



# NATIONAL ENERGY SECURITY CONFERENCE

*“CLOSING THE ENERGY SUPPLY-DEMAND GAP”*

## INITIATIVES TO ENHANCE MALAYSIA'S ELECTRICITY SUPPLY SECURITY

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# PRESENTATION OUTLINE

## 1. Introduction:

- ❖ **Malaysia's Key Indicators**
- ❖ **Evolution of Malaysian Electricity Supply Industry**
- ❖ **Malaysia's Electricity Profile**

## 2. Fuel Mix and Fuel Management Policies

## 3. Outlook of Electricity Demand & Supply

## 4. Power Development Plan

## 5. Fuel Requirements and Way Forward

## 6. Conclusion

# Malaysia's Key Indicators

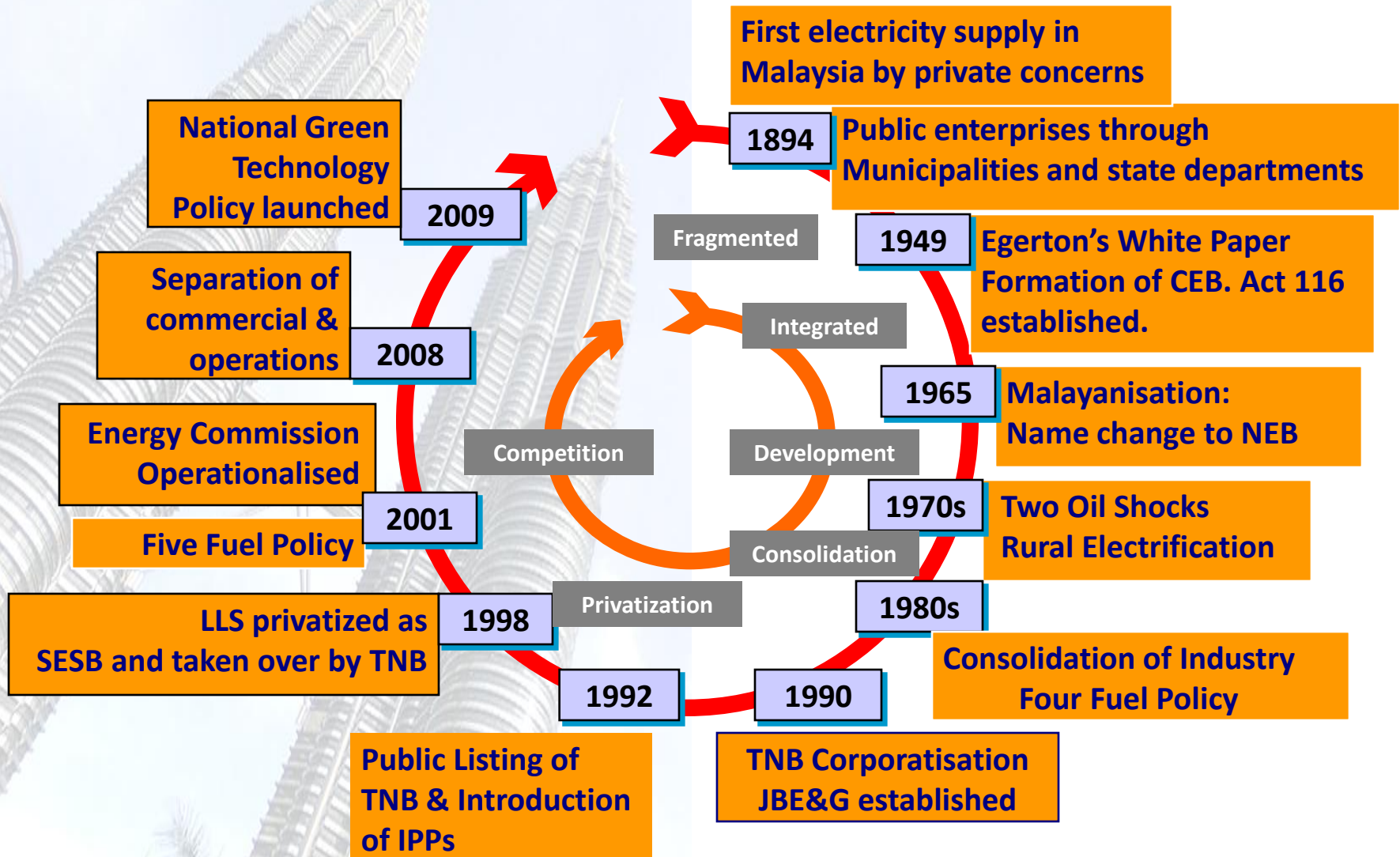
<b>Economic Indicators (2011)</b>	
<b>Population</b>	28.6 million
<b>Area</b>	329,847 sq km
<b>GDP</b>	USD269.34 billion
<b>GDP Growth</b>	5.1%
<b>Per capita income</b>	USD9,382

