



PDP & Tariff Review



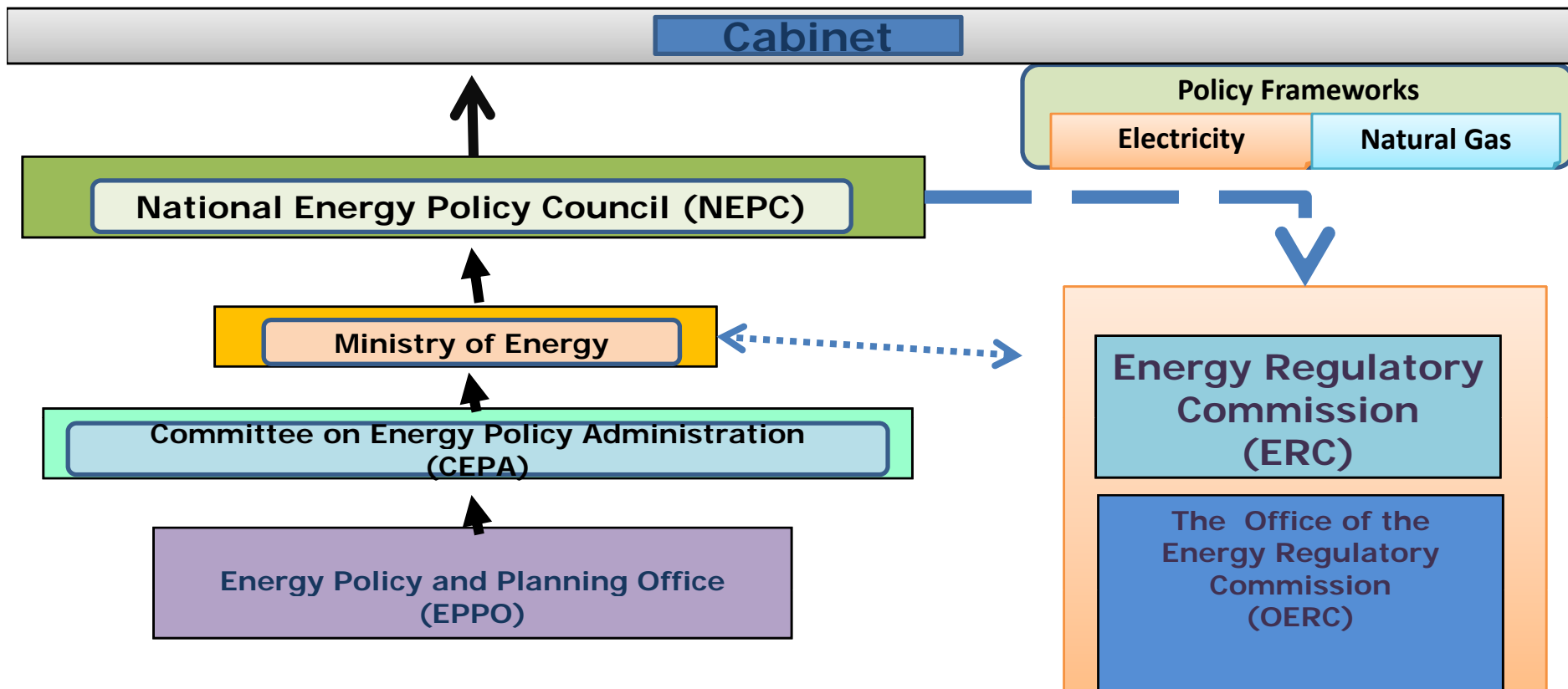
Presentation for NARUC Partnership Activity 2
Portland, Oregon Tuesday 21 September 2010

Dr. Pallapa Ruangrong
Commissioner

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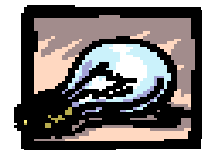
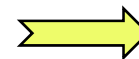
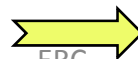
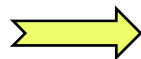
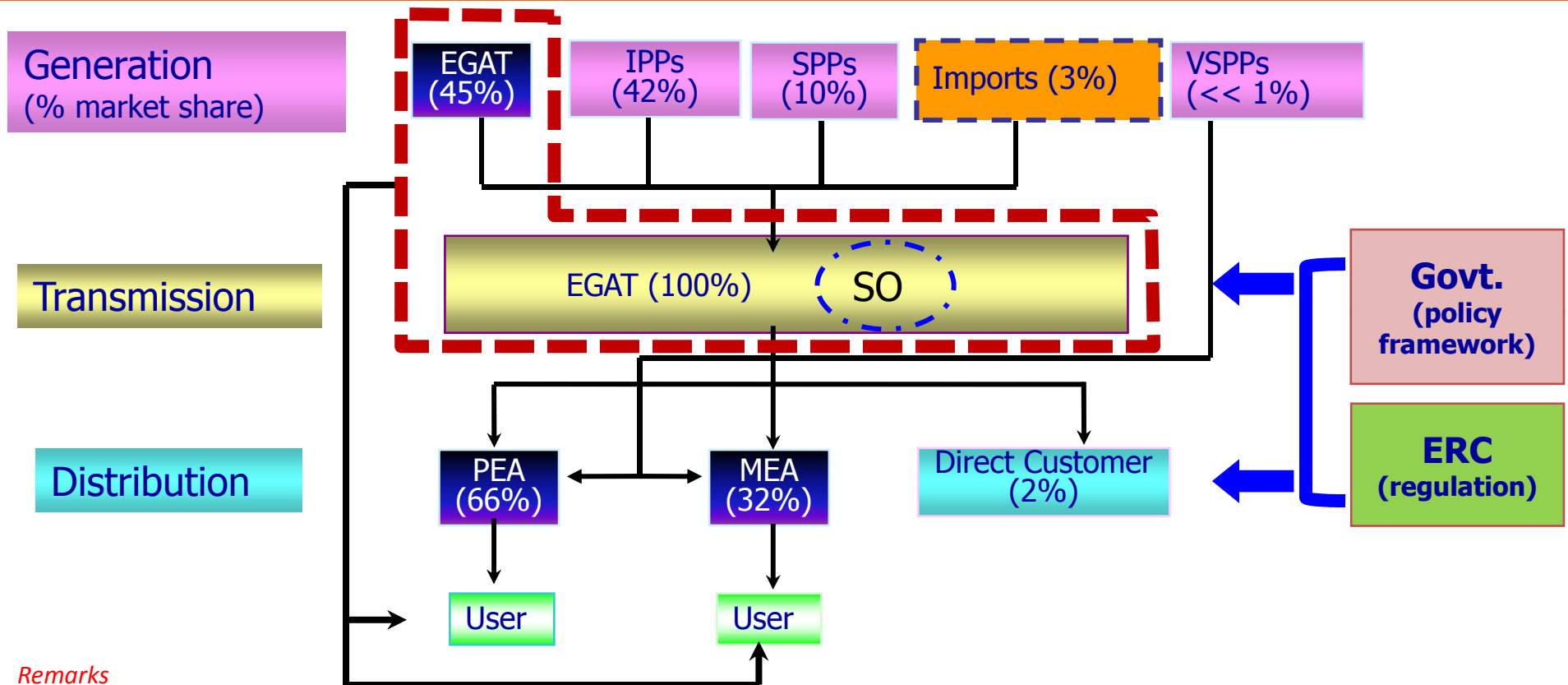


ERC & the PDP



ERC does not have any mandate to approve PDP. The PDP is prepared by EGAT under the supervision of the Ministry of Energy

Electricity Industry



MEA and PEA Service Areas

- 63 Million people
- 17 Million energy users
- Cover 99% of service area

76 Provinces of THAILAND :

-**Metropolitan Area** (3 Provinces : Bangkok, Nonthaburi, Samutprakan) served by MEA)

-**Provincial Area** (73 Provinces are served by PEA)

