ESSENTIAL SERVICES COMMISSION

Workshop

Reference Price Methodology

April 2018

Overview

James Clinch, ESC

Agenda

1. Objectives

2. Purpose of our reference price

3. Overview of proposed approach

4. Next steps

5. General Q&A

Objectives of the workshop

1. **Outline the purpose of the reference price**
2. **Discuss the approaches described in our consultation paper**
3. **Key topics for and the process of giving feedback**

Purpose of the reference price

To be used by the commission as part of the assessment of competitiveness and efficiency of the retail energy market in Victoria
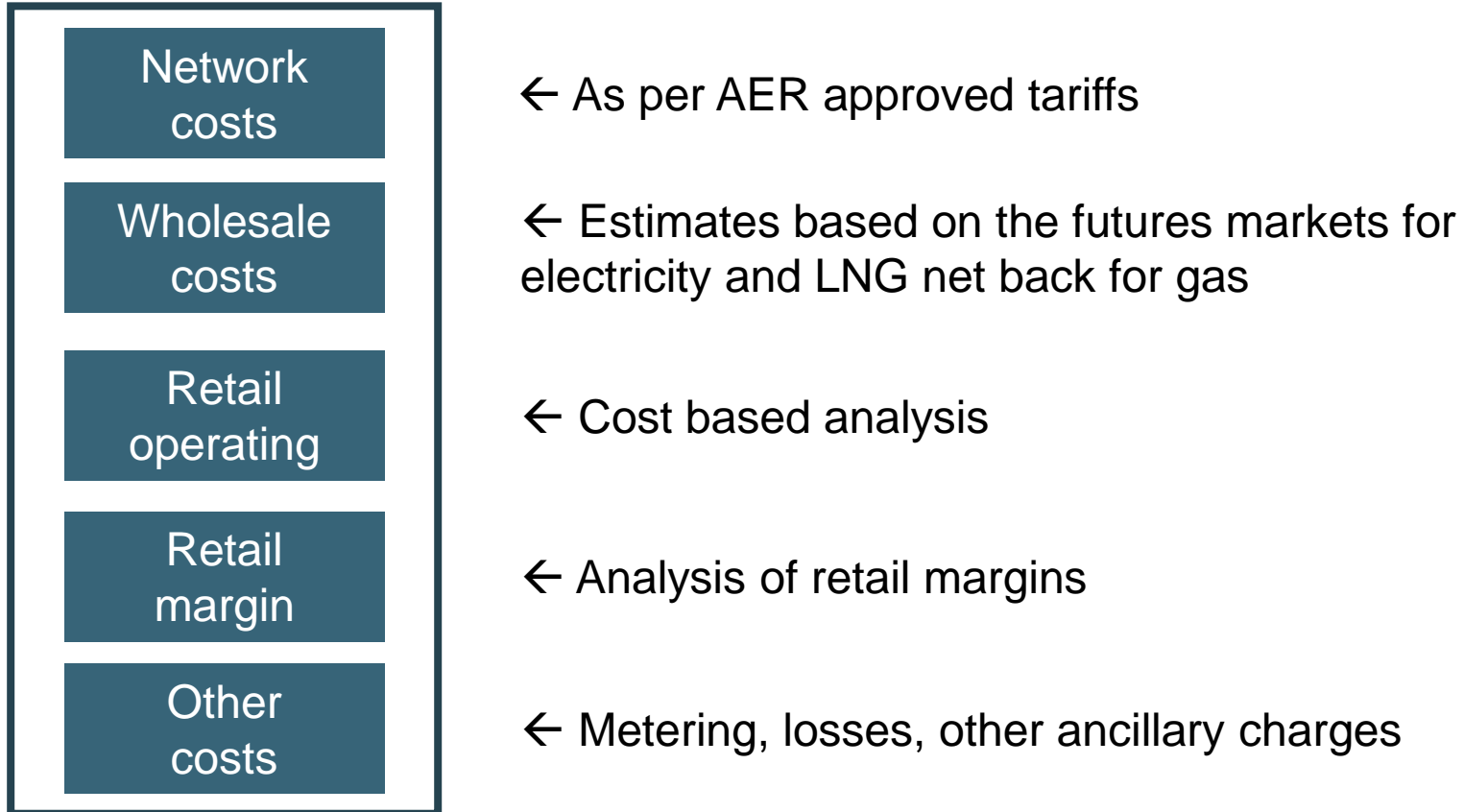
Methodology

Jessica Saigar, ESC

Andrew Harpham, Frontier Economics

Proposed approach

The cost stack:

Network costs	← As per AER approved tariffs
Wholesale costs	← Estimates based on the futures markets for electricity and LNG net back for gas
Retail operating	← Cost based analysis
Retail margin	← Analysis of retail margins
Other costs	← Metering, losses, other ancillary charges

Wholesale costs

Wholesale Electricity and Gas Costs

A presentation for ESC

5 April 2018

CORPORATE FINANCE
RETAILING
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ENERGY MARKETS
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TRANSPORT
Regulation
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frontier economics
INTELLECTUAL PROPERTY
OUR DISCIPLINES & SECTORS
TELECOMMUNICATIONS
Econometric Analysis
NATURAL RESOURCES & THE ENVIRONMENT
Market Modelling

We apply economics to markets, organisations and policies

Introduction

- The ESC has engaged Frontier Economics to estimate wholesale costs for electricity and gas

- Several alternative approaches have been used in Australia:

  □ Building block – calculation of each component of wholesale costs

  □ Benchmarking – against other jurisdictions or available market offers

  □ Indexation – changes in cost/prices used to adjust a reference price

- We propose a **building block** approach

- This presentation details our proposed approach

- **Electricity**
- **Gas**

Our proposed approach to calculating the wholesale electricity costs

- The wholesale electricity cost of a Victorian retailer comprises:

  - electricity purchase costs, including costs of financial hedging

  - a volatility allowance, representing the cost of holding working capital to protect against default under higher than expected energy costs

  - green scheme costs, including the LRET and SRES

- To calculate **electricity purchase costs** and a **volatility allowance**, we need to answer four questions

  1. What is the likely **half-hourly load** of the retailer's customers?

  2. What are the likely **half-hourly spot** prices that retailers will face?

  3. What is the **cost of financial hedging contracts** that retailers will face?

  4. What kind of **hedging position** is a prudent retailer likely to adopt?

- To calculate **green scheme** costs, we need to know:

  - For LRET costs, what is the likely **cost of LGCs** and what is the likely **liability** on retailers (RPP)

  - For SRES costs, what is the likely **cost of STCs** and what is the likely **liability** on retailers (STP)

Projecting prices and load

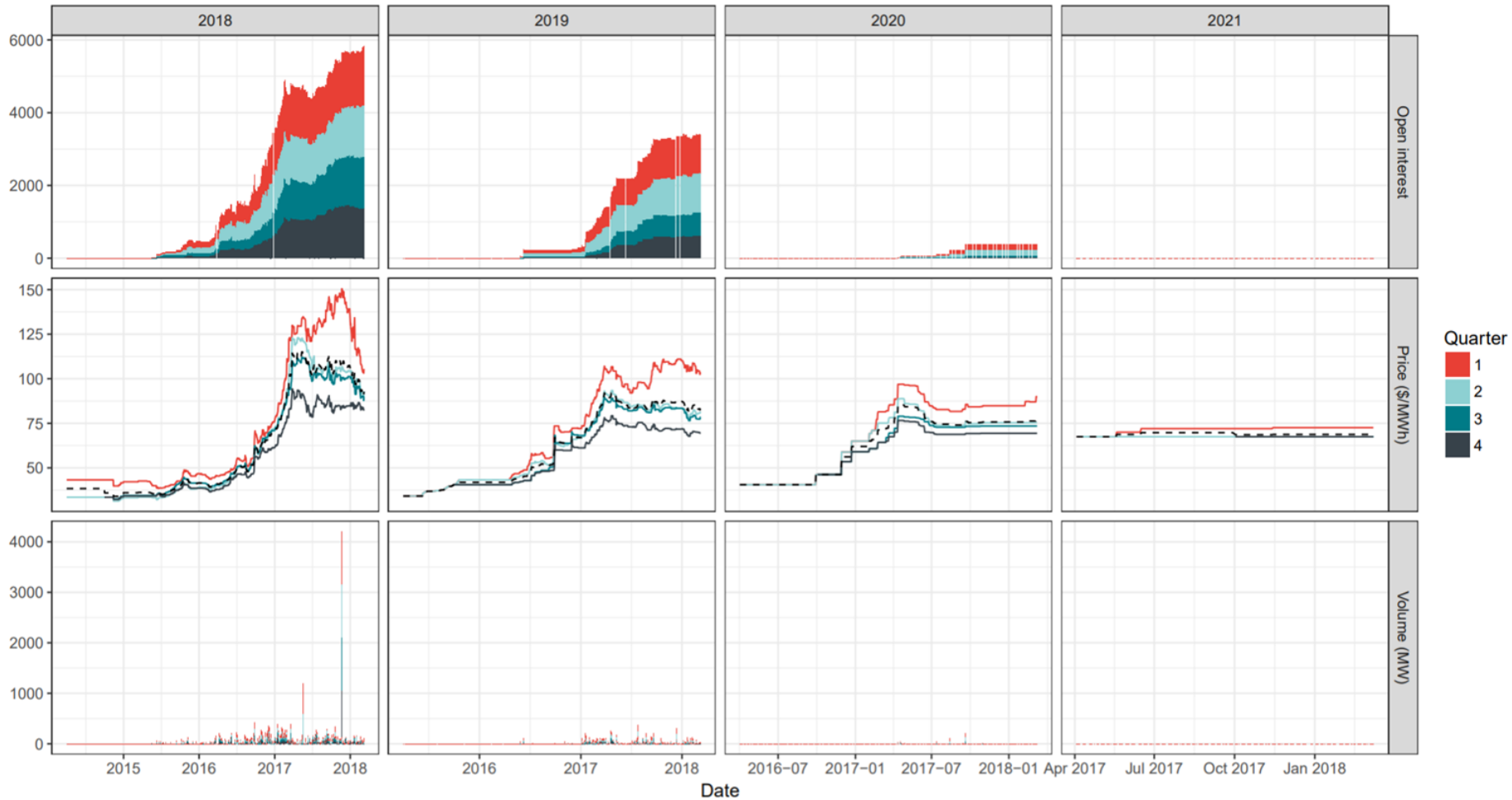| Prices |
| --- |
| ● Shapes and levels change over time due to changes in generation mix, market concentration, vertical integration etc |
| ● Best information we have for price *shape* is most recent available prices |
| ● Best information we have for price *level* is expectation derived from base future contracts |
| ● Therefore, we scale recent price shape to base future levels, and subtract contract premium (five per cent on underlying prices) |

