



Sydney Futures Exchange



A Proposal to Mitigate Credit Risk

New South Wales Electricity Businesses Risk Management Proposal for NSW Treasury

12 July 2004

Synopsis

This Proposal outlines a mechanism that will enable NSW Treasury to significantly reduce the credit risk associated with its proposed transfer of trading rights from the NSW Government owned electricity businesses to the private sector. In so doing, the proposal significantly improves the commercial and practical viability of NSW Treasury's proposal.

Note: This paper has been prepared by SFE Corporation Limited ("SFE") and d-cyphaTrade (d-cyphaTrade). The purpose of this paper is to outline a mechanism for reducing credit exposures faced by NSW Government in its plan to transfer to the private sector the trading rights to its electricity businesses. This paper is not intended to be a comprehensive analysis of all issues pertaining to EFP's or the proposed mechanism and neither SFE nor d-cyphaTrade accepts responsibility for errors or omissions.

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Executive Summary

In May 2004, NSW Treasury released a paper¹ outlining a proposal to shift the highly competitive and risky activity of power trading to the private sector. The paper identifies the management of hedging contracts and its associated credit risk as being one of the key issues to be resolved in implementing the proposal.

Without a mechanism to eliminate the NSW Government businesses as counterparties in the process of transferring existing hedge positions, NSW Government businesses will remain at risk to future price movements, and additionally, will become exposed to the credit risk of the new Private Traders (Private Generation Traders and Private Retail Managers who purchase the trading rights of the NSW Government businesses).

Under the NSW Risk Management Proposal, the associated hedge positions currently held by NSW electricity businesses would be transferred as part of the process of transferring trading rights.

This paper outlines a proposal that takes advantage of the existing futures market capability that enables over the counter (OTC) hedge contracts to be swapped into equivalent futures positions through a trading mechanism known as an Exchange for Physical (EFP). The EFP facility, facilitated by the Sydney Futures Exchange, creates a standardised and readily tradable hedge contract (futures) position, which can be precisely closed out through mirror transactions with the Private Traders.

By converting existing hedge contract positions into futures positions, NSW Government businesses would have the flexibility to seamlessly transfer the majority of associated hedge positions to Private Traders, and in the process completely eliminate themselves as a counter party to the transactions.

Thus, this proposal provides NSW Treasury with a solution that eliminates all risk associated with a substantial proportion of existing electricity hedge contracts currently held by NSW electricity businesses, including credit risk to Private Traders.

The paper provides an overview of;

1. the EFP mechanism;
2. the steps to be taken to effect the transfer of OTC contract positions to futures contracts; and
3. a detailed example of the transfer process with a cash flow and cost analysis.

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¹ NSW Treasury, A Risk Management Proposal for New South Wales' Electricity Business, Research and Information Paper, May 2004

The Proposal

SFE / d-cyphaTrade propose that the counterparty credit risk associated with current OTC contracts held by NSW electricity businesses, as part of the transfer of trading rights for these businesses to Private Traders, be eliminated by:

1. Swapping existing OTC hedge contracts held by the NSW electricity businesses into futures positions using the Exchange For Physical (EFP) mechanism; and
2. Transferring the resulting futures exposure to Private Traders through 'mirror' futures transactions. The mirror transactions are to be executed as a component of the process of transferring trading rights to the Private Traders.

How an Exchange for Physical (EFP) works

An EFP is an off-market transaction which involves the swapping (or exchanging) of an OTC hedge contract position for a futures position. The OTC position must be for the same or similar quantity or amount of electricity, or a substantially similar commodity or instrument. The OTC side of the EFP can include electricity swaps, swap options and other such instruments traded in the OTC market.

In order that an EFP transaction can take place, the OTC and futures components must be "substantially similar" in terms of either value and or quantity.

EFPs may be transacted either through SFE Full Participants or direct, one counterparty to another. They must be registered through a SFE Full Participant.