\* Department of Statistic Malaysia

<b>Energy Resources (2009)</b>	
<b>Oil</b>	5.52 bbl
<b>Gas</b>	87.98 Tscf
<b>Coal</b>	1.94 bil ton
<b>Hydro Potential</b>	20 GW

\* National Energy Balance 2009

# Evolution in Malaysia Electricity Supply Industry (MESI)



# Snapshot of Malaysia's Electricity Profile

As of June 2011	INSTALLED CAPACITY (MW)		PEAK DEMAND (MW)	RESERVE MARGIN (%)
Pen. Malaysia	TNB	7,096	15,476	40%
	IPPs	14,777		
	Total	<b>21,873</b>		
Sabah	SESB	410	773	33%
	IPPs	625		
	Total	<b>1,035</b>		
Sarawak	SEB	1,349	1,067	26%
	Total	<b>1,349</b>		



Total installed capacity is **24,257MW**



3 major utility companies in Malaysia



This presentation will concentrate on Peninsular Malaysia since more than 90% of demand is in Peninsular Malaysia



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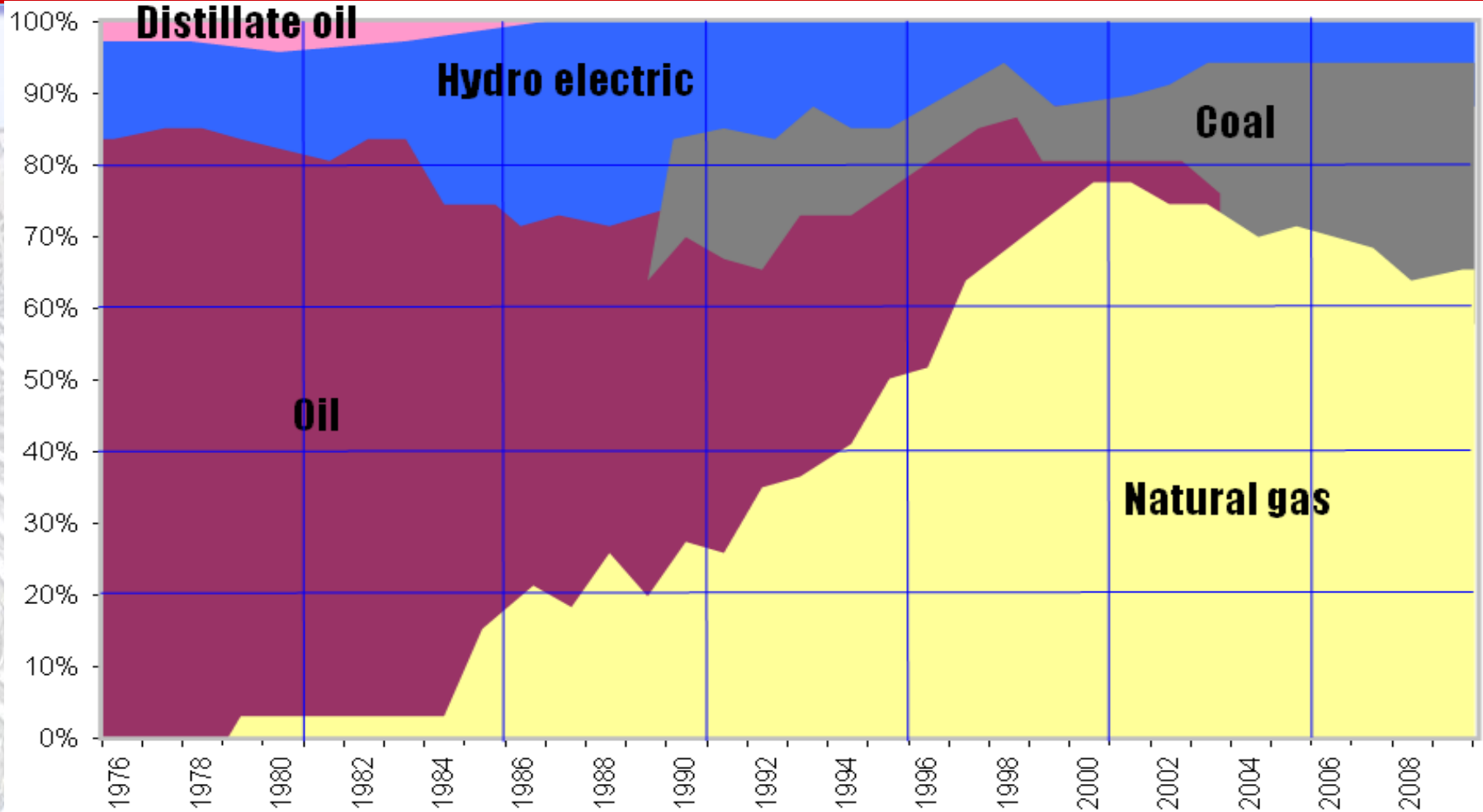
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# Fuel Mix - Historical