Load
● Shapes and levels change over time due to population growth, energy efficiency, solar etc
● Best information we have for *shape* is most recent MRIM data (reflecting current solar, EE, and consumption patterns)
● Best information we have for *level* is demand forecasts, which are generally flat
● Therefore, we use recent load patterns as-is to represent load over the BSO periods

These price/load series must be coincident!

Contract prices

Base swaps

Contract prices

- Preference is to use ASX Energy prices as-is

- However, where there is low liquidity in exchange-traded contracts for some or all contracts, this can be problematic

- As an alternative, can infer prices for contracts from projected price series

  □ 'Inferred' peak swap: calculate the time-weighted peak price from projected spot price series and add a five per cent contract premium

  □ 'Inferred' cap: calculate the payouts on a $300 cap from projected spot price series, spread cost over the number of hours in the relevant quarter, and add a five per cent contract premium

- 'Inferred' peak swaps similar to ASX energy prices; caps lower, due to low volatility in historical price shape
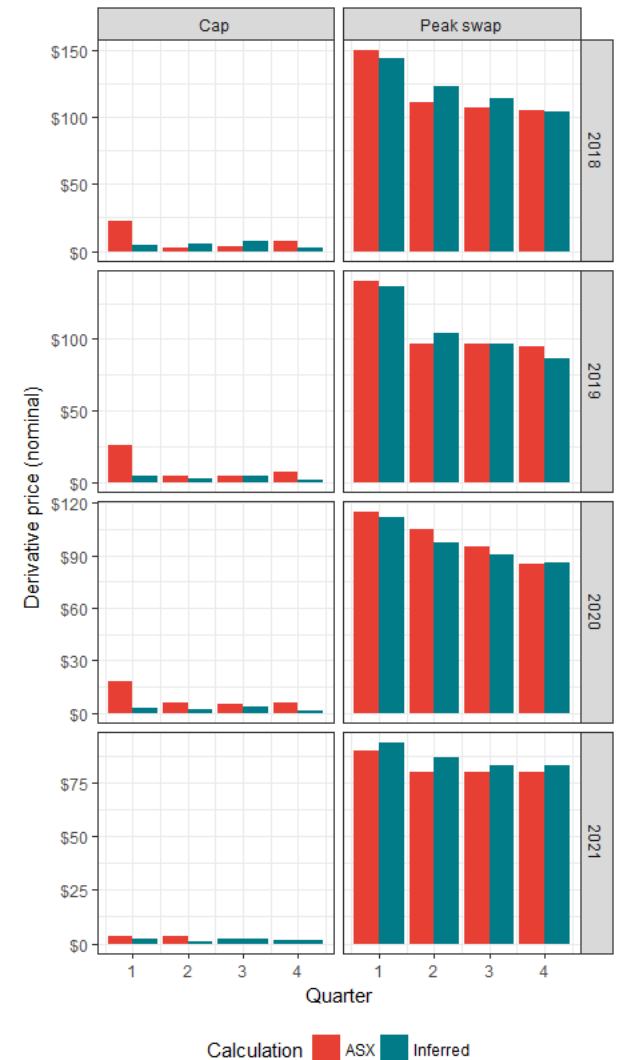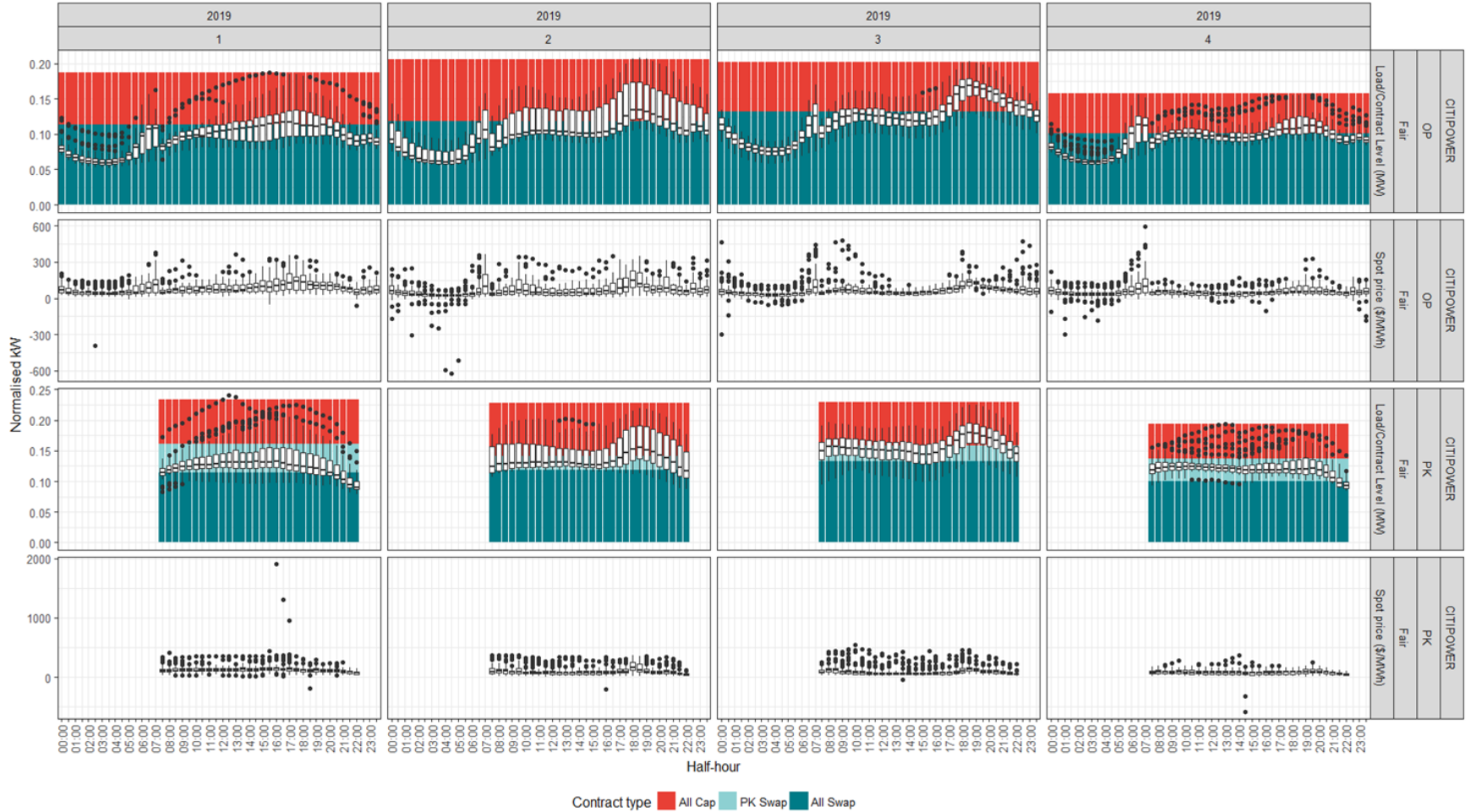
What *STRIKE* is doing

