
The South American Natural Gas Market

Raul Bertero
Universidad de Buenos Aires

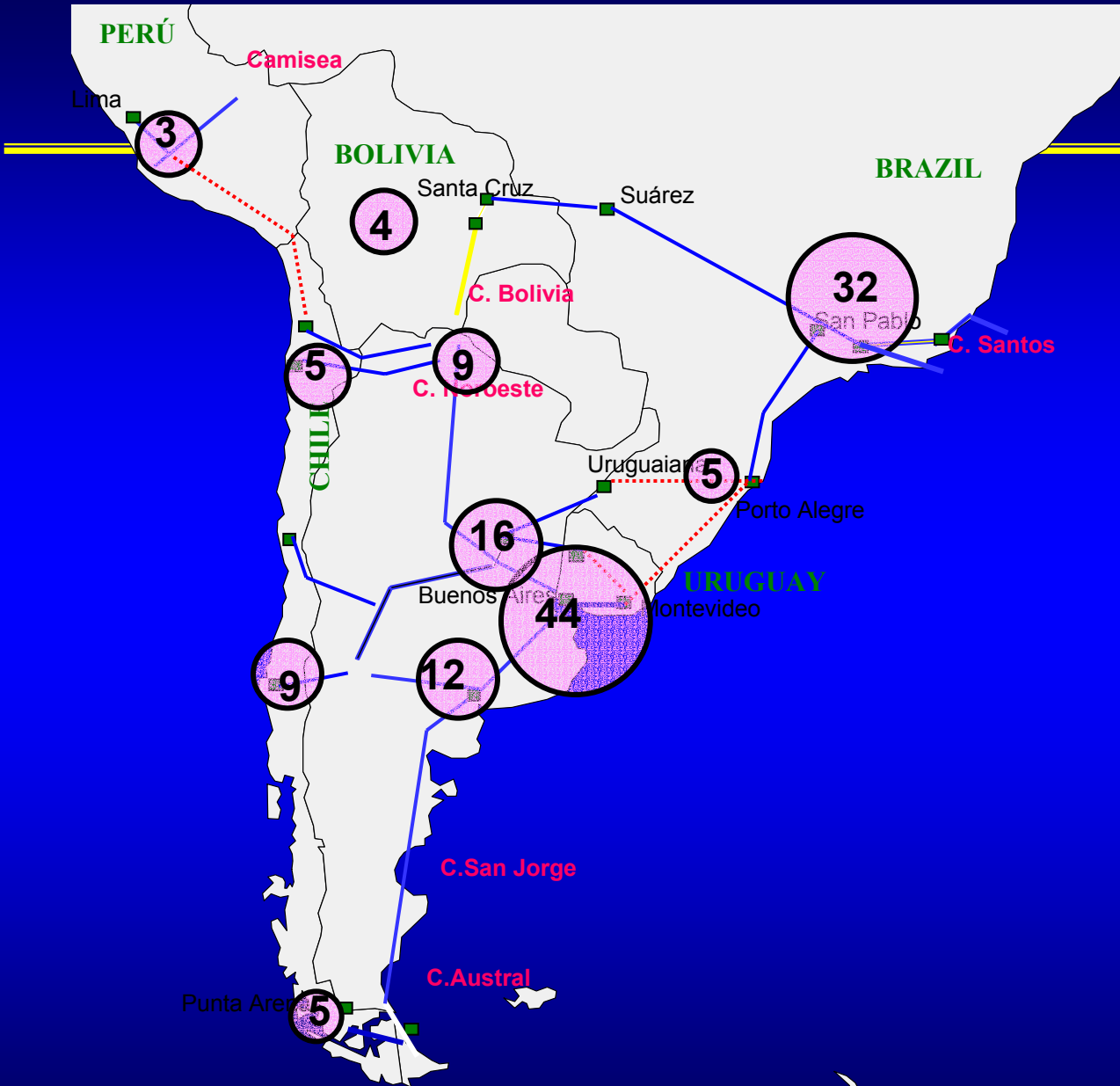
The South American Natural Gas Market

- **Southern Cone situation before 2004**
- **2004 Argentina Crisis**
- **Future of the Natural Gas in the Southern Cone**

Southern Cone situation before 2004

AVERAGE NATURAL GAS DEMAND (MMm3/d)

2004

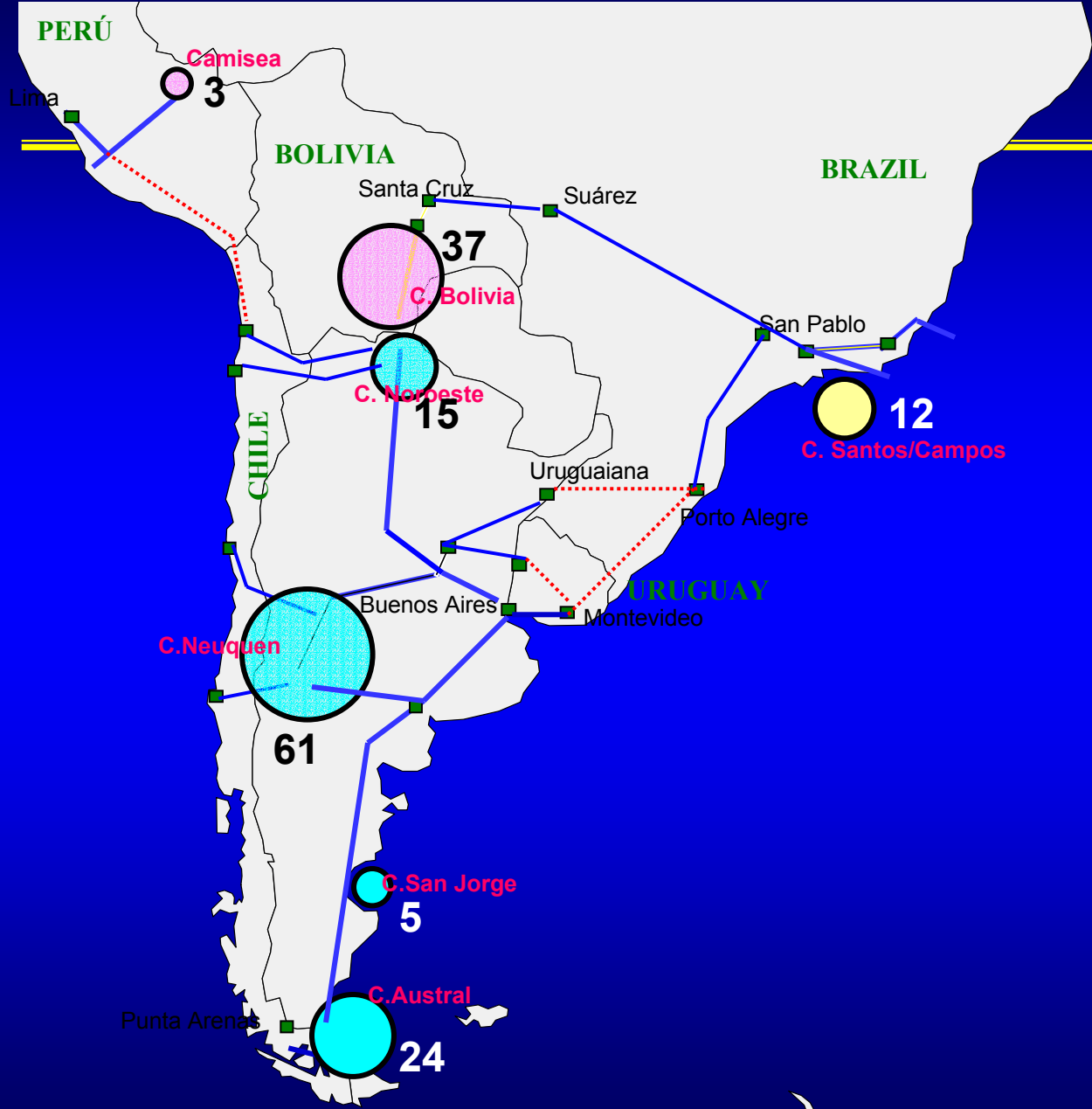


INTERNAL DEMAND (MMm3/d)	
ARGENTINA	96
BRASIL	37
CHILE	19
BOLIVIA	4
PERU	3
URUGUAY	1
TOTAL	160

AVERAGE NATURAL GAS DELIVERED BY BASIN

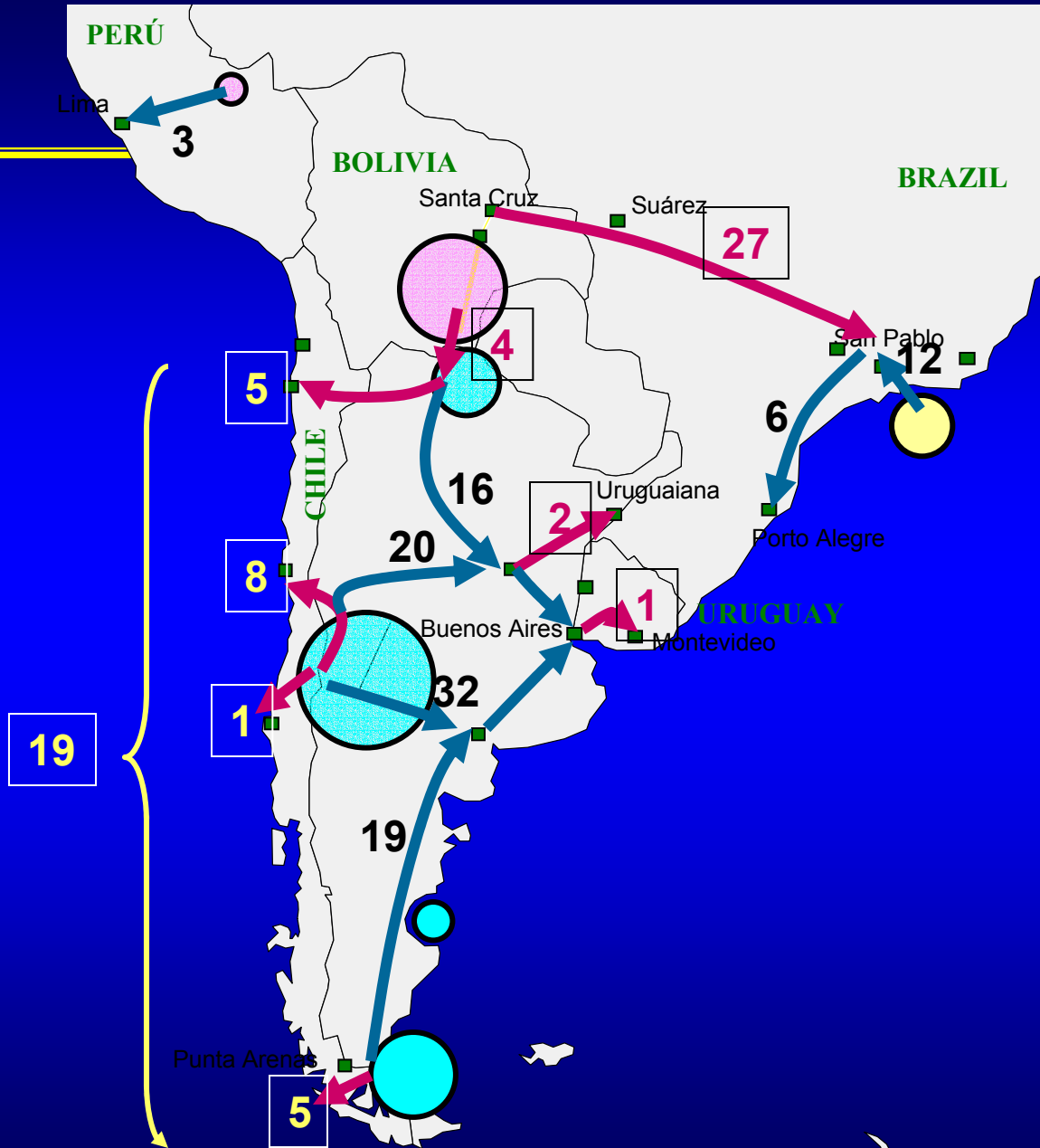
(MMm3/d)

2004



AVERAGE FLOW (MMm3/d)

2004



EXPORTS (MMm3/d)

BOLIVIA 31

ARGENTINA 22

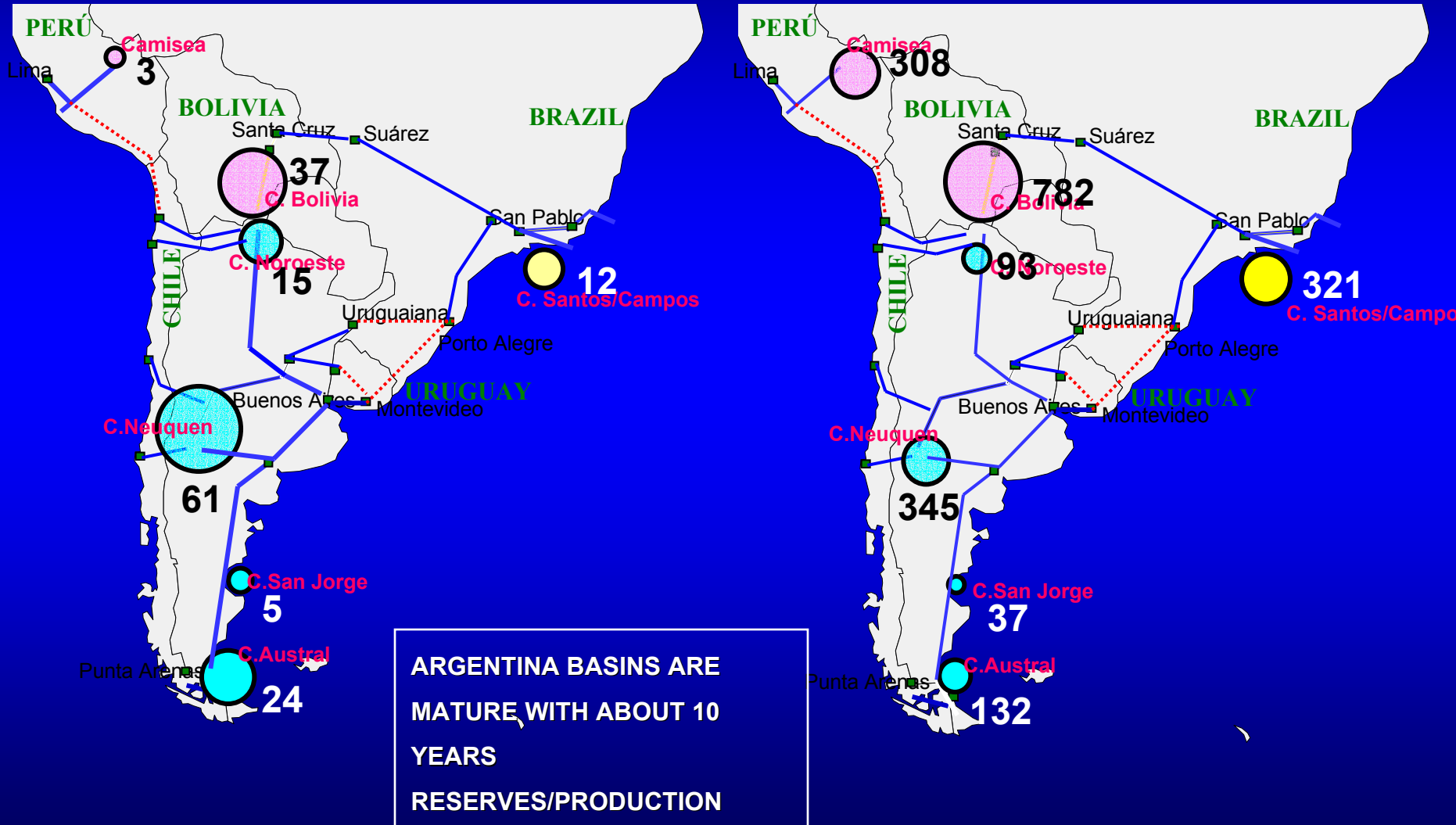
TOTAL 53

(33% OF THE TOTAL DEMAND)

