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09 Sep. 2010

Australian Energy Market Commission
PO Box A2449
Sydney South

EPR0019

Dear Commissioners

Trasnsmission Frameworks Review: Issues paper

TRUenergy welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Transmission Frameworks Review.

Both the Australian Energy Market Commission (AEMC) & the National Electricity Code Administrator (NECA) undertook reviews of the transmission frameworks in the National Electricity Market (NEM) in the past. However, we believe that such a holistic review of the transmission frameworks has not been advanced on this scale before. For that reason, we commend the AEMC efforts in publishing an Issues paper that covers such a wide scope of transmission related issues.

We respond to all of the questions raised in the Issues paper in this submission. However, we draw attention to the following points in our submission.

- **A problem with the rules regarding capacity congestion**

  The rules that apply to justify capacity congestion in transmission in the NEM are deficient. As a result, the AEMC needs to review these rules – again.

  Currently, we remain concerned that:

  - AEMO plans generation & transmission to different standards in the NEM. Generators (rightly) plan to an N-1 deterministic standard NEM wide. But, Transmission Network Service Providers (TNSPs) prepare their networks to varying standards according to the jurisdictional requirements in the different states. For example, in Victoria where probabilistic planning standards apply, AEMO justifies augmentations only where they consider it is "economic". In extreme circumstances, it may be "economic" for the lights to go out under probabilistic planning. We submit this is totally unacceptable.

- Market benefit augmentations (under the RIT-T) that seek the removal of high demand prices and congestion are difficult to justify. In addition, some market benefits - especially competition benefits – can be difficult to quantify. What's more, there is no legal obligation for a TNSP to proceed with an augmentation that mostly addresses congestion or any other market benefit. As such, the AEMC needs to address this deficiency in the rules to ensure transmission augmentations are delivered to the market in a timely manner.

- **The current transmission framework provides locational price signals to new generation**

  Marginal loss factors, access to fuel and the risk of constraints combined provide a locational signal for new generators.

  We suggest that the case for a price signal for locational network costs to apply to Generators has not made conclusively in the Climate Change Review. [1] Therefore, we question whether there is a need for this policy to be introduced.

  As such, we encourage the AEMC to consult much wider before adopting this measure.

Key questions

1. Do the frameworks governing electricity transmission allow for the minimisation of total system costs and for overall efficient outcomes in accordance with the NEO?

TRUenergy considers the transmission arrangements in the NEM can be improved by adjusting the current framework.

We believe that this will improve the current transmission framework in accordance with the National Electricity Objective (NEO).

We submit:

- **The Victorian transmission arrangements can be improved by moving to an N-1 deterministic planning standard.**

  Even though the AEMC recently changed the RIT-T to include a wider range of market benefits, we remain concerned that the probabilistic planning standard applied in Victoria will deliver a sub optimal level of transmission investment in the next 10 years. We acknowledge that only a short time has passed since the AEMC changed the RIT-T, and enough time has not passed for these changes to infiltrate the planning process. However, we are concerned that these changes alone will not – in isolation – deliver the transmission required in Victoria in the next 10 years. With the potential changes to network flows - as a result of all the renewable generation being introduced into the NEM from the revised MRET - Victorian generators' face more financial distress as congestion continues to accelerate. As a result, Generators will reduce their contracted capacity in order to reduce their chances of being "constrained off" thereby reducing the liquidity of the contract market.

  On Jan. the 29th 2009, TRUenergy faced the prospect of being "constrained off" the transmission system for the failure of a single 220/500KV transformer at Hazelwood terminal station for a period of 7 hours at VoLL. This event would impact our ability to deliver the energy for the MWs we had contracted to the market for both the Jeeralang Power Station and our Yallourn Power Station. We estimated that this low probability/high impact event would cost TRUenergy roughly $55M & $80M to Loy Yang. [2] The congestion on the day was not a serious as had been forecast in the Australian Energy Market Operators (AEMO's) pre-dispatch as a result of quick response by SP AusNet. Nevertheless, TRUenergy was still exposed to a serious financial impact.

[1] AEMC "Review of Energy Market Frameworks in light of Climate Change Policies" Final Report- 30 September 2009".

[2] See Appendix 1 – case study.

We consider that this event - a direct consequence of probabilistic planning – is not consistent with the National Electricity Objective (NEO). Ultimately, congestion leads to higher prices for consumers, which neither benefits the wholesale sector or the consumer. We believe the introduction of N-1 planning to Victoria will deliver more timely market benefit transmission augmentations to the market in Victoria. And, no doubt, this will help resolve the level of congestion as it arises in the future.

- **The RIT-T should be improved to address the current "gaps" in the framework relating to market benefit augmentations in order to deliver the required capacity expansion to the market**

  TRUenergy acknowledges the work done by the AEMC recently to improve the RIT-T. We are pleased by the changes to the RIT-T that amalgamate both reliability and market benefits – encouraging TNSPs to maximise the present value of net economic benefits – subject to meeting deterministic reliability standards.

  We hope the changes to the RIT-T will force TNSPs to undertake more market benefit augmentations. In addition, we submit the inclusion of market benefits like "options values" and "competition benefits" to the RIT-T will help justify more market benefit augmentations.

  However, as we have argued above, we think there are still some gaps in the rules that apply to market benefit augmentations under the RIT-T. Therefore, in order for the transmission frameworks to operate efficiently, these gaps need to be addressed. As such, we welcome the prospect to work further with the AEMC and explore ways to address this issue.

2. Is there a need to consider the appropriate future of transmission in providing services to the competitive sectors in the NEM? What evidence is there to consider that the existing service provided to facilitate the market, or the definition of this service, is inappropriate or insufficient.

TRUenergy acknowledges the AEMC has worked hard to improve the transmission frameworks in the NEM. We consider the changes that it has made recently to the transmission rules have been beneficial to market. We encourage the AEMC to continue its work in reforming the transmission arrangements further.

