The Next Oil and Gas Reform in Mexico

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1. Why is Energy Reform essential for Mexico?

1. All hydrocarbons (oil and gas) in place belong to the Nation, by extension to the Mexican people. Mexican Contitution: the most restrictive regime in the world

Article 27: provides that, when it comes to hydrocarbons, "no concessions or contracts shall be granted … and the Nation shall carry out the exploitation of those substances, under the terms set forth in the respective Regulatory Law."

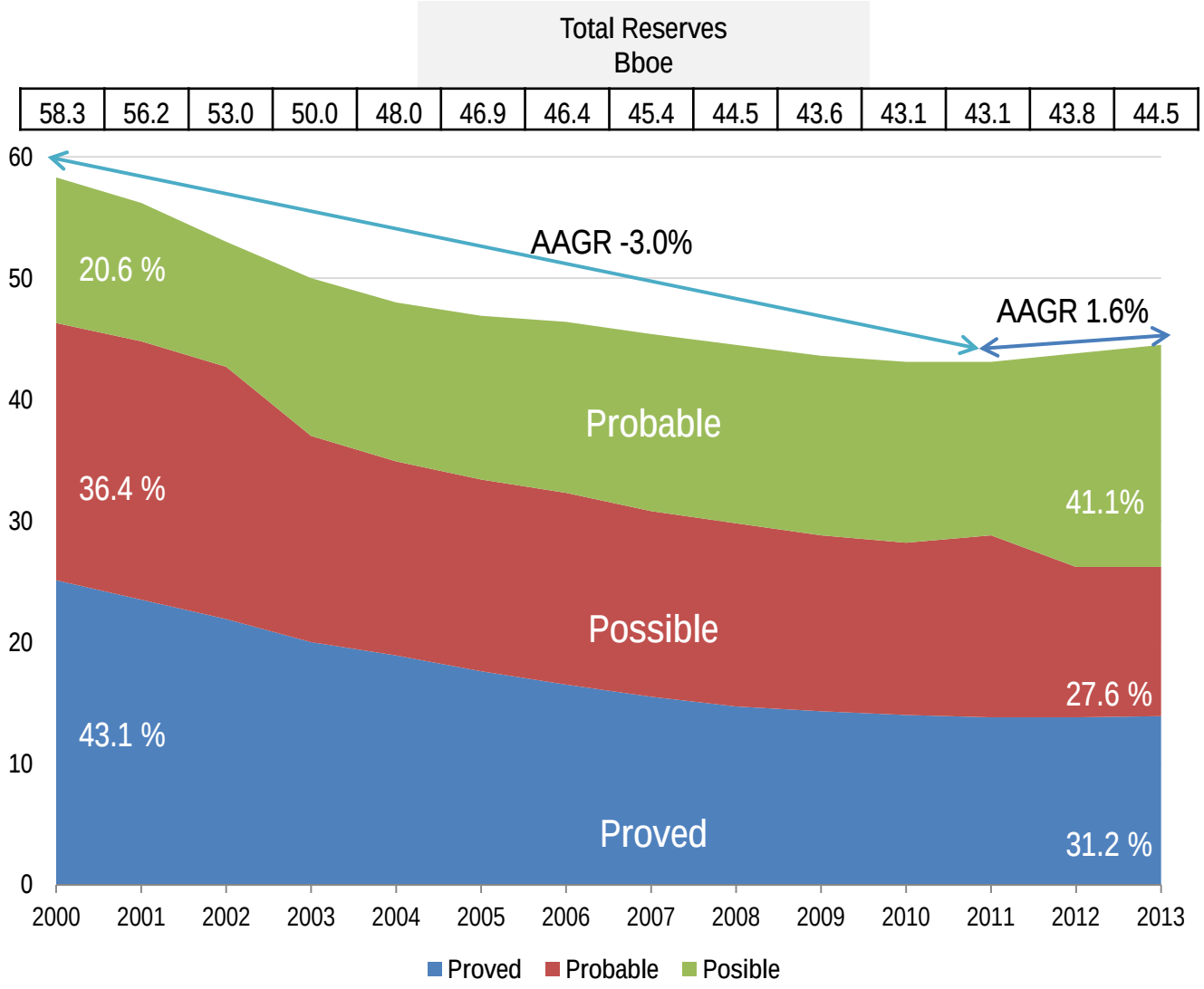
Article 28: states that hydrocarbons and basic petrochemicals are "strategic areas" reserved exclusively to the state

Specific O&G sectors closed to private capital include

- E&P
- Refining
- Gas processing
- Raw materials for petrochemicals
- Gas & liquids storage terminals
- Petroleum product pipelines

Today, most oil producing countries around the world have introduced legal amendments to allow foreign capital into their O&G industries: Mexico stands as an exception

1.1 Mexico's hydrocarbon reserves have declined for the last 10 years



Source: Pemex

- Proven reserves were the most affected
- The declining tendency changed in 2011. Replacement rates above 100%
- Main reserve additions in 2011 comprise discoveries in shallow and deep water. Some inland
- In 2012, Pemex announced three major discoveries in the Gulf of Mexico:
  - Trion 1: 8,200 feet of water depth and 350 MMB of potential oil reserves
  - Kunah-1: 7,000 feet of water depth and 1.5-2 Tcf of natural gas
  - Supremus 1: 9,500 feet of water depth and 125 MMB of oil
- In addition, there was the discovery of an inland field: Navegante, with up to 500 MMboe of potential reserves

