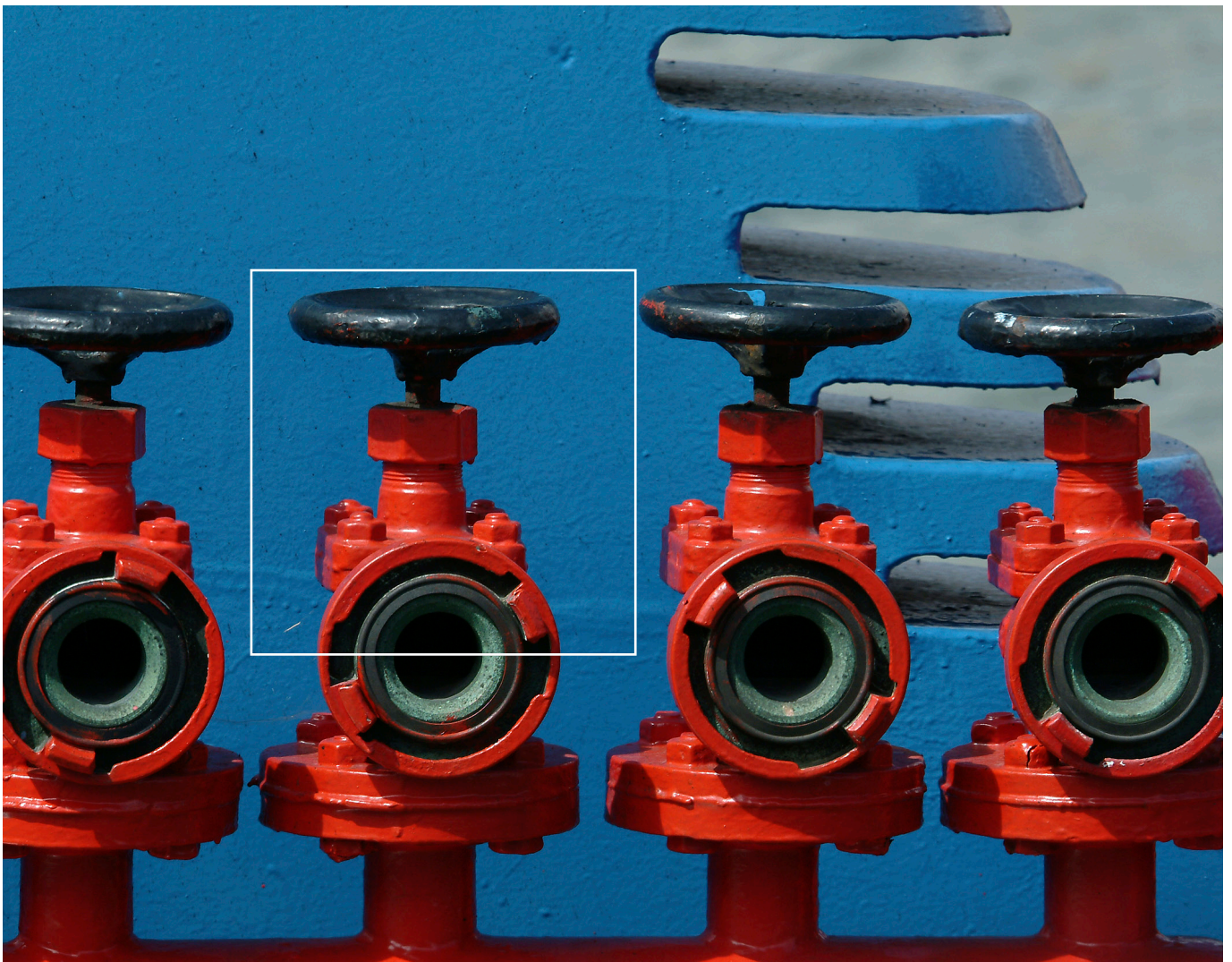


Third Party Access in Gas Transportation

Are Players in Emerging Markets Ready for New Rules?