Having supported the AEMC for its recent transmission initiatives, we submit, the current transmission frameworks still causes problems for market participants. For example:

- TRUenergy exposed itself to serious financial risk as a result of being "constrained off" as a result of a low probability/ high impact event on the transmission system in Victoria. As such, we submit that there needs to be a review of the policy mechanisms to deal with this issue.

  Whether we achieve this through:

  - changes to the planning regime in Victoria
  - adjustments to the rules that apply to market benefits augmentations under the RIT-T that allow planners to capture the **actual impact** of low probability/ high impact events. It could be that planners are directed to apply more appropriate probability weightings to these events.
  - the introduction of an enhanced level of transmission service

  we welcome further dialogue with the AEMC in this regard.

- TRUenergy exposed itself to financial risk in the "deeper' part of the transmission network at our Tallawarra Power Station. On Friday the 20th of November, on three separate occasions Tallawarra was instructed by NEMDE to reduce generation output due to network constraints. Each of these incidents coincided with the NSW regional price going to VoLL which resulted is significant forgone generation revenue. During the

second incident Tallawarra was forced to bid fixed load to avoid being dispatched below minimum stable levels. [3]

As a result of this, we submit there needs to be:

- an improvement to the efficiency in which TNSPs operate the transmission network
- adjustments to the Australian Energy regulator's (AER) Service target Performance Incentive Scheme to ensure the transmission network in NSW is used more efficiently.

We look forward to consulting with the AEMC on these matters.

3. Does the current transmission planning framework appropriately reflect the needs and intention of the market (including generators, loads and demand side response?) Will this adequately provide reliable information to TNSPs on where and when to invest, or when to defer or avoid investment, in an uncertain planning environment, or is there a case that additional market benefit signals might be beneficial?

TRUenergy supports the AEMC 's recent reforms to the transmission frameworks. We think these reforms will help deliver both intra regional and inter regional investment in the long term. Furthermore, we welcome the introduction of the National Transmission Planner (NTP). We consider the NTP provides the NEM with a more national approach to transmission planning. Therefore, it should deliver greater interconnector capacity.

Having argued this, we submit:

- Probabilistic planning did not deliver the level of intra-regional transmission investment required in Victoria in the past 10 years. Of particular concern, is the probabilistic planning regime's ability to deliver the required level of transmission investment required by Victoria in the next 10 years, especially given the level of renewable generation forecast. So, as previously suggested, we believe a review of probabilistic planning in Victoria is necessary.

- The NEM failed to deliver a sufficient level of interconnector capacity in the past decade. We agree that the National Transmission Planner – which has been introduced to forecast transmission requirements on national flow paths over the next 20 years - will help to address this. However, we welcome the AEMC's further investigations into ways to ensure more inter connector capacity is delivered in the future.

4. Will the existing frameworks, including the recently introduced RIT-T, provide for efficient & timely investment in the shared transmission network?

TRUenergy acknowledges the recent work done by the AEMC to improve the RIT-T.

We support the changes to the RIT-T that amalgamate both reliability and market benefits. The AEMC's revised RIT-T requires augmentations to maximise the present value of net economic benefits – subject to meeting deterministic reliability standards.

We hope these changes to the RIT-T will force TNSPs to undertake more market benefit augmentations. In addition, we submit the inclusion of market benefits like "options values" and "competition benefits" to the RIT-T should help justify some additional market benefit augmentations.

TRUenergy considers a review of the rules that apply to market benefit augmentations under the RIT-T as a critical part of this review. In short, we need to **broaden** the range & **improve** our ability to capture **all** of the market benefits and costs in market benefit augmentations assessed under the RIT-T. By doing this, we might just avoid having to change the transmission framework in any serious way.

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[3] See Attachment A: Case Study No: 1

We hope that the AEMC will review this area of the RIT-T. We expect this exercise will improve our understanding of the rules that apply to market benefit augmentations under the RIT-T. In this regard, we plan to commission external consultants to help progress our thinking in this area.

We welcome the opportunity to work further with the AEMC on this issue. We look forward to exploring a range of possible mechanisms for identifying and better quantifying the benefits of market benefit augmentations under the RIT-T.

5. Does the current regime of economic regulation of transmission lead to efficient network investment? And - do the incentives on TNSPs lead to appropriate investment decisions & the efficient delivery of additional network capacity?

TRUenergy considers the incentives that apply to TNSPs to deliver timely and efficient transmission investment can be sharpened.

We submit:

- The incentive framework should be strengthened to expose TNSPs to the direct impacts of their investment decisions to the market for the cost of congestion. In some circumstances, this could be **VoLL.** We acknowledge the AER's efforts in developing and refining its Service Target Performance Incentive Scheme – and in particular the Market Impact Component – recently. However, we believe that there is a strong case for strengthening the incentives in these schemes.

  We would welcome the opportunity to work with the AEMC & the AER in this area.

- Allowing revenue allowances rolled forward based on the value of actual (as opposed to forecast) capital expenditure is appropriate. The AER – in its Review of the Statement of Regulatory Principles (SORP) & the AEMC's chapter 6A review – seriously assessed the merits of allowing revenue allowances rolled forward. based on the value of actual (as opposed to forecast) capital expenditure. In the SORP, the ACCC found that the scope of periodic revaluation of a TNSP's assets could lead to substantial uncertainty for TNSPs and thereby deter efficient network investment. On this basis, we doubt this is an aspect of the TNSP incentive framework that needs to be revisited.

6. Is a price signal of locational network costs for generators required to promote overall market efficiency? Would there be any consequential impacts for pricing arrangements for load?

TRUenergy believes two conditions should be met before considering whether the NEM needs a price signal of locational network costs levied on generators.