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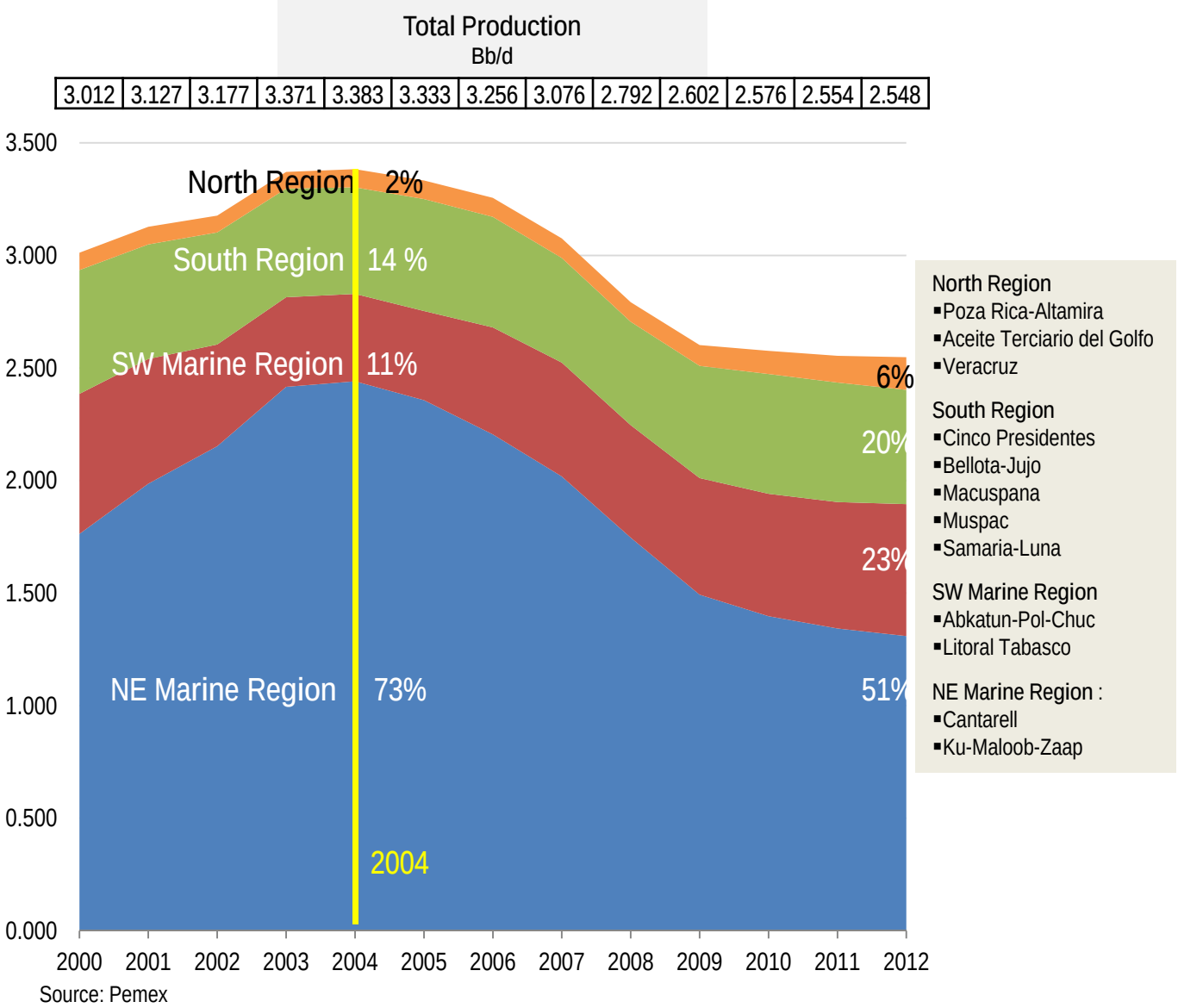
1.1 Oil production has dropped 835 MBD since 2004



North Region
- Poza Rica-Altamira
- Aceite Terciario del Golfo
- Veracruz

South Region
- Cinco Presidentes
- Bellota-Jujo
- Macuspana
- Muspac
- Samaria-Luna

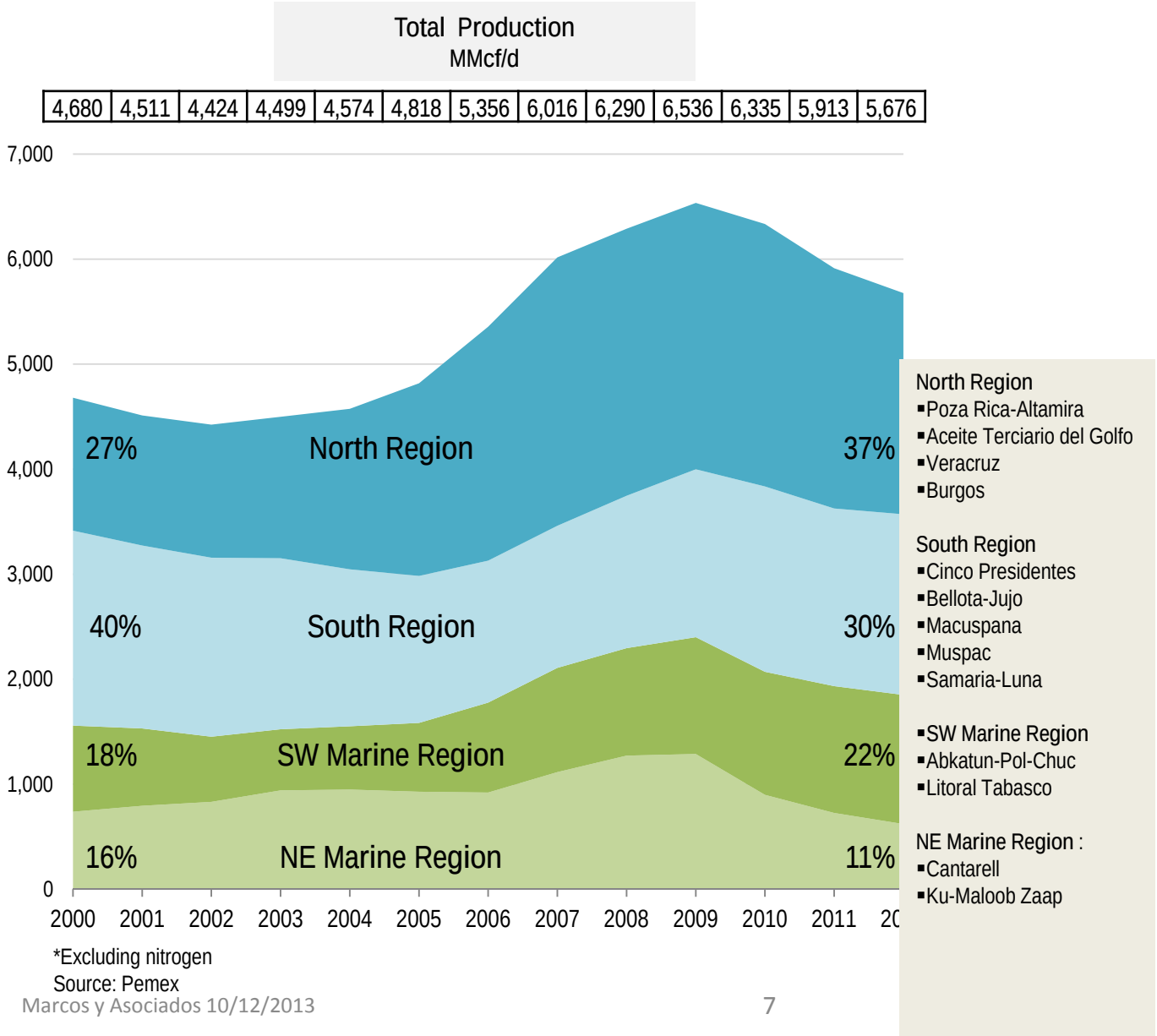
SW Marine Region
- Abkatun-Pol-Chuc
- Litoral Tabasco

NE Marine Region :
- Cantarell
- Ku-Maloob-Zaap

Source: Pemex

- Since its peak in 2004, oil production decreased due to the steep decline of Cantarell. From 2.1 MM BD in 2004 to less than 400 MBD today.
- Production is expected to increase again, according to official estimates, mainly in the marine regions
- Ku-Maloob-Zaap represents 1/3 of total crude production

