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## Wholesale Electricity Market Rule Change Proposal Form

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**Change Proposal No:** RC\_2011\_07  
**Received date:** 14 July 2011

**Change requested by:**

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<b>Date submitted:</b>	14 July 2011
<b>Urgency:</b>	1 - High
<b>Change Proposal title:</b>	Calculation of Net STEM Shortfall for Scheduled Generators
<b>Market Rule(s) affected:</b>	4.26.2 and 4.26.2B

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### Introduction

Market Rule 2.5.1 of the Wholesale Electricity Market Rules provides that any person (including the IMO) may make a Rule Change Proposal by completing a Rule Change Proposal Form that must be submitted to the Independent Market Operator.

This Change Proposal can be posted, faxed or emailed to:

**Independent Market Operator**

Attn: Manager Market Development and System Capacity  
PO Box 7096  
Cloisters Square, Perth, WA 6850  
Fax: (08) 9254 4339  
Email: [market.development@imowa.com.au](mailto:market.development@imowa.com.au)

The Independent Market Operator will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.

In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the wholesale electricity market objectives. The objectives of the market are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

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## **Details of the proposed Market Rule Change**

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### **1. Describe the concern with the existing Market Rules that is to be addressed by the proposed Market Rule change:**

#### **Background**

Clause 4.26.1A of the Market Rules requires that the Independent Market Operator (IMO) calculate a Forced Outage refund for each Facility ("Facility Forced Outage Refund"), whereas the IMO must also determine whether there arises a "Net STEM Shortfall" under clause 4.26.2 and hence a Capacity Cost Refund under clause 4.26.2E.<sup>1</sup>

Currently, if a Market Participant operates a single Scheduled Generator and that generator suffers a Forced Outage, the Market Participant is exposed to a Facility Forced Outage Refund calculated under clause 4.26.1A. The specification of the Net STEM Shortfall calculation in clause 4.26.2 ensures that the Market Participant does not also incur a Net STEM Shortfall Refund for the same Forced Outage.

However, where a Market Participant operates more than one Scheduled Generator and one of its generators suffers a Forced Outage, the Market Participant will be exposed to both:

- a Facility Forced Outage Refund calculated under clause 4.26.1A; and

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<sup>1</sup> Clause 4.26.1A (and other clauses) will be amended from 1 October 2011 by RC\_2010\_29 to change references to "Forced Outage Refund" to "Facility Reserve Capacity Deficit Refund".

- a Capacity Cost Refund under clause 4.26.2E as a Net STEM Shortfall will also arise under clause 4.26.2 in respect of the same Forced Outage, in circumstances where at least one Scheduled Generator has not been dispatched.

That is, for a Market Participant operating more than one Scheduled Generator, the cost of a Forced Outage in respect of a specific generator is **up to twice** that which would be incurred had the same generator been the only Scheduled Generator registered to that Market Participant.<sup>2</sup>

A worked example is provided in the attachment.

### **RC\_2010\_03**

This issue identified above is essentially the same as that rectified by the amendments to the Market Rules resulting from RC\_2010\_03.

In RC\_2010\_03, the IMO identified that where a Market Participant has multiple generators in its portfolio and one (or more) suffers a real-time Forced Outage then the expected energy supplied in real-time from the portfolio is reduced to reflect just the Forced Outage.

However, the IMO also noted that this adjustment was applied relative to the portfolio's total Reserve Capacity Obligation Quantity, including Scheduled Generators, Curtailable Loads and Interruptible Loads that were **not dispatched**. As a result, the IMO noted that the Market Participant would be exposed to a Net STEM shortfall purely because some of its facilities were not asked to supply energy or loads requested to reduce consumption.

RC\_2010\_03 was subject to the Fast Track Rule Change Process as the IMO considered that the proposed amendments were required to correct a manifest error, including to remove a potential anomaly in determining the Net STEM Shortfall.

