Policy Brief on Energy

Reducing the Cost of Electricity

Office of Senator Win Gatchalian

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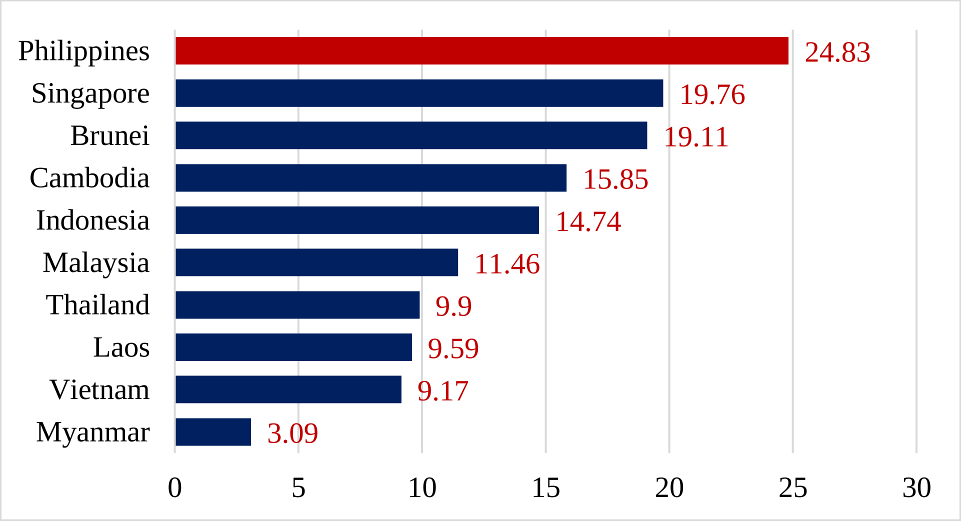
Introduction

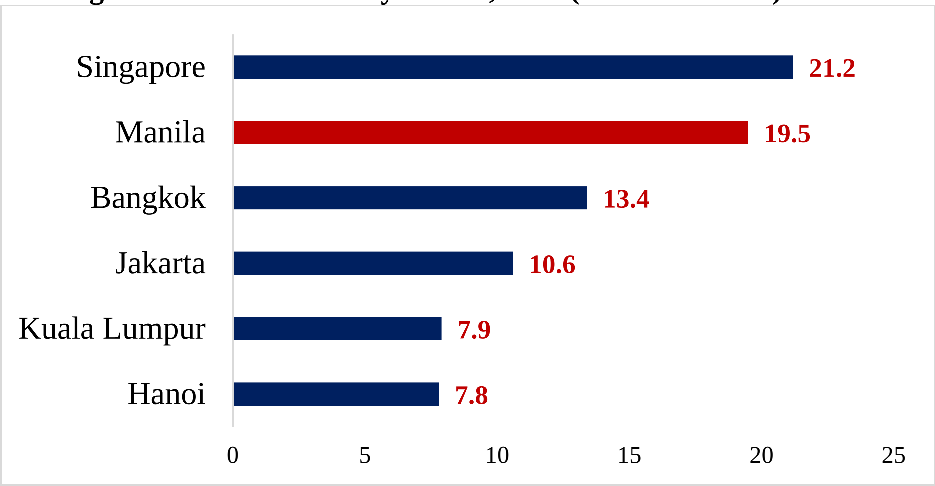
The widely held perception that the Philippines has expensive electricity finds purchase in contemporary literature. Figure 1 summarizes data from the Japan International Cooperation Agency (JICA). Their numbers indicate that Filipino households are forced to pay approximately twice the average retail residential electricity rate registered by the entire ASEAN region. Figure 2 summarizes data collected and analyzed by the Lantau group. Their analysis suggests that electricity tariffs in Manila were comparable to tariffs in Singapore and considerably higher than tariffs in other ASEAN countries in 2013. Finally, Figure 3 summarizes data from International Energy Consultants (IEC). Their data indicate that the electricity rate in Manila eclipsed the average rate of Singapore in 2016. Moreover, their data suggest that the Manila rate is on pace to reach the average electricity retail rate registered by Hong Kong.