1.1 Natural gas production* increased momentarily until 2009; has declined since



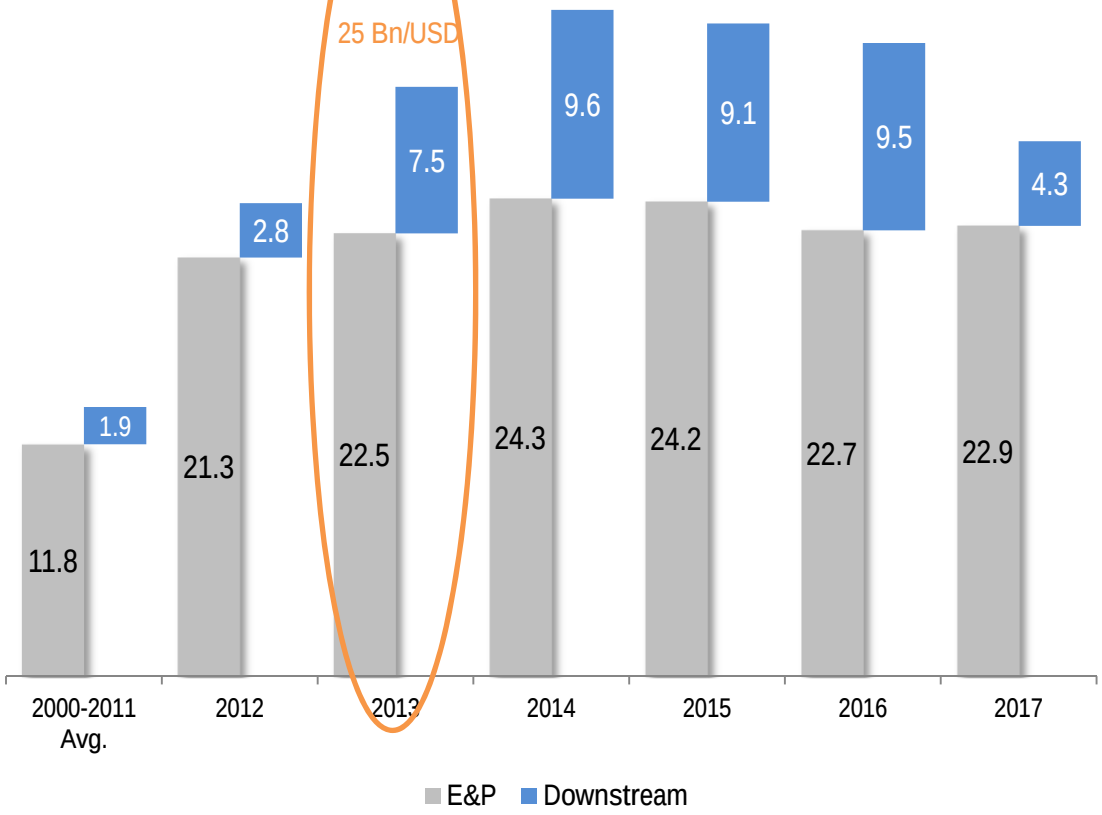
*Excluding nitrogen
Source: Pemex

- Natural gas production expanded from 2003 to 2009 mainly due to an increasing output from the North Region (Burgos)
- However, production declined again recently due to lower output from NE Marine Region
- Since 2006 some of the nitrogen injected in Cantarell and other fields has surfaced, affecting gas specs.

1.1 Pemex capital expenditure for 2013-2017, expected to increase

Projected CAPEX
Bilion USD

	2000-2011 Avg.	2012	2013	2014	2015	2016	2017
Pemex Total	13.7	24.1	30.0	33.9	33.2	32.2	27.2



- Pemex E&P investments between 2013-2017 averages 23.3 Bn
- Downstream CAPEX growth projected for 2013-2016 would come from the new Tula Refinery project suspended temporarily.
- However, the 2013 expected CAPEX of 30 Bn/USD was reduced by Congress to 25 Bn/USD, affecting mainly anticipated investments for the new Tula Refinery

Source: Pemex, Business Plan 2013-2017

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1.1 In summary, Pemex capabilities to supply a growing market and to mantain its fiscal contribution, has decline signifficantly

In 2005, oil and gas revenues accounted for 41% of goverment revenue has fallen to about 31%; still arround $70 Bn dolars

From 2000 to 2012:

- Total hydrocarbon reserves declined 23%
- Oil production decreased 25%
- Oil exports have dropped 32%
- Natural gas production increased until 2010, but since then has been declining. 2012 imports at 2.2 BCR represented 1/3 of national consumption
- Natural gas pipeline network has not grow significantly, though several new projects are in development stage
- During this period, refining capacity increased just 10%, but utilization has been averaging 70%
- Gasoline production remains stagnant while consumption keeps growing. Imports now account for 50% of local demand

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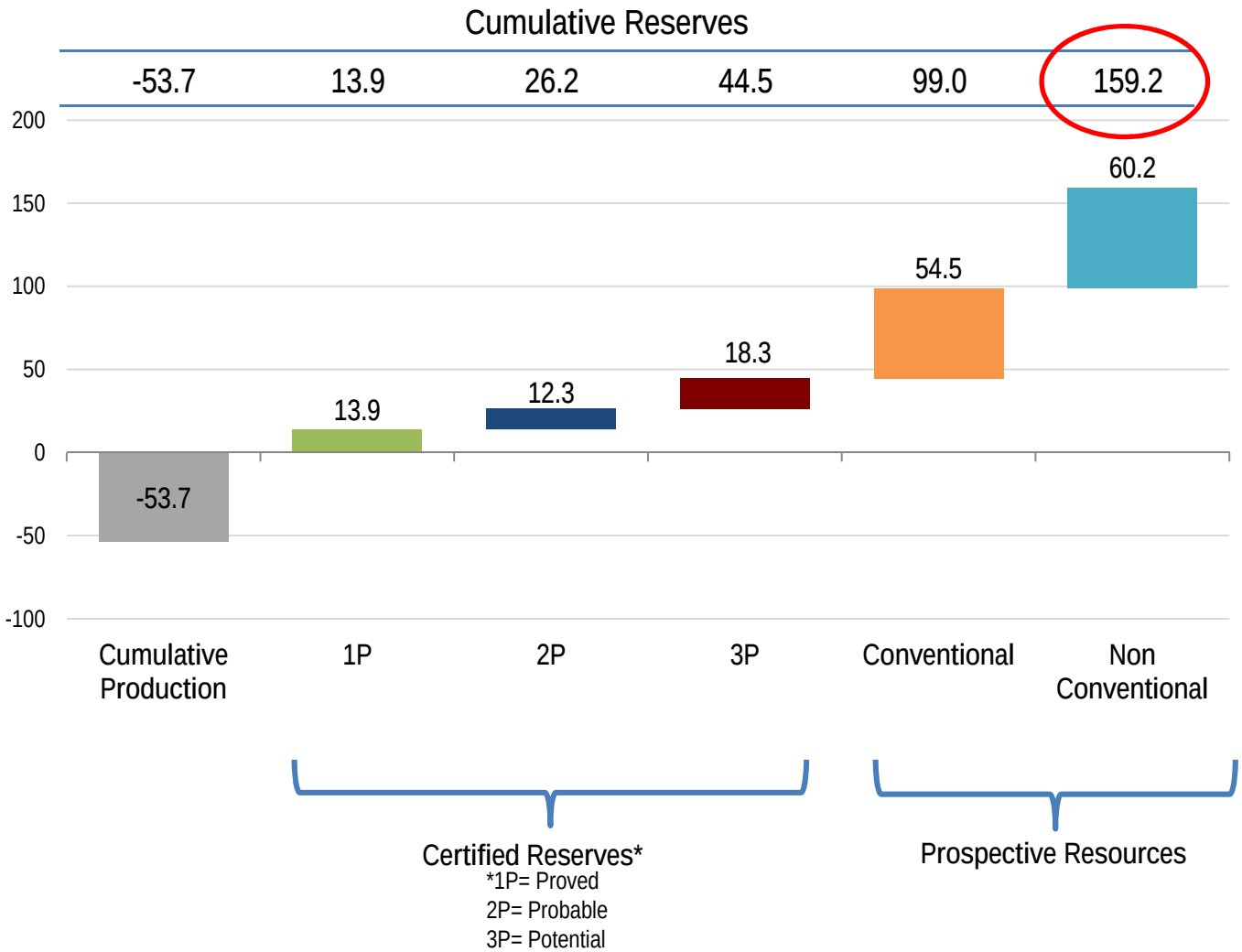
1.2 However, Mexico has a promising potential of O&G resources that need to be developed

