# THE PHILIPPINE NATURAL GAS INDUSTRY:

## Vision, Strategy and Policy

*Supported by the Partnership for Reforms in the Energy-Environment Sector Management (PREESM), a joint DOE-USAID Program*

**A Briefing for the Proponents of House Bill No. 4754**

*Prime Contractor: Academy for Educational Development*

**February 5, 2003**
**Quezon City, Philippines**

# Briefing Outline

- Importance of Nat Gas Industry
- Industry Status
- Regulatory Concepts
- Proposed Framework
- Potential issues on HB 4754

# Why Should We Care?

- Security of Supply
- Energy Self Sufficiency
- Eco Social Benefits
- Foreign Exchange Savings of $ 4.5 B

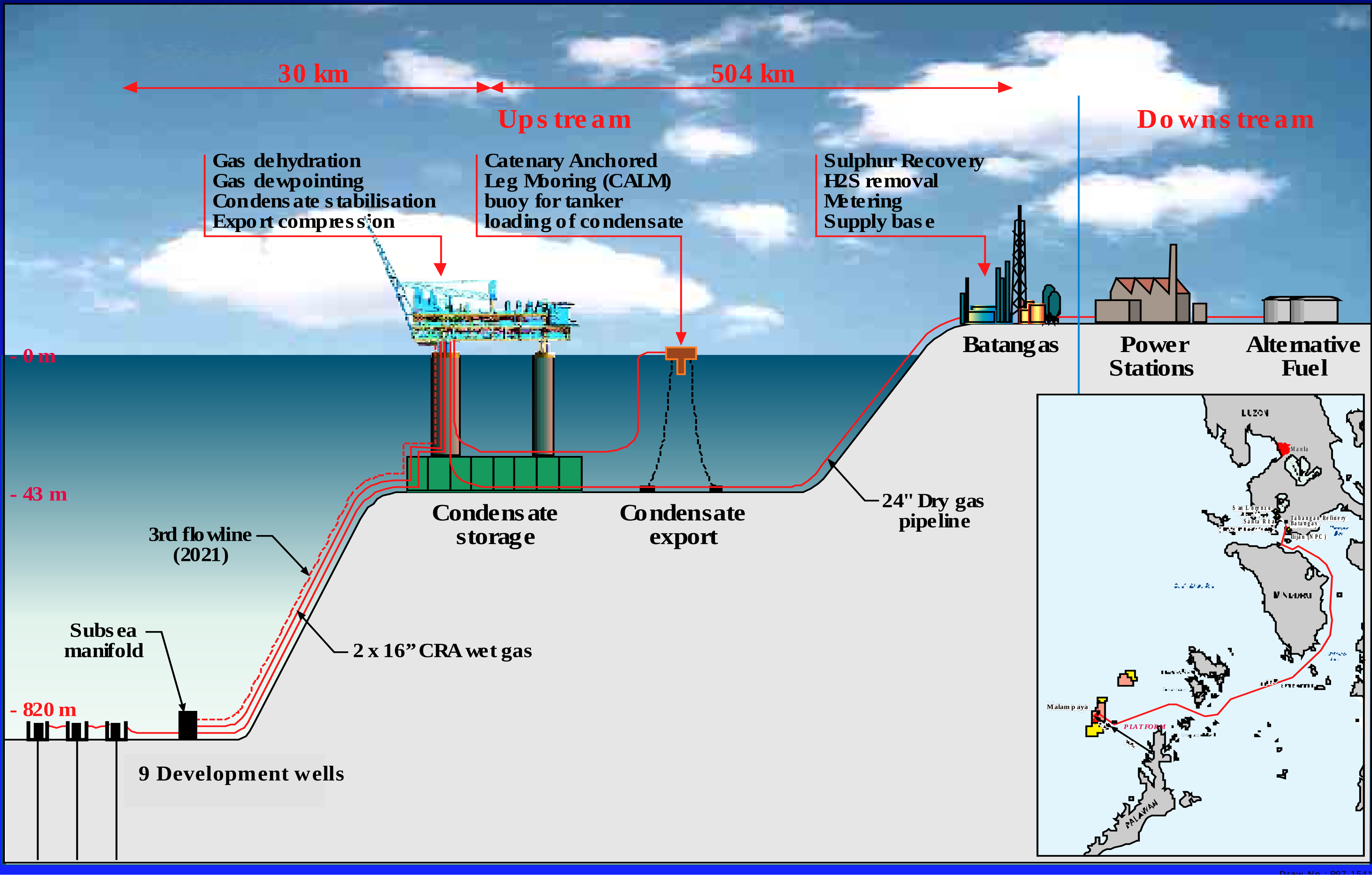
# STATUS

# Birth of the Gas Industry
## Upstream Sector

San Antonio Gas Field, 2.7 BCF

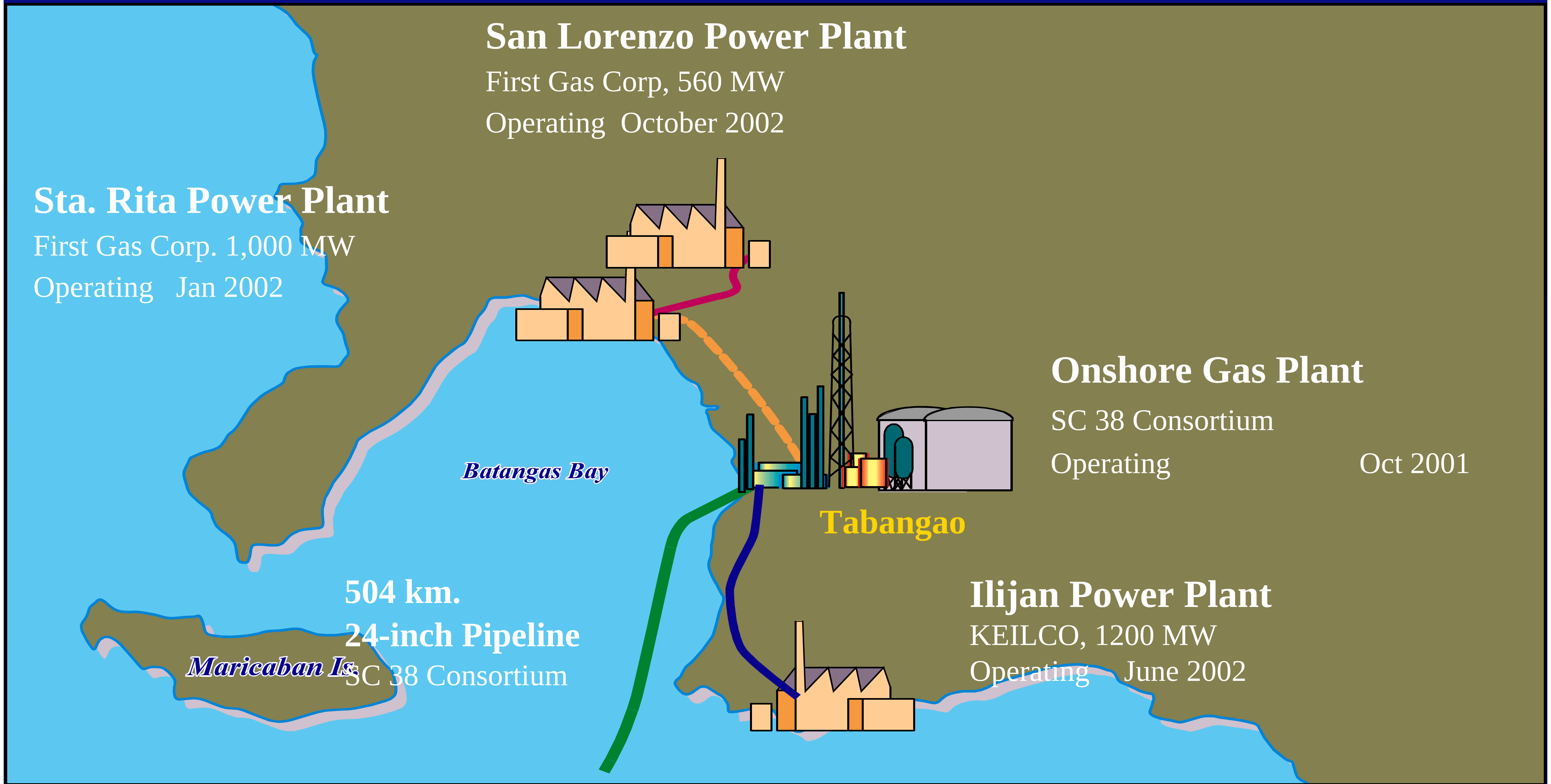
Malampaya Gas Field, 3.7 TCF

# Birth of the Gas Industry
## Malampaya Gas-to-Power Project



# Birth of the Gas Industry
# Downstream Sector

## *Gas Pipelines and 2700-MW Gas Fired Power Plants*

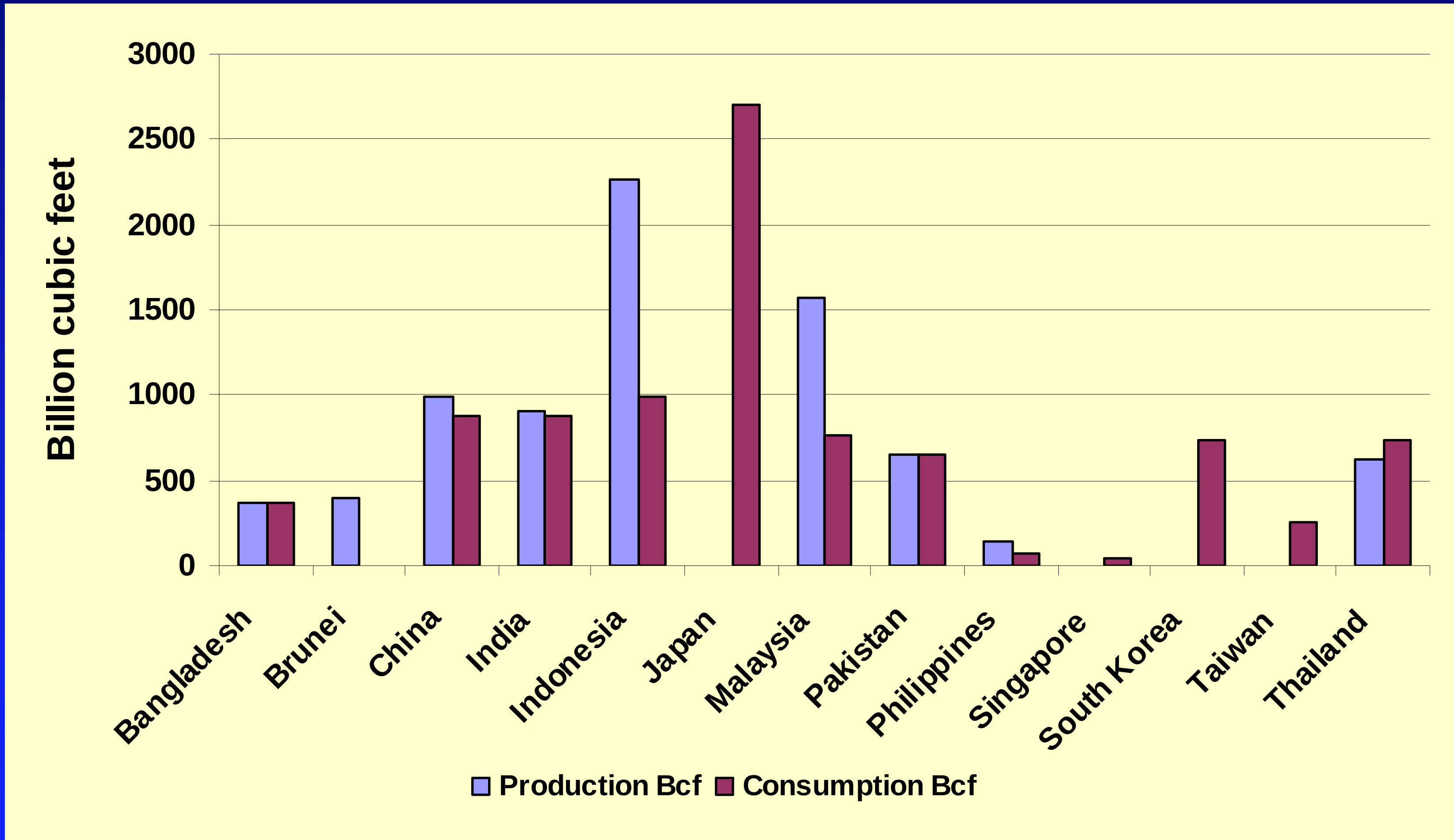


# Birth of the Gas Industry
# Downstream Sector

***PNOC CNG-Refilling Station and NGVs***



# Natural Gas Production and Consumption of Asian Countries*




*Phil- 2002 data; all other countries- 2000

*Source of Data: BP Amoco Statistical Review*