Therefore, the AEMC should review this policy if:

- The current problems in justifying market benefit augmentations under the RIT-T are not resolved. In this regard, we expect the AEMC to make significant progress on this issue in this review. We are encouraged by the recent changes to the RIT-T that amalgamate both reliability and market benefits under the RIT-T. And, we are confident these changes will force TNSPs to undertake more market benefit augmentations. In addition, the inclusion of market benefits like "options values" and "competition benefits" into the RIT-T will help justify some more augmentations. However, as we have argued above, we believe there are still some gaps in the current regulatory framework that apply to market benefit augmentations. As such, they should be addressed.

- It can demonstrate - with the support of both quantitative or qualitative analysis - the case for a price signal of locational network costs for generators has been made.

If the AEMC is satisfied that both of these conditions are met, then we should enter this debate. If the AEMC chooses to enter this debate, **currently**, our position is a deep connection policy sends superior locational investment signals compared to a generator use of system charge.

7. Would it be appropriate for generators & load to have the option of obtaining an enhanced level of transmission service? Would this help generators manage risks around constraints and dispatch uncertainty?

TRUenergy will submit two case studies that reveal the financial impact of being "constrained off" the transmission system.

The financial impacts of the events on:

- Jan 29th 2009 for the failure of a single 220/500KV transformer at Hazelwood terminal station for a potential period of 7 hours at VoLL.

- Friday the 20th of November 2009, on three separate occasions, when Tallawarra was instructed by NEMDE to reduce generation output due to network constraints with each of these incidents coincided with the NSW regional price going to VoLL

seriously impacted TRUenergy. As a result, the AEMC needs to work with market participants to develop alternative arrangements that will allow for generators to pay for the right of an enhanced level of transmission service. Therefore, if a market participant wants to pay for an enhanced level of transmission service- it can pay for it.

We welcome the AEMC's investigation into a range of schemes that might provide either a physical transfer capability at a connection point, or financial access to a market price. We note its concerns outlined in the Issues paper regarding the inability of section 5.4A to work in a practical way for market participants.

Finally, we would welcome further investigation of the SENE concept being implemented on the shared network in order to deliver an enhanced level of transmission service.

8. Do the current arrangements for the connection of generators and large end user reflect the needs of the market? To the extent that more fundamental reforms to transmission frameworks are considered under the review, would it be appropriate to revisit the connection arrangements?

TRUenergy has extensive experience in negotiating with network service providers to connect a generator to both the transmission & distribution system.

We believe that our experiences to date reflect our limited bargaining power in dealing with a regulated monopoly. In the cases where we have been negotiating with an NSP to connect a generator, we comply with any requests we get from NSPs to prevent a delay to connecting our generator. Therefore, given our lack of bargaining power, it is crucial that the connection arrangements are robust.

Our experiences listed below suggest there is a real need to revisit the connection arrangements. Some of the problems we were subject to include:

- **Expensive modelling to undertake network connection**

  Network Service Providers (NSPs) have made unreasonable requests on generators to undertake expensive power system modelling to under pin a generator connection application in the past.

  In our experience to date, these modelling requests have in some cases been unreasonable, and the resultant system modelling costs have been exorbitant. The need for the modelling must be justified on the basis of need and benefit, not just because it is possible to model using current software packages.

There also appears at the distribution level a lack of understanding by the NSP of their network. Hence, there has been a tendency for the modelling requested to extend beyond the needs of a generator connection but has been justified on the basis of the generator connection.

Unfortunately, given our limited bargaining power, we complied with these requests in order to progress a generator connection (or inquiry).

We believe that significant cost benefits could be obtained throughout the NEM if the need to modelling was based on need and benefit.

- **Information sharing/timing issues**

  TRUenergy considers NSPs may optimise their superior bargaining position to get "off market" consultant work.

  To date, we experienced one situation where we were required to pay a large "off market" consultant fee to process our connection application. This creates significant inefficiencies and impediments in the connection application process.

  Further, we experienced a situation whereby the NSP had little modelling information on their own network and we were forced to effectively pay the NSP for the building a network model.

- **A lack of penalties for TNSPs who fail to comply with their connection obligations in a timely manner**

  TRUenergy concurs that NSPs have insufficient penalties placed on them where they fail to comply with their obligations to connect in a timely manner.

  To date, we experienced one situation where the relevant NSP delayed significantly the time required for it to connect a specific generator. Ultimately this was because the NSP involved did not understand their responsibilities and obligations under the NER with regard the connections.

  We were aggrieved that no reasonable penalties could be applied to the NSP for its failure to connect us in a timely manner.

- **No firmer service in exchange for the payment of a range of transmission services**

  TRUenergy observes that generators that pay for a "negotiated" or "competitive " transmission services under the current NEM arrangements receive no property right in exchange for their investment. As a result, third parties can connect to these assets by paying a use of system charge. For example, any change to the transmission network providing shared transmission services to provide a service required by a generator is generally considered to be a negotiated transmission service. Unfortunately, the Generator that finances such an augmentation receives no property right in return for its investment. Whilst that generator is free to negotiate a reduced tariff with the TNSP for other parties that "free ride" on this augmentation, there are no arrangements in place that provide for market compensation in the event that a third party connects to the augmentation and constrains the original investor off. Therefore, we believe that the AEMC should investigate further whether some form of property right (or enhanced level of service) should be provided to a generator that pays for either a "negotiated asset" or a "competitive asset" regardless of where these investments are located.

9. Are there more fundamental reforms required to the financial incentives on TNSPs to manage networks efficiently & to maximise operational network capability for the benefit of the market? Should further options for information release and transparency on network availability & outages be considered?

TRUenergy submits that a TNSP should be subject to the cost of the full impact of congestion as a resulted of their investment decisions.