Historically, oil dominance was replaced by natural gas in 1990's



# Fuel Management Policies

## **National Energy Policy 1979**

To ensure the provision of adequate, secure and cost effective energy supply

## **National Depletion Policy 1980**

Aims at safeguarding the depleting oil reserves

## **Four-fuel Policy 1980**

Aimed at ensuring reliability and security of supply through diversification of fuel

## **Five-fuel Policy 2001**

A safe, cost-effective, secure energy supply through renewable, cogeneration, diversification, efficiency and incentives



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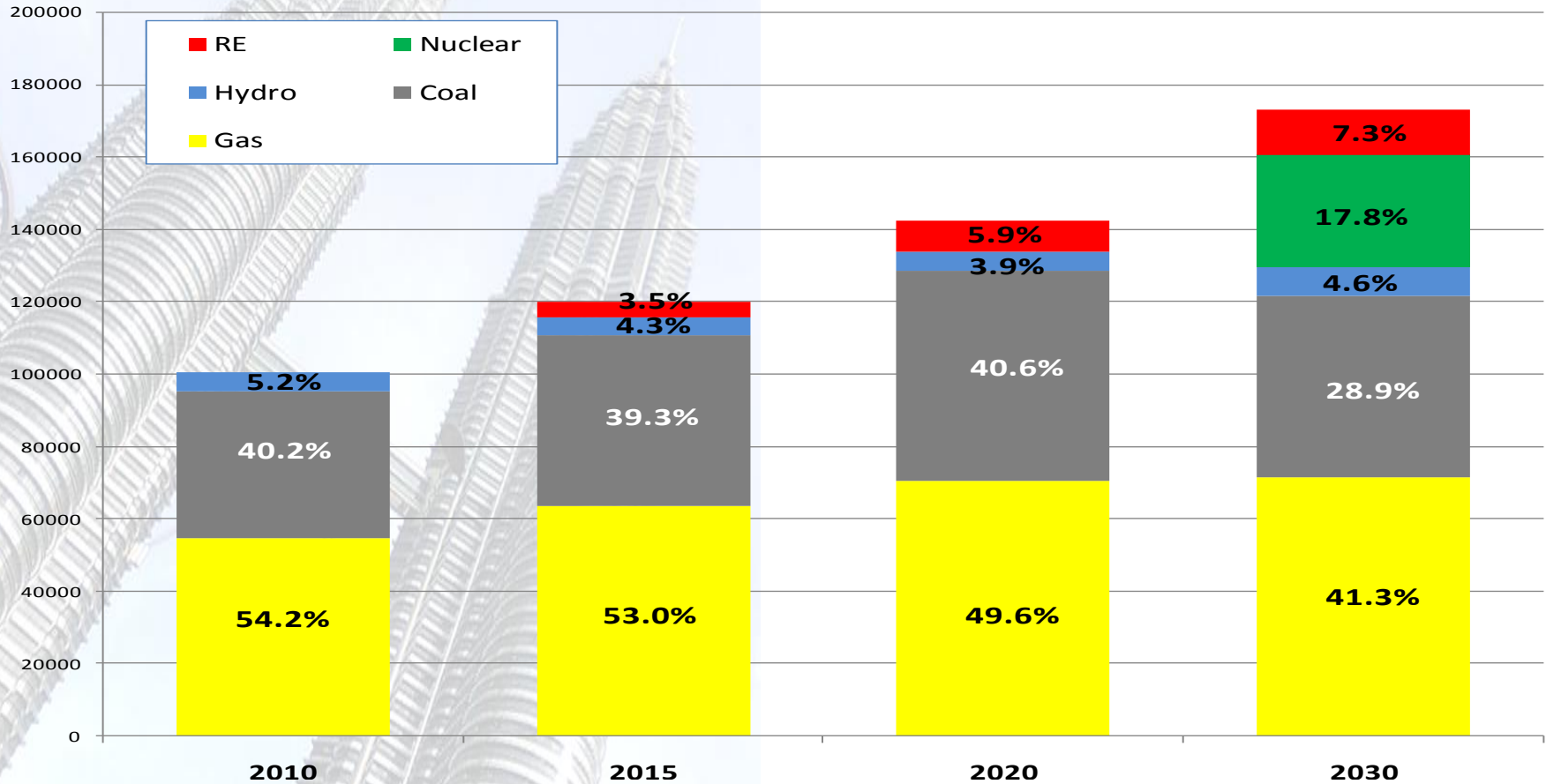
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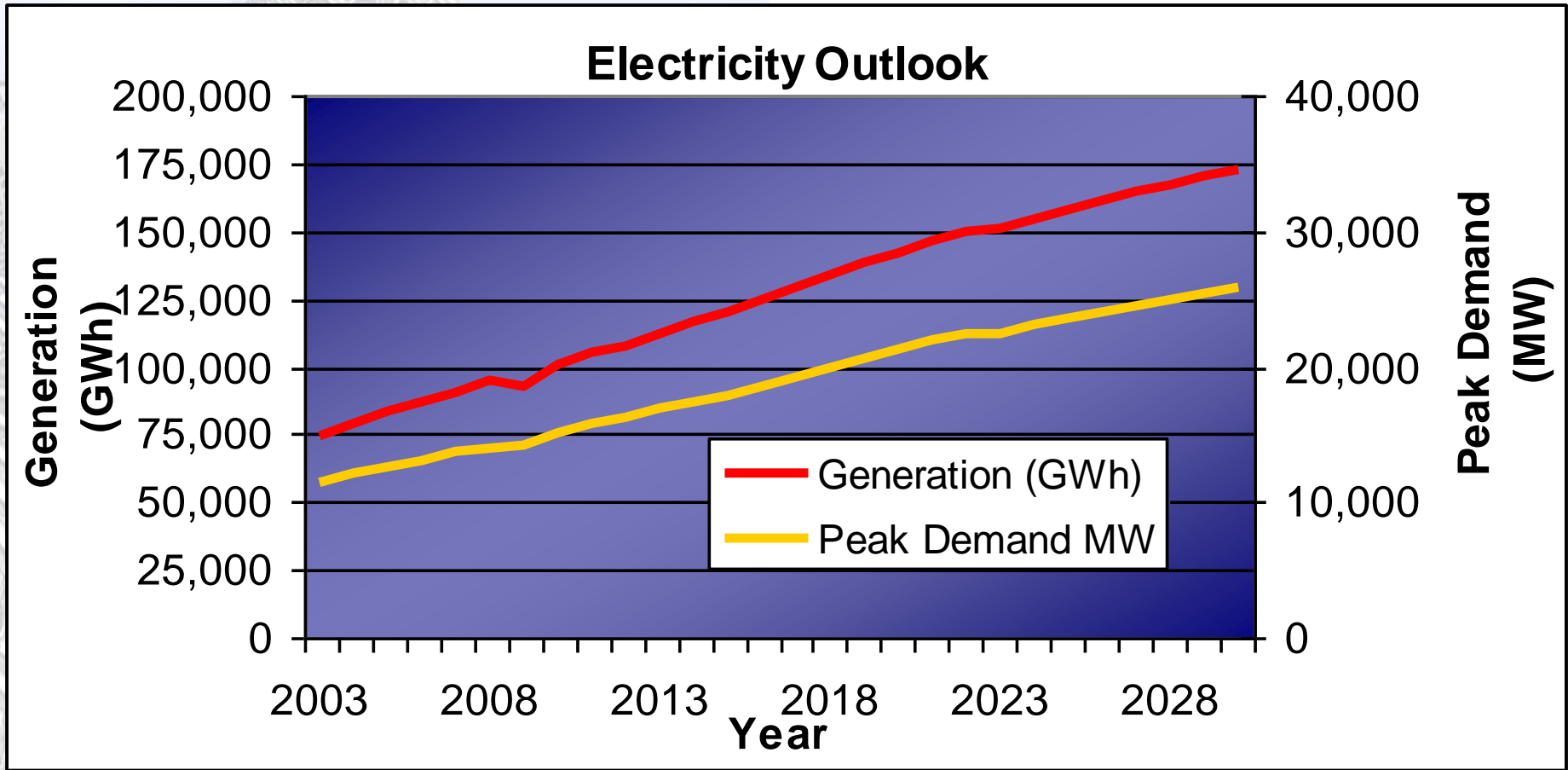
# Outlook of Electricity Demand and Supply



