Regional/Global Comparison of Retail Electricity Tariffs

Executive Summary

Feb, 2023

International Energy Consultants

www.energyconsultants.com.au

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The data contained in this Report are valid for the dates indicated. Subsequent changes to tariff schedules, exchange rates, fuel prices and other variables may affect the overall conclusions in the Report.

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Introduction

- Meralco has commissioned International Energy Consultants (IEC) to prepare an independent report comparing Meralco's retail electricity tariffs with those in selected markets from the Asia-Pacific region and worldwide
- This Report:
  - Provides a detailed snapshot of tariffs at various consumption levels in 18 selected markets in the Asia-Pacific region (including Meralco) as well as lower resolution data for a further 28 European and US markets, at the end of 2022
  - Updates a previous report that was prepared by IEC in 2018 for the same markets and examines the change in tariffs over the intervening 5 year period
  - Investigates the reasonableness of Meralco's tariffs
- Note that this Executive Summary is only a partial version of the Main Report & Appendices. Persons wishing to view the full report should make inquiries directly to Meralco.

Methodology

- For this Report, IEC has conducted a detailed survey and analysis of retail electricity tariffs and costs in 17 Core markets (15 countries and 2 US states) in the Indo-Pacific region plus Meralco, as well as a supplementary, less comprehensive "meta-analysis" of 27 countries in the Euro area and the 48 remaining US states
- The 17 Core markets in the survey include the following:
- Subsidized markets: Australia (WA), Indonesia, Malaysia, Thailand, South Korea, South Africa, Sri Lanka, Taiwan, Vietnam
- Unsubsidized markets: Japan (Kansai), Hong Kong, Singapore, NZ, California (PG&E), Hawaii, Canada (Ontario), PNG
- These markets were selected based on availability and quality of data with a focus on those which would provide a representative range of costs and tariffs. These are the same markets reviewed in a similar report prepared in 2018
- At the time of preparation, only four (NZ, Singapore, Japan and Meralco) of the core markets are deregulated. 17 US states are deregulated (not including Hawaii or California)
- For each of the 17 Core markets (& Meralco), retail tariffs were calculated for Residential customers @ 100, 200, 400, 800 & 1500kWh per month as well as Commercial (40kW) and Industrial customers (2MW) each operating at @ 40% and 80% load factors. This data was calculated using published tariff schedules for each market's respective utility/supplier and cross-checked with actual customers bills (where available)
- The detailed analysis and source information for the 17 Core markets are contained in Part II of this Report
- Tariffs for each of the supplementary 27 countries in Europe and 50 US states were sourced from data published by Government energy agencies and were not all verified separately by IEC. Tariff data for these supplementary markets is presented for customer categories which may vary in size from those presented for the Core markets
- Wherever possible, tariffs were unbundled into constituent components, for ease of comparison with Meralco's unbundled rates (eg. Generation, Transmission, Distribution, Other, VAT)
- Tariffs for each of the 17 Core markets (and Meralco) were calculated for November 2022 in USc/kWh, using the average exchange rate for that month. Tariff data for European markets and the 48 US states are reported for mid-2022 and October 2022 (respectively) which was the most recently available data
- The generation component of Meralco's tariff was assumed to be equal to the regulated charge for all customers. Contestable customers pay an unpublished negotiated rate which could be higher or lower than the regulated charge

International Energy Consultants

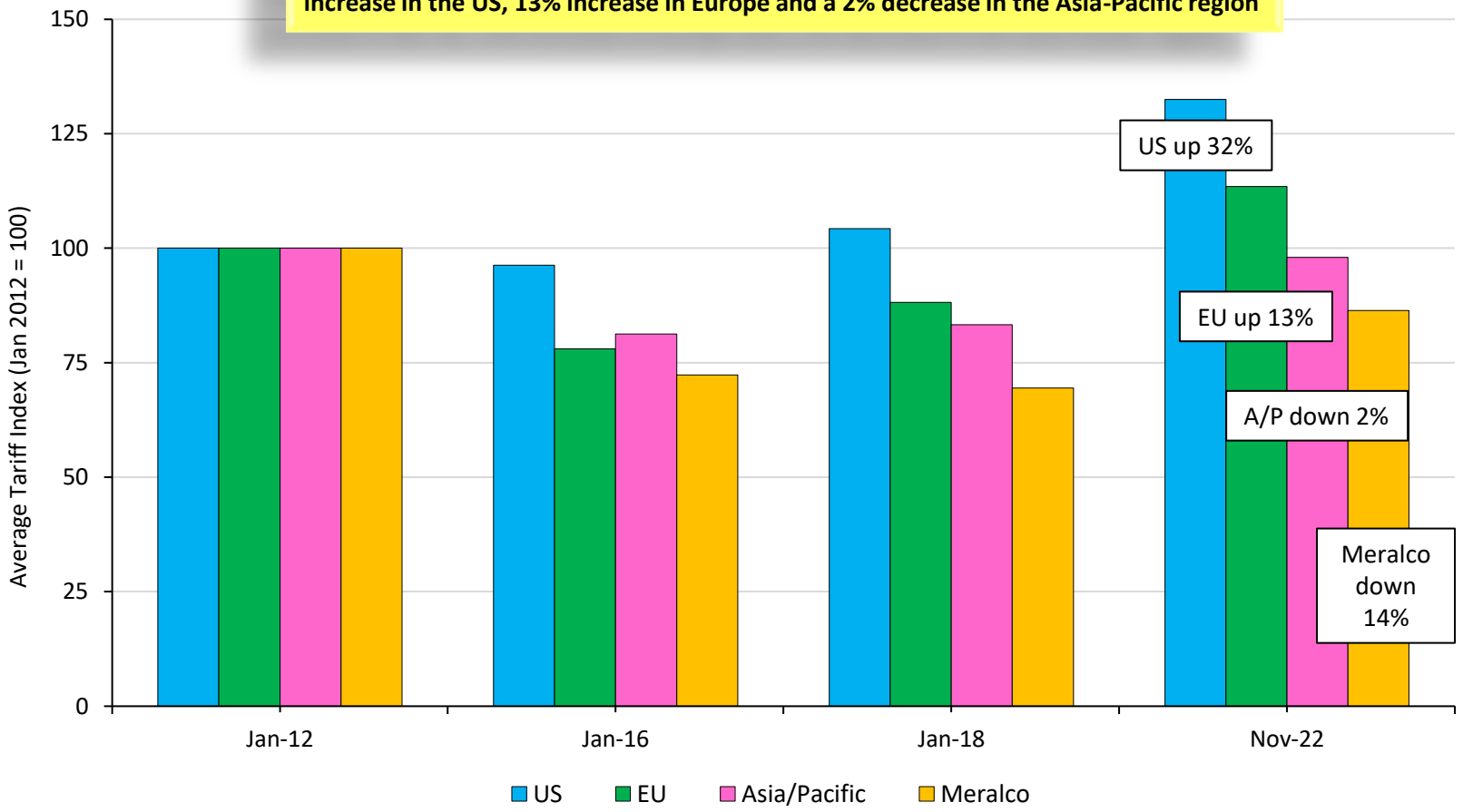
- IEC is a Perth-based consulting firm which specializes in providing power market advisory services to companies operating in and associated with the IPP sector within the Asia-Pacific region
- IEC has been operating for over 20 years and has a major client list which includes: BHP Billiton, Shell, CLP Power, InterGen, Itochu, JPower, OneEnergy, PTT, EGCO, Arcapita, Woodside Energy, BG, Sithe, Blackstone, Origin Energy, Standard Chartered Bank, GNPower, Meralco, Macquarie Bank, San Miguel & YTL
- Since inception, we have undertaken multiple engagements acting as both Sponsor's and Lender's Market Consultant for both acquisitions and greenfield IPP developments throughout Asia
- IEC specializes in modeling most of the major power markets in the Asia-Pacific region including: Philippines, Singapore, Indonesia, Vietnam, NZ, Taiwan, Japan & Korea. For each of these markets we have a detailed customized dispatch model and database and a deep understanding of the market mechanics and regulatory framework.
- We also provide a range of general IPP development services including: acquisition due diligence, greenfield project development, fuel demand forecasting, carbon analysis, strategic/business planning, in-house training courses and temporary secondment of personnel.
- IEC's Managing Director and lead consultant Dr John Morris is recognized as a leading authority in deregulated power markets in the Asia region. Dr Morris was formerly Country Manager for InterGen in Indonesia and Managing Director of InterGen in Singapore. He also holds a PhD in Geology and has worked extensively throughout Asia and globally in the oil/gas exploration industry

Background

- This Report is the 4th in a series to be published by IEC. Similar reports were compiled dated Jan 2012, Jan 2016 & Jan 2018
- In the past 5 years, the Philippines and the world have experienced some major shocks that have disrupted many aspects of life and not least the supply of energy
- The COVID pandemic, the war in Ukraine and a range of natural disasters have combined to create a set of unprecedented circumstances which have directly impacted electricity pricing eg.:
    - Fuel supply disruptions and massive price increases
    - Coal price has increased 270% from $105/tonne to $390/tonne, over 5 years
    - Oil price has increased 32% from $69/bbl to $91/bbl, over 5 years
    - Depreciation of most currencies; Peso down 12% vs US$
    - Inflationary pressures not experienced for several decades
- The Philippines electricity system is especially impacted by these events because of its heavy reliance on imported coal and domestic gas which are both priced in US$
- Despite these pressures and without the benefit of large subsidies, the Philippines power supply industry has proven remarkably resilient and electricity prices have risen at or below the global average

Change in Tariffs (2012-2022)

Meralco's average tariff (in US$) has decreased by 14% over the past decade vs a 32% increase in the US, 13% increase in Europe and a 2% decrease in the Asia-Pacific region



Notes
1. Weighted average tariff excluding VAT
2. All tariffs converted to US$

Key Questions

The key questions addressed in this Report are the following:

- **Tariff Composition:** ***What is the composition of Meralco's retail tariffs?***
- **Tariff Comparison:** ***How do Meralco's rates compare with other countries?***
- **Tariff Changes:** ***How have Meralco's tariffs changed since the last survey 5 years ago and how do these changes compare with other markets?***
- **Tariff Reasonableness:** ***Are Meralco's tariffs fair and reasonable?***

Summary of Answers: Tariff Composition

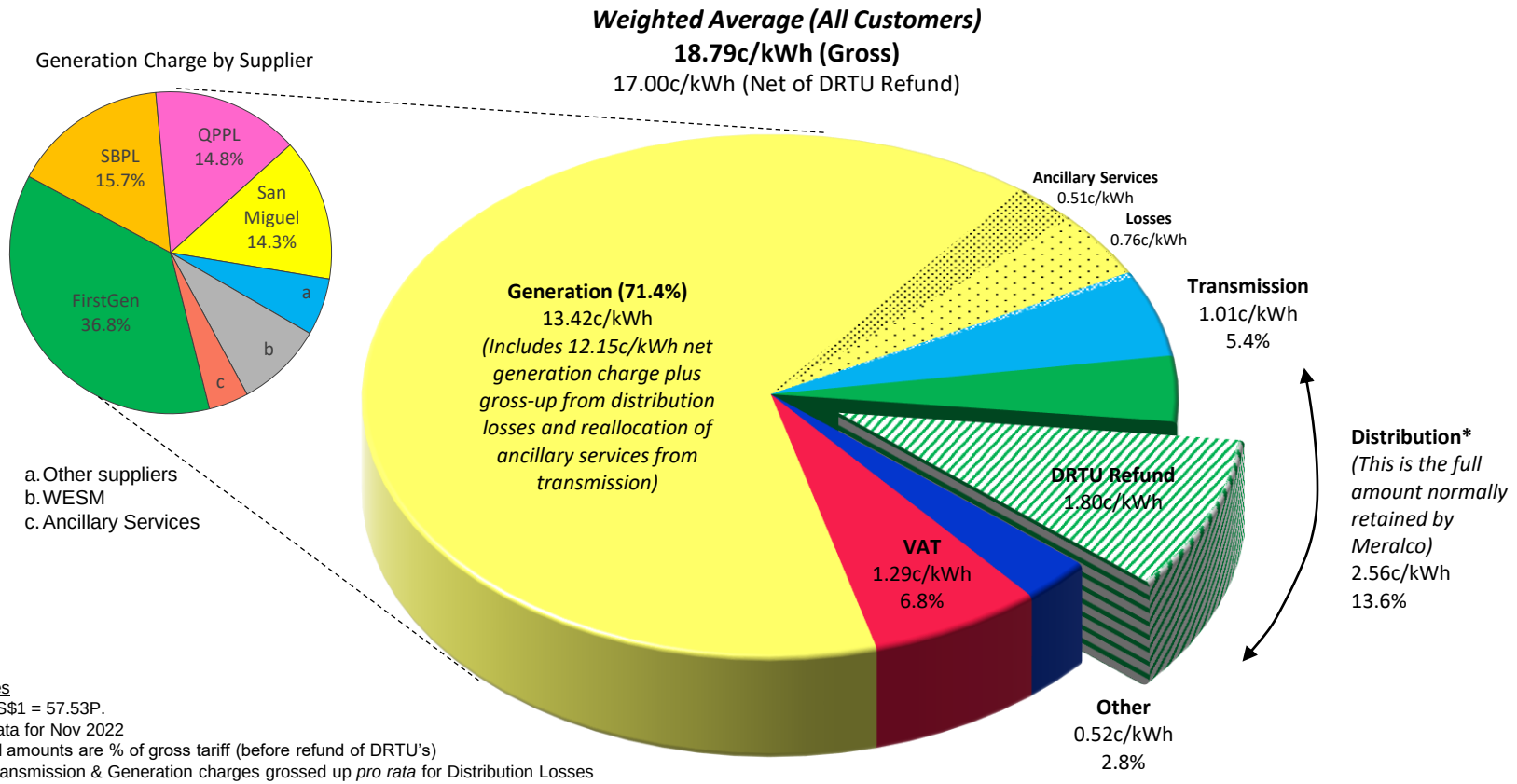
What is the composition of Meralco's retail tariff?