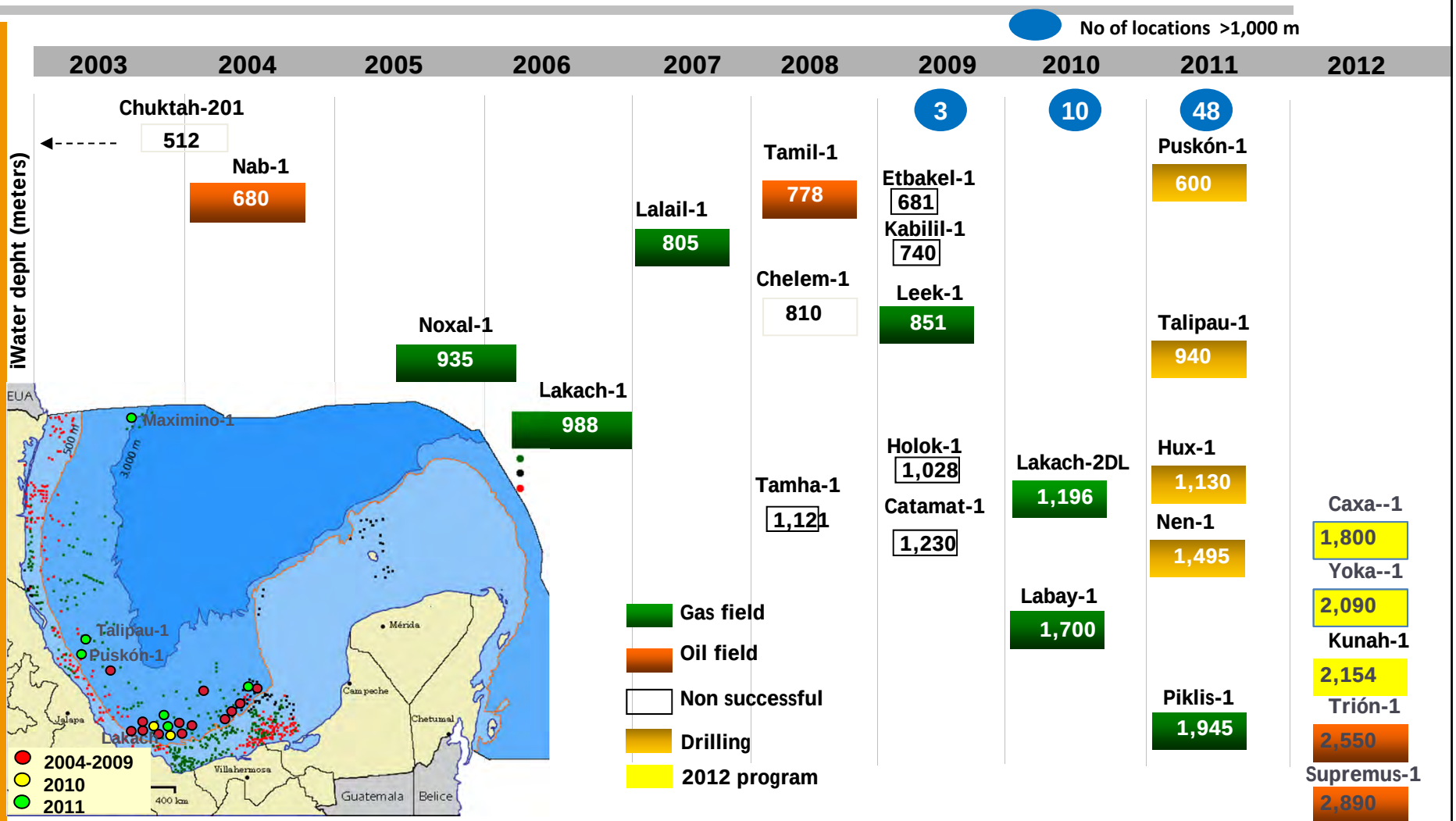
Hydrocarbon reserves potential as of January 1st 2012
Bboe



Source: Pemex

- Mexico's certified hydrocarbon reserves as of 2012 reached 44.5 Bn BOE, of which 31.2% are proven
- Prospective resources amount to 115 Bn BOE, 52% of which are non conventional

1.2 Pemex Gulf of México deepwater initial exploration results are promissory



Source: Pemex

Deep water budget (wells drilling, seismic evaluation, studies)

