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# WEM Weekly Constraint Outcomes

Trading Week starting 23 March 2025

A summary of constraint outcomes using data available at 31 March 2025

A report for the Wholesale Electricity Market Congestion Information Resource

## Important notice

#### Purpose

The purpose of this report is to assist Rule Participants and other interested stakeholders to understand the impact of Network Congestion during Trading Week starting 23 March 2025.

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### **Invoked Constraint Sets**

Figure 1 shows invoked Constraint Sets, ordered by date invoked. Sets created for discretionary Constraint Equations (see Figure 2) are excluded.



#### Figure 1 – Summary of invoked Constraint Sets.

\* Dates indicate Trading Days (starting 8am)

### **Discretionary Constraints**

Figure 2 shows the status of discretionary Constraint Equations, ordered by creation date.

#### Figure 2 – Binding summary of discretionary Constraint Equations.



\* Dates indicate Trading Days (starting 8am)

### **Binding Constraints**

Figure 3 shows the status of invoked library Constraint Equations that could have had an impact on dispatch, i.e. each Constraint Equation here has bound or violated for at least one Trading Interval and has a non-zero Constraint Violation Penalty (CVP). Constraints are ordered by cumulative shadow price, which gives an indication of relative market impact. Defined Contingency Constraint Equations and discretionary Constraint Equations have been excluded.

#### Violating Binding Near-binding Invoked Constraint status Library constraints with material impact 167.9 MSR-KMK 81 \* {NIL} [RegRaise(TIWEST\_COG1)] 664950000 8 664950000-₹ 167.9 2 MSR-KMK 81 \* {NIL} [RegLower(TIWEST COG1)] 108902547 34.5 NIL \* {NIL} [InjectionLimit(KWINANA\_ESR1)] 11 92730000 23.4 🗄 YDW-YDT 91 \* {NIL} [Off(YANDIN\_WF1)] 40260000 10.2 KW-KWB 92 \* {NIL} [ContRaise(KWINANA ESR1)] 40260000 10.2 KW-KWB 92 \* {NIL} [ContLower(KWINANA\_ESR1)] 40260000 10.2 KW-KWB 92 \* {NIL} [RegLower(KWINANA ESR1)] 10.2 KW-KWB 92 \* {NIL} [RegRaise(KWINANA ESR1)] 40260000 39271065 10.2 KW-KWB 92 \* {NIL} [Energy(KWINANA\_ESR1)] NIL \* {COLLIE ESR1} [SelfCovering] 32340965 14.0 31020000 7.8 MGA-WWF 81 \* {MGA-GTN 81} [Island(ALINTA\_WWF)] MSR-KND 81 \* {NIL} [Off(PERTHENERGY\_KWINANA\_GT1)] 5610000 1.4 2011873 167.9 MSR-KMK 81 \* {NIL} [Manual(TIWEST\_COG1)] 1248729 1.6 NetworkCommit(PINJAR\_GT11) \* {NIL} [On(PINJAR\_GT11)] NIL \* {KWINANA\_ESR1} [SelfCovering] 330004 0.9 68530 0.7 PIC-PNJ-BSN-KEM 81 > {RO-WAI 81} [PNJ-APJ 81 (PNJ-)] 53648 25.1 NIL > {MBR-ALB 81} [KOJ81-KAF (KOJ-)] PIC-PNI-BSN-KEM 81 > {MU BTT1} [PIC-MRR 81 (MRR~)] 40313 0.4 . 33000 0.1 NIL > {WMS G501} [MU-NGS X1 (MU~)] 33000 0.1 NIL > {WMK G501} [MU-NGS X1 (MU~)] 16961 5.7 NIL \* {KWINANA ESR2} [LoadContingency] 10848 3.0 MOR-TS 81 > {TST-TS 81} [PJR-RGN 81 (RGN~)] 9943 47 NIL > {PJR-ENB-EMD 81, PJR-CTB 81} [PJR-RGN 81 (RGN~)] 8023 PIC-PNI-BSN-KEM 81 > {KEM-MRR 82} [KEM-MRR 81 (KEM~)] 0.3 7954 29.5 NIL \* {NIL} [WithdrawalLimit(KWINANA ESR1)] 5231 NIL > {NBT-NT 91, SPS MARNET} [JDP-WNO 81 (WNO~)] 2.4 1619 0.8 NIL > {NBT-NT 91, SPS\_MARNET} [NBT-WNO 81 (NBT~)] 1244 3.9 NIL \* {Partial(SIMCOA\_IPT\_LD\_01)} [ContingencyRaise] 664 0.2 NIL > {KEM-MRR 81} [KEM-MRR 82 (KEM~)] 12 0.1 SF-AMT 81 > {ST-EP 82} [ST-BTY 81 (ST~)] 23 Mar 24 Mar 25 Mar 26 Mar 27 Mar 28 Mar 29 Mar

#### Figure 3 – Binding summary of library constraints.

\* Dates indicate Trading Days (starting 8am)

### **Constraint Impact**

Figure 4 shows the extent to which a Facility's energy setpoint was influenced by a Constraint, based on the Constraint Equation's total shadow price over the Trading Week and the Facility's coefficient in the Constraint Equation. Only constraints with an influence on energy setpoints have been included, and only Scheduled Facilities and Semi-Scheduled Facilities have been included. Facilities have been roughly ordered by region.

#### Figure 4 – Summary of shadow price by constraint and by Facility.



## About the data

The data used to create the figures in this report is solely sourced from the case files and solutions from the <u>WEM Dispatch</u> <u>v1 API</u>. The same case and solutions files can be downloaded from the <u>WEM Market Data website</u>.

More information about the Constraints Library can be found using the <u>Operational Constraint Library PowerBI report</u>, including descriptions of what each Constraint Equation does, which Constraint Equations are in which Constraint Sets, and version histories of each Constraint Equation and Constraint Set.

For queries related to information published in this report please contact the WEM Congestion team (System Engineering) via <u>wem.constraints@aemo.com.au</u>.

## Glossary

The following definitions apply in this report unless the context requires otherwise.

#### Table 1 Definitions

Term	Definition
Constraint Equation	As per the definition in the WEM Rules.
Constraint Set	As per the definition in the WEM Rules. Constraint Sets can be invoked and revoked, whereas individual Constraint Equations cannot be.
Defined Contingency Constraint Equation	A specific type of Constraint Equation used to calculate the size of the Largest Credible Supply Contingency. All Constraint Equations with a "constraintType" field of either "Network Risk" or "Facility Risk" are Defined Contingencies.
Discretionary Constraint Equation	A discretionary Constraint Equation is a constraint created in WEMDE UI for real-time operations, these do not form part of the Constraint Library. All Constraint Equations with an ID starting with "#" are discretionary.
Library constraint	A constraint from the Constraint Library. This excludes discretionary Constraint Equations. The Constraint Library is published on the Congestion Information Resource.
Near Binding Constraint Equation	As per the definition in the WEM Rules.
Shadow price	Shadow price is a mathematical concept related to linear solvers. It represents the change in the objective function (total system cost plus violating penalties) if the constraint RHS is increased by 1 MW. It has been used here a rough proxy for the relative market impact of a constraint.