- **The main component of Meralco's regulated retail tariff is the gross[1] Generation Charge (71.4% of the average retail tariff) which includes (by value):**
  - **Legacy PPA's (FirstGen 32.0%, QPL 14.8%) 46.8%**
  - **PSA's (SBPL 15.7%, SMC 14.3%, FirstGen 4.8%, ACEnergy 4.1%, Others 1.7%) 40.6%**
  - **WESM 8.8%**
  - **Ancillary services[1] 4.0%**
- **The Distribution Charge[2] comprises 13.6% of the average tariff. *This is the only component of the tariff that accrues to Meralco. All other charges are collected by Meralco on behalf of third parties.* NB. The actual Distribution Charge received in Nov 2022 is slightly higher that the pro-forma ERC rate because of final sales mix vs the mix assumed by ERC**
- **The Transmission Charge (excl. Ancillary Services[1]) makes up 5.4% of the average tariff**
- **Other taxes and statutory charges comprise 2.8% of the average tariff**
- **VAT makes up 6.8% of the average tariff. (NB. The overall VAT rate is reduced by a large fraction of non-residential customers receiving an exemption)**

Notes
1. Ancillary services are included in the Transmission component of the published tariff but are ultimately paid to generators
2. The Distribution Charge has been grossed up by adding back the DRTU refund paid in Nov 2022
3. Some figures may not add to total because of rounding

Meralco Tariff Composition (Nov 2022) – US$

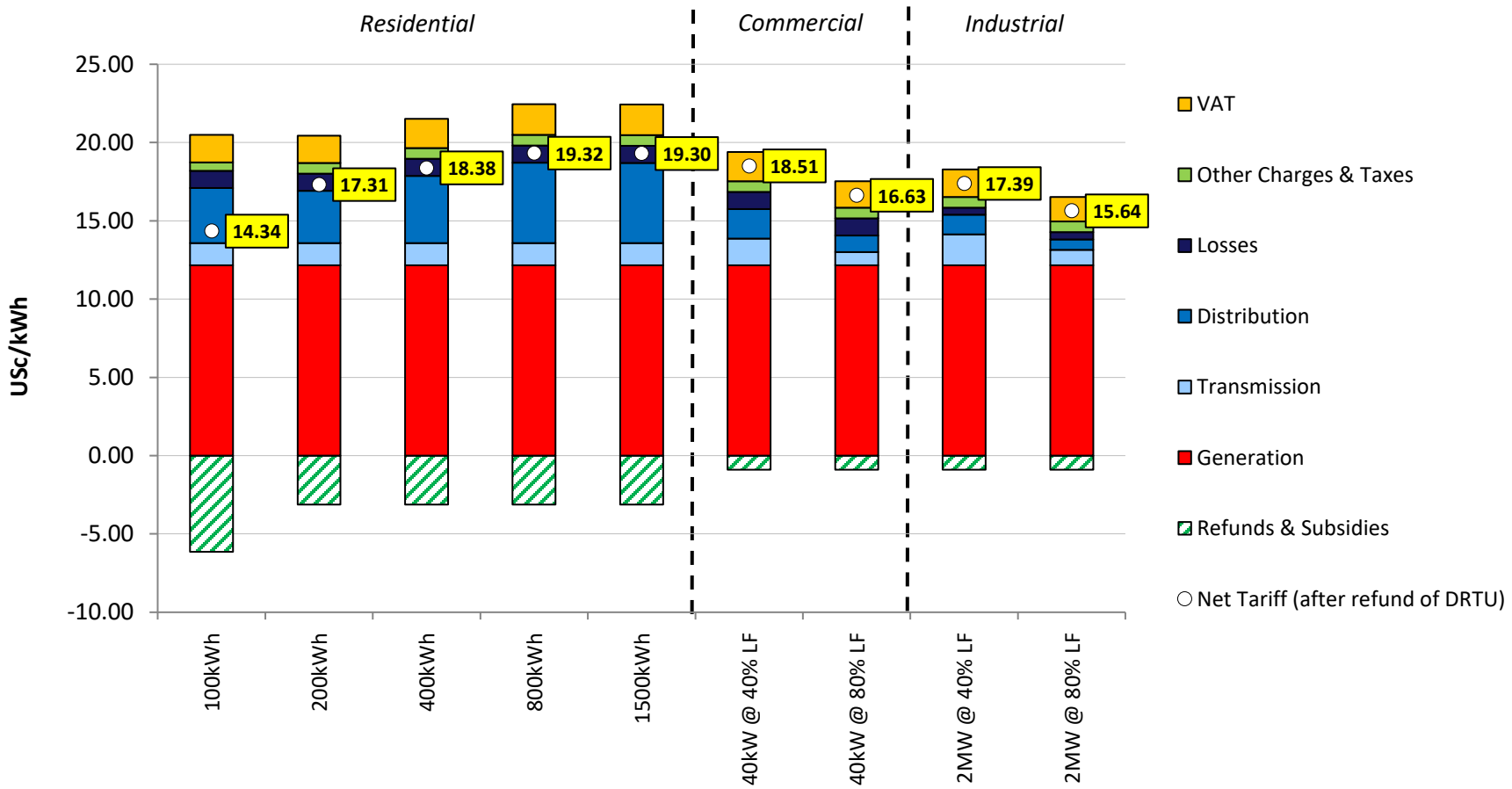
Meralco's average tariff in Nov 2022 was 18.79c/kWh but this was reduced to 17.00c/kWh, as a result of a 1.79c/kWh DRTU refund to customers



Notes
1. US$1 = 57.53P.
2. Data for Nov 2022
3. All amounts are % of gross tariff (before refund of DRTU's)
4. Transmission & Generation charges grossed up *pro rata* for Distribution Losses
5. Ancillary Services component (assumed 33%) of gross transmission charge reallocated back to generation
6. Weighted average based on Meralco customer categories in Nov 2022 (35% Residential; 37% Commercial; 28% Industrial)
7. Net Distribution Charge reduced from 2.56c/kWh to 0.76c/kWh (net) after DRTU's refund to customers

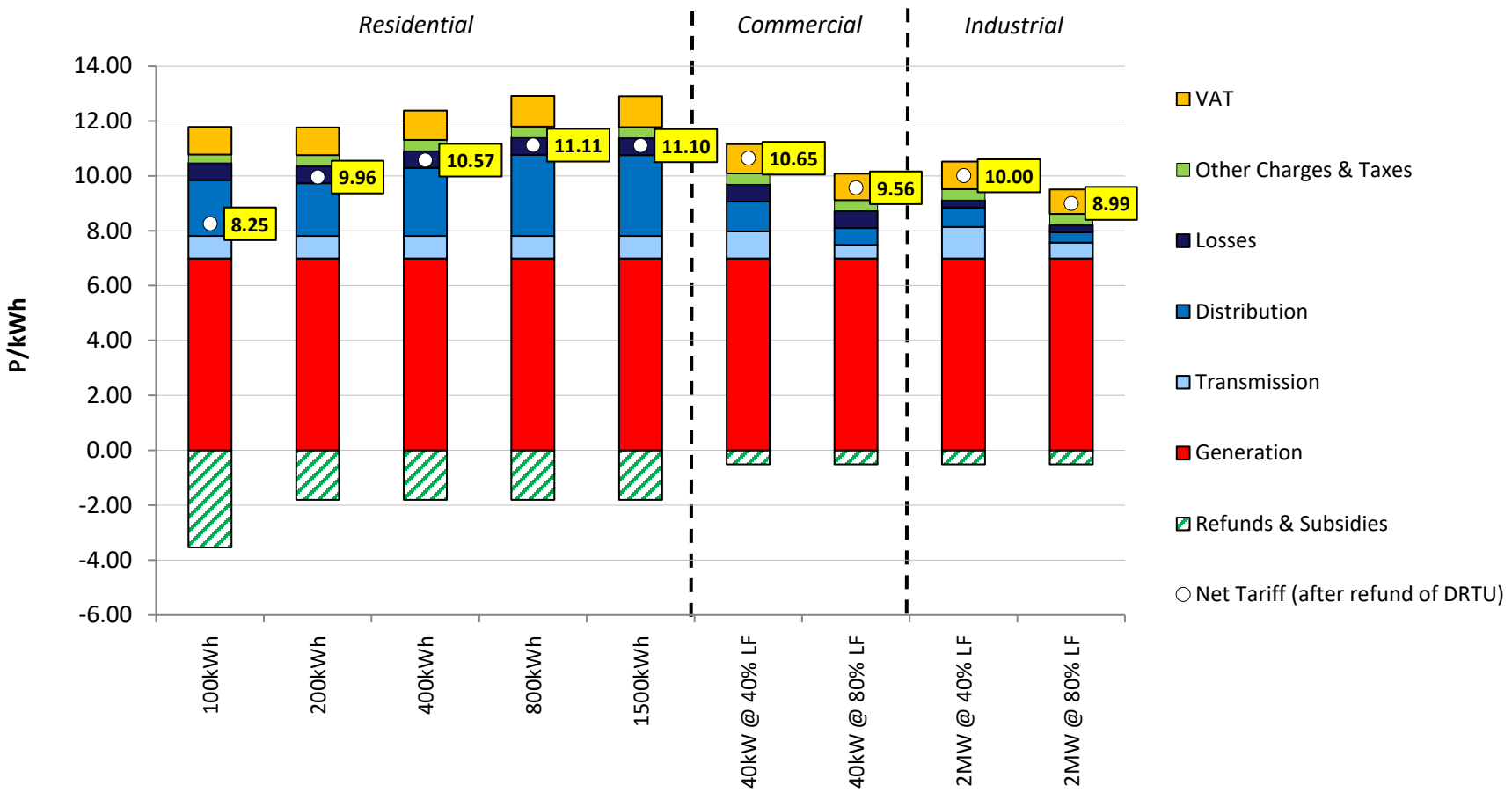
* The Distribution Charge shown is actual and differs from the pro-forma ERC approved rate because of variations in the final sales mix. Meralco's distribution rate will be subjected to a future DRTU to bring the overall weighted average back to the ERC-approved rate of 2.35c/kWh (=P1.35/kWh)

Meralco Tariff Structure (USc/kWh) – Nov 2022



Notes
1. US$1 = 57.53P
2. The Distribution Charge has been grossed up by adding back the DRTU's
3. Meralco's distribution charge will be subjected to a future DRTU to bring the overall weighted average back to the ERC-approved rate of P1.35/kWh

