Short Term Gas Demand Forecasting

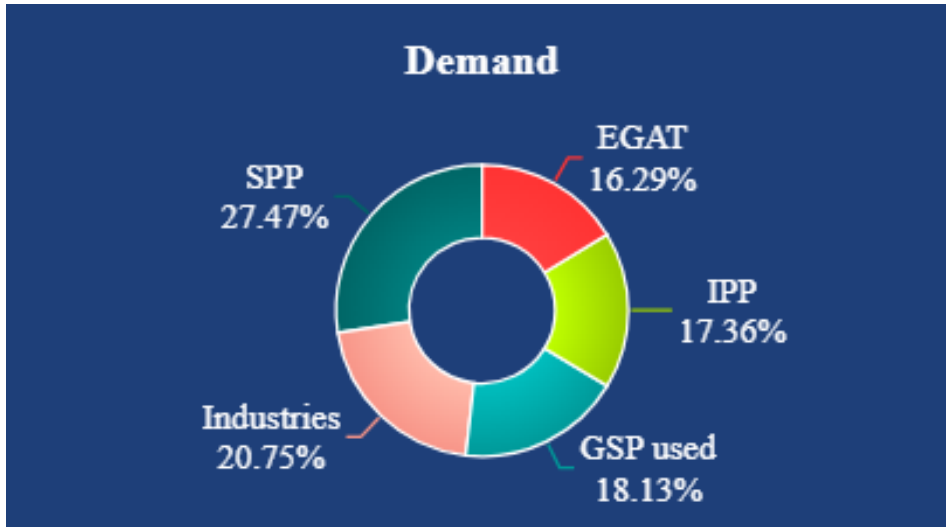
Case study of Thailand

Energy Regulatory Commission (ERC)

ERRA Gaseous Fuels Markets and Economic Regulation Committee (GF COM) Meeting
October 28-29, 2024 | 3rd Meeting | Physical in Tirana, Albania

Regulator Role in Gas Forecasting

- **Gas Demand forecast**
  - In Thailand, natural gas is mainly used for power production, e.g. EGAT IPP and SPP.
  - Thus, natural gas demand forecast depends significantly on electricity load demand forecast.



Year: 2023

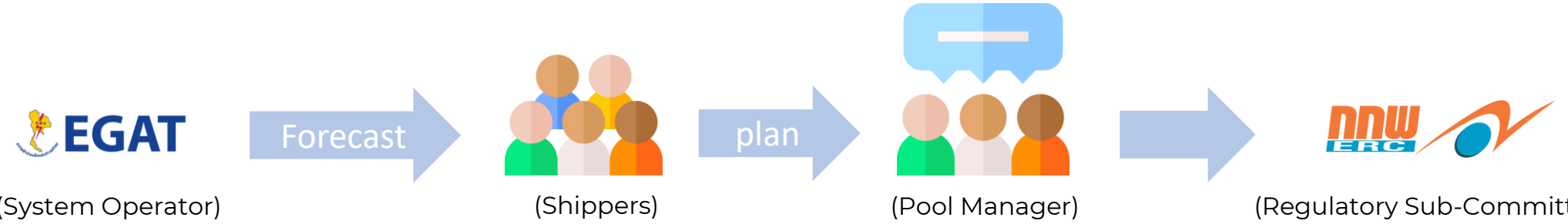
EGAT (System Operator) → Forecast → Gas Consumption in Power Sector

ptt Old Shipper → Forecast → Gas Consumption in GSP, SPP, Industrial, Transport and SPP sector

New Shippers → Forecast → Gas Consumption in IPP and SPP

Regulator Role in Gas Forecasting

- **Gas Demand forecast in Power sector**



(System Operator) (Shippers) (Pool Manager) (Regulatory Sub-Committee for Pool Gas Provision and Management: PPM)

➢ Operation Plan done by EGAT SO

Long-Term — **5 Years**
- Maintenance Scheduling, Fuel Supply Planning, Energy Balancing

Medium-Term & Short-Term — **1 Day – 4 Months**
- Fuel Management
- Unit Commitment (Start-up, Shutdown, Running)

National Control Center (NCC) — **Real-Time**
- Economic Dispatch and System Operation

4 Months Rolling Plan

1 Months Rolling Plan

Regulator Role in Gas Forecasting

- **Role of the regulator in the gas forecasting**
  - Monitor 5 years, annual, and monthly demand and supply forecasts.
  - Monitor the balance between Demand and Supply
  - Allow shippers to import LNG to fulfill remaining demand volume