Figure 1. Average Residential Rates, 2011 (US cents/kwh)



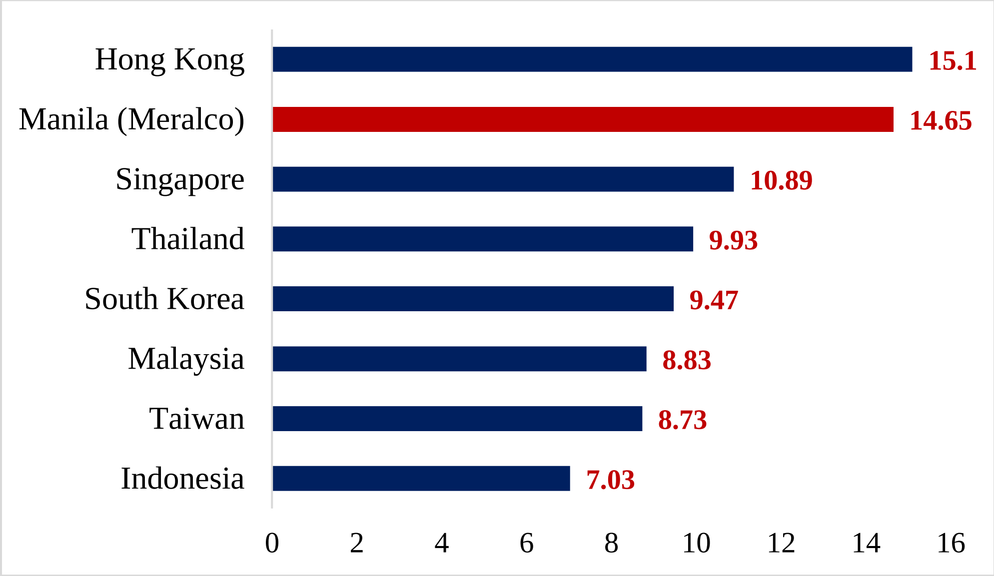
Source: Japan International Cooperation Agency

Figure 2. Average Household Electricity Tariffs, 2013 (SGD cents/kwh)



Source: The Lantau Group

Figure 3. Average Retail Electricity Tariffs, 2016 (US cents/kwh)



Source: International Energy Consultants

The high cost of electricity in the Philippines could be viewed to have resulted in adverse knock-on effects on the Philippine economy and its growth prospects. More specifically, high electricity rates could be posited to have significantly curtailed electricity consumption in the Philippines. In 2000, the estimated household electricity consumption intensity estimates culled from the Philippines, Vietnam, and Indonesia were all below 200 kWh. In 2011, the estimated household electricity consumption intensity in the Philippines (197 kWh) was markedly lower than that of Indonesia (272 kWh) and Vietnam (380 kWh). Given that all three countries are viewed to be peers in so far as economic performance is concerned, the disparity in electricity intensity could be viewed to have had significant dampening effects on both aggregate Filipino consumer demand and growth prospects of the entire Philippine macroeconomy.

The perceived curtailment of electricity demand in the Philippines could, in turn, be argued to translate to the curtailment of consumer welfare as well as the reduction of aggregate consumer activity. Given the increasing reliance of consumers on gadgets, online connectivity, and telecommunications services, the net impact of the curtailment of electricity demand on both consumer welfare and the Philippine macroeconomy would be expected to increase over time. Put simply, the persistence of high electricity prices limit consumer demand and prevent the Philippine economy from realizing its full growth potential. A sustained effort to reducing electricity price could therefore be viewed to be a means towards accelerating Philippine economic growth and, perhaps more importantly, enhancing the welfare of millions of Filipino households.

The price of electricity in the Philippines can be reduced by (1) expanding the supply of electricity and (2) minimizing or eliminating unfair pass-on charges. In order to expand domestic energy generation capacity, the government can spur fiercer competition among energy generation firms and reduce the bureaucratic burden associated with the energy generation projects. In order to minimize pass-on charges, the government can develop and implement a firmer regulatory framework to govern retail rates.

SB1, SB2, and SB3 constitute a package of measures that seek to promote competition, reduce red tape, and lower system loss charges for consumers. What follows is a discussion of the salient features of SB 1, SB 2, and SB 3 as well as their potential impacts on electricity prices on the Philippines.

