



Regulatory impact analysis on power industry in the Philippines and key challenges in the short and long term
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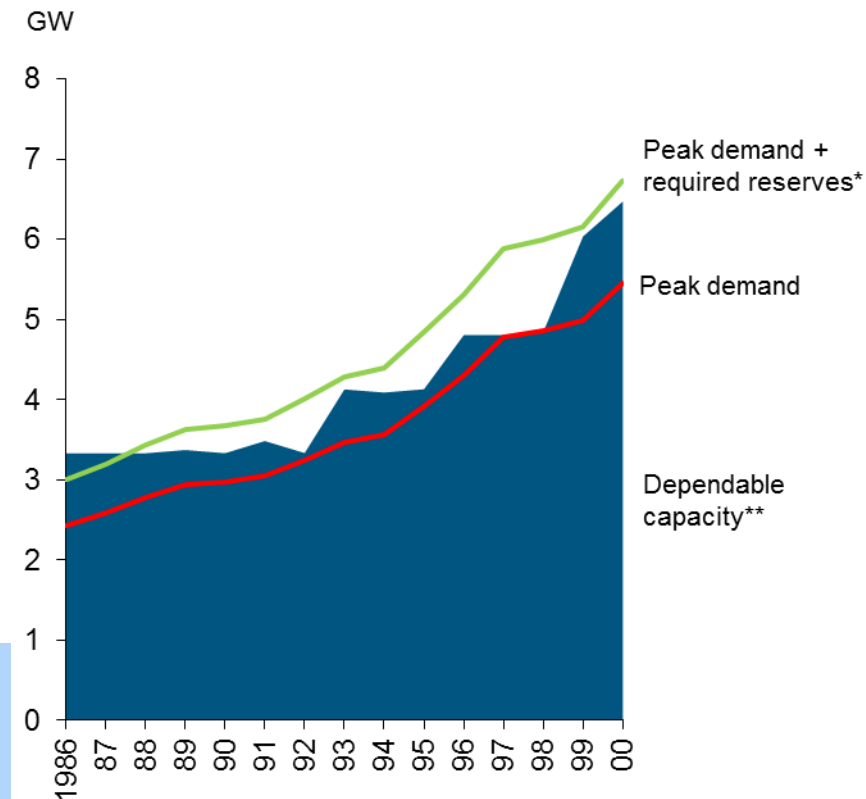
First – a short history lesson

During the 1990s the Philippines was beset by a long power crisis, eventually alleviated by turning to IPPs

- Napacor could not fund new investment
- Government turned to the private sector
- NPC signed around 22 PPAs with IPPs for a total capacity of 2,648 MW between 1991 and 1993.
 - Mostly bilateral negotiations, often initiated by unsolicited bids, rather than competitive bidding.
 - PPAs often not made publicly available
 - The IPPs were protected from any competition by the long-term PPAs.

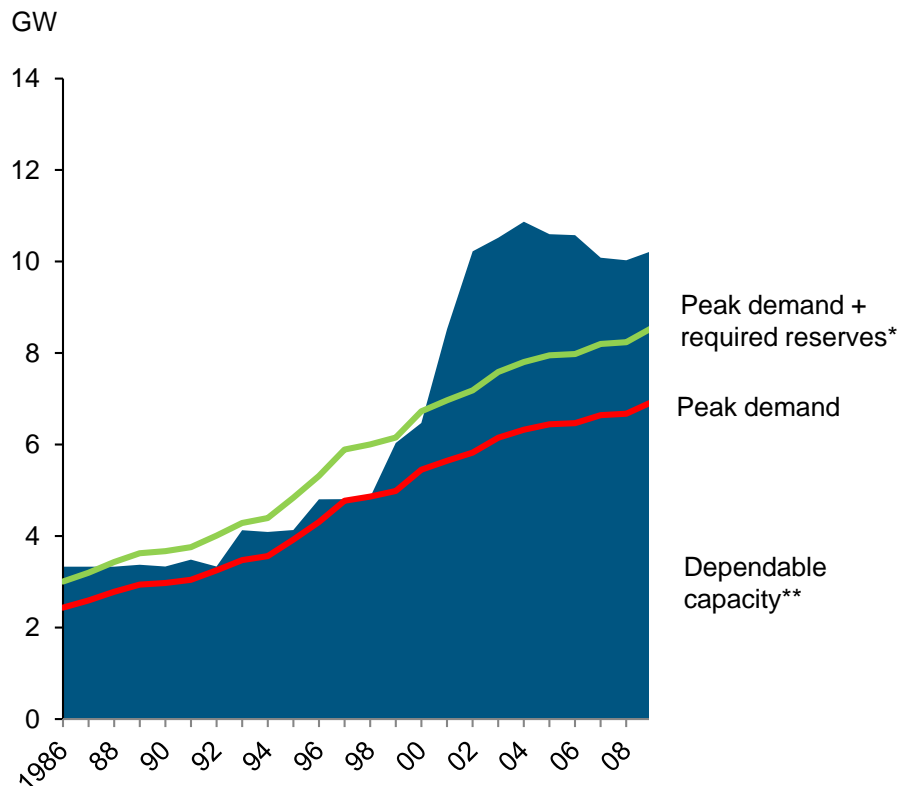
The Philippines was one of the first developing Asian countries to successfully engage with foreign IPPs and many of the early entrants are still actively involved in the market.

Supply and demand in Luzon (1986-2000)



Too many IPP's were ordered – so Luzon swung from shortage in the 1990s to over-supply in the early 2000s

Supply and demand in Luzon (1986-2015)



Major capacity additions in Luzon

Year	Plant	Fuel	Installed Capacity (MW)
1984	Calaca	Coal	600
1996	Pagbilao	Coal	764
1998	Masinloc	Coal	630
1999	Sual	Coal	1,294
2000	Quezon Power Sta. Rita	Coal	511
2000	Sta. Rita	Gas	1,060
2002	Ilijan	Gas	1,271
2002	San Lorenzo	Gas	530
2003	San Roque	Hydro	411
2013	Mariveles	Coal	652

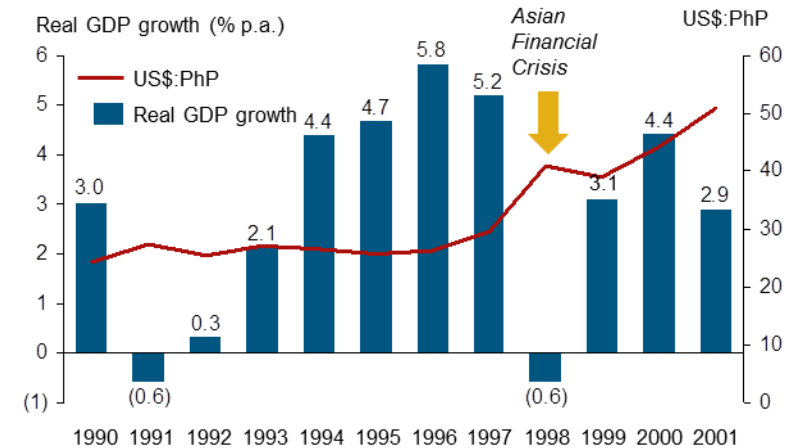
Napacor and Meralco bore the cost of these new power stations – Napacor by losing money while Meralco passed costs on to consumers

The Asian Financial Crisis brought about a pressing need for reform of the power sector

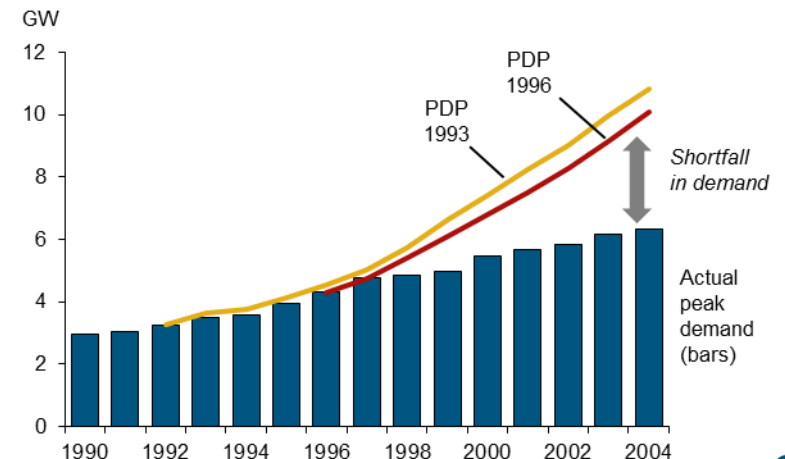
The worsening macro environment had a range of effects:

- Peso fell sharply, increasing foreign currency exchange components of the IPP contracts, which were almost all in US\$.
- Falling economic growth fed into power demand growth, meaning much of the expected demand growth did not materialise
- Since many of the PPAs that were signed during the early 1990s were based on fixed price terms and take-or-pay clauses, the average cost of power rose significantly.
- The impacts were not fully passed through into retail tariffs, although these did rise throughout the 1990s into the 2000s . NPC's accumulated increasingly high losses.