Content

Introduction	3
Conflicting Market Expectations	4
TPA Rules and their Strategic Impact	5
TPA services	5
TPA service tariffs	6
Capacity allocation mechanisms	7
Congestion management procedures	8
Balancing rules	8
Capacity trading	9
Other aspects	10
Conclusion	11

Authors:



Piyush Mehra
mehra.piyush@adlittle.com



Samrat Bose
bose.samrat@adlittle.com

Co-Authors:



Kirsty Ingham
ingham.kirsty@adlittle.com



Lukas Vylupek
vylupek.lukas@adlittle.com



Michal Sladek
sladek.michal@adlittle.com

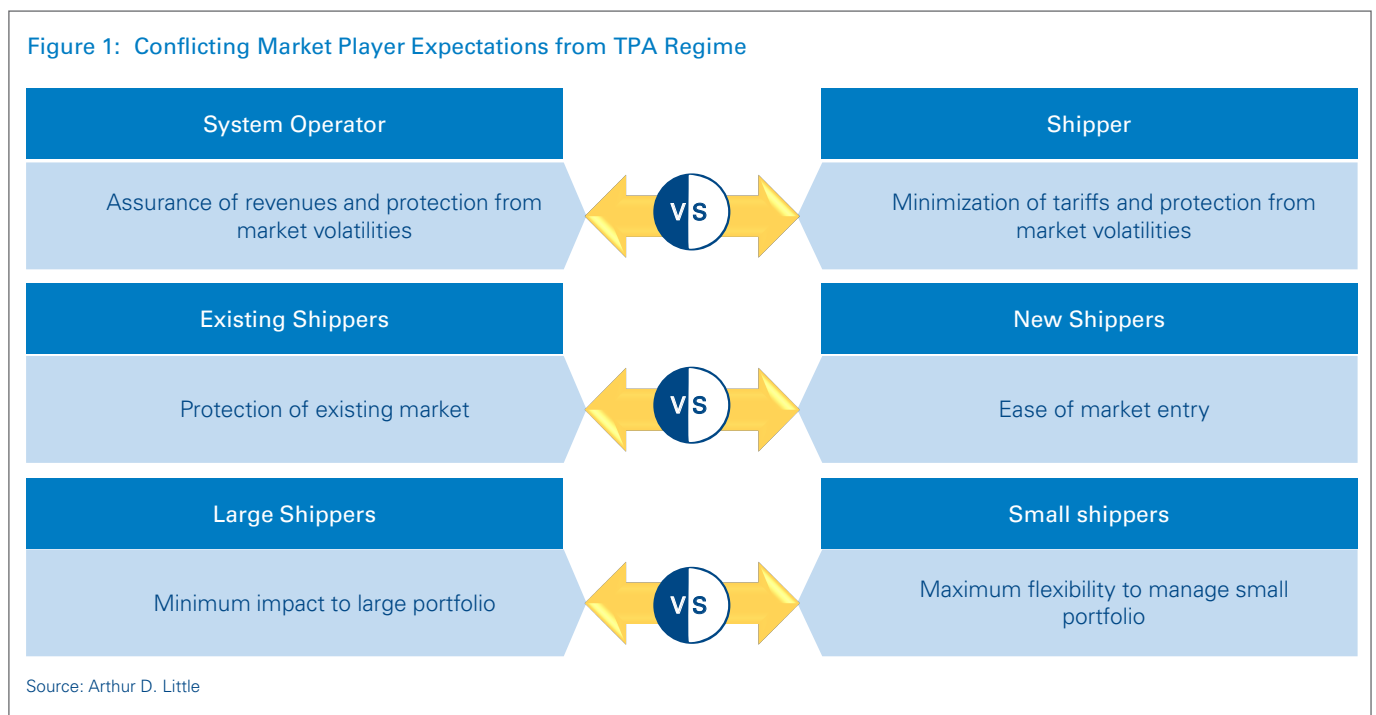
Introduction

Historically, the introduction of a Third Party Access (TPA) regime has been a central element of the liberalization of the gas industry in developed nations. Learning from the past, emerging nations are gradually realizing the importance of introducing a TPA regime. The objective is to foster competition in the gas market, improve supply efficiency, and bolster infrastructural investments, thereby strengthening the energy security. However, TPA provisions have a game-changing impact on the gas supply market by introducing competition, breaking the incumbent's monopoly, lowering prices and adding complexities to service provision by the system operator. Understanding the impact of such provisions upfront will help players avoid the potentially detrimental impacts on their businesses and enable the shaping of their strategy to reflect the new rules of the game.