2011	2012	2013
1.15 Billion USD	1.08 Billion USD	2.7 Billion USD

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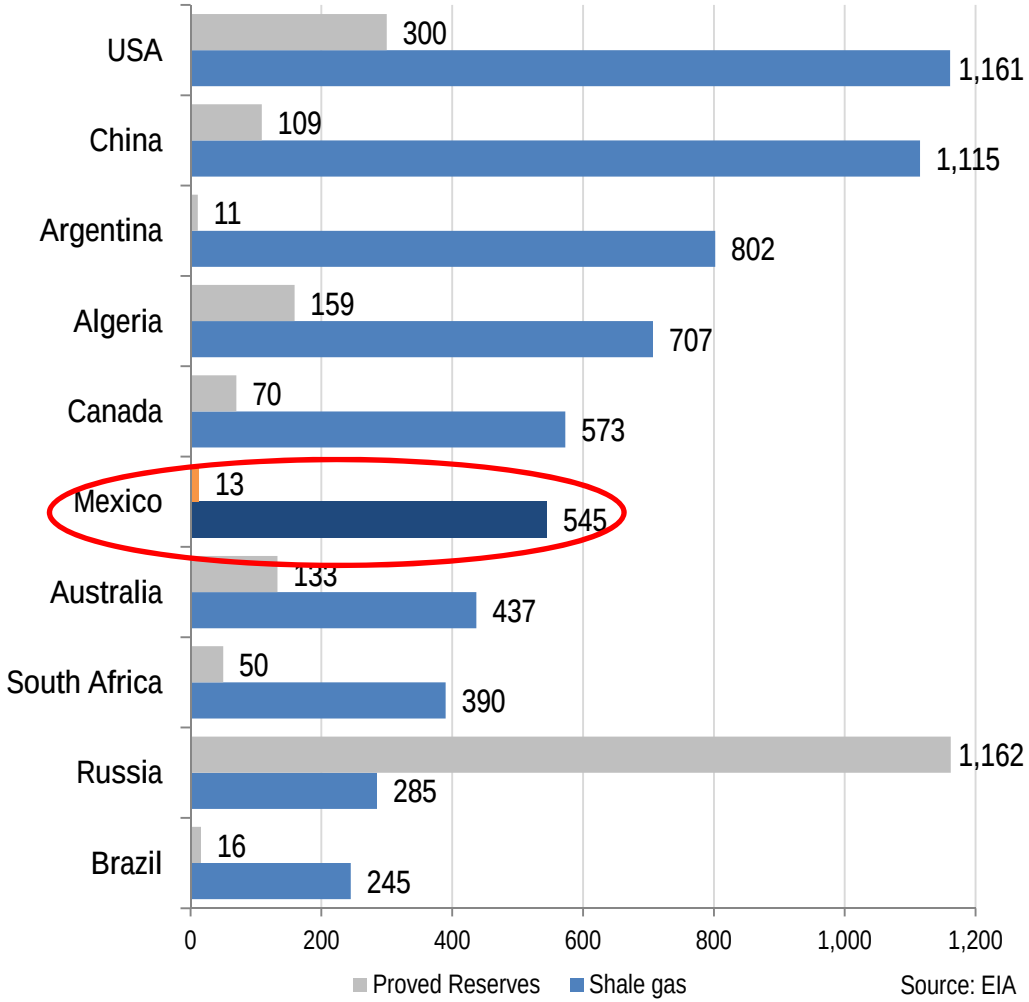
1.2 According to EIA, Mexico has the world's sixth biggest shale gas reserves, located in the northeastern states neighboring Texas. So far, not developed by the State Monopoly

Mexican Provinces

Underexploration

Source: Pemex

Countries with biggest technically recoverable shale reserves vs. proved conventional reserves 2013 TCF



Source: EIA

2. Energy Reform Agenda

2. The new administration´s energy agenda

- Maintain the property of the State over all Mexican hydrocarbon resources. Capture “economic rent“
- Transform Pemex into a Productive State-owned Enterprise with an efficient corporate government, able to compete with international oil companies
- Increase the country’s oil and gas E&P capabilities to maximize royalties
- Establish a competitive framework in the mid & downstream sectors (refining, gas processing, distribution and petrochemicals)
- Reinforce the regulatory capabilities of the National Hydrocarbon Commission to oversee Pemex and the new private operators
- Support the development of a value chain of local suppliers for the O&G industry
- Encourage the use of renewable energy sources to address climate change

2. Main Agreemenrts in the Pact for Mexico

Ownership and management of hydrocarbon resources will remain under Mexican State jurisdiction, as much as Pemex as a National Oil Company (Agreement N° 54 PPM*)

I Strengthen Pemex as a Public Productive Company to compete in an open market:

- Transform Pemex into a "Public Productive Company", (A. 55) relieving it from its monopoly duties
- Create a truly independent Pemex and Corporate Board (A.55), with capacity to negotiate alliances with other oil companies
- Maximize Hydrocarbons "economic rent" (A.56), and introduce a new fiscal regime for Pemex and other operators to encourage competitiveness
- Negotiate a more flexible labor contract

II Reinforce the regulatory Agencies and its legal capacities to oversee Pemex and private newcomers to the industry

- National Hydrocarbons Commission (A. 58)
- Energy Regulatory Commission
- Economic Competence Commission
- Establish obligations for Pemex to adopt efficiency and transparency policies equivalent to other global oil companies (A. 58)

III Liberation of the O&G industry to promote market competition:

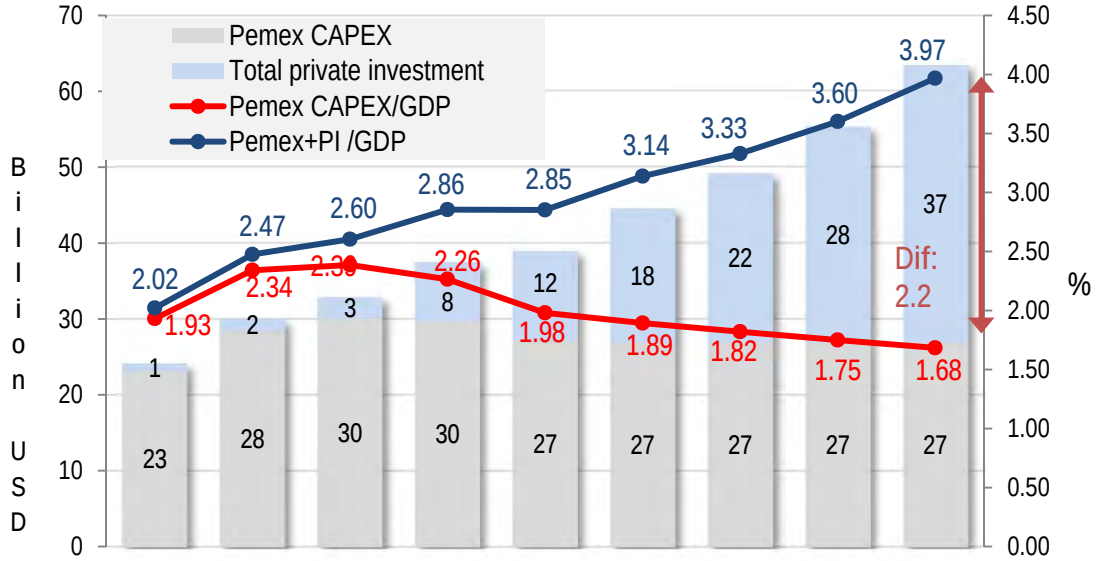
- Production
- Allow private investment in downstream activities like oil refining, gas processing and petrochemicals, including transportation, storage and local sales (A. 57)
- Eliminate price controls

IV

Promote the creation of a local supply chain, the increase of local content (A. 59) and the development of an indigenous technology base for the oil industry

