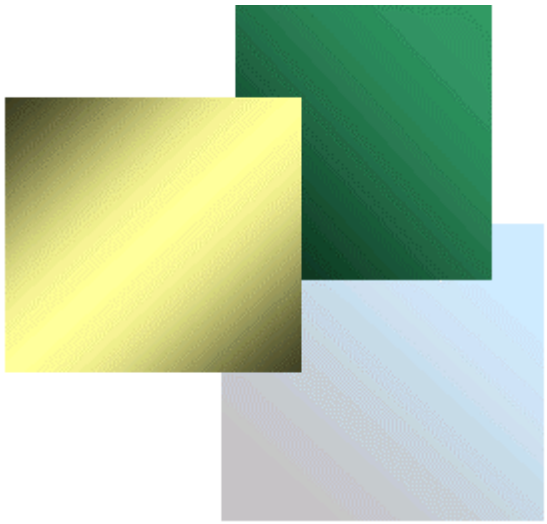

TASMANIAN ELECTRICITY MARKET ARRANGEMENTS

DEPARTMENT OF TREASURY AND FINANCE
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Glossary

Australian Competition and Consumer Commission (ACCC) – the Australian Competition and Consumer Commission, established under the *Trade Practices Act 1974* of the Commonwealth, which has the power to authorise certain anti-competitive conduct that would otherwise breach a provision of Part IV of the Trade Practices Act.

Australian Energy Regulator (AER) - the Australian Energy Regulator, established by section 44AE of the *Trade Practices Act 1974*, which performs economic regulation of the wholesale electricity market and electricity transmission networks in the National Electricity Market, and enforcement of the National Electricity Law and National Electricity Rules.

Aurora Energy Pty Ltd – Retailer and Distribution Network Service Provider operating in Tasmania.

Basslink – A high voltage DC interconnector linking the electricity transmission networks in Tasmania and Victoria.

Basslink Capacity – The electrical power that can be transported across Basslink. The maximum capacity of Basslink is 600 MW from Tasmania to Victoria and 480 MW from Victoria to Tasmania.

Bell Bay Power Pty Ltd – The owner and operator of the gas fired thermal power station at Bell Bay in Tasmania.

Contestable Customer – An electricity consumer who is able to choose a retailer based on the products offered. Non-contestable customers are supplied by Aurora Energy on scheduled tariffs set in accordance with a pricing determination issued by the Tasmanian Energy Regulator.

Constraint - A limitation on the capability of a network, load or a generating unit such that it is unacceptable to either transfer, consume or generate the level of electrical power that would occur if the limitation was removed.

Counter-price Flows – A situation where electrical energy flows from a high priced region to a low priced region (usually as a result of constraints or intervention in the market).

Generator Bids – The prices offered by a generator to NEMMCO for the availability of a generating unit to operate for a trading interval (a 30 minute period ending on the hour or half hour).

Generator Dispatch – NEMMCO instruction for a generator to operate at a certain capacity for a dispatch interval (a period of five minutes). Generators are chosen in order of price from least to highest cost subject to any constraints.

Hedging Contract – A contract under which a generator of electricity and a retailer seek to reduce the financial risk associated with fluctuating wholesale spot prices.

Hydro Tasmania – Generator with predominantly hydro-electric plants operating in Tasmania.

Interconnector - A transmission line (or network of transmission lines) and associated equipment that connects the transmission networks in adjacent regions.

Inter-regional Revenues (IRR) – The revenue stream that accrues to a Market Network Service Provider due to buying electricity in one region with a low spot price and selling in another region where the spot price is higher.

Inter-regional Price Risk – The risk of exposure to price differentials between regions of the NEM.

Inter-regional Trading – The ability of participants to trade between interconnected regions of the NEM. Participants are able to contract with parties in another region.

Market Network Service Provider (MNSP) – the owner and operator of an interconnector that is registered with NEMMCO as an MNSP and buys and sells electricity at the connection points in different NEM regions

Market Participant - A person who is registered by NEMMCO as a Market Generator, Market Customer or Market Network Service Provider.

National Electricity Market (NEM) – An electricity market operating in the eastern states of Australia. The NEM operates regional spot markets for wholesale supply of electricity in the six regions of Queensland, New South Wales, the Snowy Mountains, Victoria, South Australia and Tasmania through a centrally-coordinated dispatch process that continuously balances supply with demand to satisfy the electricity requirements of almost eight million end-use customers.

National Electricity Rules – A statutory instrument issued under the National Elelctricty Law that defines the regulatory and prudential frameworks within which the NEM must be operated.

National Grid Australia Pty Ltd – The owner and operator of Basslink.

NEMMCO – The National Electricity Market Management Company Limited which is both market operator of the NEM and operator of the power system that underpins NEM operation.

Network Service Provider - A person who engages in the activity of owning, controlling or operating a transmission or distribution system and who is registered by NEMMCO.

Regional Reference Node (RNN) - A location on a transmission or distribution network to be determined for each region by NEMMCO at which the wholesale spot price for the region is determined. The Tasmanian RNN is located at George Town.

Retail Contestability – The ability for end-user electricity consumers to chose their supplier (retailer).

Roaring 40s Renewable Energy Pty Ltd – A joint venture between Hydro Tasmania and CLP Power Asia operating wind farms in Tasmania.

Safety Net Auction – An independent auction process whereby the Basslink southward IRRs that accrue to Hydro Tasmania are made available for sale.

Settlements Residue - A surplus or deficit of funds retained by NEMMCO upon completion of settlements to all Market Participants in respect of a trading interval (30 minutes).

Spot Price – The wholesale price for electricity at a regional reference node.

Tasmanian Energy Regulator – Responsible for the administration of the licensing of electricity entities in Tasmania and fulfils the role of Jurisdictional Regulator for Tasmania.

