechanism to raise the issue with the relevant NT Government agency.

PWC Ref#	Stakeholder	Issue
2	NT Airports	Capacity Mechanism – We would like an explanation or discussion describing this mechanism. What are acceptable levels of excess capacity? Would a mechanism for compensation be provided in the event that reliability and capacity of the system results in underutilisation of generators connected to the network? Is that a part of the capacity mechanism?
10	T-Gen	The C-FCAS Supplementary Paper indicates that TGen is paid a rate to compensate it for C-FCAS, this rate is embedded in the SCTC and will be reviewed in the near future. TGen has made previous requests to review this rate in the past and asks when will this rate be reviewed and by whom?
11	Epuron	It is understood that there is no method or intention for these ancillary services to be paid for. This is due to the understanding that new generators need to provide similar characteristics to the generators they are replacing, however in the current system Territory Generation gets paid for these services indirectly. New generators will not be paid for these services directly or indirectly. A mechanism for some method of payment for required ancillary services would encourage investment and boost the NT Governments Roadmap to Renewables plan.
12	Epuron	The introduction of an FCAS market may more easily allow new entrants that could receive payment for providing ancillary services. Alternatively, new entrants could contract for these services with another provider.
13	NT Airports	The omission, initially, of ancillary services remuneration simply provides a missing link in the ability to calculate returns and contingency requirements. It also introduces uncertainty into design scope.
14	Confidential submission	Not having an NT market for ancillary services is constraining the options here.
16	NT Airports	It has been stated that there is little opportunity for large storage (pumped Hydro) in the N.T. This will not allow the decommissioning of significant amounts T-Gens synchronous generation. To allow for the 50% target of renewables, repurposing and extending this infrastructure to support non-synchronise generation would provide all of the required FCAS and ancillary services for the system as it currently stands.
17	NT Solar Futures	Clause 3.3.5.15 - Inertia and Contingency FCAS – The requirements are onerous on intermittent RE generation, as it forces a synch con, BESS, etc to comply. Would this not be better provided as an Ancillary Service, and not a requirement on intermittent generation? The service can then be delivered much more efficiently centrally rather than increasing the connection costs of generators. This should be considered in the Code.
19	NT Solar Futures	NTSFDL supports the competitive dispatch of C-FCAS, as this will lead to the most economic outcome, although it is recognised that T-Gen are well positioned to provide this service for the medium term.
20	Tetris	Tetris acknowledges the additional clarifications provided and understand the need for all generators to provide C-FCAS (lower) whilst T-Gen provides C-FCAS (raise) until market start.
21	T-Gen	The C-FCAS Supplementary Paper indicates that the existing I-NTEM arrangement will continue and only TGen will be scheduled to provide C-FCAS and other ancillary services. This section also indicates that ‘as soon as practicable an arrangement will be