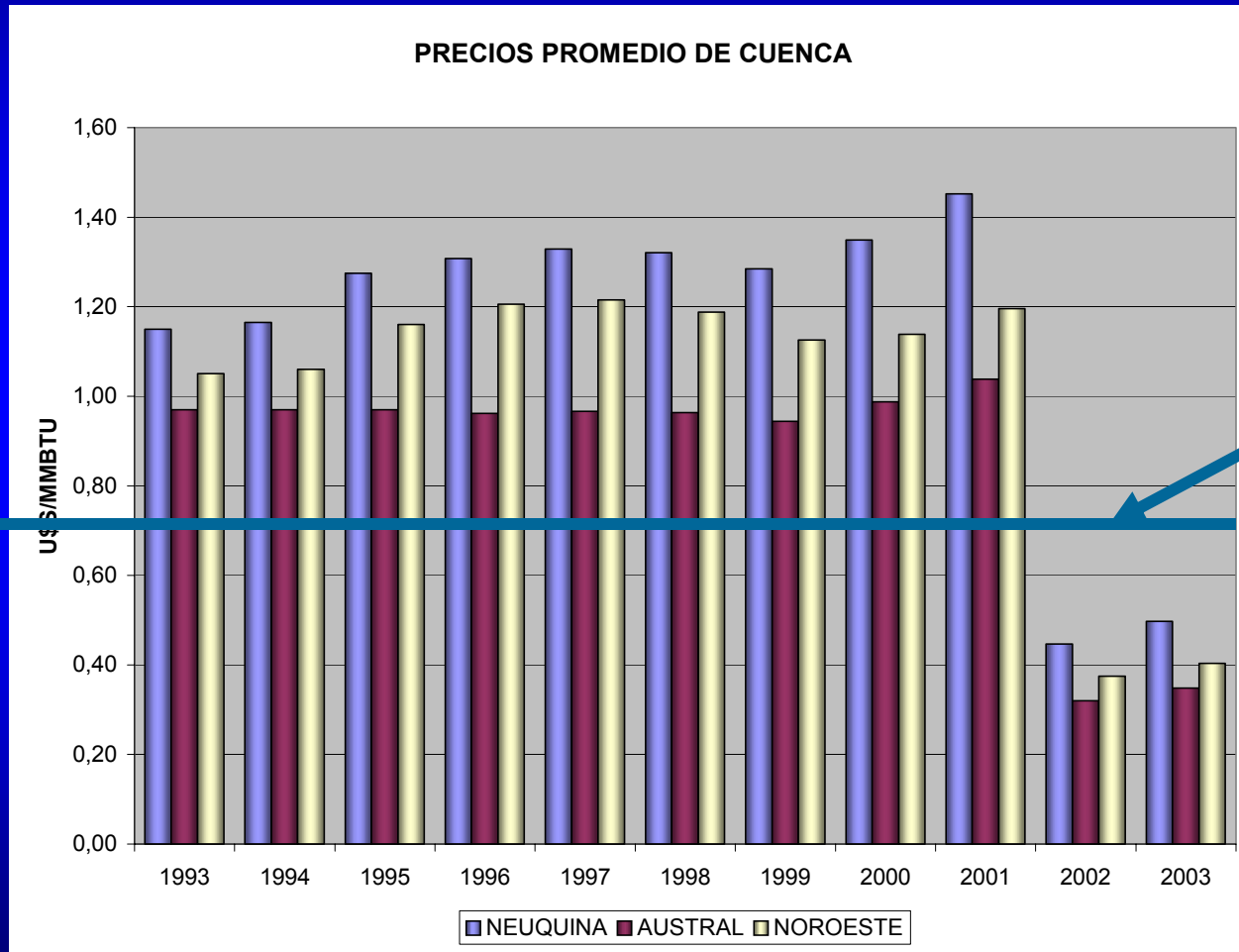
AVERAGE NATURAL GAS DELIVERED BY BASIN

(MMm3/d) 2004

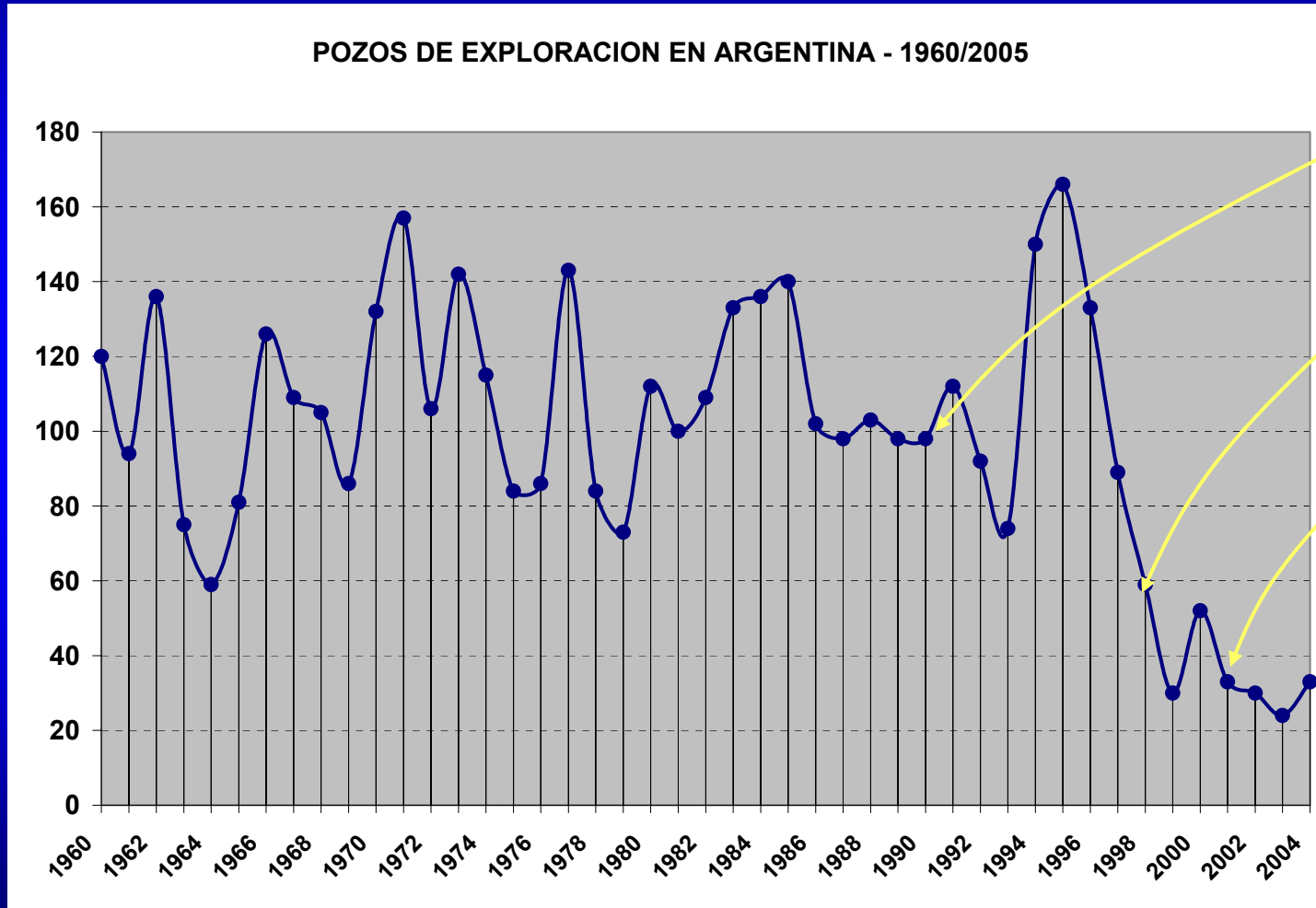
PROVEN RESERVES (BCM) 2004



Argentina wellhead prices



Oil and Gas Exploration wells in Argentina 1960/2005



Privatization
of YPF

Repsol buys
YPF

Argentina
Economical
Crisis

SOUTHER CONE NATURAL GAS 2003

- **Apparently no concern about supply**
- **Argentina issued an export permit to Chile from Neuquina basin in 2003**

Argentina crisis - 2004

- **Brief Description of the Argentina System**
- **Crisis reasons**
- **Measures taken by the Argentine Government**
- **Argentina Crisis Lessons**

Argentina Natural Gas System

AÑO 2004
(MMm3/d)



