

**Basics of Chapter 5:
Allocation, Reconciliation and Swing**

Retail Energy Market Company

Disclaimer

The Retail Market Rules (the "Rules") are the final word!

- This presentation has been prepared to assist participants/stakeholders with their understanding of the operation of the WA gas retail market.
- The information presented here is a guide only.
- Participants should refer to the Rules to ensure that they have a full understanding of the risks associated with operating in the market, and that they are operating in accordance with its obligations.

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Topics Covered

This presentation will cover the following topics:

1. REMCo overview;
2. WA gas retail market;
3. Market participants;
4. Key terminology;
5. User Obligations;
6. Assumptions;
7. Before and during the gas day;
8. Allocation;
9. Reconciliation; and
10. Swing Service.

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1. REMCo Overview

REMCo overview:

- REMCo provides retail market services to gas industry participants in Western Australia.
- REMCo delivers the infrastructure that provides over 620,000 gas consumers with the ability to contract for the supply of gas with the retailer of their choice, and facilitates the interactions between industry participants required to support efficient operation of the markets.

REMCo

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1. REMCo Overview

REMCo's primary functions:

- Delivery Point Management:
 - Managing the transfer of customer and the associated market data between users (retailers), and between users and the network operator.
- Balancing, Allocation and Reconciliation Management :
 - Managing the daily allocation of gas usage to retailers to enable settlement of gas supply and transmission contracts.
- Rule Change Management:
 - Managing further development and improvement of the Retail Market Rules (the "Rules") governing the operation of the retail gas market.
- Compliance Management:
 - Managing and enforcing compliance with the Rules.

REMCo

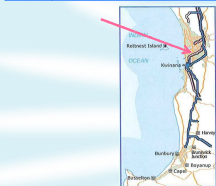
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2. WA Gas Retail Market

- FRC commenced in 2004
- > 620,000 customers in WA

NATURAL GAS TRANSMISSION PIPELINES	OWNER
— Darwin to Darwin Suburban Gas Pipeline	Darwin Suburban Pipeline
— Kimberley to Kimberley Pipeline	Kimberley Gas Transmission Pty Ltd
— Kimberley to Perth Pipeline	Southern Cross Pipelines Australia Pty Limited
— Mackay to Perth Pipeline	Esperance Pipeline Company Pty Ltd
— Perth to Perth Pipeline	Australian Pipeline Trust
— Perth to Perth Pipeline	Australian Pipeline Trust
— Perth to Perth Pipeline	Epic Energy (Perth Pipeline) Pty Ltd
— Perth to Perth Pipeline	Gas Transmission Services WA (Operational) Pty Ltd
— Perth to Perth Pipeline	Ventura
— Perth to Perth Pipeline	Ventura



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3. Market Participants

Market Participants:

- “Network operator” holds a distribution licence and oversees the operation of the gas distribution system (GDS);
 - the GDS is comprised of the sub-network of pipelines that delivers gas to customers (e.g. WA Gas Networks).
- “User” is an entity that has a haulage agreement for the transportation of gas through a sub-network (i.e. Retailers);
 - (e.g. Alinta Sales, Synergy, Premier Power).
- “Consumer” means the customer who receives gas from a user at a delivery point;
- “Shipper” is an entity that has a haulage agreement with a pipeline operator to transport gas along a transmission pipeline and deliver it to a user at a delivery point;

3. Market Participants

Market Participants (continued):

- “Pipeline operator” operates a transmission pipeline, which transports gas from the gas source to the sub-network;
 - (eg. DBNGP, APT Parmelia).
- “Swing Service provider” is a shipper or a pipeline operator that uses its contractual rights to pipeline capacity to provide “Swing Service” to users at a gate point.