Conflicting Market Expectations

In the past, the establishment of a Third Party Access (TPA) regime has proven to be an important tool in the liberalization of gas markets in developed nations. Regions such as US, U.K. and Australia, who pioneered TPA, have gained substantial economic benefits. Gradually, in recent times, emerging nations such as Pakistan, Ukraine, Morocco, Malaysia and Thailand have also begun to realise the importance of TPA as a key aspect of securing and facilitating their own energy supplies, and Arthur D. Little has supported the development of a number of such emerging gas markets. Plagued by depleting gas reserves, many such nations have been hoping that TPA and supply competition will help bolster efficient investments, improve capacity utilization, reduce tariffs and improve service quality.

In our experience, the introduction of a TPA regime is a game-changing event. Each TPA provision affects a market player either favourably or unfavourably, depending upon the player's position in the market. This primarily stems from the different and often conflicting interests between the various players, all striving to capture maximum value in the value chain (See Figure 1). Since the regulator sets the rules of the game, it is critical for all market players to participate actively while the market rules are being set, in order to protect their business interests.



TPA Rules and their Strategic Impact

In our experience of these emerging markets, there are seven key aspects of a TPA regime which hold immense strategic significance to gas players; as the TPA rules which are established determine the risks and opportunities of the market players. These seven key aspects (see Figure 2) are:

1. **TPA services**
2. **TPA service tariffs**
3. **Capacity allocation mechanisms**
4. **Congestion management procedures**
5. **Balancing rules**
6. **Capacity trading**
7. **Other aspects**

The objective of this article is to provide an overview of these critical aspects of the TPA market rules, highlighting the areas in which ADL has advised its gas market clients regarding the different options and their ramifications on market participants. In particular, the article considers the potential impact of TPA regimes on shippers' businesses as these companies face the greatest risks / opportunities from the implementation of these provisions.

1. TPA services

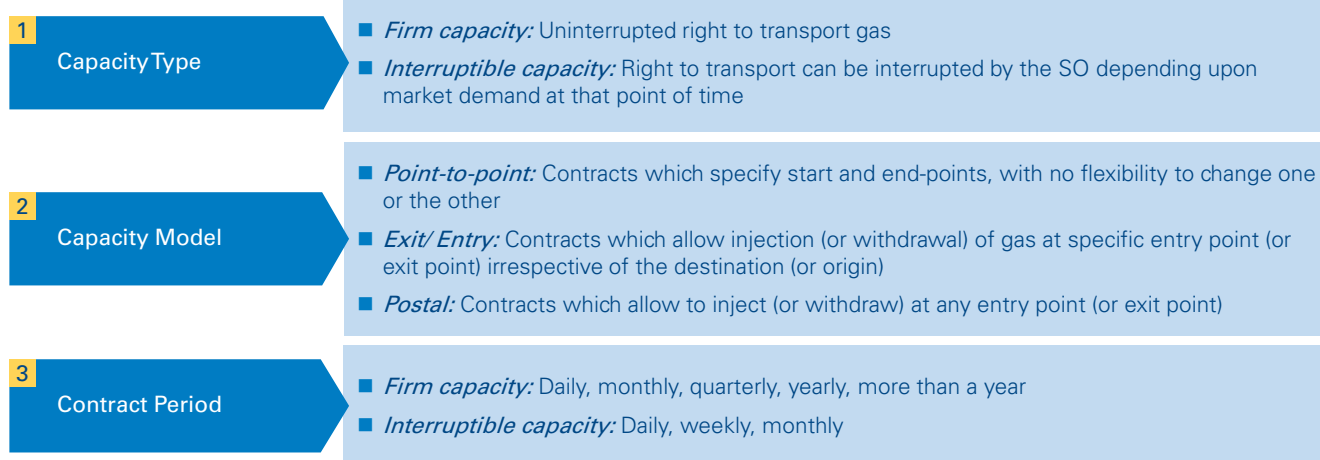
TPA services reflect the right of a shipper to gain access to the gas network and the obligation of the System Operator (SO) to provide it. Players should understand that the various forms of TPA services differ widely from regime to regime. Key parameters which define these forms are: (1) Capacity type (2) Capacity model (3) Contract period (Figure 3)

Figure 2: Seven Key Aspects of TPA Market Rules



Source: Arthur D. Little

Figure 3: Capacity Forms Parameters



Source: Arthur D. Little

Individual TPA services can be turned into a strategic advantage for shippers, depending upon their position in the market. For example, interruptible capacity is a strategic advantage to both new and small shippers as it requires lower capital commitment (as they are cheaper in price to book than firm capacities). It also gives greater flexibility to alter a shipper's booked capacity. An Entry/Exit model, as opposed to Point-to-point model, may provide greater flexibility and reduced entry barriers for new entrants at the cost of incumbent shippers¹. Finally, a shorter contract period is more advantageous for new or smaller shippers as such a contract requires lower capital and time commitments.