SB 1: Competitive Selection Process

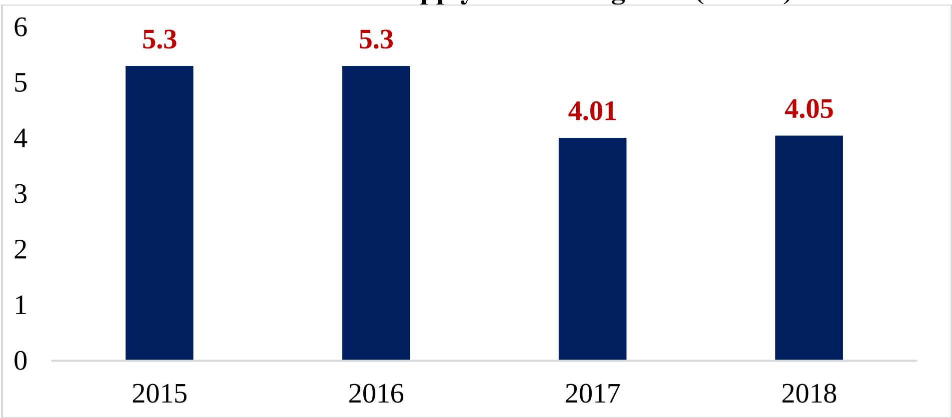
CSP Bill Discussion

SB 1 provides the legal framework for the development and institutionalization of an auction mechanism that tasks electric cooperatives and distribution utilities to contract electricity from generation companies that can provide electricity at the lowest prices. The proposed auction mechanism frames the task of electricity contracting and the underlying interaction between buyers and sellers within a purely competitive context – fully operationalized by the price of electricity. In effect, the auction mechanism compels electric cooperatives and distribution utilities to select contracts on the basis of price instead of arbitrary selection parameters such as long-standing relationships with generation companies, the intensity of lobbying activities, and/or the size of bribes (Boehm and Olaya, 2006). The auction mechanism designates the price of electricity as the primary signal in the transaction between buyers and sellers of electricity – tacitly eliminating information asymmetries and enabling the formulation of better informed decisions among market participants (Duan et al. 2005). Given the emphasis on price, generation companies are incentivized to focus on reducing their costs. Moreover, given the primacy of price over relationships and lobbies, older generation companies can no longer use their long-standing relationships to create additional barriers to entry for newer generation companies. The result is a (more) level-playing field. In addition, the realignment of incentives and the increase in the number of competitors serve to discourage collusive practices among industry players (Demsetz 1968). The proposed auction mechanism, in essence, induces fiercer and fairer competition among generation companies in order to exert downward pressure on the price of electricity. Given that the auction mechanism encourages the entry of additional energy producers, it enhances the capacity of the market to absorb increases in the demand for electricity.

The proposed auction mechanism also provides the means to facilitate the aggregation of the demand of electric cooperatives and distribution utilities. This, in turn, enables electric cooperatives and distribution utilities, especially those in smaller jurisdictions with smaller populations, to tap into the benefits of economies of scale and avail of electricity prices often given to larger jurisdictions with larger populations. Generation companies could be viewed to be partial to larger jurisdictions given that they would be expected to want to avoid the administrative and efficiency costs associated with managing multiple smaller contracts.

The capacity of an auction mechanism to elicit significant price reductions and promote supply stability has been demonstrated in several jurisdictions in the Philippines . In 2010, several electric cooperatives from Mindanao received contract offers from Mindanao-based generation companies with prices ranging from 5.5 pesos per kWh to 6.3 pesos per kWh. Dissatisfied with the offers, the electric cooperatives opted to aggregate their demand and conduct an auction. At the conclusion of the auction, the cooperatives managed to secure their electricity supply at 4.12 pesos per kWh – 25% to 35% cheaper than the offers previously given to the cooperatives. In 2012, electric cooperatives from Central Luzon held an auction for their aggregated long-term demand. At the conclusion of the auction they were able to secure a supply contract that would bring their 2013 generation rates down by approximately 34% in 2019 (i.e. approximately 5.6 pesos per kWh in 2013 to 3.7 pesos per kWH in 2019). In 2014, electric cooperatives from Region VIII decided to conduct an auction of their aggregated demand. Table 1 summarizes the results of the aforementioned auction. The data illustrate the manner in which the auction managed to (1) encourage the entry of power producers and (2) leverage the entry of power producers to decrease the price of electricity. The auction managed to bring the blended price down by 29% from 5.7 pesos per kWh in 2015 to 4.05 pesos per kWh in 2018.