\* JPPPET 1/2011

**Post 2030, a more balanced fuel mix with RE & nuclear**

# Outlook of Electricity Demand and Supply



\* JPPPET 1/2011

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# Peninsular Malaysia Power Development Plan

Adopting “Loss of Load Probability of 1-day in a year”

Adopting Incentive Based Regulation Approach

Diversifying Fuel Mix with hydro, coal and possibly nuclear in the longer term

Target SAIDI of 55 minutes/customer/year by 2015

**PDP  
Characteristic**

Undertaking long-term capacity plans to ensure demand growths are met with adequate capacity

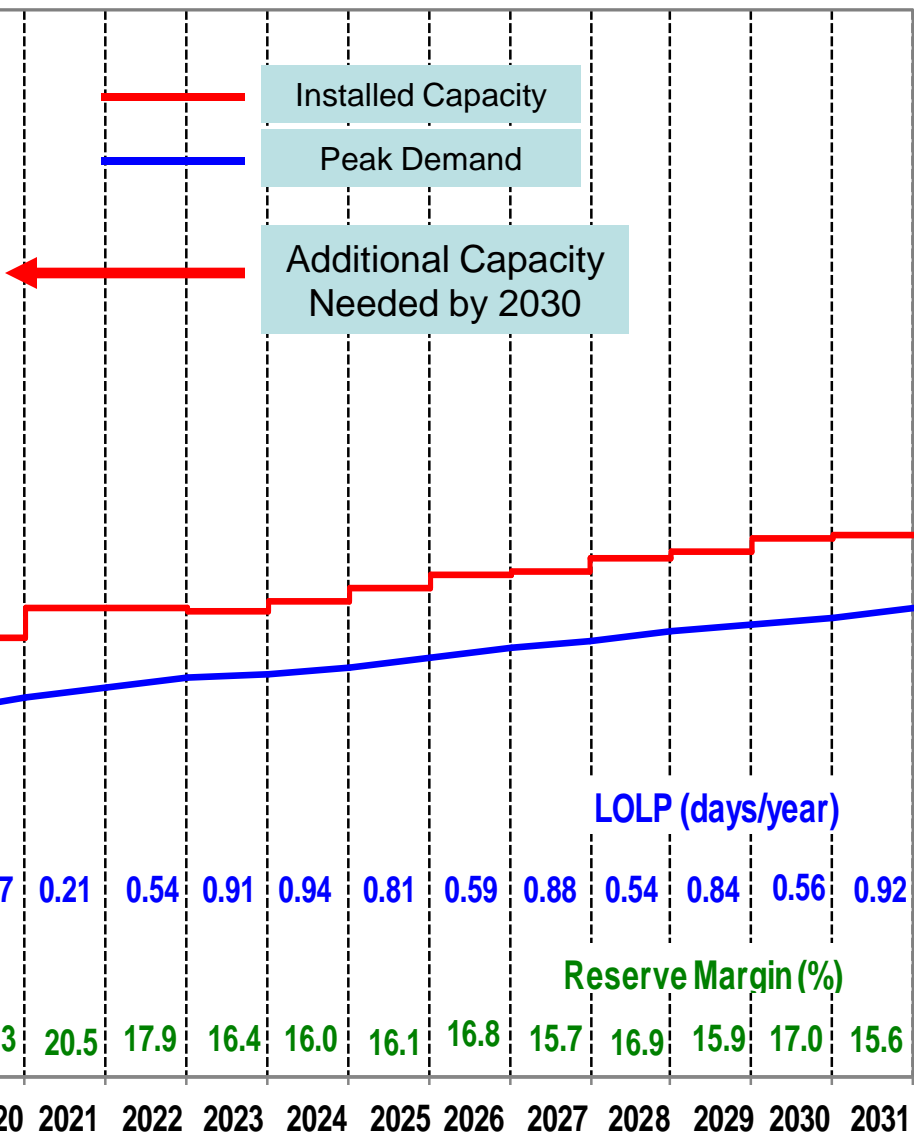
The investment made by utilities are based on projected demand growth

