roma brisbane pipeline
2017-22 access arrangement

public forum 5 October 2016

energy. connected.

highlights

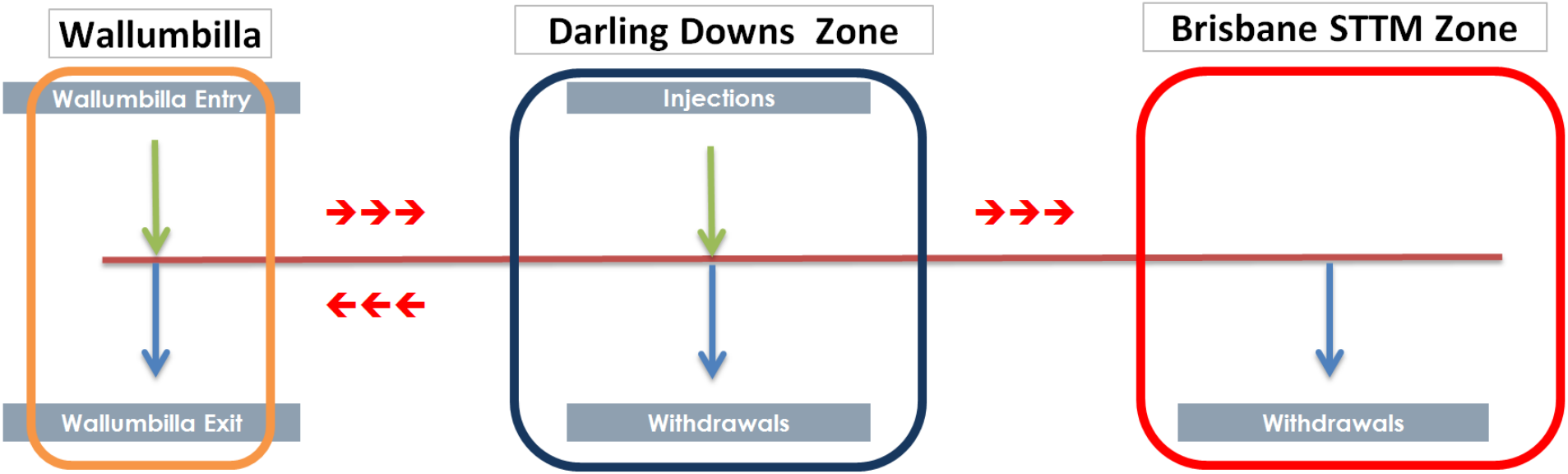
The SE Queensland gas market has undergone significant change since the last revision to the Roma Brisbane Pipeline (RBP) access arrangement in 2012:

- **The construction of three Liquefied Natural Gas (LNG) projects in Gladstone**
- **associated development of the coal seam gas industry**
- **Reduction in industrial load in the Brisbane region**

This revised access arrangement acknowledges those changes to the market, and includes services to meet the needs of shippers in the new environment.