*Pact for Mexico agreement

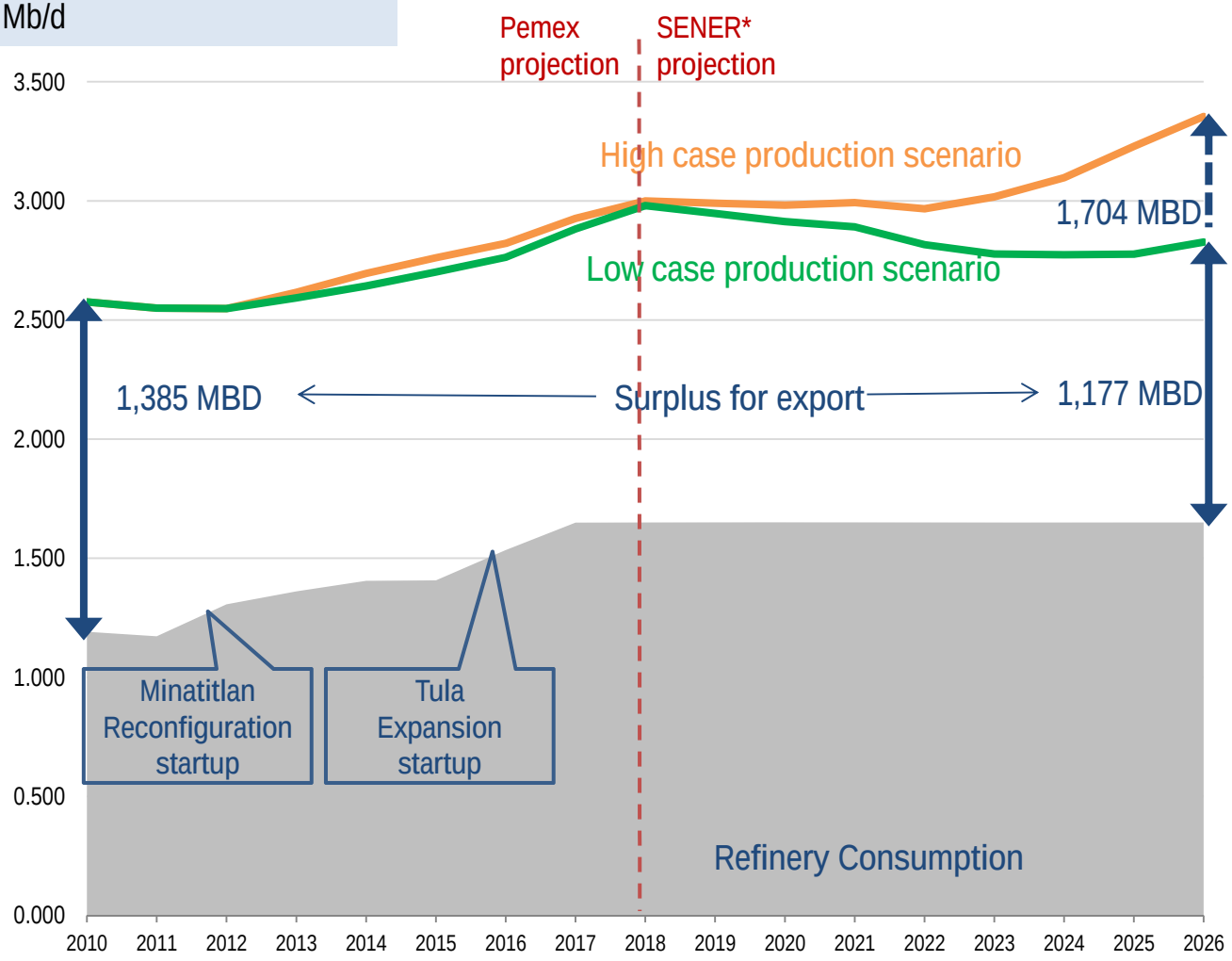
2. Mexico oil & gas potential CAPEX



	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	Agr
Pemex CAPEX	23	28	30	30	27	27	27	27	27	246	1.9
Private investment											
Integral contracts	0	1	1	2	2	2	3	5	6	22	
Dee water				1	2	2	4	5	8	22	
Shale gas				0	1	2	3	5	6	17	
New refining capacity				2	3	4	3	3	4	18	
Gas processing and fractionation				0	0	0	0	0	0	2	
Gas pipelines			1	1	2	3	3	3	3	16	
Cogeneration projects	0	0	0	1	1	1	1	1	1	5	
Petrochemicals	0	1	1	0	1	1	2	3	4	13	
Midstream				1	2	2	3	4	5	16	
Total private investment	1	2	3	8	12	18	22	28	37	130	
Pemex + private investmet	24	30	33	38	39	45	49	55	63	376	12.8
GDP current prices (Trillion USD)	1,197	1,215	1,264	1,315	1,367	1,422	1,479	1,538	1,599	12,966	3.7
Pemex CAPEX/GDP	1.93	2.34	2.39	2.26	1.98	1.89	1.82	1.75	1.68	1.90	
Prmex+PI /GDP	2.02	2.47	2.60	2.86	2.85	3.14	3.33	3.60	3.97	2.90	

2. An increase in CAPEX should favor long term oil production and exports

Projected crude oil balance
Mb/d



- In the low case scenario, a 0.67% annual production growth rate is forecasted, which would lead to a stable oil surplus for export
- In the high case scenario, production would grow 1.9% per year, expanding the export base

Source: Pemex, Bussines Plan 2013-2017. *Secretaria de Energía (SENER), Crude oil prospective 2012-2026

2. Transition to a free market: Post- Reform

- In Electricity: A new national State- owned / transmition operator; independent from CFE
  -Perhaps the most important issue … widespread effects
- In oil and oil-products: gasoline, diesel and
  - New refineries ? or acquisition of refinay assets in the USA
- In natural gas and gas liquids
  -An independent operator, to promote the additional capacity required
- Mid Stream infraestructure
- Foreing investment in distribution and marketing?

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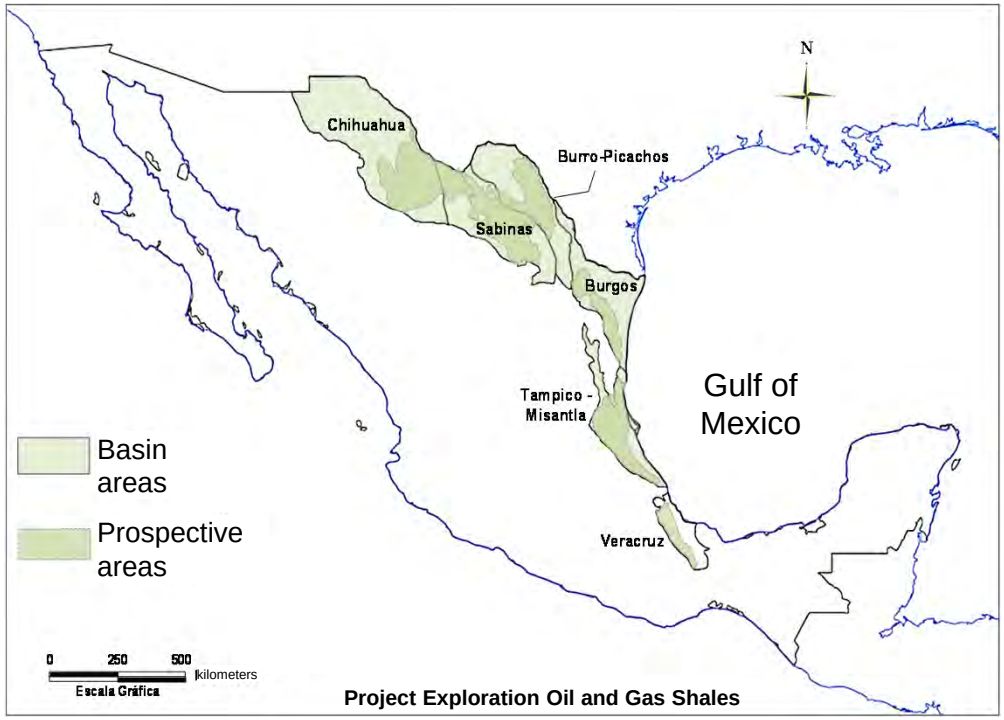
Annex