Purpose and Objectives of the Gas Demand Forecasting

- **The main goals of the gas demand forecasting**
  - To supply sufficient pipeline gas and LNG to meet country demand.
  - To monitor existing supply including pipeline gas and LNG.
  - To monitor the current infrastructure such as LNG storage tank and transmission pipeline if they are sufficient for future gas demand, or whether additional investment is needed.
- **Focused timeframes**
  - 5 years , Annual, monthly
  - Updated and Adjusted in every 4 months / 1 months

Segmented Gas Demand Forecasting

- **When gas forecast are made, they segmented by users ; Power Plants (Electricity), Industries, GSP and NGV**

- For power sector

- ➢ EGAT SO does load demand forecast for Power Plant Generation Planning to supply electricity for industrial and residential.
- ➢ The gas demand forecast for electricity takes many factors into account, e.g. GDP, temperature, season and power from hydro power plants.

- For IND, NGV

- ➢ Referring to Business plan of PTT.

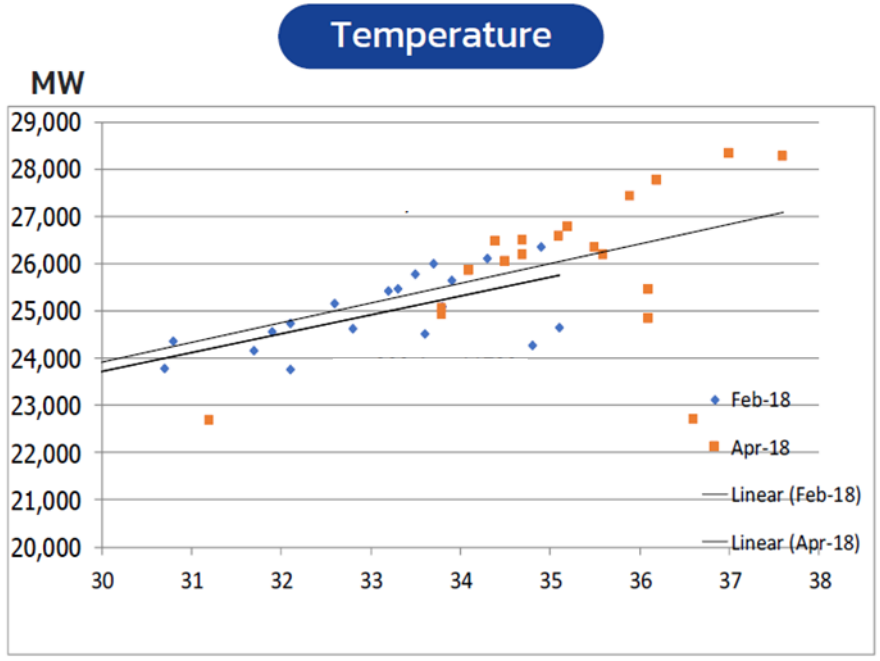
Inputs When Forecasting the Gas Demand

- **The inputs that are used when making the gas demand forecast**
  - GDP growth
  - Weather forecast, El Nino – La Nina
  - Natural Gas and LNG contracts signed
  - Hydro supply from Laos PDR
  - Maintenance of coal power plants (they have to use gas power plant instead)
- **Contingency scenarios for unexpected demand surges**
  - Unpredictability of weather / Fluctuated demand
  - Emergency events
  - Accidents or Incidents effected to gas transportation system

Mathematical Models for Forecasting

- In Power Sector, they collect historical data that reflects past demand such as GDP Growth, Energy Growth, Population density, seasonality and temperature.
- Then, Use linear regression to create forecasted model.

Example:



1°C ≅ 400 MW

Challenges and Best Practices in Gas Demand Forecasting

- **Challenges :** The main obstacles to accurate forecasting
  - Fluctuated demand
  - unpredictability of weather
  - Emergency events / accidents / incidents
- **How do they address these challenges?**
  - Adjust forecasted models
  - Update demand plan
  - Use LNG reserve, Request additional volumes from domestic gas (Swing gas) Prepare to urgently procure Spot LNG prompt cargo, Use secondary Fuel in Powerplant ; Oil
- **Best Practices**
  - Adjust forecasted model and Update demand plan rolling 4 months / 1 months

THANK YOU FOR YOUR ATTENTION!

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