Philippine macro performance



Luzon peak demand and expectations



The Electric Power Industry Reform Act (EPIRA) sought to liberalise the entire power sector and it was finally passed in 2001 after seven years of debate

Objective	Outputs
Restructuring NPC	<ul style="list-style-type: none">• Creation of an asset management corporation – Power Sector Assets & Liabilities Management Corp. (PSALM) – to manage government assets.• Creation of TransCo to own the transmission assets.• Formation of autonomous group market operator (AGMO) to run a new wholesale market, eventually to be managed by an independent party.
Privatisation	<ul style="list-style-type: none">• Sale of generation assets and contracted capacity.• Concession of the transmission network franchise.
Cost-reflective electricity pricing	<ul style="list-style-type: none">• Restructuring and unbundling of retail tariffs.• Removal of cross-subsidies.
Competition	<ul style="list-style-type: none">• Creation of the Energy Regulatory Commission (ERC) to act as an independent regulator and monitor markets.• Establishment of the Wholesale Electricity Spot Market (WESM) for the trading of energy and reserves.• Sanction of Retail Competition and Open Access (RCOA).

In summary, the objectives of the reform were

- To bring private sector capital into the economy
 - Removing Government from the power sector and free up Government funds
 - Encouraging private sector investments through privatisations
- To meet the growing need for new power sector investment – in a timely manner
 - Regulating in a fair manner that is consistent with private investment
- To manage prices for consumers
 - Robust competition so that prices are efficient through divestments and setting up a competitive market structure
 - Giving choice to customers so that they can shop around

This presentation looks at how the regulations have worked and what this might mean for the future

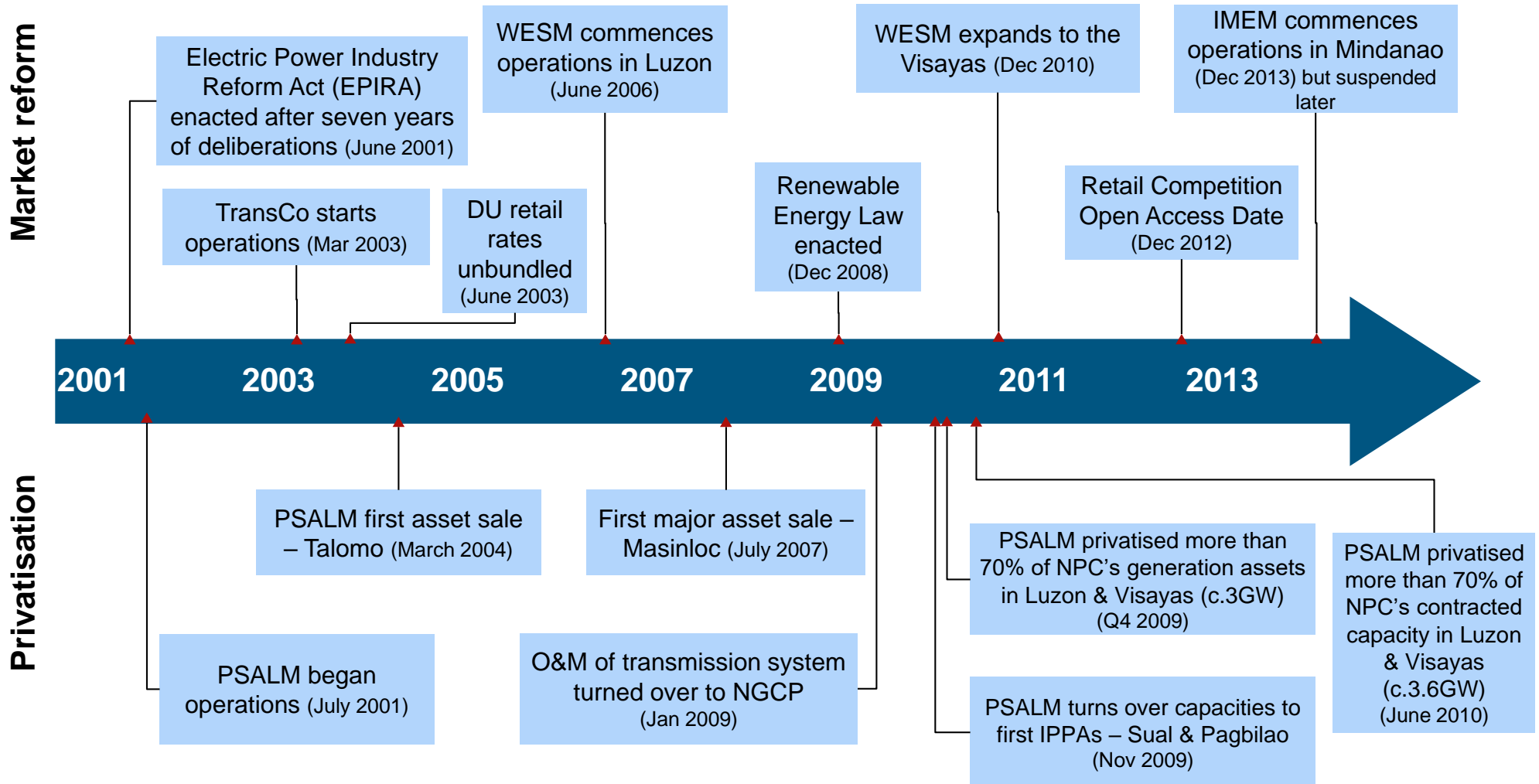
Have the reforms met their objectives?

The Philippines started with some good fundamentals

- Strong implementing legislation (EPIRA)
- (Mainly) good WESM market design – energy only gross pool with nodal prices and net settlement
- Privatisation of assets and also of contracts so that even pre-existing BOT plants entered the market
- No subsidies in electricity (but some of the highest residential and industrial prices in Asia)
- Separation of transmission from generation and distribution/retail
- (Mainly) independent regulator
- (Mainly) independent market operator

And a capacity overhang to allow the market time to adjust

The power industry has now come a long way in just over a decade since the EPIRA reforms



The details of these steps are described in the following parts of this report

Many of the market functions and operations are very different now

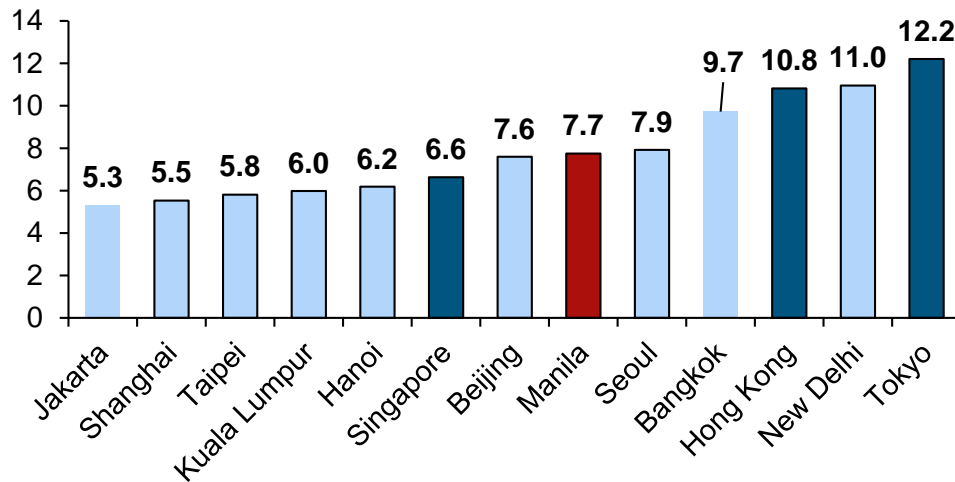
	Pre-EPIRA	Post-EPIRA
IPP contracts held by NPC	<ul style="list-style-type: none"> NPC was the single buyer for all the IPP contracts* 	<ul style="list-style-type: none"> Dispatch rights with respect to the contracted capacities have been transferred to IPPAs. The IPPAs in turn sell electricity to the spot market or to electricity distributors through short-term/ long term bilateral contracts
Dispatch	<ul style="list-style-type: none"> Carried out by NPC in an opaque manner 	<ul style="list-style-type: none"> Carried out by PEMC in a transparent matter using the market rules based on offer by generators
Competition between generators	<ul style="list-style-type: none"> Did not exist 	<ul style="list-style-type: none"> Exists
Open Access / Retail Competition	<ul style="list-style-type: none"> Did not exist – customers must purchase from franchised supplier 	<ul style="list-style-type: none"> Retail competition introduced in June 2013 for largest customers ($\geq 1\text{MW}$ peak demand)
Wheeling	<ul style="list-style-type: none"> No wheeling 	<ul style="list-style-type: none"> NGCP is required to connect and wheel power around the system on a non-discriminatory basis
Regulation	<ul style="list-style-type: none"> All electricity segments were regulated by the Philippine government 	<ul style="list-style-type: none"> ERC regulates monopoly parts of the businesses, including distribution and transmission Regulates the Universal Charge and its components Regulates the NPC tariffs until one year after OARC

Note * Apart from a few – e.g., First Gen & Quezon.

Generation costs in the Philippines are high – but this is mainly because they are not subsidised.