**MEA's service area
2.7 Million Customers**

MEA's service area

**PEA's service area
14.2 Million Customers**

Northern area

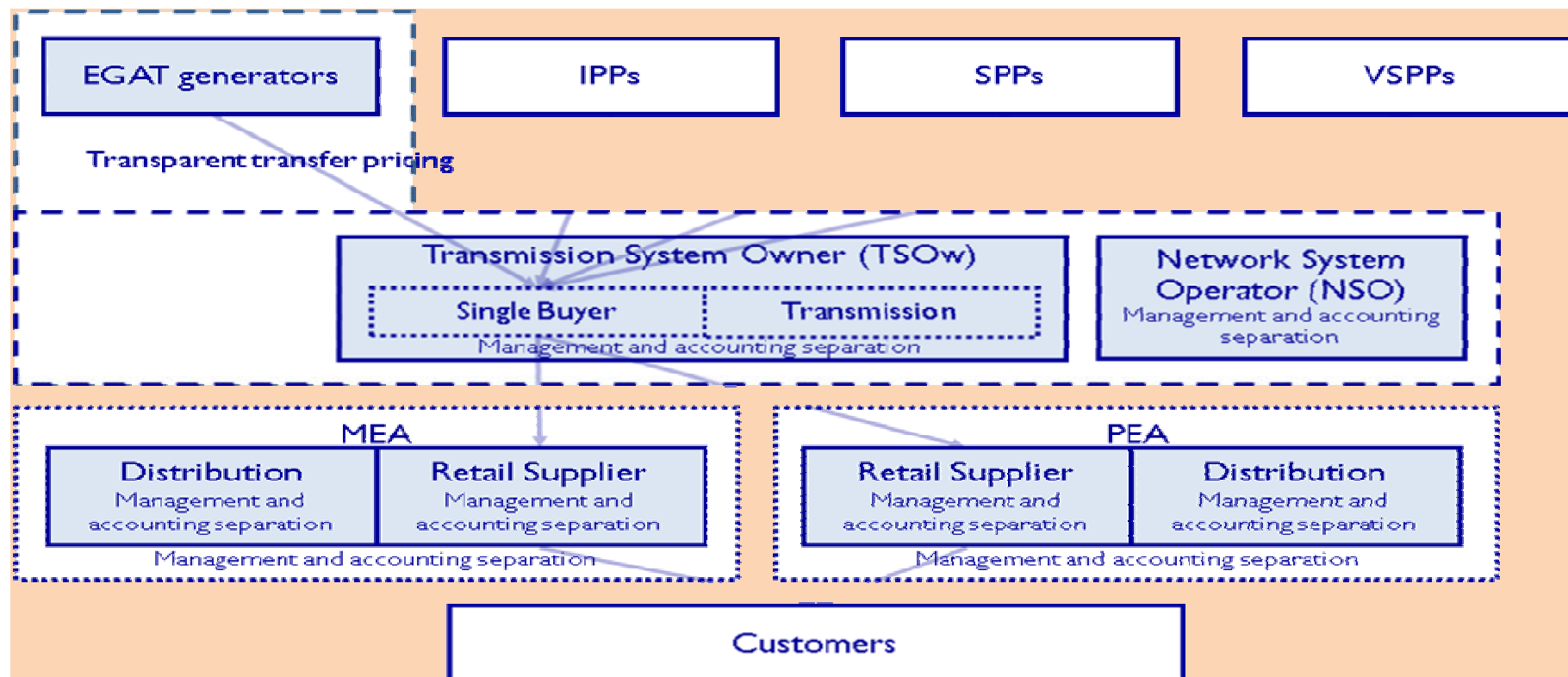
North Eastern area

Central area

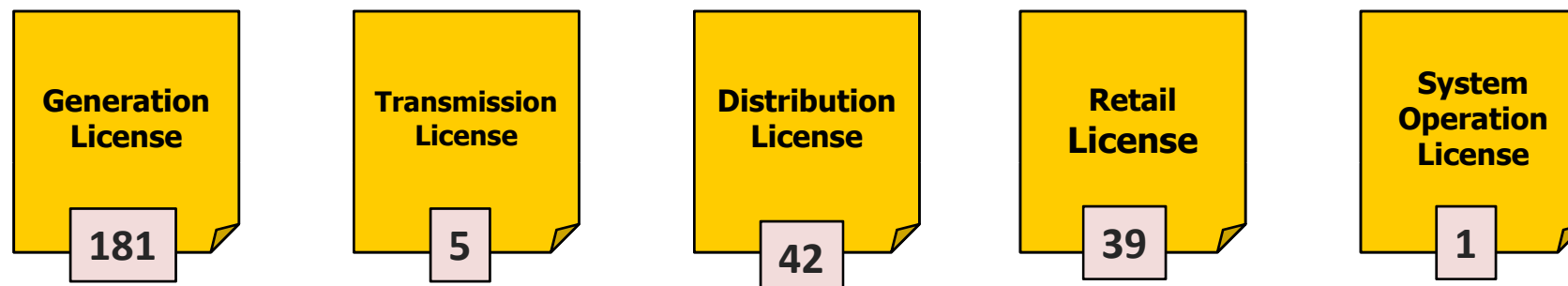
Southern area



Enhanced Single Buyer

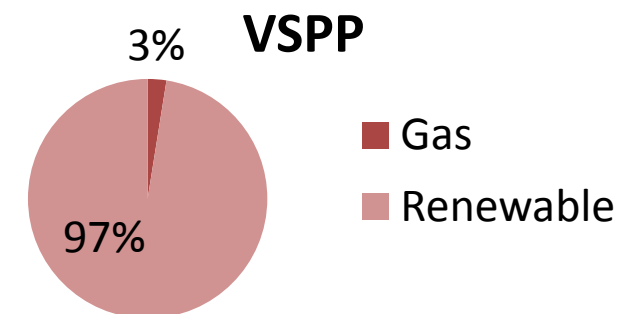
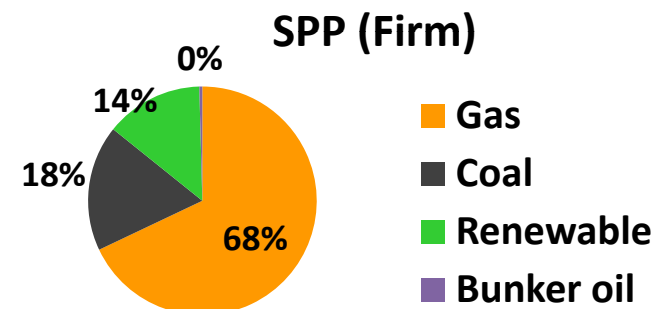
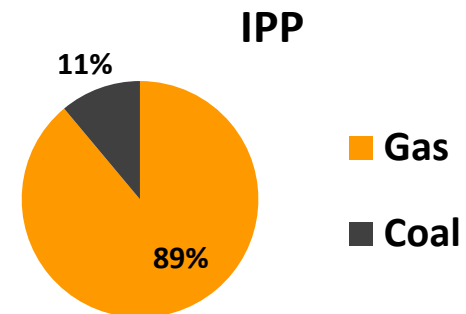


Five Classes of Licenses



Private power producers in Thailand

Producers		Existing	New
IPP		12,151.6 MW (10)	4,400 MW (4)
		EGAT's 5,474 MW (3)	Private 6,677 MW (7)
SPP	Firm	2,079 MW (41)	~2,000 MW (~ 27)
	Non Firm	243 MW (19)	(> 10)
VSPP		238 MW (118)	> 2,000 MW (> 300)
		14,712 MW (188)	> 8,400 MW (> 341)



Remark: () = numbers of firms

Independent Power Producers

IPP First Round Bidding

commenced on 2000-2008

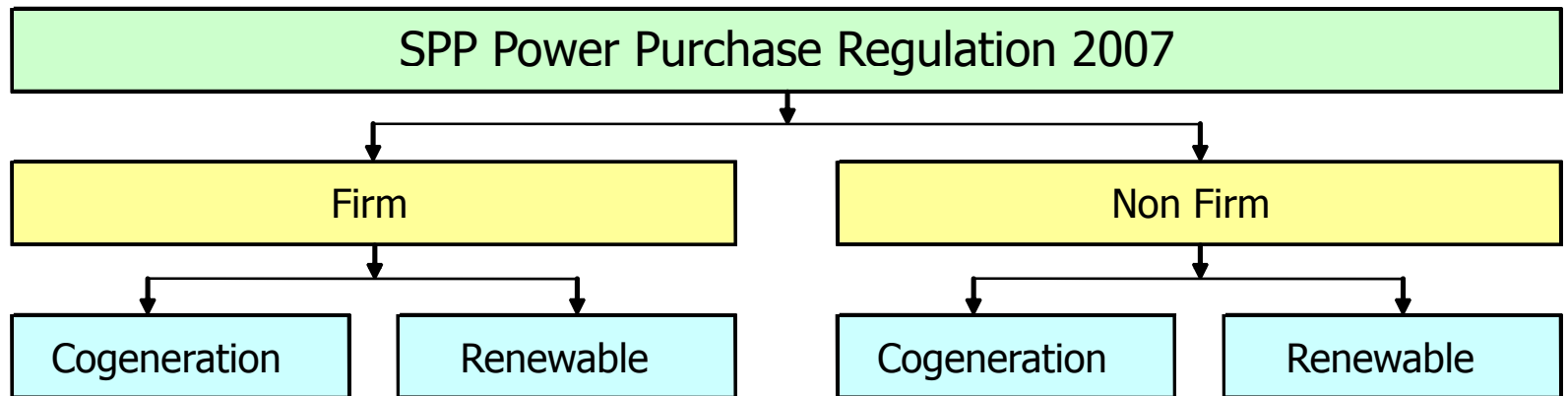
IPPs	Fuel Type	Capacity (MW)
1. IPT	Natural Gas	700
2. TECO	Natural Gas	700
3. Ratchburi Power	Natural Gas	1,400
4. Gulf Power	Natural Gas	1,468
5. BLCP	Coal	1,346.5
6. Glow IPP	Natural Gas	713
7. EPEC	Natural Gas	350
		6,677.5