# Development and Growth

# Development and Growth
# Policies and Objectives

## Policies

Promote natural gas as an environment-friendly, secure, stable and economically efficient source of energy

Promote competition by liberalizing entry into the industry and adopting pro-competitive and fair trade measures

Ensure compliance with Philippine environmental laws and regulations and international safety standards

## Objectives

Competitive natural gas prices vis-à-vis other fuels

Increased utilization of natural gas as fuel in power and non-power sectors

Increased share of natural gas in the energy mix

Adoption of state-of-the-art technology, development of experts and increased employment

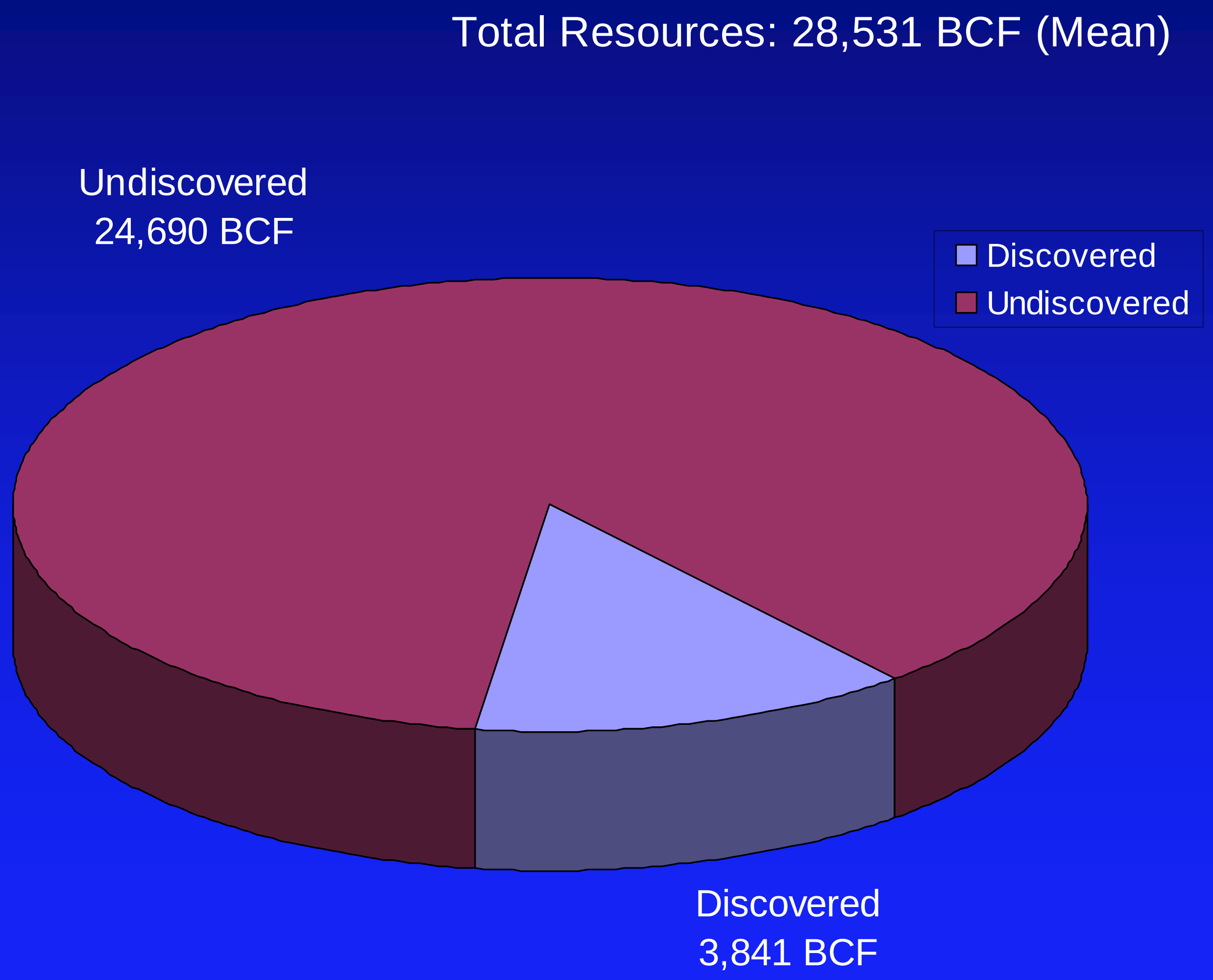
Enhanced economic benefits to consumers

# Development and Growth

## Natural Gas Share in Energy Mix (In %)

| | 2001 | 2007 | 2012 |
|---|---|---|---|
| GDP growth p.a. | 3.2 | 5.2 | 5.2 |
| Oil | 45.3 | 38.6 | 39.6 |
| Coal | 9.2 | 9.7 | 5.3 |
| Indigenous | 45.5 | 51 | 44.4 |
| *Gas* | 0.6 | 7.0 | 6.0 |
| *Other RE* | 31 | 27.9 | 24 |
| *Local Coal* | 1.5 | 1.9 | 4 |
| *Hydro* | 4.9 | 4.1 | 3.1 |
| *Geothermal* | 7.2 | 7.7 | 5.8 |
| *Local Oil* | 0.1 | 2.4 | 1.4 |
| Others (unidentified) | | 0.7 | 10.7 |