The net result is that the initial OTC position (and the inherent counterparty credit exposure) is transferred from the OTC market to the futures market. SFE Clearing Corporation (SFECC) guarantees the performance of all futures contracts traded on the SFE. SFECC provides central counterparty clearing (CCP) services for all SFE traded futures and options products. Central to CCP clearing is the process of 'novation', which involves SFECC interposing itself between a buyer and a seller and becoming the central counterparty, or principal, to all trades. The process of novation provides a number of benefits for users including surety of payment, margin netting, risk management and liquidity. Through this process SFECC remains liable to perform against all contracts to which it is a party, even if either the buyer or seller fails to fulfil its obligations. SFECC therefore effectively guarantees performance of all contracts. To enable this to happen, and to ensure the continued financial integrity of both the CCP process and the market, SFECC imposes comprehensive entry criteria on its Participants, including strict financial requirements.

EFPs can also work in reverse i.e. a futures position can be transferred to the OTC market.

The EFP mechanism is frequently utilised by other electricity market participants to convert OTC contracts into futures contract positions. The main benefit from the mechanism is the contractually clean and efficient way credit risk is novated by the SFE Clearing House through the futures market.

Achieving the desired result for NSW Treasury

The proposed scheme involves a series of steps that:

1. convert the OTC contracts to futures contracts; and
2. transfer the futures contracts to the private traders (either at market or at the original contract price).

These steps are illustrated in the simple diagrams below.