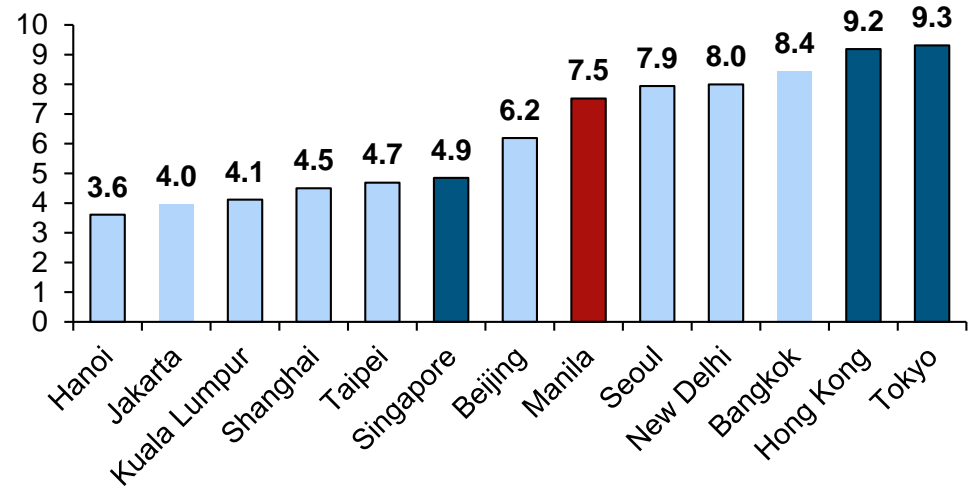
Commercial energy costs across Asia as of Nov 2016

US¢ per kWh



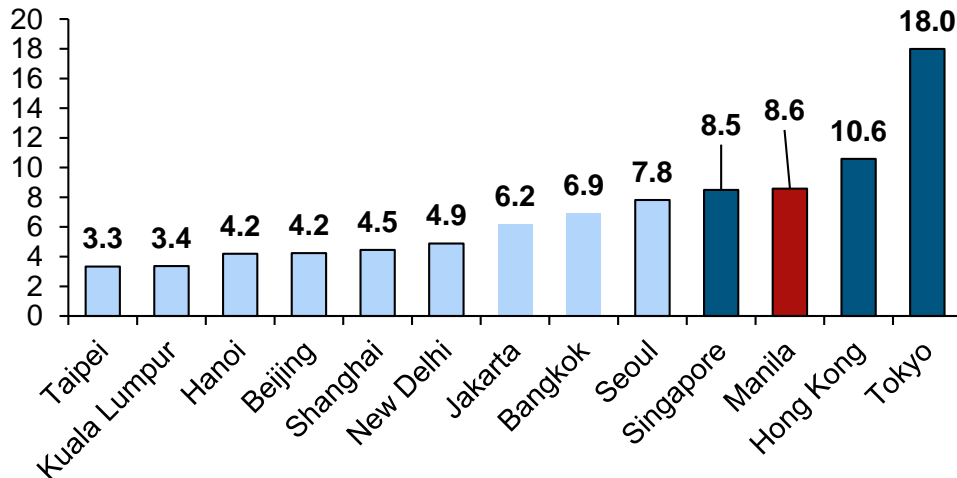
Industrial energy costs across Asia as of Nov 2016

US¢ per kWh




Residential energy costs across Asia as of Nov 2016

US¢ per kWh

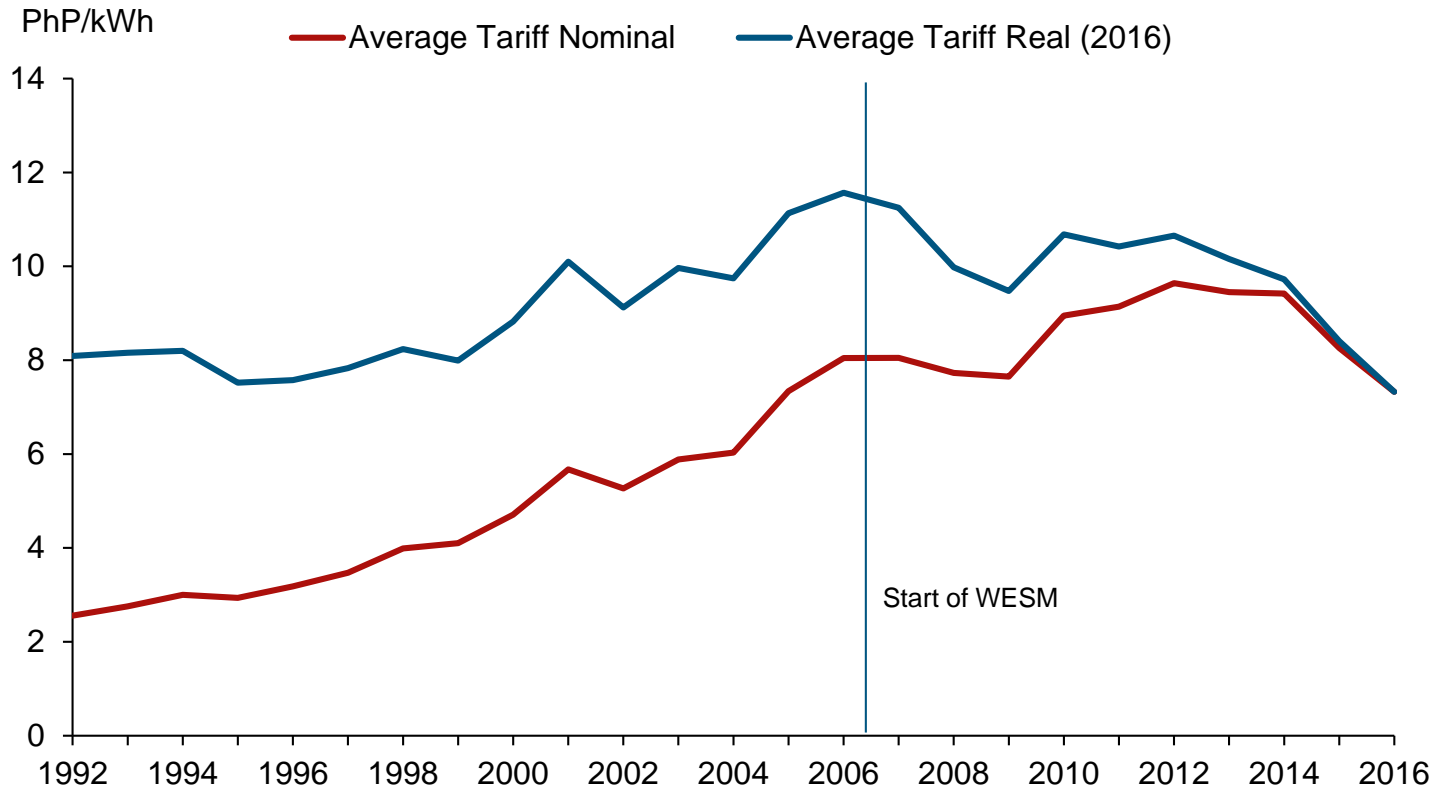


The charts show estimates of the generation cost component of various tariffs across Asia

 Cities with some subsidy

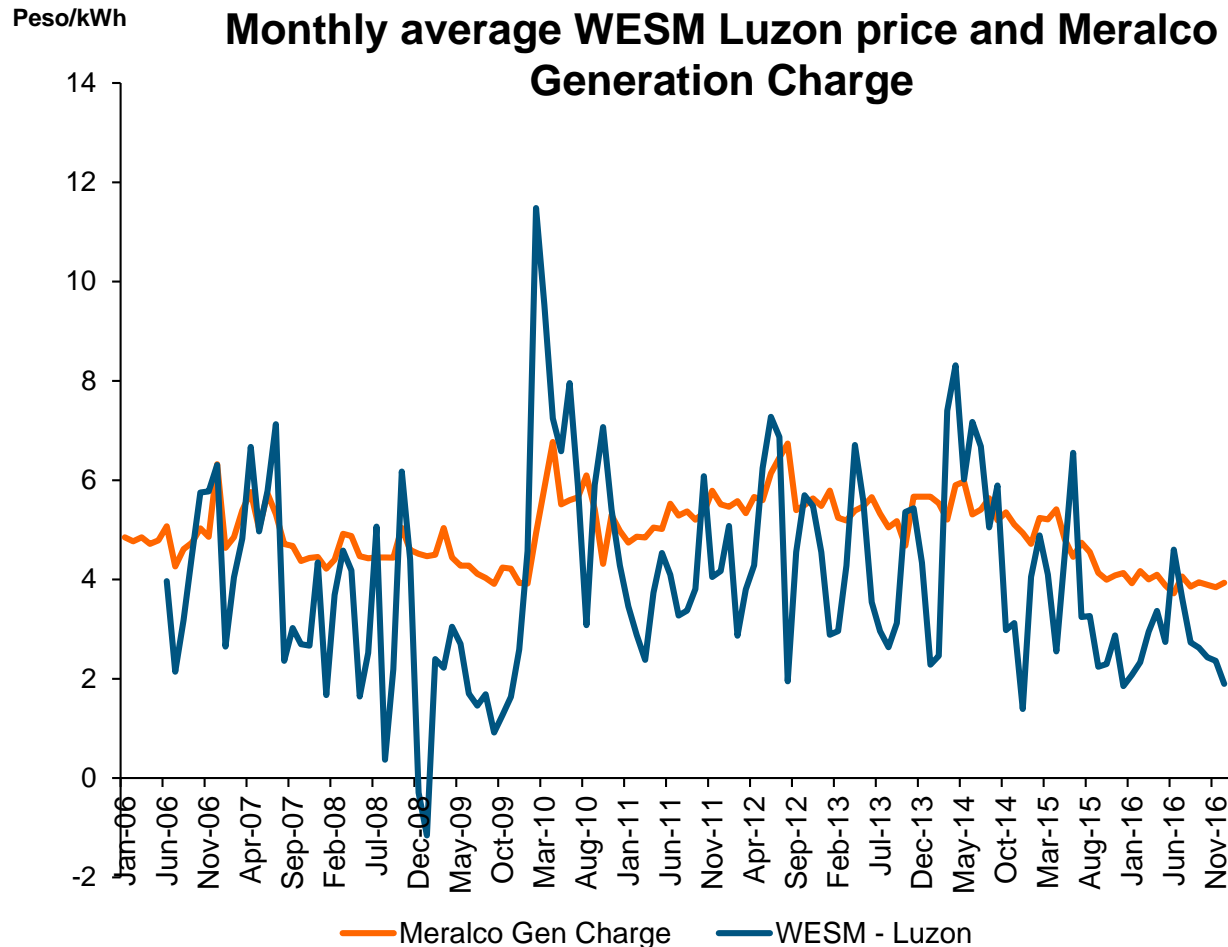
Since the introduction of the WESM, tariffs stabilised and have recently fallen

