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| Direct Energy Comments Regarding Holistic Approach to Congestion Irresolvable in SCED |

Direct Energy proposes modifications to the WMS recommendation regarding the Holistic Solution for Congestion Irresolvable in SCED. Direct Energy believes the WMS recommendation provides a solution that relies on scarcity pricing concepts from the Commission Resource Adequacy Rule and a solution that sends a price signal that reflects the marginal cost to resolve the irresolvable constraint (firm load shed) while providing an adequate incentive for generation to compete to provide a long-term solution. However, one of the principles adopted by the WMS regarding the development of a holistic solution is the proposal should complement rather than interfere with the operation of the market. Direct Energy suggests the TAC consider revising the shadow price cap adjustment when the peaker net margin threshold is met under the proposal. The WMS recommendation lowers the shadow price cap to the currently effective LCAP pursuant to PUC Subst. R. 25.505 when the peaker net margin threshold is reached. Direct Energy is concerned that adjusting the shadow price cap to a set value (LCAP) for all irresolvable constraints when the peaker net margin is reached will limit the dispatch of generation that can effectively relieve the constraint. The shadow price cap necessary to dispatch generation is determined by dividing the Mitigated Offer Cap of the unit with the lowest shift factor impact on the constraint by the shift factor of the unit with the lowest shift factor that relieves the constraint. Below is an example to illustrate the concern.

* Assume Mitigated Offer Cap of $65.00 per MWh
* Assume shift factor for unit with lowest shift factor impact on constraint is 0.1
* $65.00/0.1 = $650 per MWh

The current value of the LCAP pursuant to PUC Subst. R. 25.505 is $500 per MWh. This example shows that ERCOT would not dispatch the unit with a 10% shift factor because the shadow price cap required to dispatch that unit would be $650 per MWh. A shadow price cap of $500 for irresolvable constraints would prevent dispatch of units with a shift factor impact less than 0.13. Direct Energy thinks preventing ERCOT from utilizing existing units with shift factors less than 13% would inappropriately interfere with the operation of the market. Direct Energy proposes for TAC consideration the following modification to the WMS recommendation in order to allow ERCOT to effectively utilize existing generation to relieve the constraint.

Replace WMS recommendation regarding the value of C with the following:

* *C=* If peaker net margin exceeds $95,000 per MW/year, then adjust Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraint to maximum of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or currently effective LCAP pursuant to PUC Subst. R. 25.505 for the remainder of the calendar year.

Below is an example to illustrate the proposed change.

* Assume peaker net margin of $95,001 per MW/year on September 1st, 2011
* Assume Mitigated Offer Cap of $65.00 per MWh
* Assume shift factor for unit with lowest shift factor impact on constraint is 0.1
* Assume currently effective LCAP = $500
* Irresolvable Constraint Shadow Price Cap = max of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or currently effective LCAP
* Irresolvable Constraint Shadow Price Cap = max of ($65.00/0.1) or $500
* Irresolvable Constraint Shadow Price Cap = $650 for remainder of calendar year

The revised methodology for determining the Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraints including the revision to C would be the following:

* Irresolvable Shadow Price Cap in a calendar year = Minimum of A or B until peaker net margin threshold exceeded then implement C
  + A = current value for the Transmission Shadow Price Cap in Section 3.5 of the ERCOT Business Practice Manual for Setting Shadow Price Caps and Power Balance Penalties in SCED
  + B= max of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or $2000 per MWh
  + *C=* If peaker net margin exceeds $95,000 per MW/year, then adjust Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraint to maximum of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or currently effective LCAP pursuant to PUC Subst. R. 25.505 for the remainder of the calendar year.

The Congestion Irresolvable in SCED task force discussed the inclusion of a shift factor cutoff and Direct Energy believes there was general consensus that a shift factor cutoff is appropriate for irresolvable constraints. However, the WMS recommendation does not include a shift factor cutoff. Direct Energy believes the TAC recommendation should include a shift factor cutoff of 2% (0.02) for constraints that have been deemed irresolvable by ERCOT.

In summary, Direct Energy supports the framework of the WMS recommendation regarding a holistic approach to congestion irresolvable in SCED. Direct Energy proposes for TAC consideration the modifications described above to the WMS recommendation. Direct Energy has included below as Attachment A draft revisions to the ERCOT Business Practice Manual, *Setting the Shadow Price Caps and Power Balance Penalties in Security Constrained Economic Dispatch.*

**ATTACHMENT A**

Revisions to ERCOT Business Practice Manual, *Setting the Shadow Price Caps and Power Balance Penalties in Security Constrained Economic Dispatch.*

## Revise Section 3.3 to the following:

**3.3 Shift Factor Cutoff**

## Note: This Shift Factor cutoff is not related to above Shift Factor efficiency threshold used for determination of maximal Shadow Price.