2. TPA service tariffs

Fundamental to a TPA regime is the application of fair, non-discriminatory and transparent tariffs for TPA services. The key principle used by regulators is that tariffs should be designed to recover no more than the SO's reasonable operating costs and capital charges in order to provide a reasonable and competitive return on the SO's investment. However, this is where the

similarities in tariff regimes end. Each regime devises its own tariff structure to suit its own needs. Key questions (see Figure 4) which any regime tries to answer whilst designing an optimal tariff structure include:

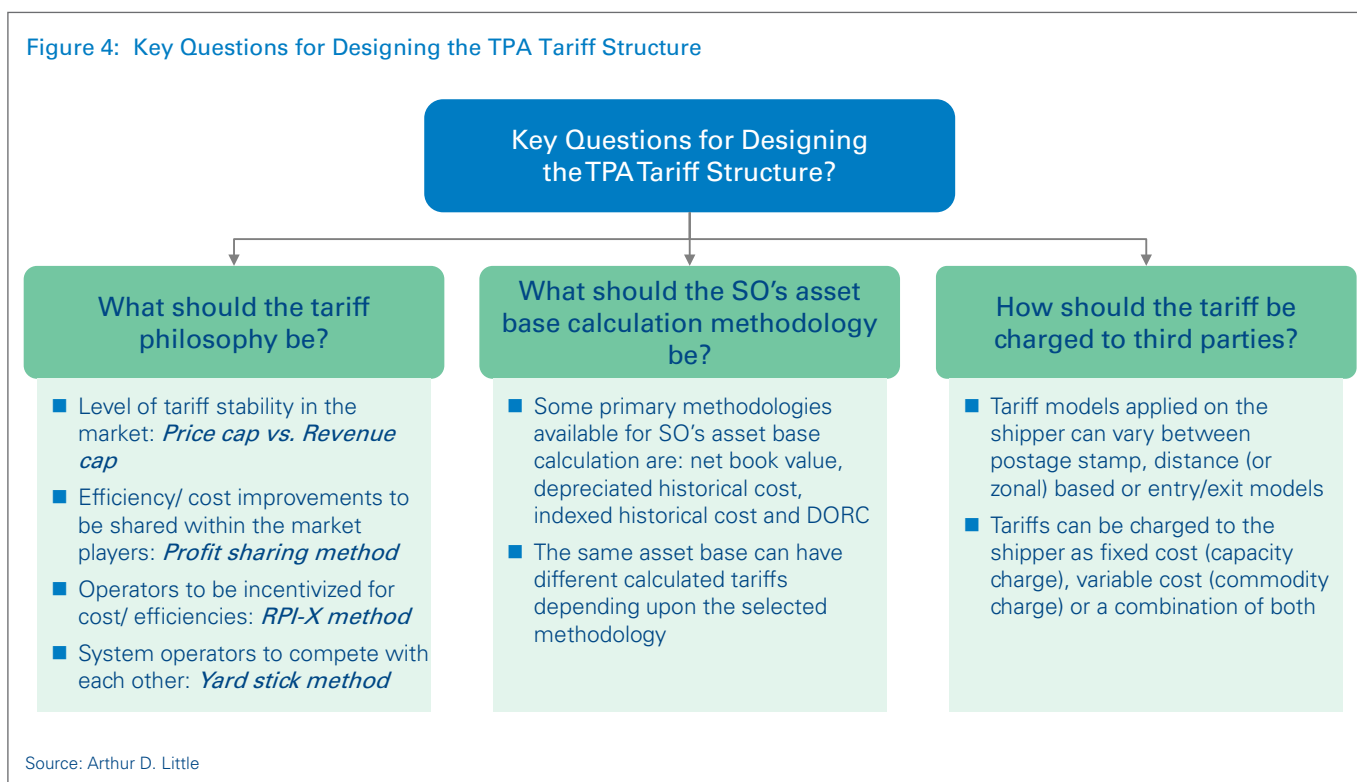
1. What should the tariff philosophy be?
2. What should the SO's asset base calculation methodology be?
3. How should the tariff be charged to third parties?