Transend Networks Pty Ltd – The Transmission Network Service Provider for Tasmania.

Transport Bidding – A bid submitted to NEMMCO by a MNSP for the use of the interconnector. If the interconnector is not otherwise constrained, electricity will flow if the price differential is greater than the transport bid.

Vesting Contract - A contract between a generator and a retailer which underpins electricity sales for non-contestable tariff customers.

Tasmanian Electricity Market Arrangements

1. Introduction

The establishment of a competitive electricity market in Tasmania is a key aspect of the State's energy reform agenda. This commenced in July 1998 with the disaggregation of the Hydro-Electric Corporation into separate generation (Hydro Tasmania), transmission (Transend Networks) and distribution and retail (Aurora Energy) businesses.

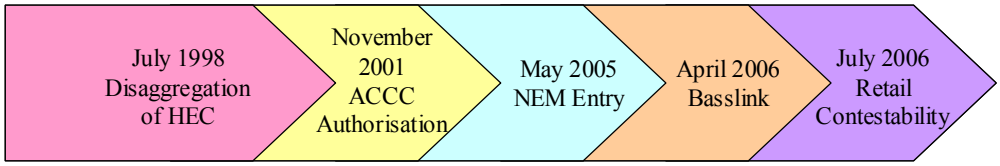
The next phase in the transition to a competitive market in Tasmania was the agreement by the Australian Competition and Consumer Commission in November 2001 on Tasmania's structural arrangements for entry into the National Electricity Market (NEM).

Tasmania entered the NEM on 29 May 2005, joining Queensland, New South Wales, the Australian Capital Territory, Victoria and South Australia to become the sixth jurisdiction to be a member of the national market.

The next phase in the process is the physical linking of Tasmania with the mainland via the Basslink interconnector which occurred on 29 April 2006. On commercial operation, this interconnection will enable Tasmania to fully participate in the national market through the trading of electricity with users and suppliers in other jurisdictions, thereby facilitating competition in the Tasmanian electricity sector.

The final phase in establishing a fully competitive market is providing customers with the ability to select a retailer of their choice. Retail contestability is to be progressively introduced from 1 July 2006.

Transition to a Competitive Market in Tasmania



A number of arrangements have been put in place aimed at assisting the establishment of a truly competitive wholesale electricity market in the State. These include restrictions imposed on Hydro Tasmania in relation to the use of its rights to Basslink as a Market Network Service Provider (MNSP), in particular the arrangements for transport bidding and mitigation of inter-regional trading risks. In addition, mechanisms such as the sell down of southward inter-regional revenues (IRRs) will increase opportunities for contracting with market participants in Tasmania.

2. Tasmania's Energy Reform Framework

The new electricity market arrangements are one part of Tasmania's overall energy reform framework as detailed in Attachment 1. Over the past few years, the Tasmanian Government has embarked on a range of projects and reforms in the energy sector designed to create an environment for secure, diverse and competitively priced energy.

The framework incorporates two nationally significant infrastructure projects in Basslink and the Tasmanian Natural Gas Project, as well as the development of the State's wind resources and the introduction of competitive market forces in both electricity and gas.

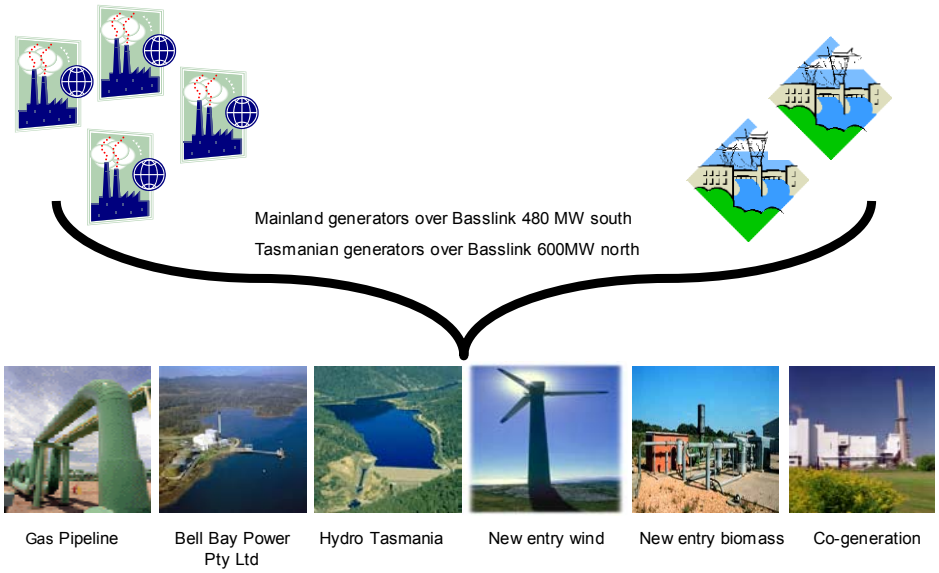
Tasmanian energy reform is aimed at securing significant economic benefits to the Tasmanian economy through the provision of access to additional sources of electricity supply that can meet future increases in electricity demand in Tasmania. One of these sources is access to the generation capacity in the national electricity market through the Basslink interconnector.

The provision of a robust and competitive regulatory framework will encourage new investment in Tasmania's electricity supply industry. The removal of regulatory barriers will enable further developments utilising Tasmania's natural resources and lead to the creation of an efficient, modern and diverse energy sector that will provide energy users in Tasmania with increased security of energy supply and more flexibility in their energy choices. Increased competition should lead to a range of benefits for all consumers.

3. The Competitive Environment

Following Tasmania's entry to the NEM and Basslink commissioning, real competition will be introduced into the Tasmanian electricity market. There will be a diverse mix of on-island generation (hydro, gas and wind) technologies in use as well as mainland generators competing in Tasmania through the linking of Tasmania and the mainland via Basslink. Over time, however, it is anticipated that greater diversity in generation will emerge within Tasmania.