Some generating units can be excluded from network congestion management by ignoring their contribution in line power flows. Note that this exclusion cannot be performed physically, i.e. all units will always contribute to line power flows according to their Shift Factors. Therefore, the Shift Factor cutoff introduces an additional approximation into line power flow modeling.

Since the effect of the Shift Factors below the cut off on the overload are ignored in the optimization, any Shift Factor cutoff will cause additional re-dispatch of the remaining generating units participating in the management of congestion on the constraint. I.e. Generation Resources with Shift Factor above cut off will have to be moved more to account for the increase in overload caused by increasing generation of a inexpensive Resource with positive Shift Factor below cut off and decreasing generation of a expensive Resource with negative Shift Factor below cut off.

The Shift Factor cutoff will cause mismatch between optimized line power flow and actual line power flow that will happen when dispatch Base Points are deployed. This mismatch can degrade the efficiency of congestion management.

The Shift Factor cutoff can reduce volume of Shift Factor data and filter out numerical errors in calculating Shift Factors. Currently the default value of Shift Factor cut off is 0.0001 and is implemented at the EMS to reduce the amount of data transferred to MMS. Any threshold above that level will cause a distortion of congestion management process. The Shift Factor cut off for non-competitive constraints deemed irresolvable pursuant to Section 3.6 shall be 0.02.

## Revise Section 3.5 to the following:

**3.5 Current Values for the Transmission Network System-Wide Shadow Price Caps in SCED**

The Transmission Shadow Price Caps noted below will be used in the Security Constrained Economic Dispatch (SCED) with the exception of Section 3.6, Current Methodology for the Transmission Shadow Price Caps for Irresolvable Non-Competitive Constraints in SCED.

## New Section 3.6

## 3.6 Current Methodology for the Transmission Shadow Price Caps for Irresolvable Non-Competitive Constraints in SCED

ERCOT shall take steps to resolve insecure states as described in the Nodal Protocols and Operating Guides. However, if ERCOT deems a non-competitive constraint in SCED irresolvable, then the following methodology will be used to determine the shadow price cap for the irresolvable constraint. A non-competitive constraint will be deemed irresolvable by ERCOT if the constraint cannot be resolved through SCED dispatch for more than two consecutive hours for more than 4 consecutive days or more than 20 hours in a rolling thirty day period.

Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraint = minimum of A or B

A = current value for the Transmission Shadow Price Cap described in Section 3.5, Current Values for the Transmission Network System-Wide Shadow Price Caps in SCED

B = max of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or $2000/MW

If the irresolvable constraint peaker net margin exceeds $95,000/MW during a calendar year, then adjust Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraint to C for the remainder of the calendar year.

C = max of (Mitigated Offer Cap of lowest shift factor unit/shift factor of lowest unit used to resolve constraint) or currently effective LCAP pursuant to PUC Subst. R. 25.505

C shall not exceed A

ERCOT shall reset the Transmission Shadow Price Cap for Irresolvable Non-Competitive Constraint to the minimum of A or B on January 1st of the next calendar year.

Irresolvable constraint peaker net margin shall be calculated as:

Σ((SPP – POC) \* (number of minutes in a settlement interval / 60 minutes per hour)) for each settlement interval when the irresolvable non-competitive constraint is active and binding and SPP – POC >0.

(POC) shall be 10 times the daily Houston Ship Channel gas price index for the previous business day. The POC is calculated in dollars per megawatt-hour (MWh).

For the purpose of this section, the SPP used for the irresolvable constraint peaker net margin calculation shall be the SPP for the unit with the highest absolute negative value shift factor impact on the constraint deemed irresolvable pursuant to this section. Upon the designation of an irresolvable non-competitive constraint, the irresolvable constraint peaker net margin shall be calculated for the current calendar year and that irresolvable constraint peaker net margin value will be used as the value on the date ERCOT declares the non-competitive constraint irresolvable pursuant to the section. Each day ERCOT shall post at a publicly accessible location on its website the updated value for the irresolvable constraint peaker net margin pursuant to this section in dollars per megawatt (MW).

**Delete Appendix 3, Shadow Price Cap for the Valley Import Constraint**