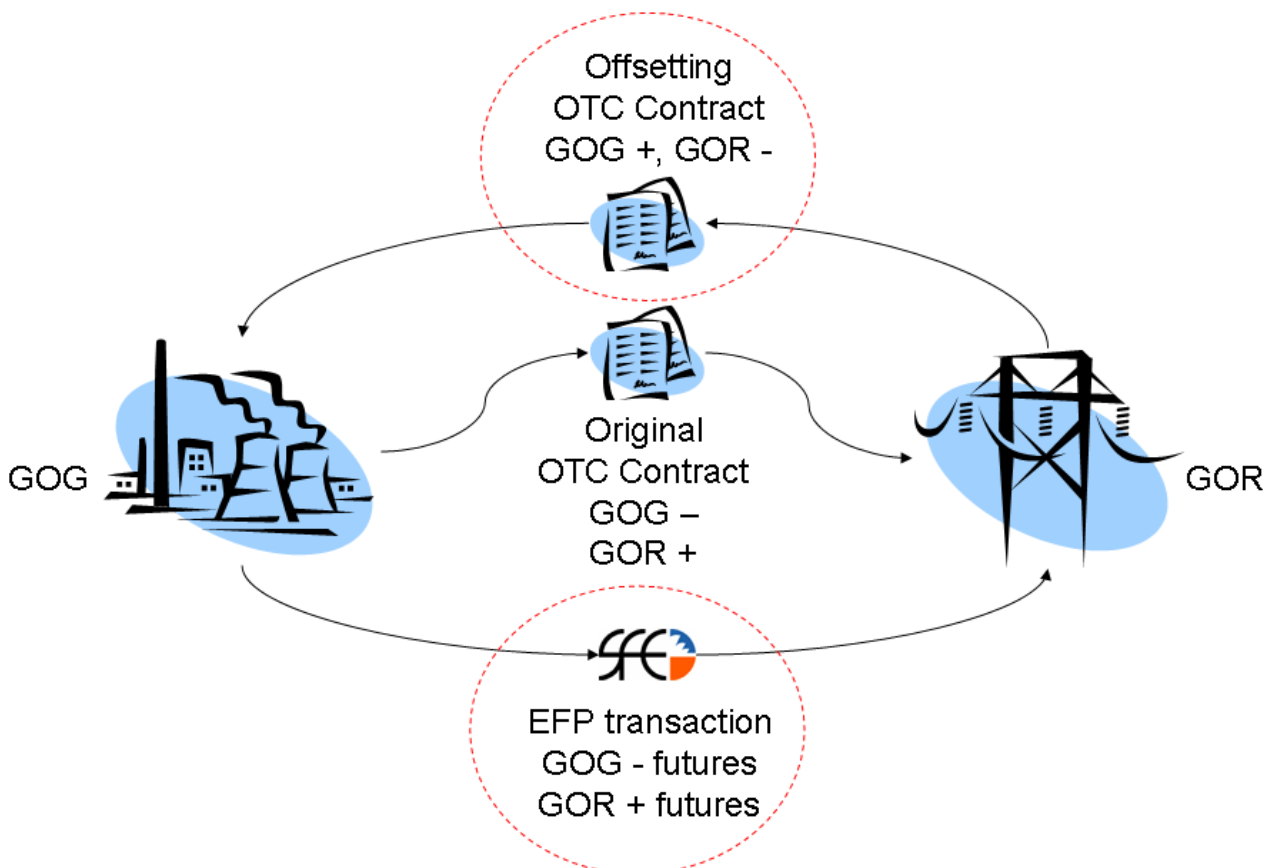
Current position

Government owned generators and retailers have OTC contracts with each other and other third parties in the market.



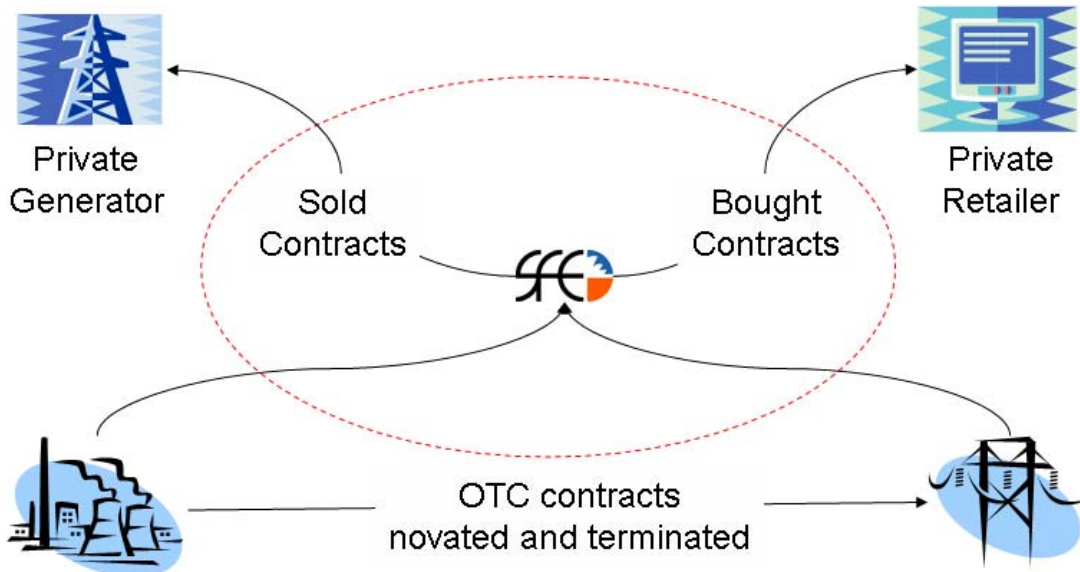
Step 1 - OTC hedge contracts are converted into futures via the EFP process.

Current OTC contracts held by NSW electricity businesses are converted into futures contracts via the EFP process. Offsetting OTC contracts are entered into which novate and lead to the termination of the original OTC contracts, leaving the generators and retailers with futures positions that equate to the original OTC positions.



Step 2 - Mirror futures transactions are executed simultaneously with the Private Traders at the time trading rights are transferred.

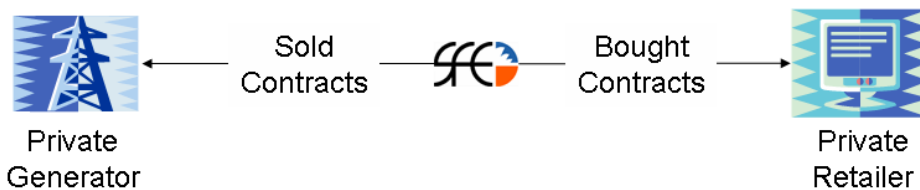
The mirror transaction achieves the transfer of the hedge positions to the Private Traders.