The options selected to design the tariff system will have considerable implications on any shipper's business. For example:

- A price cap philosophy provides greater tariff stability. By contrast, in a revenue cap philosophy, tariffs are subject to change according to the revenue of the SO. As a result, in periods where demand is lower the SO is allowed to increase tariffs to recover its revenue. This causes a counterintuitive situation for the shippers where tariffs increase despite lower demand for pipeline capacity.
- Depending upon the valuation methodology chosen, the valuation of the regulatory asset base may vary significantly

¹ Convergence of Non-Discriminatory Tariff and Congestion Management Systems in the European Gas Sector, The Brattle Group, September 2002

Figure 4: Key Questions for Designing the TPA Tariff Structure



thereby affecting the tariffs. For example, the Depreciated Optimized Replacement Cost (or DORC) method can result in an increase of asset valuation by as much as a multiple of five times relative to that produced by the Net Book value method².

- A postage stamp model causes the transportation tariff to be uniform irrespective of the distance traversed by the gas. By contrast, distance based tariffs or zonal tariffs can be designed to be cost reflective resulting in lower tariffs for shorter routes of gas transportation. This has implications for the geographical distribution of end-consumers thus also affecting the shipper's business.
- When tariffs are charged according to capacity bookings (i.e. a fixed tariff for any unit of gas transported), shippers run the risk of paying a high cost per unit of gas during low demand

periods. A commodity charge however (i.e. tariff vary depending on the amount of gas transported) will mitigate demand volatility risks for a shipper.

Tariff rules do not have the same impact on all types of shippers. Each shipper needs to assess the tariff regulation against its own business needs, which may differ widely depending on the characteristics of its gas contract portfolio in terms of demand variability, geographical distribution, size, etc.

3. Capacity allocation mechanisms

Broadly, two options are available for capacity allocation mechanisms – first-come-first-serve and auction. The former is adopted when physical or contractual congestion is expected to be non-existent which is usually the case in the initial stages of a TPA regime. The latter option is adopted as and when demand may exceed capacity and when congestion becomes a more serious issue during capacity allocation. Therefore, assessment

² The opening regulatory asset base of the Dutch gas transmission system, Oxera report, April 2011

of the competitive intensity under a TPA regime for the region becomes important in the selection of a specific methodology.

For example, if first-come-first-serve principles are adopted in a congested market, this may lead to crowding out by large shippers. Furthermore, inadequate unbundling of the incumbent's shipping business from its transportation business will give the incumbent information asymmetry advantages, thus increasing the entry barrier for new shippers during a first-come-first-serve allocation process.

The regulator may often impose an ex-ante capacity release program which forces the existing shippers to give up a certain percentage of their booked capacity to new shippers. Such capacity release programs have been used in the UK and elsewhere in the EU to promote competition. The incumbent shipper must ensure that they remain cost neutral in such circumstances. Non-incumbent shippers should lobby to ensure that the regulator or the incumbent shipper releases enough capacity for everyone and not just for the large shippers (e.g. In British Gas's 1989 capacity release program, released capacity was snapped up by the power generators leaving little room for smaller shippers' participation).

4. Congestion management procedures

A key concern for the regulator during competition for capacity is the impact of contractual congestion (i.e. unavailability of capacity contracts despite the availability of physical capacity) or physical congestion (i.e. absence of physical capacity in the pipeline system). Part of this concern is mitigated by choosing the appropriate capacity allocation mechanism. However, our recent experience with certain energy regulators suggests that a regulator must also look at imposing upon the shippers certain additional, upfront congestion management procedures such as Use-It-Or-Lose-It (UIOLI) provisions. These provisions are directed towards large and/ or incumbent shippers who are suspected of hoarding capacity to stifle entry of new and/ or smaller shippers. UIOLI provisions force the shippers to release capacity if their utilization is less than the norm for a specific period of time. Although UIOLI is considered to be a best practice in TPA regime, the shippers need to carefully

assess the fine print of UIOLI provisions to prevent over-restrictive regulations on their business operations. Too short a time period to adhere to capacity utilization norms or too high a percentage reduction of capacity rights can result in shippers facing inflexibility in strategically buying and keeping capacity for use at a later point of time. For example, in Singapore, the UIOLI provision imposes a risk of capacity loss if utilization is less than 80% in the last 6 months; this is far more stringent than the EU guidelines where shippers are required to maintain a utilization of 80% and above for a period of 12 months.