Figure 4. Results of Short-term Power Supply CSP in Region 8 (₱/kwh)



Source: del Mundo (2016)

Welfare Gains from the Institution of the CSP

How would an auction mechanism benefit residential consumers serviced by the largest distribution utility in the Philippines? Table 1 summarizes salient information from the January 2017 breakdown of electricity contracts procured by the Manila Electricity and Rail Company (MERALCO). Table 2 indicates that contract prices exhibit tremendous volatility even among generation companies using similar fuels. This volatility suggests that competition among generation companies can be tighter. This observation, in turn, suggests that generation rates can be made cheaper through the deployment of an auction mechanism.

Table 1. January 2017 Meralco Generation Contracts

Company	Energy Sales (GWH)	Current Average Generation Cost (₱/kwh)
SEM-Calaca Power Corp. (SCPC)	173.20	3.75
Masinloc Power Partners Corp. (MPPC)	128.90	5.61
Therma Luzon Inc. (TLI)	152.80	2.27
San Miguel Energy Corp. (SMEC)d	81.20	5.08
South Premiere Power Corp. (SPPC)	511.50	2.90
Quezon Power Phils Ltd. Co. (QPPL)	272.60	4.42
First Gas Power Corp. (FGPC) – Sta. Rita	478.50	4.40
FGP Corporation (FGP) – San Lorenzo	261.30	4.19
Wholesale Electricity Spot Market (WESM)	575.50	2.57
Others	4.70	41.10
Total	**2640.20**	**3.67**

Source: Meralco 2017

Table 2 provides an estimate of the blended generation rate if the six most expensive price offers are brought in line with the second least expensive price offer. In essence, the adjustment is made in order to simulate the outcome of fiercer competition induced by (1) the entry of highly-competitive firms (i.e. those capable of at least matching the offer of the second-most competitive firm in the market) and/or (2) the lowering of offers of existing firms in order to remain competitive in the market. The second least expensive price offer is employed to give firms additional leeway in their pricing and, as a result, generate a more conservative estimate. The adjustment is underpinned by the following question: if a generation company can offer a price of 2.9 pesos – what prevents or precludes other generation companies from offering a similar price? A comparison of Tables 2 and 3 indicates that the blended generation rate can be reduced by approximately 22% or 81 centavos per kWh.

Table 2. Theoretical Meralco Generation Contracts under CSP

Company	Energy Sales (GWH)	Potential Average Generation Cost (₱/kwh)
SEM-Calaca Power Corp. (SCPC)	173.20	2.90
Masinloc Power Partners Corp. (MPPC)	128.90	2.90
Therma Luzon Inc. (TLI)	152.80	2.27
San Miguel Energy Corp. (SMEC)d	81.20	2.90
South Premiere Power Corp. (SPPC)	511.50	2.90
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First Gas Power Corp. (FGPC) – Sta. Rita	478.50	2.90
FGP Corporation (FGP) – San Lorenzo	261.30	2.90
Wholesale Electricity Spot Market (WESM)	575.50	2.57
Others	4.70	41.10
Total	**2640.20**	**2.86**

Source: Meralco 2017, Author's Calculations

SB 2: Energy One-Stop-Shop

An argument can be made that the benefits of the proposed CSP are gated behind the bureaucratic system for the permitting of energy projects. The replacement of older and less efficient power plants by newer and more efficient power plants will be delayed by layers of unnecessary bureaucratic processes – or red tape. Every unnecessary year of permit processing adds an additional year of more expensive generation costs – wherein consumers are forced to pay what could be considered as an inefficiency tariff.

Literature suggests that energy development projects in the Philippines are often mired in a dense overgrowth of red tape. Navarro and Escresa (2015) estimate that the permitting process involved in developing a power project could take, on average, two to five years. Stakeholder statements indicate that the process could take three to seven years. These estimates suggest that prospective power plants have to hurdle approximately four to five years' worth of red tape. This, in turn, suggests that each year of delay corresponds to an additional year with the aforementioned inefficiency tariff. Given the estimates in the preceding section, the inefficiency tariff on the generation cost can be viewed to be substantial (approximately 28%). On a per kWh our basis, this figure translates to an inefficiency tariff of approximately 80 centavos. For a household consuming 200 kWh a month, this translates to an annual inefficiency tariff of 1,920 pesos. If red tape results in an additional three years, this corresponds to almost an added burden of 6,000 pesos for a household consuming 200 kWh a month.