PWC Ref#	Stakeholder	Issue
		introduced whereby C-FCAS can be scheduled from other facilities'. Given that currently C-FCAS has not been implemented, TGen asks how is this to be arranged?
50	Tetris	Batteries are likely to be a critical aspect of the future system design, allowing a solar-dominated system to achieve a 50% renewable energy target (RET). If solar farms are required to both install batteries (for C-FCAS) and either spill significant energy or add additional batteries in order to provide guaranteed forecasts, the project economics will become challenging. However, if batteries are encouraged for frequency control, solar forecasting may well become a thing of the past, with batteries able to quickly and accurately respond to any cloud conditions through regulation and contingency FCAS.
90	T-Gen	TGen is also cognisant of the time critical need to support the entry of new solar generation as part of Government's Roadmap to Renewables strategy. Given the prevailing time constraints, TGen considers that a transitional arrangement will be required. The most plausible transitional arrangement is the pursuit of an incremental approach to the current regulatory framework. This has already been recognised in the current set of consultations that highlight either further regulatory changes or cut down transitional arrangements are to be undertaken in 2019. If an incremental approach can be taken to ensure solar generators can connect in 2019 then TGen believes an opportunity exists for the reforms to be co-ordinated under a single unit to ensure benefits from the reforms can be provided to electricity customers without being eroded by increased costs of implementation and compliance. This would include addressing all of the services provided by TGen which are currently not defined and therefore not explicitly recognised or adequately compensated for. As such, currently the full costs of electricity production are not evident and transparent to the potential industry participants who may provide innovative ways to reduce this cost.
146	Epuron	The mantra of 'do no harm' excludes the benefits that renewable non-synchronous generation brings to the network, namely in reduction in fuel use, reduction in harmful emissions and reduction in energy cost which all benefit the network.
132	T-Gen	PWC have indicated that there are further consultations expected this year regarding implementation of NTEM and other reforms. TGen queries whether there an intention under the current reforms to define a 'generator of last resort' role and if so how would last resort capacity be contracted?
133	T-Gen	Refer to all of Section 3 in our NTEM Functional specification feedback.
134	Repower Alice Springs	Repower Alice Springs welcome the idea of a grandfather clause in the GPS for existing generators, where most of the mechanical generators across the Northern Territory will not be required to meet the new standard of reliability and performance. This is fair as the existing contracts have used significant resources to undertake Power Purchase Agreements, however, it would be uncompetitive and unfair to allow them to earn income at the same rate as newer, more modern and cheaper competitors and hence, we recommend that any generators operating under a grandfather clause for this standard should not have access to the full value of the instantaneous wholesale price of electricity and should not be automatically approved to provide generations capacity when load forecasting changes, if there is a fully compliant generation competitor.

PWC Ref#	Stakeholder	Issue
186	NT Airports	Any scheme that makes less certain the ability to pay debt required to build a major project could be problematic. Shifting the control of the sale of the income that pays the debt to a third party will influence confidence and risk acceptance. Investors will need confidence that system control will dispatch their production, how is this going to be enforced so investors have certainty.
4	T-Gen	DKIS In addition to the specific responses to the issues raised in the paper below, TGen also seeks improved definition of the type and quantum of ancillary services, such as: <ul style="list-style-type: none"> <li>• Inertia requirements going forward</li> <li>• Timetable of change from spinning reserve to C-FCAS requirements</li> <li>• Network Support requirements</li> </ul>
48, 107, 108	NT Solar Futures	There is no obligation on System Control to operate the power supply system in order to maximise the amount of renewable energy injected into the network. There should be an obligation placed on System Control within clause 1.74 (and/or in Section 38 of the Electricity Reform Act) for System Control to dispatch the maximum amount of renewable energy whilst maintaining system security and to minimise the amount of renewable energy spill. If renewable energy is contracted under PPAs then volumes under these contracts should be dispatched first. System Control will play a key role in achieving the 50% RE by 2030. This intent of maximising renewables was welcomed by System Control at the 18th Feb 2019 GPS Information Session.
66	NT Airports	How will the reliability manager work toward mitigating derating factors on generators as is currently occurring in the NEM? Derating whilst ensuring system security is also enabling bankruptcy
88	NT Airports	Such a major change to the NT energy market with stringent rule changes in an environment that requires major investment to achieve, appears to be counter intuitive and possibly biased toward a predetermined outcome. A perception may be that the splitting of PWC into three separate entities has not occurred completely at the highest levels of governance. Investment will require the confidence in a fair and unbiased environment where returns on investment remain true for the timeline of the project.
89	T-Gen	TGen considers that the various consultations currently underway would benefit from a comprehensive, consistent approach to the regulation of electricity. TGen is concerned that where there is no central coordination of these consultations, it is likely to lead to inconsistent application of regulations in the three regulated networks and possibly not provide the predictability needed for new investment. A greater level of coordination would also allow the government to conduct a cost benefit analysis of the regulatory changes to ensure unintended costs are kept to a minimum.
91	T-Gen	TGen considers that the various consultations currently underway would benefit from a coordinated approach to the regulation of electricity. For example the market fees for System Control are being considered prior to the obligations for System Control being established under the other consultation papers. TGen considers that as the consultations will ultimately require approval from the Utilities Commission for changes to the Codes, and that they will ultimately need to arbitrate on any disputes or non-compliance in the future, the Utilities Commission (UC) would have been best placed to centrally coordinate all consultations.