5. Balancing rules

Balancing rules ensure that shippers balance the injection and off-take of gas in the pipeline during a balancing period. Failure to balance can cause over or under-pressure related emergencies, disruption of gas supplies and substantial economic loss.

Although its design is an evolutionary process, our recent experience with emerging nations' gas supply markets suggests that balancing rules have seven design elements which hold strategic relevance to a shipper's business. These seven elements are:

1. Linepack Ownership: who owns the linepack – the SO or the shipper?
2. Balancing Period – period within which the gas injection and off-take need to be balanced
3. Tolerance Levels – threshold within which shipper is allowed to remain imbalanced
4. Imbalance Charges – imbalance amount calculation methodology, imbalance charges payment and settlement protocols
5. Physical Balancing – methodology of procurement of required gas or disposition of excess gas by the SO to maintain optimum gas level in the pipeline
6. Balancing Zone – the geographical area within which the shipper needs to balance its gas injection and off-take at entry and exit points

Figure 5: Balancing Rule Design Elements

Balancing Rule Design Elements							
	Line-pack Owned . . .	Balancing Period	Tolerance levels	Imbalance Charge Anchored to . . .	Imbalance Charge Payment Direction	Physical Balance Procedure	Balancing Zone
Options	. . . By the SO	Hourly	Yes, tolerance given for line pack flexibility	Gas Market Price	Unidirectional (Shipper to SO)	SO buys and sells gas from the market	Single Zone
	. . . By the shippers	Daily	No tolerance given to the shippers	Capacity Tariff	Bi-directional (Shipper to SO or SO to Shipper depending upon the sign of the imbalance)	SO curtails nominations on days of system stress	Multiple Zones
		Between Hourly and Daily		A fixed charge		Others	
		> Daily		Others			

Source: Arthur D. Little benchmark

(See Figure 3 for typical options within each design element of the balancing regime)

Balancing rules can significantly impact a shipper’s flexibility in managing demand variability in a large gas contract portfolio. For example, a short balancing period forces a shipper to balance its injection and off-taken amounts more frequently, thus reducing flexibility to manage contracts with high demand variability. To mitigate this impact, the SO can provide a certain percentage of tolerance whereby the shipper can remain imbalanced within the tolerance level, thus enjoying flexibility to manage swing demands without incurring imbalance costs.

Shippers must assess that the proposed balancing rules are fair for all shippers, big or small, and that the SO does its best to reduce the burden of balancing from the shipper. For example, in case the SO has gas storage facilities, such facilities should be taken into account to reduce the severity of the balancing rules. Similarly, shippers should prevent the SO from artificially creating multiple balancing zones which hamper gas portfolio management, as these portfolios have to be split up as well.

In certain regimes, imbalance trading or imbalance pooling amongst shippers is allowed either ex-post or ex-ante with respect to a transportation day to net off their respective imbalance liabilities. Other best practices such as intraday trading, re-nominations, etc. can all be explored by shippers to recommend them to the SO and regulator in order to reduce their imbalance costs. Finally, shippers must ensure that sufficient information systems are provided on their imbalance positions much ahead of the end of the balancing period to help them reduce their balancing costs.

6. Capacity trading

Capacity trading provisions lay down the ‘rules of the trading game’ and the roles of the SO and the regulator in the envisioned wholesale capacity trading hub. In this hub, shippers can freely trade their excess capacities, thereby improving the liquidity of pipeline capacity in the region. Capacity trading hubs are created only when the TPA regime has reached a certain level of maturity. However, it should be noted that a prerequisite for establishing capacity trading rules is the presence

of standardized capacity agreements between the SO and the shippers. A market which encourages the SO to enter into negotiated TPA agreements with the shippers will not succeed in establishing capacity trading rules at a later stage. It will also be relatively less transparent and unfair especially to the smaller shippers who will have less negotiating power with the system operator.

7. Other aspects

A regulator establishes formal rules regarding remedies, liabilities, dispute resolution and the minimum actions expected from all parties during emergencies. For example, when off-specification gas causes harm to a consumer's property, the concerned shipper and the SO are liable to pay damages to the customer. To assess the business impact of these provisions, the shipper needs to evaluate the risks of incurring such expenses by calculating the probability of occurrence of such events.