4. Key Terminology

Key terminology:

- “Gas day” is the 24 hour period starting at 0800 hours on a day and ending at 0800 hours on the following day;
- “Transmission Pipeline” means a pipeline which supplies gas to a “sub-network” at a “Gate point”;
- “Sub-network” is a standalone part of a “Gas Distribution System” (GDS);
- “Gate point” also known as a “delivery point” means the point at which a “User” takes delivery of gas on a “sub-network”.
- “Interval meter” means a meter that is remotely read and that records gas flow on an hourly (or shorter) basis.
- “Basic meter” means any meter that is not an interval meter (i.e. meters for most residential and small businesses).

4. Key Terminology

Key terminology (continued):

- “**Net System Load**” (NSL) means the estimated gas withdrawals for all basic metered delivery points in the sub-network.
- The market is settled daily, but basic meters are read quarterly, so NSL represents total daily deliveries to basic metered sites on a sub-network.
- NSL is total injections into a sub-network, less deliveries to interval metered sites, less unaccounted for gas. Mathematically, this is:

$$NSL = TCI - \sum UIW - \sum EUAFG$$

Where:

- NSL = Net System Load;
- TCI = Total Corrected Injections (see Rule 221);
- UIW = User Interval metered withdrawals (see Rule 222); and
- EUAFG = the Estimated Unaccounted For Gas (see Rules 229 and 238).

4. Key Terminology

Key terminology (continued):

- “**Un-Accounted For Gas**” (UAFG) means the difference between the amount of gas delivered to a pipeline for transportation and that redelivered by the pipeline.
 - o Differences include leakages and other discrepancies due to meter inaccuracies, variations of temperature and/or pressure.
 - o UAFG is supplied by the User contracted by the Network Operator.

$$UAFG = \sum PI - \sum UIW - \sum UBW$$

Where:

- UAFG = the actual UAFG for the sub-network for gas day D;
- PI = pipeline injections for the gate point provided to REMCo (see Rule 220(1));
- UIW = user's interval metered withdrawals (see Rule 222); and
- UBW = the user's basic-metered withdrawals (see Rule 230(1)).

5. User Obligations

User obligations:

- User's obligations are described under Part 5.2 of the Rules.
- User's are required to:
 - o Provide daily nominations to REMCo (Rule 197); and
 - o Use the AEMO FRC Hub for business-to-business and business-to-market communications.
- User's allocation instructions (UAI) (Rule 188).
 - o At least 2 business days before the gas day or future gas days, users must provide an allocation instruction to REMCo.
 - o Users can provide an updated allocation instruction on the gas day, up to 3.5 hours after end of the gas day.
 - o Allocation instruction can be expressed in percentage or quantity terms, or a combination of the two.

5. Users Obligations

User obligations (continued):

- Validity of UAI (Rule 191).
 - REMCo validates a UAI:
 - whether the allocations in the allocation instruction are capable of being applied to all the user's gas injections (whatever they are on a gas day) to a shipper; and
 - the shipper is a registered shipper for that user.
- If a UAI is invalid (Rule 192).
 - REMCo will use the last valid UAI.
 - This may not provide the best outcome and may result in Swing Service.

6. Assumptions

Assumptions:

- The sub-network is always in balance:
 - (i.e. total injections equal total withdrawals each day).
- Reconciliation is a forward process
 - (i.e. today's errors are fixed the day after tomorrow).
- Pipeline transmission contracts that pre-date the market remain intact.

7. Before and During the Gas Day

Before the start of the gas day (Part 5.4):

- User's to procure standing nominations (Rule 195):
 - User's are obligated to ensure that the shippers have a standing nomination in place with the pipeline operators.
- User's must notify REMCo at least 18 hours before the start of the gas day of the user's pipeline nomination amount for the gate point.
- REMCo publishes profiled daily nominations (Rule 199):
 - At least 2 hours before the gas day:
 - Profiled pipeline nominations; and
 - Profiled sub-network nominations.