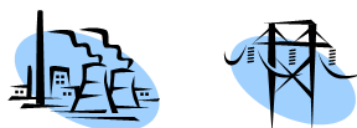
Final outcome – Contract risk removed.

At the conclusion of this process all associated Government-owned hedge contract positions are closed out through the netting of the equal and opposite futures contracts (i.e. the futures side of the EFP and the mirror futures contracts). Similarly the OTC positions are also netted off (through the OTC component of the EFP and the original OTC hedge position). Legal termination of netted OTC positions may be agreed to between counterparties. As such all risk associated with the OTC contracts that had been subject to the EFP is eliminated.

The Private Traders will be left holding futures positions, guaranteed by SFECC rather than holding a suite of OTC hedge contracts guaranteed by NSW Government-owned entities.



Contract risk removed



Private Traders have the ability to negotiate with other private trading entities, to swap any amount of futures positions back into OTC hedge contracts using the EFP mechanism at a later time, if so desired. Private Traders may also choose to manage futures exposure via transactions on the futures market.

The risk of counterparty insolvency resides with the Private Traders and the counterparties with which they transact. Candidates for Private Generation Traders and Private Retail Managers may seek to reach conditional agreement with other candidates, regarding such arrangements, prior to the conclusion of the tendering process for trading rights.

Eliminating credit risk via the EFP mechanism and mirror transaction

Advantages to NSW Treasury

The advantages to NSW electricity businesses and NSW Treasury from this proposal are:

- Elimination of counterparty credit risk for those existing contractual positions that can be converted and then transferred as futures contracts to Private Traders;
- Avoidance of any futures contract margining requirements where EFP and mirror transactions are executed simultaneously;
- Existing capability. All Government-owned energy-trading businesses have the capability to transact EFPs on the Sydney Futures Exchange;
- Significant reduction in the volume of OTC-hedging collateral requirements provided by Private Traders to NSW Treasury as a result of OTC contracts replaced with future contracts.
- Reduced credit exposure implies enhanced ability for more Private Traders and Retail Managers to participate in the NSW Treasury risk management proposal.
- The increase in the pool of suitable tendering parties and resulting increased competition for trading rights during the tendering process should maximise the payments received by NSW Treasury for the trading rights associated with the energy businesses.
- Reduced legal and administrative costs and complexities associated with the tendering process. OTC hedge contracts, which are governed by various counterparty specific contractual nuances, are replaced by standardised futures contracts, which benefit from centralised clearing and a standardised margining process guaranteed by the SFECC. The less efficient alternative of transacting an OTC hedge contract with the Private Traders requires OTC trading facilities (e.g. collateral support and legal negotiation of ISDA contracts) to be established and verified by each Government-owned energy business on an individual basis for each tenderer. Such monitoring and verification of credit worthiness must be maintained, and the associated risks borne, for the duration of the 3 to 5 year trader contracts for all OTC contracts not swapped for futures contracts.
- Reduced OTC hedge contract administration costs (including costs associated with contract settlement, hedge contract revaluation, credit risk monitoring and reporting) to the extent that OTC positions are swapped for futures. Contract administration costs associated with maintaining futures positions are minimal.
- The process of swapping OTC hedge contracts for futures positions, combined with subsequent mirror futures transactions, avoids all related contract risk. The alternative OTC trading solution creates associated contract management risk such as the following:
 - Difficulty of closing out mirror OTC positions which require bi-lateral agreement between the counterparties if later desired; and
 - Legal difficulties in gaining effective relief by relying on ISDA provisions in the event of the worsening of creditworthiness on the part of the Private Trader. Attempted close out of OTC contracts may result in complex (and unsuccessful) legal disputation (e.g.: Enron Australia Finance (in liquidation) vs. NSW Retailer Australia).