Analysing the risk-reward tradeoff
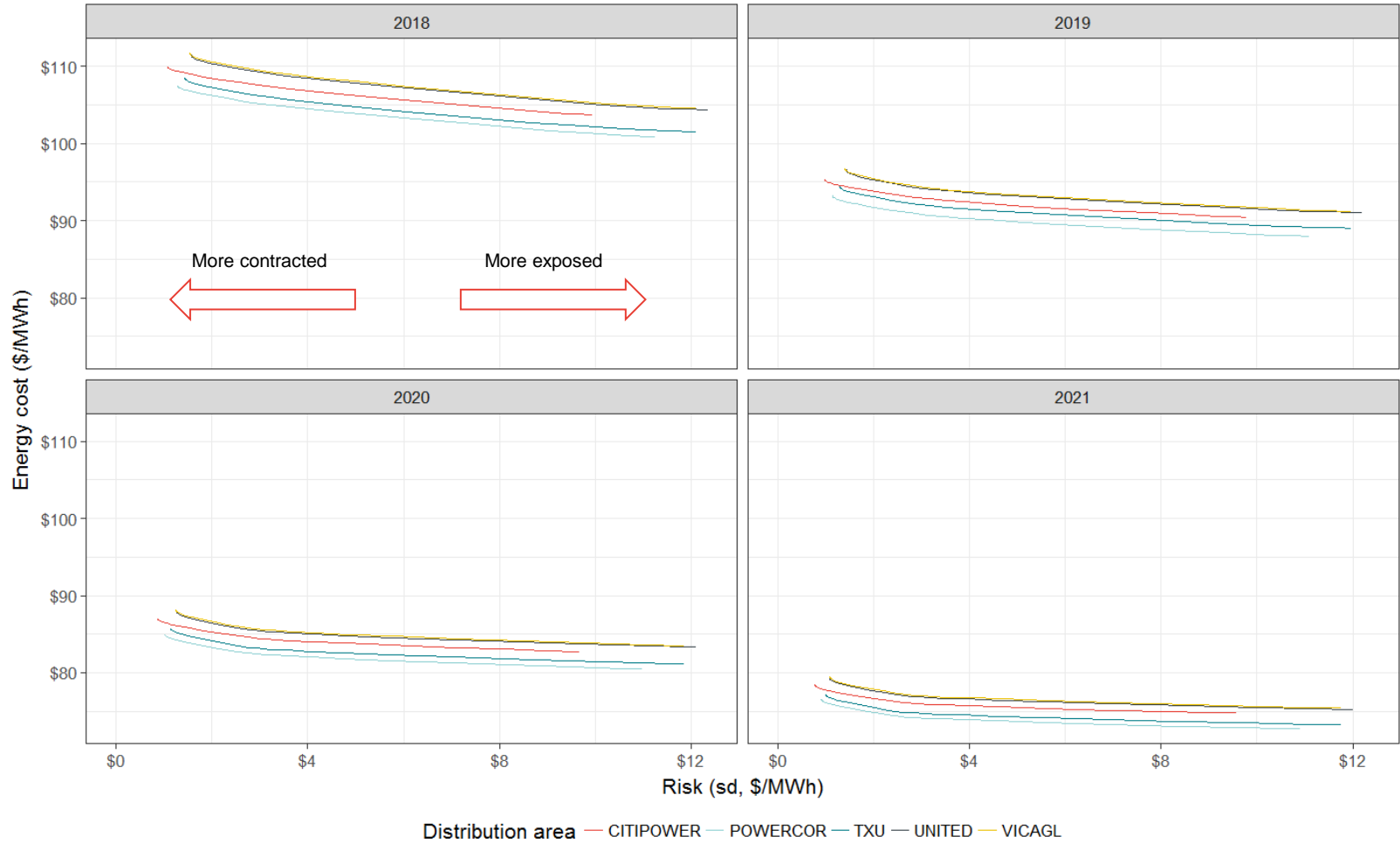
What *STRIKE* is doing

Determining efficient contract position (one point on the frontier)

Volatility allowance

- Retailers need to hold cash to avoid default in the case of higher than expected energy purchase costs, termed here a volatility allowance

- Amount of working capital required determined by formula

$$3.5 \times sd \times WACC$$

- Where

  - □ 3.5 represents 3.5 standard deviations or (conservatively, given a non-normal distribution) a 1 in 200 year event (99.5% CI)