We think this can be achieved either two ways:

- **Exposing TNSPs to the full costs of congestion in full**

  TNSPs should face the full costs of congestion when a Generator is constrained off a TNSP's system. In some circumstances, this could be **VoLL**

  We agree the service target performance incentive scheme (STPIS) would be adjusted dramatically to get TNSPs to face the full financial impact of congestion. But, we suggest, TNSPs will pay much closer attention to any service performance incentive scheme under this proposal.

- **Increasing the TNSPs revenue at risk under the current STPIS to 10% of their regulated revenue**

  The AEMC should sharpen the incentives under the STPIS by subjecting TNSPs to higher penalties/costs under the scheme.

  The AER regulates TNSPs under a revenue cap form of regulation. This provides incentives to TNSPs that allows them to earn up to a maximum allowed revenue (MAR). The MAR is based on forecast efficient costs. During the regulatory control period, a TNSP can maximise its profits by reducing its costs below the forecast levels. Whilst the costs reductions could occur because of improved efficiency, they could also result from reduced service quality. Therefore, a TNSP may have an incentive to maximise its profits at the expense of service quality delivered to its customers and the market.

  The AER introduced the STPIS to minimise the incentive to reduce costs below forecast levels at the expensed of service quality by linking regulated revenues to defined performance standards. The scheme is made up of two parts:

  - The **service component** which provides incentives for TNSPs to minimise the number & duration of loss of supply events & to maximise circuit availability
  - The **market impact component** which provides an incentive for TNSPs to minimise the market impact of outages.

  The maximum revenue increment or decrement that a TNSP may earn under the service component is 1% of its Maximum Average Revenue (MAR). And, the maximum revenue increment that a TNSP may earn under the market impact component is 2% of its MAR.

  TRUenergy submits there is a need to sharpen the incentives under the under the STPIS so that the:

  - maximum revenue increment or decrement that a TNSP may earn under the service component is 5% of its Maximum Average Revenue (MAR)
  - the maximum revenue increment that a TNSP may earn under the market impact component is 5% of its MAR.

  TNSPs will put at risk millions of dollars under their STPIS if this proposal is adopted. No doubt, they will argue that their risk profile (& their WACC) should be adjusted. We suggest this debate can proceed in the future with the AER.

- **Exploring further options for information release and transparency on network availability & outages be considered?**

TRUenergy believes that increasing the availability of information to the market on network availability and outages in any way will help market participants. We would welcome further efforts by the AEMC in exploring this issue further as part of this review.

10. Is there a need for more material congestion to be more efficiently managed in the NEM?

TRUenergy does not support the implementation of location specific time limited implementation of congestion pricing.

We submit that the prevalence of in-efficient congestion on the transmission system in Victoria is a consequence of the failure of the current framework to deliver timely & efficient transmission. The current probabilistic planning arrangements make it difficult to get the timely delivery of efficient transmission investment.

Whilst the current RIT-T allows for reliability based augmentations to be delivered to the market on a least cost basis to the market in other jurisdictions, it can be difficult to for an augmentation to be justified solely on the basis that it net economic benefits exceeds its costs in Victoria. We submit that this is a higher threshold to pass – compared with justifying augmentations in other jurisdictions on a least cost basis to comply with N-1 jurisdictional planning standards.

Therefore, we believe that:

- A change in the Victorian planning standard will help to deliver more timely efficient transmission to Victoria
- Further clarity and direction on helping TNSPs to identify additional market benefits in the RIT-T

will help resolve the capacity congestion in the NEM. Hence, we see no need for the implementation of location specific time limited congestion pricing.

11. Conclusion

The AEMC requested stakeholders offer evidence in support of any claims they make in responses to the Issues paper. In accordance with this advice, and in order to support our positions, we provide direct evidence on the financial impacts of congestion in this paper.

We submit the following two case studies to support our case. They include impacts of the events on:

- Jan the 29th 2009 for the failure of a single 220/500KV transformer at Hazelwood terminal station for a potential period of 7 hours at VoLL.
- Friday the 20th of November 2009, on three separate occasions, when Tallawarra was instructed by NEMDE to reduce generation output due to network constraints with each of these incidents coincided with the NSW regional price going to VoLL

Both these events resulted in energy being priced at VoLL on the day. This was not the outcome of the demand and supply of electricity on the day but was instead caused by transmission congestion. As a result, the market was burdened with another cost which would ultimately be passed through to consumers. Additionally, transmission events (like the ones described in this paper) which result in VoLL pricing provide no signal for investment and effectively provide an arbitrary cost and distortion to the NEM.

In order to address the problem of transmission congestion, we submit:

- Transmission planning needs to clearly capture transmission related VoLL events into planning to build out congestion and to ensure the lines are open from an operating perspective

- The RIT-T should include an explicit congestion costs valued at VoLL (for non demand related events) for any area where there are systematic events of VoLL pricing caused by transmission congestion at a higher level of probability.

We are pleased that to have the opportunity to respond to AEMC Transmission Frameworks Review – Issues paper. And, we welcome any further discussions regarding this submission. In this regard, we would be pleased to discuss our submission in a direct meeting with the AEMC- if required. If you have any queries regarding this matter, please do not hesitate to contact Con Noutso – Regulatory Manager at TRUenergy on Tel: (03) 8628-1240 or via email on (con.noutso@truenergy.com.au).

Yours Sincerely

p.p. Mark Collette
Director Portfolio Management & Development

Case Studies

TRUenergy submits two case studies in Attachment A & B.

Both these events on the transmission system resulted in energy being priced at VoLL on the day. This was not the outcome of the demand and supply of electricity on the day but was instead caused by transmission congestion. As a result, the market was burdened with another cost which would ultimately be passed through to consumers. Additionally, transmission events (like the ones described in this paper) which result in VoLL pricing provide no signal for investment and effectively provide an arbitrary cost and distortion to the NEM.