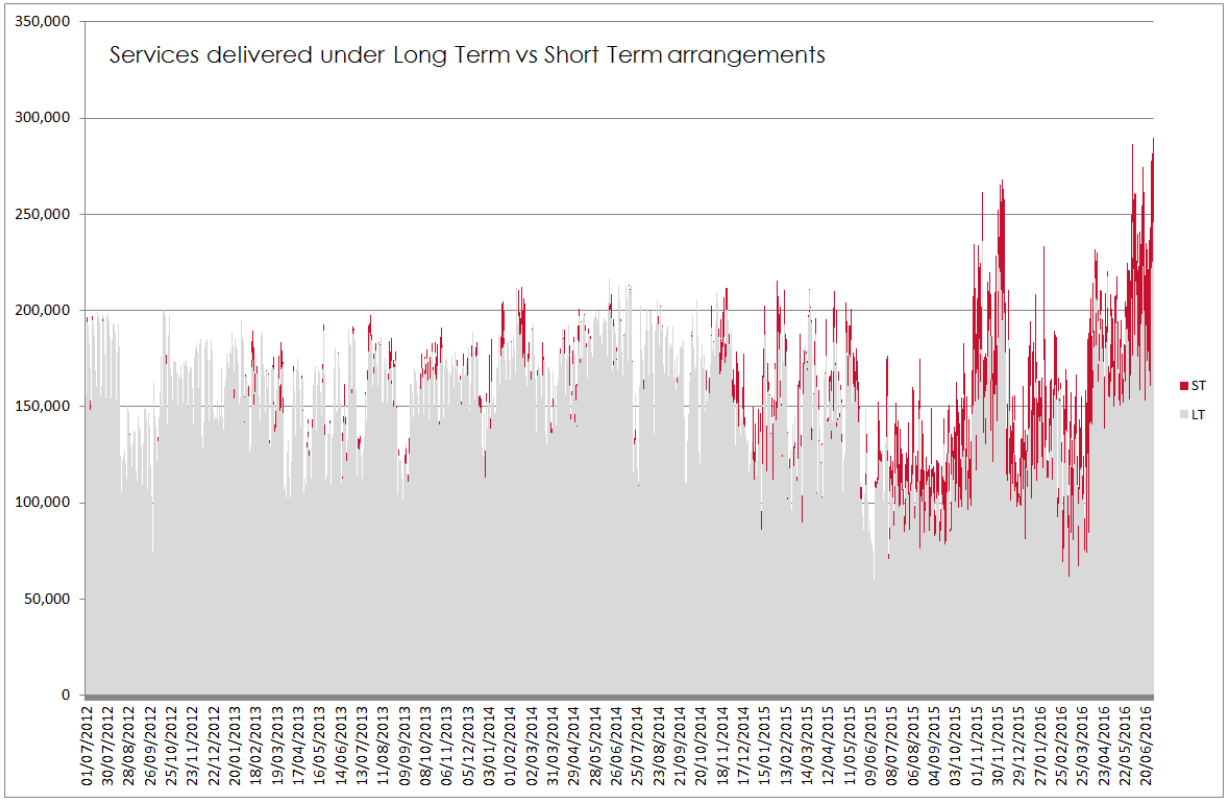
RBP bi-directional service

- the RBP was originally built to bring gas from Wallumbilla to Brisbane
- there has been an increase in midline injections to the RBP from the Scotia, Woodroyd, Condamine, Windibri Argyle and Kogan gas fields in the Darling Downs zone
- these midline injections lead to a demand for an RBP Westbound service
- this access arrangement now offers both “Eastbound” and “Westbound” services



