SCHEDULE 28A

Demand Curves for Transmission Constraints

1. Introduction

Transmission Constraint Demand Curves (TCDC) shall be used by the Transmission Provider to limit the cost of the redispatch incurred to manage a constraint and to determine the Shadow Price for transmission constraints when the flow over a constraint cannot be managed within the binding limit in a dispatch interval. TCDCs shall be used in both the Day-Ahead and Real-Time Energy and Operating Reserve Markets. This schedule shall apply to all constraints in MISO's markets except those constraints that are subject to Market-to-Market congestion management protocols with an adjacent Regional Transmission Organization. Constraints under active management as Market-to-Market constraints will be managed pursuant to the applicable Joint Operating Agreement.

2. General

TCDCs shall be used to price the transmission constraints during any dispatch interval in which a transmission constraint cannot be managed within its binding limit using the Security Constrained Economic Dispatch (SCED) engine.

3. Transmission Constraint Demand Curves

3.1 Group 1 Demand Curves

Transmission constraints shall be assigned a TCDC based on the voltage level of the constraint or the potential impact of the constraint on reliability. The TCDC includes two Marginal Value Limits (MVLs) and corresponding constraint exceedance percentages. Group 1 TCDCs are as follows:

		Type and Voltage (V)			
Group 1		V <= 100kV $/MWh	>100kV and <161kV $/MWh	>= 161kV $/MWh	IROL $/MWh
Binding Constraint Exceedance Percentage	>=102%	$500	$1,000	$2,000	$4,000
	>100% and <102%	$400	$700	$1,000	$3,000

The top block of the TCDC shall apply when the constraint exceedance is greater than or equal to 102% of the binding limit.

The low block of the TCDC shall apply when the constraint exceedance is greater than 100% and less than 102% of the binding limit.

Due to the nature of transmission constraints associated with Transmission Loading Relief events, the constraint exceedance of the TCDC is defined as the MW amount above the binding limit. The TCDC for these constraints will be established as follows:

Group 1		TLR $/MWh
Constraint Exceedance MW	>= 10 MW	$2,000
	>0 MW and < 10 MW	$1,000

Group 1 TCDCs may need to be updated over time based on changes to fuel costs, generation mix, topology and experience with the existing demand curves. A review of the effectiveness of the TCDC will be conducted if the Transmission Provider determines one or more TCDCs are ineffective.

3.2 Group 2 Demand Curve

Constraints that raise reliability concerns differing from other constraints in the same voltage class when their flows exceed their binding limits may be managed through Group 2 TCDCs. Such constraints may be indicated by one or more of the following:

i. The constraint is frequently violated for more than two consecutive intervals because it cannot routinely be managed under the Group 1 TCDCs.

ii. The constraint is not subject to operating guides or other actions to manage flows that are available to other constraints in the same voltage class.

iii. The operators believe the reliability consequences of allowing the flow to exceed the limit on the constraint are more severe than for other constraints in the voltage class.

A Group 2 TCDC shall only apply to constraints that persistently cannot be managed using Group 1 TCDCs. Group 2 TCDCs will have the following MVLs:

		Type and Voltage (V)		
Group 2		V <= 100kV $/MWh	>100kV and <161kV $/MWh	V >= 161kV $/MWh
Binding Constraint Exceedance Percentage	>=102%	$1,000	$2,000	$3,000
	>100% and < 102%	$700	$1,000	$2,000

The top block of the TCDC shall apply when the constraint exceedance is greater than or equal to 102% of the binding limit.

The low block of the TCDC shall apply when the constraint exceedance is greater than 100% and less than 102% of the binding limit.

Changes to the set of constraints managed by Group 2 TCDCs shall be publically posted by the Transmission Provider. The public posting will include (1) all constraints managed by the Group 2 TCDC, (2) the reason for applying the Group 2 TCDC to each of these constraints, and (3) the length of time that the Group 2 TCDC has been applied to each of the constraints. The public posting will be accessed via the Transmission Provider's OASIS Notices Archives site.

The Transmission Provider shall remove constraints from Group 2 when it deems that a constraint no longer satisfies the Group 2 criteria described above.

3.3 Temporary Overrides

When the flow over a constraint is greater than or is expected to be greater than the constraint's binding limit for more than two intervals or raises an elevated reliability concerns, the Transmission Provider may temporarily override a Group 1 or Group 2 TCDC applicable to a constraint. Transmission constraints will be returned to their applicable TCDC as soon as the Transmission Provider determines that system conditions and congestion management needs no longer require the adjustment to the applicable TCDC. Overridden binding constraints will be publically posted by the Transmission Provider as soon as practicable. The public posting will (1) provide the reason for which the temporary override was exercised; (2) describe the length of time each temporary override was in place; and (3) state the MVL applied during the temporary override in place of the default TCDC MVL. The public posting will be accessed via the Transmission Provider's OASIS Notices Archives site.