We believe that to address the problem of transmission congestion, we submit:

- Transmission planning needs to clearly capture transmission related VoLL events into planning to build out congestion and to ensure the lines are open from an operating perspective
- The RIT-T should include an explicit congestion costs valued at VoLL (for non demand related events) for any area where there are systematic events of VoLL pricing caused by transmission congestion. In addition, we believe these events should be captured at higher probabilities when their impact is quantified in the RIT-T.

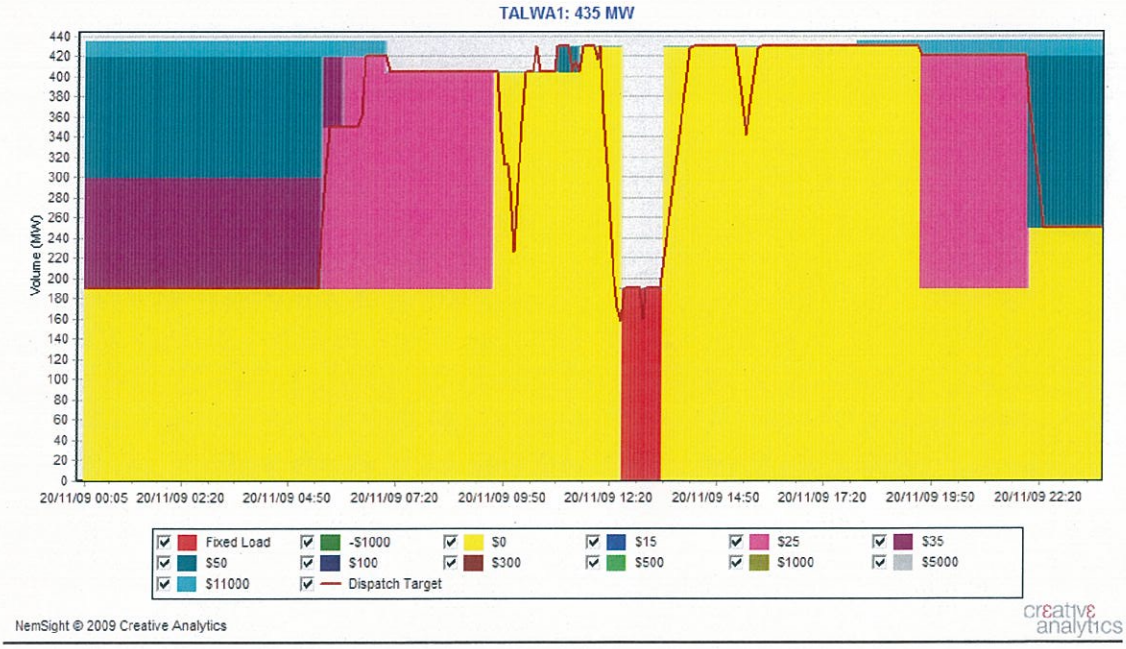
Attachment A

Case Study No: 1:

Constraints that impact Tallawarra Generation on Friday 20th November 2009

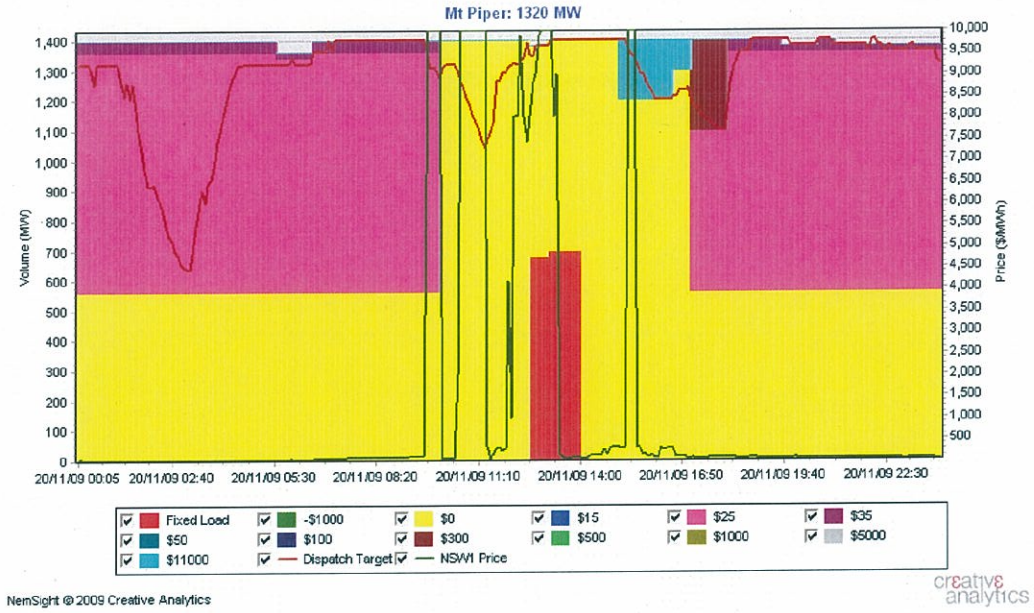
A: Introduction

- On three separate occasions Tallawarra was instructed by NEMDE to reduce generation output due to network constraints.
- Each of these incidents coincided with the NSW regional price going to VoLL and resulted is significant forgone generation revenue.
- During the second incident Tallawarra was forced to bid fixed load to avoid being dispatched below minimum stable levels
- On the day, Sydney experienced severe weather with 33°c in Sydney and 42°C in Penrith
- NSW Scheduled demand peaked at 13224MW.