IPP Second Round Bidding

Expected to commence on 2012-2014

IPP	Equity Structure	Fuel	Capacity (MW)
1.GHECO-One	GLOW IPP2 = 65% Hemaraj = 35%	Coal	660
2.National Power supply (NPS)	NPS = 99.99% 6 Thai Individuals =0.01%	Coal	540
3.Siam Energy	Gulf JP = 99.94% 6 Thai Individuals =0.06%	Gas	1,600
4.Power Generation Supply	Gulf JP = 99.94% Individual Investors =0.06%	Gas	1,600
			4,400

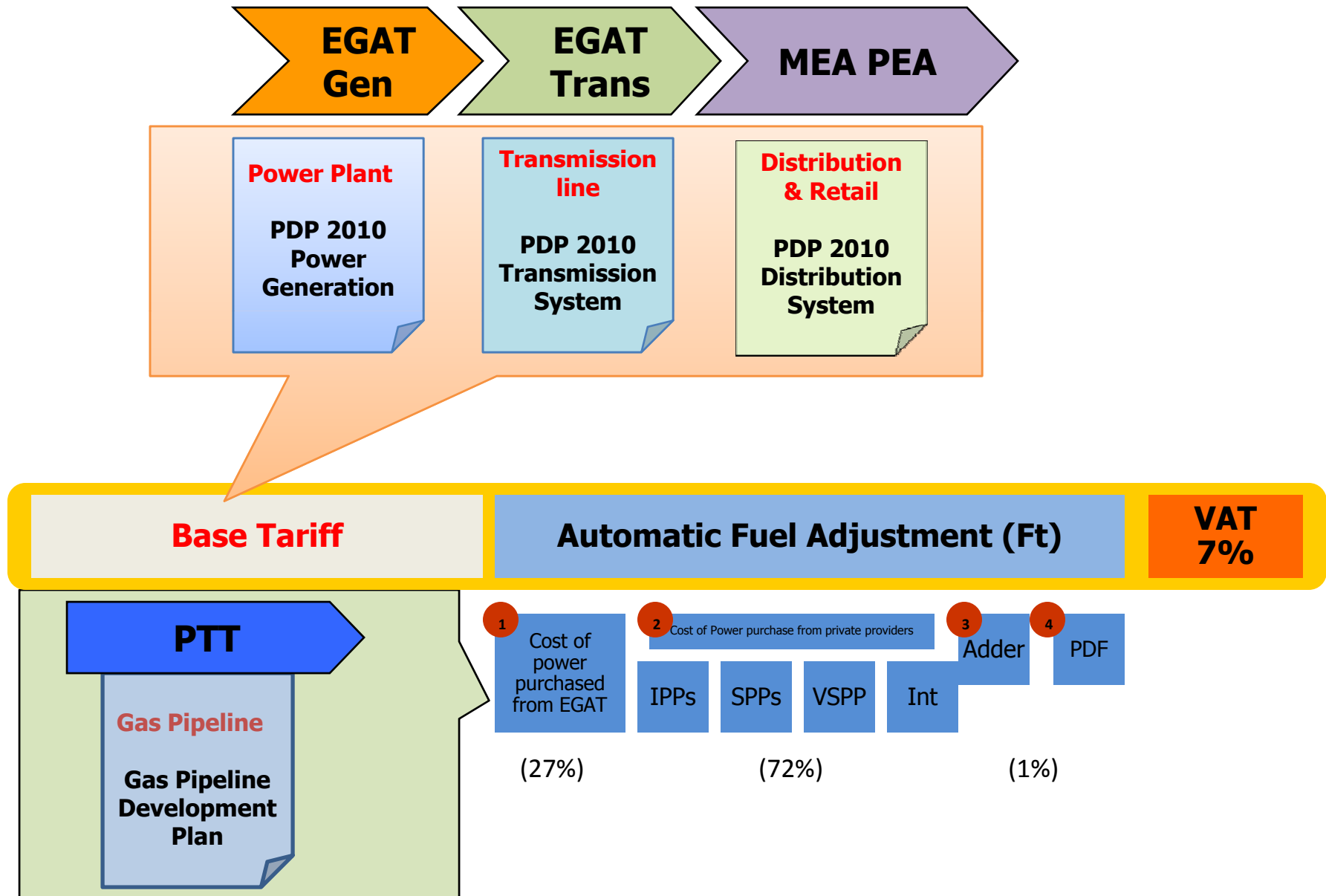
SPP Power Purchase Regulation



Target	Firm 4,000 MW	No limit	No limit	No limit
Purchased Cap.	>10 - 90 MW	>10 - 90 MW	>10 - 90 MW	>10 - 90 MW
Contract Period	20 -25 Year	20 -25 Year	5 Year (renew contract)	
Fuel	gas , coal	Renewable	any	Renewable
Condition	Steam >= 5%	Conventional fuel <= 25 %		Conventional fuel <= 25 %