Competition in Tasmania



The new environment will bring structural changes to Tasmania. These changes will shape the market in a number of ways. The flexibility of Basslink will allow demand and supply responses to drive a competitive environment where different constraints will apply at different times. In addition there will be no regulatory barriers to entry in the Tasmanian generation sector with increasing opportunities arising through the availability of natural gas.

A key to ensuring effective wholesale electricity competition is having low barriers to entry so that potential new entrants provide an effective threat to incumbents. Future generation options will provide a mix of on-island generators with different cost drivers and different behaviours, each competing for volume in the NEM. Hydro Tasmania will continue to play a very important role in this environment.

While Basslink is not in itself a generator competing in the Tasmanian market, it will enable competition between Tasmanian generators and mainland generators. Tasmania, with its flexibility in generation, will provide vigorous competition to Victorian generators during times of Victorian peak demand where the supply/demand balance in Victoria is tight. As generators are dispatched on the basis of price, there is pressure on all generators in the NEM to offer competitive prices. The Victorian region is arguably the most competitive in the NEM.

In times of northward flows across Basslink (generally periods of peak Victorian demand), Tasmanian generators will be taking volume from those Victorian generators bidding their electricity at the highest prices. Conversely, in times of southward flows (during Victorian off-peak periods), low priced Victorian generators will gain additional volume at the expense of those Tasmanian generators bidding their electricity at the highest prices for the period.

4. Retail Competition

Retail competition will be progressively introduced to customer classes commencing from 1 July 2006. Competition will be initially introduced for large electricity consumers and phased-in for other consumers over a five year period, as shown in the following table. This will ensure a smooth transition to a competitive retail market.

Tasmanian Retail Contestability Timetable

Date	Power Consumption (GWh/yr)
1 July 2006	>= 20 GWh/yr
1 July 2007	>= 4 GWh/yr
1 July 2008	>= 0.75 GWh/yr
1 July 2009	>= 0.15 GWh/yr
1 July 2010	Under 0.15 GWh/yr

The Government has reserved a final decision as to whether retail contestability will be extended to households and small businesses (from 1 July 2010) until a public benefit test has been undertaken.

Once a customer becomes contestable, they have the ability to source electricity from a retailer of their choice enabling them to select the retailer that offers the best product (based on price and services offered) for their specific needs.

Non-contestable customers will remain on scheduled tariffs with Aurora Energy. Scheduled tariffs are set under a pricing determination issued by the Tasmanian Energy Regulator.

5. Basslink Arrangements

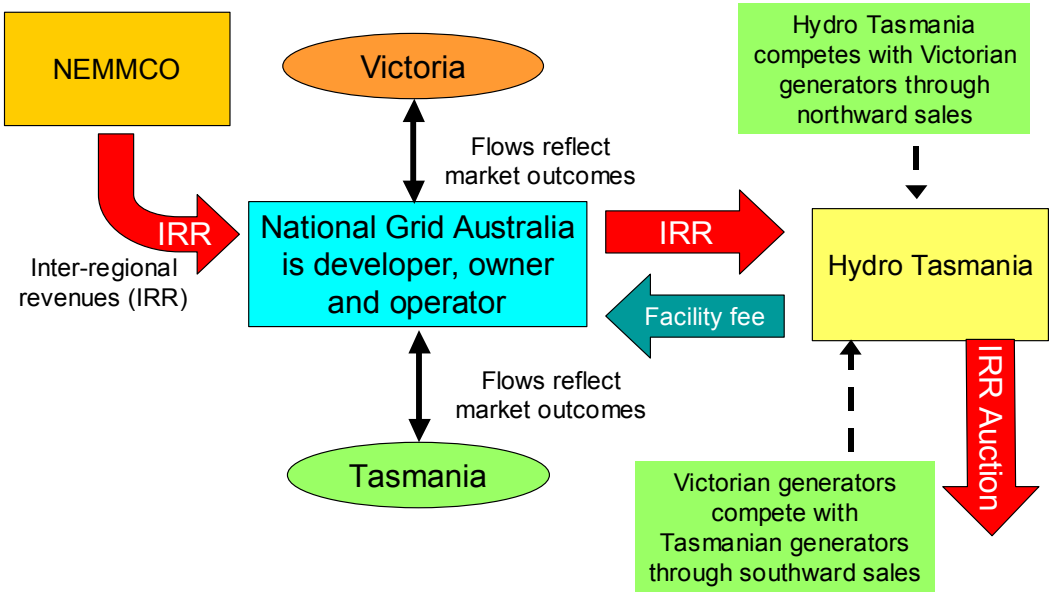
Basslink is an interconnector in the NEM and registered with NEMMCO as a MNSP. Attachment 2 outlines how MNSPs operate and earn a return in the NEM. Enhancements to Tasmania's Energy Reform Framework were agreed with the Australian Competition and Consumer Commission and put into place through the Tasmanian regulatory framework for NEM entry. These enhancements effectively place constraints on how Basslink operates as a MNSP.

Basslink as a Market Network Service Provider

Under the contractual arrangements to come into effect on the commercial operation of Basslink, Hydro Tasmania will receive all the IRRs accruing to the link for a period of 25 years, in return for a series of agreed payments (in the form of a facility fee) to National Grid Australia, the owner of the link. The arrangements include requirements that the link be available to NEMMCO for dispatch in either direction up to its full nominated capacity. The extent and direction of flows across the link will be determined by NEMMCO as a result of the competitive real time scheduling and dispatch process operating in the NEM.

The following diagram depicts the operation of Basslink.