  - □ sd is the standard deviation in energy costs

  - □ $WACC$ is the relevant cost of capital

Green costs

LRET

- RPP is published to 2018

- Default calculation for 2018-2021 is used in lieu of final values

- Futures markets exist for LGCs, however liquidity is low

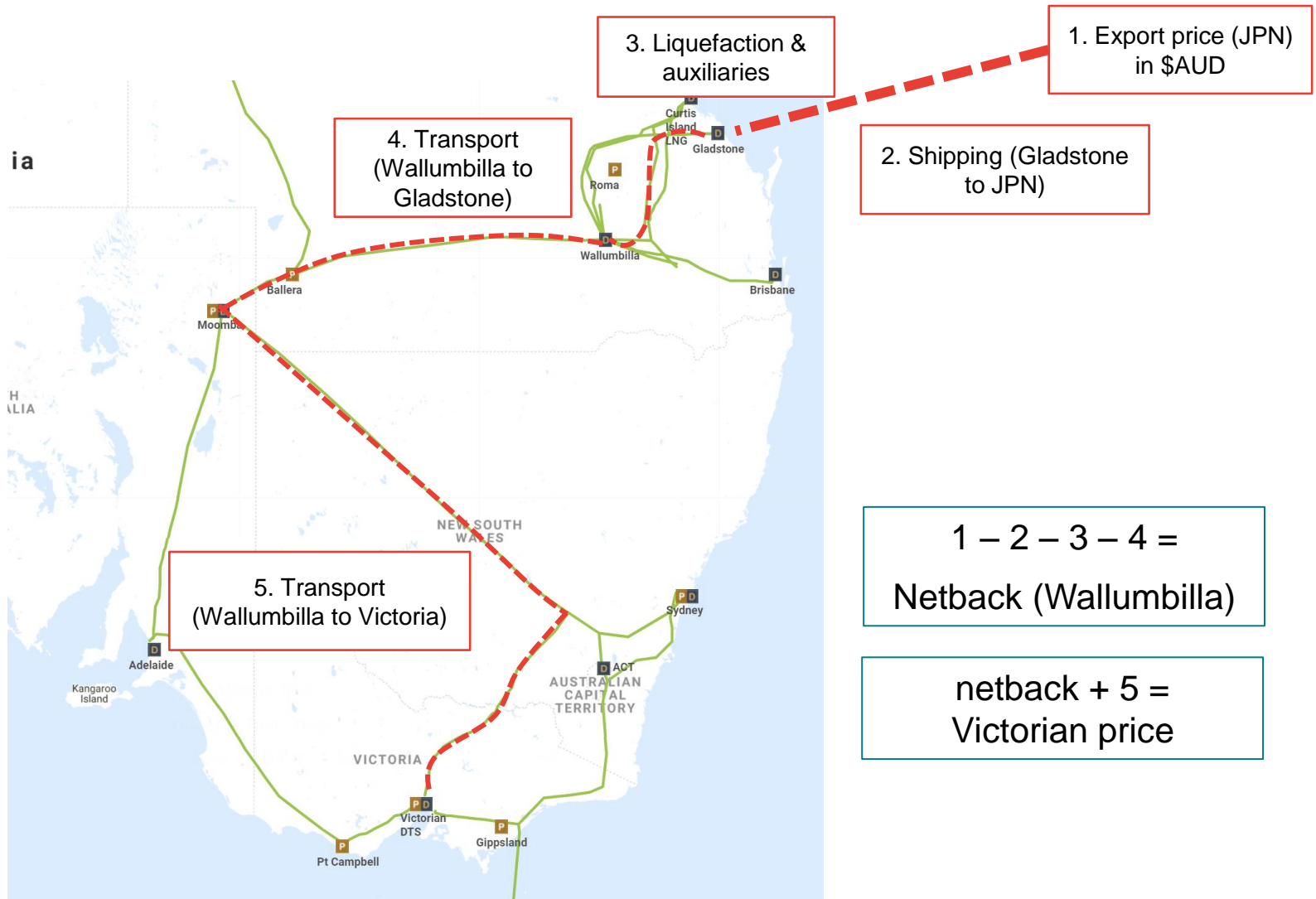- Most larger retailers likely to have contracted LGC supply (PPAs)

SRES

- STP is set each year based on the number of certificates generated

- CER publishes an expected STP two years ahead (currently for 2018 and 2019)

- We have rolled-forward the 2019 STP for 2020 and 2021

- STCs have a guaranteed price of $40 at the clearing house; may trade for less as there can be delays in clearing

- Electricity
- Gas

Our proposed approach to calculating the wholesale electricity costs – netback price