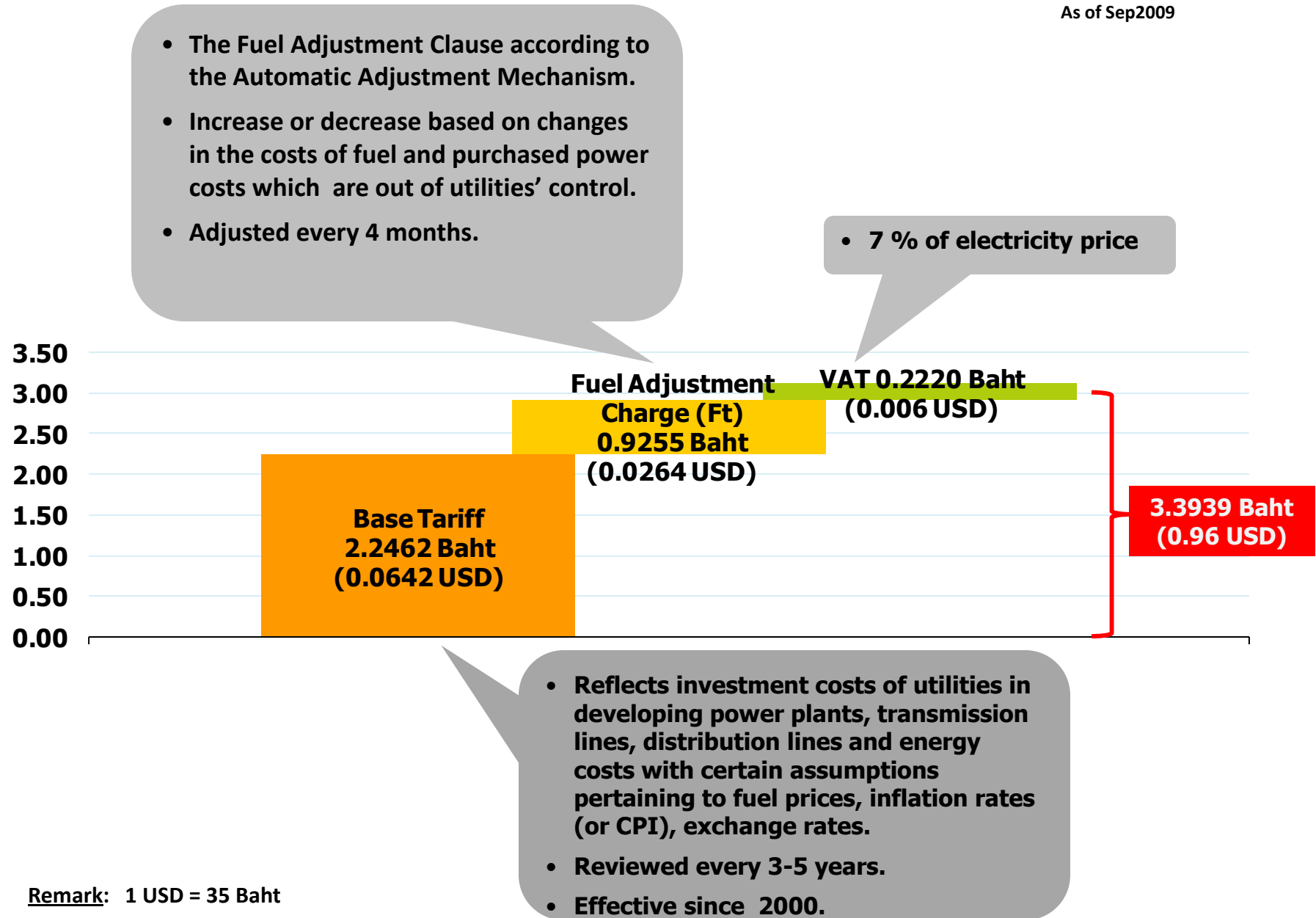
Source : EGAT

Tariff Structure



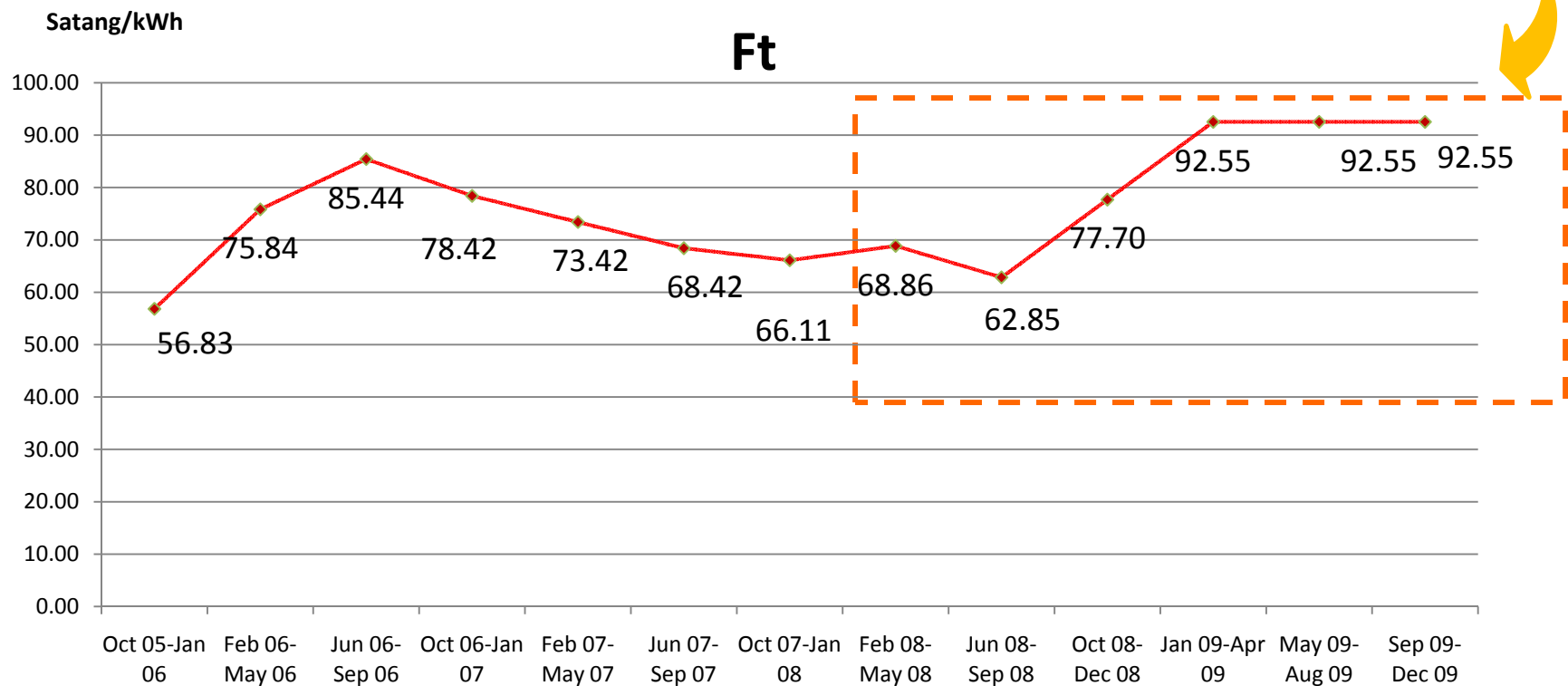
The Structure of Current Electricity Price

As of Sep2009



The Adjustments of Ft

6 times of Ft adjustment have been done by the ERC.



Remark:

100 Satang = 1 Baht

35 Baht = 1USD

Revenue Requirement and financial criteria

Revenue Requirement : based on meeting financial criteria on average over tariff period (2006 - 2008)

Financial Criteria

Description	EGAT	MEA	PEA
Return on Capital Invested : ROIC (%)	8.39	4.80	4.80
Debt Service Coverage Ratio : DSCR (x)	≥ 1.30	≥ 1.50	≥ 1.50
Debt /Equity (x)	≤ 1.50	≤ 1.50	≤ 1.50

Tariff design in Thailand

Progressive Rate



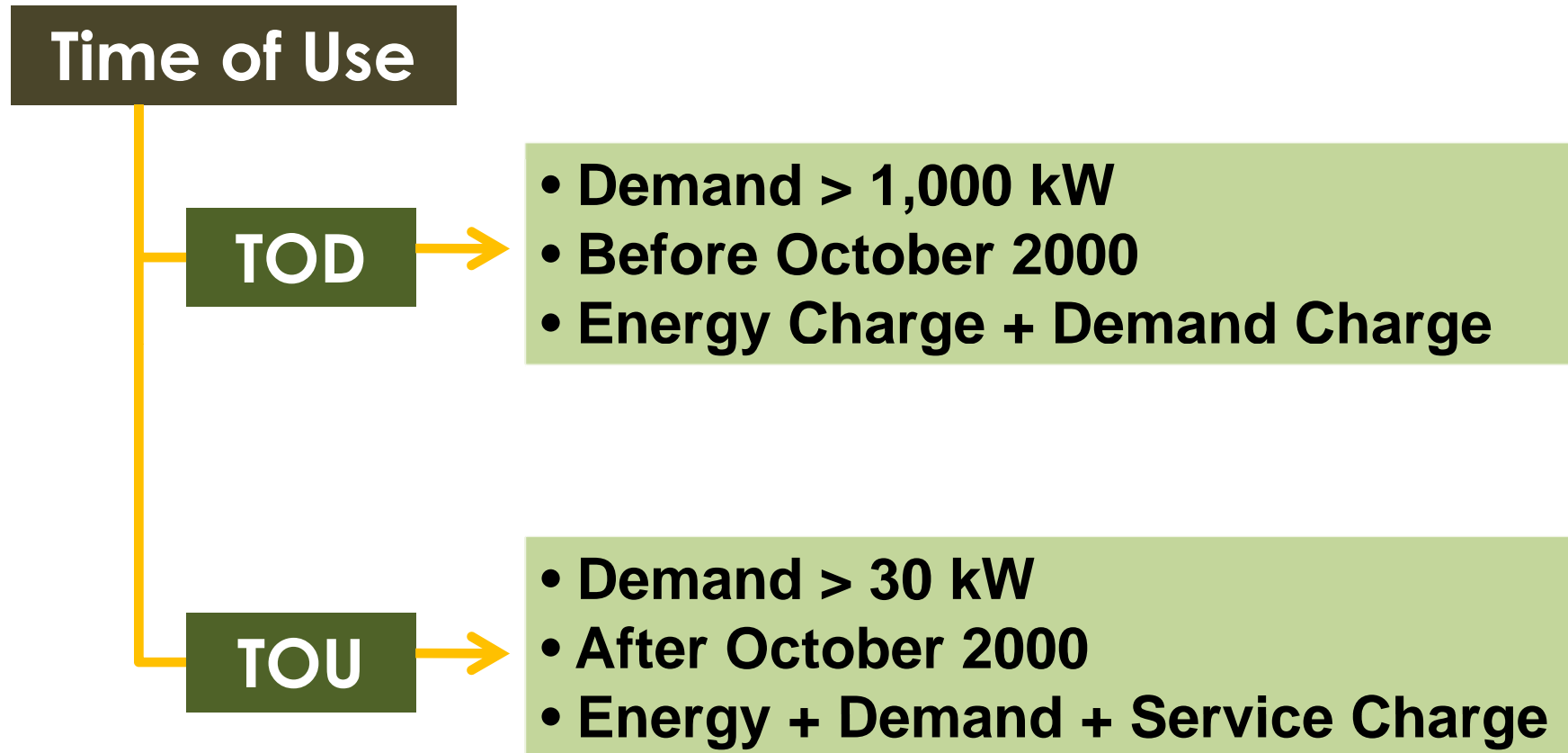
- Residential
- Small General Service
- Government
- Energy Charge + Service Charge