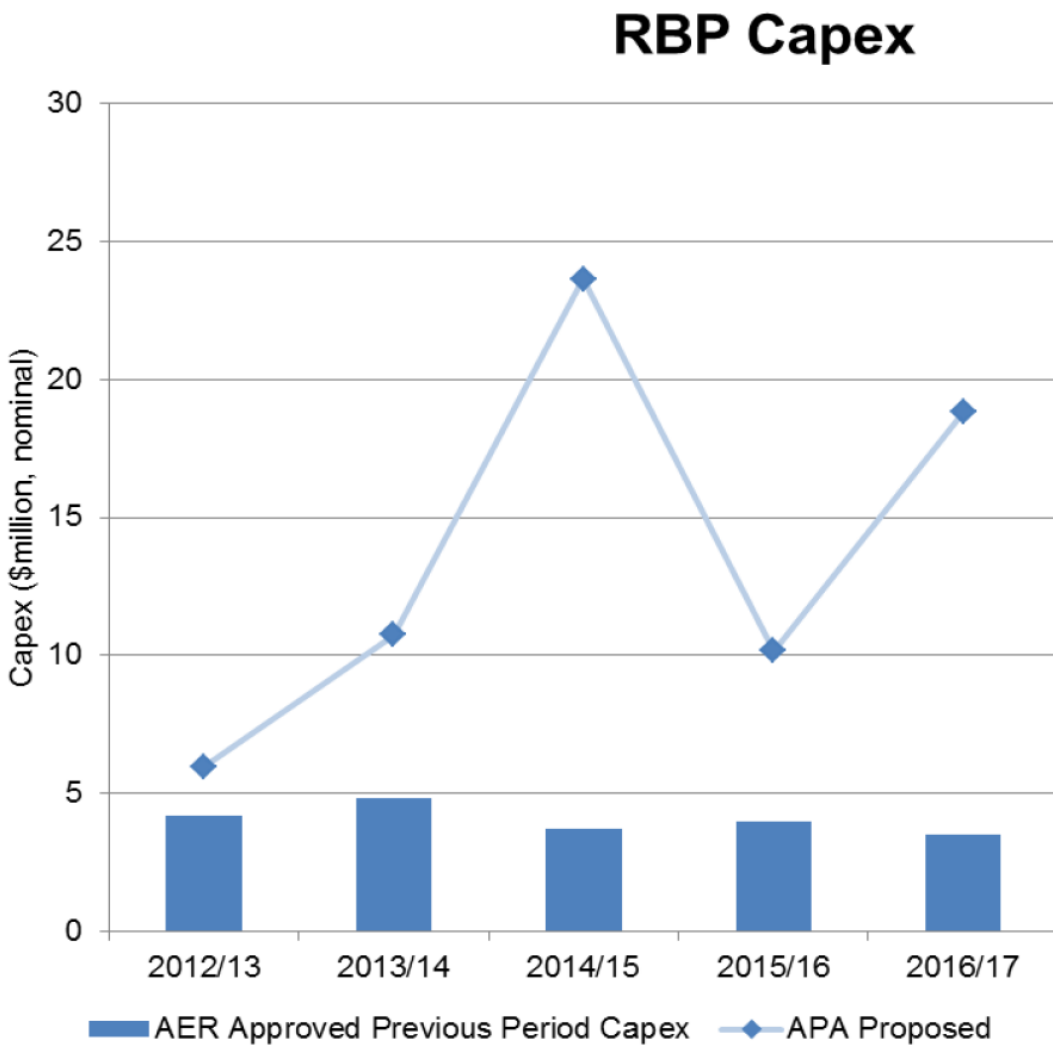
RBP Short Term Firm service

- the LNG industry has driven significant changes to gas trading activity
- we have seen an increase in demand for short term services
- this access arrangement now includes a “Short Term Firm” service
- available for terms as short as one day and up to three years



capex and the capital base

- **the capital base is rolled forward from the previous access arrangement following the AER's Roll Forward Model**
- **we spent more in capex over 2012-17 than was forecast at the last access arrangement review:**
  - address damage done to the pipelines as a result of flooding and land slippage;
  - make the RBP bi-directional;
  - undertake work to ensure the integrity of an aging pipeline