3. Liquefaction & auxiliaries

1. Export price (JPN) in $AUD

4. Transport (Wallumbilla to Gladstone)

2. Shipping (Gladstone to JPN)

5. Transport (Wallumbilla to Victoria)

1 – 2 – 3 – 4 =

Netback (Wallumbilla)

netback + 5 = Victorian price

1. Export price and exchange rate forecasts

- The World Bank forecast commodity prices (LNG in Japan)

  □ We test an alternate (oil-linked) forecast as a sensitivity

- The International Monetary Fund (IMF) forecast exchange rates

LNG ($/mmbtu)
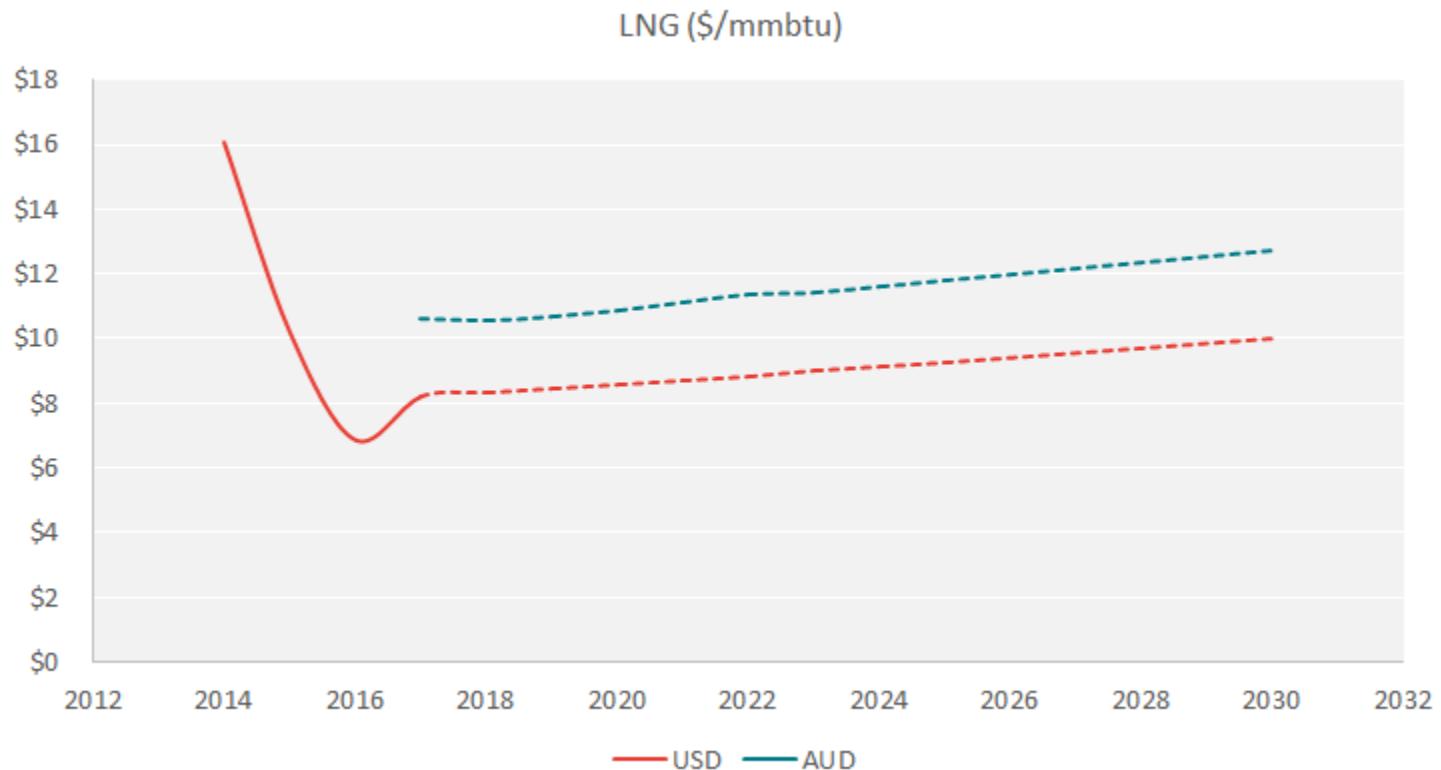
2. Shipping (Gladstone to Japan)

- Shipping costs are complicated and include many factors (loading, fuel type, port fees, long-term vs spot, speed etc)

- Public estimates of LNG shipping costs are rare

- We use estimates from Drewry Maritime Research based on a ~9,000km journey (approximate sea route from Gladstone to Japan)