Ensuring adequate Reserve Margin to meet Peninsular demand



# Peninsular Malaysia Power Development Plan

Coal	4,000 MW
Hydro	1,666 MW
Gas	11,430 MW
Nuclear	5,000 MW
<b>Total</b>	<b>22,096 MW</b>



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# Fuel Requirements

## Gas

- Prioritise indigenous resources for local consumption
- Storage for substitute fuels

## Coal

- Secure long term contracts with supplier
- Multiple coal supplier countries

## Hydro

- Develop feasible and viable hydro projects
- Hydro potentials from Sarawak

## Renewable Energy

- Introducing Feed-in Tariff (FiT) to support the RE growth in Malaysia
- Prioritise RE to be dispatched into the grid

## Nuclear

- Studying the possibility of introducing nuclear power

## Energy Efficiency

- Increase efforts on managing the demand side
- Introduce specific law on efficient use of energy



# Way Forward

## Fuel Mix Study

- Study initiated through MyPOWER to determine optimum fuel mix for power sector
- Part of Government reform initiative for the whole value chain in Malaysia Electricity Supply Industry (MESI)

## Renewable Energy RE

- Inception of Renewable Energy (RE) Act 2011
- Introduction of Feed-in Tariff will increase the contribution of RE in the fuel mix

# Way Forward

## Gas

### Short Term:

- **National Gas Task to resolve and mitigate gas supply issues to power sector**

### Long Term:

- **Review Gas Supply Agreements**
- **Enhance supply through Regasification Terminals in Melaka & Johor**
- **Open Access to Peninsular Gas Network and determination of gas transportation charges**

# Way Forward

## Coal

- Peninsular Malaysia is totally dependent on imported coal
- In 2010, 85% of our coal was imported from Indonesia
- Diversifying coal supplier countries to ensure the security of coal supply  
- Australia, Russia, South Africa, etc
- Explore possibilities of mine ownership in supplier countries
- To mitigate Green House Gas emissions, future plant-ups should be based on Ultra Super Critical technologies, and other technologies such as CCS, CCT, etc.

## Hydro Power from Sarawak

- Hydro power importation from Sarawak as a long term option since Sarawak has hydro potential of more than 20,000MW

# Way Forward

## Regional and Bilateral Arrangements

### ASEAN Power Grid (APG)

- Establish Electricity Open Market among ASEAN countries for resource optimization

### Trans-ASEAN Gas Pipeline (TAGP)

- Gas exports among ASEAN countries for gas usage optimization

### Bilateral Agreement

- Bilateral Agreements with neighboring countries such as Singapore, Thailand and Indonesia for power import/export.

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# Conclusion

- ① **Over-dependence on certain fuel types is not a viable long-term option. Better fuel mix to ensure sustainability**
- ② **Fuel diversification reduces supply interruption risk and security risk. Nuclear is a good candidate for reliability, but the risks have to be properly studied**
- ③ **Comprehensive long term planning is imperative to ensure reliable & adequate electricity supply, including APG and Trans ASEAN for supply security**
- ④ **Technological innovations and R&D can change the mix in the future**
- ⑤ **Energy Efficiency & Conservation initiatives need to be further enhanced**



**THANK YOU**

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