Two part tariff



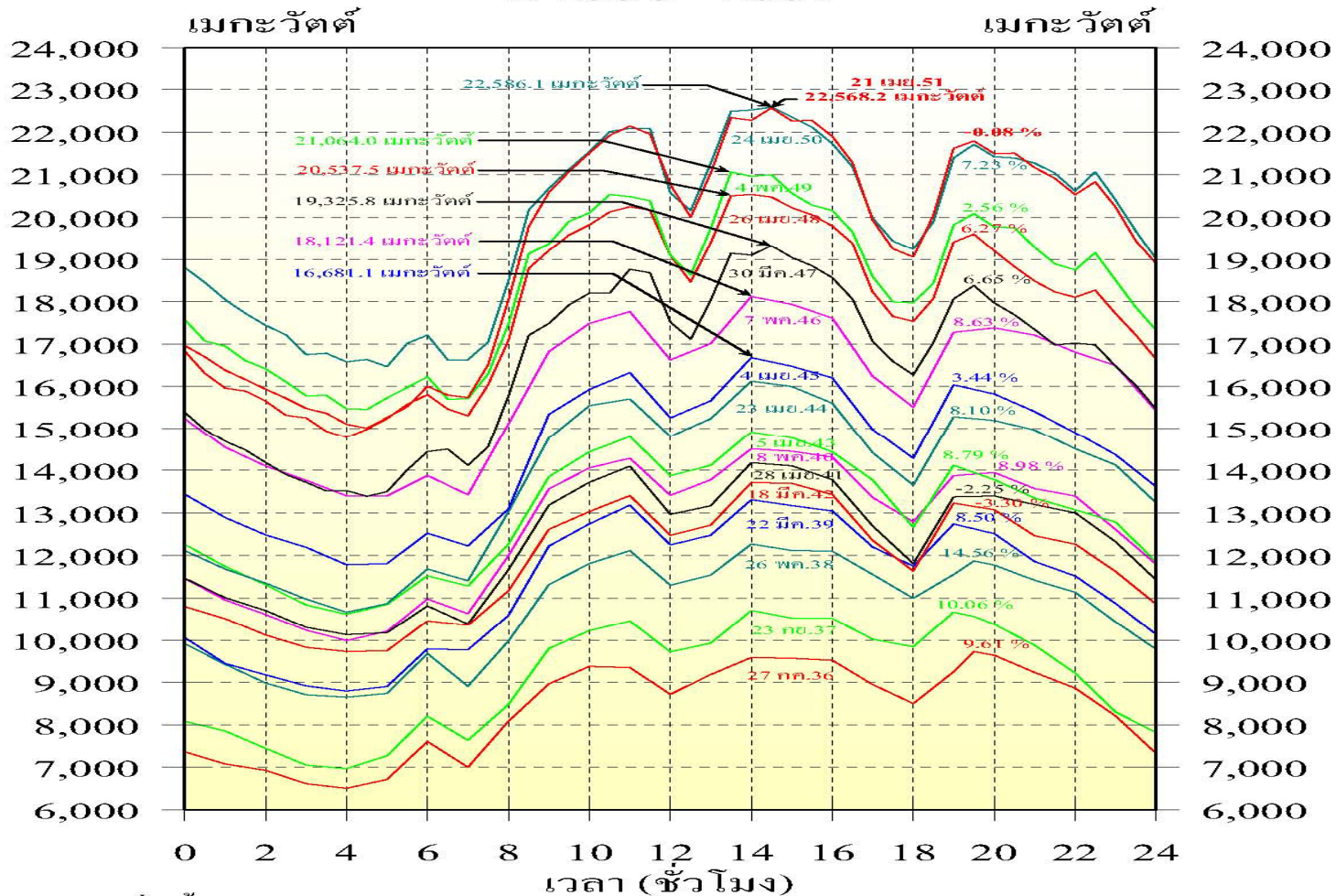
- Demand < 1,000 kW
- Before October 2000
- Energy Charge + Demand Charge