- Estimated shipping from this source and distance is AUD ~95c/GJ in 2018

3. Liquefaction and auxiliaries

- SRMC of liquefaction (~$1)

- Auxiliaries (9%)

4. Transport (Wallumbilla to Gladstone)

- Pipelines from Wallumbilla to Gladstone have been built by LNG exporters

  - WGP (formerly QCLNG) (BG Group, sold to APA)

  - APLNG (JV: ConocoPhillips, Origin, Sinopec)

  - GLNG (Santos)

- Estimated cost of transport via WGP ~90c/GJ
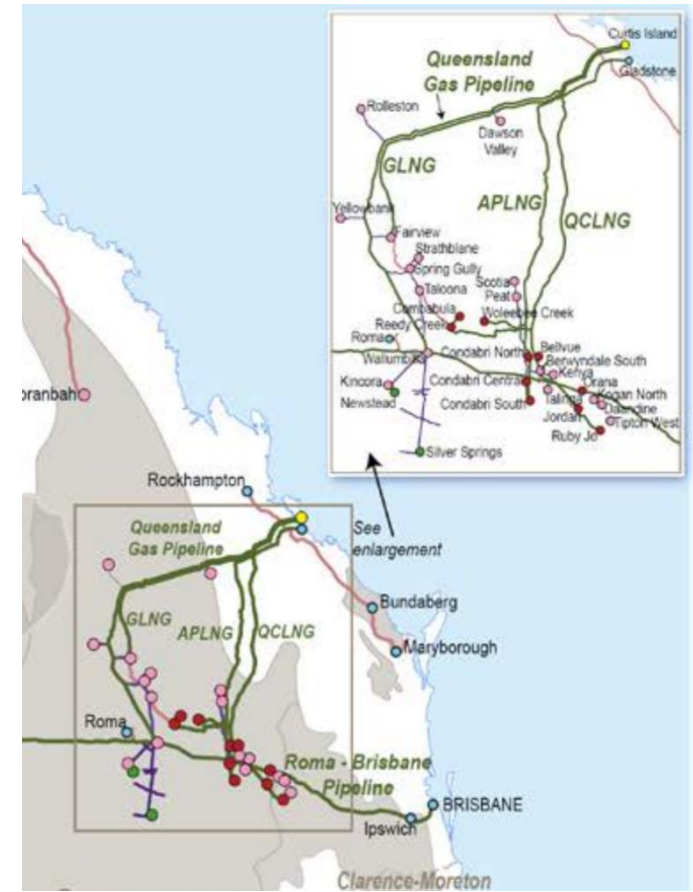
5. Transport (Wallumbilla to Victoria)

- Transport generally priced on a capacity reservation basis, reflecting high fixed cost (capex) and low variable cost structure of pipelines

- Higher utilisation of pipeline lowers average cost

  □ Utilisation depends on customer consumption levels

- We adjust reservation prices ($/GJ/day) by customer load factors to calculate a variable price component ($/GJ)

- We have considered several sources:

  □ ESC provided **monthly** average Victorian residential/business consumption – implied LF of ~70%

  □ AEMO forecast of average and maximum Victorian residential/commercial load – LF of ~32%

  □ AEMO historical Victorian system load – LF of ~40%

Retail operating costs

Operational costs incurred by a retailer in conducting its business (i.e. billing and IT systems, call centre, corporate overheads, energy trading costs)

Fully comprehensive approach

Undertake a bottom up using data from retailers in Victoria to build up an efficient operating costs

In the interim…

We are proposing to use a regulatory benchmark for operating costs.

Retail margin

The return that a retailer requires to support sufficient capital in order to finance ongoing operations.

Fully comprehensive approach…

Analysis using the three approaches – expected returns, bottom up, and benchmarking with comparable firms.

In the interim…

We are proposing to use a regulatory decision benchmark for retail margin. This is from previous ICRC and IPART decisions.

Other Costs

Range of other costs that are incurred

- AEMO fees

- Ancillary services fees

- Loss for electricity based on AEMO transmission and distribution loss factors

- Unaccounted for gas based on the ESC's benchmarks

- Metering

- ESC licence fees

Next steps

Feedback

- Submit to retailenergyreview@esc.vic.gov.au by 17 April 2018

  – For confidential submissions, please identify as 'Commercial in confidence'

  – We welcome data submissions

- Stakeholder session on 4 May to discuss feedback

Our process

- We will finalise a proposed methodology to enable publication from 1 July 2018.

- We will look at updating our work as part of the competitiveness review

Questions?