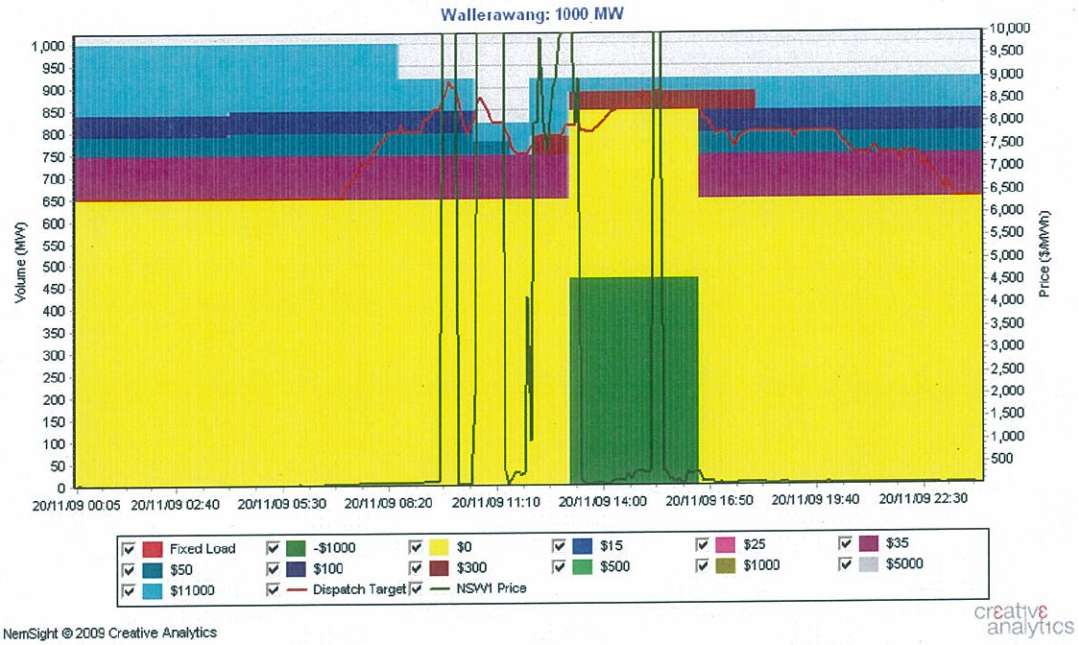


B: Incident No: 1

- At 9:45 NEM time (10:45am AEST) AEMO invokes automatically generated constraint 'CA_SPS_3A18636E_01': Avoid overload of MT Piper line #70 on the contingent trip of Dapto to Sydney South 330kV Line.
- No market notice was released about the reason for the constraint.
- All running generators affected by constraint (~10) re-bid volume to -$1000.
- Mt Piper units which had the strongest coefficient in the constraint (~1) were backed off heavily.



- Tallawarra with the next highest coefficient (0.8) was also backed off hard, likely because the Mt Piper ramp down rates were not high enough to satisfy the constraint.
- Wallerawang with a strong mitigating constraint coefficient is dispatched at VoLL for the initial spike. Shoalhaven, Colongra were dispatched and set price for the second portion of the spike which was likely caused by ramping constraints.



- At 10:10 NEM time (11:10 AEST) AEMO issues market notice (#28913) advising that a direction between issued to a market participant between 10:00 and 11:45 NEM time and that intervention pricing was used during this period

- The incident ended @11:20 NEM time when the constraint was revoked and AEMO subsequently released a market notice (#28919) identifying these periods as being subject to an over constrained dispatch price review.

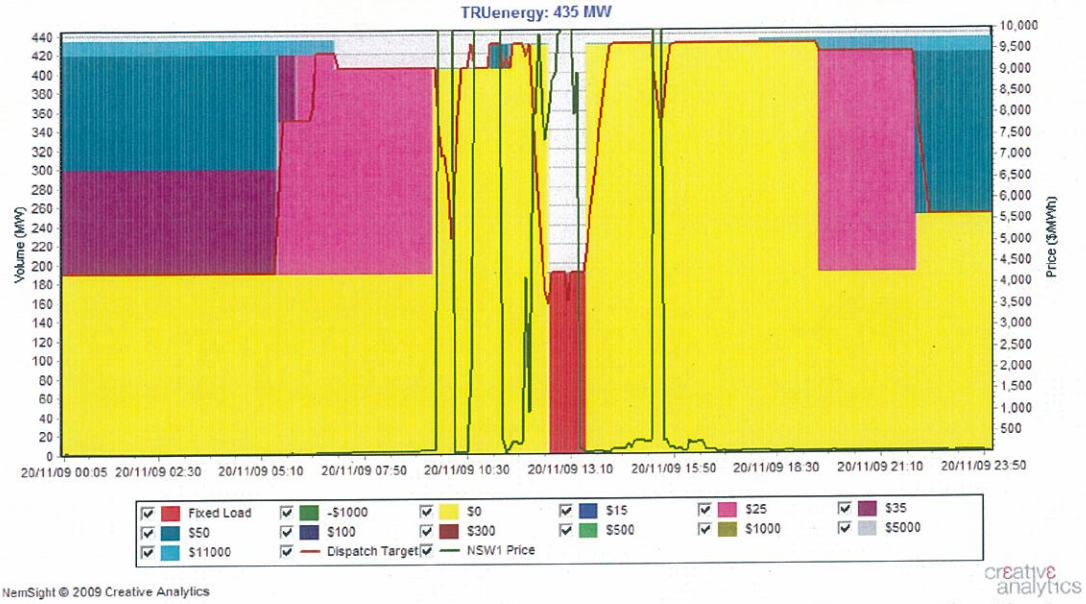
C: Incident No: 2

- At 11:30 NEM time (12:30am EST) the network outage constraint 'N>>N-AVMA' is invoked: Avoid overload of Dapto to Sydney South 330kV Line on trip of Yass to Sydney West.

- Constraint contingency is a result of an outage on an Avon to Macarthur line and was first created on 18/11.