Meralco Tariff Structure (P/kWh) – Nov 2022

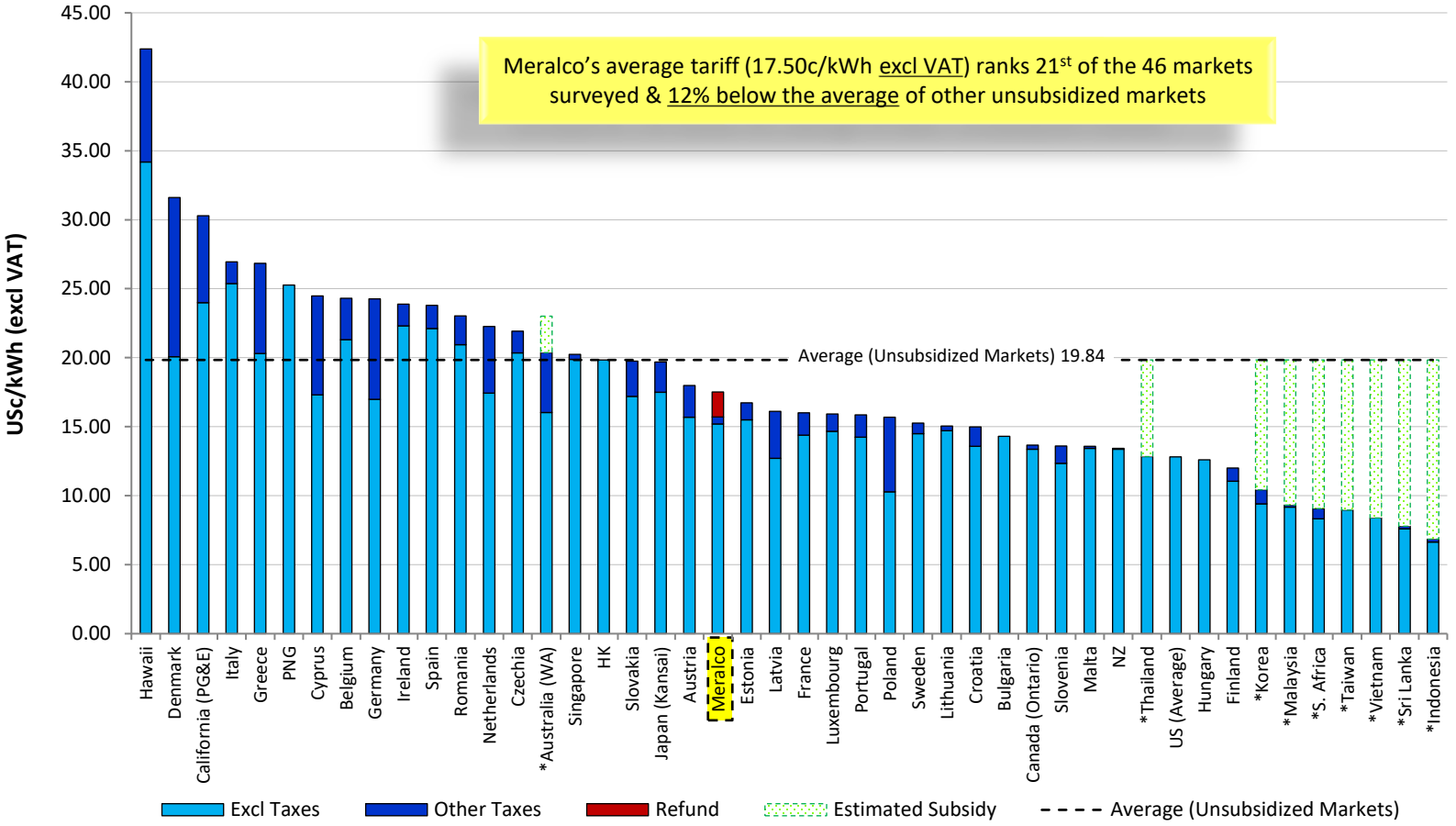


Notes
1. The Distribution Charge has been grossed up by adding back the DRTU's
2. Meralco's distribution charge will be subjected to a future DRTU to bring the overall weighted average back to the ERC-approved rate of P1.35/kWh

Summary of Answers: Tariff Comparison
How do Meralco's rates compare with other countries?

- **Overall, Meralco's tariffs have remained roughly unchanged over the past 5 years, relative to other markets ie. close to the median and the average**
- **Meralco's weighted average retail tariff (17.50c/kWh excluding VAT but including all other statutory charges) ranks 21st and 3% below the global average (*vs. 24th highest & 4% below the average in 2018*) among the 46 markets surveyed**
- **Meralco's Residential retail tariff (21.58c/kWh incl. VAT) ranks 21st highest and is 4% above the world average (*vs. 26th highest & 8% below the average in 2018*)**
- **Meralco's Commercial retail tariff (17.22c/kWh excl. VAT) ranks 26th highest and 7% below the world average (*vs. 24th highest & 7% below the average in 2018*)**
- **Meralco's Industrial retail tariff (15.72c/kWh excl. VAT) ranks 24th highest and 8% below the world average (*vs. 17th highest & 6% above the average in 2016*)**
- **Residential tariffs have become more expensive than the average because of increased subsidies and cuts to VAT in many other markets, as a Government response to global inflation. Notwithstanding, Meralco's Residential tariffs are still very close to the global average**
- **Industrial tariffs have become cheaper than the average, largely because of a general shift in the cost burden in other regulated markets from residential to industrial customers**

Global Survey of Electricity Tariffs (Nov 2022) – Average All Customers



Notes
1. All data for Nov 2022 except EU countries which are 1H 2022 and US (average) which is Oct 2022
2. All figures are actual weighted averages except EU countries which are weighted Res 40% : Com 30% : Ind 30%
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)
* Indicates subsidized (or under-priced) markets. Estimated subsidies calculated as average of all markets minus actual residential tariff. Australia (WA) is actual.

Global Electricity Tariffs[1] (Nov 2022) – Average All Customers

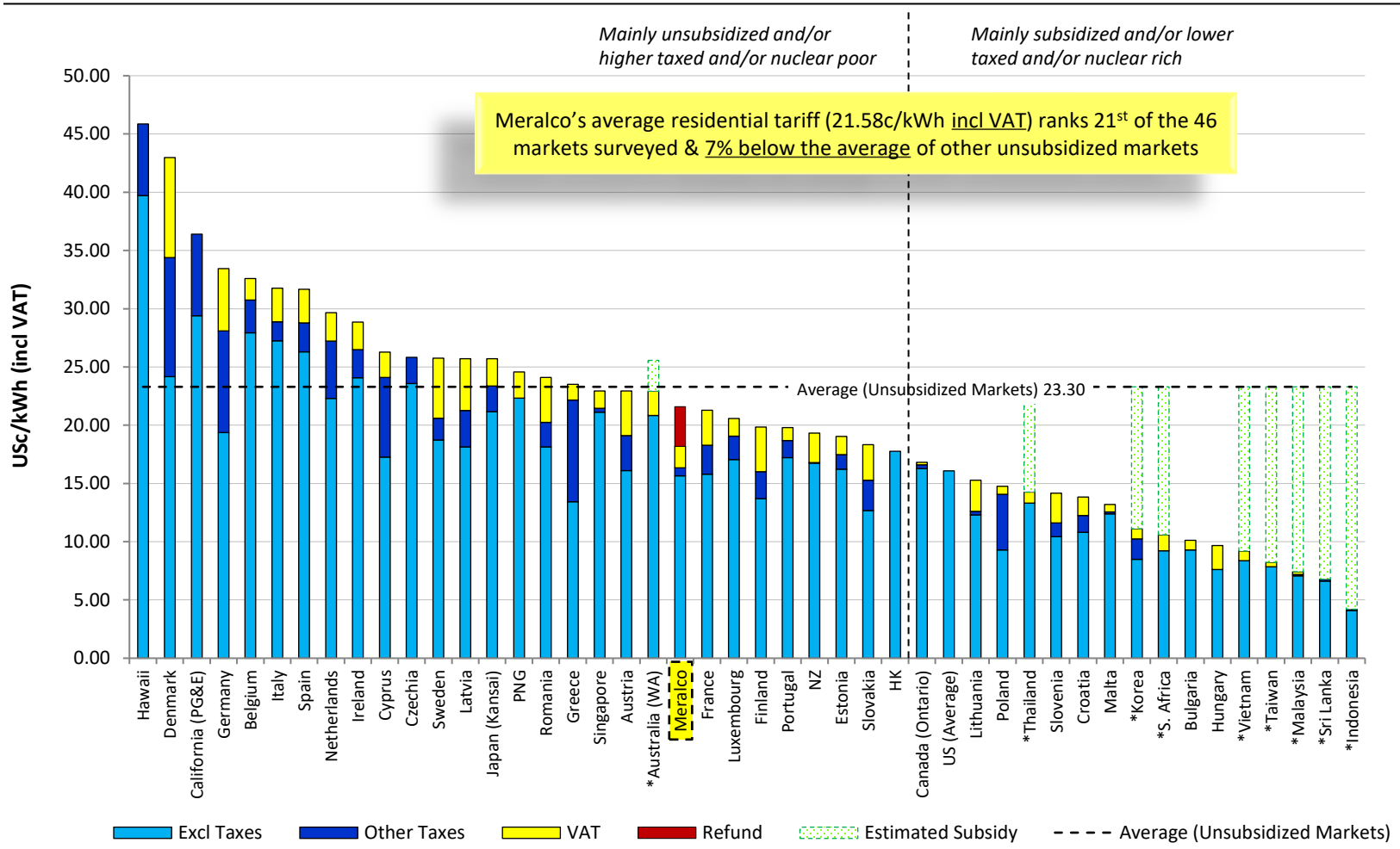
- **Meralco's average tariff ranks 21/46 & 3% below the average of all markets**

2018 Rank	**2022 Rank**	**Country** *	**2022 Tariff** [1,2]	*2018 Tariff* [1,2]	Change in Tariff
2	**1**	**Hawaii**	**42.38**	*25.61*	65.5%
12	**2**	**Denmark**	**31.62**	*18.03*	75.4%
6	**3**	**California (PG&E)**	**30.30**	*20.78*	45.8%
5	**4**	**Italy**	**26.94**	*20.79*	29.6%
14	**5**	**Greece**	**26.85**	*17.08*	57.1%
1	**6**	**PNG**	**25.26**	*27.56*	-8.4%
9	**7**	**Cyprus**	**24.48**	*18.54*	32.0%
7	**8**	**Belgium**	**24.32**	*20.68*	17.6%
3	**9**	**Germany**	**24.26**	*23.67*	2.5%
8	**10**	**Ireland**	**23.89**	*19.19*	24.5%
37	**16**	**Singapore**	**20.23**	*10.25*	97.5%
10	**19**	**Japan (Kansai)**	**19.69**	*18.52*	6.3%
		Average (All 46 Markets)	**18.00**	*14.61*	23.2%
24	**21**	**Meralco** [3]	**17.50**	*14.07*	24.4%
38	**32**	***Thailand**	**12.84**	*10.17*	26.3%
40	**37**	**US (Average)**	**12.81**	*10.09*	27.0%
39	**38**	**Hungary**	**12.60**	*10.12*	24.5%
30	**39**	**Finland**	**12.01**	*11.64*	3.2%
35	**40**	***S. Korea**	**10.42**	*10.47*	-0.5%
42	**41**	***Malaysia**	**9.31**	*9.43*	-1.3%
46	**42**	***S. Africa**	**9.06**	*7.31*	23.9%
43	**43**	***Taiwan**	**8.95**	*8.86*	1.0%
44	**44**	***Vietnam**	**8.38**	*8.43*	-0.6%
36	**45**	***Sri Lanka**	**7.79**	*10.29*	-24.3%
45	**46**	***Indonesia**	**6.84**	*8.06*	-15.1%

- Light blue indicates subsidized market

1. Tariffs are USc/kWh excluding VAT but including all other non-recoverable taxes and charges
2. All data for Nov 2022 except EU countries which are H1 2022 and US (average) which is Oct 2022
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

Global Survey of Residential Electricity Tariffs (Nov 2022)



Notes

1. All data for Nov 2022 except EU countries which are 1H 2022 and US (average) which is Oct 2022
2. EU countries based on 2500-5000kWh pa sourced from EuroData. US data sourced from EIA for all residential customers. All other data for weighted average customer size
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

* Indicates subsidized (or under-priced) markets. Estimated subsidies calculated as average of all markets minus actual residential tariff. Australia (WA) is actual.