Basslink as a MNSP



A Ministerial Notice was issued under Section 36 of the *Electricity Supply Industry Act 1995* on 31 July 2005 establishing principles to be followed by Hydro Tasmania in relation to:

- the exercise of certain rights Hydro Tasmania has in respect of the bidding of Basslink; and
- the making available by Hydro Tasmania of certain IRRs to which it is entitled arising from the operation of Basslink.

The focus of these arrangements is on Hydro Tasmania's potential control over southward flows through its rights to make transport bids for Basslink and its ownership of the IRRs.

Transport Bidding of Basslink

The first of these principles is directed at managing the potential impact that Hydro Tasmania can have on Basslink flows through its commercial right to make transport bids for Basslink. In essence, these requirements will mean that Basslink should operate in a similar manner to a regulated interconnector. Under the National Electricity Rules full Basslink capacity, for both the export of power from and the import of power to Tasmania, is to be made available to NEMMCO. The regulatory arrangements mean that Basslink:

- will not be permitted to offer negative transport bids; and
- will be required to offer zero transport bids for southward flows, except in limited and appropriate circumstances, such as technical reasons associated with the operation of Basslink.

These restrictions are designed to give the market greater certainty regarding the way in which Basslink will be bid and the resultant relationship between electricity prices in Tasmania and Victoria. The restriction on Hydro Tasmania's right to direct National Grid Australia to make positive transport bids or to request negative transport bids is part of the arrangements to promote competition in Tasmania.

Inter-regional Trading and Basslink

Inter-regional risk is the risk of exposure to the price differentials from one region to another. Market participants such as generators and traders are likely to face risks when contracting between regions due to the divergence of spot prices between regions.

Inter-regional price risk arises primarily from:

- the division of the NEM into separate regions; and
- the physical limitations of the interconnector to transfer electricity from one region to another.

Transport bids by MNSPs can also give rise to inter-regional price risk but the restrictions imposed on the bidding of Basslink as described above should ensure that this is not a significant factor.

Inter-regional price risk is also influenced by:

- the determination of spot prices at the regional reference node (RRN) in each region;
- the manner in which transmission loss factors are accounted for in determining prices; and
- interventions in the market by NEMMCO that interfere in the setting of the spot market price.

Inter-regional price risk (measured between the Victorian RRN and the Tasmanian RRN) has been recognised as a potential barrier for the entry of competition into the Tasmanian wholesale electricity market. To assist in the management of this risk and thus facilitate competition, the Tasmanian regulatory framework provides for the following:

- Hydro Tasmania is obliged to make available for sale the southward IRRs accruing to it;
- Hydro Tasmania may seek private commercial arrangements (long or short term) under which some or all of the IRRs or equivalent products are sold directly to a third party;
- to the extent that private commercial arrangements do not result in sufficient southward IRRs being sold, Hydro Tasmania is obliged to make the remainder available for sale through a safety net auction process;
- the volume of southward IRRs that must be made available for sale by Hydro Tasmania must be: not less than the size of the contestable market; or the import capacity of Basslink (whichever is smaller);
- there will be no restriction in principle on who may purchase the southward IRRs (market participants and others), except that Hydro Tasmania will not be allowed to participate in the auction process; and
- the auction will be subject to independently set confidential reserve prices.

Implications of Basslink Arrangements

The arrangements for Basslink should ensure that:

- while Basslink is in service it will be possible for up to 480 MW (and generally at least 300 MW) of mainland generation to compete for dispatch to supply Tasmanian load. This corresponds to 30 to 50 per cent of the Tasmanian load at off-peak periods and 20 to 30 per cent at peak periods;
- transport bidding of Basslink cannot be used to artificially establish the spot price in Tasmania relative to the mainland when importing to Tasmania;
- generation in Tasmania will be competing with mainland generation; and
- price risks which may be faced by market participants in Tasmania relative to mainland prices during import periods may be mitigated through a variety of risk management products including those associated with the Basslink IRRs from southward flows.

6. Contracting with Market Participants in Tasmania

At the present time, NEM market participants in Tasmania include:

- Hydro Tasmania;
- Aurora Energy Pty Ltd;
- Roaring 40s Renewable Energy Pty Ltd;
- Bell Bay Power Pty Ltd; and
- National Grid Australia Pty Ltd.

There are also a number of other generators licensed to operate in Tasmania, which are not market participants, as they are small and their output is purchased directly by Aurora Energy.

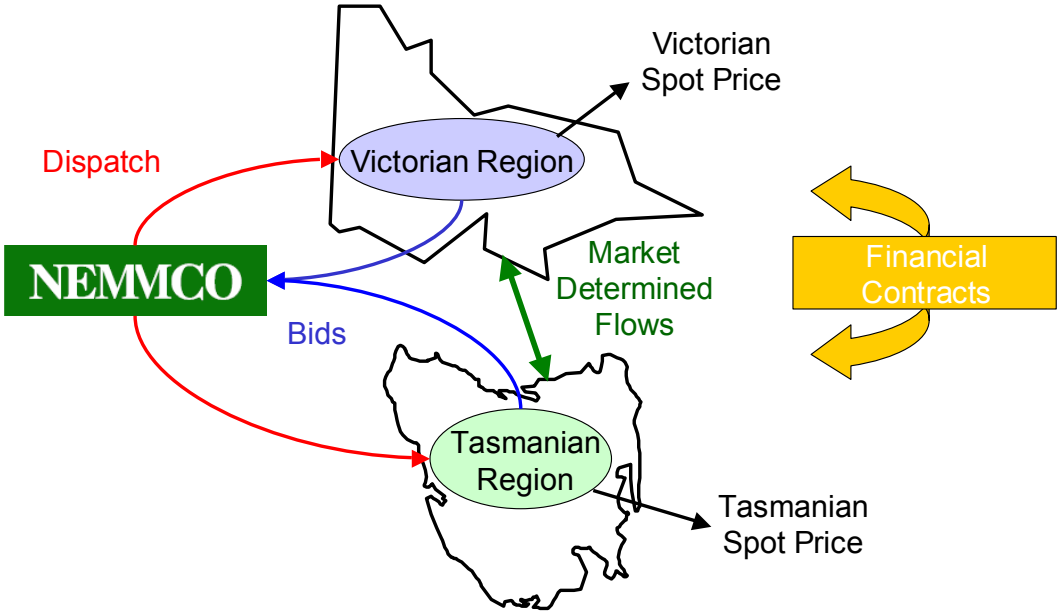
Transend Networks Pty Ltd is registered with NEMMCO as a network service provider but is not a market participant.