Transportation Capacity

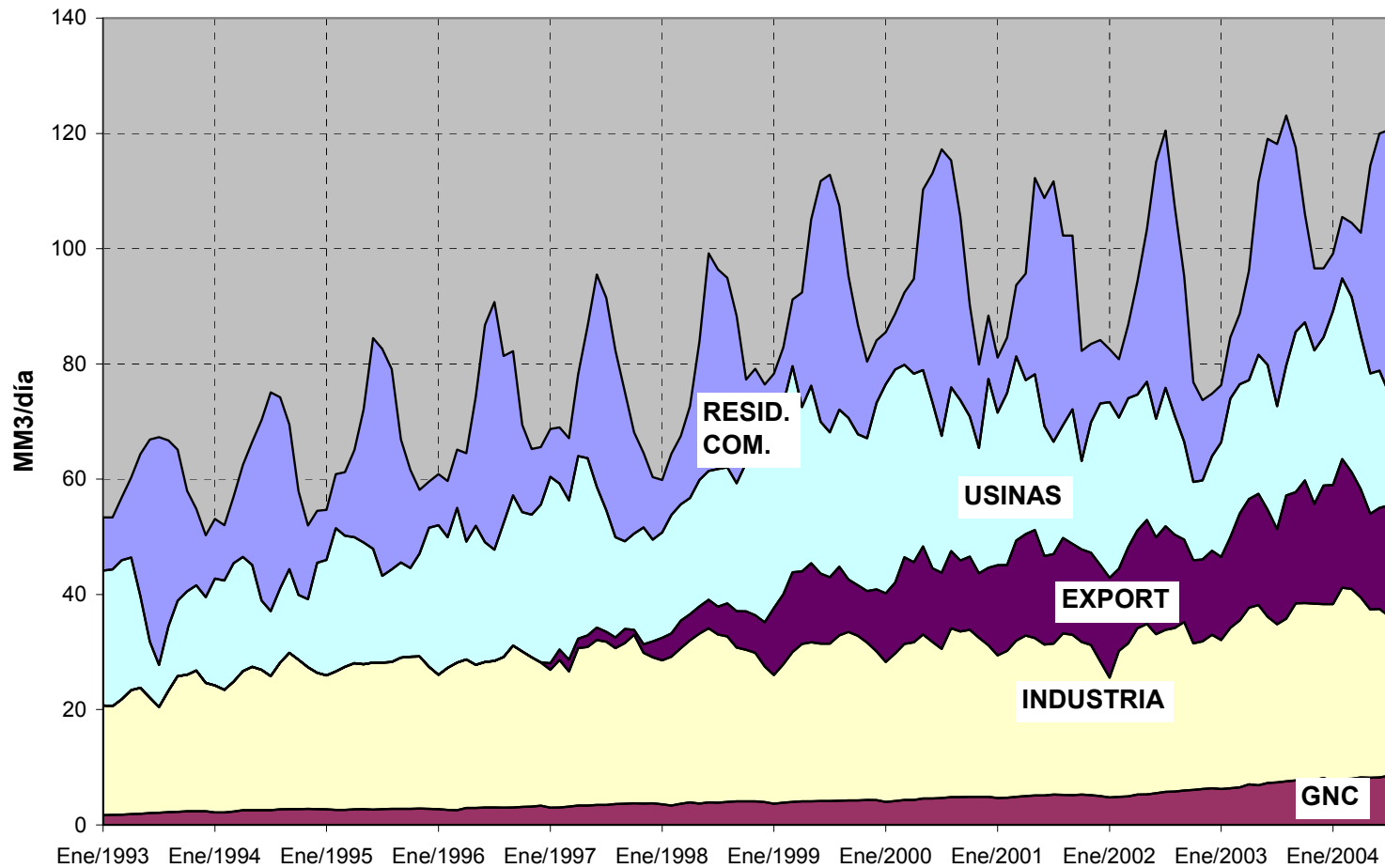
120 MMm3/d

Average flow at crisis

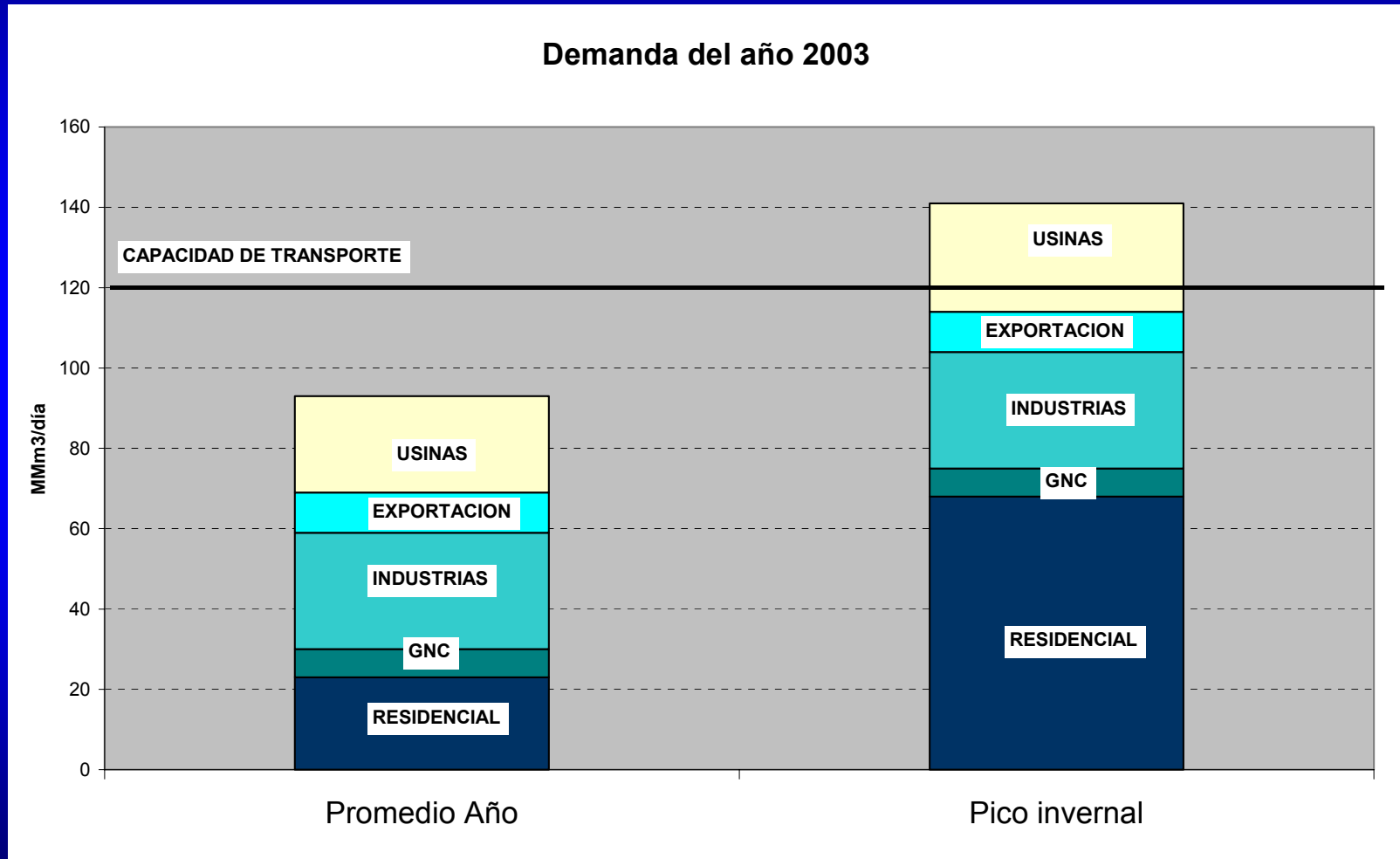
100 MMm3/d

Argentina Seasonality

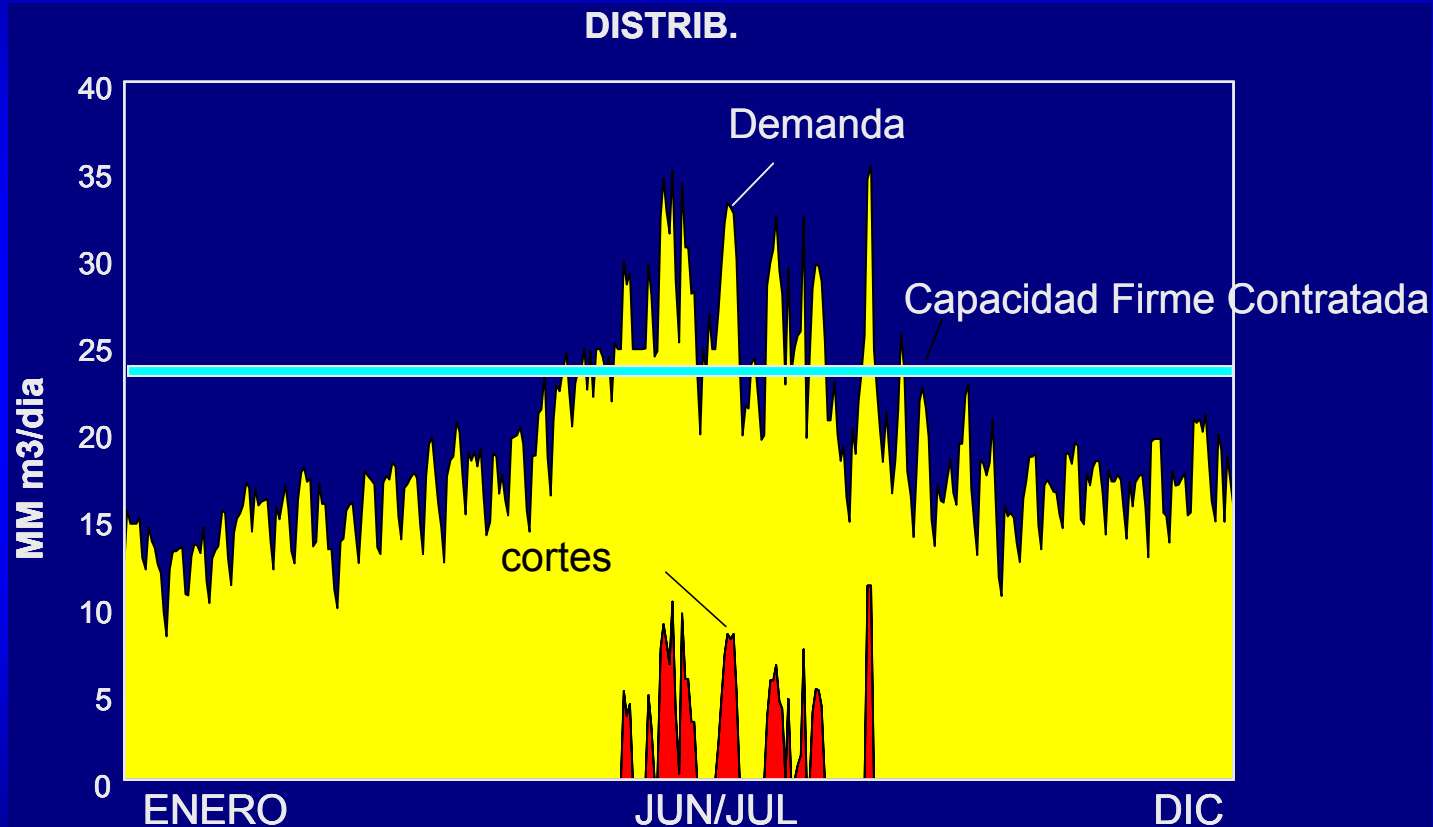
Consumo de Gas Natural (promedio mensual)



Argentina Natural Gas Demand

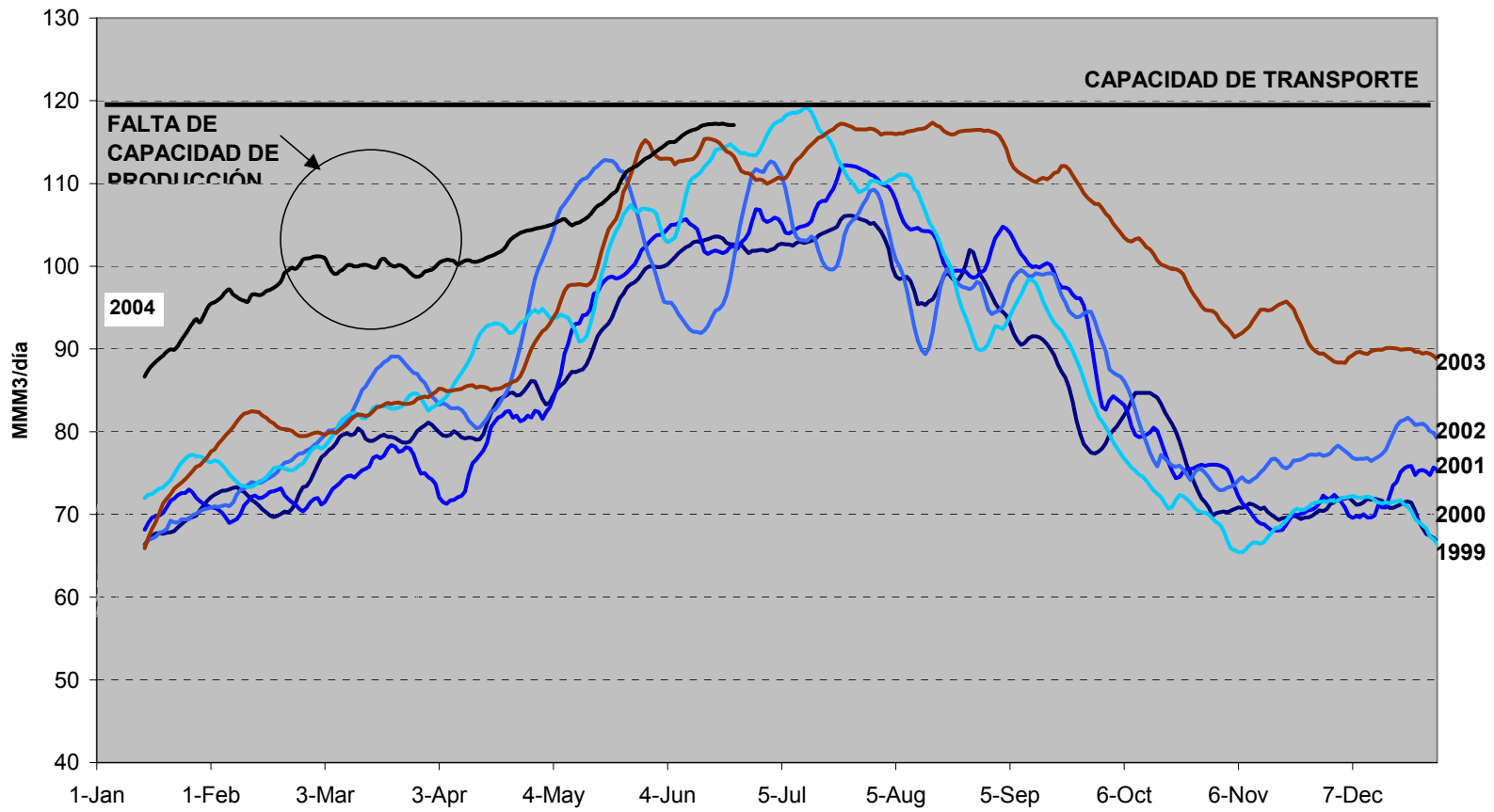


Argentina Natural Gas mechanism to manage seasonality (no storage)



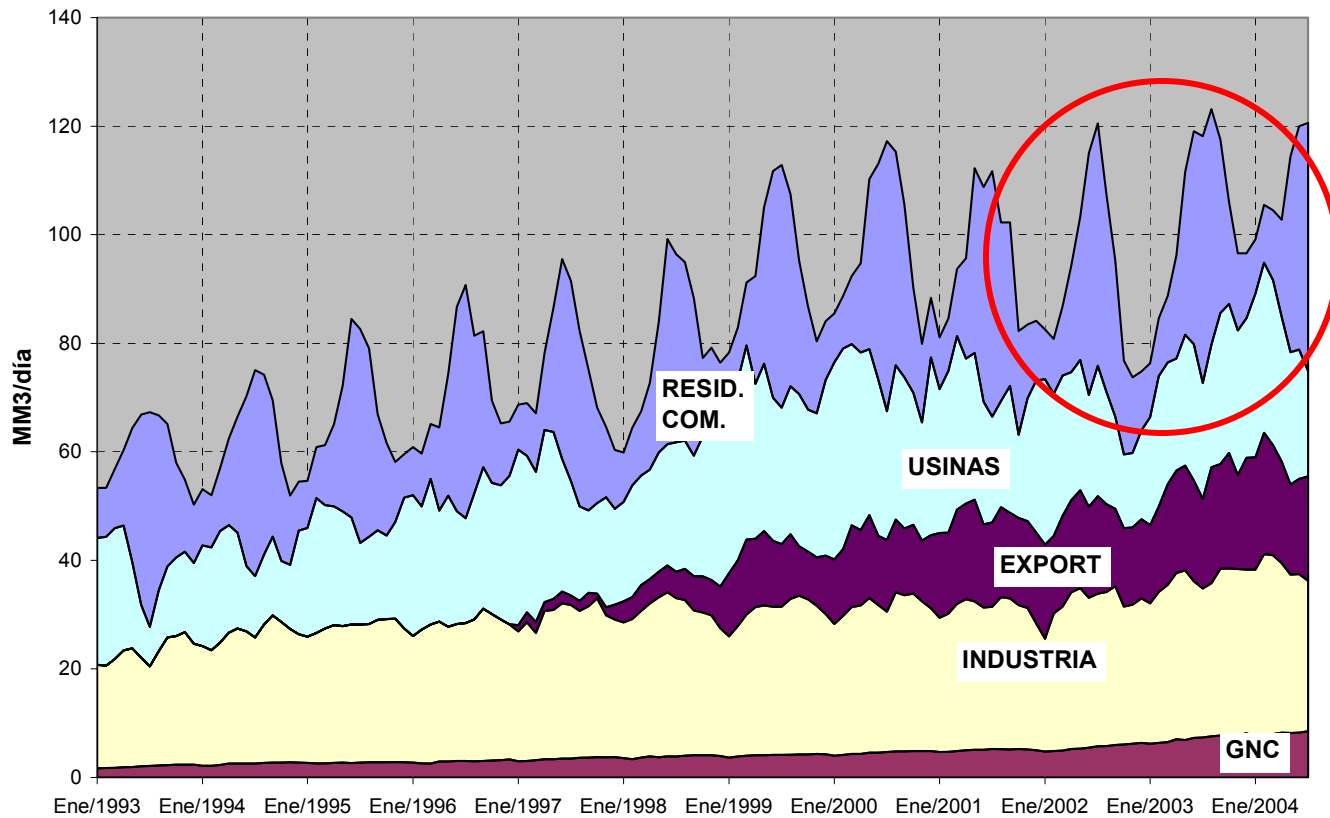
Total injections in the transportation system

INYECCION TOTAL DE GAS EN EL SISTEMA DE TRANSPORTE



Crisis reasons

Consumo de Gas Natural (promedio mensual)



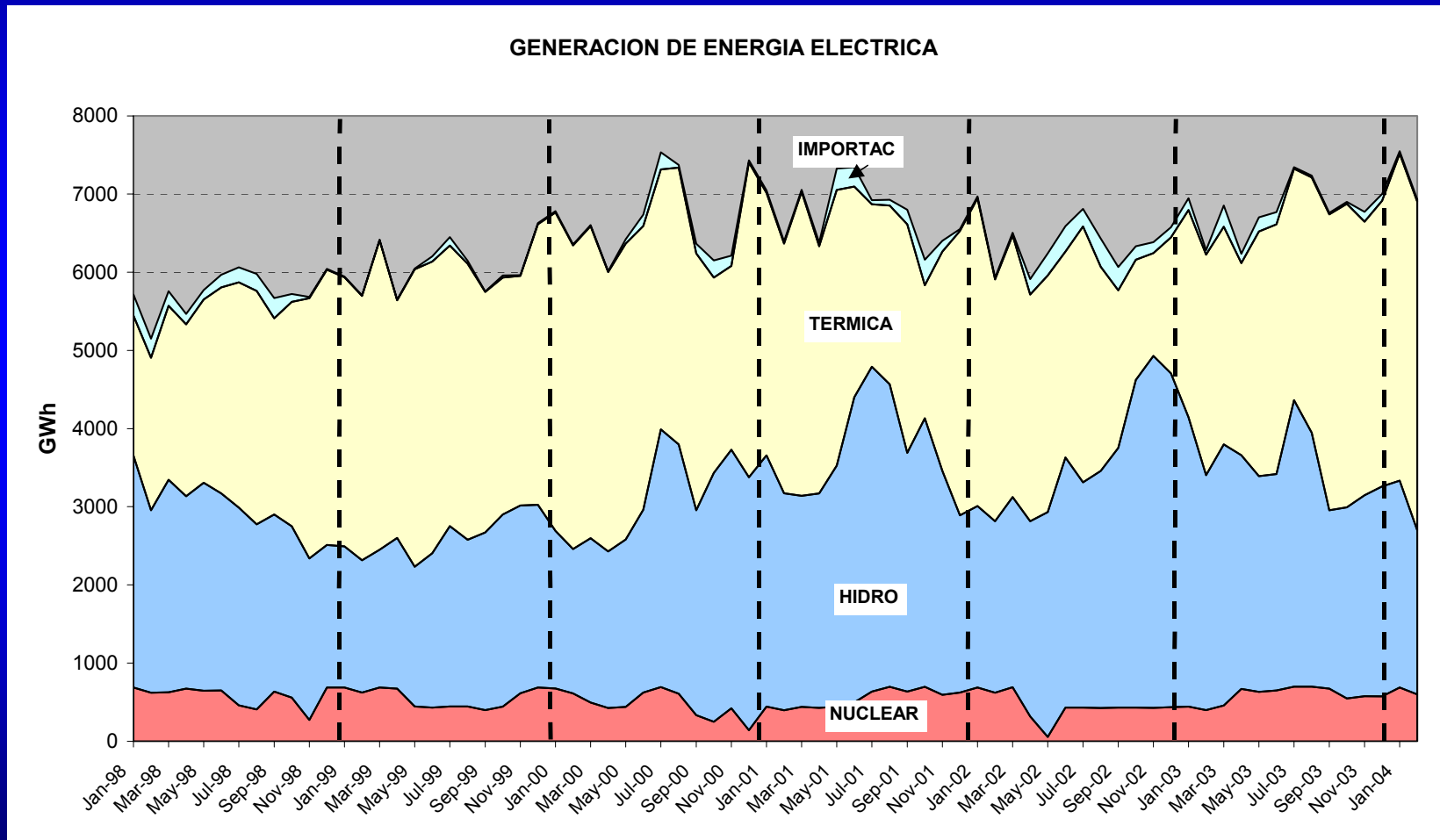
In the summer of 2004 the demand increased