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## **2. Explain the reason for the degree of urgency:**

Alinta requests that this Rule Change Proposal, and the proposed specific changes to clauses outlined in the following section, be subject to the Fast Track Rule Change Process in accordance with clause 2.5.9 of the Market Rules.

Like RC\_2010\_03, Alinta submits that the Rule Change Proposal should be subject to the Fast Track Rule Change Process as the Rule Change Proposal is required to correct a manifest error.

Alinta notes that the "New Balancing Market" proposal being progressed as part of the Market Evolution Plan (MEP) may result in the Market Rules being amended to remove at least that element of the Net STEM Shortfall calculation in clause 4.26.2 that results in the double penalty to Market Participant operating more than one Scheduled Generator.

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<sup>2</sup> The cost of the Forced Outage would be twice that which would be payable by a Market Participant with a single Scheduled Generator where the non-dispatched capacity from another Scheduled Generator (or generators) operated by the Market Participant exceeded the quantum of the Forced Outage.

However, as noted in section 5, the potential cost associated with this manifest error is significant (up to around \$1.5 million), while the expected costs are small (perhaps several thousand dollars). The greatest risk, and financial impact, associated with the manifest error arises during the periods of peak system demand (i.e. the summer period commencing 1 December) when multipliers of 6 apply to capacity refunds.

As there is no certainty that the package of rule changes to give effect to the “New Balancing Market” proposal will be implemented prior to 1 December 2011, there is an urgent need to rectify the manifest error through the Fast Track Rule Change Process.

In addition, Alinta notes that System Management raised concerns about the proposed removal of the Net STEM Shortfall calculation at the Rules Development Implementation Working Group meeting on 21 June 2011, which creates further uncertainty around the outcome in respect of this matter.

**3. Provide any proposed specific changes to particular Rules:** (for clarity, please use the current wording of the Rules and place a ~~strike through~~ where words are deleted and underline words added)

The proposed specific changes to the Market Rules outlined below are restricted to addressing the manifest error in the Market Rules to ensure that a Market Participant operating more than one Scheduled Generator will incur the same cost for a Forced Outage in respect of a specific Scheduled Generator as would be incurred had the same generator been the only Scheduled Generator registered to that Market Participant.

The proposed amending rules do not address any of the other issues identified by RC\_2010\_03 in respect of the Net STEM Shortfall calculation, including in respect of Intermittent Generators (of which there are none) or Dispatchable Loads.

- 4.26.2. The IMO must determine the net STEM shortfall (“**Net STEM Shortfall**”) in Reserve Capacity supplied by each Market Participant  $p$  holding Capacity Credits associated with a generation system in each Trading Interval  $t$  of Trading Day  $d$  and Trading Month  $m$  as:

$$SF(p,m,d,t) = \text{Max}(\text{RTFO}(p,d,t), \text{RCOQ}(p,d,t) - A(p,d,t)) + \text{Sum}(f \in F, \text{Max}(0, B(p_f,d,t) - C(p_f,d,t))) - \text{RTFO}(p,d,t)$$

Where

$$A(p,d,t) = \text{Min}(\text{RCOQ}(p,d,t), \text{CAPA}(p,d,t));$$

$$B(p_f,d,t) = \text{Min}(\text{RCOQ}(p_f,d,t) - \text{RTFO}(p_f,d,t), \text{DSQ}(p_f,d,t));$$

$$C(p_f,d,t) = \text{Min}(\text{DSQ}(p_f,d,t), \text{MSQ}(p_f,d,t));$$

RCOQ(p,d,t) for Market Participant p and Trading Interval t of Trading Day d is equal to:

- (a) the total Reserve Capacity Obligation Quantity of Market Participant p's unregistered facilities that have Reserve Capacity Obligations, excluding Loads that can be interrupted on request, plus
- (b) the sum of the product of:
  - i. the factor described in clause 4.26.2B as it applies to Market Participant p's Registered Facilities; and
  - ii. the Reserve Capacity Obligation Quantity for each Facility for all Market Participant p's Registered Facilities, excluding Curtailable Loads;

RCOQ (f,d,t) for Facility f and Trading Interval t of Trading Day d is equal to the product of the factor described in clause 4.26.2B as it applies to Facility f and the Reserve Capacity Obligation Quantity for Facility f.