Tariff design in Thailand

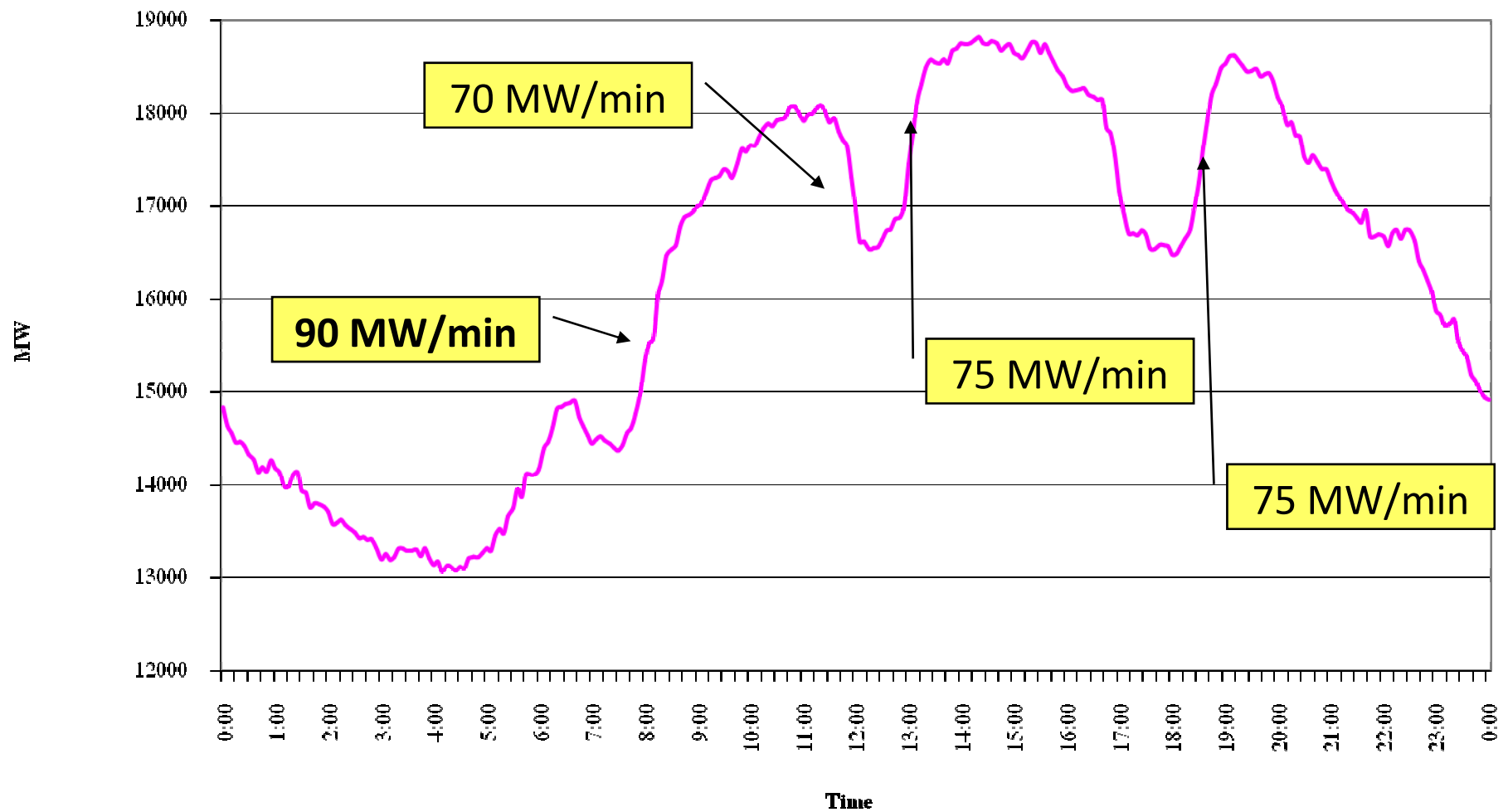


เปรียบเทียบลักษณะของพลังไฟฟ้า

ลักษณะของพลังไฟฟ้า
ในวันที่มีการใช้พลังไฟฟ้าสูงสุด
ปี 2536 - 2551



Daily Load Curve : 5 Minutes Scan



Retail Tariff

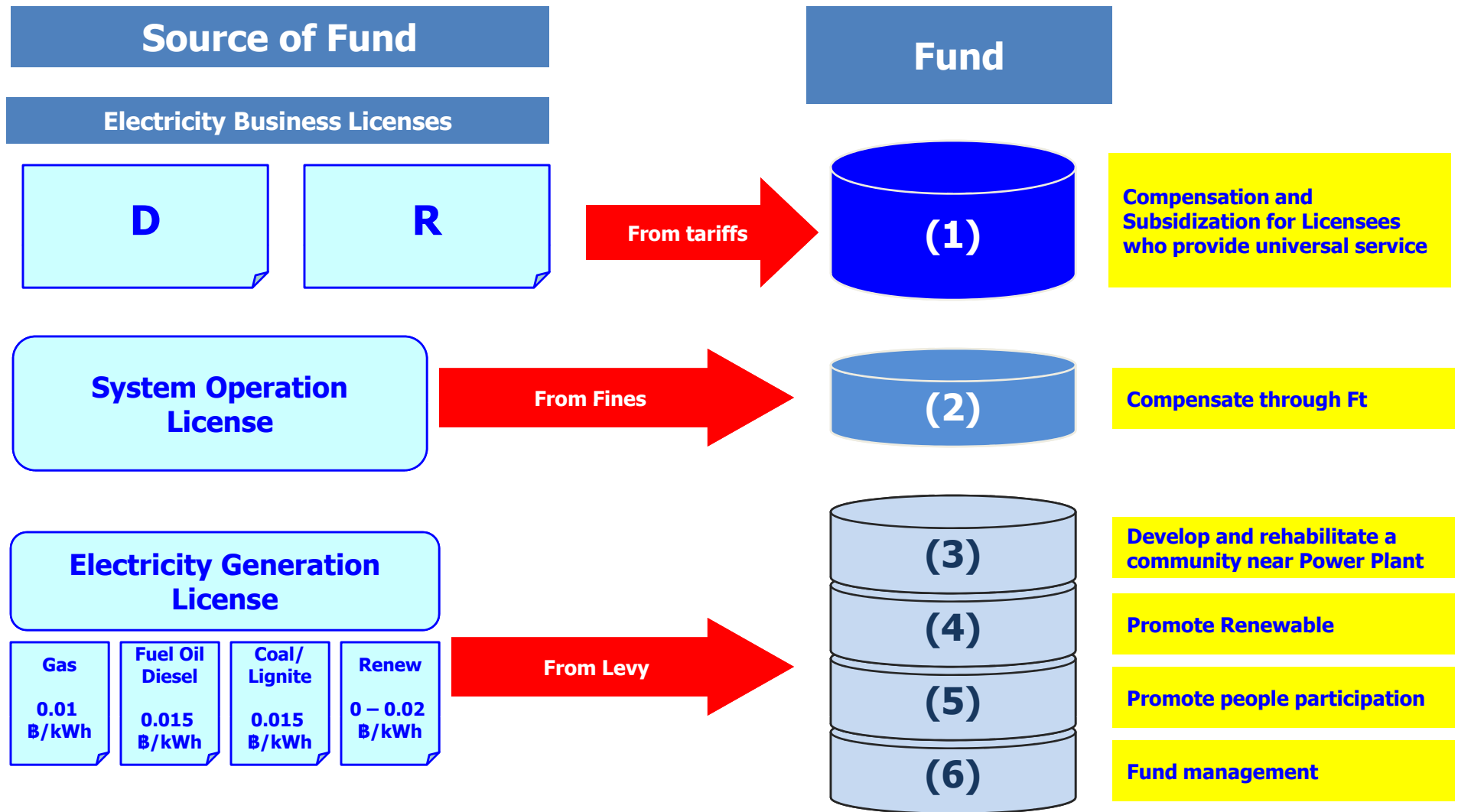
Categories	Energy Consumption	Peak Demand	Tariff Categories
1. Residential			
- Small	< 150 kWh		Progressive
- Large	> 150 kWh		Progressive and TOU Rate
2. Small General Service	Not Specified	< 30 kW	Progressive and TOU Rate
3. Medium General Service	< 250,000 kWh	30 - 999 kW	Two part tariff and TOU Rate
4. Large General Service	< 250,000 kWh	> 1,000 kW	Two part tariff and TOU Rate
5. Specific Business	Not Specified	≥ 30 kW	Two part tariff and TOU Rate
6. Government and Non Profit Organization	< 250,000 kWh	< 1,000 kW	Progressive and TOU Rate
7. Water Pumping for Agriculture			Progressive and TOU Rate

The Adder* for RE generator classified by types of RE

Types of Renewable Energy	Former Adder (Baht/kWh)	Current Adder (Baht/kWh)	Additional for Diesel Substitution (Baht/kWh)	Additional for RE generators in the most 3 southern provinces (Baht/kWh)	Period (Year)
1. Biomass					
- Installed Cap. <= 1 MW	0.30	0.50	1.00	1.00	7
- Installed Cap. >1 MW	0.30	0.30	1.00	1.00	7
2. Biogas (all sources)					
- Installed Cap. <= 1 MW	0.30	0.50	1.00	1.00	7
- Installed Cap. >1 MW	0.30	0.30	1.00	1.00	7
3. Waste (MSW and non-toxic industrial waste)					
- Fertilizer/Landfill	2.50	2.50	1.00	1.00	7
- Thermal Process	2.50	3.50	1.00	1.00	7
4. Wind					
- Installed Cap. <= 50 kW	3.50	4.50	1.50	1.50	10
- Installed Cap. > 50 kW	3.50	3.50	1.50	1.50	10
5. Hydro (Mini/Micro Hydro)					
- Installed Cap. 50 kW - <200 kW	0.40	0.80	1.00	1.00	7
- Installed Cap. <50 kW	0.80	1.50	1.00	1.00	7
6. Solar	8.00	6.50	1.50	1.50	10

* The Cabinet's resolution on 24 Mar 2009

The Power Development Fund



- ERC is in the process of developing the rules for the electricity rates and the supply of electricity, with the principle objective of encourage the efficient use of resources; reducing environmental impact while ensuring the balanced development of the power sector and the economic development of the country.
- Issues being considered include
 - Opening the sector to demand side participation to provide the opportunity to compete with energy production
 - Offering demand response where a tariff paid to reduce consumption (Interruptible tariff)
 - Open demand response to competition