20 MMm3/d

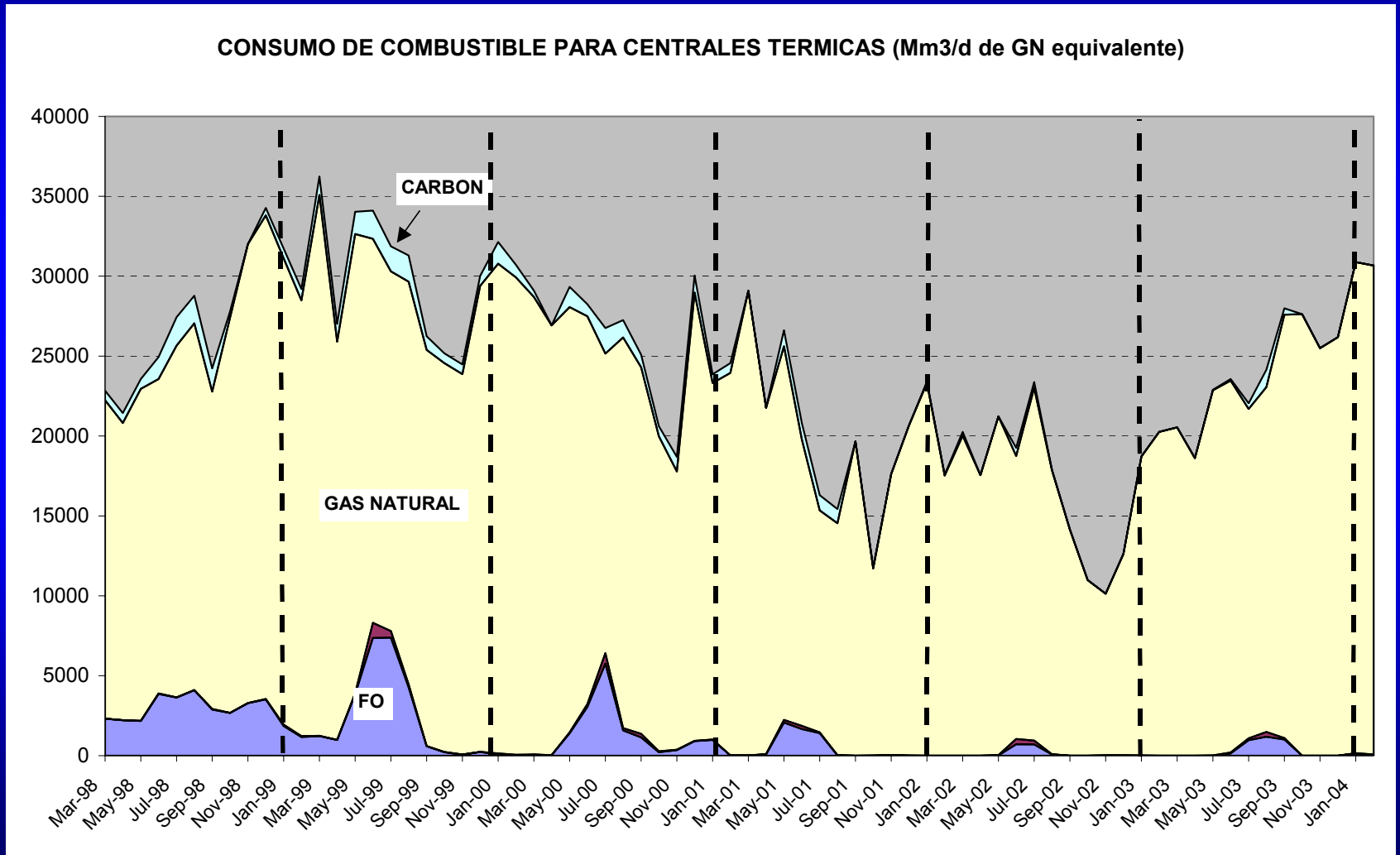
with respect to the previous year

(25 % increase)

Argentina Power Generation



Thermal Power Plants demand



2004 Increase of Demand

➤	Industrial	4 MMm³/d
➤	Exports	4 MMm³/d
➤	GNC	2 MMm³/d
➤	Power Plants	
	• Energy demand growth	2 MMm³/d
	• Low Hydro conditions	8 MMm³/d
➤	Total	20 MMm³/d

Measures taken by the Argentine Government

2004

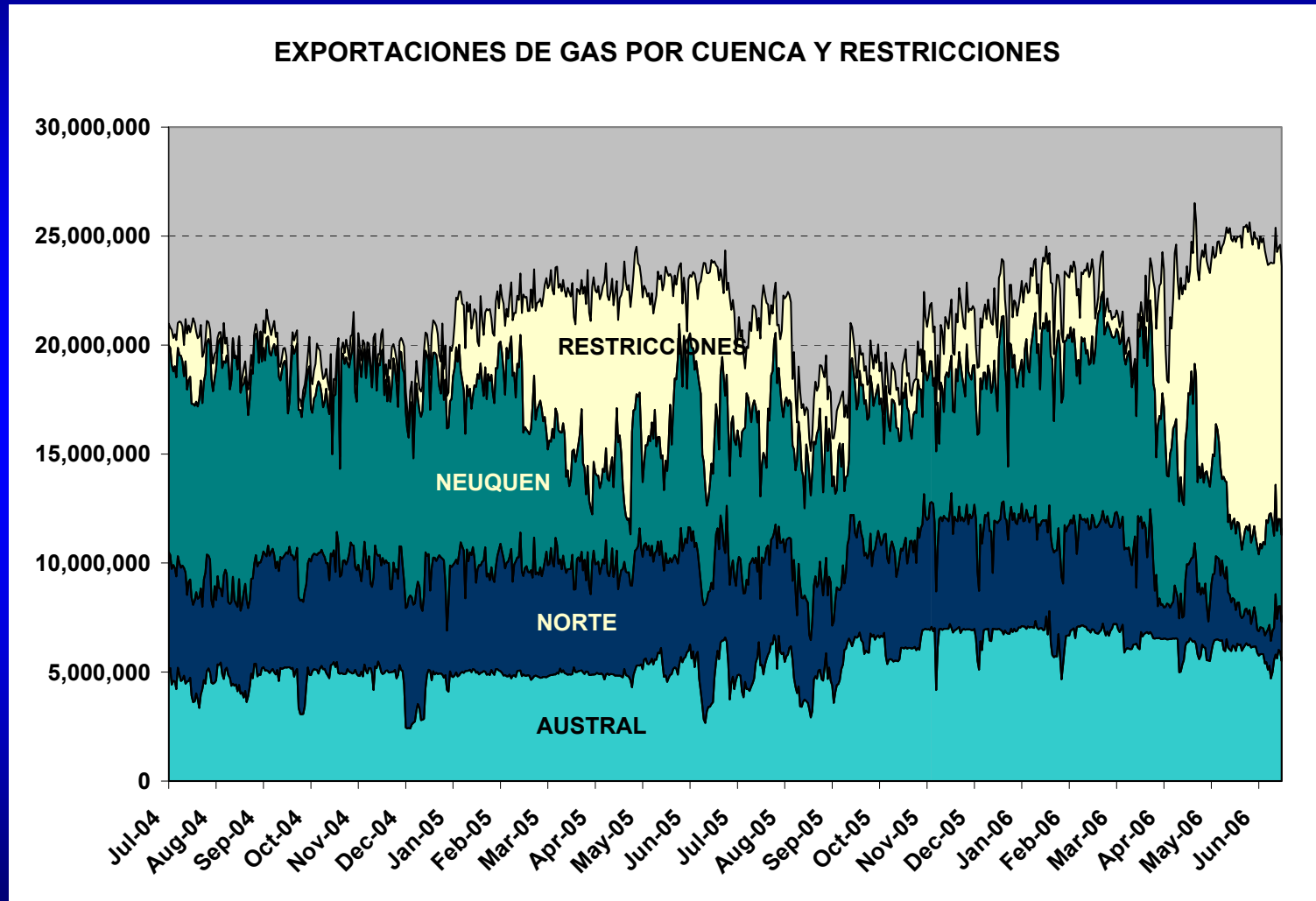
Actions on demand

1. Export restrictions
2. Fuel-oil acquisition (240 MMu\$s)
3. Energy saving program

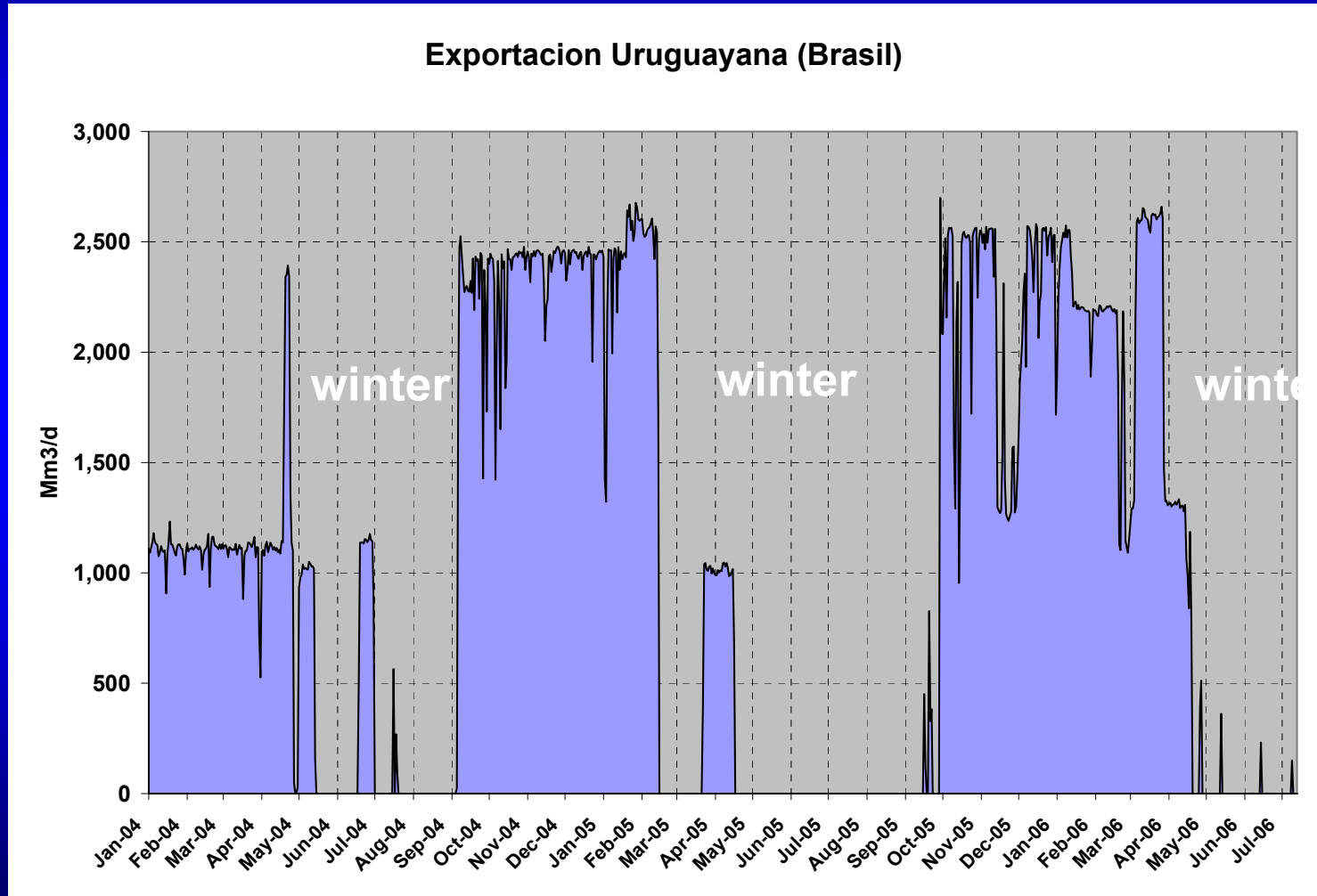
Actions on supply

1. Agreement between Government and Producers on price path and target production volumes
2. Re-start natural gas imports from Bolivia. (4 MMm³/día - 1.60 u\$s/MMBTU)