- As constraint affects exactly the same generators as Incident 1, all are still bid at -$1000

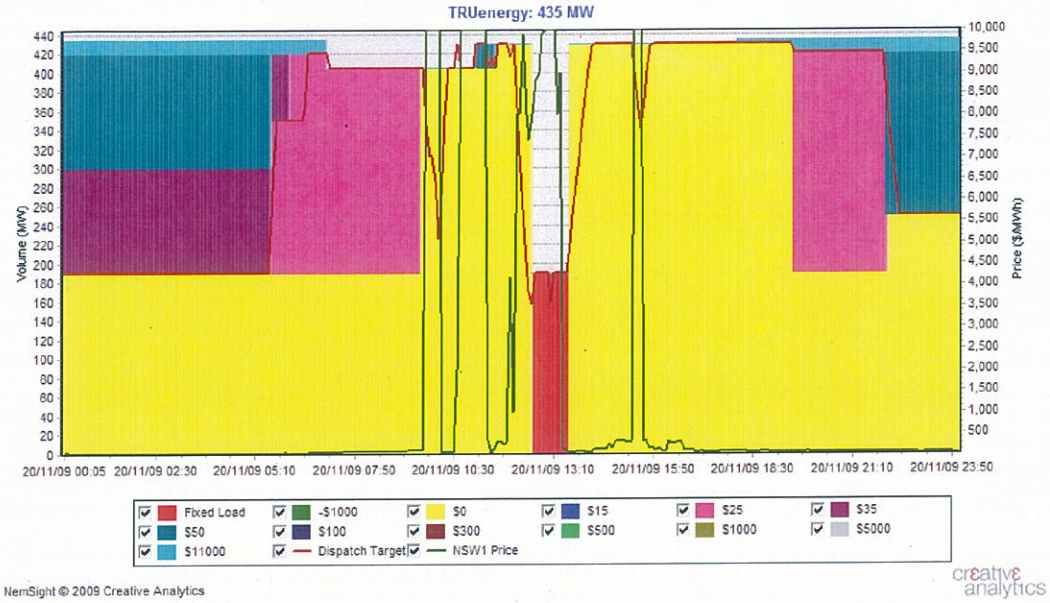
- Tallawarra with the worst constraint coefficient (+1) is backed off heavily to the point that it must bid fixed load to maintain unit stability at min generation (190MW).



- Eraring's Shoalhaven, which has the next worse co-efficient is bid all 160MW at fixed load to 'Avoid Non-Conformance' and 'Avoid Plant Fluctuations'.
-
- Eraring already had two 660MW units out.
- VIC-NSW Interconnector was dispatched to flow~350MW at ~$30 into NSW.
- No other generators were backed off and Delta set the price with aggressive bidding and a shortage of supply
- At 12.37 NEM time, AEMO released a market notice for an actual LOR2 event (load shedding required for loss of unit) would exist in NSW from 12:00 to 18:00 NEM time.
- At some point after this notice it is considered that AEMO starting using the 15 minute line ratings on the Dapto to South Sydney contingency which relieved the constraint and allowed Tallawarra to increase generation back to availability

D: Incident No: 3

- At 15:00 NEM time AEMO cancelled the LOR2 notice for the NSW region.
- The same constraint 'N>>N-AVMA' then again began to bind, possibly due to NSW demand exceeding 13200MW.
- Tallawarra again was given reducing dispatch targets due to being constrained off.



- Prices were again set at VoLL by aggressive bidding from Delta plant @15.20 NEM Time.
- Eraring's Shoalhaven was again was re-bid at fixed load to 'Avoid Plant Fluctuations' after initially being constrained off.
- No other generators were backed off and Delta set the price with aggressive bidding and a shortage of supply

Notes from the Days Events

- Tallawarra needed to bid fixed load as NEMDE was effectively instructing TRUenergy to de-commit a generating unit during very high regional demand.
- AEMO assumptions about line recall times were incorrect due to misinformation from TNSP. This meant that lack of reserve declarations were not made in line with actual circumstances. If short term ratings were utilised earlier, event may not have happened at all.

Attachment B

Case Study No: 2:

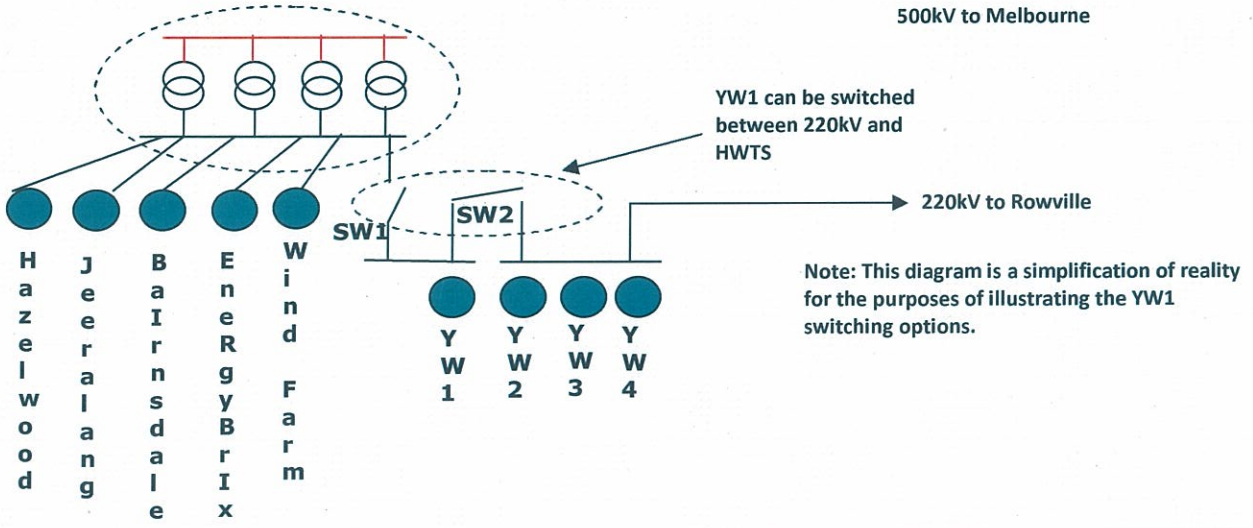
Failure of a single 220/500KV transformer at Hazelwood terminal station on January the 29th 2009

A: Introduction

- Yallourn units were originally connected to the 220kV transmission system through the two 220kv busses in SP AusNet's Yallourn switchyard, and from thence through the 220kV transmission system to Rowville Terminal station in Eastern Melbourne. These transmission lines share a common easement. In addition Yallourn has access to an additional 220kV double circuit line from Hazelwood Terminal Station to Rowville.