The impact on Private Generation Traders and Private Retail Managers

- OTC trading collateral support requirements of the Private Traders, such as guarantee facilities, will be substantially alleviated.
- The transacting of mirror futures transactions will require Private Traders to lodge initial margins (in the form of cash, cash equivalent or Letters of Credit) with their futures clearing broker. These funds are held on deposit until the positions are closed out. Private Traders will require SFE Full Participant client agreement documentation to be in place.
- Futures margin requirements will be dramatically reduced (or eliminated) where Private Traders negotiate with each other, if desired, to enter into further EFP transactions that swap the newly created futures positions back into OTC positions (with non-Government-owned counterparties). The appeal

and design of such transactions will be dependent upon the credit risk/cash flow preferences of each entity.

- Private tenderers will be able to value contract hedge positions of Government-owned businesses quickly and more accurately where such positions are substantially held as futures contracts due to the inherent price transparency benefits of exchange traded futures contracts.
- During the course of the 3 to 5 year contract terms, Private Traders that hold futures positions in preference to OTC positions will benefit from contract netting, credit novation, independent valuation and transparency benefits delivered by exchange traded hedge contracts.

SFE Corporation Limited – Background Information

SFE Corporation Limited (SFE) and its subsidiary companies, Sydney Futures Exchange Limited, New Zealand Futures and Options Exchange Limited (NZFOE), SFE Clearing Corporation Pty Limited and Austraclear Limited, provide exchange traded and over the counter (OTC) services throughout the Asia Pacific region and in other major financial cities in the world.

SFE Group offers trading, risk management, clearing and settlement products and services to banking, funds management and government users of the exchange traded and OTC markets of Australia and New Zealand. SFE operates the major central securities depository in Australia. SFE has a fully electronic 24 hour trading capability and a network of communication hubs to service the needs of its trading and clearing customers. Leveraging this infrastructure and expertise, SFE also provides outsourcing services to industry bodies wishing to develop, underwrite and promote risk management products for their own market participants.

SFE's exchange traded derivatives franchise covers five major markets – equities, interest rates, currency, commodities and energy. During 2003, on average more than 177,000 futures and options contracts were traded each day, with an annual turnover of 45 million contracts, positioning SFE as one of the major derivatives exchanges in the Asia Pacific region. In excess of A\$60 billion nominal value of futures and options contracts were traded on average through SFE each business day in 2003.

SFE Clearing and SFE Austraclear operate a significant clearing and settlement service in Australia and New Zealand. Together, they provide the full range of clearing services including central counterparty clearing for exchange traded derivative obligations, central securities depository (CSD) services, Real Time Gross Settlement (RTGS) of cash, and the registration and transfer of A\$ denominated securities. SFE Austraclear has on average A\$426 billion worth of securities in safe custody and settles on average A\$16 billion in securities on a daily basis.

SFE is a public company whose shareholders comprise a mixture of institutional and retail investors. Its shares were listed on the Australian Stock Exchange (ASX) in April 2002, having previously been exempt market listed, and the stock is included in the ASX 200 index.

d-cyphaTrade

d-cyphaTrade is the market leader in facilitating exchange-traded electricity derivatives in Australia. d-cyphaTrade's strategy and vision is to create an "energy exchange", where participants from the wider energy markets (i.e. not just electricity) can trade listed energy derivatives (futures and options) to enable them to manage their energy price risk, with the security of a central counterparty clearing structure.

The exchange-traded derivative instruments referred to in this proposal are registered as the **d-cypha SFE Electricity Futures contracts** and are traded on the Sydney Futures Exchange. Daily prices are available via the website.

Appendix – Transfer Process Using Futures – Hypothetical Example

Transaction Procedure and Position Analysis

Assumed Hedge Contract Position

A NSW Generator has previously sold 100MW of Over The Counter (OTC) NSW Flat load hedge contracts covering 2005 to a NSW Retailer struck at a fixed price of \$35.00/MWh, governed by the ISDA agreement between those counterparties.