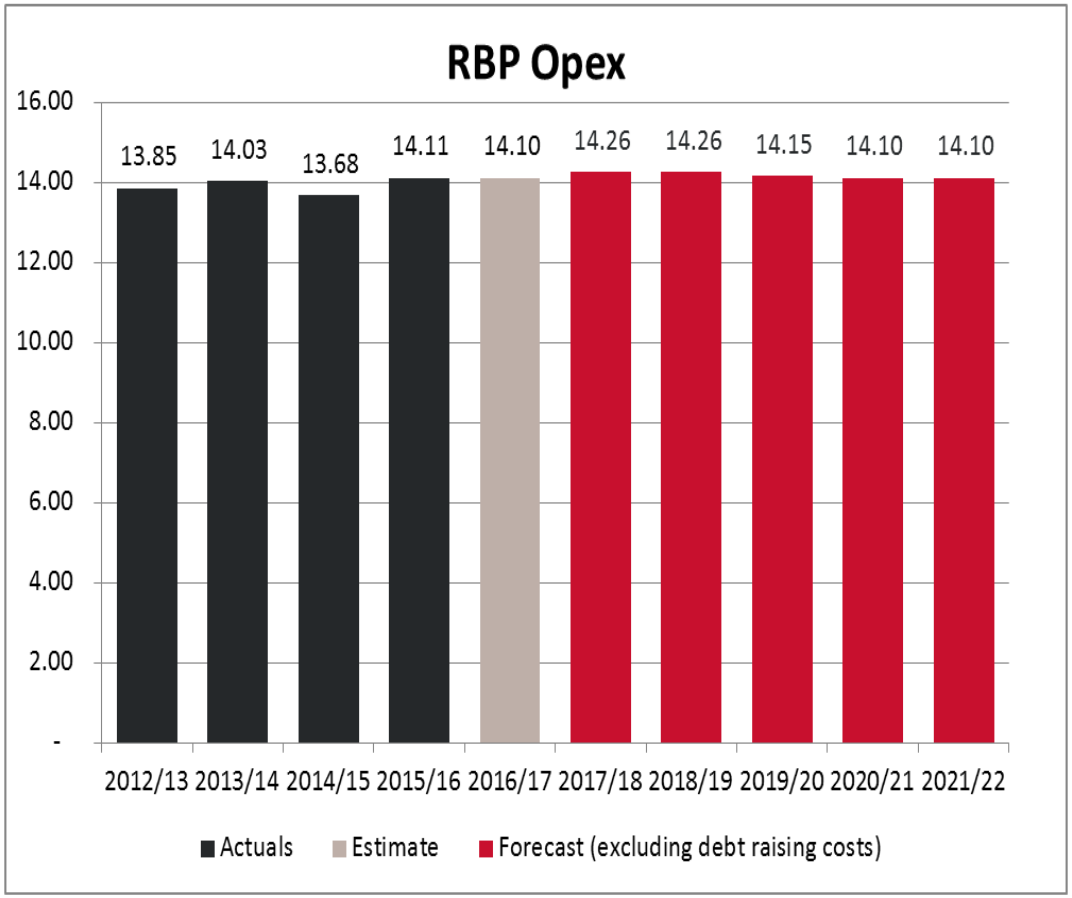


forecast capex

- **key drivers of forecast capex relate to the age and integrity of the pipeline**
- **integrity management:**
  - increased program of in-line inspections (pigging)
  - Pipeline integrity inspection dig-ups
  - Cathodic protection upgrades
- **urban risk reduction**
  - Brisbane's growth has encroached on the pipeline right-of-way
  - urban risk reduction strategy required by AS2885
  - pressure reduction where possible (will reduce capacity of the pipeline)
  - barrier protection in other High Consequence Zones
- **also routine "stay in business" and IT system capex**
- **no augmentation capex is forecast in the 2017-22 period**
- **total forecast capex $66.6 million ($m real).**

forecast opex

- no significant changes expected in forecast opex
- opex for 2017-22 is 2.3% higher than opex for 2012-17
- forecast differences are charges by Qld Government, cathodic protection testing and easement loss of cover assessment
- no real cost escalation included in forecast
- total forecast opex is $70.9m (real 2016/17)



rate of return

- **return on equity**
  - calculated using the **Sharpe-Lintner Capital Asset Pricing Model:**

$$E(r_j) = r_f + \beta_j \left[E(r_m) - r_f\right]$$

  - beta = 0.8; betas are known to vary systematically over time, and current evidence is that the beta for a regulated pipeline is increasing
  - the "Market Risk Premium" of the Sharpe-Lintner Capital Asset Pricing Model is the difference between the current expected return on the market and the current risk free rate of return (and not a long term historical average): that difference is 8.1%
  - return on equity = 8.4%
- **return on debt**
  - immediate move to a rolling average cost of debt consistent with findings of the Tribunal in recent merits reviews
  - debt risk premiums estimated from RBA credit spreads for BBB rated non-financial corporations
  - return on debt = 7.3%
- **rate of return**
  - gearing = 60.0%
  - proposed allowed rate of return = 7.7%

imputation credits

- **gamma**
  - estimated as product of distribution rate and theta
  - distribution rate = 0.7; made from ATO data for all equity (and not just listed equity)
  - theta = 0.35; from the updated SFG/Frontier dividend drop-off study which was before the Tribunal in February 2016
  - gamma = 0.25
    - **arrived at on a reasonable basis, and still the best estimate possible in the circumstances**

inflation

- **AER applies differing measures of inflation:**
  - forecast inflation to calculate depreciation in the PTRM; and
  - actual inflation to calculate the capital base in the Roll Forward Model
- **these differences will over- or under- compensate the business for inflation**