Global Residential Electricity Tariffs[1] (Nov 2022)

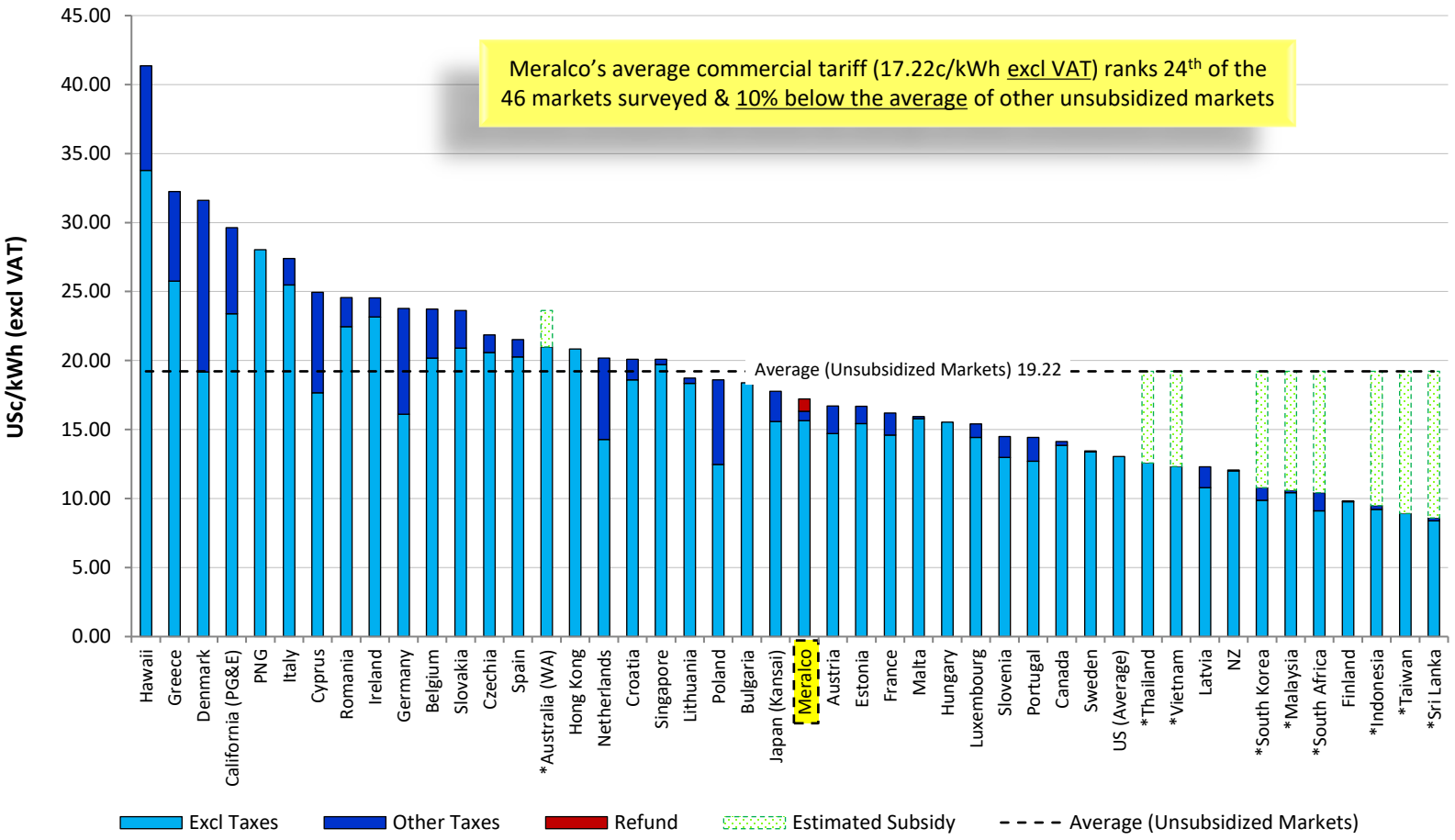
- **Meralco's average residential tariff ranks 21/46 & 4% above the average of all markets**

2018 Rank	**2022 Rank**	**Country** *	**2022 Tariff** [1,2]	*2018 Tariff* [1,2]	Change in Tariff
4	**1**	**Hawaii**	**45.86**	*29.26*	56.7%
1	**2**	**Denmark**	**42.97**	*37.20*	15.5%
10	**3**	**California (PG&E)**	**36.40**	*24.67*	47.5%
2	**4**	**Germany**	**33.44**	*37.19*	-10.1%
3	**5**	**Belgium**	**32.58**	*34.15*	-4.6%
9	**6**	**Italy**	**31.77**	*26.14*	21.5%
6	**7**	**Spain**	**31.66**	*28.02*	13.0%
n.a.	**8**	**Norway**	**31.45**	*n.a.*	n.a.
24	**9**	**Netherlands**	**29.66**	*19.06*	55.6%
5	**10**	**Ireland**	**28.86**	*28.13*	2.6%
12	**15**	**Japan (Kansai)**	**25.70**	*24.35*	5.5%
29	**19**	**Singapore**	**22.95**	*17.46*	31.4%
26	**21**	**Meralco** [4]	**21.58**	*17.72*	21.8%
		Average (All 46 Markets)	**20.80**	*19.18*	8.4%
37	**32**	**US (Average)**	**16.09**	12.50	28.7%
30	**37**	**Malta**	**13.19**	15.59	-15.4%
40	**38**	***S. Korea**	**11.12**	10.38	7.1%
43	**39**	***S. Africa**	**10.60**	9.16	15.7%
39	**40**	**Bulgaria**	**10.13**	11.65	-13.1%
34	**41**	**Hungary**	**9.67**	13.73	-29.6%
41	**42**	***Vietnam**	**9.20**	9.27	-0.7%
44	**43**	***Taiwan**	**8.23**	8.63	-4.6%
42	**44**	***Malaysia**	**7.42**	9.17	-19.1%
45	**45**	***Sri Lanka**	**6.79**	7.58	-10.4%
46	**46**	***Indonesia**	**4.22**	4.92	-14.3%

- Light blue indicates subsidized market

1. Tariffs are USc/kWh including VAT and all other non-recoverable taxes and charges.
2. Weighted average of all residential customers.
3. All data for Nov 2022 except EU countries which are H1 2022 and US (average) which is Oct 2022
4. Meralco tariff is gross (ie. DRTU refund added back for comparison)

Global Survey of Commercial Electricity Tariffs (Nov 2022)



Notes

1. All data for Nov 2022 except EU countries which are 1H 2022 and US (average) which is Oct 2022
2. EU countries based on Band IB (20-500MWh pa) sourced from EuroData. US data sourced from EIA for all commercial customers. All other data for 40kW demand non-residential customers
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

* Indicates subsidized (or under-priced) markets. Estimated subsidies calculated as average of all markets minus actual residential tariff. Australia (WA) is actual.

Global Commercial Electricity Tariffs[1] (Nov 2022)

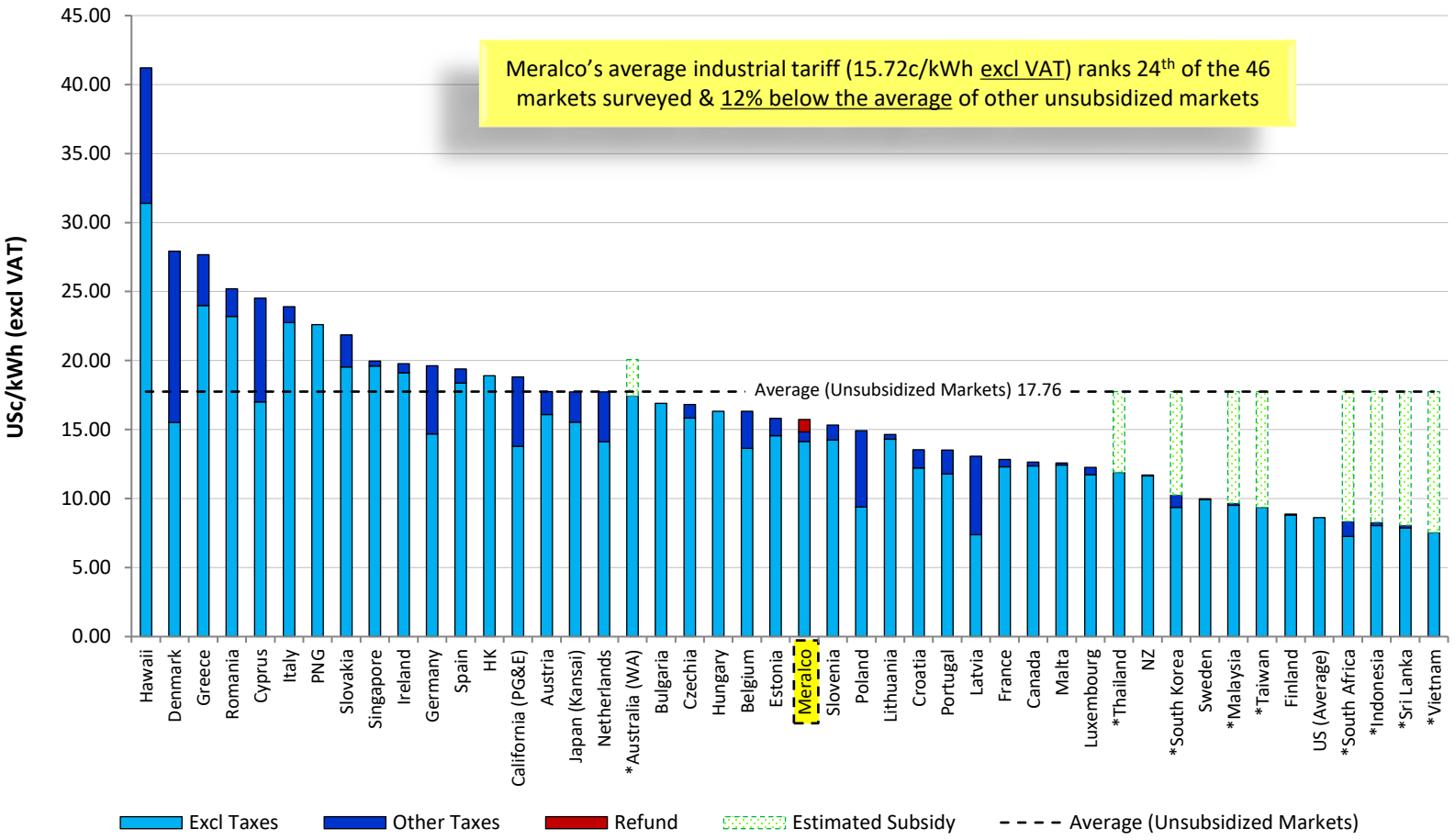
- **Meralco's average commercial tariff ranks 24/46 & 7% below the average of all markets**

2018 Rank	**2022 Rank**	**Country** *	**2022 Tariff** [1,2]	*2018 Tariff* [1,2]	Change in Tariff
2	**1**	**Hawaii**	**41.37**	*24.64*	67.9%
13	**2**	**Greece**	**32.26**	*17.64*	82.9%
38	**3**	**Denmark**	**31.62**	*10.68*	196.1%
6	**4**	**California (PG&E)**	**29.63**	*20.65*	43.5%
1	**5**	**PNG**	**28.04**	*30.60*	-8.4%
5	**6**	**Italy**	**27.40**	*20.65*	32.7%
7	**7**	**Cyprus**	**24.96**	*20.32*	22.8%
35	**8**	**Romania**	**24.56**	*10.84*	126.6%
11	**9**	**Ireland**	**24.55**	*18.34*	33.9%
4	**10**	**Germany**	**23.77**	*21.76*	9.2%
44	**19**	**Singapore**	**20.08**	*9.26*	116.8%
14	**23**	**Japan (Kansai)**	**17.78**	*17.01*	4.5%
		Average (All 46 Markets)	**18.60**	*14.96*	24.3%
24	**24**	**Meralco** [3]	**17.22**	*13.93*	23.6%
40	**36**	**US (Average)**	**13.04**	10.32	26.4%
27	**37**	***Vietnam**	**12.31**	12.40	-0.7%
18	**38**	**Latvia**	**12.31**	16.42	-25.0%
25	**39**	**NZ**	**12.07**	13.73	-12.1%
36	**40**	***S. Korea**	**10.79**	10.77	0.2%
42	**41**	***Malaysia**	**10.60**	10.19	4.0%
46	**42**	***S. Africa**	**10.43**	7.93	31.5%
41	**43**	**Finland**	**9.84**	10.26	-4.1%
32	**44**	***Indonesia**	**9.49**	11.30	-16.0%
45	**45**	***Taiwan**	**8.91**	9.13	-2.4%
21	**46**	***Sri Lanka**	**8.60**	15.76	-45.4%

- Light blue indicates subsidized market

1. Tariffs are USc/kWh excluding VAT but including all other non-recoverable taxes and charges
2. All data for Nov 2022 except EU countries which are H1 2022 and US (average) which is Oct 2022
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

Global Survey of Industrial Electricity Tariffs (Nov 2022)



Notes

1. All data for Nov 2022 except EU countries which are 1H 2022 and US (average) which is Oct 2022
2. EU countries based on Band ID (2000-20000MWh pa) sourced from EuroData. US data sourced from EIA for all commercial customers. All other data for 2000kW demand non-residential customers
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

* Indicates subsidized (or under-priced) markets. Estimated subsidies calculated as average of all markets minus actual residential tariff. Australia (WA) is actual.