PWC Ref#	Stakeholder	Issue
		However, the level of resourcing at the UC's disposal would need to be reviewed so this could be undertaken adequately. This would include technical, regulatory, legal and administrative.
93	T-Gen	Considers that the independence of the System Controller and Market Operator should be part of the reforms. Requires clarification on the role of the Utilities Commission. Providing sufficient time to establish correct governance arrangements is imperative to attracting future private investment in the electricity sector. It is possible that the versions of the reliability, capacity and other market functions proposed as transitional arrangements are likely to diminish investor confidence in the absence of a clear transition plan.
94	T-Gen	The consultation includes changes to both codes and guidelines at the same time. The changes to the codes cannot be made by System Control or the Network Operator without approval of the Utilities Commission. However the Secure System Guidelines are more easily changed by System Control. TGen suggests that a review of the document hierarchy is undertaken by the Utilities Commission to confirm which items should be included in a code, and which should have the flexibility for System Control to change without approval in the guideline.
95	T-Gen	Has or will the Utilities Commission be undertaking a legislative review to ensure changes and modifications to these two codes and one guideline do not result if conflicts between their governing acts and regulations?
109	Allan Langworthy	The Expert Panel specifically recommended [Core Enabling Action 5(a)] that commitment to the NERs be paused to allow full review and ensure that the Rules are drafted to support the Governments renewable energy policy. In Core Enabling Action 5(b) it was recommended that changes to the Rules and Code should not "inhibit the achievement of the 50 per cent target", which this Code change may well do.
110	NT Solar Futures	At present there are various mechanisms for individual players in the NT electricity industry to undertake system planning within their own area of influence. Power systems require precise and comprehensive system planning and are unlikely to operate efficiently without such planning. It is therefore necessary that measures be put in place to facilitate system-wide strategic planning. This was proposed by the Expert Panel in the Government's Roadmap to Renewables Report. An example of the need for strategic system planning is the likely need for future augmentation of the Darwin-Katherine Transmission Line. A planning mechanism that can deal with this contingency must be in place within the Codes and/or NTEM well before such a need arises. In forward planning and management of the system it is imperative that Networks and System Control are truly independent. Decisions around access that are managed by Networks must be unbiased and seen by all proponents as fair. This will only happen if the organisation is independent of PWC. Likewise, System Control has the power to curtail or inhibit dispatch and must also be seen to be unbiased and independent of PWC.
111	NT Solar Futures	we are of the view that a whole of system plan development would be the most desirable, cost effective and efficient plan for the NT's long term energy generation future. We draw your attention to recent announcements by the WA government to be led by the Public Utilities Office. Their plan is to be developed by mid-2020. It is a great initiative and one that NT could follow.

PWC Ref#	Stakeholder	Issue
123	T-Gen	<p>As part of the Reform Process the PWC Networks are now under the economic regulatory oversight of AER. However oversight of licensing and trading of energy is regulated by the Utilities Commission. TGen believes that the consultation underway should separate the obligations for the System Controller and the Network Operator as much as possible. In addition, for a generator or a load, the interaction with the Network operator and the interaction with the System Controller should be separated as much as possible. Therefore TGen believes the current consultation should separate requirements of connection and operation of the Network into the Network Technical Code.</p> <p>This code would then form an input into any additional requirements from the System Controller which would be codified under the System Control Technical Code. This would assist all participants understanding of how the overall regulatory framework is established as well as whose authority is required to perform which functions.</p> <p>If this is not separated at this stage it will become increasingly difficult establish requirements of future technology and increase adoption of NEM rules.</p>