CAPA(p,d,t) is for Market Participant p and Trading Interval t of Trading Day d:

- (c) equal to RCOQ(p,d,t) for a Trading Interval where the STEM auction has been suspended by the IMO in accordance with clause 6.10;
- (d) subject to paragraph (c), for the case where Market Participant p is not the Electricity Generation Corporation, the sum of:
  - i. the sum of the Reserve Capacity Obligation Quantities in Trading Interval t of that Market Participant's Interruptible Loads; plus
  - ii. the MW quantity calculated by doubling the net MWh quantity of energy sent out by Facilities registered by that Market Participant during that Trading Interval calculated as the Net Contract Position less the shortfall as indicated by the applicable Resource Plan; plus
  - iiA if a STEM submission does not exist for that Trading Interval, the MW quantity calculated by doubling the total MWh quantity of energy to be consumed by that Market Participant including demand associated with any Curtailable Load or Interruptible Load, but excluding demand associated with any Dispatchable Load during that Trading Interval as indicated by the applicable Resource Plan; plus
  - iii. the MW quantity calculated by doubling the total MWh quantity covered by the STEM Offers which were not

- scheduled and the STEM Bids which were scheduled in the relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval  $t$ , corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
- iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for that Market Participant corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - v. the greater of zero and  $(BSFO(p,d,t) - RTFO(p,d,t))$ ; and
- (e) subject to paragraph (c), for the case where Market Participant  $p$  is the Electricity Generation Corporation, the sum of:
- i. the sum of the Reserve Capacity Obligation Quantities in Trading Interval  $t$  of that Market Participant's Interruptible Loads; plus
  - ii. the MW quantity calculated by doubling the total MWh quantity of the Net Contract Position quantity of that Market Participant for Trading Interval  $t$ , corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - iii. the MW quantity calculated by doubling the total MWh quantity of the STEM Offers which were not scheduled and the STEM Bids which were scheduled in the relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval  $t$ , corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for the Electricity Generation Corporation corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
  - v. the greater of zero and  $(BSFO(p,d,t) - RTFO(p,d,t))$ .

BSFO(p,d,t) is the total MW quantity of Forced Outage associated with Market Participant p before the STEM Auction for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the MW Forced Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.3;

RTFO(p,d,t) is the total MW quantity of Forced Outage associated with Market Participant p in real-time for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the MW Forced Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.13.1A (b);

RTFO(f,d,t) is the total MW quantity of Forced Outage associated with Facility f in real-time for Trading Interval t of Trading Day d, where this is the lesser of the Reserve Capacity Obligation Quantity of the Facility f for Trading Interval t and the MW Forced Outage of the Facility f for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.13.1A (b);

~~DSQ(p f,d,t) is a MW quantity calculated by doubling the MWh value of sum over all of the Facilities registered by Market Participant p of each Facility f's Dispatch Schedule for Trading Interval t of Trading Day d;~~

~~MSQ(p f,d,t) is a MW quantity calculated by doubling the greater of zero and the MWh value of sum over all of the Facilities registered by Market Participant p of the greater of zero and Facility f's Metered Schedule for Trading Interval t of Trading Day d, corrected for Loss Factor adjustments applicable to that Facility so as to be a sent out quantity;~~

F denotes the set of Scheduled Generators registered by Market Participant p, where "f" is used to refer to a member of that set.

- 4.26.2A. All values in clause 4.26.2 which are required to be corrected for Loss Factor adjustments so as to be a sent out quantity are to be adjusted based on an assumed Loss Factor of 1.
- 4.26.2B. The IMO is to set the factor described in the definition of RCOQ(p,d,t) and RCOQ(f,d,t) in clause 4.26.2 to equal one in all situations except for Scheduled Generators, Non-Scheduled Generators and Dispatchable Loads with Loss Factors less than one in which event the factor must equal the facilities Loss Factor.