Global Industrial Electricity Tariffs[1] (Nov 2022)

- **Meralco's average industrial tariff ranks 24/46 & 8% below the average of all markets**

2018 Rank	**2022 Rank**	**Country** *	**2022 Tariff** [1,2]	*2018 Tariff* [1,2]	Change in Tariff
2	**1**	**Hawaii**	**41.21**	*24.31*	69.5%
24	**2**	**Denmark**	**27.94**	*9.72*	187.4%
19	**3**	**Greece**	**27.67**	*11.01*	151.3%
34	**4**	**Romania**	**25.21**	*8.70*	189.8%
5	**5**	**Cyprus**	**24.53**	*15.80*	55.3%
4	**6**	**Italy**	**23.90**	*16.40*	45.7%
1	**7**	**PNG**	**22.60**	*24.66*	-8.4%
12	**8**	**Slovakia**	**21.87**	*12.65*	72.9%
30	**9**	**Singapore**	**19.96**	*9.15*	118.1%
15	**10**	**Ireland**	**19.77**	*12.59*	57.0%
7	**13**	**Hong Kong**	**18.90**	*15.58*	21.3%
6	**16**	**Japan (Kansai)**	**17.73**	*15.72*	12.8%
		Average (All 46 Markets)	**16.26**	*11.35*	43.3%
17	**24**	**Meralco** [3]	**15.72**	*12.01*	30.9%
36	**35**	***Thailand**	**11.90**	8.50	40.0%
22	**37**	***S. Korea**	**10.26**	10.52	-2.5%
44	**38**	**Sweden**	**9.97**	6.75	47.7%
32	**39**	***Malaysia**	**9.66**	9.10	6.2%
33	**40**	***Taiwan**	**9.37**	9.00	4.1%
40	**41**	**Finland**	**8.87**	7.78	14.0%
45	**42**	**US (Average)**	**8.61**	6.63	29.9%
46	**43**	***S. Africa**	**8.34**	6.43	29.7%
25	**44**	***Indonesia**	**8.28**	9.71	-14.7%
43	**45**	***Sri Lanka**	**8.07**	6.75	19.6%
42	**46**	***Vietnam**	**7.52**	7.53	-0.1%

- Light blue indicates subsidized market

1. Tariffs are USc/kWh excluding VAT but including all other non-recoverable taxes and charges
2. All data for Nov 2022 except EU countries which are H1 2022 and US (average) which is Oct 2022
3. Meralco tariff is gross (ie. DRTU refund added back for comparison)

What are the main factors driving differences between Meralco's tariffs and those in other countries?

- Meralco's tariffs remain close to both the global average and median which has been true for the past decade. Since 2018, Meralco's average tariff has risen by 24% vs. the global average of 23%
- Of the 25 cheaper countries in the survey, at least 8 are heavily subsidized, 14 either generate or import a large fraction of nuclear electricity and the remaining 3 are hydro-rich
- Many of the Philippines' "cheaper" neighbouring countries (eg. Thailand, Indonesia, Malaysia, Korea, Taiwan, Vietnam) have electricity tariffs that are >50% subsidized
- Tariffs in most subsidized markets have either remained unchanged (in local currency terms) or the increases have been insufficient to offset the increases in inputs costs and currency depreciation. As a result, many of these markets have actually seen their tariffs (in US$ terms) decline which has resulted in a massive increase to subsidies
- Although nuclear- and hydro-rich markets often correlate to cheaper tariffs, the true costs of these generation sources are usually not baked into their price. Furthermore, long lead-times, social and environmental concerns, high capex and financing problems for these sources probably rule out their applicability in the Philippines
- Many EU countries cut their VAT rate for residential electricity dramatically (eg. Belgium has reduced VAT from 21% to 6%), as a response to cost-of-living pressures and rising energy costs caused by the war in Ukraine. These cuts have artificially lowered household electricity prices in these markets, relative to Meralco

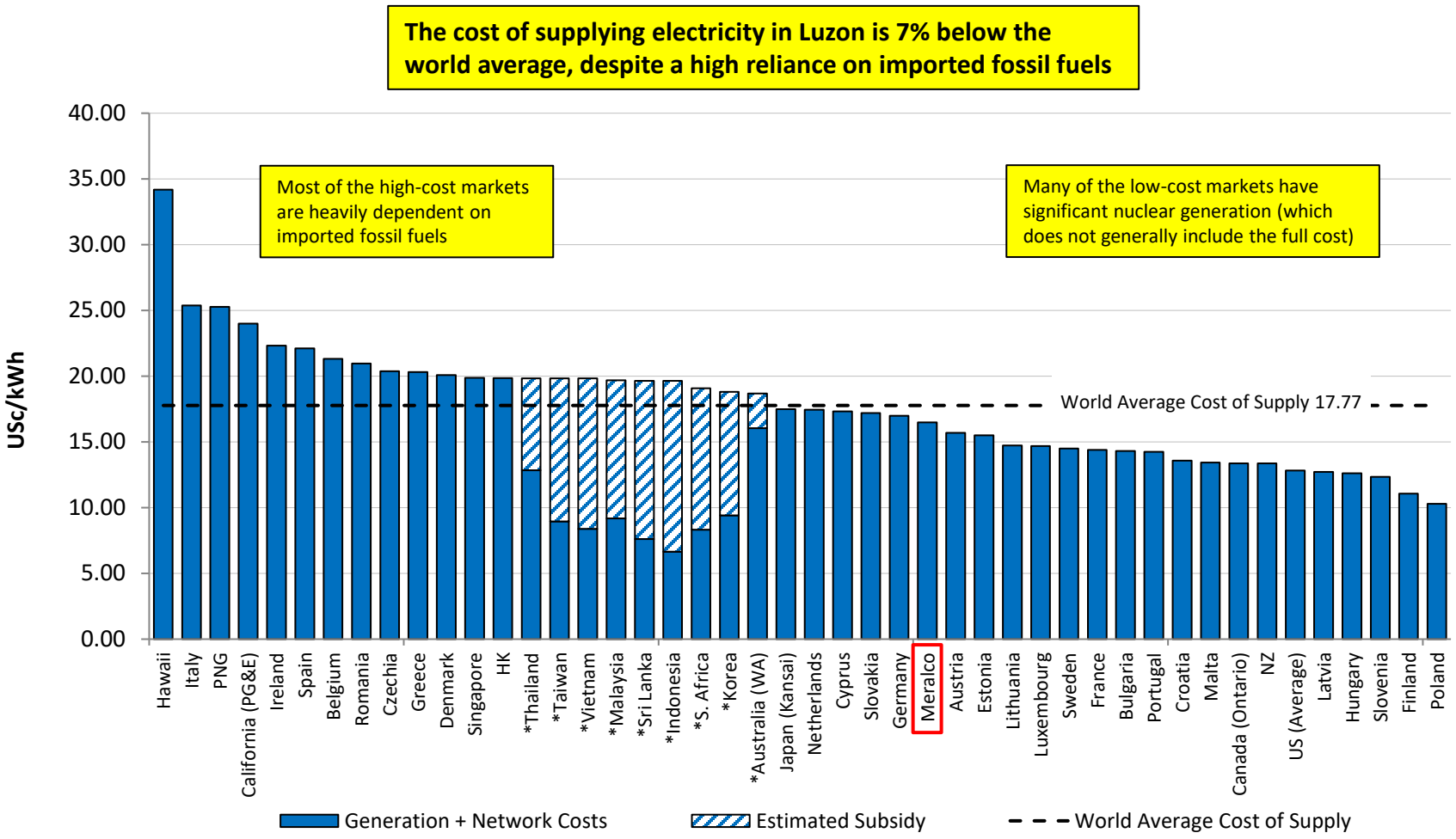
Subsidies

- **In 2022, the five countries listed in the table below subsidized their tariffs by an estimated 35-66% (average of 52%) for a combined implied annual subsidy c.$138 billion ie. Consumers in these countries are paying less than half the actual cost of supply**
- **These subsidies were in in the form of cash grants, subsidized fuel or deferred expenditure**
- **The implied subsidy is calculated by subtracting the actual tariff from the LRMC plus network charges and multiplying the result by the annual sales volume**
- **A similar 50% subsidy applied to Meralco's average tariff would require an estimated US$4.2 billion[7] or P241 billion in 2022**

	Oil Price[1] ($/bbl)	Coal Price[1] ($/tonne)	Indonesia[2]	Malaysia[3]	Taiwan[4]	Korea[5]	Thailand[6]	Average subsidy
2022	$91	$395	$34.6B	$12.5B	$26.3B	$51.1B	$13.4B	52%
2018	$69	$107	$18.1B	$7.3B	$14.5B	$31.0B	$10.1B	41%
2016	$31	$50	$12.8B	$4.3B	$8.5B	$18.4B	$5.1B	32%
2012	$116	$111	$13.2B	$5.3B	$17.1B	$40.5B	$8.3B	46%

Notes
1. Fuel price for month of November in 2022 and January in other years.
2. Assumes 267,000GWh net sales x 12.998c/kWh subsidy. Cash subsidy to PLN in 2012, 2016 & 2018 (proposed) was $10B, $4.6B & $3.6B respectively.
3. Assumes 119,212GWh net sales x 10.51c/kWh subsidy. Peninsula Malaysia only.
4. Assumes 246,000GWh net sales x 10.70c/kWh subsidy.
5. Assumes 544,000GWh net sales x 9.40c/kWh subsidy.
6. Assumes 192,000GWh net sales x 6.98c/kWh subsidy. (MEA & PEA combined sales).
7. Based on projected 48,737GWh net sales x 8.60c/kWh subsidy. (Meralco franchise area only)

Estimated Cost of Supply (Nov 2022)



Notes
1. Net cost of supply calculated by removing all taxes from tariffs and adding back subsidies
2. Meralco cost includes the gross distribution charge by adding back DRTU refunds

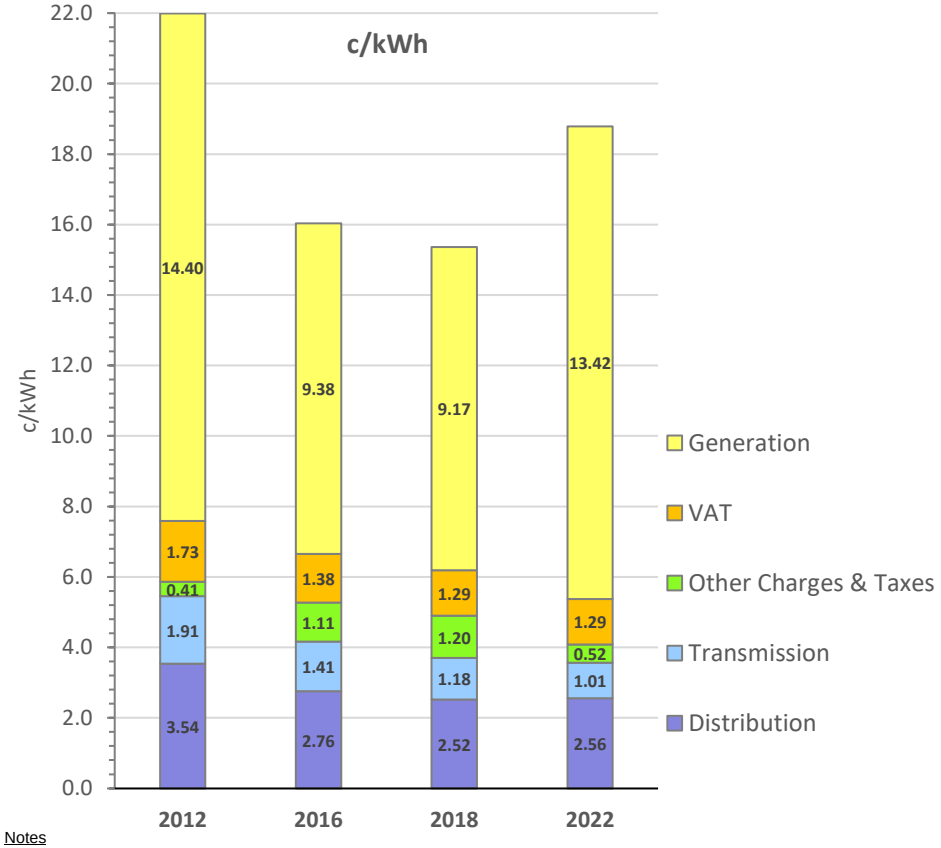
Summary of Answers: Tariff Changes

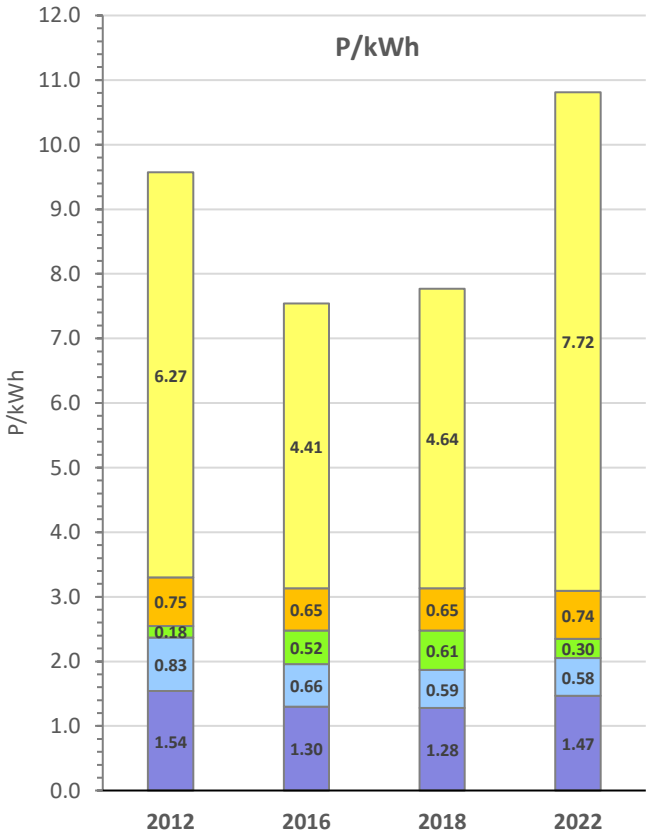
How have Meralco's tariffs changed since the last survey 5 years ago and how do these changes compare with other markets?