# Development and Growth
## Gas Resources

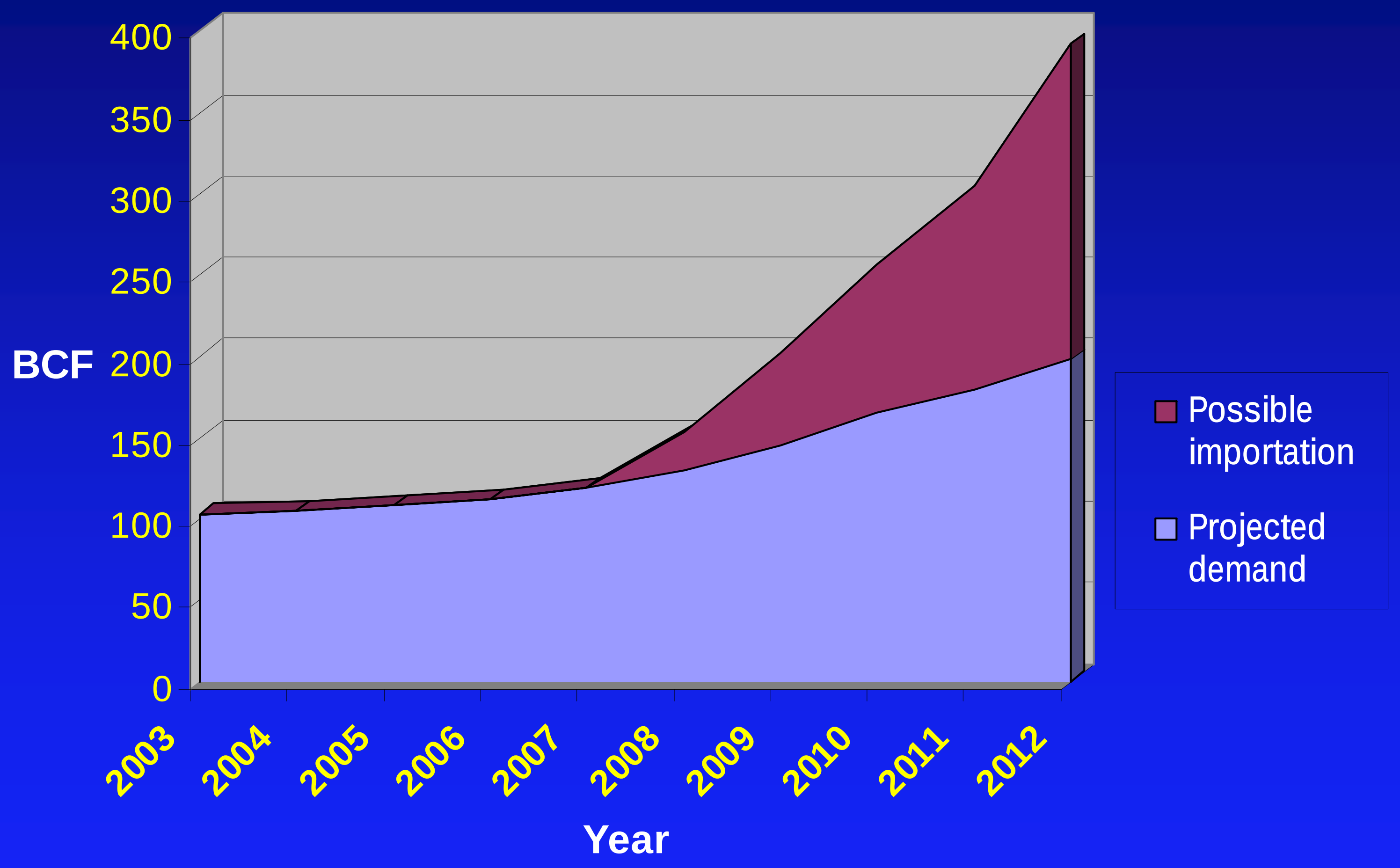


# Development and Growth
# Location of Petroleum Resources

Found in 16 sedimentary basins with an area of over 700,000 sq. km.

- Ilocos
- Cagayan
- Central Luzon
- West Luzon
- Southeast Luzon
- Bicol Shelf
- Mindoro - Cuyo
- Northwest Palawan
- Southwest Palawan
- East Palawan
- Reed Bank
- West Masbate / Iloilo
- Visayan
- Cotabato
- Agusan - Davao
- Sulu Sea

# Projected Demand and Possible Importation of Natural Gas



# Development and Growth
# Proposed Gas Pipeline Infrastructure


# Development and Growth
# Potential Gas-Fired Power Plants

Limay
620 MW (2008)
Conversion

Sucat
300 MW (2008)
600 MW (2009)

Malaya
600 MW (2010)
Conversion

**Additional Greenfield Capacity Requirement in Luzon**

300 MW (2010)

1,200 MW (2011)

600 MW (2012)

Santa Rita
1000 MW (2002)
San Lorenzo
560 MW (2002)

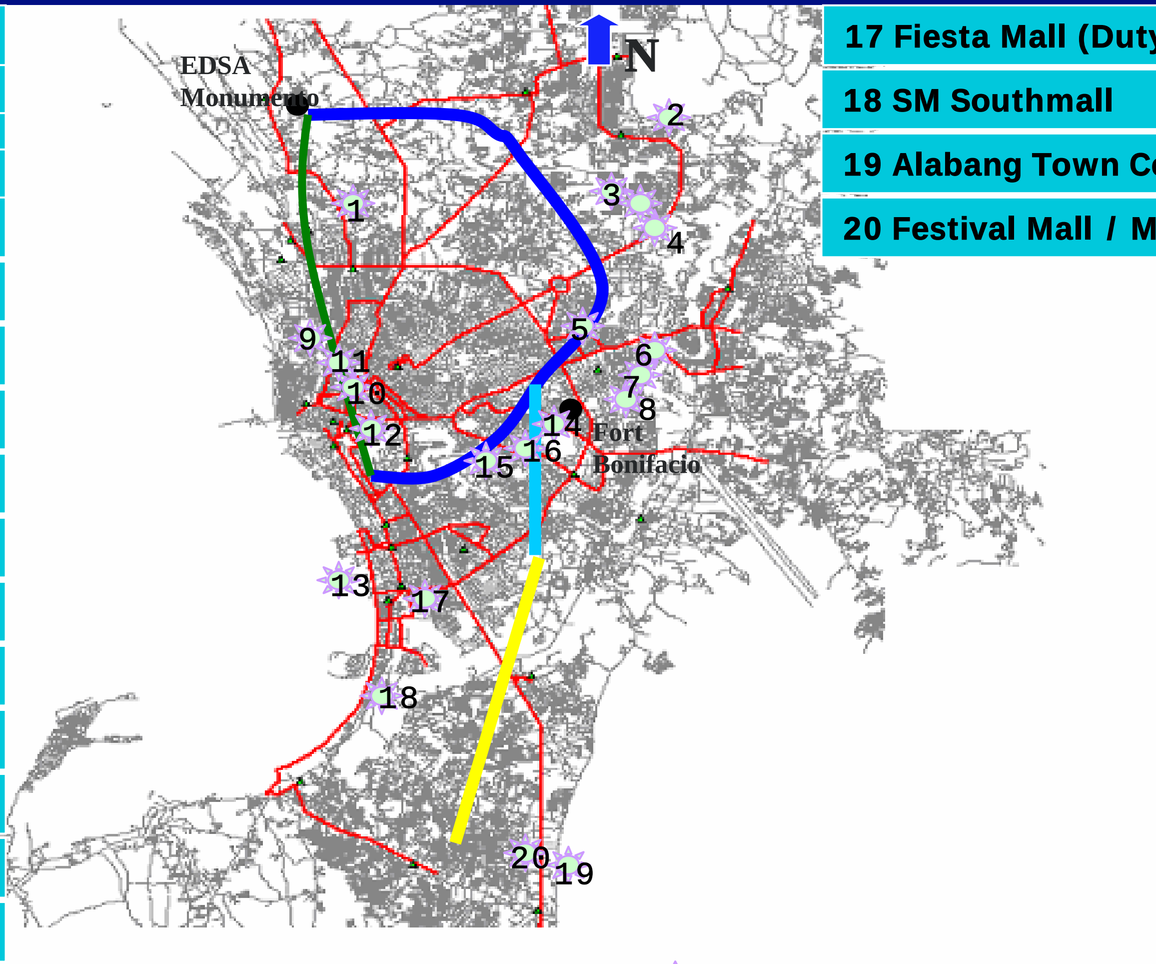
Ilijan
1200 MW
(2002)

# Development and Growth

# Potential Commercial Gas Markets

1 Gotesco Mall
2 Commonwealth Center
3 SM North Edsa
4 Araneta Center
5 Greenhills Mall
6 SM Megamall
7 Shangri-la Plaza
8 EDSA Central
9 Tutuban Mall
10 Robinson's Place
11 SM Manila
12 Harrison Plaza
13 Coastal Mall
14 Rockwell
15 Greenbelt Mall
16 Ayala Center

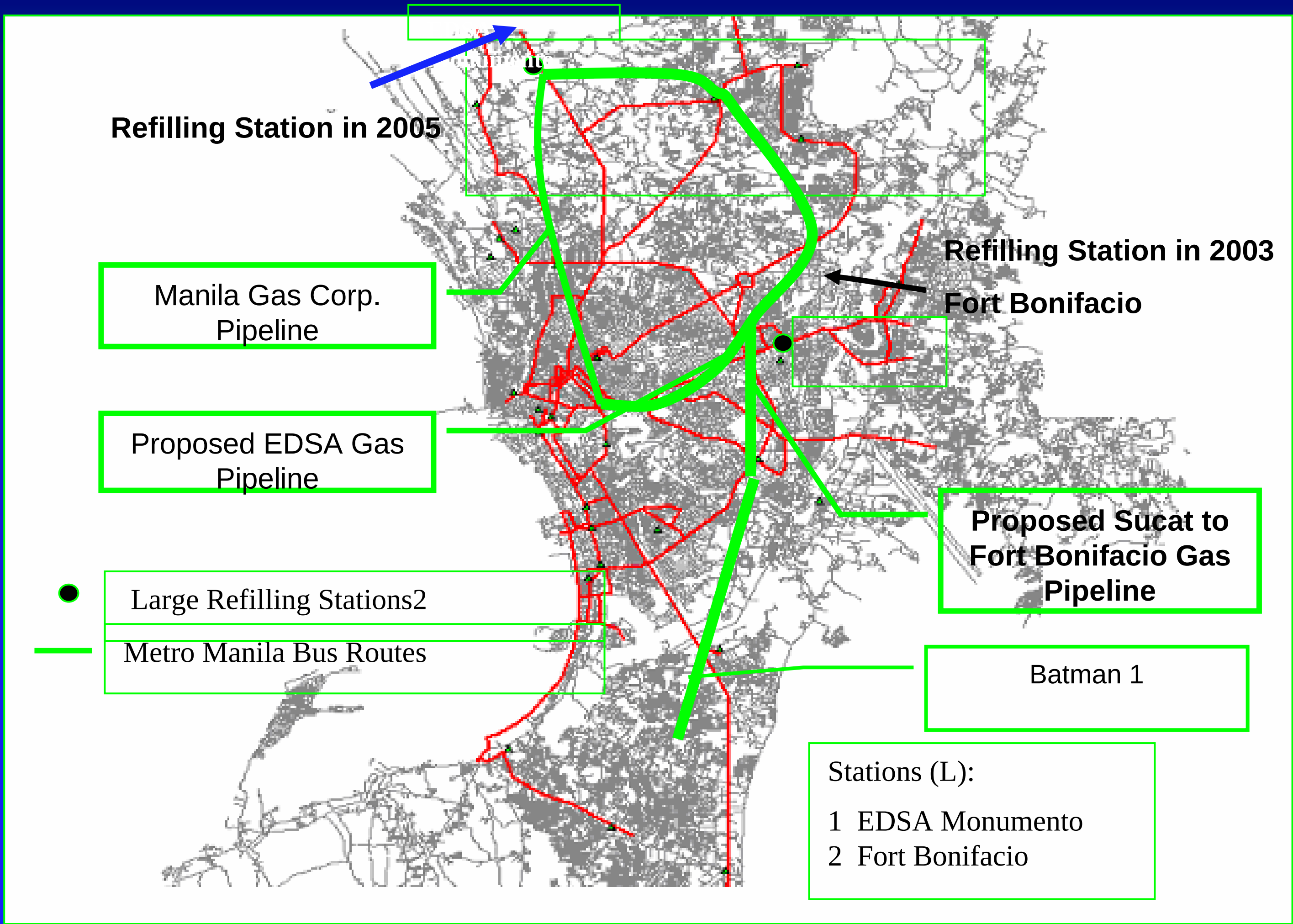
17 Fiesta Mall (Duty Free)
18 SM Southmall
19 Alabang Town Center
20 Festival Mall / Metropolis