MERALCO's annual average tariff (1991-2016*)



*2016 average tariff is estimated from Meralco monthly tariff schedules

But how does the residential generation cost compare to the WESM?



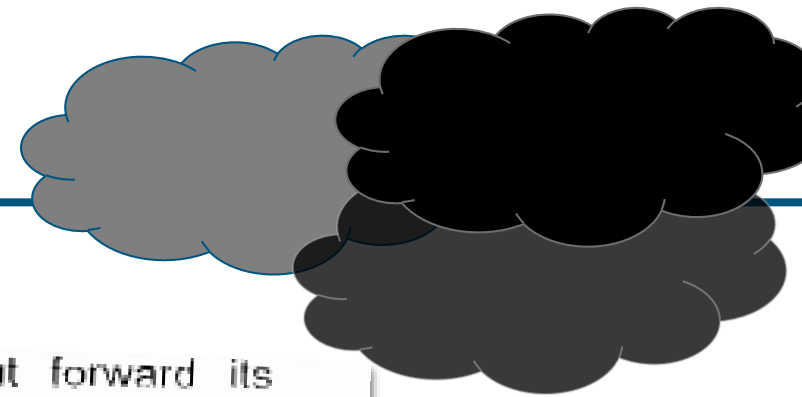
- While both are volatile, the generation component of tariffs is generally higher than the WESM price
- On average over the period, it's 23% higher
- If no contracts were in place we would expect both lines to be identical
- So contracting is smoothing the volatility but also raising the price

In theory, generation costs should be similar to average spot market prices

- If contract costs were generally higher than spot prices, retailers would choose to contract less and transact more through the market – incentivizing generators to make lower offers that are closer to the market
- If contract costs were generally higher than spot prices, generators would choose to contract less until they were offered a similar price in both markets
- The fact that there is a persistent difference between generation costs and WESM prices suggests a structural issue...

Why are consumers paying too much for their generation?

Unfortunately, the ERC does not consider the WESM is fully competitive



The Commission takes this opportunity to put forward its observation that there has always been a tightness of supply in the market given that it cannot be said that the market has matured to be considered a fully competitive one. Reasons for not attaining a fully competitive market may be rooted in the market itself which may be characterized as oligopolistic.

ERC Order, case no. 2014-021MC (dated 3 March 2014)

With respect to the proposed “market based” pricing, the Commission believes that the current Philippine electricity market is not yet ripe for such since it is one borne out of a true and robust competition which is not yet present in the Philippine setting at this point in time. First, there should be sufficient capacity for competition. Recent available data reveal that the system load and demand are always higher than the available capacity, thus, making the present market a seller's/supplier's market. In a seller's market, the seller is able to obtain better conditions for the sale or higher prices because of the scarcity of underlying commodities or goods.

ERC Order, case no. 2012-118RC (dated 28 January 2013)

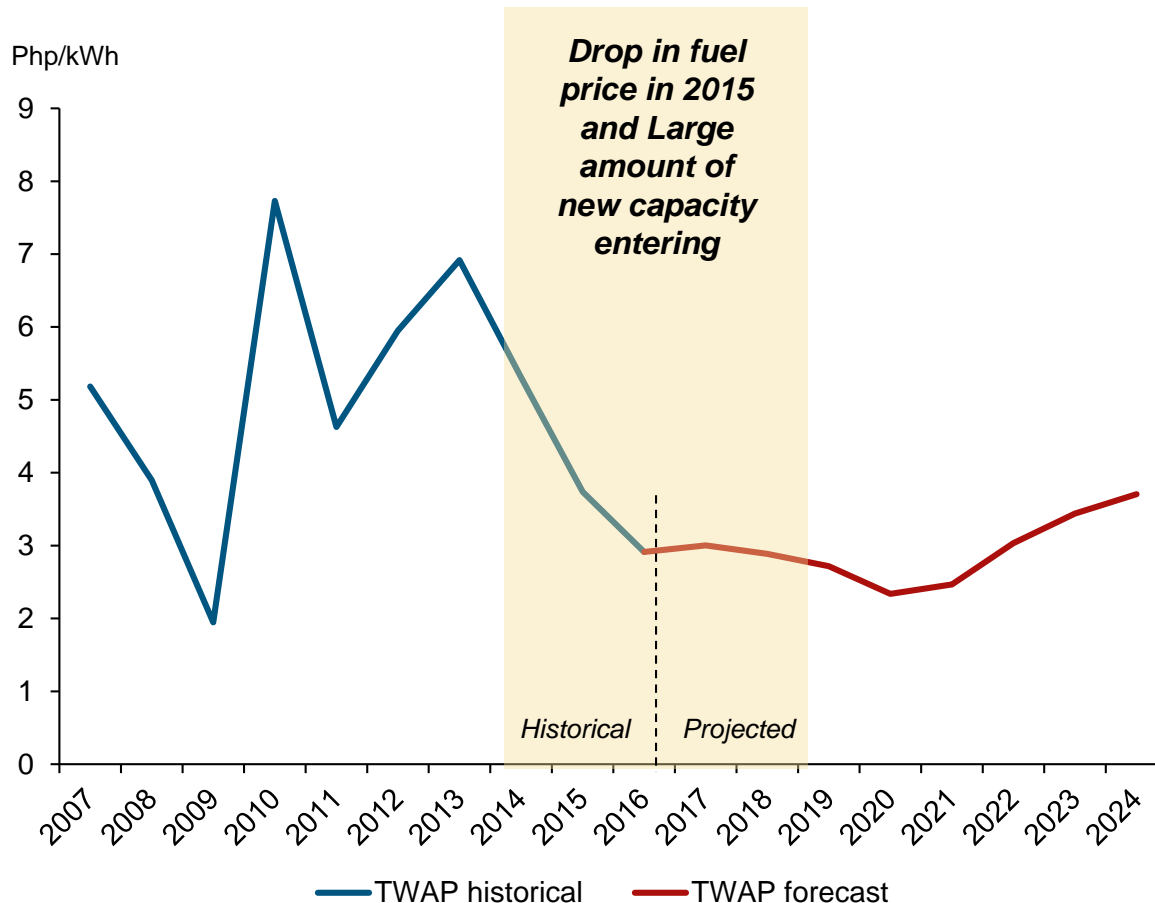
And because of that, failed to allow the benefits of the very real competition to flow through to consumers

- The ERC approves each contract entered into for supply to the captive market
- The PSA approvals are based on a “cost-plus” approach and not a market approach, thus losing the competitive benefits of the market pricing
- The fact that each contract is regulated individually, rather than generation costs regulated as a whole, removes incentives on retailers (DU’s and EC’s) to contract at least cost
 - Once approvals are gained, costs are passed through irrespective of whether the contract turns out to be a good deal or not
 - Or even if the contract turns out to be not needed at all!
- Contracts are also typically very long term, meaning that falls in the competitive WESM are not passed through for decades (if at all)

So what does this mean for the future?