- **Average tariff up 24%, since 2018 (vs global average up 23%), due to higher generation charges**
- **A small reduction in network charges has been more than offset by increased generation costs which are up 46% mainly because of fuel price increases (eg. coal up 270%)**
- **Every market in the survey (except Indonesia which decreased 0.4%) increased their tariffs in local currency terms by an average of 47%, since 2018**
- **36 markets increased their tariffs in US$. Seven of the 10 markets that experienced tariff decreases in US$ benefited from increased subsidies**
- **The reasons for the changes include one or more of the following factors (sometimes moving in opposite directions):**
  - ***Currency movement*. eg. Meralco tariffs up 24% in US$ but up 41% in Pesos because of a 12% depreciation in local currency**
  - ***Higher fuel costs.* Crude oil up 32% and coal up 270% (ie. Meralco's generation costs increased 46%)**
  - ***Change in VAT rates.* Many EU countries have slashed the VAT on essential services which has caused their tariffs to rise less dramatically**
  - ***Increased subsidies.* Many of the markets surveyed are still fully regulated and the full cost of rising fuel prices has not been fully passed through to tariffs**

Decadal Change in Meralco's Tariff (2012-2022)

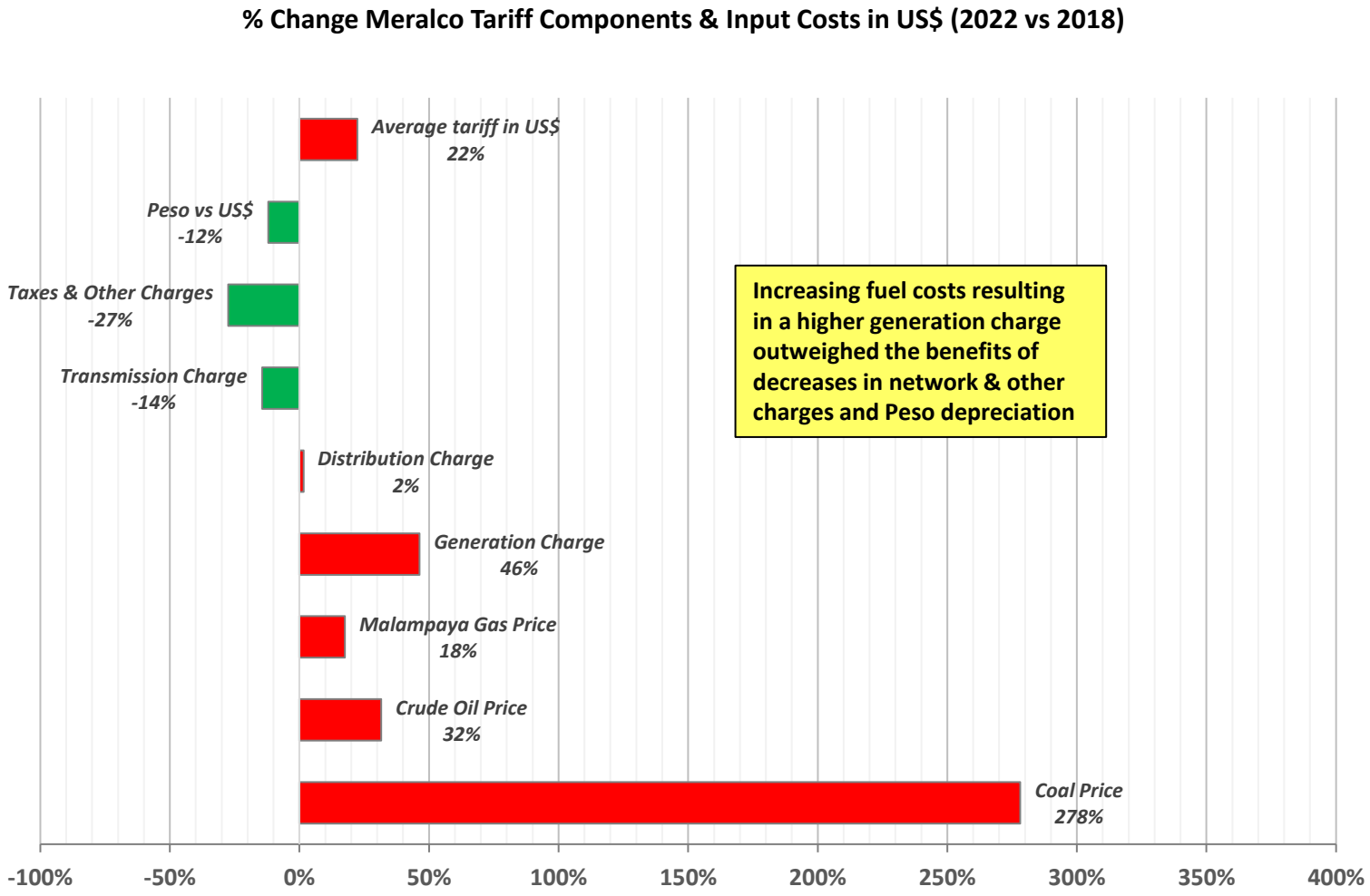
- **The Distribution component of the Meralco tariff has decreased 28% (-5% in Pesos), over the past decade**
- **Total Network charges (Distribution + Transmission) have decreased 35% (-14% in Pesos) since 2018**



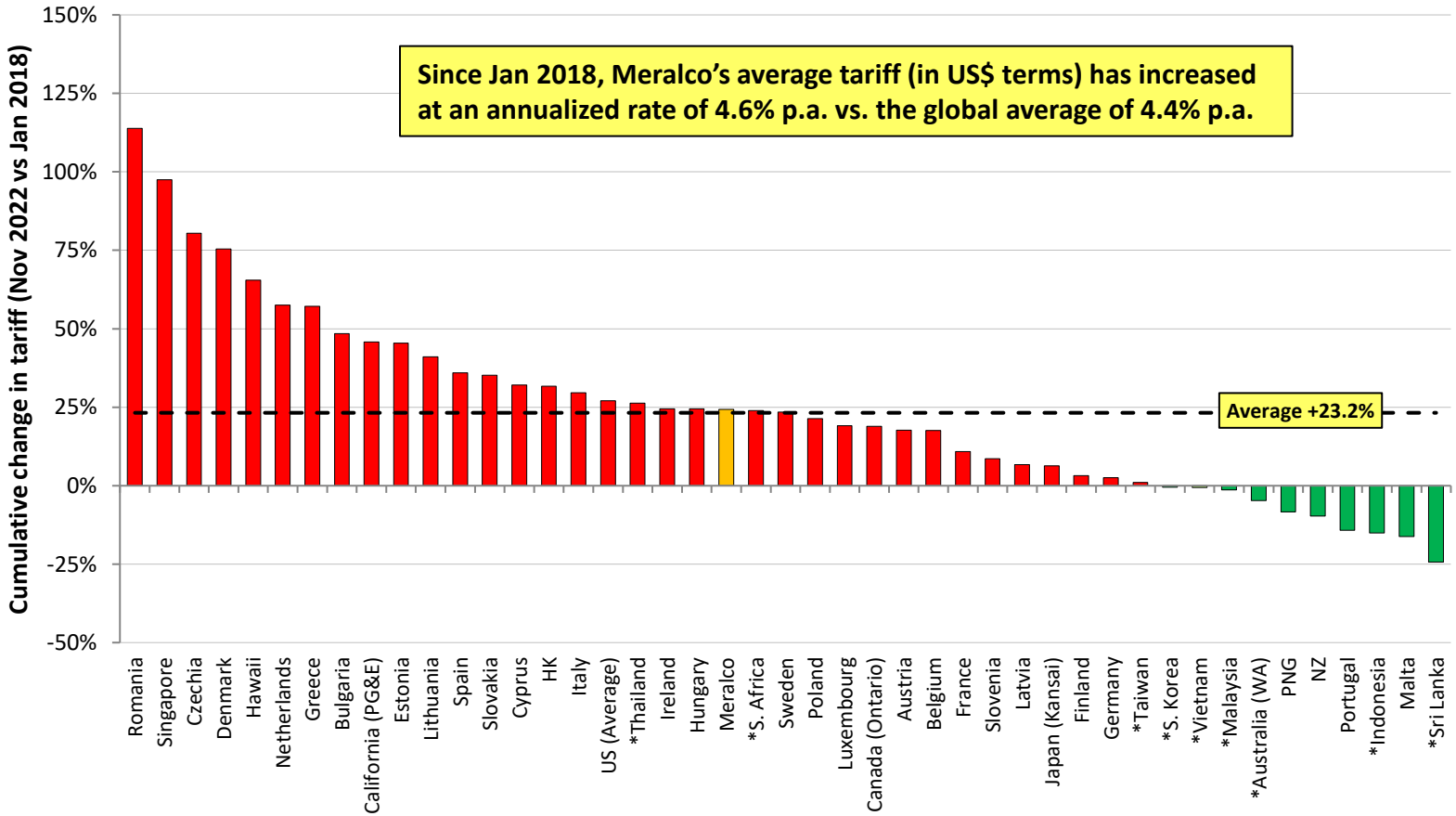


Notes
1. Includes VAT and other taxes for all customer classes
2. Data for Jan in each year except 2022 which is Nov. Charges are weighted average of all customers based on actual volumes in each year
3. Transmission & Generation charges grossed up for Distribution Losses
4. Refund of Distribution DRTU added back in 2022
5. Ancillary services component of Transmission charge (assumed to be 33% of total) allocated back to Generation charge
6. Meralco's distribution charge will be subjected to a future DRTU to bring the overall weighted average back to the ERC-approved rate of P1.35/kWh