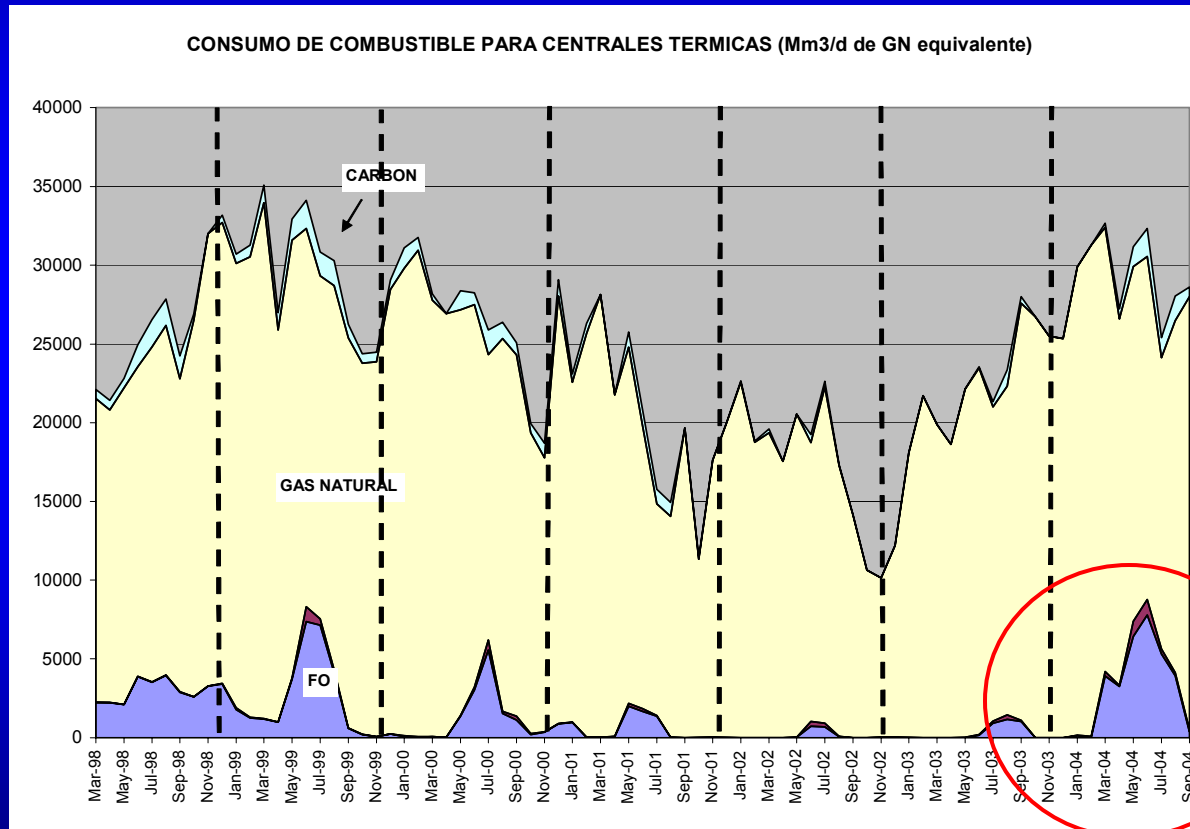
Export restrictions to Chile



Exports to Uruguayana Power Plant in Brasil

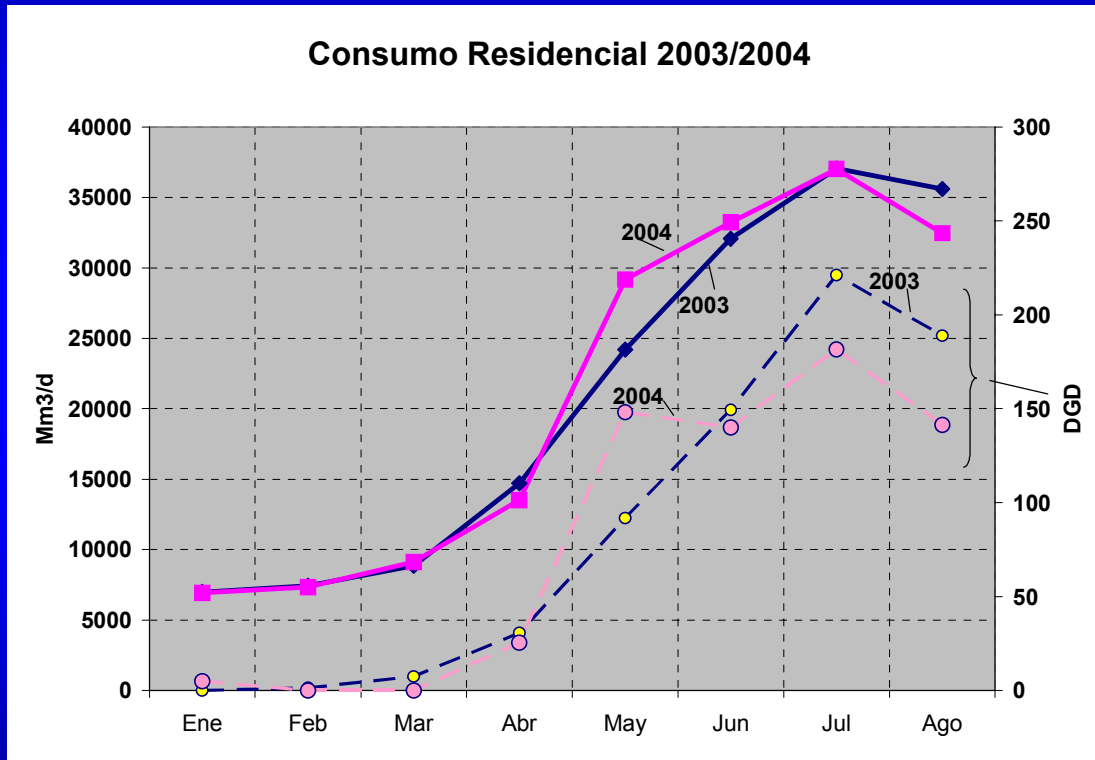


Fuel-Oil Acquisition



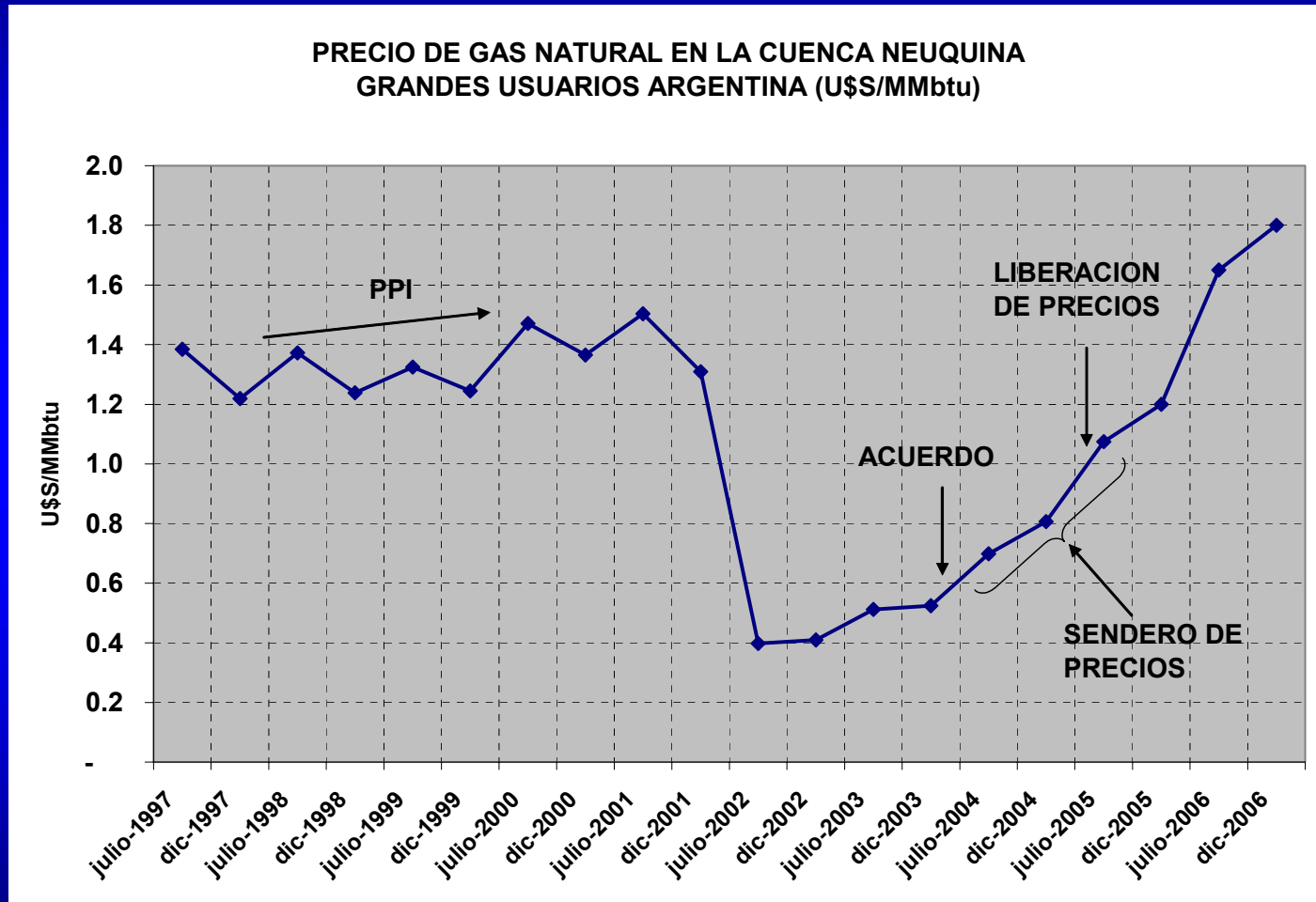
- Fiscal cost of 300 millones de US\$
- There is a limit for switching natural gas to fuel-oil because storage, logistic and dual power plants facilities of about 16 MMm3/d equivalent natural gas

Energy saving program



- No significant effects on the residential demand pattern
- The incentives and penalties were too low to be effective

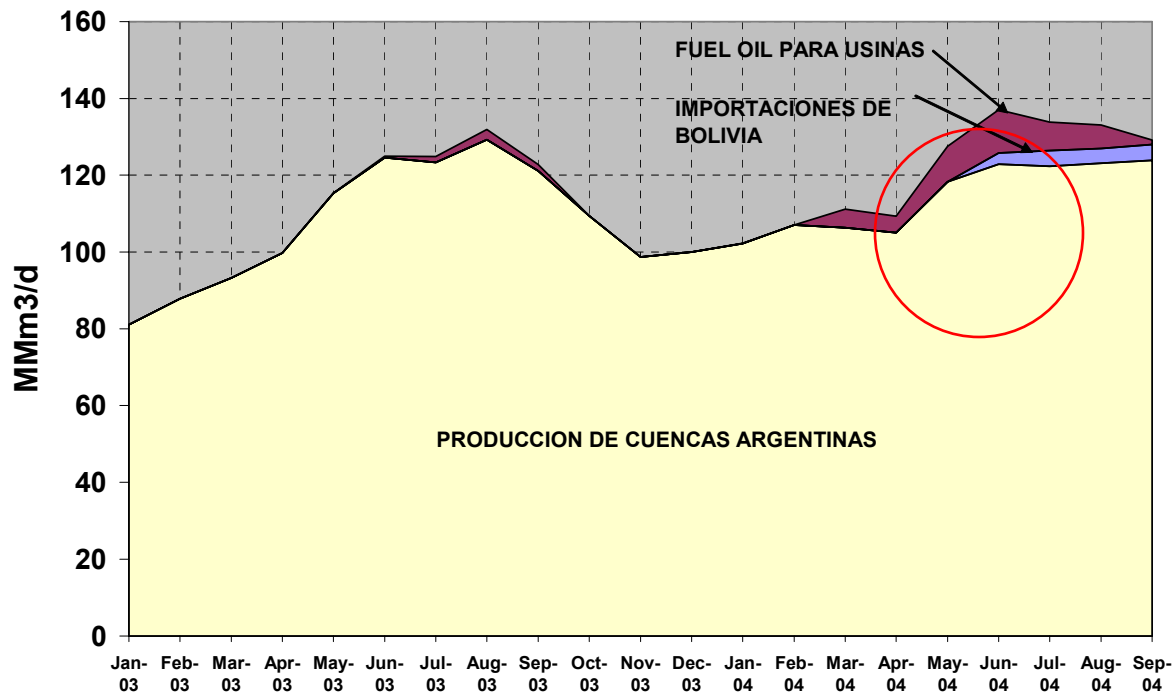
Natural Gas Prices of Neuquina Basin for Large Users in Argentina



No increase to Residential users (1/3 of Demand)

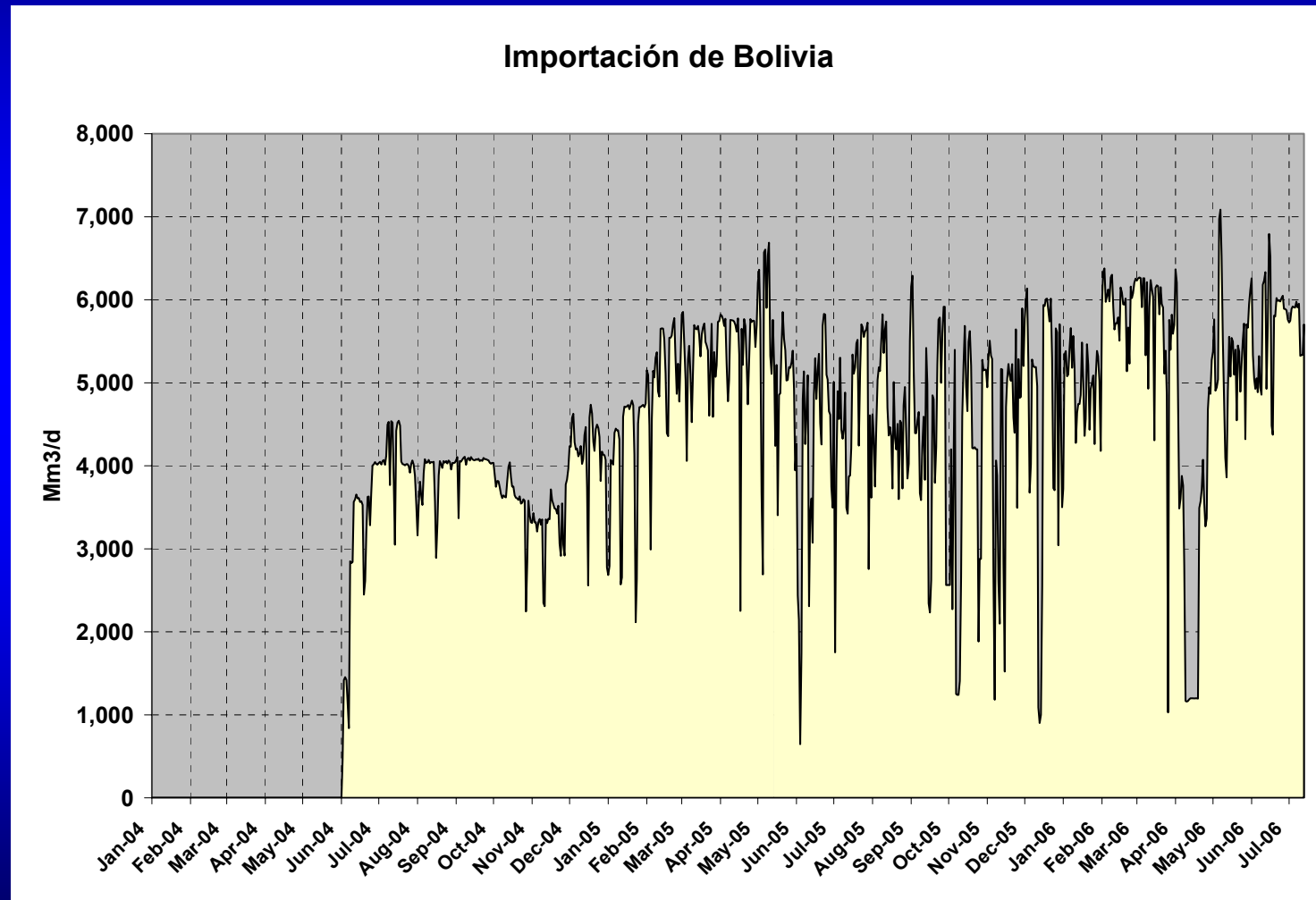
Agreement with producers and Bolivia imports

Producción Neta total



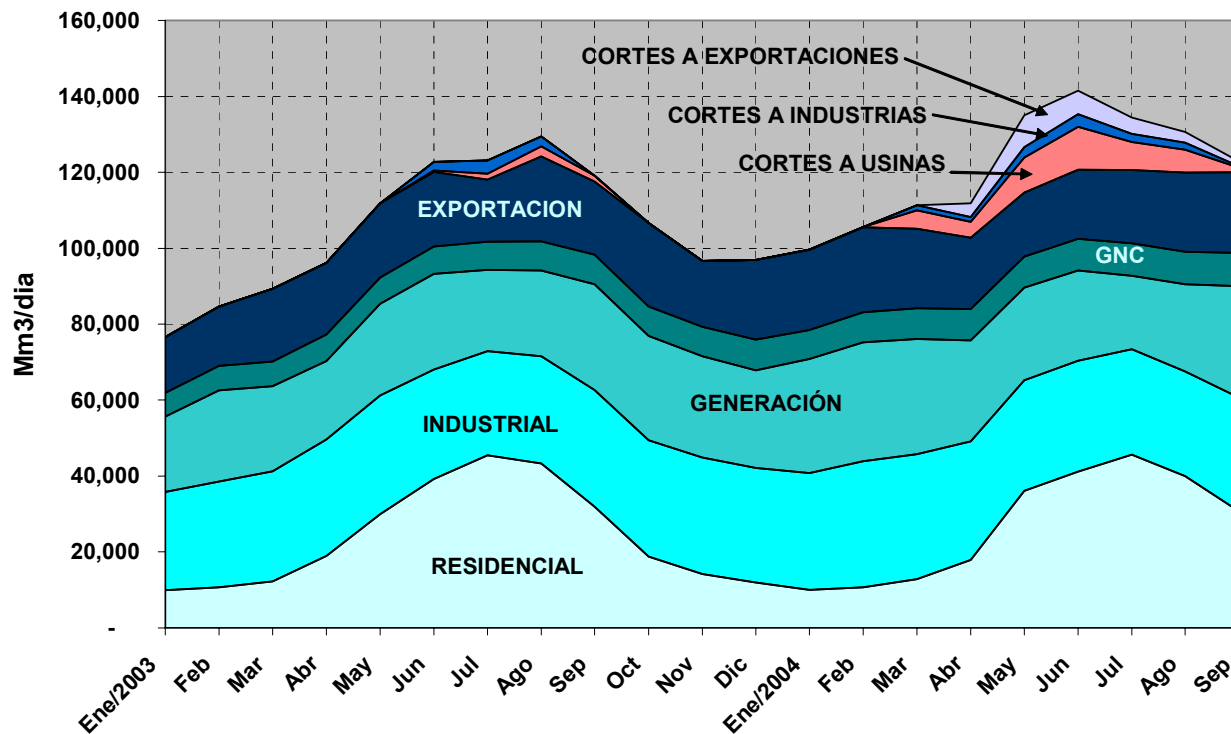
- The established volumes were not enough to fill the transportation capacity and therefore the exports restrictions continue

Imports from Bolivia



2004 Crisis Summary

Demanda mensual 2003-2004 promedio diario



Total demand increase 25% mainly due to hydro conditions

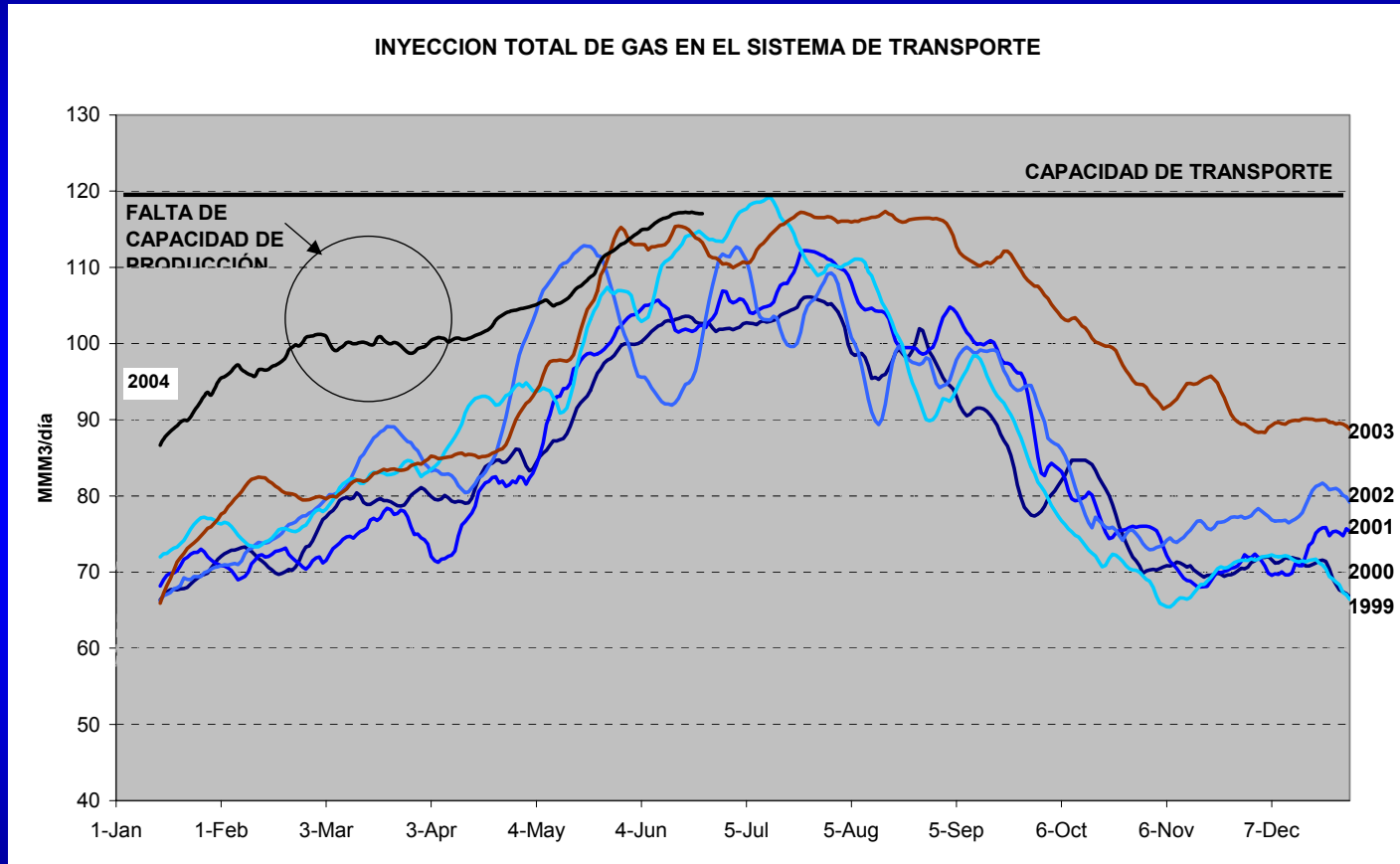
Total deliverability could not afford it

Export restrictions and Fuel oil supplies manage the crisis

2004 Argentina Crisis Questions

- Was it a transportation, reserves or deliverability shortage?
- Was it only a price problem?
- Is it over?
- What are the lessons for the future of the Southern Cone Natural Gas Supply?