We are expecting WESM prices to fall further

Annual time-weighted average price (TWAP)

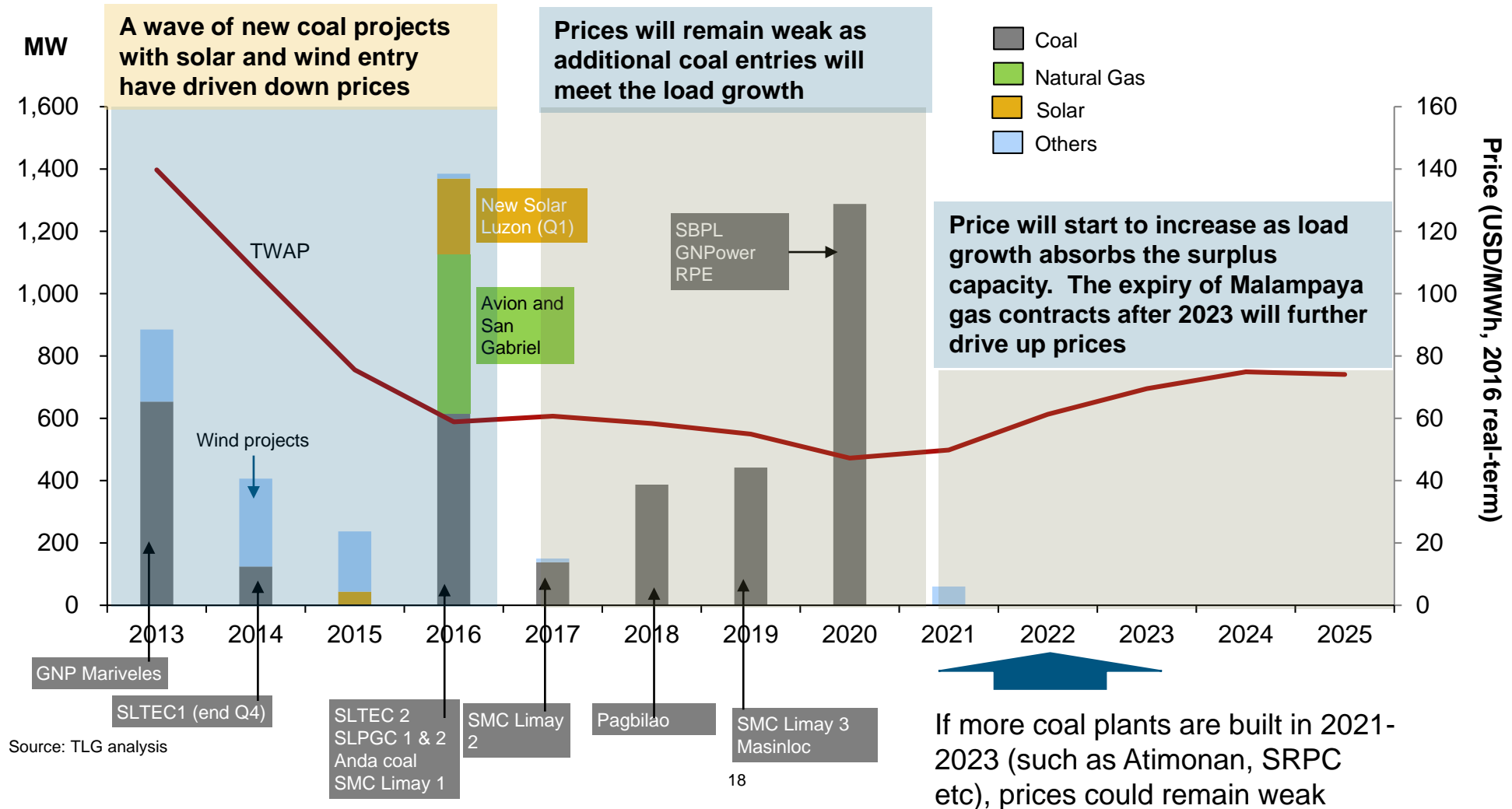


After a fall in prices driven by excess capacity and lower fuel prices, average prices will remain weak in the next few years before recovering after 2020

But it is unlikely that tariffs will follow this trend

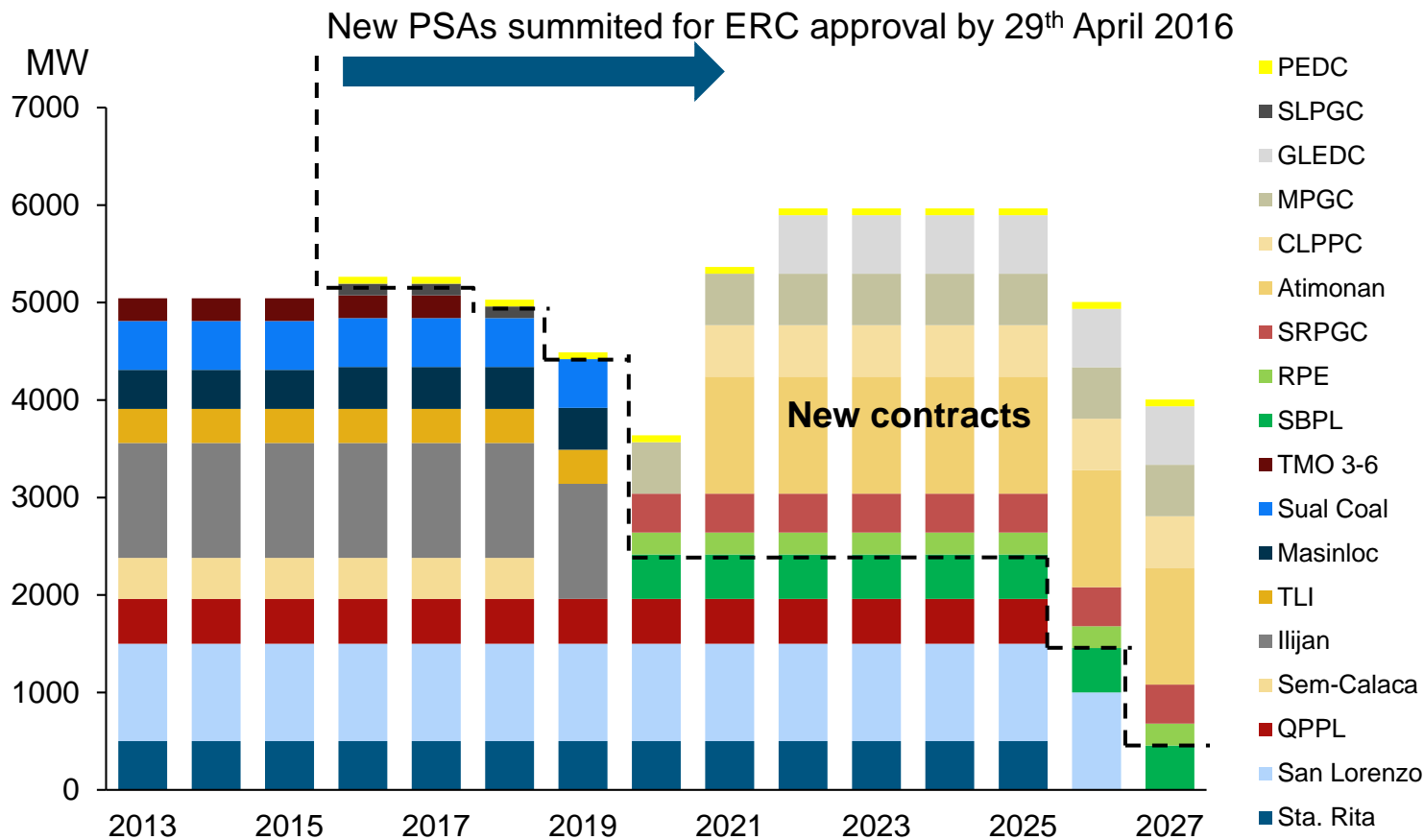
The fall in prices is partly due to large amounts of new capacity coming online But that new capacity is highly contracted with Meralco and others

Incremental annual committed supply, demand and prices



Just look at how much of that planned capacity has been contracted by Meralco alone!

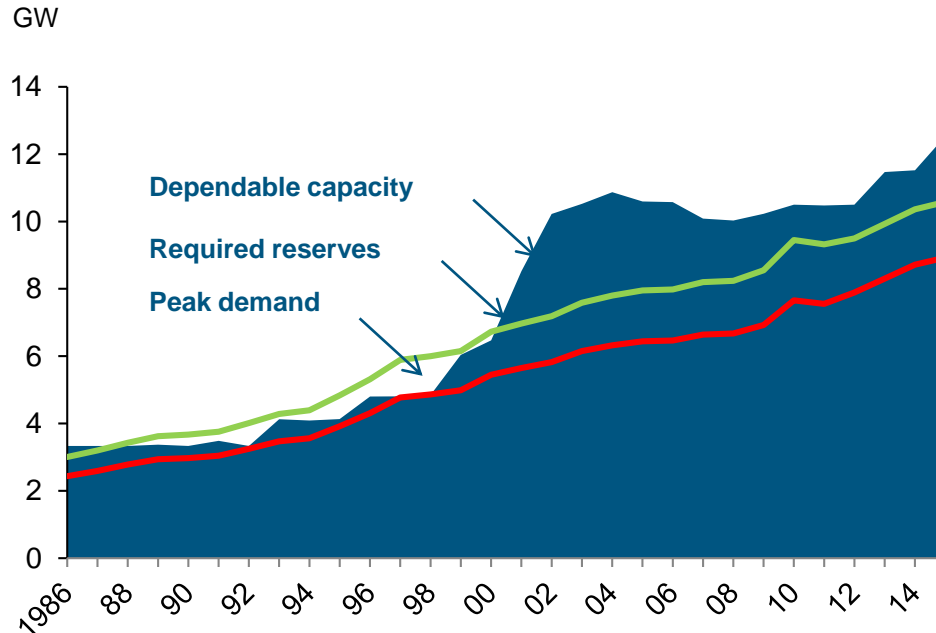
Meralco's contracted capacity



- The power prices in those contracts will be locked in for a long time

The entry of new capacity is generally an indicator of market reform working

Supply and demand in Luzon (1986-2015)