- In 2000 at TRUenergy's cost the configuration of the Yallourn to Hazelwood 220kV lines (originally constructed to transmit power from Hazelwood to Yallourn so as to access the Yallourn to Rowville 220kV system) was altered at the Yallourn switchyard and the Hazelwood switchyard to enable connection of Yallourn unit 1 to the 220kV switchyard at Hazelwood. This connection allowed Unit 1 output to flow through the 220/500kV transformers at Hazelwood Terminal Station into the 500kV transmission lines between the Latrobe Valley and Melbourne. Making use of the 500kV network path improves transmission losses faced by the entire Yallourn station – delivering a benefit of several million dollars per year.

  Unit 1 is able to be switched to either the original 220kV or the 500kV transmission path.



B: Congestion at Yallourn

- When all 4 units are connected to the 220kV Rowville lines, and the circuit linking Yallourn switchyard with Hazelwood is open, Yallourn has exclusive access to the lines and has not experienced congestion.

- However if Unit 1 is linked to the Hazelwood terminal station, situations can arise under where there is insufficient transformation capacity at Hazelwood to allow all generation capacity to reach the 500kV system. Typically this would occur in times of high demand or market price. Generators behind this constraint include: Hazelwood Power Station (1600MW), Yallourn Unit 1 (350MW), Jeeralang Power Station (450MW), Morwell units G4 and G5 (100MW) and any distribution connected generators in Eastern Victoria such as Bairnsdale or the Dollar wind farm.

- As TRUenergy bears market exposure for both Yallourn and Jeeralang, it generally chooses to switch Yallourn Unit 1 to the 220kV Rowville lines if possible congestion is forecast.

C: Investment options to reduce congestion when Yallourn uses 500kV network

- Significant efforts have been undertaken by the Generators behind the 220/500kV transformer constraint to remove congestion experienced when Yallourn Unit 1 shares these assets. The basic problem arises because the four 220/500kV transformers at Hazelwood have to be operated such that if one transformer trips, load through the remaining 3 units will not exceed their ratings. This means effectively only 3 transformers worth of capacity is available to be shared between the generators.

  Efforts to address this constraint have included:

  - **Hotmacs scheme** – An inter-tripping scheme was developed which would allow the full capacity of the 4 transformers to be used, on the basis that if one transformer failed, equivalent generation would be quickly tripped to avoid destructive overload of the remaining transformers. The generators presented a detailed design for this scheme, however ultimately the NSP's identified previously unknown fault level limitations, and determined inadequate blast walls between transformers made the risk of this scheme unacceptable for them.

  - **5th transformer proposal** - Generators have advocated to the relevant NSP's that an additional transformer should be developed to allow full use of the existing 4 units. However NSP estimates have indicated that the costs (~$40M) significantly exceed the benefits (< $1M). With generation development in Western Victoria, the prospect of a 5th transformer being required to reduce load shedding (the only high value benefit in the AEMO RIT-T approach) is further reduced. It appears unlikely this project will proceed under the existing AEMO approach.

- It has been identified during the course of this work that SP-AusNet does not carry a spare 220/500kV transformer. This could have serious repercussions if one of the existing units fails, as it could take 12 or 18 months for a new unit to be ordered, manufactured and installed. This could potentially leave the generators exposed to ongoing congestion while the replacement is implemented – as only two thirds of the pre-failure capacity would be available from the remaining three units. Clearly under this outcome Jeeralang's ability to generate could be severely limited.

- An even worse scenario would be possible, if the unit that failed did so catastrophically, with the explosion destroying more than one of the transformers. Clearly a 2 unit failure would result in even more congestion and financial impacts for generators.

- TRUenergy has argued that the potential load shedding from these failure scenarios is high, and should be factored into the benefits assessment for a 5th Transformer. Even with this benefit, the low probability of transformer failures heavily discounts such benefits, and the cost benefit analysis appears unlikely to justify this investment. TRUenergy and other generators continue to advocate that such extreme events should be better dealt with under the transmission investment regime in Victoria

D: Events on January the 29th 2009

- On Jan. the 29th 2009, TRUenergy faced the prospect of being "constrained off" the transmission system for the failure of a single 220/500KV transformer at Hazelwood terminal station for a period of 7 hours at VoLL.

- This event was driven by simultaneous high demand in Victoria and a failure of failure of one of the four Hazelwood 500kV transformers. As standard procedure is to operate these on an N-1 basis, effective utilisation was only the equivalent of two 500kV transformers.

- This event would impact our ability to deliver the energy for the MWs we had contracted to the market for both the Jeeralang Power Station and our Yallourn Power Station. We estimated that this low probability/high impact event would cost TRUenergy in excess of $55M and potentially more than that to each of the other three major Latrobe Valley generators. The congestion on the day was not as serious as had been forecast in the Australian Energy Market Operators (AEMO's) pre-dispatch as a result of quick response by SP AusNet. Nevertheless, had this single event eventuated it could have materially threatened the financial viability of all of the Latrobe Valley generators.