- **APA does not take issue with the AER's methodology for calculating forecast inflation**

- **APA proposes a simple methodology to sterilise any differences between forecast and outturn inflation**
  - by updating tariffs each year for actual and current forecast inflation at the same time as tariffs are updated for changes in the cost of debt

load and demand forecast

- **perhaps the most significant part of this review**
  - significant reductions in Eastbound demand
    - **closure of BP Bulwer Island refinery**
    - **mothballing of Swanbank E power station**
  - level of Westbound demand?
    - **volatile - driven by opportunistic gas trading opportunities**
  - shortening of contract terms, driven by:
    - **inability to obtain longer term gas supply agreements**
    - **transient nature of gas trading opportunities**

drivers of demand - Eastbound

- **three distinct customer classes with distinct demand patterns:**
  - Industrial:
    - **use gas as an input or a feedstock to productive activity**
      - – generally a stable load with a high load factor
  - Retail:
    - **sell delivered gas to domestic, commercial and small industrial users**
      - – a stable load with some seasonal variation, some organic growth
  - PowerGen:
    - **use gas as a fuel to an electricity generation plant**
      - – usage will depend on whether base load or peaking facility

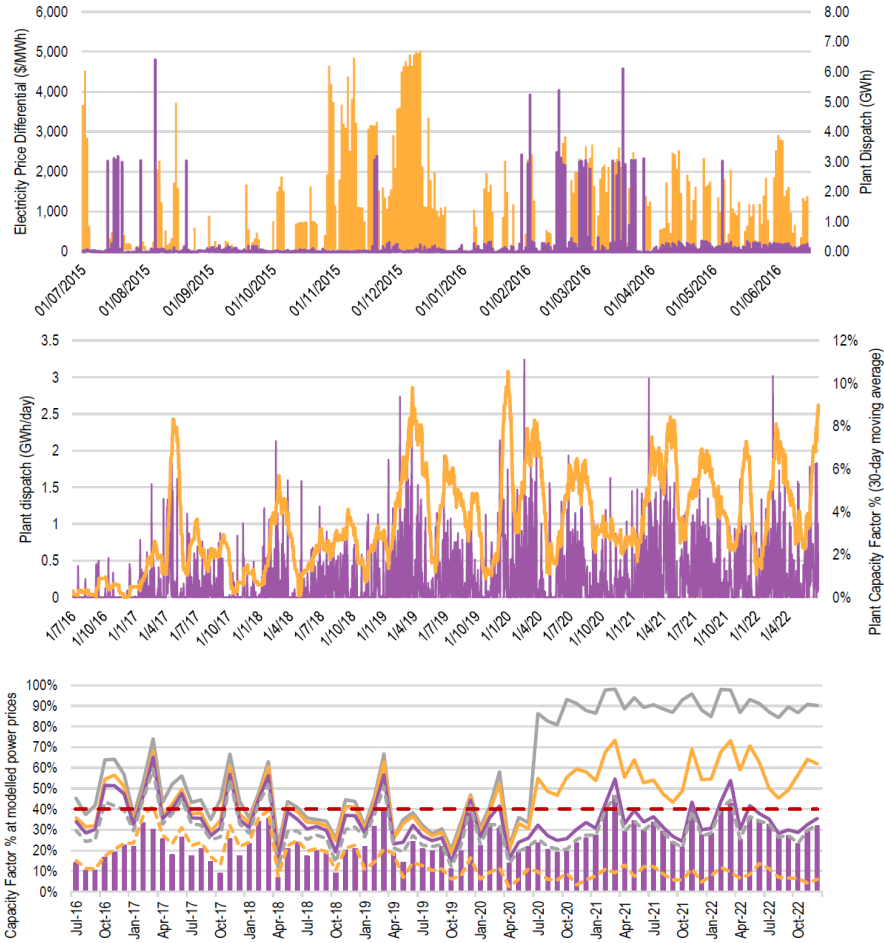
drivers of demand – Eastbound – Industrial

