

PRELIMINARY AND SUBJECT TO CHANGES

Methodology and assumptions on the petroleum excise revenue estimates
as of 21 July 2017

The revenue impact of the proposed reform in petroleum excise was computed using the volume of removals of petroleum products, pump prices, estimated disposable income, and price and income elasticities.

The January to December 2016 actual volume of removals from BIR and the January to December 2016 actual volume of importations from BOC were used to project the volume of removals as shown in Table 2. The pump prices from the Department of Energy Oil Monitor as well as the excise tax schedule from 2018 to 2020 are shown in Table 1. For estimation purposes, the price of diesel and essential petroleum products were all assumed to be the same as the price of diesel at 32.20 pesos per liter. Diesel accounts for 65.9 percent of the total volume for this category. Processed gas, denatured alcohol, kerosene, LPG, asphalts and other similar products are categorized as essential petroleum products. The price of gasoline and non-essential petroleum products were assumed to be 46.00 pesos per liter which is the price of gasoline. Gasoline accounts for 67.2 percent of the total volume for this category. Naphtha, regular gas, and other similar products are categorized as non-essential petroleum products.

Table 1. Petroleum prices in PHP and excise schedule

Product	Price as of April 18, 2017	Tax Base	Current Excise (In Pesos)	Proposed rate		
				2018	2019	2020
<i>Diesel and essentials</i>						
Diesel fuel oil	32.20	Per liter	Exempt	3.00	5.00	6.00
Processed gas		Per liter	0.05/L			
Denatured alcohol		Per liter	0.05/L			
Kerosene		Per liter	Exempt			
Liquefied petroleum gas		Per liter	Exempt			
Asphalts		Per kilogram	0.56/kg			
Bunker fuel oil		Per liter	Exempt			
<i>Gasoline and non-essentials</i>						
Naphtha, regular gasoline, and other similar products of distillation	46.00	Per liter	4.35/L	7.00	9.00	10.00
Lubricating oils and greases		Per liter, kilogram (respectively)	4.50/L or kg			
Waxes and petrolatum		Per kilogram	3.50/L			
Leaded premium gasoline		Per liter	5.35/L			
Aviation turbo jet fuel		Per liter	3.67/L			

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The excise tax collection for petroleum product, X , is computed using the following formula:

$$X_{i,j} = u_{i,j} \cdot x_{i,j},$$

where u is the volume of removals and importations and x is the excise tax rate to be applied based on the schedule in Table 1 for petroleum product i for the year j .

The total excise tax collections from petroleum products R_j for the year j for both the existing and proposed petroleum excise tax rates is computed using the following formula:

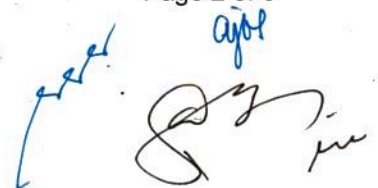
$$R_j = \sum_{i=1}^n (1 + g_{i,j})(1 + \eta_I \cdot \Delta I_j + \eta_P \cdot \Delta P_i) \cdot u_i \cdot X_i,$$

where $g_{i,j}$ is the growth rate of crude oil and other petroleum products provided by Bangko Sentral ng Pilipinas as shown in Table 3, η_I is the income elasticity of demand of petroleum products (computed to be constant at 0.302283), ΔI_j is the percentage change in disposable income for the year j (9.5 percent in 2018, and 9.3 percent in 2019, 9.2% in 2020, 10.0% in 2021 and 9.3% in 2022), η_P is the price elasticity of petroleum product prices (computed to be constant at -0.384363), ΔP_i is the percentage change in the price of the product from the petroleum excise proposal, u_i is the volume of removals of product i , $X_{i,j}$ is the total excise tax collections from product i , and n is the total number of products both local and imported. Other data used in the revenue estimates is shown in Table 4.

Note that $(1 + g_{i,j})$ corresponds to the change in the volume of removals and importations. ΔP_j was computed using 32.20 pesos as the baseline for diesel and essential petroleum products, and 46.00 pesos for gasoline and non-essential petroleum products. The income elasticity of demand η_I and price elasticity of demand η_P were based on computations from the Total Final Oil Consumption of the Philippines from Economic Research Institute for ASEAN and East Asia (ERIA) Discussion Paper Series, Analysis on Price Elasticity of Energy Demand in East Asia: Empirical Evidence and Policy Implications for ASEAN and East Asia. $(1 + \eta_I \cdot \Delta I_j + \eta_P \cdot \Delta P_i)$ is the multiplier that takes into account consumer behavior when their incomes change and the prices of the petroleum products change.

Finally, the computation for the projected incremental revenue $R_{I,j}$ for the year j is the difference between the projected revenue $R_{p,j}$ of year j using the proposed petroleum excise schedule, and the revenue $R_{c,j}$ of the current year using the existing system:

$$R_{I,j} = R_{p,j} - R_{c,j}.$$



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Table 2. 2016 Actual Volume of Removals and Importations of Petroleum Products by Collecting Agency (In Billions)

Petroleum Products	Unit	BIR	BOC	TOTAL
Premium/regular/naphtha/platformate/xlf/motor spirit/gasoline	Liters	2.91	1.24	4.16
Pyrolysis Gasoline	Liters	-	0.64	0.64
Jet A-1 Fuel/Aviation Gas	Liters	0.15	0.75	0.90
Asphalts	Kilograms	0.00002	0.14	0.14
Kerosene	Liters	0.09	0.04	0.12
Diesel	Liters	5.03	5.60	10.63
LPG	Liters	0.97	1.15	2.11
Naphtha (Exempted for Petrochemical Industry)	Liters	0.10	0.05	0.15
Ref. Fuel & Loss/(Gain)	Liters	0.74	-	0.74
Fuel Oil	Liters	0.91	0.80	1.72
Lubricating Oil	Liters	-	0.47	0.47
Paraffin Wax/Petroleum Jelly and other Waxes	Kilograms	-	0.03	0.03
Others	Liters	-	0.51	0.51

Table 3. Import Volume of Petroleum Products and Growth Rate

	2015	2016	2017	2018	2019	2020	2021	2022
Crude	78	83	88	95	101	109	118	127
<i>Crude, Growth Rate*</i>		6.4%	6.0%	8.0%	6.3%	7.9%	8.3%	7.6%
Non-Crude	75	80	85	91	97	105	113	123
<i>Non-crude, Growth Rate**</i>		6.7%	6.3%	7.1%	6.6%	8.2%	7.6%	8.8%

Source: BSP January 17, 2017 based on December 21, 2016 DBCC

Notes: *Growth rates applied to the volume of removals from BIR

** Growth rates applied to the volume of importations from BOC

Table 4. Other Data Used in the Revenue Estimates

	2016	2017	2018	2019	2020	2021	2022
Change in Pump Price	0.0%	0.0%	8.1%	5.9%	2.8%	0.0%	0.0%
Nominal GDP*	14,480.72	15,876.92	17,456.07	19,150.92	21,012.76	23,204.30	25,503.22
Tax Revenues	1,980.39	2,258.35	2,537.87	2,839.44	3,195.45	3,597.47	4,067.33
Disposable Income	12,500.33	13,618.57	14,918.20	16,311.48	17,817.31	19,606.83	21,435.89
Change in Disposable Income			9.5%	9.3%	9.2%	10.0%	9.3%

Source: National Accounts