Shippers must assess the TPA gas quality specifications vis-à-vis the gas quality received from different sources and the actual needs of the market. They should ensure inclusion of critical parameters such as the Wobbe Index³ in the gas quality specification, provision of adequate tolerance range for each parameter and inclusion of adequate gas quality monitoring systems.

A TPA regime without unbundling provisions and competition regulations will fall short of achieving the desired objectives. For example, up until 2000, the Mexico Gas market remained dominated by the PEMEX utility company, despite the presence of a third-party access regime. The main reason was the continued presence of a vertically integrated system which crowded out competition from new shippers. The regulator had to take strong measures to unbundle PEMEX to foster competition. Similarly, the presence of competition regulations ensures identification of bottlenecks for market creation. For example, in Belgium, the early presence of long-term contracts

by Distrigaz prevented the uptake of competition in the market. After intense deliberations by the Energy Commission, applying competition regulations, Distrigaz was required to curtail its long term contracts in order to reduce entry barriers for the new shippers.

³ Wobbe Index indicates the calorific value normalized basis specific density of the gas. It is an important parameter to assess incoming gas quality especially when the possibility of calorific value fluctuation due to differences in gas quality across different sources.

Conclusion

Introduction of TPA regulation is one of the most important levers for driving liberalization in the gas markets of the emerging economies. Arthur D. Little's experience of working with multiple clients in these markets has established that TPA rules impact every player differently depending on its position in the value chain, its size and presence in the market. Failure to pre-empt or assess such impacts can lead to substantial losses or sub-optimal profits and regulatory violations affecting reputation.

In Arthur D. Little's experience, in such markets it is always 'better to be safe than sorry' and hence players need to invest upfront in understanding the regulator's TPA objectives, assess implications of TPA on their business and lobby strategically and vigorously for a set of clear recommendations prior to roll out of the TPA regulations. This is true not only for incumbent players but also for those who are contemplating an entry into these markets. The new players can take this as an opportunity to showcase to the regulator, the ways in which the regulator can foster competition in the market.

Arthur D. Little has long standing experience in third party access rules in the gas industry, across developed and emerging economies, and with different types of market players. We have gained deep insights into the potential consequences of variations in TPA rules and their impact on gas markets, especially their effects on the businesses of market participants. We support clients in devising strategies to manage the risks involved from introduction of TPA regulations and to protect their commercial interests.



Contacts

If you would like more information or to arrange an informal discussion on the issues raised here and how they affect your business, please contact:

Argentina/Brazil/USA

Rodolfo Guzman
guzman.r@adlitttle.com

Belgium

Kurt Baes
baes.kurt@adlitttle.com

Central Europe

Matthias von Bechtolsheim
bechtolsheim.matthias@adlitttle.com

China

Antoine Doyon
doyon.antoine@adlitttle.com

Czech Republic

Dean Brabec
brabec.dean@adlitttle.com

France

Vincent Bamberger
bamberger.vincent@adlitttle.com

India

Srini Srinivasan
srinivasan.srini@adlitttle.com

Italy

Saverio Caldani
caldani.saverio@adlitttle.com

Japan

Hiroshi Shimizu
shimizu.hiroshi@adlitttle.com

Korea

Daesoon Hong
hong.daesoon@adlitttle.com

Malaysia/Middle East/Singapore

Thomas Kuruvilla
kuruvilla.thomas@adlitttle.com

The Netherlands

Martijn Eikelenboom
eikelenboom.martijn@adlitttle.com

Nordic

Bo Lenerius
lenerius.bo@adlitttle.com

Spain

David Borrás
borras.david@adlitttle.com

UK

Stephen Rogers
rogers.stephen@adlitttle.com

Arthur D. Little

As the world's first consultancy, Arthur D. Little has been at the forefront of innovation for more than 125 years. We are acknowledged as a thought leader in linking strategy, technology and innovation. Our consultants consistently develop enduring next generation solutions to master our clients' business complexity and to deliver sustainable results suited to the economic reality of each of our clients.

Arthur D. Little has offices in the most important business cities around the world. We are proud to serve many of the Fortune 500 companies globally, in addition to other leading firms and public sector organizations.

For further information please visit www.adl.com

Copyright © Arthur D. Little 2013. All rights reserved.

www.adl.com/ThirdPartyAccess