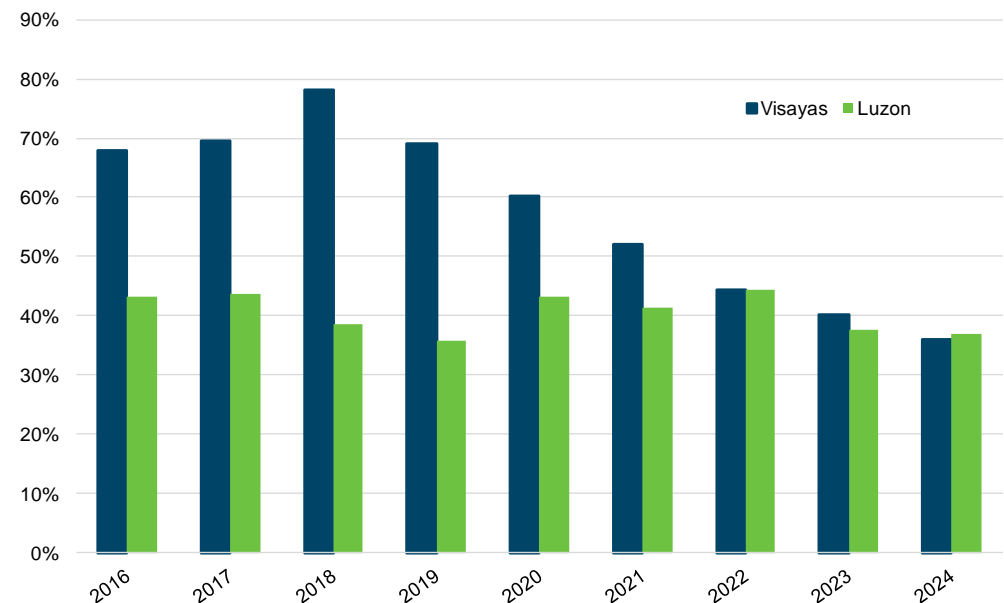
- When the WESM started, and for several years, no new capacity was required
- When supply and demand tightened – that is new capacity was actually required – there was significant entry:
 - Over 5000 MW of coal and 1100 MW of gas plant has commissioned or is committed (i.e. under construction or reached financial closure) in WESM since 2013
 - 427 MW of wind, and over 900 MW of solar, has entered. These are mainly driven by the Feed in Tariff but not all projects earn FIT rates

However, while new investment is a measure of success, what is also important is who bears the risk of that new investment

Note: The 600 MW EWC CCGT plant is not included

But excessive reserve margins are not a sign of efficiency

- From 2002 – 2004, Luzon reserve margins exceeded 70%
- The required reserve margin for prudent operation was – and remains - less than 25%
- The cost of this excess capacity was borne by consumers – through tariffs and later through the Universal Charge for stranded contract costs after the reforms
- Visayas currently has a reserve margin around 70% and predicted to grow in the next few years. Luzon is hovering around 40%



Consumers are still paying for excess capacity – however this time the excess has entered after the reforms

Who is bearing the risk of over capacity this time?

- Almost all of the new entry is underpinned by contracts
 - Most of the recent coal plants have long term Power Supply Agreements
 - Most of the recent renewables are covered by the Feed In Tariff which guarantees above market prices
 - The new gas plants do not have contracts and are the only real “merchant” new build
- Prices in the PSA’s (and the FIT) have been approved by the ERC
 - The ERC uses a cost plus methodology that does not rely on market pricing
 - The FIT was determined also using a cost-plus methodology
- Plants with PSA’s are mostly insulated against WESM prices in the future
 - Some PSA’s have a demand reduction clause - it is uncertain how this would actually operate

Most of these costs are firmly being passed through to consumers for decades to come

But surely the new Competitive Selection Policy will fix this problem?

- DOE and ERC had noticed that Power Supply Agreements were being signed after negotiations
- The process of selection was not transparent
- The prices were high
- So we understand the intent of CSP is to
 - **Bring down the cost of power for consumers**
 - By increasing transparency
 - Promoting competition



Are there more detailed rules coming?

- We understand a process must be run for everything and have at least two qualified bids
- Direct negotiations can only take place after two failed bids
- The process must be transparent and indicate:
 - How much volume is needed
 - What sources / fuel types of power are required
 - Term
 - Tariff structure
 - Details of transmission or grid upgrades required

How will the rules prevent contracting and having excessive reserve margins?

How will the rules ensure the right kind of plant is contracted?

Will the contract terms be long enough to encourage investment?

What makes for a good, transparent, competitive power procurement process anyway?

Strong DESIRE for the right OUTCOME

Processes work best when people want them to work

Regulation is a second best to incentives in this regard



An approach focused on the OUTCOME not on the PROCESS

The right outcome is least cost power for the demand required

Focusing on the outcome drives a process to achieve that outcome; focusing on process or inputs risks outcomes getting lost in the rules

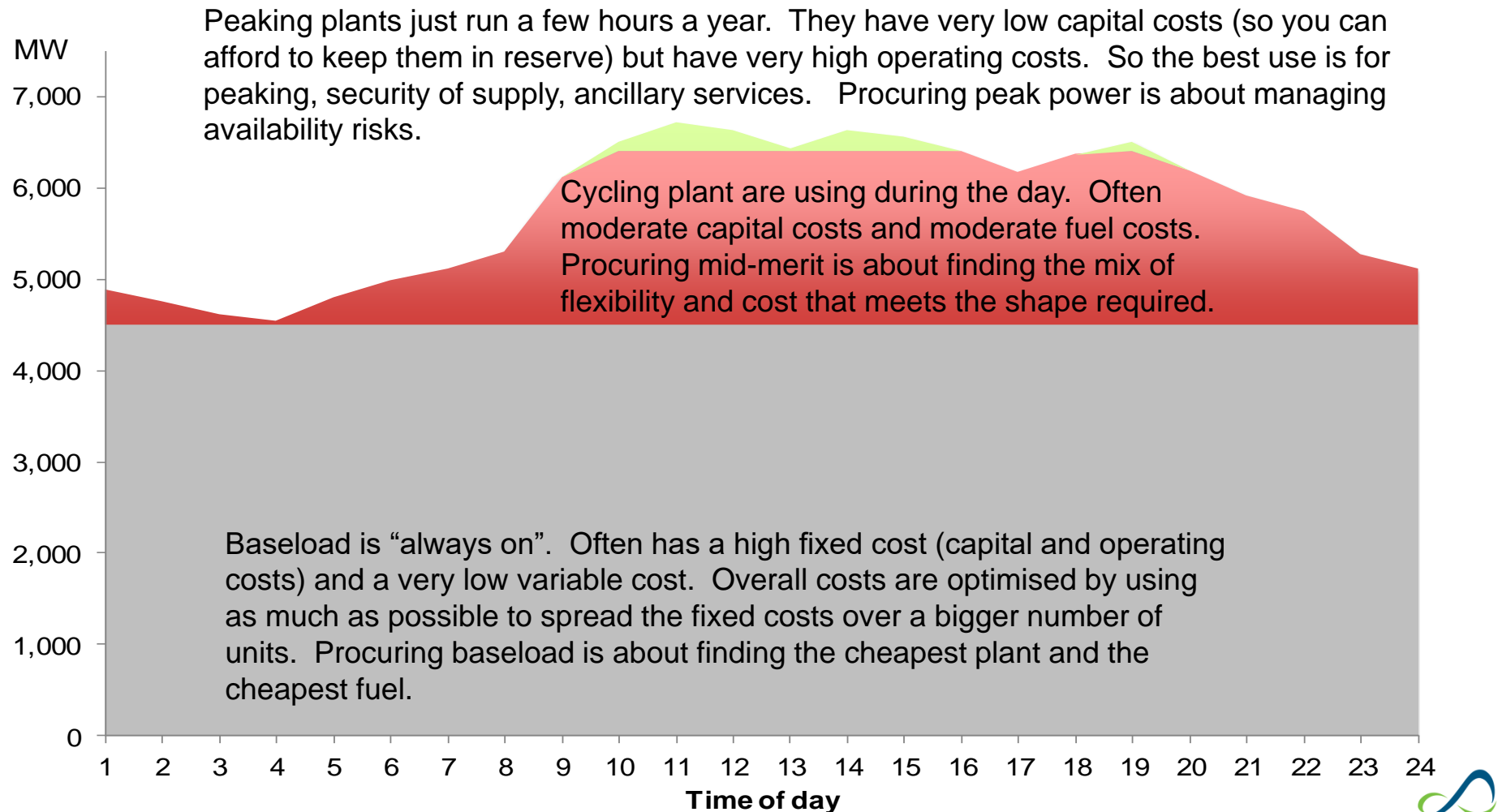


A PROCESS that is FIT FOR PURPOSE

Different time periods, different types of load, different fuels require different approaches

Flexibility will be required to ensure that suppliers can procure the types of products they need in the manner best suited to that product

Its not just about the price or even the volume: you need the right type of plant



Focusing on good outcomes sometimes means allowing the sellers more flexibility to determine the terms

- A simple baseload tender can be specified and run without issue
- But sometimes the purchaser does not know as much about what is available as the seller
 - New technologies (such as solar becoming economic sooner than expected)
 - Features of different technologies (such as the actual flexibility of different kinds of plant)
 - New fuels (such as LNG)
 - Short term opportunities (such as some equipment that is available at below market price because a previous process failed)

Hint: DO NOT use Philippine Government procurement rules if you want a good outcome!