The ability for participants in Tasmania to contract with mainland participants is important for the development of a competitive wholesale market in Tasmania. However, as indicated above, one of the potential risks associated with such trading is the presence of inter-regional price risk.

Various financial instruments are likely to be available to assist in the management of the inter-regional price risk associated with contracts with participants in regions other than Tasmania including inter-regional swaps (two-way hedges) and options (one-way hedges).

Such instruments may be available from Tasmanian market participants (Hydro Tasmania in particular) as well as through market traders.

Basslink Operation



Bearing in mind the fact that Tasmanian spot prices should always be higher than Victorian prices when Basslink is flowing south and lower when Basslink is flowing north, participants in Tasmania may be able to utilise other means (such as demand management) to manage the inter-regional price risk associated with Basslink. Such measures could also be combined with the purchase of financial instruments to manage inter-regional price risk, including the southward IRRs.

For example, a retailer may have customers in the Tasmanian region and have entered into a two-way hedge contract with a Victorian generator for its total load against the Tasmanian spot price. The generator is therefore exposed if the Tasmanian spot price exceeds the Victorian spot price.

By purchasing a right from Hydro Tasmania (either over the counter or via the auction process) to an appropriate quantity of the southwards IRRs, this would provide the generator

with a hedge to cover the inter-regional price risk. Providing Basslink is operating, the IRRs should equate to the difference between the Tasmanian and Victorian spot prices for that quantity, and cover the generator's exposure between the two spot prices. Further details on inter-regional hedges can be found in Attachment 3.

The main risk which would be faced by participants who did not have firm coverage for any inter-regional price risks associated with their contract arrangements would be the risk of an outage of Basslink. Under these circumstances spot prices in Tasmania would not necessarily be related to mainland prices and there would be no IRRs associated with Basslink. Although it is expected that Basslink will have a very high level of availability it is still possible that an incident could occur which may cause it to be unavailable for an extended period.

Experience gained with the operation of Basslink should allow participants to gauge the risks from this eventuality.

7. Bell Bay Power Station

Bell Bay Power Station, which has an installed capacity of 240 MW and is operated using natural gas, is being established as a Government owned business entity (Bell Bay Power Pty Ltd) completely independent from Hydro Tasmania.

Bell Bay Power has been registered as a generator with NEMMCO and will be free to contract with other market participants from the time that it is fully separated from Hydro Tasmania.

On island competition between Hydro Tasmania and Bell Bay Power, together with the ability of mainland generators to compete in Tasmania over Basslink, will assist the further development of a market, which will encourage new participant entry over time.

8. Tasmania's Energy Balance

Electrical energy imported to Tasmania over Basslink will supplement on-island generation. Similarly energy exported will require additional output from Tasmanian generators.

Flows across Basslink in the long term will tend to reflect the overall supply/demand balance for electrical energy in Tasmania.

Tasmanian spot prices will be influenced by Victorian prices but:

- periods when the average Tasmanian spot price is relatively higher would generally be associated with net energy imports. This could be due to one or more of the following:
  - low rainfall;
  - plant outages;
  - transmission line outages;
  - use of network and system stability constraints;
  - energy in storages below the optimum levels; and
  - requirements for electrical energy in Tasmania beyond the long term capability of existing generation; and

- periods when the average Tasmanian spot price is relatively lower will generally be associated with net energy exports. This could be due to one or more of the following:
  - high rainfall;
  - energy in storages above the optimum levels; and
  - requirements for electrical energy in Tasmania below the long term capability of existing generation.

9. Implications of Competitive Factors

The price of electrical energy in Tasmania on a long term basis relative to Victorian prices will depend to a significant extent on the Tasmanian supply/demand balance. On a long term basis, market participants should be able to form a view on the likely Tasmanian prices from the market information being provided by NEMMCO and supplemented by information on energy in storage being provided by Hydro Tasmania.

10. Conclusion

In summary:

- participation in the NEM and Basslink bring significant structural changes to the Tasmanian electricity supply industry;
- Tasmania operates under the same national framework as all other jurisdictions in the NEM;
- NEM participation and Basslink are pro-competitive in that they will lead to greater competition in Tasmania than has previously been the case;
- NEM forms a framework for long term competitive energy outcomes in Tasmania;
- arrangements have been put in place to enhance the scope for inter-regional contracting; and
- in addition to the competitive dynamics between Victoria and Tasmania, there will be further competitive dynamics with the diverse mix of on-island generation in Tasmania.

TASMANIA'S ENERGY REFORM FRAMEWORK

The Tasmanian Government's broad energy policy objective is based on creating an environment for a competitive energy market through the provision of secure, diverse and competitively priced energy. The Government has established a number of specific aims, consistent with this high-level objective, for considering reform options, including:

- securing additional sources of electricity generation to meet the State's growing electricity needs;
- introducing natural gas to the State to diversify the energy sector, which will introduce strong modal competition and underpin economic development, particularly in the industrial sector;
- ensuring that Tasmanian electricity users have access to competitively priced electricity;
- developing mechanisms to effectively deal with the risks associated with drought and the loss of one or more major electricity users;
- developing a regulatory framework which maintains the reliability of the electricity supply industry and protects electricity customers, while encouraging new entrants and the development of market outcomes;
- promoting the development of Tasmania's renewable energy sources, consistent with policy at the national and international levels; and
- ensuring the budgetary implications of reform are manageable in the context of the Government's medium term Fiscal Strategy.