The substantial cost of red tape in permit processing prompted the inception and formulation of the Energy One-Stop-Shop bill. The proposed measure seeks to streamline existing bureaucratic systems by (1) institutionalizing the use of an integrated inter-agency online portal for permits, (2) eliminating unnecessary government procedures, (3) automating mechanical processes involved in permit acquisition (e.g. repetitive filing of forms, physical delivery of forms, etc.), and (4) developing a real-time feedback and assessment mechanism in order to rapidly identify agency bottlenecks. The proposed measure is designed to dramatically reduce the time and effort required to process a power plant permit and, as a consequence, facilitate the entry of new power plants – that can offer electricity at cheaper rates. As a result, the proposed measure (1) helps ensure the success of the CSP, (2) encourages bureaucratic efficiency, and (3) helps Filipino consumers avoid hefty inefficiency tariffs.

SB 3: System Loss Caps
System Loss Cap Bill Discussion

Apart from designing and implementing strategies to facilitate the expansion and procurement of electricity supply, the government can also work towards instituting mechanisms to ensure that consumers are not improperly or unfairly billed for their electricity usage. In particular, the government should institute additional regulatory safeguards to ensure that consumers do not shoulder the costs of electricity that they did not consume. Put differently, distribution utilities and electric cooperatives must be prohibited from passing on the majority of the costs of lost electricity to their customers. They must be compelled to internalize their fair share of the costs of lost electricity through economically-sound and timely investments in their distribution infrastructure.

The crux of the regulatory problem rests in distinguishing avoidable system loss from unavoidable system loss. Certain forms of system losses can be attributed to the normal functioning of transmission lines. Even well-maintained transmission and distribution infrastructure facilities can result in system losses. As such, instituting arbitrary system loss caps could be viewed to be not only economically untenable but also likely to result in significant increases in retail rates. The challenge therefore is to craft a legal framework wherein electric cooperatives and distribution utilities are (1) compelled to thoroughly study their operations, (2) tasked to operationalize the factors that result in system losses, and (3) incentivized to make timely and adequate investments in additional infrastructure systems to minimize their system losses subject to financial flows and geographic constraints.

SB 3 safeguards the rights of consumers to a fair and affordable billing system by limiting the amount of system loss that distribution utilities and electric cooperatives can pass on to their consumers and removing the tax on system loss charges. The measure mandates distribution utilities and electric cooperatives to eliminate system losses that are generated from improperly maintained and/or managed transmission and distribution systems (e.g. worn-out transmission lines, malfunctioning transformers, electricity pilferage, non-payment). The measure spurs electric cooperatives and distribution utilities to achieve firm yet reasonable performance benchmarks determined by geographic features, customer distributions, and other variables that are expected to strongly influence system loss rates.

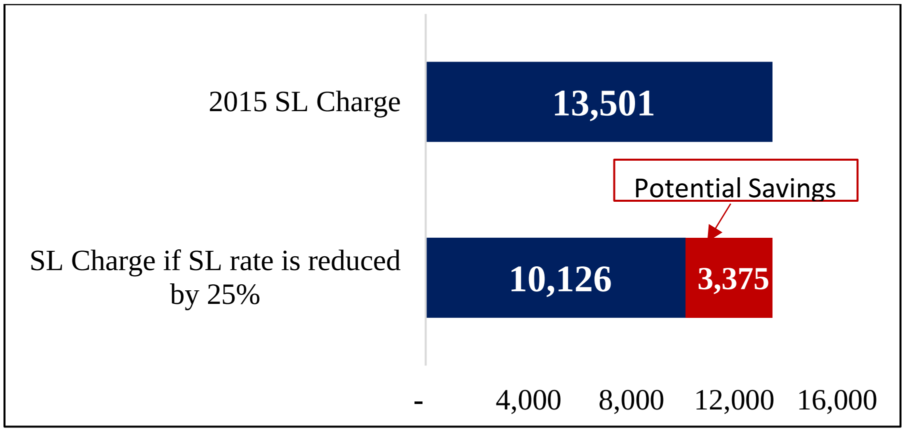
SB 3 establishes the allowable level of system losses as a function of (1) the limits of economically-viable technology and (2) the differences that distinguish one utility from another. First, the capacity to manage technical system losses is largely a function of the prevailing state of accessible technology. As the available technology improves, the ability of utilities and cooperatives to manage their system losses is expected to improve as well. By analyzing prevailing trends and the best practices in system loss management, the government can identify the appropriate level of the technical component of the system loss cap. Second, instead of a one-size-fits-all system loss cap, the proposed measure assigns utilities into groupings and tasks each of them to satisfy group-specific benchmarks. These group-specific benchmarks takes into consideration factors such as (1) the geographical characteristics of the service area (e.g. size, type of terrain, density), (2) the composition of the service area (i.e. the mixture of residential, commercial, and industrial consumers), and (3) the vulnerability of the service area to severe climatic events (i.e. the frequency and intensity of typhoons).The legislation provides a necessary push in the right direction for utilities and cooperatives to make the necessary advancements in minimizing system losses while being cognizant of the differences between the operating and financial conditions faced by distribution utilities and electric cooperatives.