Change in Meralco Tariff Component Costs (2022 vs 2018) – US$

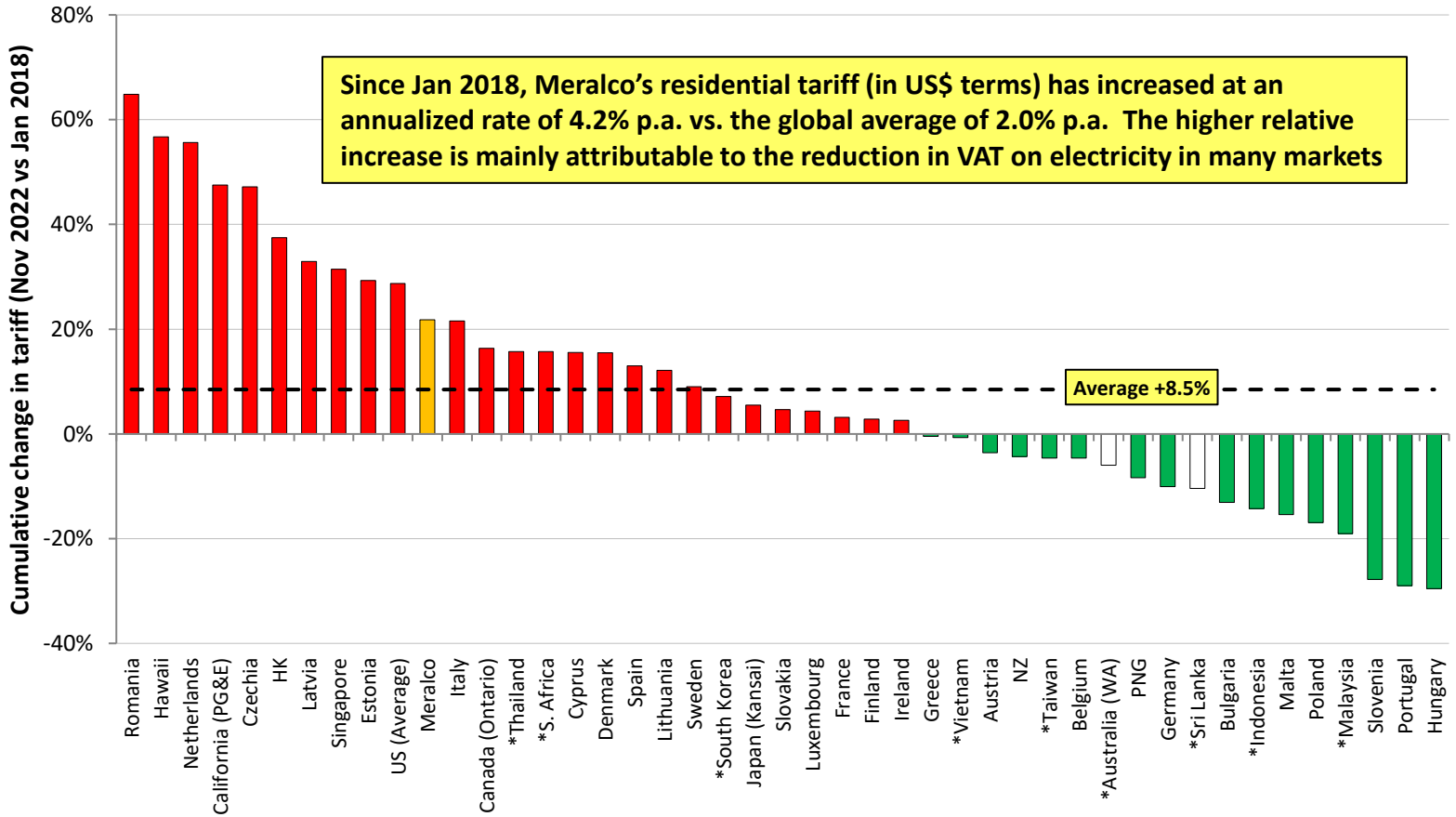


Change in Electricity Tariffs (Nov 2022 vs Jan 2018) – In US$



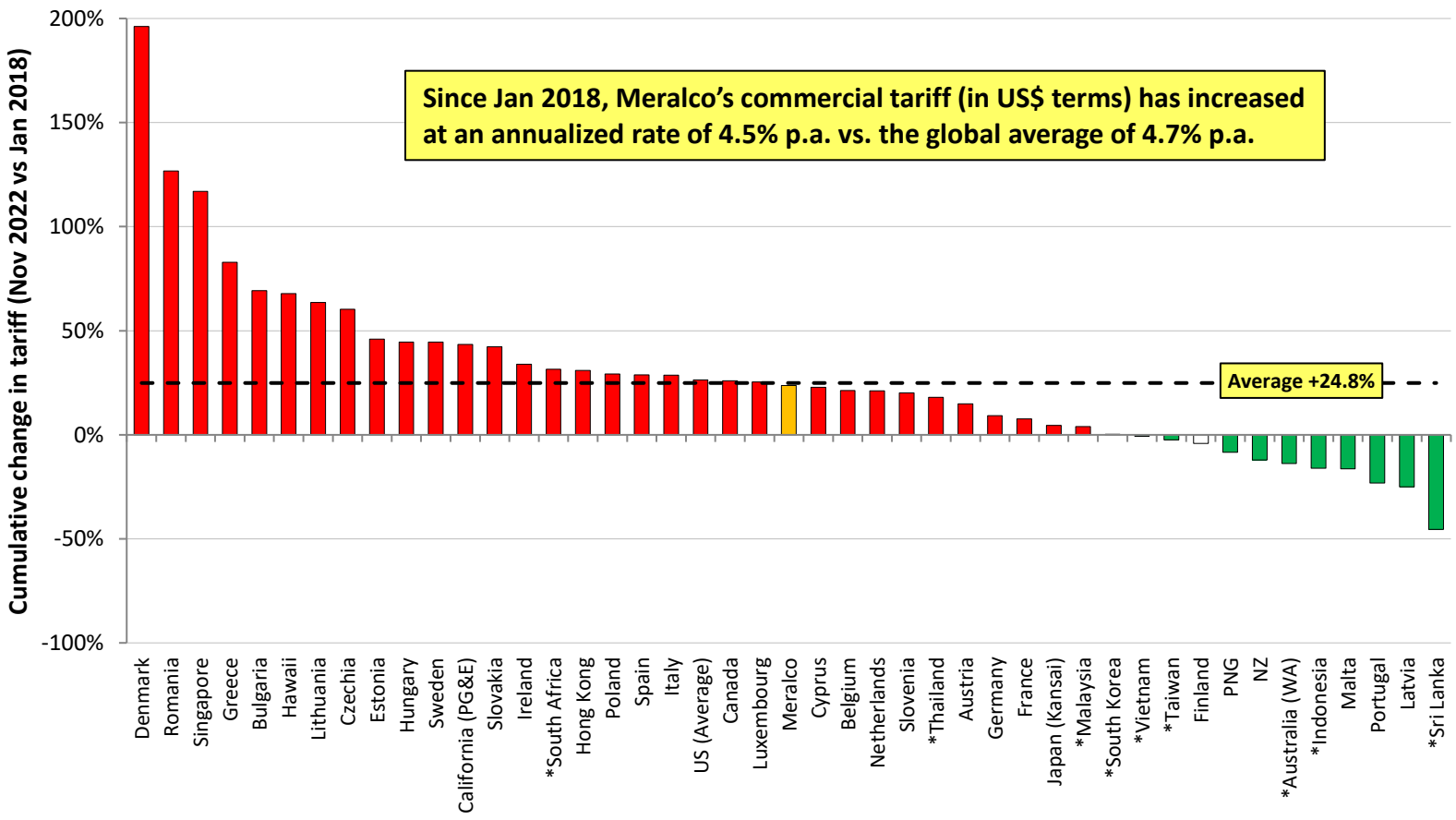
Notes
1. Comparison in US$ terms. US$1 = 57.53P
2. Excludes VAT but includes all other non-recoverable charges and taxes

Change in Residential Electricity Tariffs (Nov 2022 vs Jan 2018) – In US$



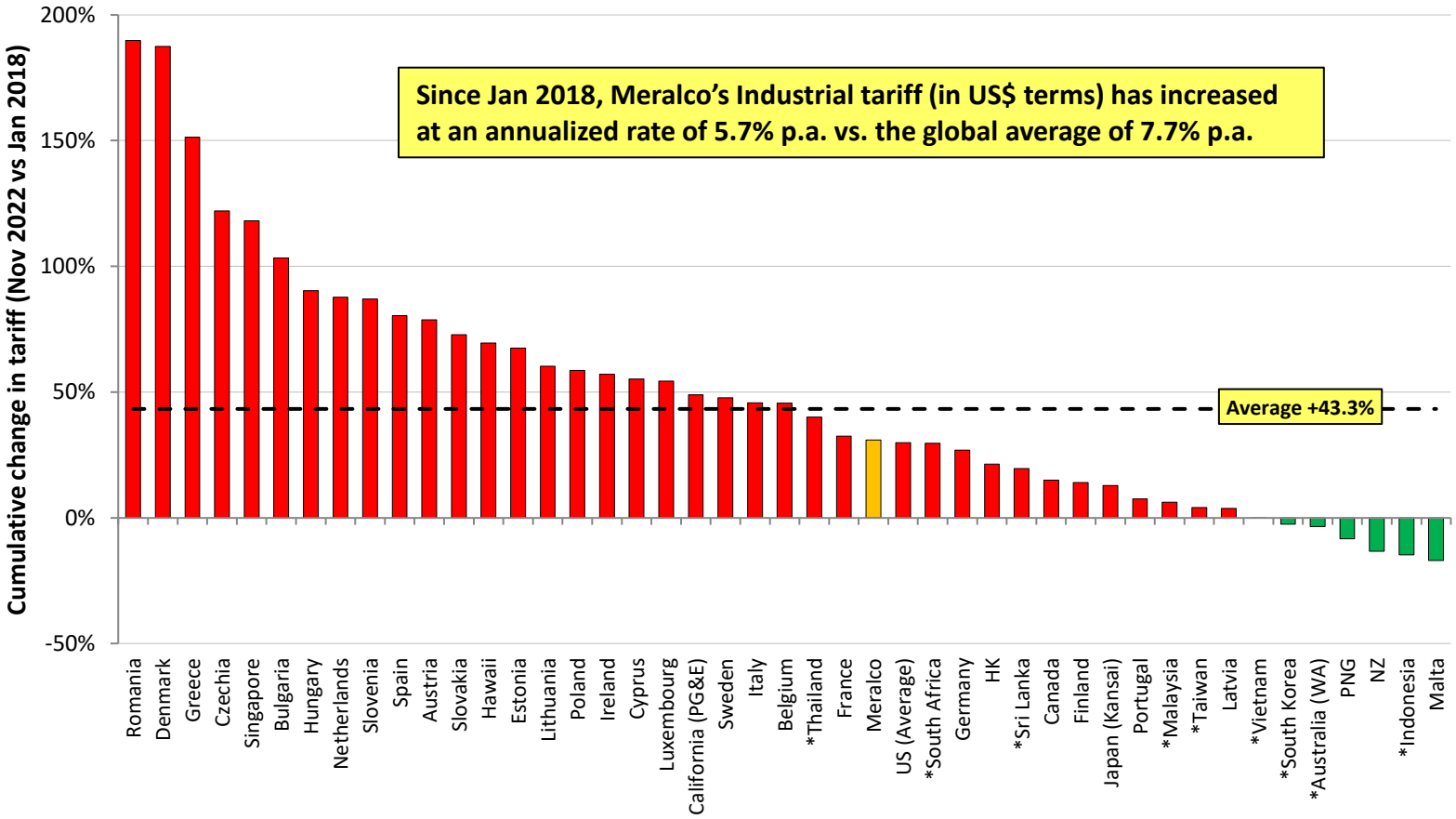
Notes
1. Comparison in US$ terms. US$1 = 57.53P
2. Includes VAT and other non-recoverable charges and taxes

Change in Commercial Electricity Tariffs (Nov 2022 vs Jan 2018) – In US$



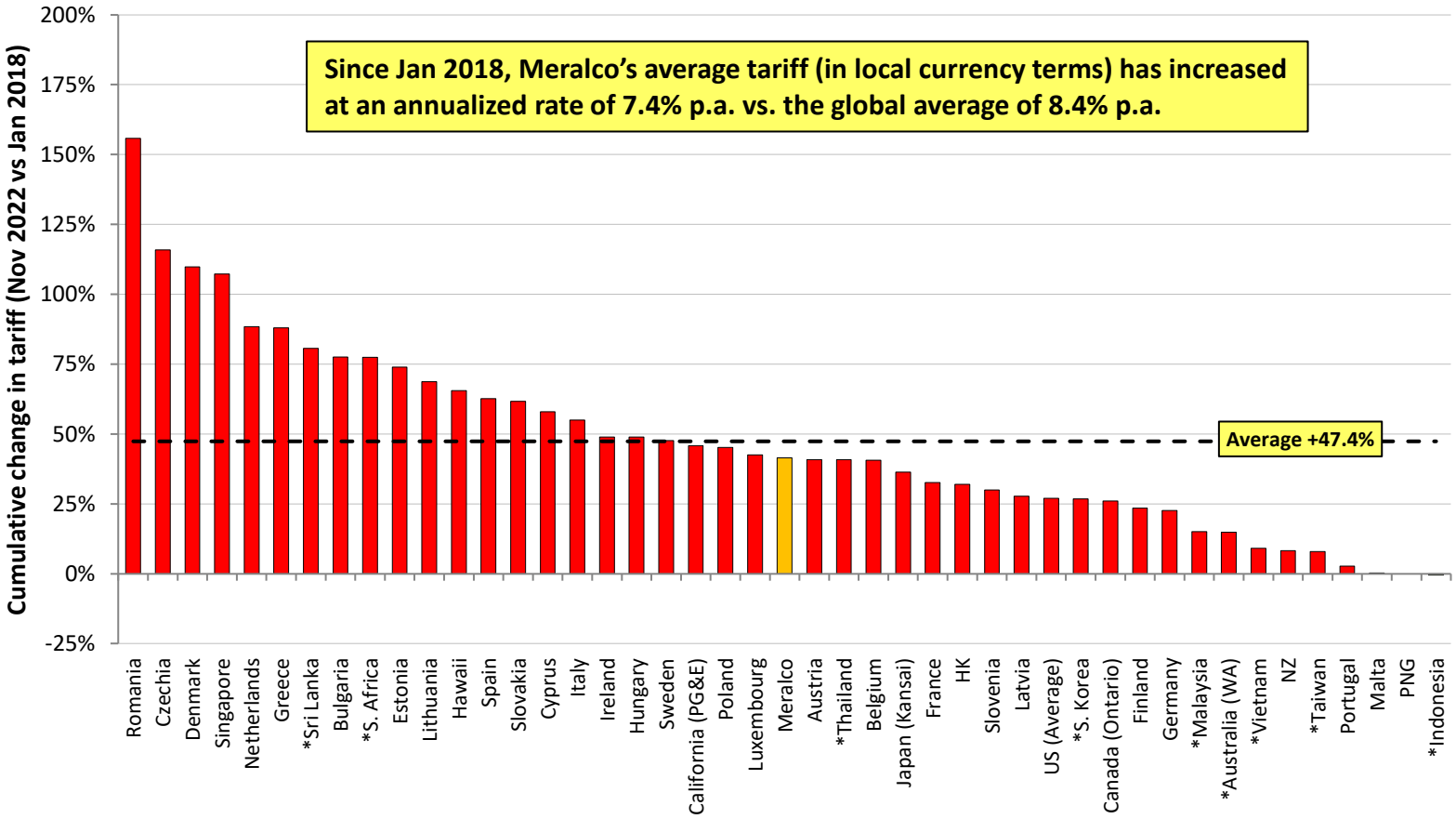
Notes
1. Comparison in US$ terms. US$1 = 57.53P
2. Excludes VAT but includes all other non-recoverable charges and taxes