The central features of energy reform framework with respect to Basslink and Tasmania's operation in the national market are:

- Hydro Tasmania retained as a single integrated hydro generation business;
- additional competition created through the conversion of the Bell Bay Power Station to natural gas and its separation from Hydro Tasmania;
- Hydro Tasmania making financial products available to the market to assist Tasmanian market participants trading across Basslink when the link is importing electricity to Tasmania;
- Hydro Tasmania's ability to influence Basslink bidding limited by Tasmanian-based regulatory arrangements;
- Hydro Tasmania's Ministerial Charter amended to ensure that the reliability and security of the State's hydro system is maintained;
- the market operated in accordance with the National Electricity Rules, with the National Electricity Market Management Company Ltd (NEMMCO) responsible for market operations and power system security;
- the phased introduction of retail competition in Tasmania;
- a vesting contract between Hydro Tasmania and Aurora Energy Pty Ltd to underpin electricity sales for non-contestable tariff customers;

- the Australian Energy Regulator having responsibility for regulating transmission revenue under the National Electricity Rules;
- the Tasmanian Energy Regulator retaining responsibility for distribution network pricing on an ongoing basis and retail price regulation for non-contestable tariff customers; and
- Tasmanian derogations to the National Electricity Rules providing for technical, procedural and administrative issues in the transition to the full NEM arrangements.

INTERCONNECTORS IN THE NATIONAL ELECTRICITY MARKET

The transmission networks that connect and transfer electricity between adjacent regions in the NEM are called interconnectors. Electricity is transported between regions to meet demands when local generation is insufficient or it is more cost effective to source electricity from another region.

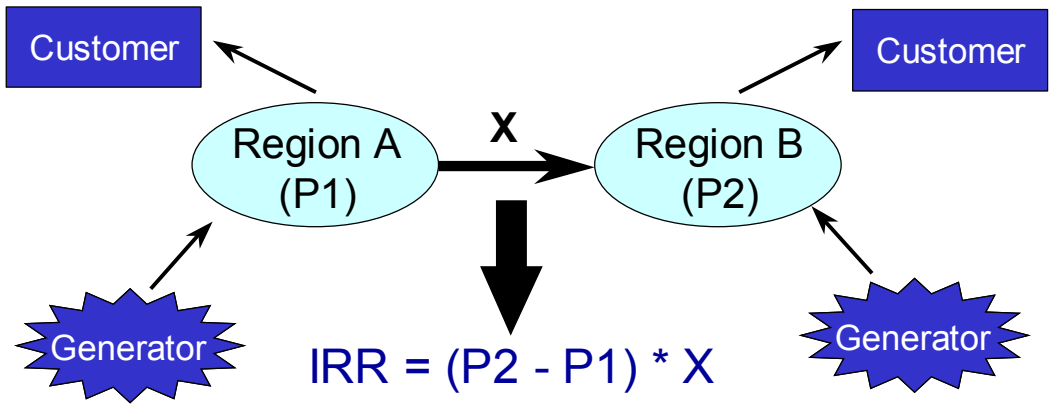
The operation of the NEM provides for two types of interconnectors – "regulated interconnectors" and "unregulated interconnectors". The owner/operators of unregulated interconnectors are referred to as Market Network Service Providers (MNSPs).

Regulated interconnectors receive a fixed return that takes into account the value of their asset base as determined by the Australian Energy Regulator. The network operator earns this revenue by charging the customers of the network (typically distribution networks and other users directly connected to the transmission network) for their use of the network. As with any other shared network asset (other than a MNSP), the operator of a regulated interconnector must make the interconnector available to NEMMCO which enables NEMMCO to transfer electricity between market regions. Their use is determined through the availability of generation plant in the two regions which they interconnect and the prices bid by generation to supply the demands in those regions.

A MNSP owns and operates a network (of poles, wires and associated equipment) that is linked to the transmission network at two connection points in different NEM regions. It must have a capacity of at least 30 MW and participate in NEMMCO's centrally coordinated dispatch process. MNSPs obtain revenue by buying electricity from the connection point in a region with a low spot price and selling it in a region with a higher price. This results in a revenue stream, known as inter-regional revenues (IRRs). MNSPs bid the use of unregulated interconnectors into NEMMCO's dispatch process at prices which will provide them with a suitable revenue stream.

Differences in the price of electricity in one region and the price of electricity once it has been transported to an interconnected region may be due to the application of inter-regional transmission constraints (physical capacity constraints) or through the bidding of the MNSP. In the following diagram, the IRRs equal the difference in price in the two regions, P1 and P2 multiplied by the quantity of electricity transferred, X.

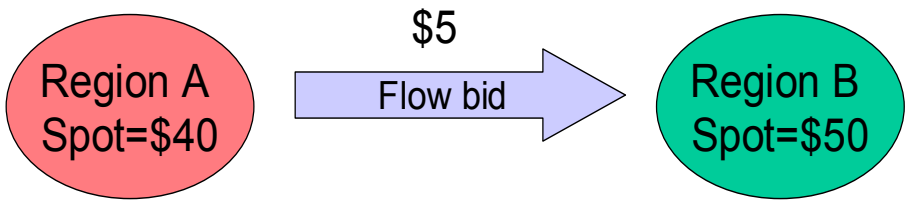
Inter-regional Revenue



The IRRs, representing the net payments by NEMMCO to the MNSP arise from the price differences and flows between the connection points in the different regions. In general, the MNSP has the option of realising the value of the IRRs directly or selling the rights to the IRRs in the market, either directly or as a component of some other inter-regional risk management instrument.