Welfare Gains from the System Loss Cap

2013 Data from the World Bank indicate that the average system loss rate in Philippines (10.28) is approximately 25% larger than the worldwide average system loss rate (8.16). This figure is also considerably larger than the system loss rates in Singapore (0.49%), South Korea (3.40%), Malaysia (4.04%), Japan (4.58%), and Thailand (6.24%). What follows is an illustration of the potential welfare gains if selected distribution utilities and electric cooperatives from all over the Philippines succeed in bringing down their system loss rates.

The Manila Electric Company (MERALCO), the distribution utility responsible for supplying 70% of overall Luzon electricity demand, presently has a system loss rate of 6.4%. Reducing the system loss rate to 5% will mark a 23% reduction in losses and an equivalent decrease in the system loss charges.

Figure 5. Meralco System Loss Charge and Potential Savings, 2015 (₱ millions)

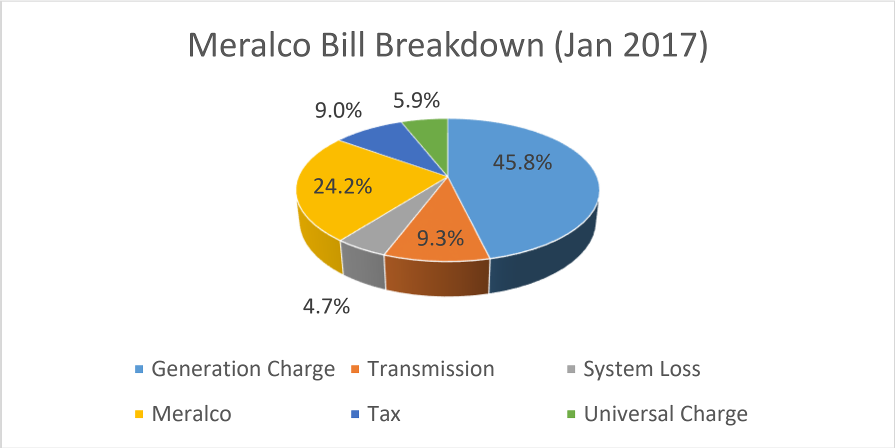


Source: Meralco Financial Statement 2015

Figure 1 illustrates the potential savings of all electricity consumers. In 2015, MERALCO collected 13.5 billion PHP in system loss charges. Reducing their 2015 system loss rate of 6.47% by 25%, electricity consumers in the Greater Manila Area (GMA) will avoid annual charges amounting to approximately 3.38 billion PHP.

Figure 2 shows the approximate breakdown of a typical MERALCO bill for a residential consumer consuming 200 kWh and paying 8.08 PHP per kWh for a total of 1616.87 PHP. The total system loss charge component is 76.44 PHP or approximately 38 centavos per kWh. The reduction will thus translate to a 16.72 PHP reduction or approximately 8 centavos per kWh.