- **Eastbound demand**
  - demand for gas is a derived demand – derived from the demand for the products made using gas – bricks, bottles, beer, etc
  - users require long term certainty in order to earn a return on their long term investment in fixed productive plant
  - these Users will tend to reserve Long Term Firm capacity
    - **acknowledging that some of this reserved capacity will go unutilised during periods of reduced operations**

- **these shippers will tend to take the Long Term Firm Reference Service**
  - but at what level, given there is spare capacity in the pipeline?
    - ***this proposed access arrangement assumes that Industrial and Retail shippers will continue to reserve capacity to cover their peak demand***
    - **Incitec Pivot assumed to continue operating at Gibson Island**

load and demand forecast – Eastbound – PowerGen

- **demand depends on electricity demand, pool price and "spark spread"**
  - has been the subject of extensive analysis by ACIL Tasman
- **Oakey Power Station**
  - peaking power plant with on-site liquid supply
    - **very unlikely to reserve firm capacity**
  - has been generating vigorously while ramp gas has been available
    - **forecast assumes return to normal peaking operation once LNG plants are operating in steady state**
- **Swanbank E Power Station**
  - mothballed since November 2014
    - **more profitable to sell gas than to generate electricity**
  - detailed analysis of operational economics
    - **Depends heavily on re-introduction of a carbon tax**
    - **not expected to return to service in forecast access arrangement period**



drivers of demand - Westbound

- **Westbound demand**
  - important distinction:
    - **there is no productive plant at the western end of the Roma Brisbane Pipeline**
  - demand for Westbound service cannot be estimated by reference to housing starts, beer demand, etc
  - Westbound demand is entirely dependant on transient market opportunities
  - Westbound shippers are highly unlikely to reserve long term capacity
    - **Q: How to forecast these loads?**

load and demand forecast - Westbound

- **a new service – demand for this service is highly uncertain**
- **detailed analysis of the ways in which shippers might use the Westbound service:**
  - LNG suppliers
  - retailers
  - producers and traders
- **none are likely to take a Long Term Firm service**
  - load forecast based on a frequency-based estimate to derive a "firm equivalent" level of demand for tariff setting purposes
    - **eg 120TJ/day for 5% of days = 6TJ/day "firm equivalent"**
- **we have forecast optimistic load growth for Westbound flows**

tariffs

- **the published Reference Tariff is the Long Term Firm tariff**
  - 2017-18 tariff proposed at $0.6944/GJMDQ/day
    - ***cf* current tariff at (0.6505/GJMDQ/day+0.0436/GJ) $0.6941**

- **the Short Term Firm service tariff is a multiplier of the posted Long Term Firm Reference Tariff**
- **why a multiplier?**
  - goal is to derive an equivalent tariff *per unit of gas transported*
  - the multiplier is the inverse of the load factor
  - a load factor of 67% derives a multiplier of 150%
    - **Short Term Firm service assumed to be used at a 100% load factor**
  - the forecast 2017-22 composite load factor is 60.3%
    - **the Short Term Firm multiplier is 166%**

other matters

- **queuing**
  - propose an auction process for existing capacity and an expression of interest process for developable capacity
    - **Previously supported by RBP Users, now approved by ERAWA**

- **pro forma contract**
  - now included as an attachment to the access arrangement
  - Short Term Firm service requires a “zero MDQ” contract for prudentials