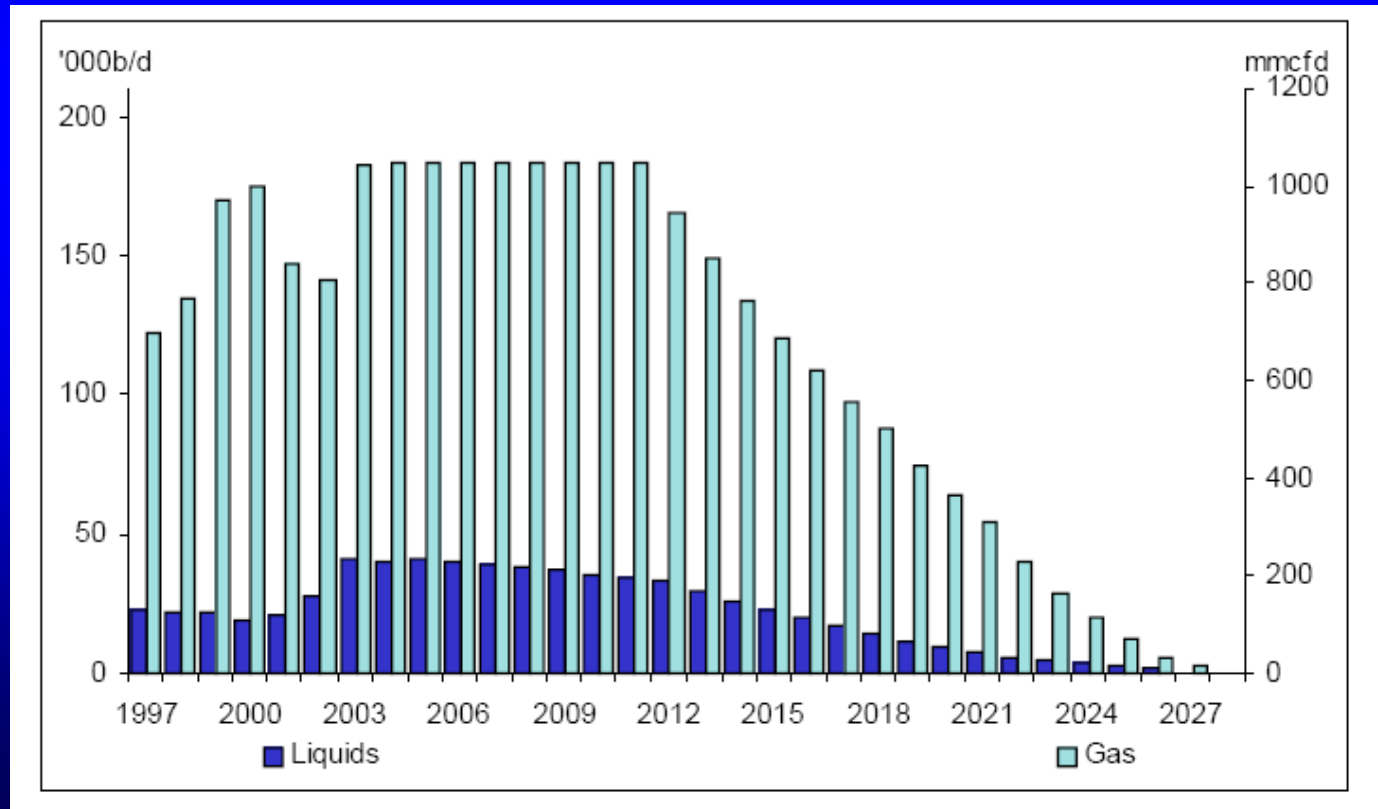
Was it a transportation, reserves or deliverability shortage?



It was deliverability problem

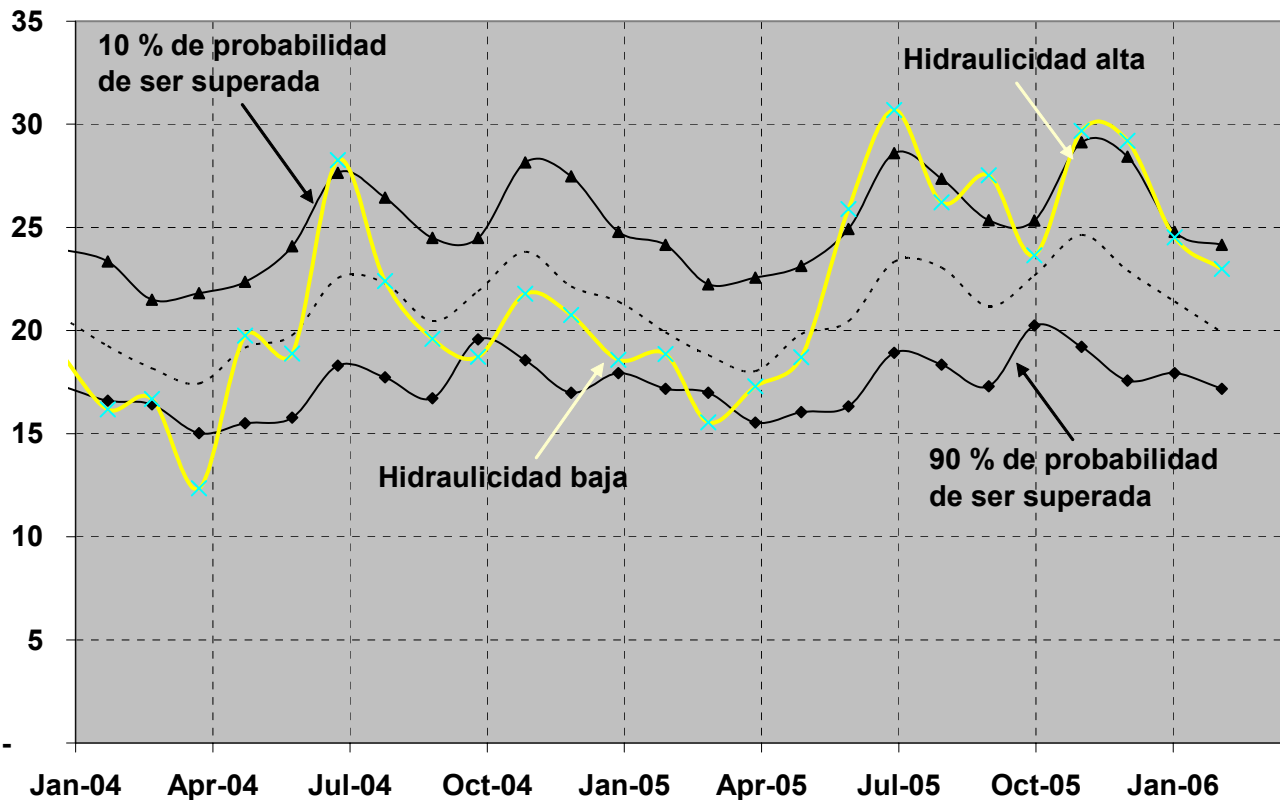
Was it only a price problem?

- Loma de la Lata Field (Neuquen) represents 25 % of the total Natural Gas Production of Argentina
- Apparently the declination of this mega-field expected by 2011 has already started
- With more investments the Argentina reserves could increase but could be very difficult to increase significantly the deliverability in Neuquina Basin



Is the crisis over?

Generación hidráulica 2004-2006



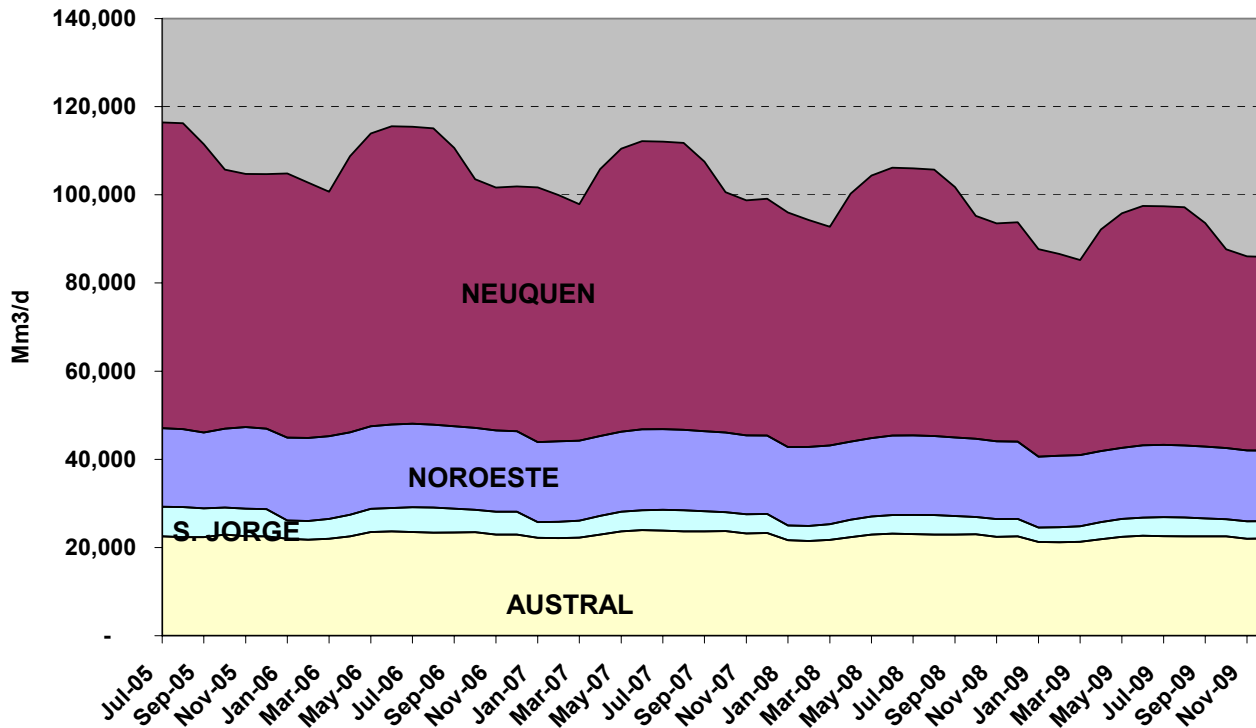
Since June 2005 the Hydro conditions have been high (only 10% probability of be overpassed)

The difference between low and high hydro condition represents

15 MMm3/d

Is the crisis over?

Pronóstico de producción de Gas Natural informado por los productores a la SE (2005/2009)



Producers inform to the Argentina Secretary of Energy the following evolution of the production 2009/2005

- Austral + 5.3 %
- S. Jorge - 37.9 %
- Neuquen - 23.5 %
- Noroeste - 6.6 %

Argentina can not afford present exports commitments and will require increasing import volumes

Argentina Crisis Lessons

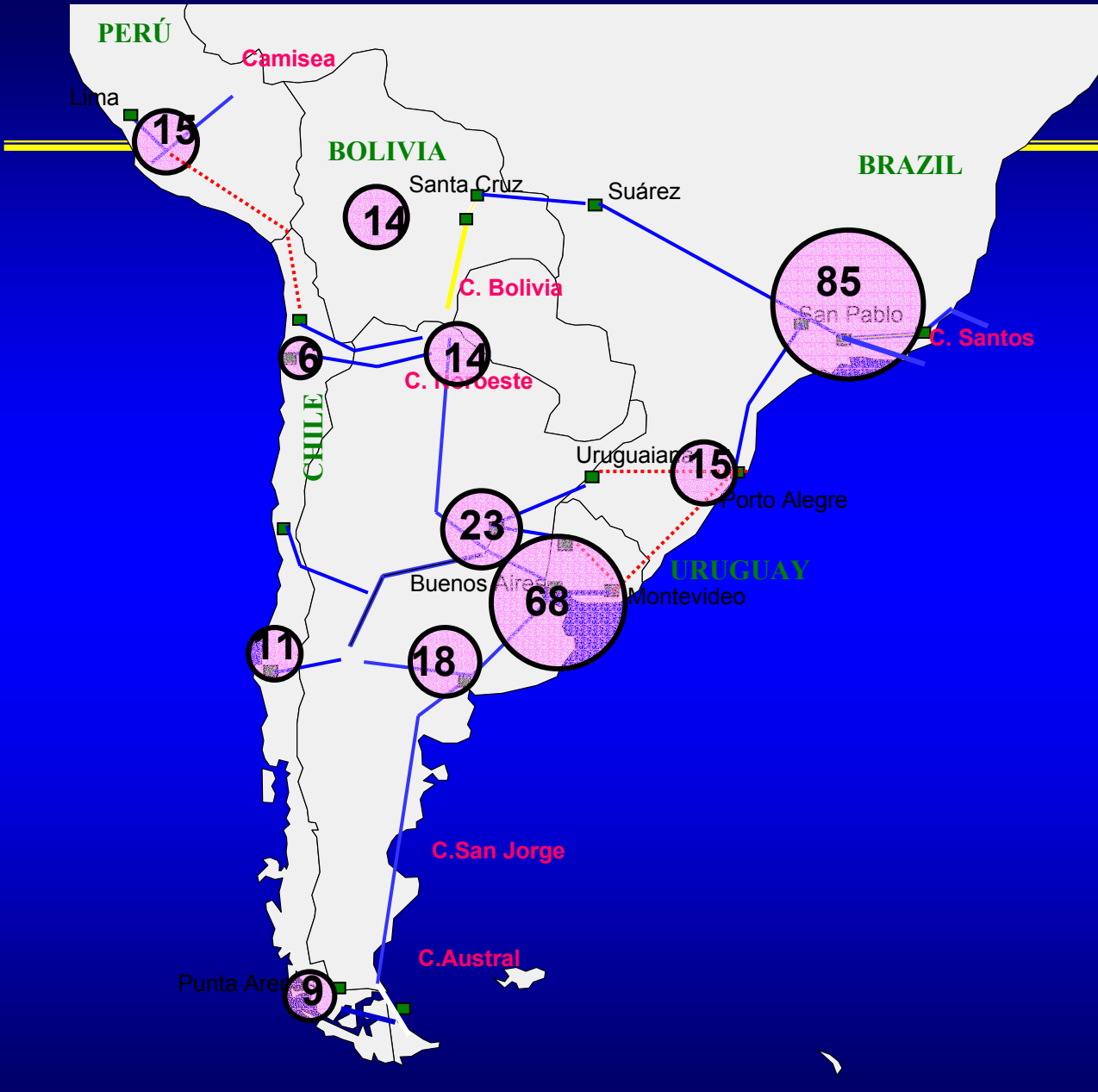
- **Deliverability is more important than reserves in order to consider the sustainability of exports**
- **It can not be expected that any country export a non renewable natural resource that is not enough for the internal market**
- **It is convenient to diversify the sources of supply**