Shale Oil and Gas

3. Pemex exploration program for shale plays is very limited and is not expected to have a noticeable impact on production in the foreseeable future



Strategy

- ✓ **Provide certainty and quantify prospective resources, type of hydrocarbons and appraise productivity in the prospective areas.**
- ✓ **Preferential assessment of oil and wet-gas prone areas.**
- ✓ **Continue geological and geochemical studies to increase the understanding of unconventional petroleum systems.**
- ✓ **Apply state-of-the-art technology to reduce uncertainty in these plays.**

Short Term Goals

In a 4-year horizon:

- ✓ **Drill 175 wells**
- ✓ **Acquire ~10,000 km^2 of 3D seismic**
- ✓ **Invest ~3,000 million USD**

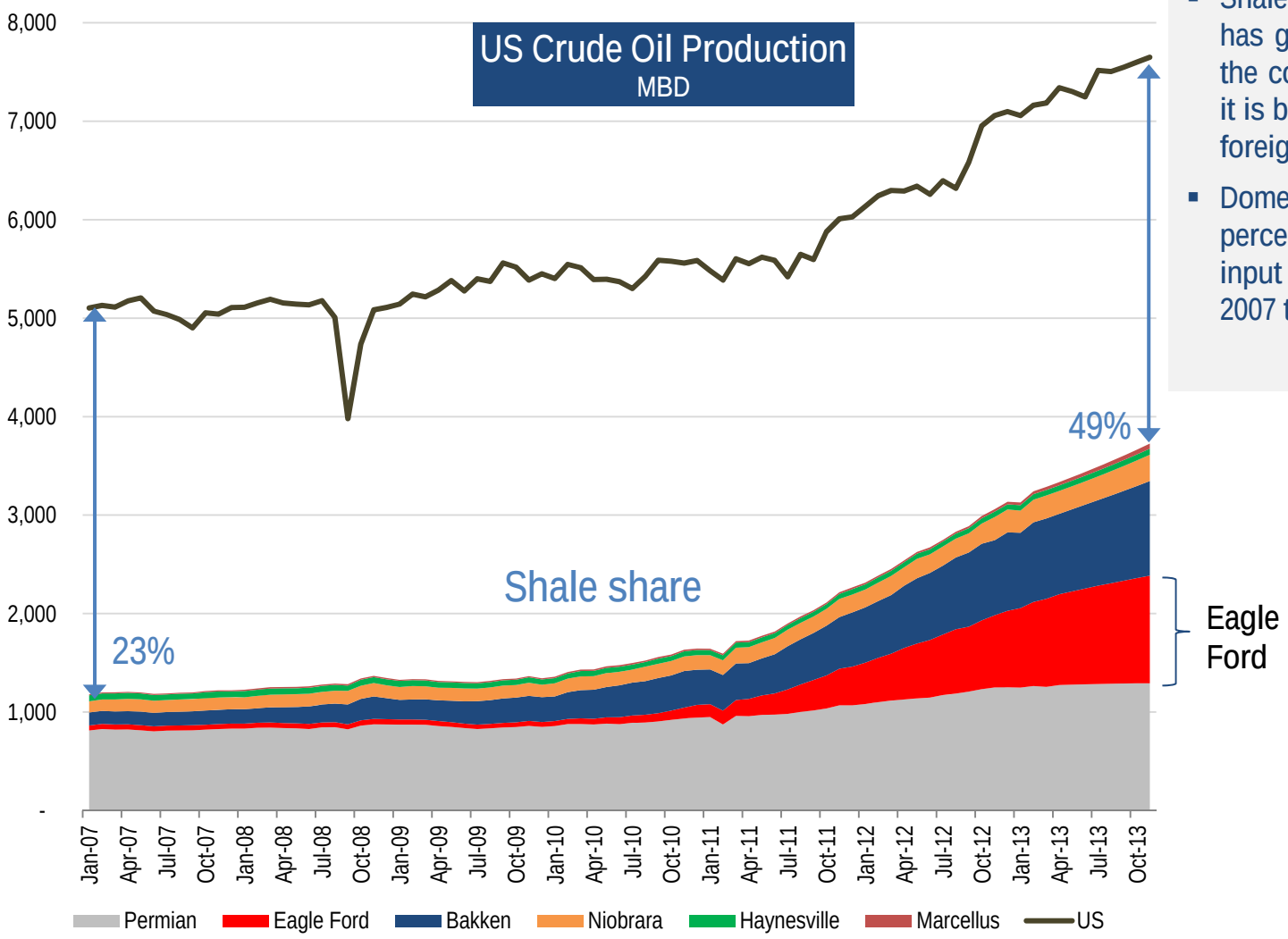
Source: Pemex

Long Term Estimates for

Massive development Stage

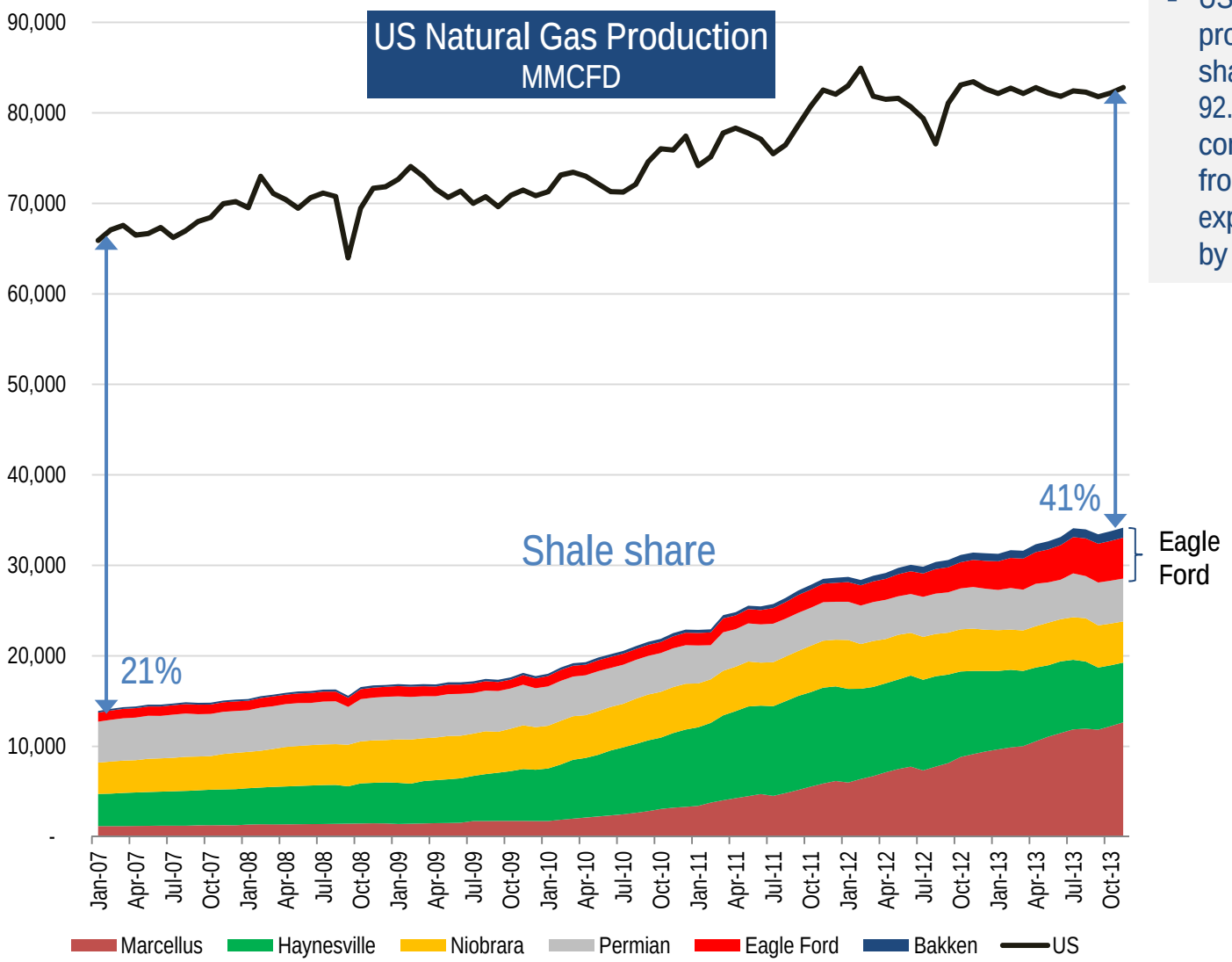
- ✓ **Drill 27,000 wells**
- ✓ **Invest $ 170 Bn Dlls**