Rigid rules that prevent purchasers from taking advantage of opportunities may fail to lower prices

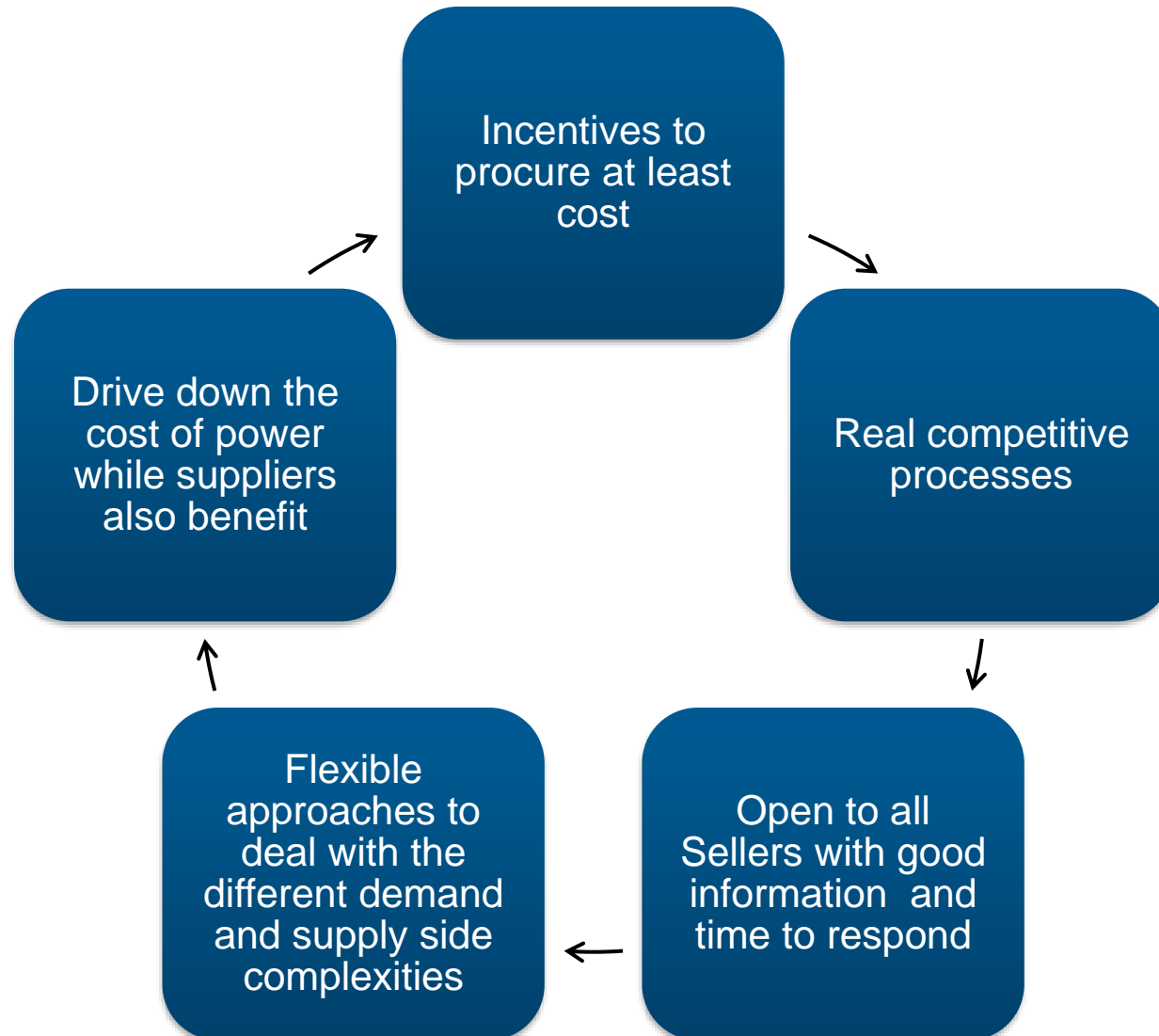
All forms of CSP have to be done well to be effective

- No form of competition is effective if nobody knows it is happening
 - Advertising a requirement for power in a local newspaper is insufficient to reach ALL potential sellers
- And potential sellers need time to respond
 - Advertising for two weeks and then claiming the bid has failed because nobody submitted a bid is competition avoidance not competition

Where processes like the above are claimed as “CSP compliant” it is likely that the real aim is to allow a previously negotiated bid (possibly with a related party) to get through two “CSP processes” unchallenged

Without incentives, regulated competition is a game of “who can game the rules the best”

The best outcome is one that is self-sustaining

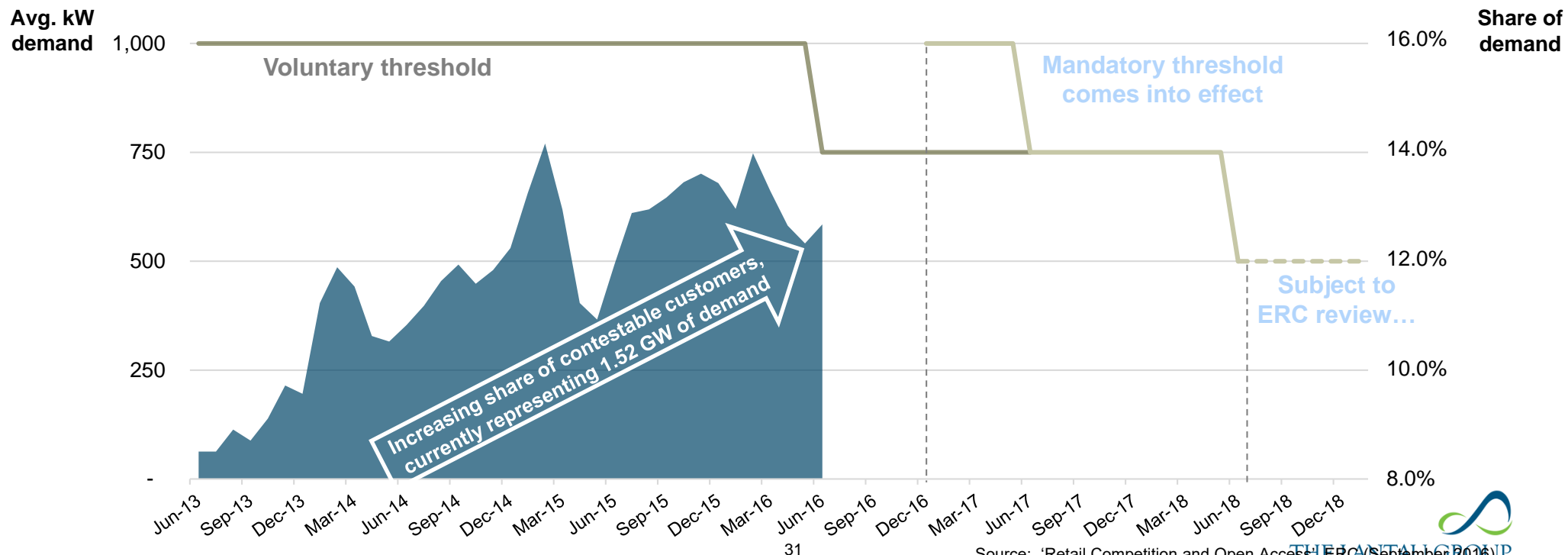


So where to from here?

Retail Competition and Open Access is a key reform necessary to open up the market