Existing Shopping Malls

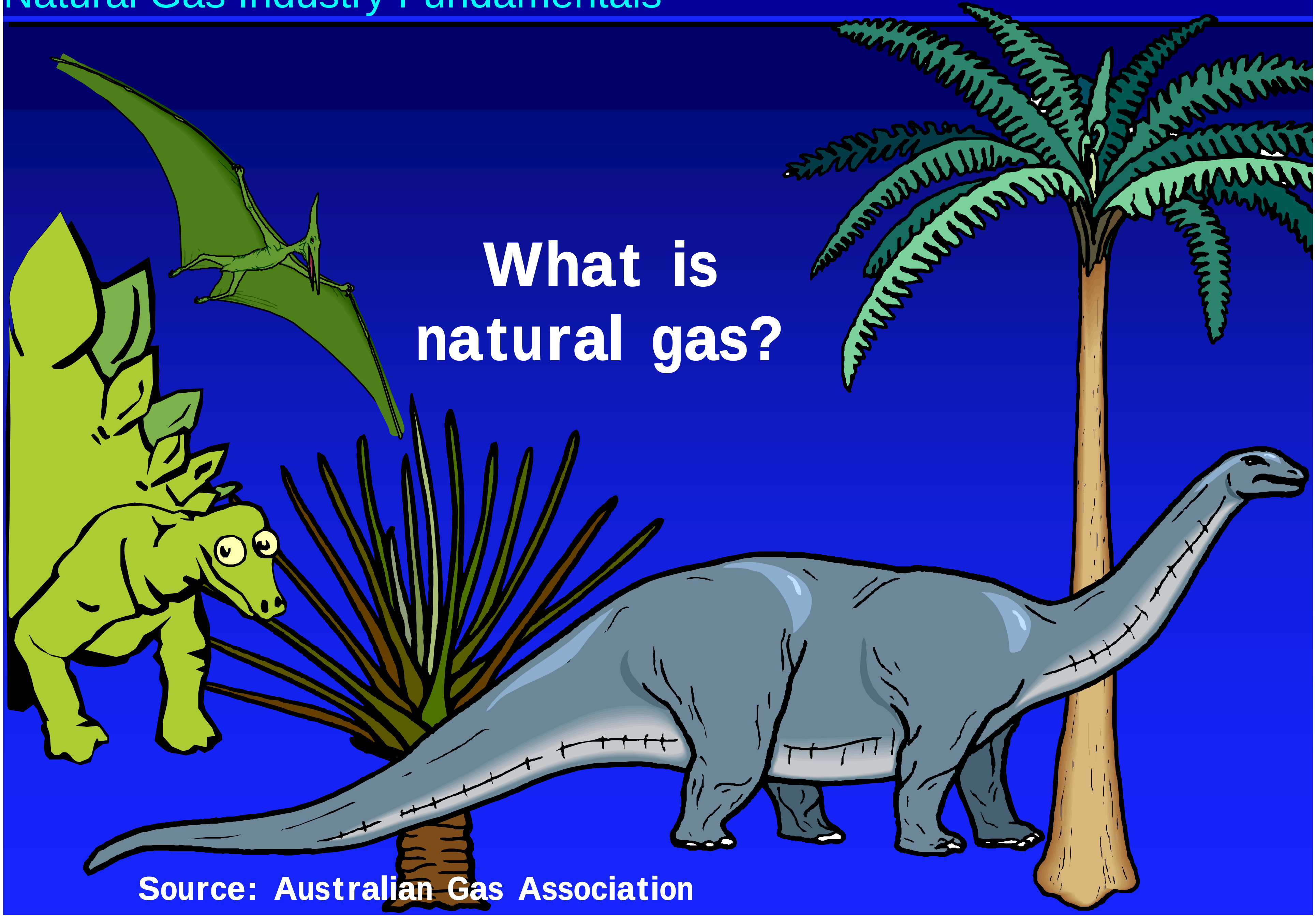
*Source: FS on CNG Development for Public Utility Vehicles in Metro Manila*

# Development and Growth
# Proposed CNG Infrastructure



# GAS INDUSTRY REGULATION

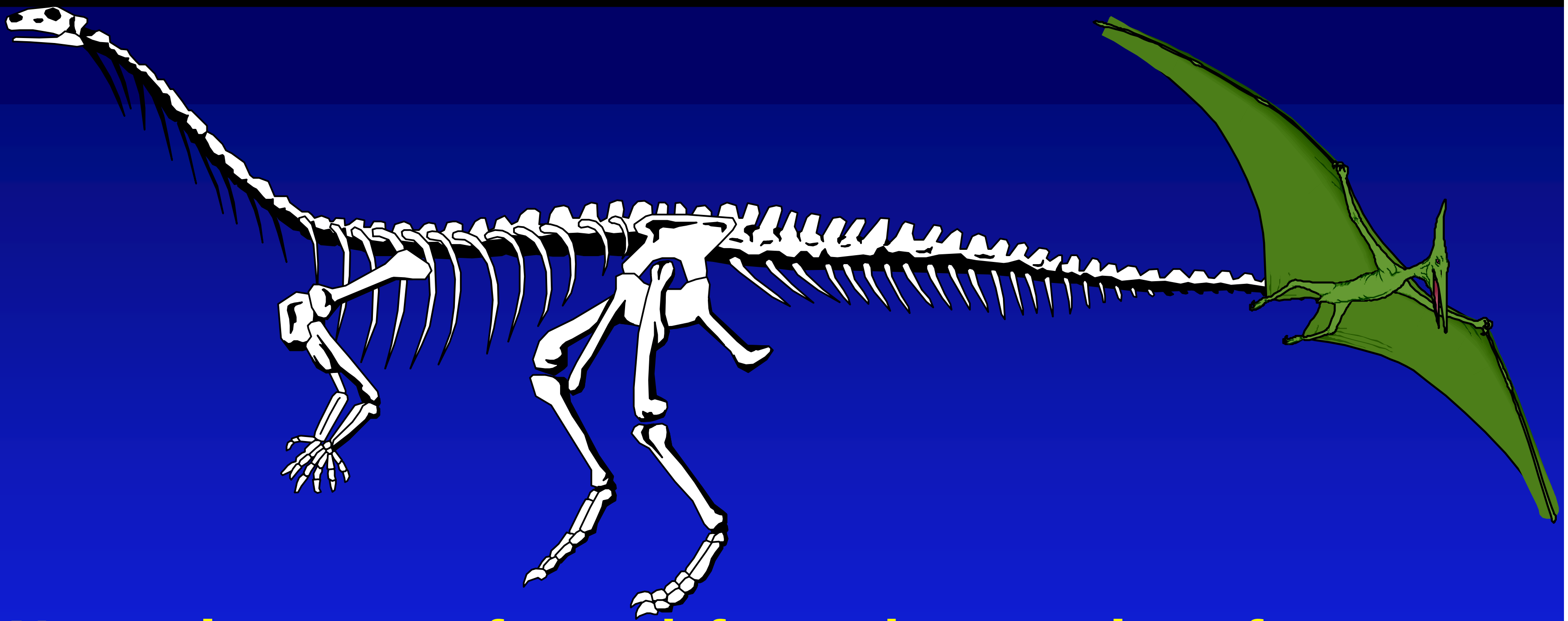
- **Basic Concepts**
- **Industry Structure**
- **Stages of Gas Market Development**
- **International Experience**