7. Before and During the Gas Day

During the gas day (Part 5.5):

- Pipeline operators to provide hourly data to REMCo (Rule 210)
 - Within 30 minutes after the end of the hour:
 - Provide the as-retrieved energy inflow data for the gate point for each hour.
- REMCo's intra-day reporting (Rule 211):
 - Within 60 minutes after the end of the hour:
 - Provide each user and pipeline operator the as-retrieved energy inflow data, energy inflow data aggregated across all gate points and profiled nominations published by REMCo before the start of the gas day (Rules 199 and 212).
- If no hourly data is provided by the pipeline operators, REMCo is not required to make the data available.

8. Allocation

Allocation (Part 5.6):

- Allocations are performed by REMCo for each gas day.
- ❖ **Key Concept.**
- User's estimated total withdrawals (UETW) (Rule 228)
 - The UETW represents the total of the users obligations to its shippers and Swing Service providers for the gas day.
$$UETW = UIW + UEBW + UUAFG + URAA + \Sigma SRQ$$

Where:

 - UIW = User's Interval-metered Withdrawals (see Rule 222);
 - UEBW = User's Estimated Total Basic-metered Withdrawals (see Rule 227);
 - UUAFG = UAFG supplied under Rule 229;
 - URAA = User's Reconciliation Adjustment Amount notified under Rule 243;
 - SRQ = Swing Service Repayment Quantity (see Rule 299).

8. Allocation

Allocation (continued):

- REMCo performs the following calculations under Part 5.6 of the Rules:
 - Pipeline Corrected Injections (PCI);
 - Total Corrected Injections (TCI);
 - User Interval meter Withdrawals (UIW);
 - Net System Load (NSL);
 - Raw Estimate of Basic metered Withdrawals (REBW);
 - Normalisation factor (NF);
 - Estimated basic-metered Withdrawal (EBW);
 - User's Estimated basic-metered Withdrawals (UEBW); and
 - Un-Accounted For Gas (UAFG).

8. Allocation

Allocation (continued):

- In summary:
 - Each day all injections into the market are withdrawn from the market.
 - REMCo allocates withdrawals for the sub-network to users.
 - REMCo determines each user's estimated total withdrawal for each day.

9. Reconciliation

Reconciliation (Part 5.7):

- To set the scene:
 - Reconciliation is a forward process:
 - estimations or errors used for today's allocations are fixed over the 28 days following the day after tomorrow.
 - Each day, each user's estimated total withdrawals (UETW) contains an amount to account for data changes from the past 425 days.
 - That is, as indicated on slide 17, each user has a user's reconciliation adjustment amount (URAA) included as part of their total estimated withdrawals.

9. Reconciliation

Reconciliation (continued):

- ❖ **Key Concept.**
- Total reconciliation amount for a User (Rule 242)
 $TRA = TBRA + TIRA + TBWRA + UUAFGRA + \sum MRA$

Where:

- TRA = user's Total Reconciliation Amount for the sub-network for gas day D;
- TBRA = user's total basic-meter reconciliation amount for the sub-network for gas day D calculated under Rule 235; and
- TIRA = user's total interval-meter reconciliation amount for the sub-network for gas day D calculated under Rule 236.
- TBWRA = user's total basic-meter withdrawal
- UUAFGRA = user's unaccounted for gas reconciliation amount.
- MRA = user's miscellaneous reconciliation amounts.

9. Reconciliation

Reconciliation (continued):

❖ **Key Concept.**

- User's reconciliation adjustment amount (URAA)
 - The URAA value is calculated each day by REMCo for past 425 gas days and represents the difference between estimated and actual meter data;
 - The summed URAA value is then smeared and recovered in the user's estimated total withdrawals (UETW) value over the next 28 days; and
 - The User arranges for the gas to be delivered or received commencing two days after the gas day that the URAA relates to.