Future of the Natural Gas in the Southern Cone

- **Demand and supply 2015**
- **Expected shortage of natural gas**
- **Alternative projects**
- **Conclusions**

AVERAGE NATURAL GAS DEMAND (MMm3/d)

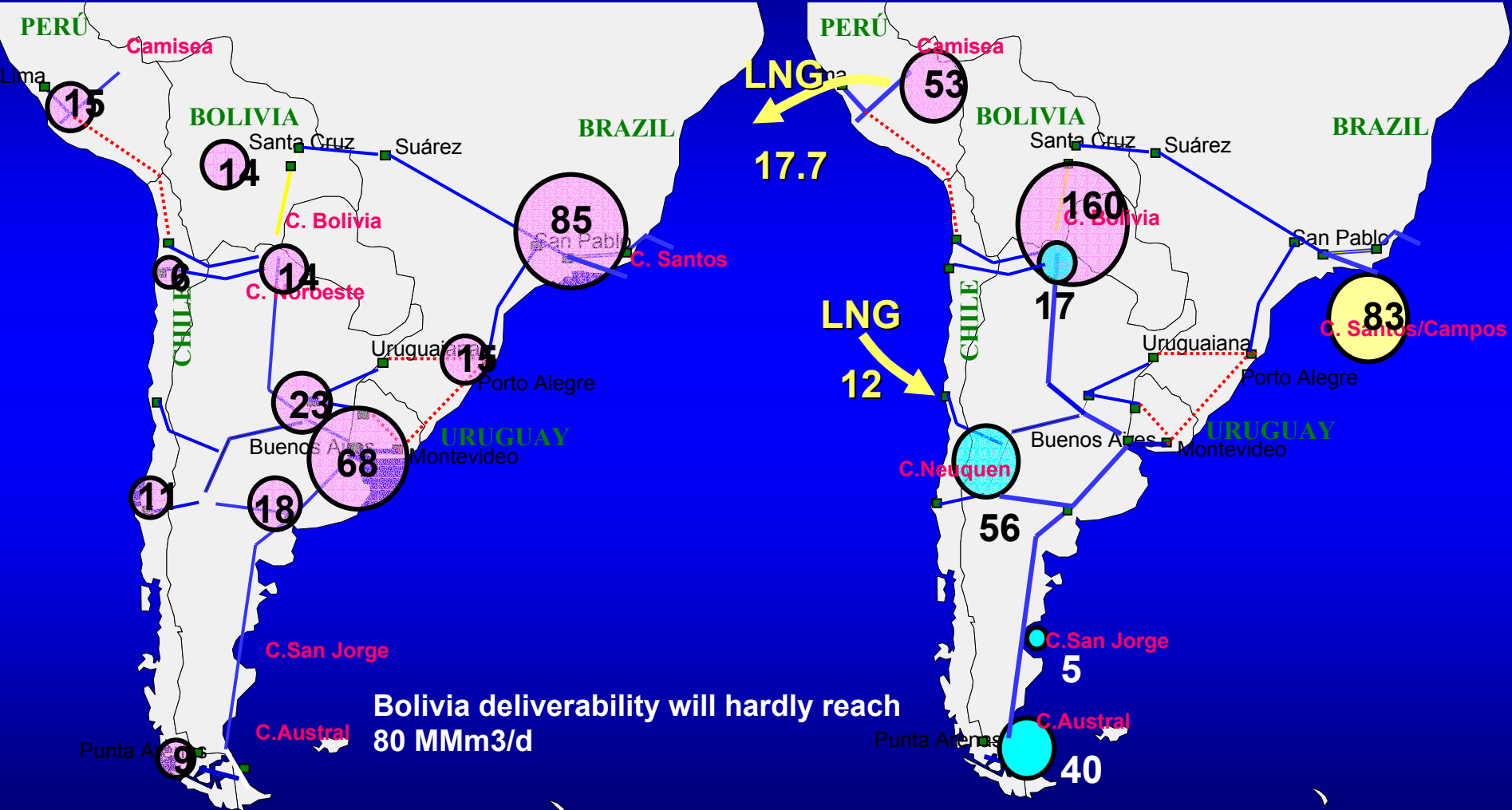
2015



INTERNAL DEMAND (MMm3/d)	
ARGENTINA	150
BRASIL	100
CHILE	26
BOLIVIA	14
PERU	15
URUGUAY	3
TOTAL	308

AVERAGE NATURAL GAS DEMAND (MMm3/d) 2015

PEAK DELIVERABILITY - 2015 (MMm3/d)



Bolivia deliverability will hardly reach 80 MMm3/d

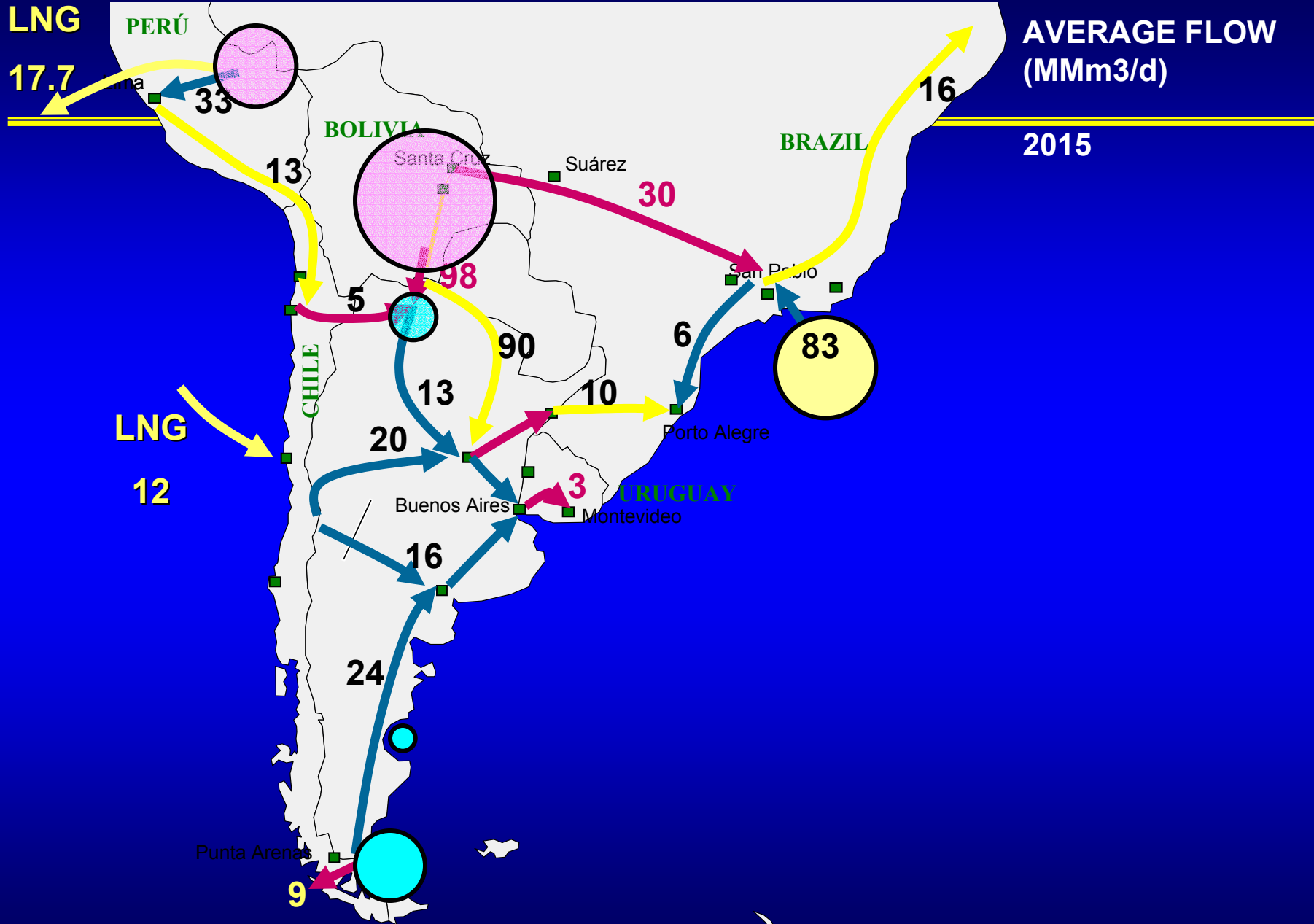
The Southern Cone shortage will be about 100 MMm3/d of Natural Gas

The Southern Cone shortage will be about 100 MMm³/d of Natural Gas

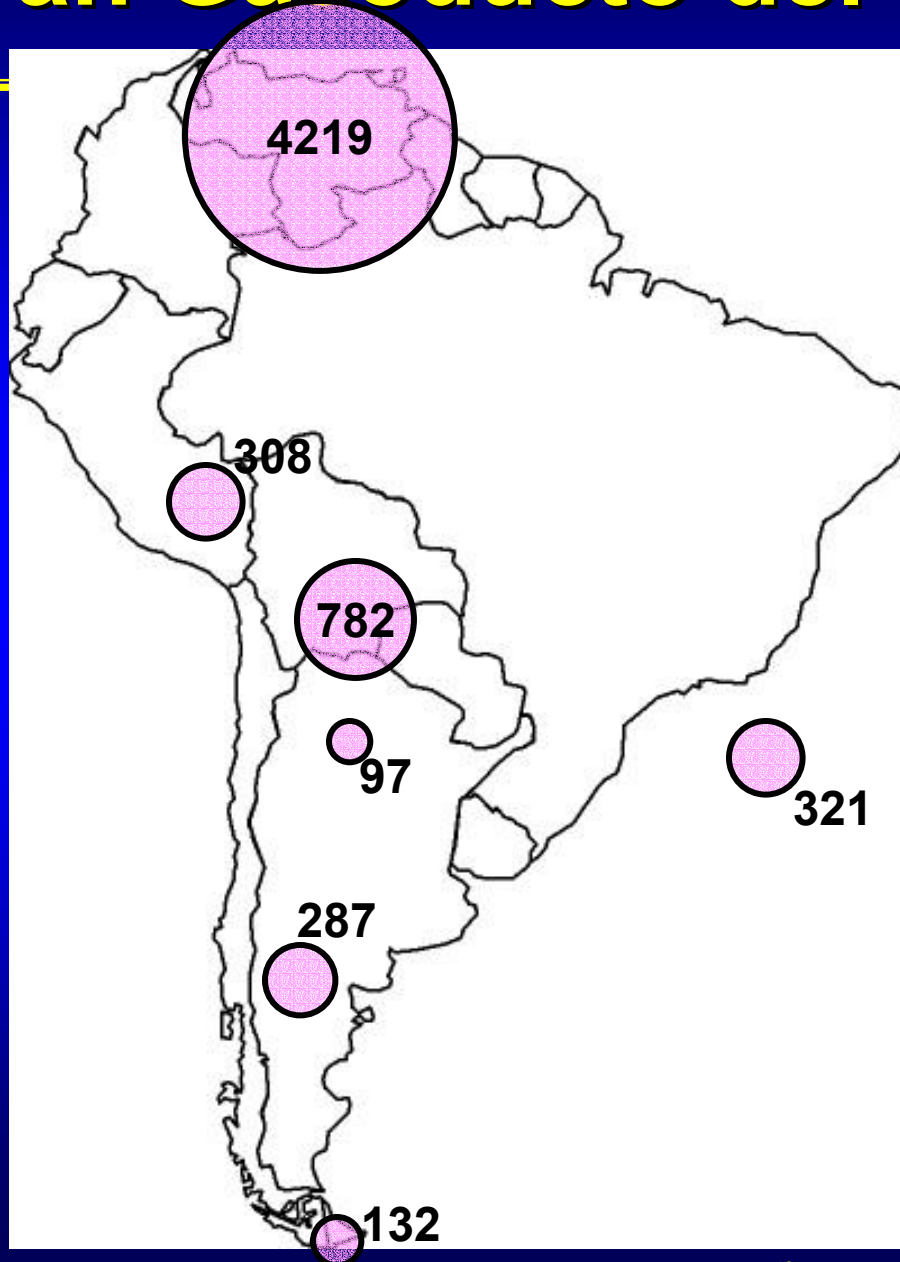
- Red de Gasoductos del Sur (Basically Gas from Peru to Chile and from Bolivia to Argentina and South of Brasil)
- Gran Gasoducto del Sur (Gas from Venezuela)
- LNG