# What is natural gas?

Source: Australian Gas Association

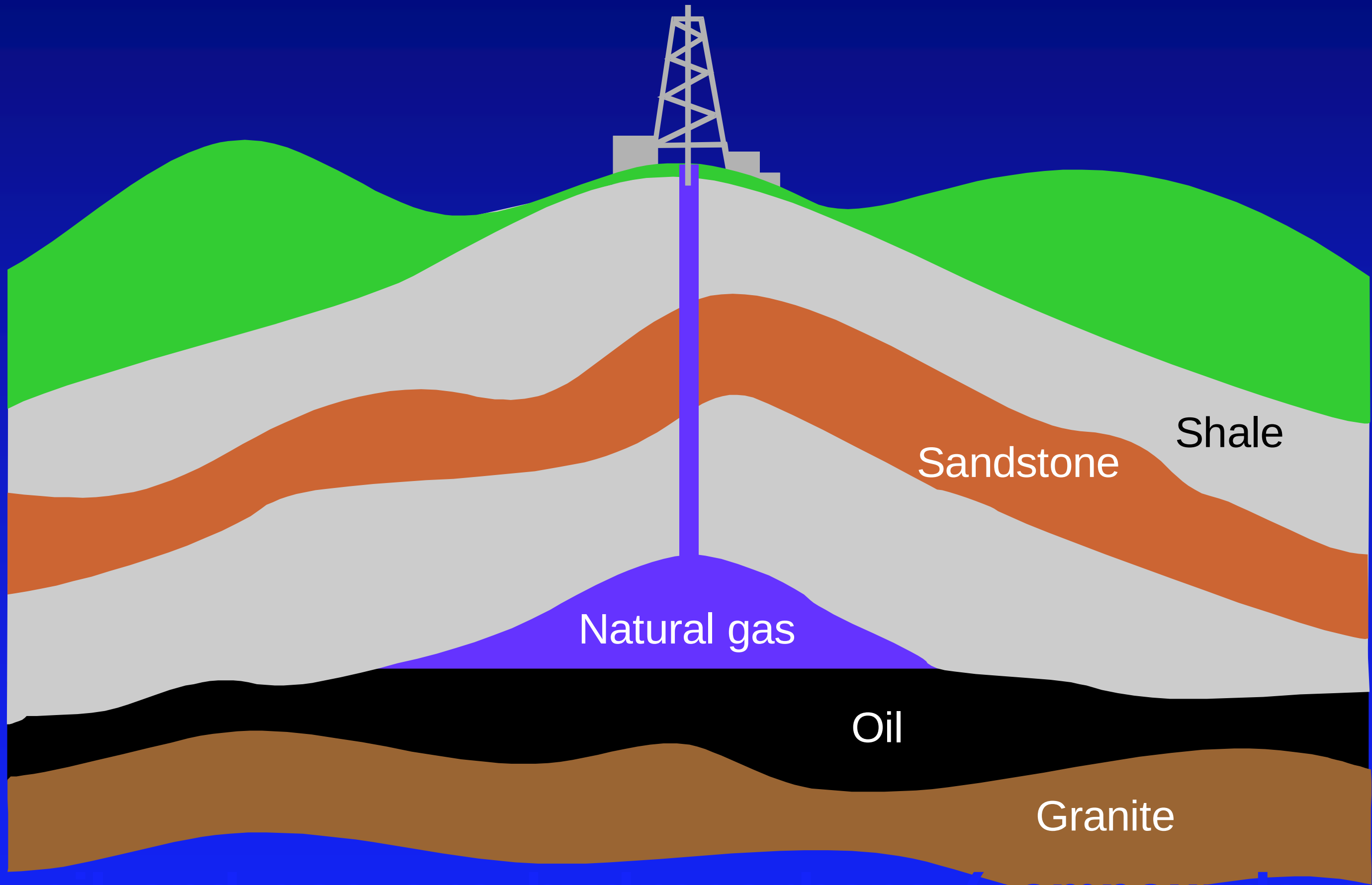
Natural Gas Industry Fundamentals



**Natural gas was formed from the remains of plants and animals which lived on the Earth many millions of years ago. Over time the remains were covered by layers of sand, rock and ice. Heat and pressure eventually changed them into fossils. The gaseous form of these fossils is natural gas**

**Source: Australian Gas Association**

## To reach natural gas we have to drill through layers of rock.




**Source: Australian Gas Association**

## How does natural gas get to town?

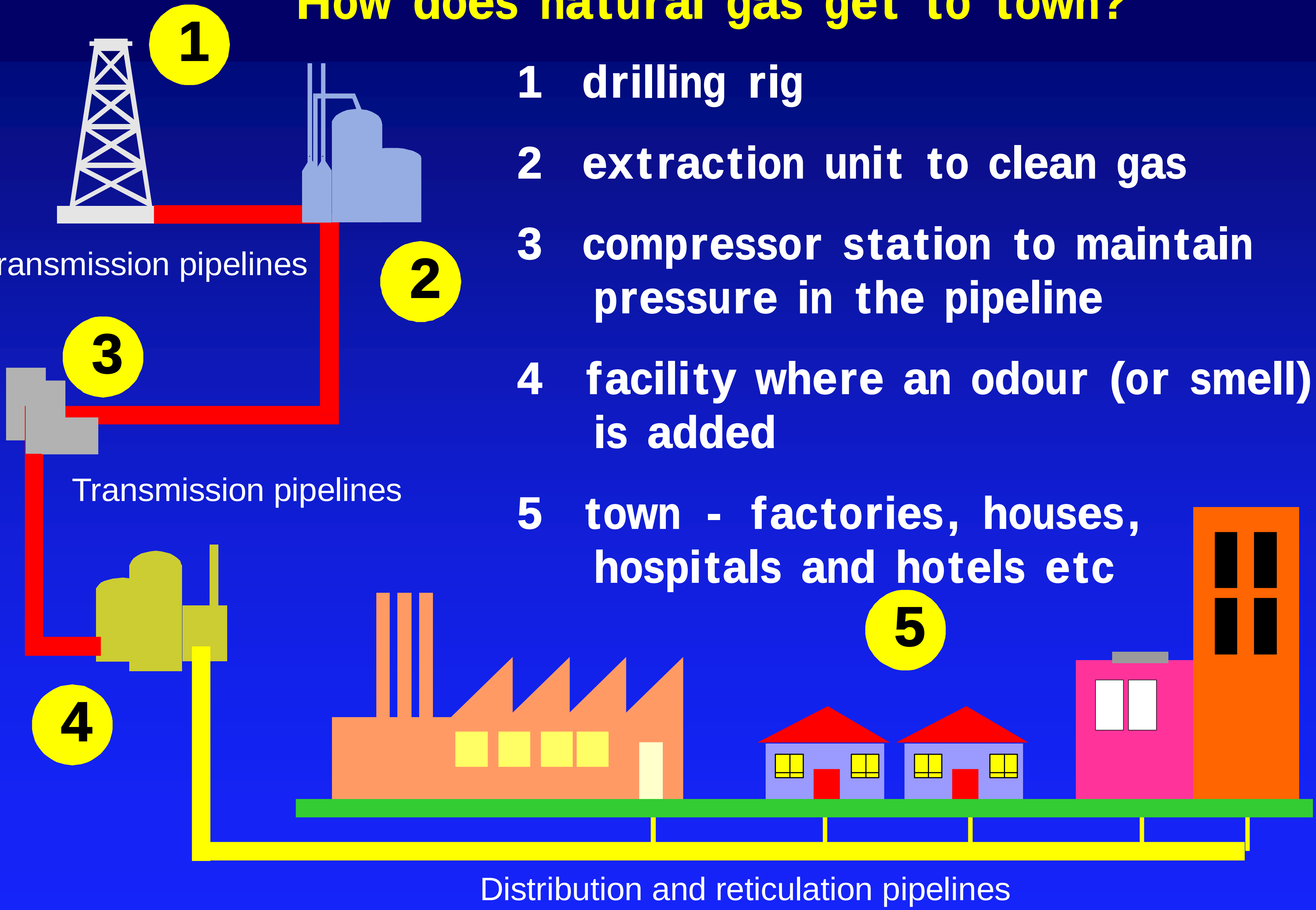
1 drilling rig

2 extraction unit to clean gas

3 compressor station to maintain pressure in the pipeline

4 facility where an odour (or smell) is added

5 town - factories, houses, hospitals and hotels etc




Source: Australian Gas Association

# How is natural gas used?


**Source: Australian Gas Association**

# Why is natural gas better for the environment?

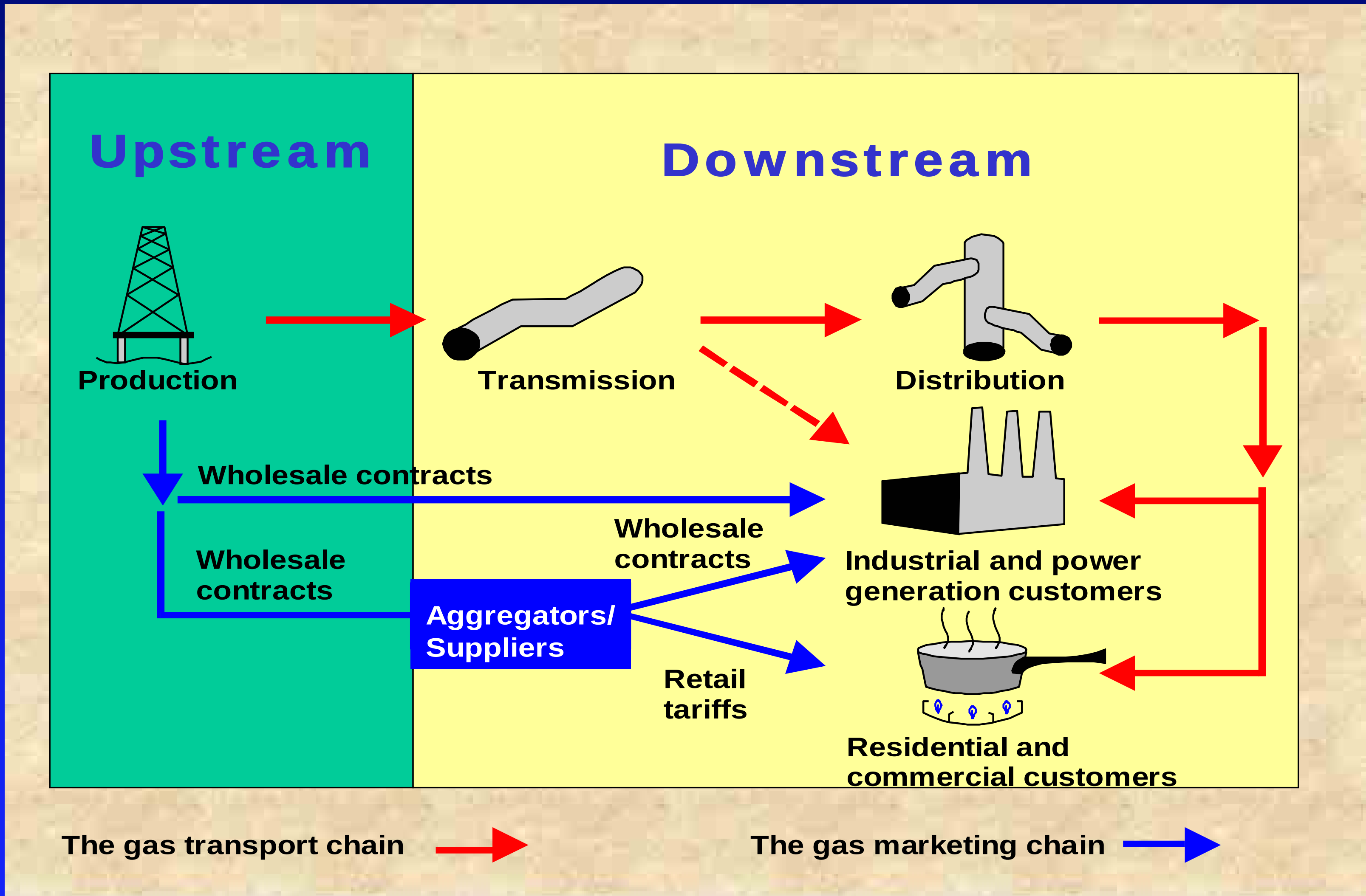
Natural gas is a clean and efficient fuel.