9. Reconciliation

Reconciliation (continued):

- User's reconciliation adjustment amount (URAA) (continued):

$$URAA_D = \sum_{i=D-(X-1)}^D \frac{TRA_i}{X}$$

Where:

- URAA = the user's reconciliation adjustment amount for the sub-network for gas day D;
- UEBW = the user's total reconciliation amount for the sub-network for gas day D;
- i = the number of a gas day from gas day D-(X-1) to gas day D; and
- X = a variable (the Rules currently specify X=28).

9. Reconciliation

Reconciliation (continued):

- To summarise reconciliation:
 - For each gas day a user's UETW contains an amount to adjust for data corrections;
 - Reconciliation is a forward process (past errors are fixed through future adjustments);
 - REMCo calculates reconciliation amounts in the GRMS data over the past 425 gas days; and
 - Reconciliation adjustments are smeared over 28 days to remove spikes.

10. Swing Service

Swing Service

- **What is Swing?**
 - Swing Service is a means to deal with gas balancing on sub-networks that are supplied by two transmission pipelines;
 - One pipeline needs to be a pressure controlled pipe (PCP) and the other a flow controlled pipe (FCP):
 - PCP is the pipeline that has its injection rate over the day set to maintain the sub-network's inlet pressure; and
 - FCP is the pipeline that has its injection rate over the day set to deliver a set (nominated) amount of gas (within tolerances).
 - Swing Service is the difference between what was ordered by a user on one pipeline and was delivered to user's customers from the other pipeline.

10. Swing Service

Swing Service (continued):

- ❖ **Key Concept.**
- **First and second gas delivered (Rule 253)**
 - Gas injected or repaid into a sub-network by or on behalf of the user is deemed to be ordered as follows:
 - first to the user's **Swing Service repayment quantity (SRQ)**;
 - second to the user's reconciliation adjustment; and
 - Third to satisfy user withdrawals.

10. Swing Service

Swing Service (continued):

- **Calculating Swing Service (Rule 256).**
$$SS = | \sum UDW(OP) - PCI(OP) |$$

Where:

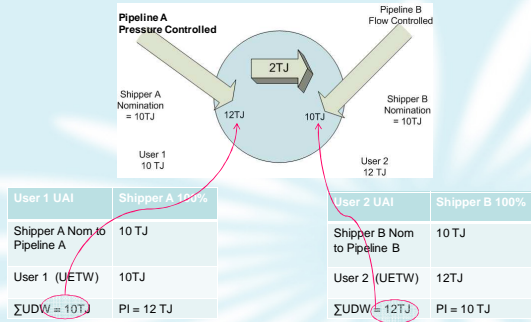
 - SS = the **Swing Service** for the gate point for the gas day
 - UDW(OP) = each User's **Deemed Withdrawals** for the other gate point for the sub-network for the gas day calculated under Rule 248;
 - PCI(OP) = the **Pipeline Corrected Injections** for the other gate point for the sub-network for the gas day calculated under Rule 220(2).

Note: if the Swing Service for a gate point for a gas day is:

 - a positive number, the Swing Service is **loan Swing Service**; and
 - a negative number, the Swing Service is **park Swing Service**.

10. Swing Service

Swing Service example:



10. Swing Service

Swing Service example: (continued)

$$\begin{aligned}
 SS &= \Sigma UDW(OP) - PCI(OP) \\
 &= |12 - 10| \\
 &= 2 \text{ (Loan Swing Service)}
 \end{aligned}$$

10. Swing Service

To summarise Swing Service:

- Provides a balancing mechanism for sub-networks supplied by two transmission pipelines – Swing Service is a means to match:
 - contractual arrangements by which the user procures gas for delivery into the sub-network; and
 - Match the end customer withdrawal with the user's deemed withdrawals.

Note: Off Market Swing Service is described under Part 5.11 of the Rules but is not covered in this Presentation.

Further Information

Further information on Chapter 5 can be obtained from:

- The presentation titled "Basics of Chapter 5: Allocation, Reconciliation and Swing"; and
- Chapter 5 of the Rules.

Both of these documents are available on the REMCo website:

www.remco.net.au

Questions?