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#### **4. Describe how the proposed Market Rule change would allow the Market Rules to better address the Wholesale Market Objectives:**

Market Rule 2.4.2 states that the IMO must not make Amending Rules unless it is satisfied that the Market Rules, as proposed to be amended or replaced, are consistent with the Wholesale Market Objectives. The objectives of the market are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

The Rule Change Proposal would ensure that for a Market Participant operating more than one Scheduled Generator, the cost of a Forced Outage in respect of a specific Scheduled Generator would be the same as that which would be incurred had the same generator been the only Scheduled Generator registered to that Market Participant.

Consequently, Alinta considers that the Market Rules as proposed to be amended or replaced by the Rule Change Proposal, would be consistent with, and better achieve, the Wholesale Market Objectives. Specifically, Alinta considers that the Rule Change Proposal would:

- better promote the economically efficient, safe and reliable production supply of electricity and electricity related services in the South West Interconnected System (objective (a)).
  - better encourage competition among generators and retailers in the South West interconnected system (objective (b)).
  - avoids discrimination against a portfolio generator and therefore better achieves objective (c).
  - likely to further minimise the long term costs of electricity supplied to customers from the South West interconnected system (objective (d)).
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## 5. Provide any identifiable costs and benefits of the change:

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For Market Participants operating more than one Scheduled Generator, the cost of a Forced Outage in respect of a specific generator is **up to twice** that which would be incurred had the same generator been the only Scheduled Generator registered to that Market Participant.

As with RC\_2010\_03, the main benefit of the proposed Amending Rules will be to restore market price signals to their correct levels.

As a Market Participant operating more than one Scheduled Generator, Alinta estimates that the potential additional cost it might incur in respect of Forced Outages could be up to \$1.5 million per annum. This estimate reflects:

- a Forced Outage rate of 0.73% (consistent with the estimate provided by the IMO to the Maximum Reserve Capacity Working Group);
- the Reserve Capacity Price for the 2011/12 year (\$131,804), and
- a refund multiplier of 6 times, which would apply where a Forced Outage occurs during a Peak Interval during summer.

Costs would be incurred by the IMO, and therefore the Market as a whole, in updating the current settlement functions of the IMO. Alinta is unable to quantify these costs precisely, but notes that for RC\_2010\_03 the IMO estimated that the costs it would incur in updating the settlement function was \$3,525.

It is expected that the “New Balancing Market” proposal being progressed as part of the MEP would ultimately result in the Market Rules being amended to remove at least that element of the Net STEM Shortfall calculation in clause 4.26.2 that results in the double penalty to Market Participant operating more than one Scheduled Generator. However, as noted earlier, there remains some uncertainty about this outcome.

Further, given the significant potential risk and cost that arises from this manifest error, Alinta considers that the benefits, including those to the broader market, of proceeding with this Rule Change Proposal significantly exceed any costs.

**Scenario 1**

Single Scheduled Generator (130 MW) with a Resource Plan (DSQ) that does not meet the dispatch and does not log a forced outage.

Under the existing and proposed changes, a shortfall of 130 MW is calculated.

<b>EXISTING Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>0</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>130</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>130</b>
	RCOQ(p,d,t) – RTFO(p,d,t)	<b>130</b>
	DSQ(p,d,t)	<b>130</b>
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	<b>130</b>
	MSQ(p,d,t)	<b>0</b>
	DSQ(p,d,t)	<b>130</b>
C = Min(DSQ, MSQ)	<b>C</b>	<b>0</b>
	<b>SF</b>	<b>130</b>
<b>PROPOSED Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>0</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>130</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>130</b>
	RCOQ(f,d,t) – RTFO(f,d,t)	
	DSQ(f,d,t)	
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	
	MSQ(f,d,t)	
	DSQ(f,d,t)	
C = Min(DSQ, MSQ)	<b>C</b>	
	Max(0, B – C)	
	∑ Scheduled Generators	<b>130</b>
	<b>SF</b>	<b>130</b>

## Scenario 2

Single Scheduled Generator (130 MW) with a DSQ that does not meet the dispatch, and where a forced outage is logged.