Natural gas can help reduce emissions that contribute to the greenhouse effect, because it burns more cleanly than other fossil fuels.

For example, when used to make electricity, natural gas only produces around half the greenhouse emissions of other fossil fuels.

**Source: Australian Gas Association**

# The Natural Gas Industry Chain




*Source: Australian Gas Association*

# Rationale for Gas Industry Regulation

| *Gas industry characteristics* | *Role of Regulation* | *Objective* |
| --- | --- | --- |
| Natural monopoly | Prevent abuse of market power | Competition and Efficiency |
| Large sunk costs | Minimize risks | Encourage investments |
| Public good | Protect public interest | Security and affordability of gas supply |

# Concepts and International Experience
## Key Elements of Gas Regulatory Regime

***What to regulate***

**Structure**

- Ownership- State/Private sector role
- Vertical integration/cross-ownership
- Stage of Gas Market Development

***How to regulate***

**Approaches**

- Entry Regulation
- Price Regulation
- Access Regime
- Public Service Obligations
- Promotion of Competition

***Who to regulate***

**Institution/ Authority**

- Law- and Policy/Rule-making
- Economic Regulator
- Competition Authorities
- Arbitration/Dispute Resolution

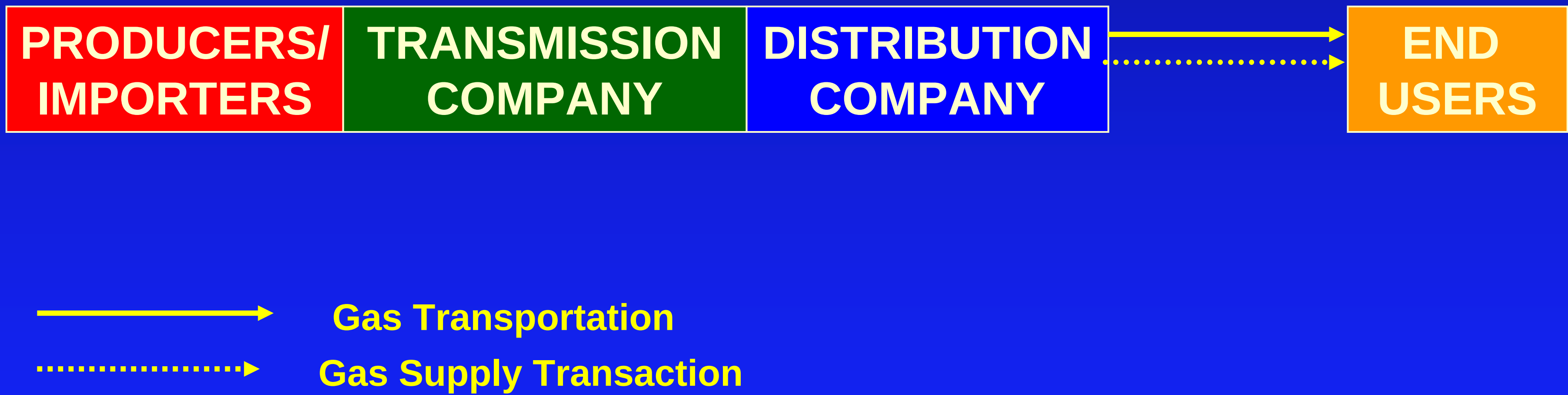
# Stages of Gas Market Development

| *Market Creation* | *Market Development* | *Mature Market* |
|---|---|---|
| Undeveloped gas reserves, small market | More supply options; rapid demand growth | Abundant supplies and demand saturation |
| Limited infrastructure | Heavy investments in infrastructure | Developed infrastructure |
| Integrated Structure; monopoly-monopsony operations | Producers sell some gas directly to buyers; third party access and large market competition | Unbundled supply chain; gas spot market; Retail competition |
| Heavy regulation or state | Regulation manages competition; assists entry of new players | Minimal government intervention to sustain competition |