Under the MNSP model, the owner/operator bids to make the link's capacity available to NEMMCO in a similar way to generators. Rather than bidding prices for the region in which they are located (as scheduled generators do), MNSPs bid price differences between the two regions which they interconnect. For example, for a MNSP interconnecting regions A and B, a bid of $5 per MWh in the direction of A to B for 100 MW of capacity means that the MNSP is prepared to transport up to 100 MW of electricity from region A to region B, provided the spot price at the link's connection point in region B is at least $5 per MWh greater than the spot price at the link's connection point in region A, as depicted in the following diagram.

MNSP — positive bid



Energy flows if (Spot Price A + $5) < (Spot Price B)

A bid of $0 by an MNSP will ensure that it is dispatched as if it was a regulated interconnector however the IRRs resulting from the inter-regional price differences will only be significant when the capacity of the interconnector constrains the flow between the regions.

MNSPs receive IRRs directly from NEMMCO from the operation of their interconnectors.

Regulated interconnectors also give rise to sources of revenue which are a function of the spot price differences between the interconnected regions and the electricity transferred. This results from a difference between the net payments to NEMMCO by generators and customers in higher priced regions and those in the lower priced regions. These revenues, known as settlements residues, are retained by NEMMCO.

NEMMCO conducts a Settlements Residue Auction at the beginning of each quarter, thereby making these revenues available to market participants. The returns from the auctions are allocated to the relevant network service provider, who then passes the returns back to customers through reduced network charges.

FINANCIAL ELECTRICITY MARKET ARRANGEMENTS

All markets have financial aspects associated with physical flows. In the electricity industry, there is a specific role played by the financial arrangements that market participants typically enter into to increase revenue or minimise risk. This is particularly important with a commodity like electricity which cannot be stored giving rise to spot market volatility which must be managed

The financial arrangements which generators enter into with retailers/customers do not directly affect physical supply. Physical supply and payment of the spot price occurs by virtue of the NEM process managed by NEMMCO. Financial contracts simply increase revenue or minimise risk at a cost. Market participants need revenue and cost certainty in order to manage their businesses. Financial contracting or hedging promotes competition and stabilises the cost of electricity to end-use customers.

Most financial electricity market trading is generally one of the following kinds:

- vesting contracts implemented by the state government as part of the electricity reform process;
- voluntarily negotiated swap contracts, also known as two way contracts for differences, associated with NEM regional prices; or
- call option contracts to cap exposure to high spot prices.

A generator may contract to minimise the impact of potential volatility in spot prices (and to provide certain revenues to cover the fixed cost component of the generator). The benefit is that the generator will receive revenue above the spot price if the spot price is below the contracted price. The cost of contracting is that the generator will not receive the benefit of spot prices above the contracted price. The generator will still be exposed to volume risk, in that it will need to ensure that it is dispatched for at least its contracted volume or it will be liable to make contract payments without incoming spot price revenue out of which to make those payments.

Retailers also need hedging contracts to provide greater certainty than the spot market. Retailers are thus able to lock-in known costs of supply and pass these on to end-use customers.

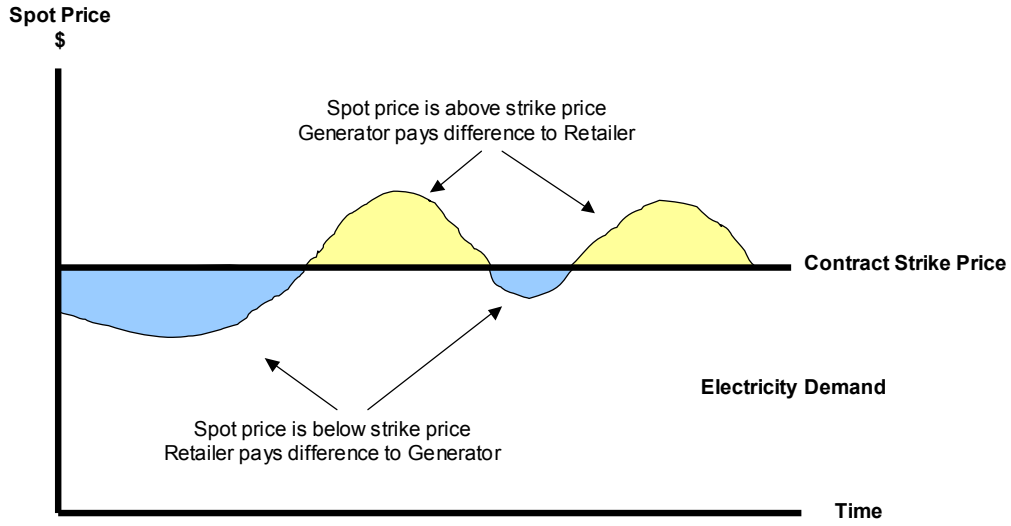
In the NEM, generators and retailers cover the majority of their spot price exposure by bilaterally negotiated hedge contracts. . Such contracts can be between:

- generator and retailer;
- generator and another generator;
- retailer and another retailer; and
- trader(without any physical generation or end-use supply contracts) and a generator or retailer.

The simplest form of hedge contract is a simple swap or two way hedge. This is one in which a retailer and generator contract with each other and agree on a price that both are willing to accept, usually know as the contract strike price.

The seller of a simple swap makes payments to the buyer whenever the spot price exceeds the contract strike price. The amount paid is the difference in price multiplied by the agreed contract volume (in MW) and the time that the price differences apply for. Conversely, whenever the spot price is below the contract strike price, the buyer makes payments to the seller. Thus both buyer and seller have locked in a volume of electricity at a fixed price.