Under the existing and proposed changes, no shortfall is calculated as the refund will be applied at the facility level.

<b>EXISTING Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>130</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>130</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>130</b>
	RCOQ(p,d,t) – RTFO(p,d,t)	<b>0</b>
	DSQ(p,d,t)	<b>130</b>
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	<b>0</b>
	MSQ(p,d,t)	<b>0</b>
	DSQ(p,d,t)	<b>130</b>
C = Min(DSQ, MSQ)	<b>C</b>	<b>0</b>
	<b>SF</b>	<b>0</b>
<b>PROPOSED Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>130</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>130</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>130</b>
	RCOQ(f,d,t) – RTFO(f,d,t)	
	DSQ(f,d,t)	
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	
	MSQ(f,d,t)	
	DSQ(f,d,t)	
C = Min(DSQ, MSQ)	<b>C</b>	
	Max(0, B – C)	
	∑ Scheduled Generators	<b>0</b>
	<b>SF</b>	<b>0</b>

### Scenario 3

Two Scheduled Generators (130 MW each), one with a DSQ that does not meet the dispatch and does not log a forced outage. The other unit is not required to run.

Under the existing and proposed changes, a shortfall is calculated.

<b>EXISTING Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>0</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>260</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>260</b>
	RCOQ(p,d,t) – RTFO(p,d,t)	<b>260</b>
	DSQ(p,d,t)	<b>130</b>
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	<b>130</b>
	MSQ(p,d,t)	<b>0</b>
	DSQ(p,d,t)	<b>130</b>
C = Min(DSQ, MSQ)	<b>C</b>	<b>0</b>
	<b>SF</b>	<b>130</b>
<b>PROPOSED Net STEM Shortfall</b>		
	<b>RTFO (p,d,t)</b>	<b>0</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>260</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>260</b>
	RCOQ(f,d,t) – RTFO(f,d,t)	
	DSQ(f,d,t)	
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	
	MSQ(f,d,t)	
	DSQ(f,d,t)	
C = Min(DSQ, MSQ)	<b>C</b>	
	Max(0, B – C)	
	∑ Scheduled Generators	<b>130</b>
	<b>SF</b>	<b>130</b>

#### Scenario 4

Two Scheduled Generators (130 MW each), one with a DSQ that does not meet the dispatch, but where forced outage is logged. The other unit is not required to run.

Under the existing rules a shortfall is calculated as well as the Forced Outage refund.

Under the proposed changes no shortfall is calculated as the changes pick up the forced outage of the facility that did not deliver.

EXISTING Net STEM Shortfall		
	<b>RTFO (p,d,t)</b>	<b>130</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>260</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>260</b>
	RCOQ(p,d,t) – RTFO(p,d,t)	<b>130</b>
	DSQ(p,d,t)	<b>130</b>
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	<b>130</b>
	MSQ(p,d,t)	<b>0</b>
	DSQ(p,d,t)	<b>130</b>
C = Min(DSQ, MSQ)	<b>C</b>	<b>0</b>
	<b>SF</b>	<b>130</b>
PROPOSED Net STEM Shortfall		
	<b>RTFO (p,d,t)</b>	<b>130</b>
	CAPA	<b>750</b>
	RCOQ (p,d,t)	<b>260</b>
A = Min(RCOQ, CAPA)	<b>A</b>	<b>260</b>
	RCOQ(f,d,t) – RTFO(f,d,t)	
	DSQ(f,d,t)	
B = Min(RCOQ–RTFO, DSQ)	<b>B</b>	
	MSQ(f,d,t)	
	DSQ(f,d,t)	
C = Min(DSQ, MSQ)	<b>C</b>	
	Max(0, B – C)	
	∑ Scheduled Generators	<b>0</b>
	<b>SF</b>	<b>0</b>