Change in Industrial Electricity Tariffs (Nov 2022 vs Jan 2018) – In US$



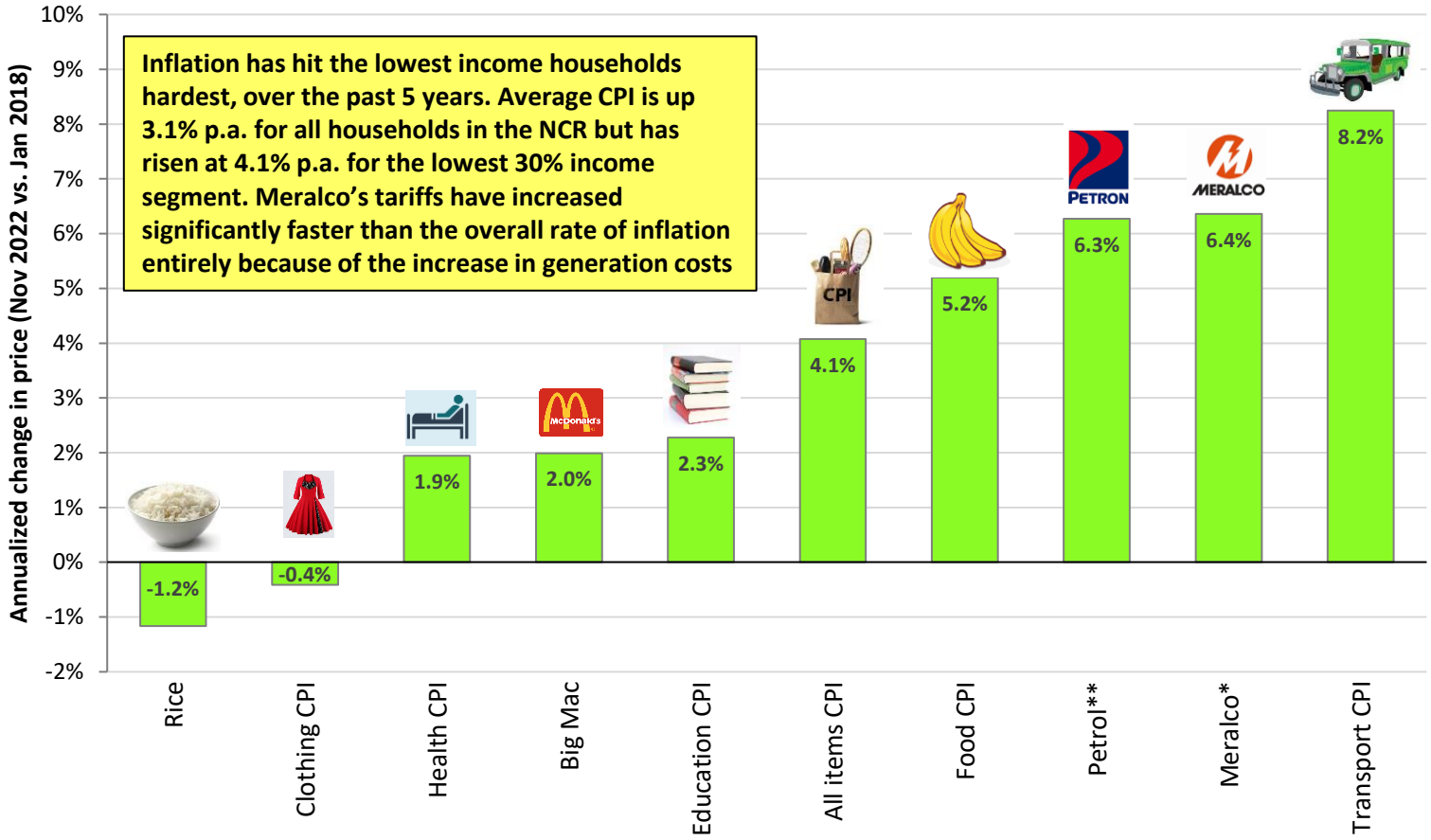
Notes
1. Comparison in US$ terms. US$1 = 57.53P
2. Excludes VAT but includes all other non-recoverable charges and taxes

Change in Electricity Tariffs (Nov 2022 vs Jan 2018) – In Local Currencies



Notes
1. Excludes VAT but includes all other non-recoverable charges and taxes

Meralco Tariffs vs Inflation (Lowest 30% Income Households)



Notes

1. All prices are in Pesos and include VAT
2. All data for Nov 2022 vs. Jan 2018 for the National Capital Region
3. All data for the lowest 30% income households
4. CPI data sourced from Philippines Statistics Authority

* Monthly residential electricity bill in Pesos (200kWh consumer) – before true-up refund

** RON91

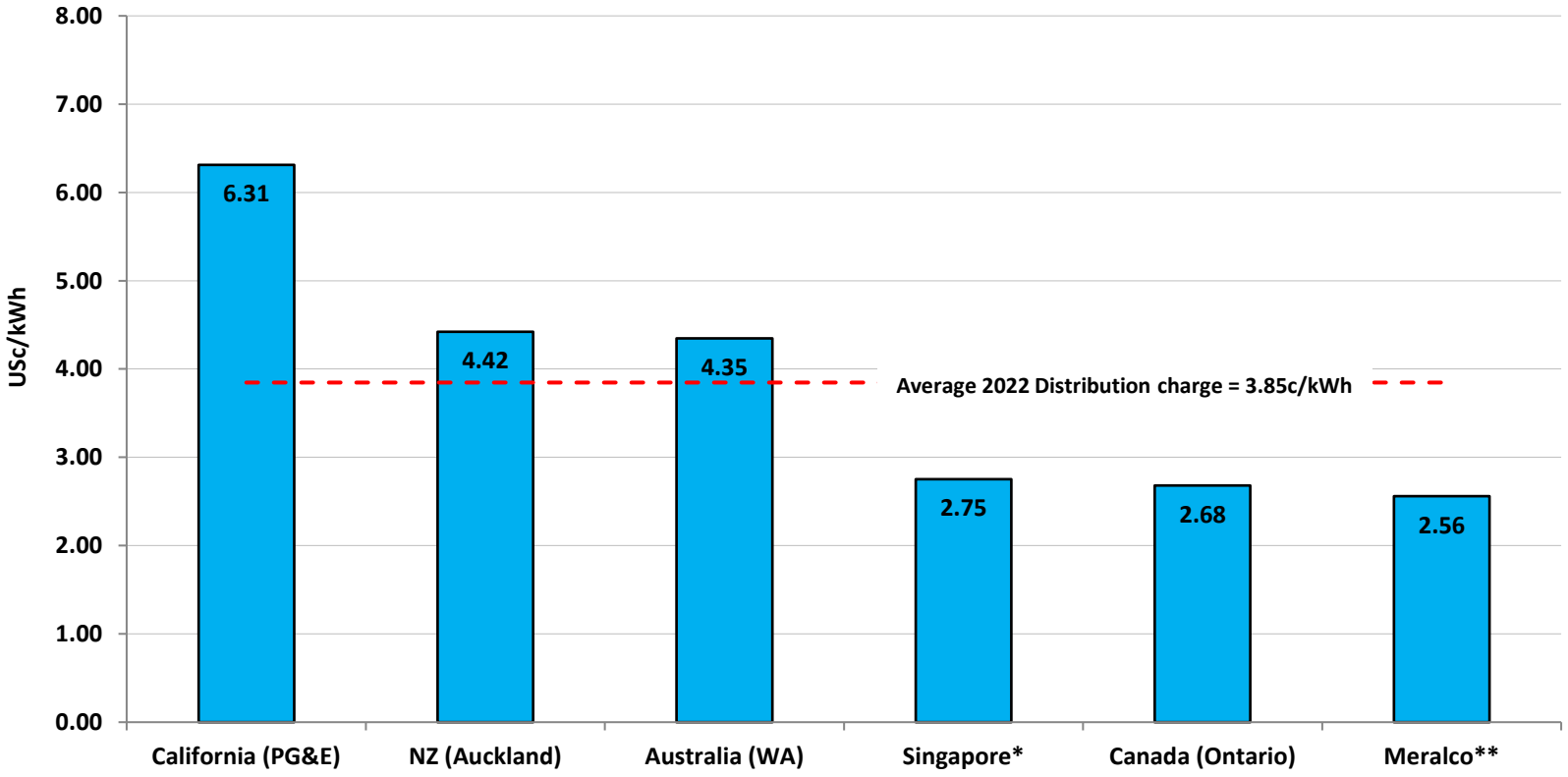
Summary of Answers: Tariff Reasonableness
Are Meralco's tariffs fair and reasonable?

- **In order to judge whether the Meralco tariff is fair, it is necessary to assess the reasonableness of each component independently**
- **The Generation Charge (13.42c/kWh[1] @ 71% of the total tariff) is significantly lower than IEC's estimate of the long-run marginal cost of producing reliable wholesale electricity in Luzon (16.00c/kWh[2]). This large discount is mainly attributable to Meralco's ability to source low cost PSA's and represents an excellent outcome for consumers who are receiving their wholesale energy at >15% below replacement cost**
- **The Distribution Charge (2.56c/kWh @ 14% of the total) is 33% less than the average rate for the markets surveyed. On this basis, IEC judges that the charge is certainly fair and reasonable**
- **The Transmission Charge (1.01c/ kWh[1] @ 5% of the total). Given the geography of the network area and the cross-subsidy for non-Meralco customers, this charge is probably fair and reasonable**
- **Taxes and Other Charges (1.81c/kWh @ 10% of the total) are much lower than the average 21% of the 46 markets surveyed. Other Charges (3% of the total) are lower than the average of 11% seen elsewhere and the VAT rate (7% effective) is much lower than the 10% average rate elsewhere**
- **Considering all of these factors, IEC believes that - on average - Meralco's regulated customers are currently paying a fair and reasonable price for electricity. This assessment is supported by the fact that Meralco's average tariff is 3% lower than the global average (and 12% lower than the average of unsubsidized markets), despite lack of subsidies and fundamentally high supply costs**

Notes
1. After adjusting for losses and ancillary services
2. Assuming fuel prices @ Nov 2022

Comparison of Distribution Charges (Nov 2022)

In comparison with the other markets in the survey (for which unbundled network costs were available), Meralco's Distribution Charge is 33% below the average



* Singapore transmission and distribution combined

** Meralco distribution charge grossed up for DRTU refund and will be subjected to a future DRTU to bring the overall weighted average back to the ERC-approved rate of P1.35/kWh

Conclusions & Recommendations

- Meralco's average tariff now ranks 21st out of 46 and 3% below the global average. If subsidized markets are excluded, then Meralco's tariff is 13% lower than the world average
- Over the past 5 years, Meralco's tariff has increased by 24% vs. a 23% global increase. More than 100% of this increase is attributable to the generation charge which has risen as a result of fuel price increases (particularly imported coal but also domestic gas) ie. The decrease in network charges and taxes have been more than offset by the increase in generation charge
- Notwithstanding this increase, all of the components of the regulated tariff are judged fair and reasonable by IEC, based on comparisons with other markets and versus the underlying cost of electricity supply in Luzon
- Considering that the Luzon power market is unsubsidized and the majority of electricity is produced using imported fuel, Meralco appears to have done a very good job of minimizing tariff increases
- Of the tariff components wholly or partly within Meralco's control, the Distribution Charge has only increased by 2%; the increase in the Generation Charge – although significant – is much lower than it might have been without diligent contract management by Meralco
- To ensure that Meralco holds or improves its position relative to tariffs in other markets, it is critical that regulators and legislators focus on facilitating investment in new generation, in order to meet rapid demand growth. In particular the reliance on imported coal and a soon-to-be exhausted domestic gas supply is a major problem. IEC recommends that urgent attention be given to accelerating the development of domestic renewable energy sources – particularly wind and solar – supplemented by utility-scale storage – particularly pumped hydro