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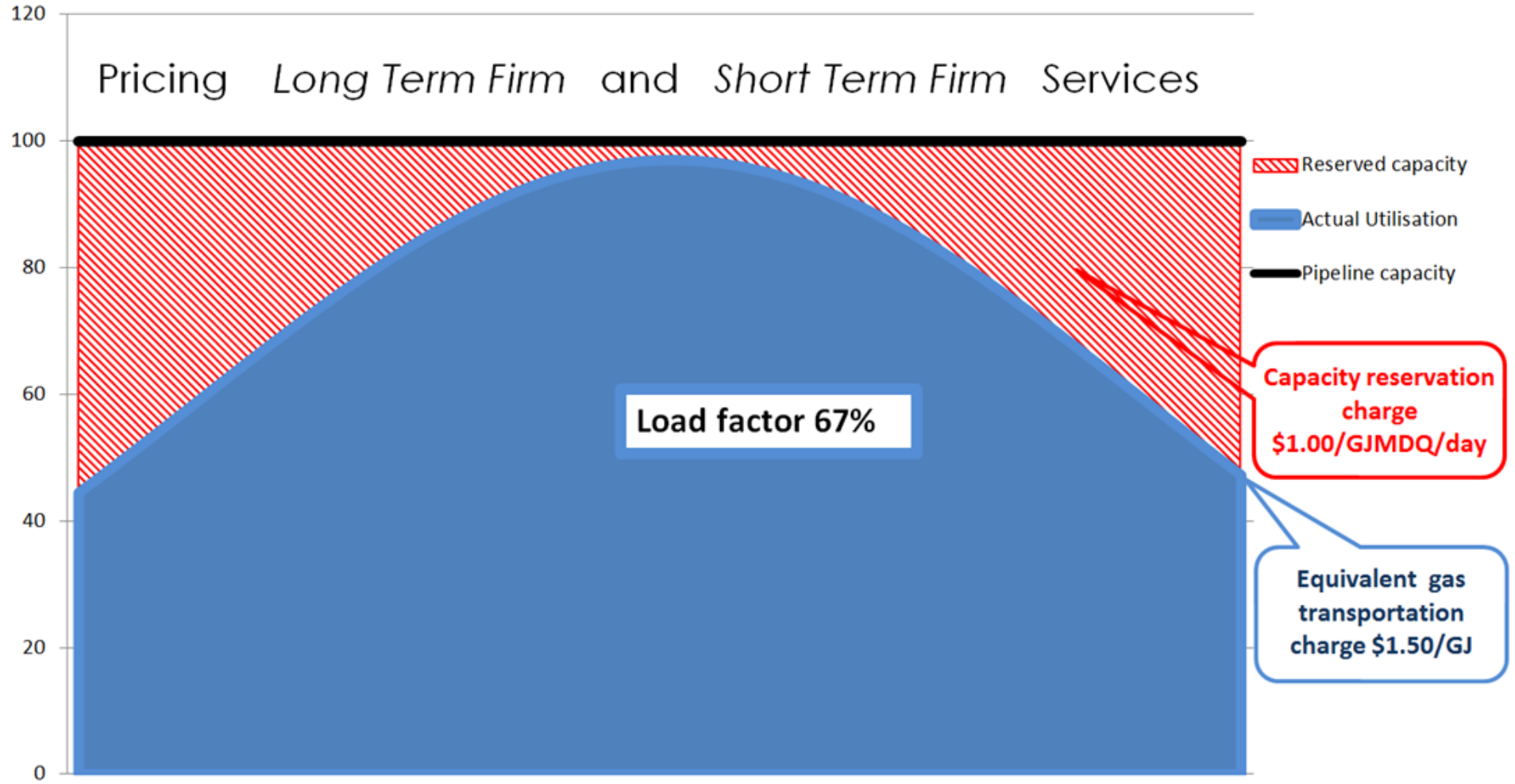
example


Pricing Long Term Firm and Short Term Firm Services
120
100
80
60
40
20
0
Reserved capacity
Actual Utilisation
Pipeline capacity
Load factor 67%
Capacity reservation charge $1.00/GJMDQ/day
Equivalent gas transportation charge $1.50/GJ