# Stages of Gas Market Development

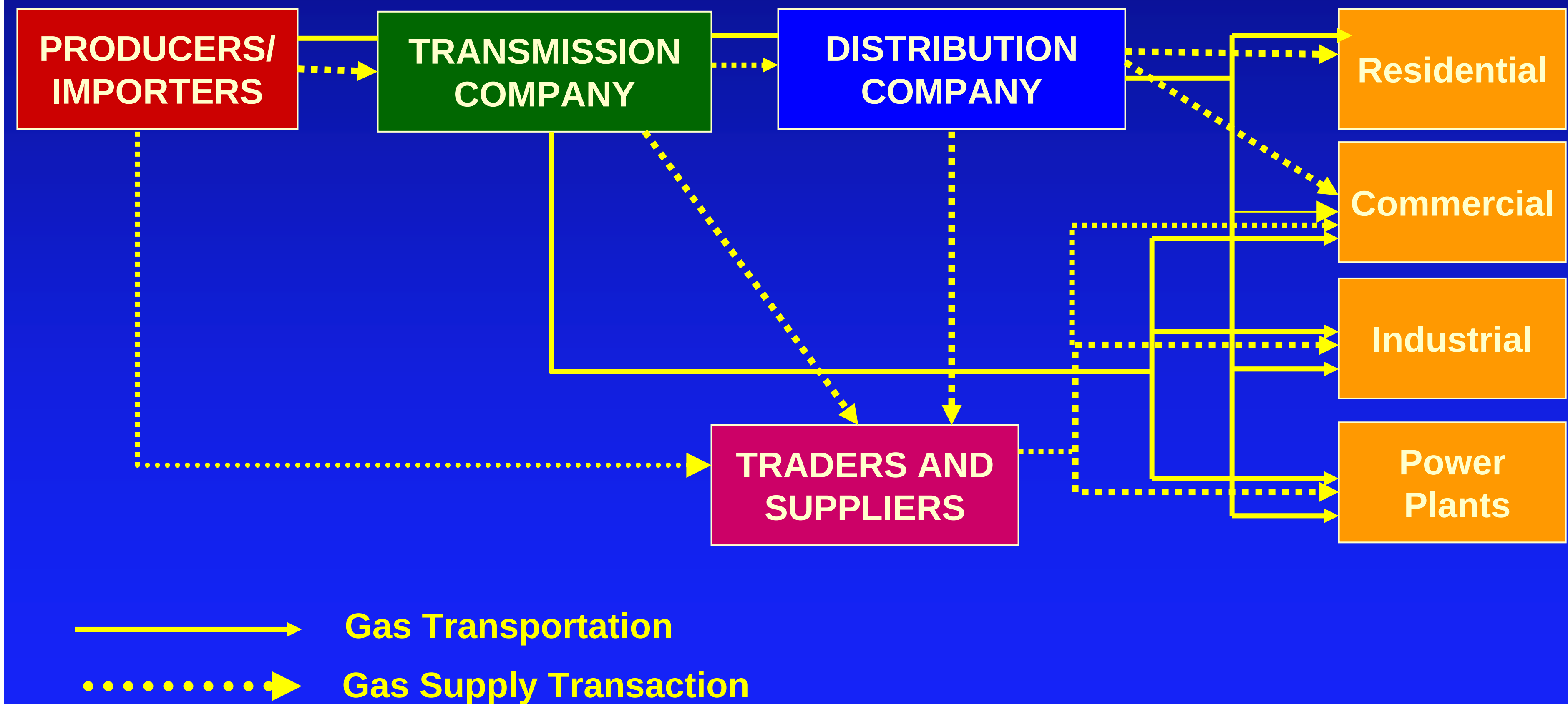
***Stage:* Gas Market Creation**

***Structure:* Vertically Integrated Monopoly**



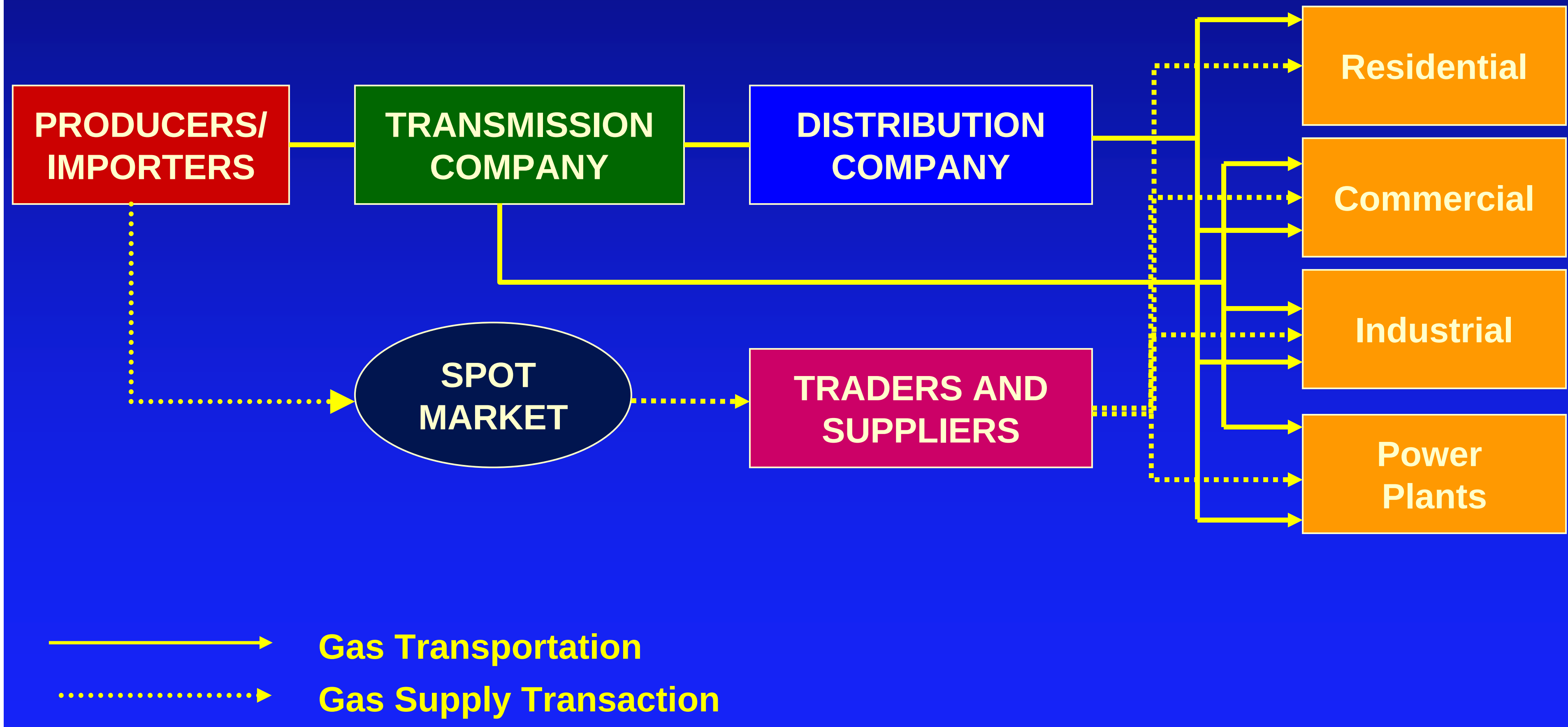
# Stages of Gas Market Development

*Stage: Gas Market Development*
*Structure: Open Access And Wholesale Competition*



# Stages of Gas Market Development

***Stage:* Mature Market**
***Structure:* Unbundled Industry and Retail Competition**



# Gas Market Development in Selected Countries

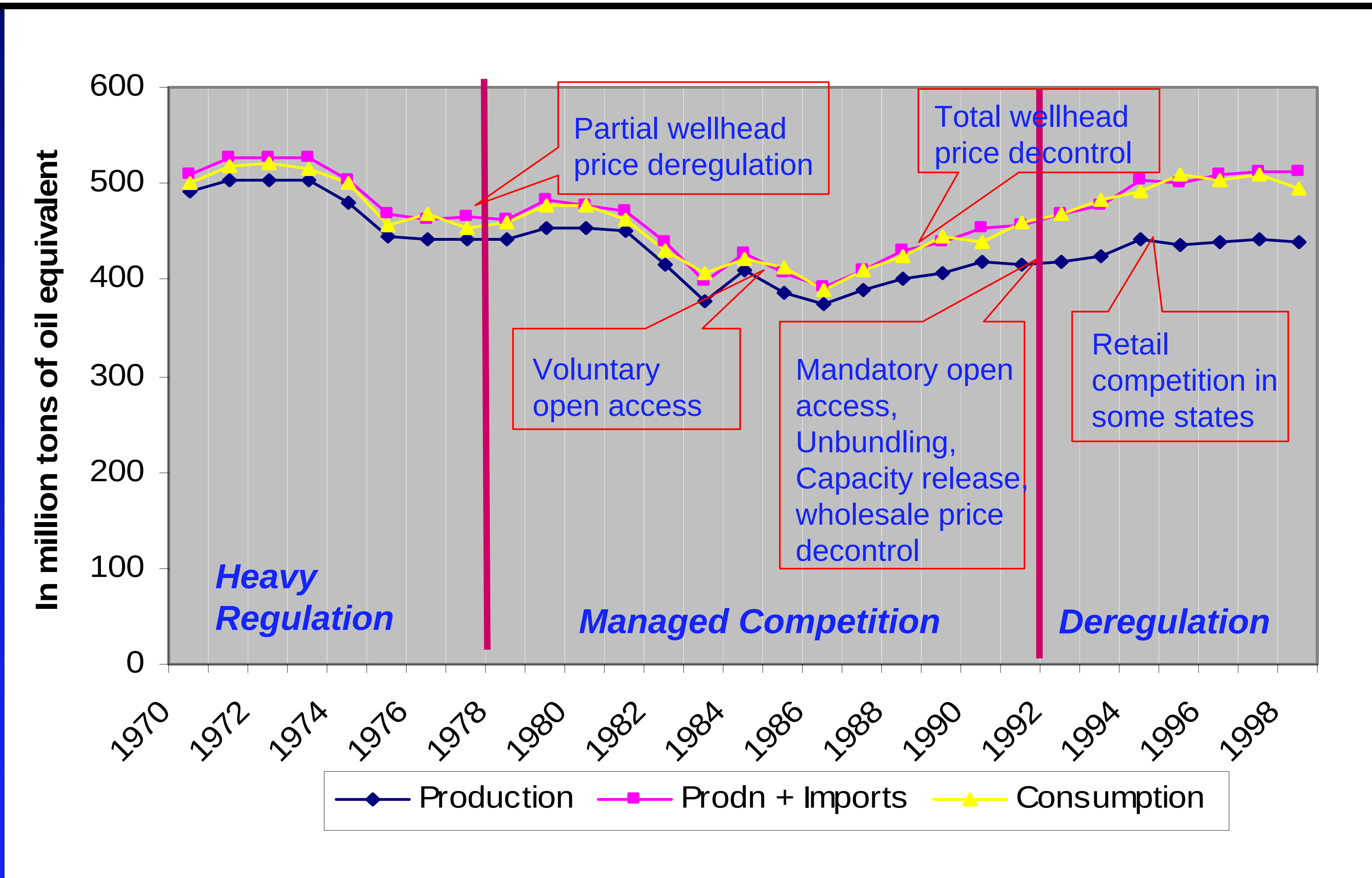
| | Market Creation | | | Market Development | | Mature Market | | |
|---|---|---|---|---|---|---|---|---|
| | *PHIL* | *IND* | *THAI* | *MAL* | *MEX* | *ARG* | *US* | *UK* |
| | | | | | | | | |
| **Proven Reserves (TCF)*** | 3 | 72 | 12 | 82 | 30 | 26 | 167 | 27 |
| **R/P Ratio (Years)[1]** | | 32 | 19 | 52 | 24 | 20 | 9 | 7 |
| **% NGas in Energy Mix*** | 4.6 (2002) | 28 | 30 | 47 | 25 | 55 | 26 | 38 |
| ***Pipeline Km**** | 526 | 4,469 | 377 (1998) | 1,753 | 12,000 | >100,000 | 1.84 MM | 278,650 |