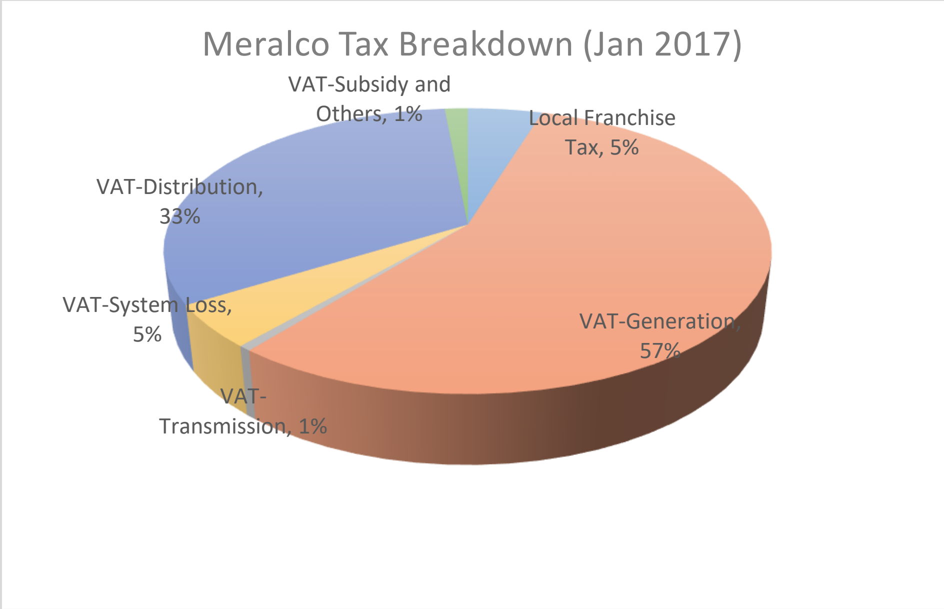
Figure 1. Breakdown of typical Meralco Bill



Source: Meralco 2017

It is worth noting that the current system imposes a Value Added Tax (VAT) on system losses. The total taxes paid by a household consuming 200 kWh is Php 145.07 or almost 73 centavos per kWh. Figure 3 provides the breakdown of taxes passed on to electricity consumers. Given that system loss taxes correspond to approximately 5% of total taxes, the removal of the tax on system loss will lower the cost of electricity by approximately 4 centavos per kWh.

Figure 2. Breakdown of the tax component of the Meralco bill



Source: Meralco (2017)

A reduction of system loss, the corresponding reduction in system loss charges, and the elimination of the VAT on system loss will translate to a 12 centavos per kWh discount for MERALCO subscribers.

System loss data from the National Electrification Administration indicate that the firm implementation of stricter system loss caps could result in even larger savings for electricity consumers residing in jurisdictions such as Sulu, Masbate, and Quezon. Table 3 summarizes the savings that would accrue to consumers if electric cooperatives with relatively high system loss rates succeed in bringing their system loss rates in line with the estimated national average system loss rate of 10%. The numbers indicate that consumers residing in these jurisdictions could save anywhere from 0.43 to 2.49 pesos per kilowatt hour once the stricter system loss caps are imposed. If a typical household consumers approximately 200 kWh per month then these figures translate to monthly savings of 85 pesos to 500 pesos and annual savings of 1,020 pesos to 6,000 pesos.

Table 3. Possible Savings for Consumers of Electric Cooperatives under Proposed System Loss Cap

Electric Cooperative	System Loss	Reduction (Php/kWh)	Ave. Res. Sales (kWh)	Per Consumer	Per 200 kWh
Sulu El. Coop.	38%	2.49	70.42	175.63	498.83
Masbate El. Coop.	23%	0.96	64.03	61.31	191.50
Zamboanga City El. Coop.	22%	0.74	130.68	96.23	147.27
Lanao Norte El. Coop.	20%	0.86	43.63	37.36	171.24
Davao Norte El. Coop.	19%	0.70	92.55	64.58	139.56
Quezon I El. Coop.	19%	0.65	55.12	35.60	129.17
North Cotabato EL. Coop. - P. Palma	18%	0.61	83.03	50.74	122.22
Pampanga III El. Coop.	18%	0.58	134.17	77.77	115.93
Quirino El. Coop.	16%	0.48	40.10	19.19	95.71
Biliran El. Coop.	16%	0.43	61.17	26.18	85.61

Source: NEA 2016, Author's Own Calculations