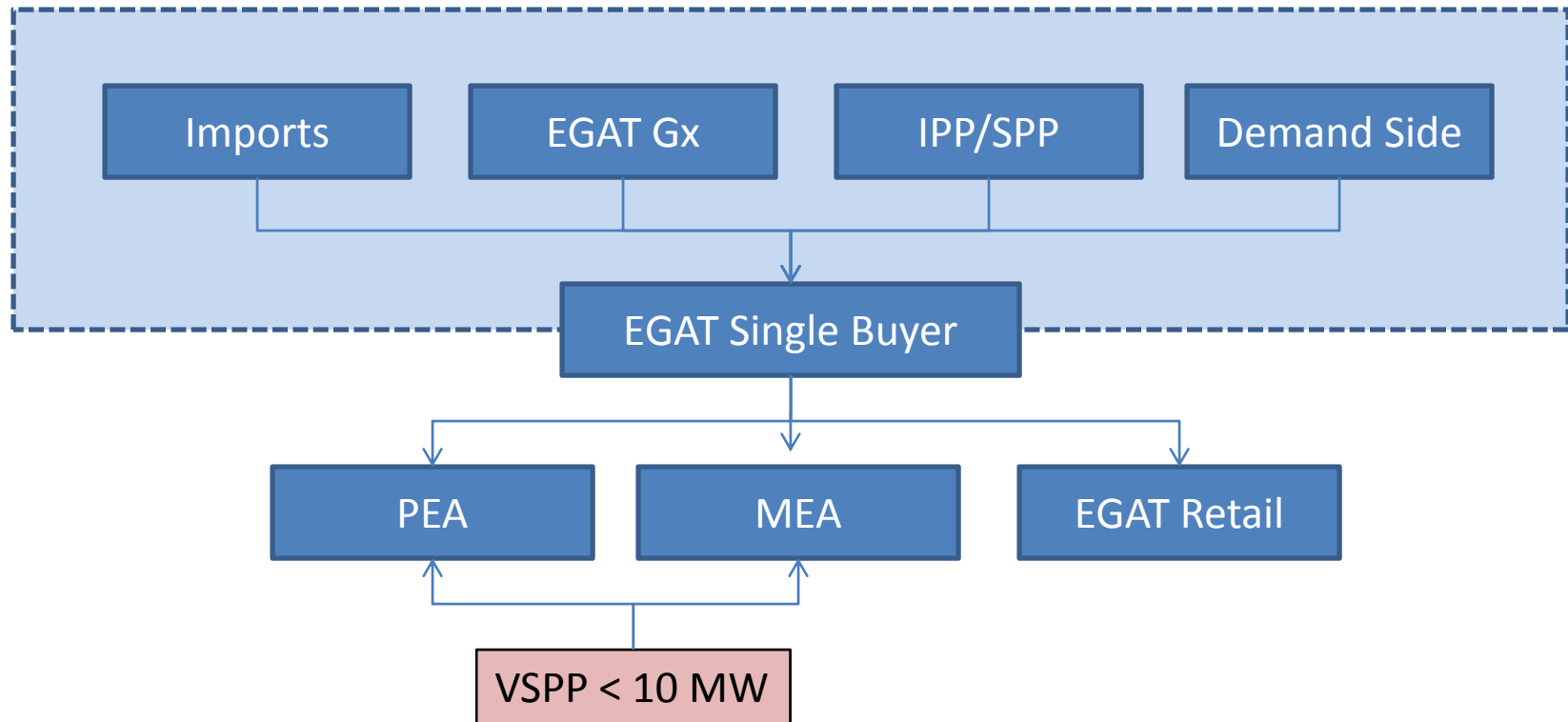
Regulated Tariff (cont)

- Tariffs will be unbundled into generation, transmission, distribution, and supply, including the various subsidies
- Subsidies will be paid through the Power Development Fund under clear rules and monitoring.
- The National Uniform Tariff will remain for customers as appropriate
- Tariffs will remain cost reflective and ERC will take on the role of collecting and monitoring cost data.



New Wholesale Tariff Structure

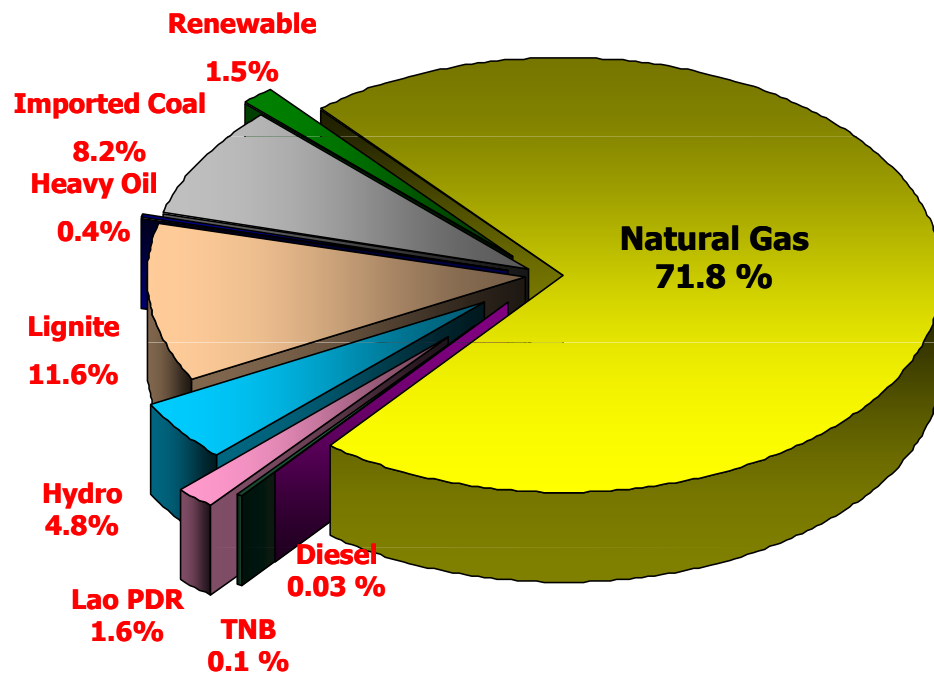
Wholesale Power Pricing Mechanism : WPPM