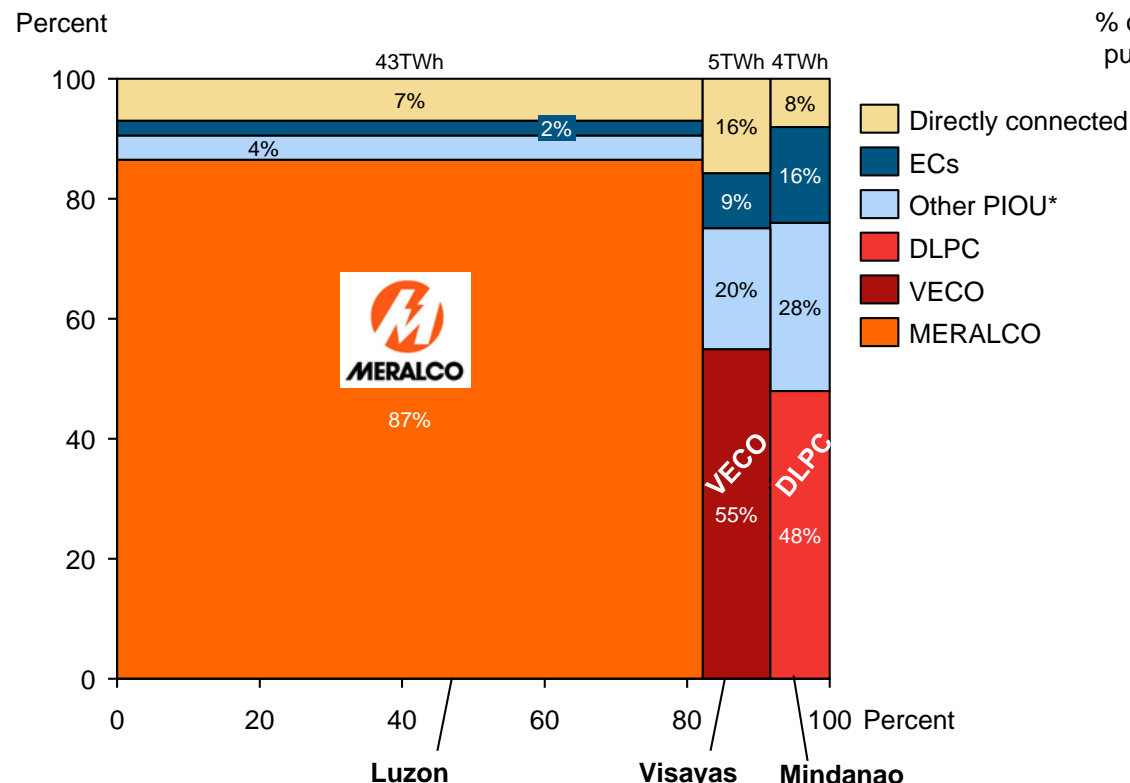
- Retail Competition Open Access (RCOA) (*Resolution No. 16*) began in June 2013, seeking to promote competition and choice within the electricity retail sector and, ultimately, lower prices.
- At present, certain customers (mostly industrial and commercial) can voluntarily choose their retail electricity supplier (RES), subject to their average demand over the prior 12 months.
- A 50% cap applies for power sourced from affiliate gencos, to be sold to contestable customers.

Evolution of RCOA: share of contestable customers and kW thresholds

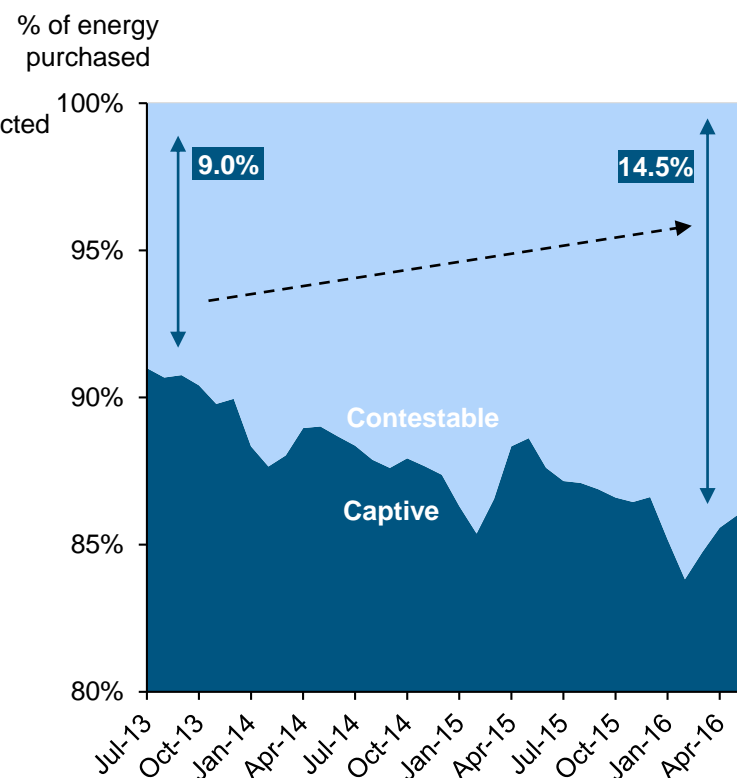


Although each grid still has one dominant power off-taker, the growing contestable market offers opportunities to sell directly to large end-users

Electricity consumption by distributor (2014)



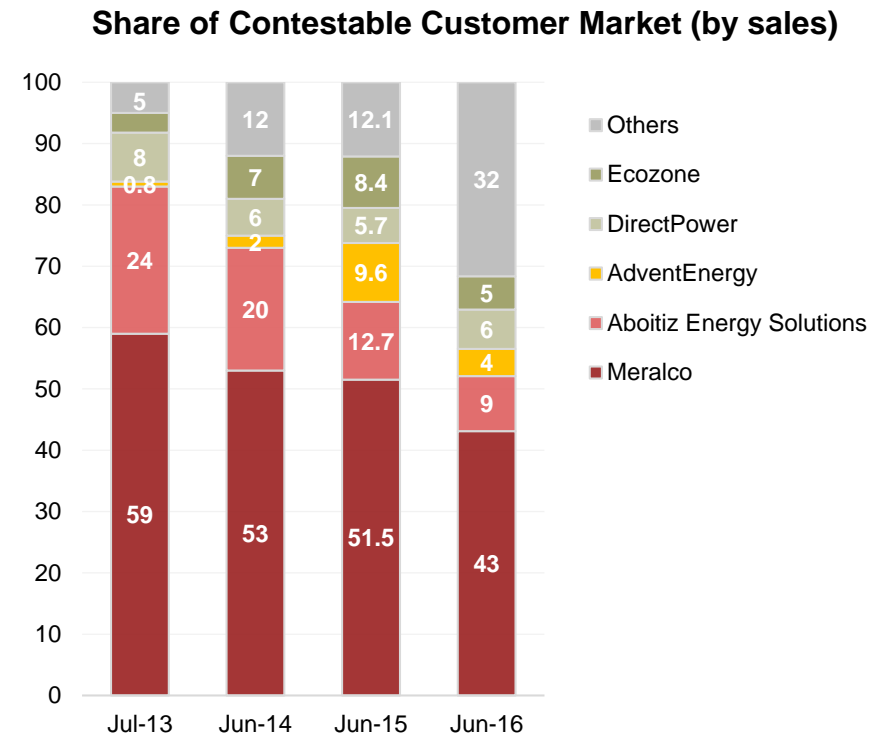
Size of Captive and Contestable markets



Note: * Private Investor Owned Utility
Source: DOE; MERALCO; AboitizPower; TLG analysis

Meralco's share of the retail market is being eroded by RCOA as the contestable market grows, and becomes both more open and competitive

- As RCOA reaches more customers, the market share of the major players are in decline
- There is no need to regulate contracts for supply to contestable customers – customers can choose a different retailer if they do not like the prices on offer
- This means WESM benefits can flow to contestable customers much faster than captive customers
- Over time, one solution therefore is to open up more and more of the market



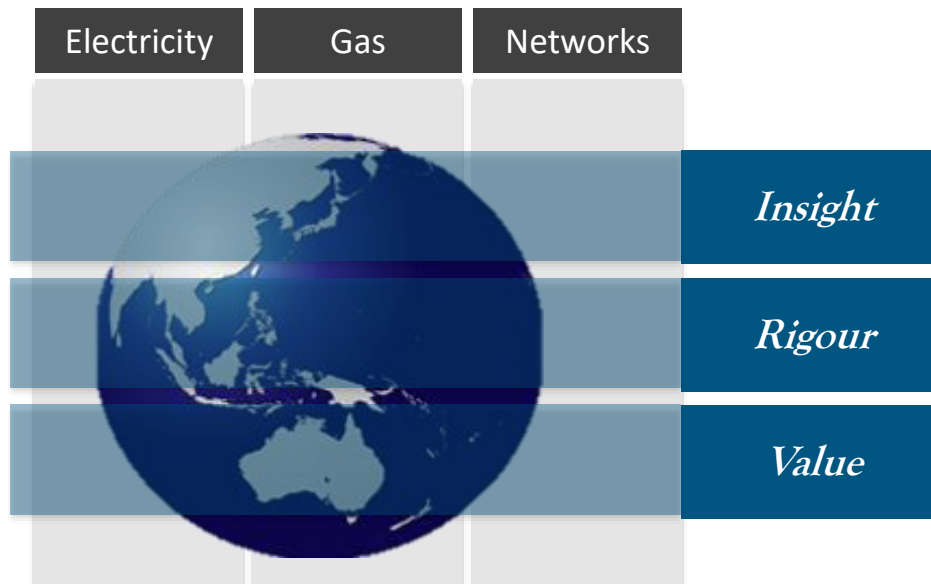
But it would be naïve to suggest the whole market be opened up without some safeguards

- Full retail competition has occurred in a number of other markets, such as the UK, parts of Australia, NZ etc
- However those markets have very different business environments and very strong general competition law and consumer protection regimes
- But more importantly, unlike the above markets, the Philippines is still a growing market where new investment is needed
 - New power stations need a level of certainty re revenue stability to enter
 - Full retail competition would remove the certainty needed by retailers (DU's and EC's) to contract for this new investment
- The right approach, therefore, is a mix of increasing retail competition and an improved structure of generation cost regulation
 - For example, by regulating the generation cost directly and not the component parts

In summary, the reform needs to reach all corners of the market

- The WESM is basically a robust market
- The regulatory framework did not keep up with the reform agenda
- CSP may help, but is no substitute for real incentives
- Real incentives can come from either:
 - Retail competition as RCOA opens up more and more of the market
 - Reforms in the structure of regulation
- Neither of the above are fast, but eventually the benefits of the market should flow through to consumers

Thanks



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