Two-way Hedge



Inter-regional Hedges

An inter-regional swap or hedge contract is a financial contract under which the seller pays the purchaser the difference between the spot price in the seller's region A and the purchaser's region B when the price is higher in the sellers region and receives the difference from the purchaser when the price is lower.

The inter-regional hedge is associated with a notional quantity, so that the amounts paid are the price differences between regions multiplied by the agreed notional quantity. There may be premiums associated with the purchase of inter-regional hedges depending on the relative values of the expected spot prices in the two regions.

Inter-regional hedges are usually "one-way" only. That is, they only operate if the price in region A exceeds the price in region B, and the purchaser is not obliged to reimburse the seller if the price in region B exceeds the price in region A.

Inter-regional hedge contracts are usually offered by parties with access to the price differential between regions, including those that have purchased the rights to inter-regional revenues (IRRs).

In the Tasmanian region of the NEM, Hydro Tasmania would have the capacity to sell inter-regional hedge contracts, given that it has the right to receive the IRRs earned by National Grid as owner and operator of Basslink.

The following example illustrates how inter-regional risk can be managed when the spot prices in two regions diverge.

Example

A Victorian generator has agreed to enter into a two-way hedge contract for 50 MW with a retailer in Tasmania to cover his 50 MW load in Tasmania . The contract is struck at the Tasmanian regional reference node and the contract strike price is $40 per MWh.

The Victorian generator also buys an inter-regional hedge for 50 MW from Hydro Tasmania (or any other party offering inter-regional hedges). The inter-regional hedge provides the Victorian generator with access to the difference payments between the Victorian spot price and the Tasmanian spot price.

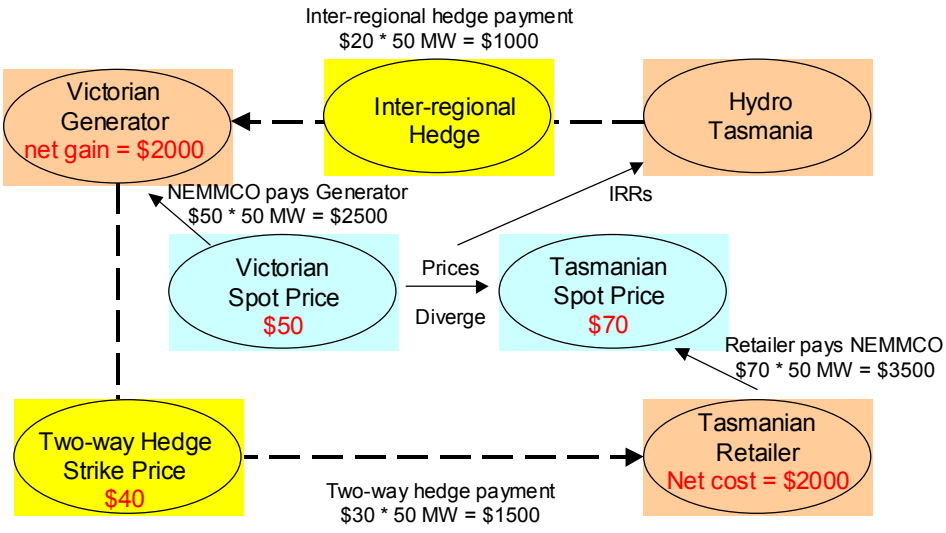
If the spot price in Victoria is $50 per MWh and the spot price in Tasmania is $70per MWh, then the following financial transactions occur for each hour that these prices apply:

- the Tasmanian retailer must pay $3500 ($70/MWh * 50 MW) to NEMMCO, but receives $1500 ($70-$40/MWh * 50 MW) from the Victorian generator under the two way hedge contract, effectively allowing the Tasmanian retailer to pay $40 per MWh which is the agreed contract price between the retailer and the generator.
- the Victorian generator receives $2500 ($50/MWh * 50 MW), assuming it is dispatched, from NEMMCO, but under its hedge contract obligations must pay the Tasmanian retailer $1500, the difference between the Tasmanian spot price and the strike price ($30/MWh * 50 MW). At this point the Victorian generator has suffered financially due to inter-regional risk.
- the party offering the inter-regional hedge is obliged to pay the Victorian generator $1000, the difference by which the Tasmanian spot price exceeds the Victorian spot price ($20/MWh * 50 MW), thus providing the generator with a net revenue of $2000.

The total generator revenue with the inter-regional hedge ($2000) is identical to the revenue that would be obtained from selling a contract referenced to the Victorian regional reference node with a strike price of $40 per MWh. In this case the net revenue would be the pool revenue of $2500 ($50/MWh * 50 MW) less contract difference payments of $500 (($50-$40)/MWh * 50 MW).

By purchasing the inter-regional hedge, the Victorian generator has effectively insured itself against inter-regional price risk

Inter-regional Hedge



Numerous products are available to manage inter-regional price risks. A number of these are detailed in the following table:

Product Type	Natural Counter-parties	Comments
Inter-regional Price Swaps	Generators, Retailers, Traders	Provides a hedge for a firm volume.
Load following inter-regional swaps	Generators, Retailers, Traders	Provides a hedge for a variable volume. However, it may be difficult to find counter-parties.
Inter-regional Revenues (IRR)	Link operators and holders of IRRs	Provides a hedge for a firm volume when the link is constrained and the physical capacity is equal to the notional capacity.
Caps and Captions	Generators and Traders	Provides a hedge above strike prices.
Modified Capacity Based Swaps	Generators	Generators compensated if there is a link constraint. Similar to IRRs.
Co-insurance arrangements	Generators	Generators compensated if there is a link constraint. Similar to IRRs.
Weather hedges	Specialist derivative operators. (Useful for systems dependent on hydro generation.)	Hedges tailored to requirements and price outcomes reasonably predictable and transparent.