Load Aggregation

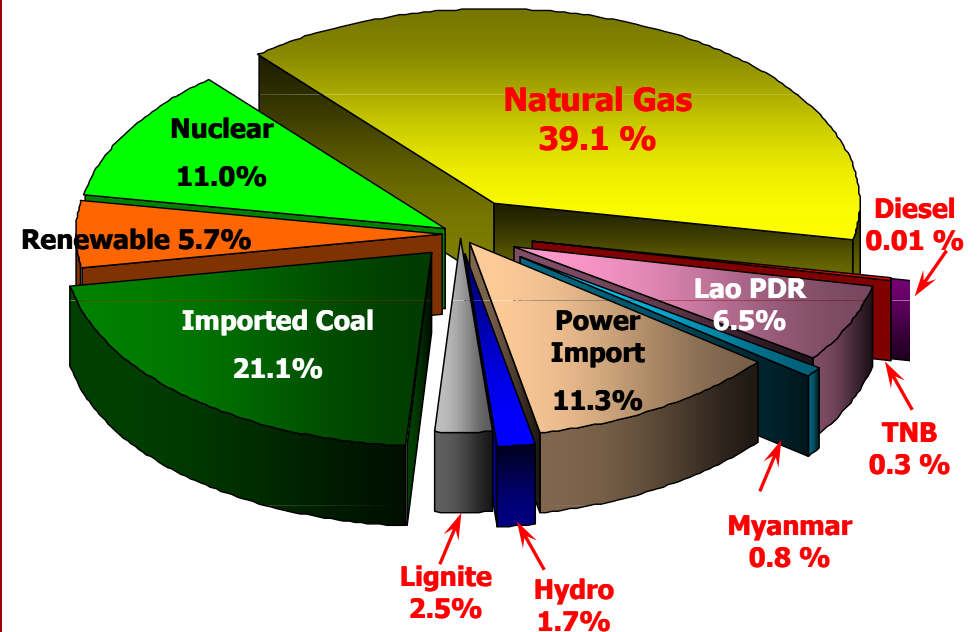
Total Energy Generation By Fuel Type

2009



Energy Generation
145,233 GWh

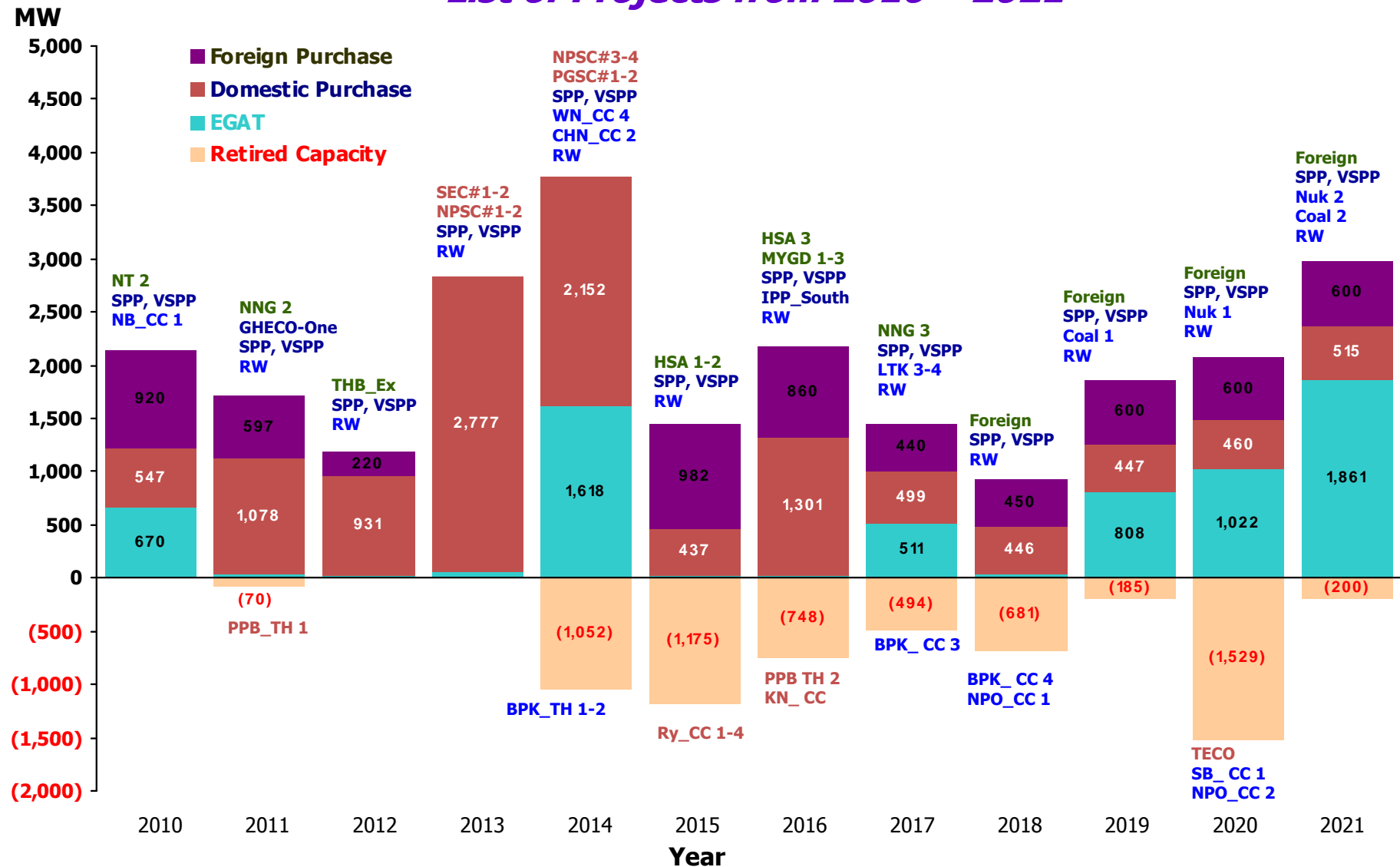
2030



Energy Generation
347,948 GWh

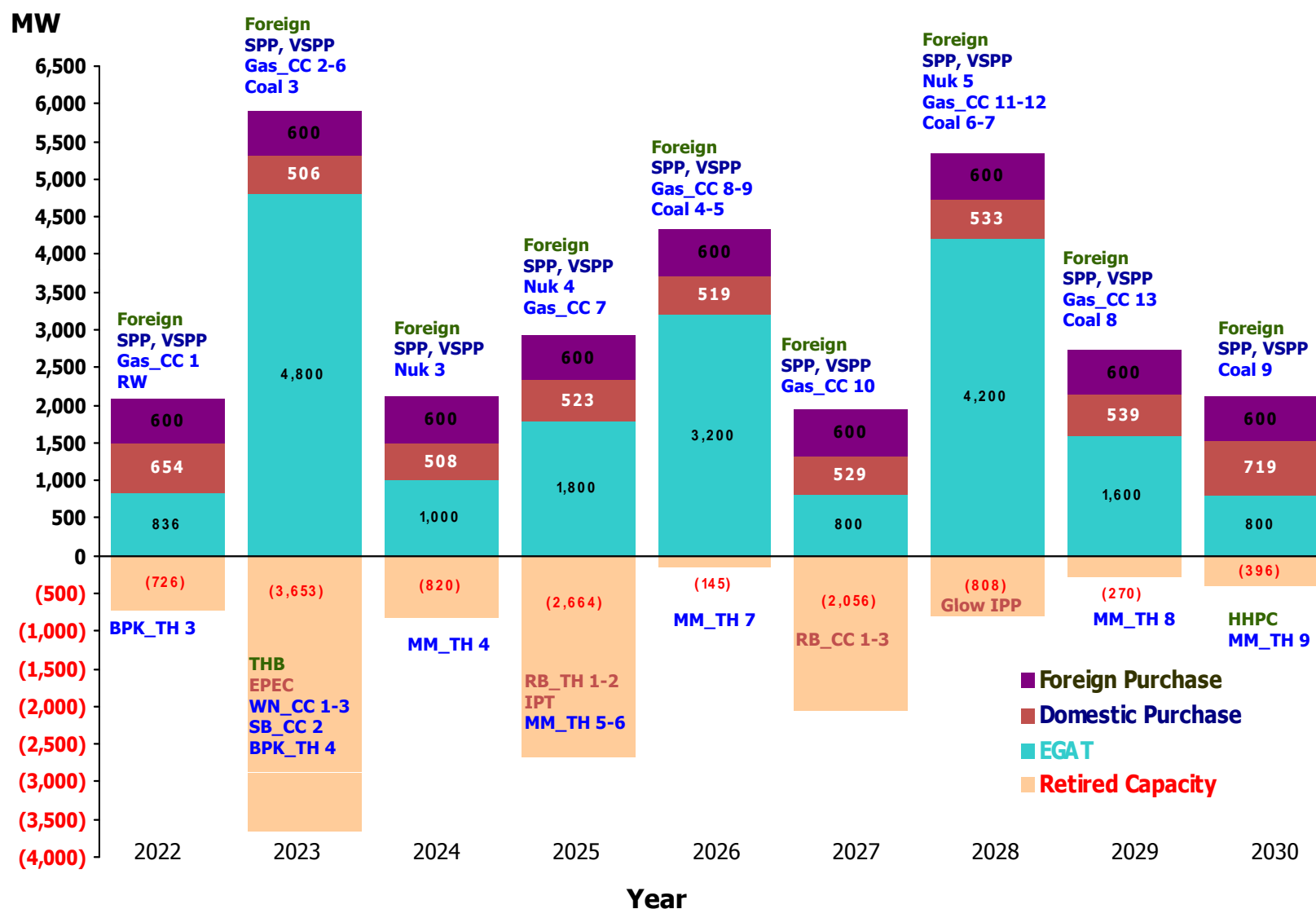
Thailand Power Development Plan

List of Projects from 2010 – 2021



Thailand Power Development Plan(Con.)

List of Projects from 2022 – 2030



- Load Forecast based on regression analysis of recorded retail electricity retail and GDP growth
- Data from current DSM programs was acquired from the Ministry of Energy and included in regression analysis. New programs will be deducted from the forecast demand afterward.
- Power generation using renewable energy in 2010-2022 was estimated as per AEDP (2008-2022) of the Ministry of Energy, while that in 2023-2030 is estimated.
- SPP purchase 2010-2021 to comply with the NEPC's resolution thereafter planned to be 360 MW annually in 2022–2029 and 540 MW in 2030.
- The minimum annual reserve margin was constraint to 15%
- Gas fired power plants to be retired would be replaced with combined cycle generating units.
- Greenhouse gas emission per unit of generated electricity in 2030 was set to be lower than that of PDP 2007 Revision 2.
- Proportion of Fuel Use:
 - Renewable energy as per the 15 Years AEDP; Cogeneration SPP took first priority and was followed by other alternative technologies.
 - Nuclear power plant was limited to 1 unit/year and allowed only 2 years in a row with a pause of 2 years to comfort the investment plan.
 - Power purchase from neighboring countries must not exceed 25% of the total generating capacity.
 - Other generating capacity was a well considered mix of replacing gas fired combined cycle power plants and clean coal thermal power plants.



Demand Side Management

PDP 2010 Definition

DSM programs and measures aim to promote and support target groups of customers to improve their electricity consumption

Promotion of New T5 Fluorescent Lamp Program

Program Target: To promote new T5 fluorescent lamps to replace old T8 fluorescent lamps, especially in business and industrial sectors, amounting 83 million lamps within 2015.

DSM Considerations

DSM from energy savings from appliances is not included in load forecast.

Plan for savings from new DSM programs to be included in load forecast.

Such new programs must be:

1. Continuous; and,
2. Must affect consumption behaviour

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Peak (MW)	43	129	215	344	473	584	498	369	198
Energy (MWh)	210	629	1049	1,678	2,307	2,852	2,433	1,804	965

Source: EPPO

The ERC would like to consider the following

Ways to regulate the scope of contents and the procedures of power development planning

Ways to introduce more competition into DSM and DR including setting the right incentives for the parties involved