Red de Gasoductos del Sur





Gran Gasoducto del Sur

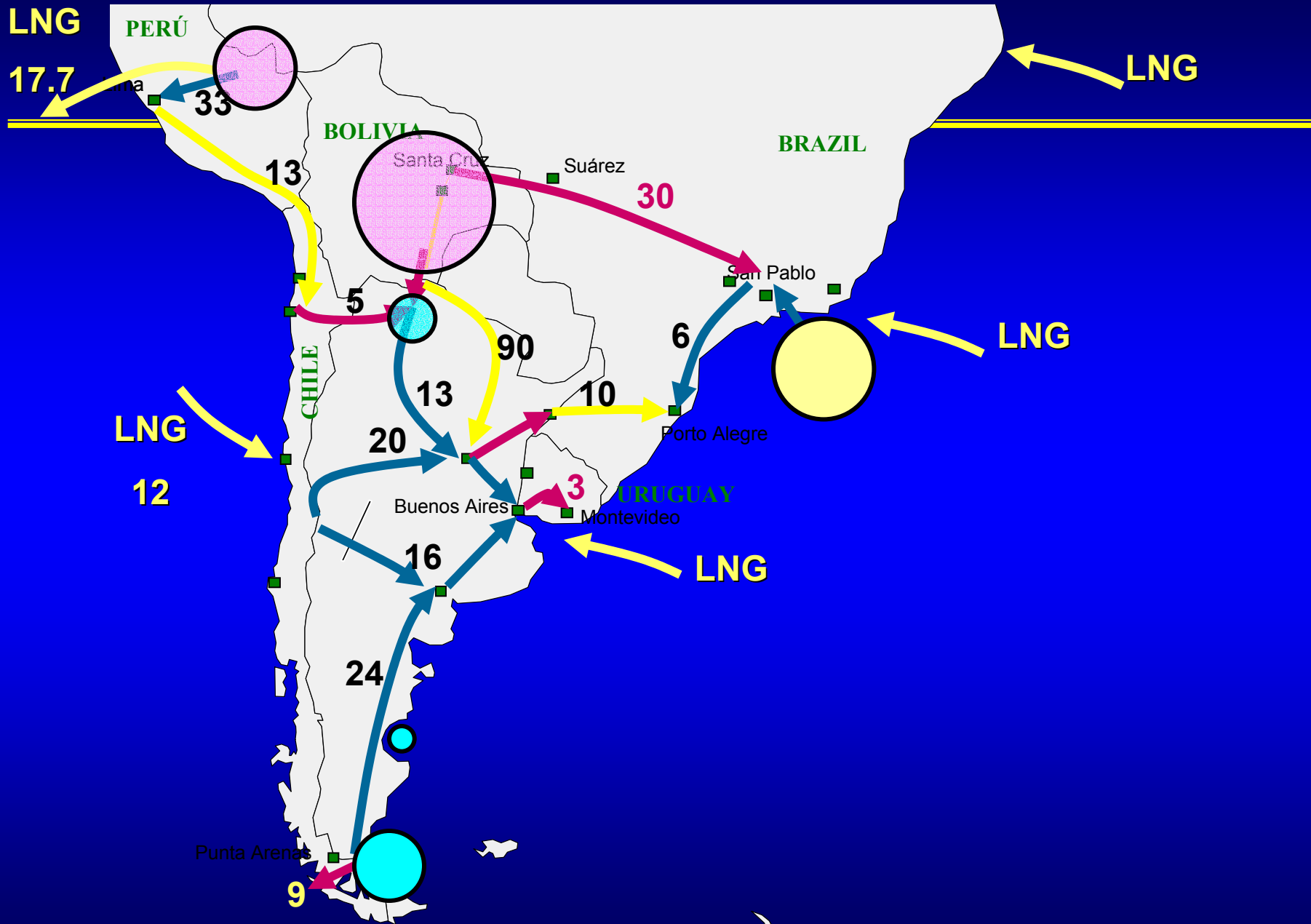


PROVEN RESERVES
(BCM) 2004







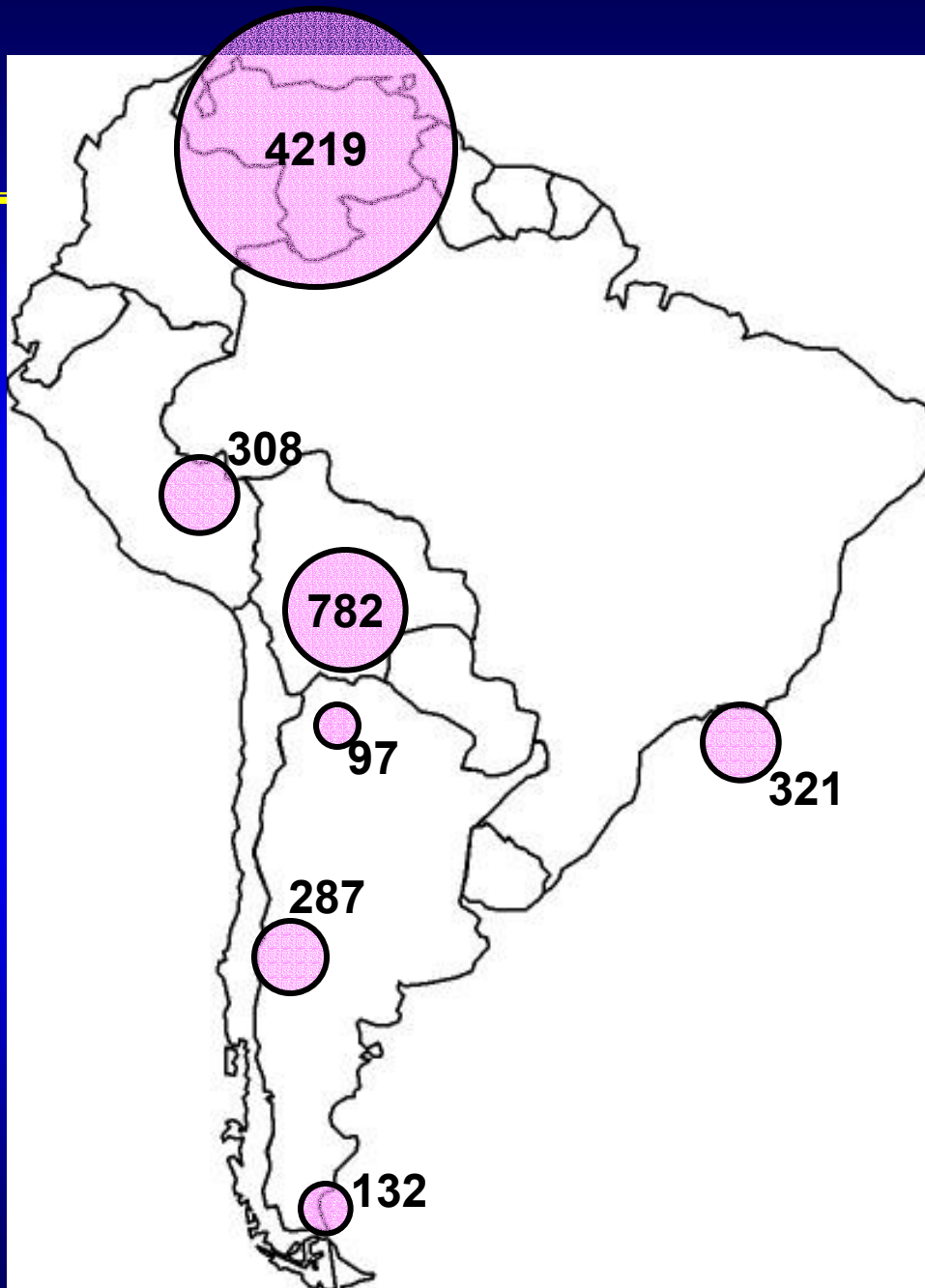


Conclusions

- **In 2015 the Southern Cone shortage will be about 100 MMm³/d of Natural Gas**
- **The Venezuela Pipeline and LNG will compete for this market**
- **Venezuela Pipeline**
 - **Investment Costs and Financing: Who Will Pay?**
- **LNG**
 - Cheap energy was considered the competitive advantage of the region. International LNG prices do not neutralizes such advantage?

The South American Natural Gas Market

End of Presentation



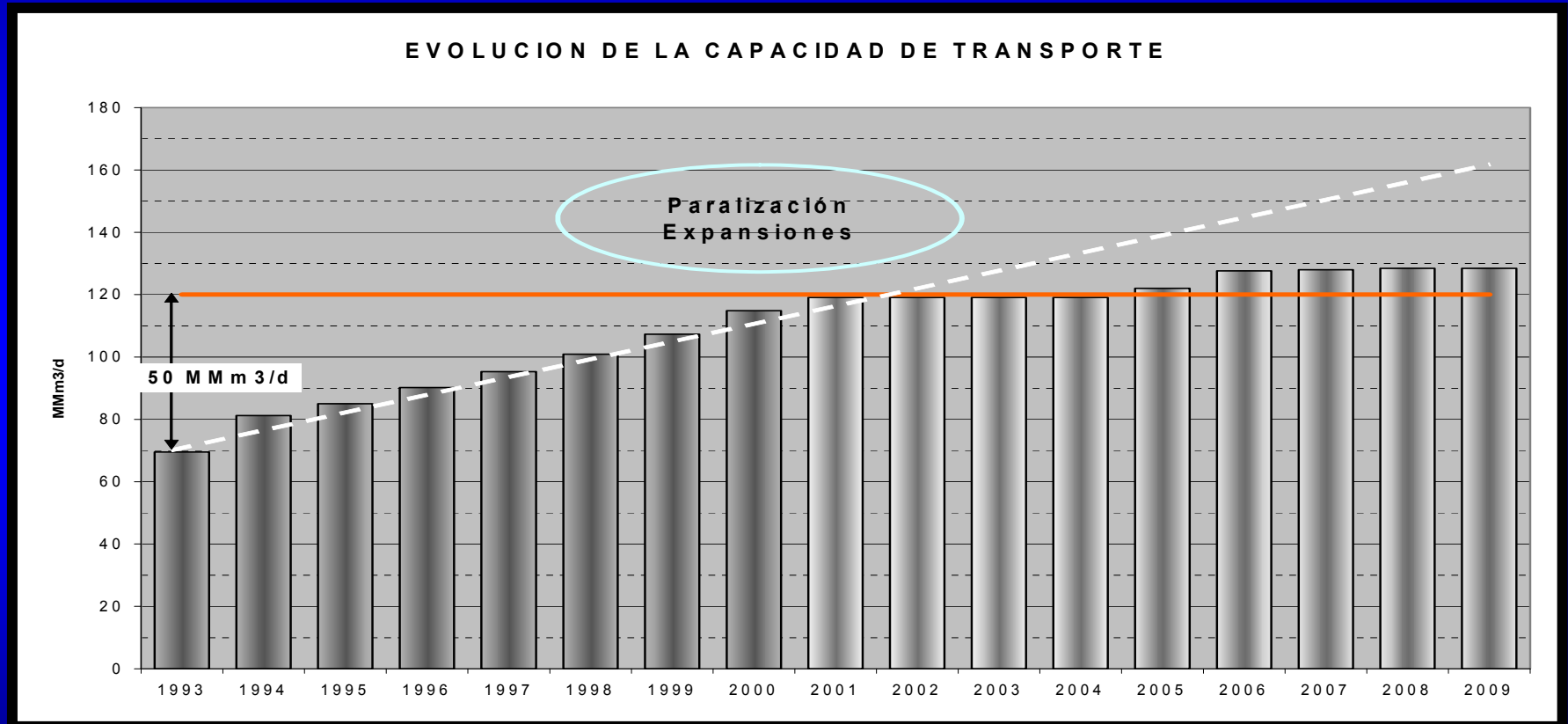
**RESERVAS
PROBADAS
(MM3/d)**

2004

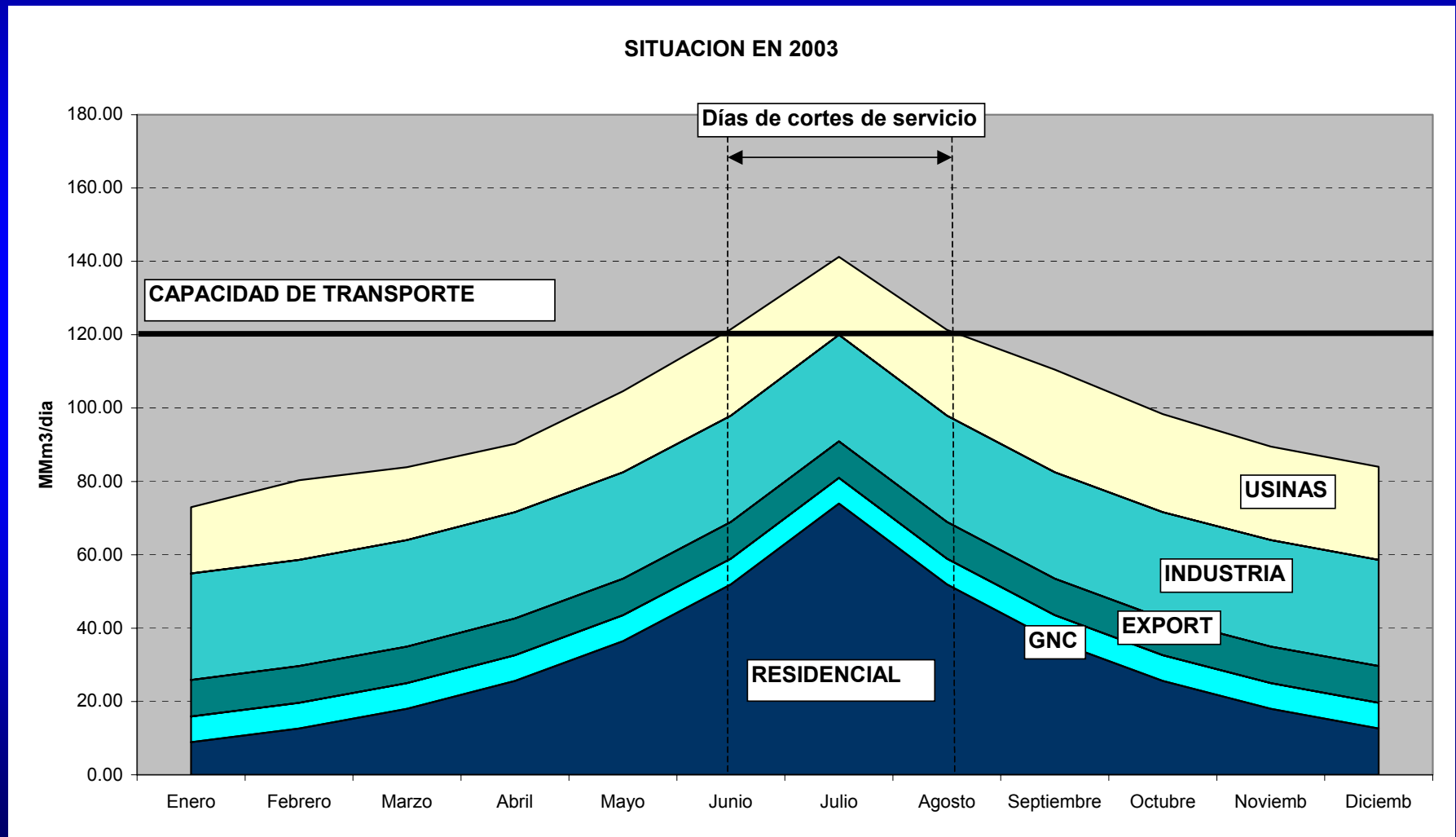
Situación de la Producción y Transporte de Gas

➤ **Situación del sistema de transporte**

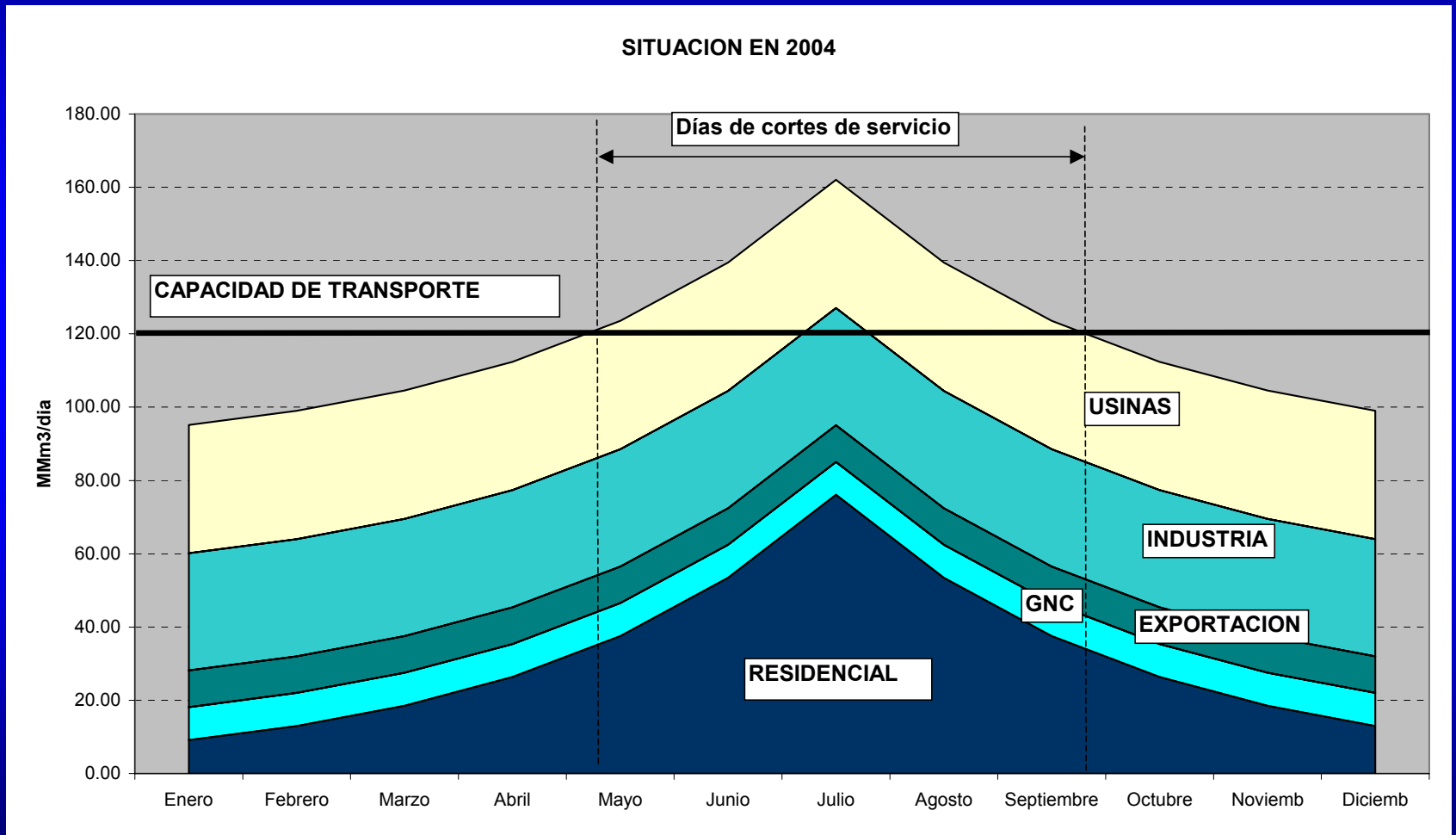
Evolución de la capacidad de transporte en los 90



Situación en el 2003



Situación en el 2004



Situación de la Producción y Transporte de Gas

- **Medidas tomadas por la Secretaría de Energía**

Natural Gas Balance - Argentina