Initial Hedge Contract Position	
Generator	Retailer
OTC: Sold 100MW Cal 05 Flat at \$35.00/MWh	OTC: Bought 100MW Cal 05 Flat at \$35.00/MWh

Step 1. EFP Transaction

Generator and Retailer negotiate and arrange for a futures broker to execute an EFP transaction with the following two components:

EFP Transaction	
Generator	Retailer
OTC: Bought 100MW Cal 05 Flat at \$35.00/MWh	OTC: Sold 100MW Cal 05 Flat at \$35.00/MWh
Futures: Sold 100MW Cal 05 Flat at \$35.00/MWh	Futures: Bought 100MW Cal 05 Flat at \$35.00/MWh

Summary of Hedge Contract Position after EFP

Hedge Contract Position after EFP	
Generator	Retailer
OTC: Nil (Sold 100MW, Bought 100MW)	OTC: Nil (Bought 100MW, Sold 100MW)
Futures: Sold 100MW Cal 05 Flat at \$35.00/MWh	Futures: Bought 100MW Cal 05 Flat at \$35.00/MWh

The Generator has a sold swap netted off by an equal and opposite bought swap (the Retailer has an equal and opposite position). The parties may agree to terminate netted OTC contracts immediately or at a later date, in accordance with the ISDA agreement.

Step 2. Mirror futures transactions

The Private Generation Trader (or Retail Manager) agrees to assume the existing hedge contract positions of the associated NSW electricity business as a condition of the transfer of trading rights.

The Private Generation Trader that purchases the trading rights of the Generator agrees to sell 100MW equivalent of futures contracts via a futures transaction negotiated with the Generator at an agreed “at market” price (e.g. \$34.50).

The Private Retail Manager that purchases the trading rights of the Retailer agrees to purchase 100MW equivalent of futures contracts via a futures transaction negotiated with the Retailer struck at an agreed “at market” price (e.g. \$34.50).

A Futures Broker will execute the negotiated transaction on behalf of each party.

This is achieved through the following process:

Mirror futures transactions – Generator	
Generator	Private Generation Trader
Futures: Bought 100MW Cal 05 Flat at \$34.50/MWh	Futures: Sold 100MW Cal 05 Flat at \$34.50/MWh

Mirror futures transactions – Retailer	
Retailer	Private Retail Manager
Futures: Sold 100MW Cal 05 Flat at \$34.50/MWh	Futures: Bought 100MW Cal 05 Flat at \$34.50/MWh

Summary of hedge Contract Position after mirror futures transaction

Final Hedge Contract Position – NSW Treasury	
Generator	Retailer
OTC: Nil	OTC: Nil
Futures: Nil	Futures: Nil

The Generator and Retailer have no residual hedge contract positions (OTC or futures) as through this process they have transferred all hedge contract positions to the new Private Traders. The government businesses have now completely eliminated all risks associated with the pre-existing hedge contract positions. This compares favourably to the alternative procedure of transacting mirror OTC hedge contracts that will expose Government-owned businesses to the credit default risk of Private Generation Traders and Private Retail Managers.

Final Hedge Contract Position – Private Traders	
Private Generation Trader	Private Retail Manager
OTC: Nil	OTC: Nil
Futures: Sold 100MW at \$34.50/MWh	Futures: Bought 100MW at \$34.50/MWh

The Private Generation Trader and Private Retail Manager may seek to independently reduce or alter the residual futures position, at their discretion, by direct futures trading activities or through negotiated EFP transactions that swap futures positions for OTC hedge contract positions with other non-Government-owned entities.