[1] Ratio of year-end reserves to annual production

*Source of basic data: WB, BP Amoco, APERC*

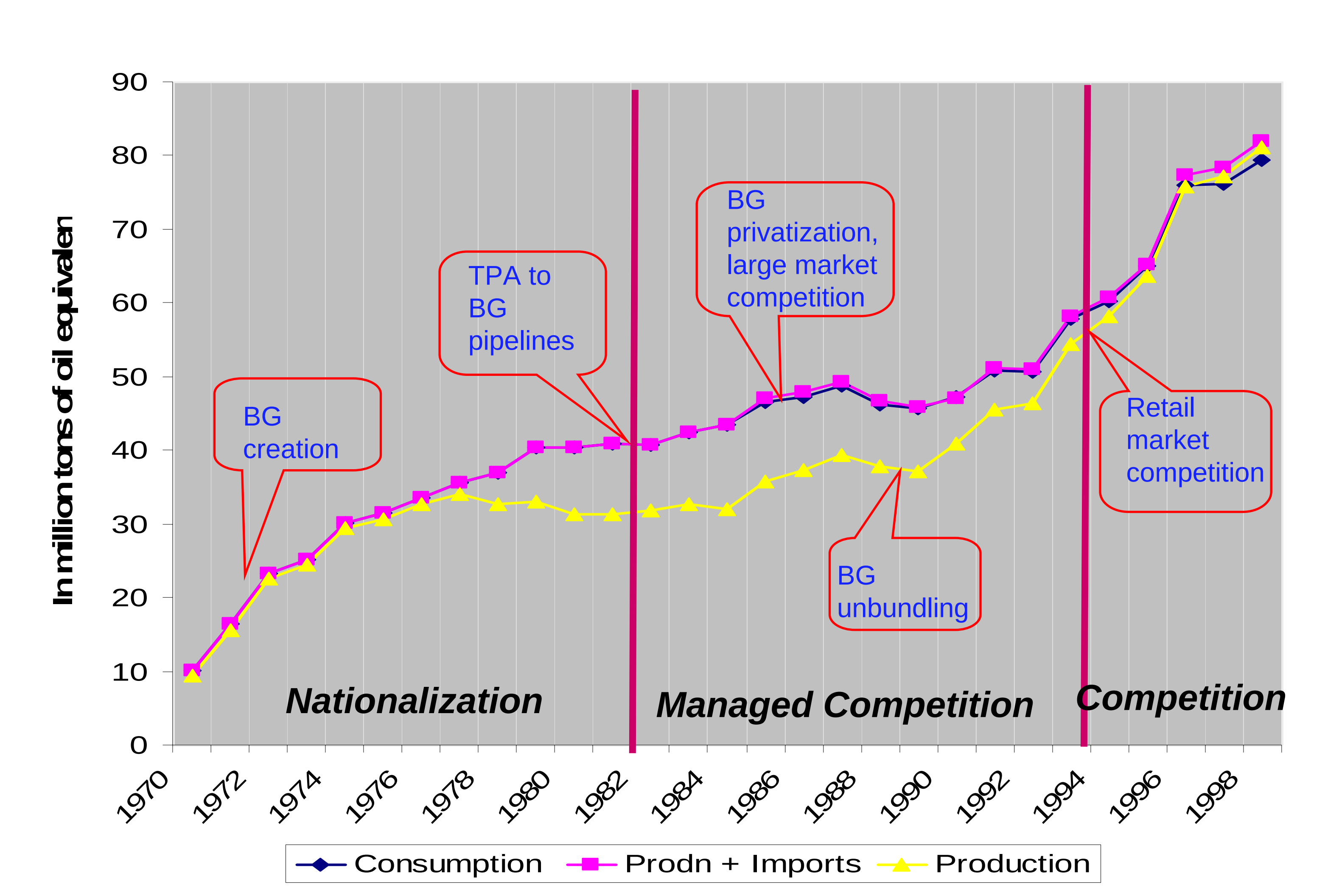
*** 2000 data**

# Evolution of Regulatory Reforms in Mature Gas Markets – United States



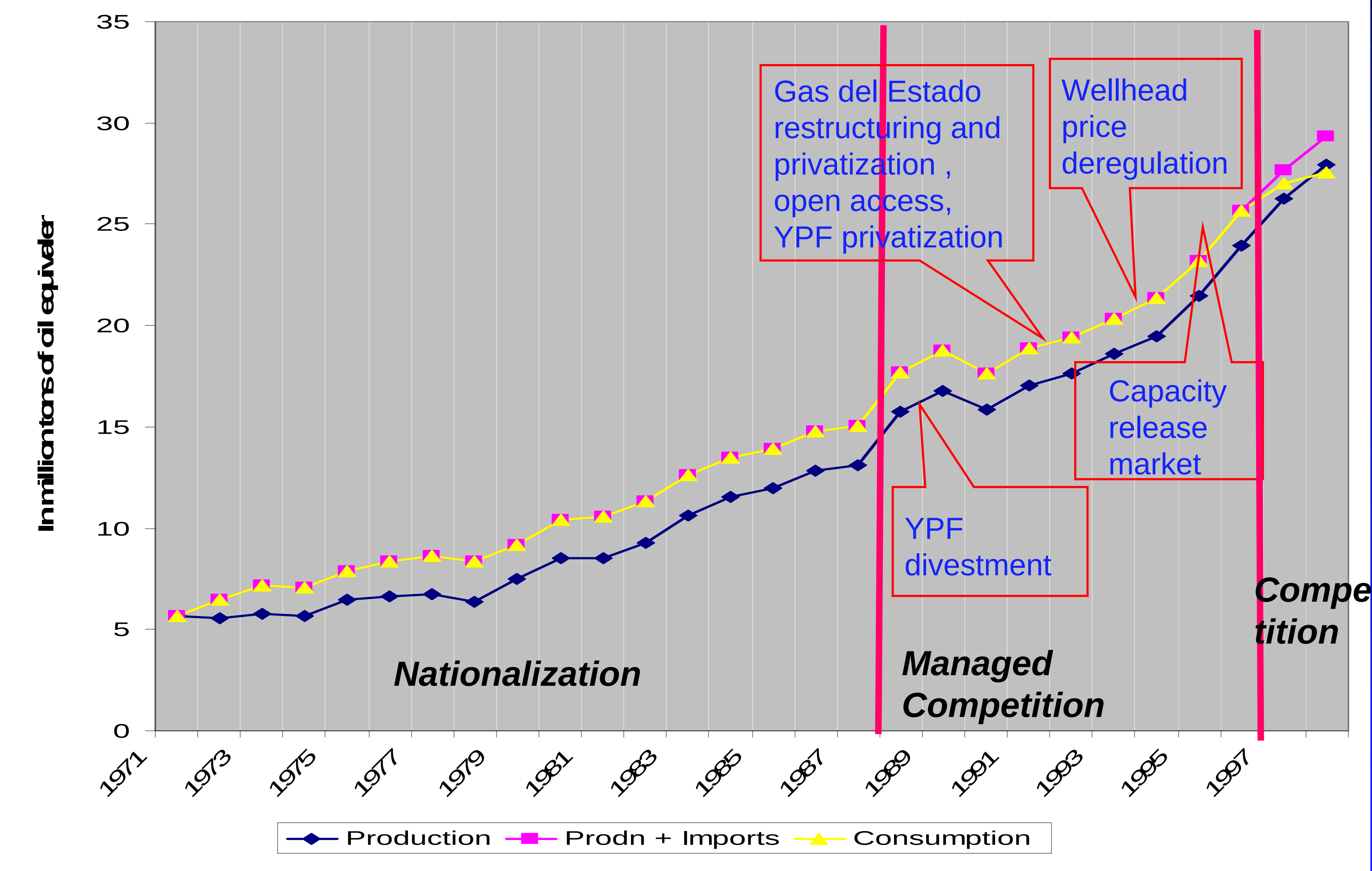

*Source: F. M. Andres, unpublished thesis*

# Evolution of Regulatory Reforms in Mature Gas Markets - United Kingdom




*Source: F. M. Andres, unpublished thesis*

# Evolution of Regulatory Reforms in Mature Markets - Argentina




*Source: F. M. Andres, unpublished thesis*

# Lessons Learned from International Experience

- **US and UK experience are "experiments" – piecemeal approach to deregulation/liberalization**
- **Latter reformers (e.g., Argentina, Victoria) took a more proactive, quicker path to gas reform**
- **No single entity should have excessive market power for competition to work**
- **Regulation needs complementary measures to work – e. g., TPA and unbundling**
- **Electricity market deregulation hastens gas market competition but drives reintegration**

# POLICY AND REGULATORY FRAMEWORK

- Existing Legal and Policy Framework
- DOE Gas Circular

# Existing Policy and Regulatory Framework
## Recent Developments

- DOE Charter
- E.O. No. 66
- DOE Gas Circular – Interim Rules and Regulations
- Philippine Energy Plan 2003-2012

# Interim DOE Gas Circular
## Policy Declaration

- Promote Natural Gas as an efficient and economical source of energy
- Facilitate private sector participation
- Promote competition by liberalizing entry and adopting pro-competition/fair trade measures
- Ensure compliance with international safety standards and relevant Philippine laws and regulations

# Interim DOE Gas Circular
## Key Provisions

***Industry Structure***

**Downstream Natural Gas Industry: Transmission (T), Distribution (D) and Supply (S)**

**Vertical integration allowed**

***Entry Regulation***

**Franchise and other legislative authorizations required to operate T& D as public utility**

**Permits required for T, D and S**

**Own-use permit allowed for end-user facilities**

# Interim DOE Gas Circular
## Key Provisions

***Access Liberalization***

**Third Party Access to T, D and related facilities required**

**Deferment allowed on new facilities**

**Access conditions negotiated**

***Price regulation***

**Prices of T, D, and S deregulated for competitive markets.**

**ERC to regulate prices charged by distribution utilities**

***Promotion of Competition***

**DOE to enforce measures to restore competition**

# Proposed Natural Gas Bill

# Natural Gas Bill
## TWG Meetings and Participants

***Meetings***

**11 meetings since September 2002**

***Participants***

**Committee on Energy Secretariat**

**Government – DOE, ERC, DOF, DENR, NEDA, PNOC, PNOC-EC. PNOC-EDC**

**Industry – SPEX, FGHC, PAP, BP Amoco, GN Power, Chevron-Texaco, Caltex, Price-Waterhouse**

**NGO – Freedom from Debt Coalition**

# Major Issues

- Regulatory Agencies
- Franchise
- Price Regulation
- TPA
- Promotion of Competition

# Natural Gas Bill
# Key Recommendations of the TWG

***Industry structure***

**Downstream gas industry: T, D and S**

**Vertical integration allowed**

***Entry regulation***

**Franchise to operate T & D as public utility**

**Permit required to operate T, D & S**

**Own-use permit allowed for end-user facilities**

# Natural Gas Bill
## Key Recommendations

***Access Liberalization***

**TPA mandatory for T, D and related facilities**

**Deferment allowed on new facilities**

**Access conditions negotiated**

***Price Regulation***

**Prices for captive markets regulated**

**Market-based prices for contestable markets**

# Natural Gas Bill
# Issues to be resolved

*Regulatory Agencies*

Division of price and non-price functions between DOE and ERC or single regulatory agency

*Franchise*

Whether Service Contractors need a franchise to engage in T & D

PNOC Charter in lieu of a franchise

*Price Regulation*

Classifying markets as contestable or captive for pricing purposes

# Natural Gas Bill
## Issues to be resolved

***Third Party Access***

**Whether to require T, D utilities capacity expansion to accommodate third party users**

**Negotiated versus regulated access charges**

***Promotion of Competition***

**What competition measures to be imposed**

**Whether to identify measures in the legislation or empower regulator to determine**

# THANK YOU!

www.doe.gov.ph