Cash Flow and Transaction Cost Analysis

Government-owned entities

The optimal solution that yields the most efficient cash flow benefits to NSW Treasury involves the simultaneous execution of the EFP and mirror futures transactions. Alternatively, the EFP may be executed prior to the mirror futures transaction if desired. The associated cash flow requirements for the Government owned entities would be determined by which strategy is adopted. Transaction costs are consistent under both strategies and are outlined separately to cash flow requirements:

Strategy One: All transactions (EFP and mirror) are executed simultaneously:

Cash Flow requirements

Initial margin requirement	Nil (as position is simultaneously opened and closed out)
One-off variation margin	When the EFP and mirror transactions are executed a cash flow requirement will arise equivalent to the difference between the original traded price of the EFP transaction (\$35.00/MWh, based on the original OTC price) and the price of the offsetting mirror futures contract (which has been negotiated at \$34.50).
Generator Worked Example	
Positions	Cash Flow
EFP contract = 100 contracts of 2005 NSW Flat futures sold at \$35.00/MWh	\$35.00 - \$34.50 = \$0.50/MWh (to determine mark to market value) \$0.50 x 8760 (# of hours in 2005) x 100 (# of contracts) = \$438,000 (Net realised Profit)
Mirror contract = 100 contracts of 2005 NSW Flat futures bought at \$34.50/MWh	
Net Position = Sold 100 contracts, bought 100 contracts = 0	

Positive cash flow received by one party to the futures contracts (in this example, the Generator) will be equal to negative cash flow required of the other party (the Retailer). Cash flow resulting from realised (or closed out) positions represents realised profit or loss and must be received (in the case of a profit) or posted (in the case of a loss) as cash. No further initial or variation margins will be required because there will not be a residual (or open) futures position.

Transaction costs

Exchange fees	\$29,600 (\$37 per futures contract for base load electricity). The d-cypha SFE Australian Electricity Futures contracts are 1MW quarterly contracts. To trade a 100MW Calendar contract it is necessary to transact 100 MW of each of the 4 quarters that make up the calendar year. As such, the EFP transaction will consist of 400 contracts. Similarly, the final mirror futures transaction will also consist of 400 contracts.
2. Brokerage fee	Charged at a rate as negotiated between each party and their broker.

Strategy Two: EFPs are executed prior to the execution of duplicate “mirror” futures contracts

Cash Flow requirements

Initial margin requirement	\$660,000 (\$6,600 per 1MW of Cal 05). Initial margins are held with a SFE Full Participant as cash, cash equivalent or approved Letter of Credit. These funds are held on deposit until the position is closed out through the execution of the duplicate mirror contracts.
One-off variation margin	As explained in Strategy One.
Ongoing daily variation margins	In accordance with the SFECC regulations all futures positions are marked to market daily against the futures settlement prices established by the market at the end of each trading day. Daily variation margins payments will reflect the changes in the settlement prices from day to day until such time as the mirror futures contracts are transacted.

Transaction costs

Exchange fees	\$29,600 (\$37 per futures contract). (See above)
Brokerage fee	Charged at a rate as negotiated between each party and their broker.

Private Generation Traders and Private Retail Managers

The associated cash flow requirements and transaction costs for the Private Generation Trader and the Private Retail Manager, under either strategy are outlined below.

Cash Flow requirements*

Initial margin requirement	\$660,000 of collateral to be held on deposit with an SFE Full Participant, in the form of cash, cash equivalent or approved Letter of Credit.
Daily variation margins	In accordance with the SFECC regulations all futures positions are marked to market daily against the futures settlement prices established by the market at the end of each trading day. Daily variation margins payments will reflect the changes in the settlement prices from day to day.

Transaction costs

Exchange fees	\$14,800 (\$37 per futures contract). Applicable to final futures transaction of 400 contracts.
Brokerage fee	Charged at a rate as negotiated between each party and their broker.

*Importantly, Private Traders have the ability to adjust their futures portfolios at any time, through direct futures trading activities or via EFP transactions negotiated directly with other counterparties. Such EFP transactions enable futures positions to be swapped back into OTC hedge contract positions (albeit with non-Government-owned entities as counterparties). Such activities may significantly reduce cash flow requirements.