3. By comparison, US oil production from the six main shale plays across the country now account for 49% of total production, up from 23% in 2007



- Shale oil production in the US has given a new perspective to the country's energy balance, as it is becoming less dependant on foreign oil
- Domestic oil production as a percentage of US refineries net input has increased from 32% in 2007 to 51% in October 2013

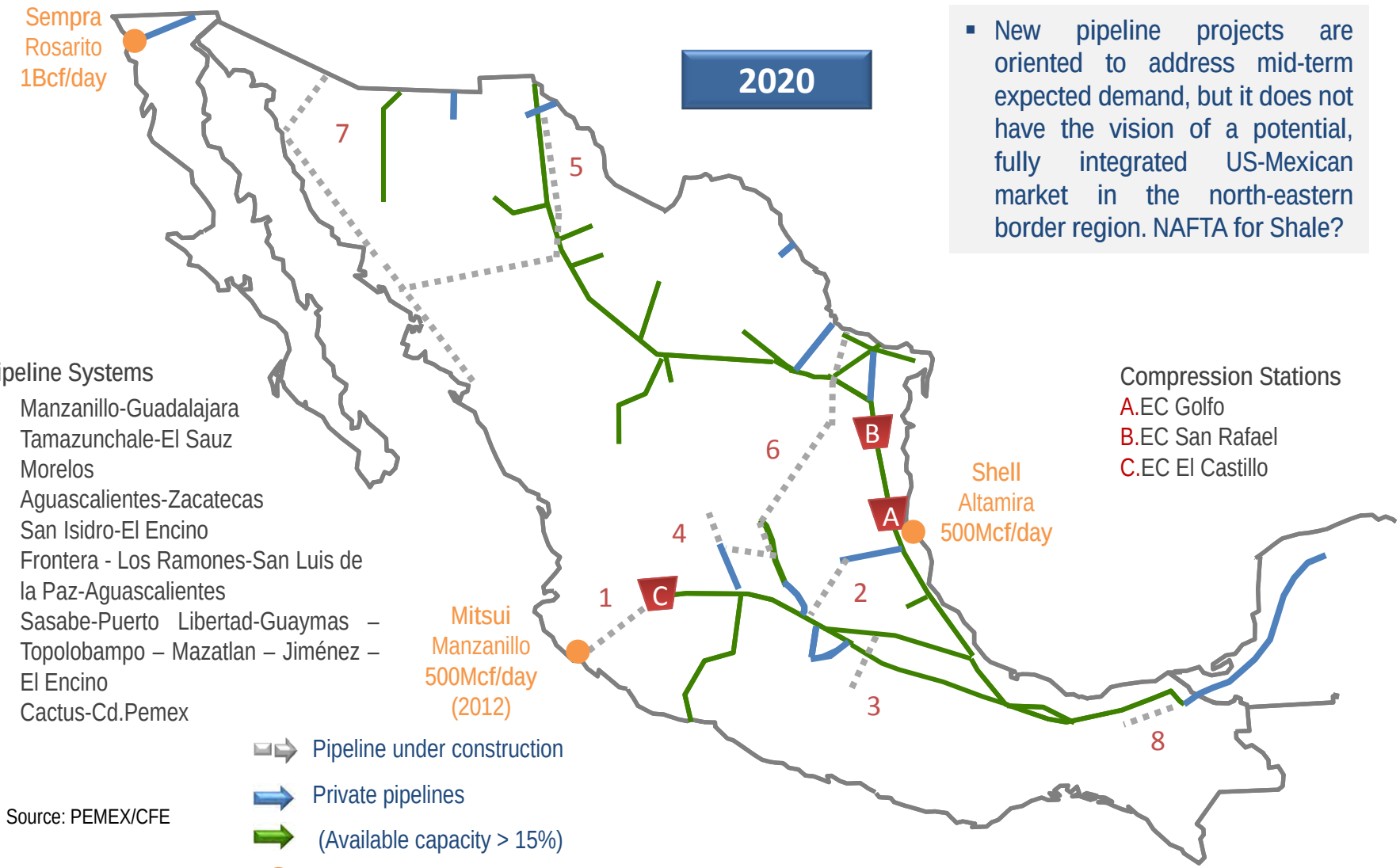
3. Natural gas production from the same main shale plays, account to 41% of total production, up from 21% in 2007



- US dry natural gas domestic production, supported by shale gas output, averaged 92.1% of total domestic consumption in 2013, up from 83.4% in 2007, and it is expected to reach a surplus by 2020

3. Two of the biggest shale plays so far discovered in Texas, border with México

3.Mexico's pipeline program to 2020 aims to mitigate mid-term supply constraints. It is not designed to take full advantage of the Northern border shale potential



- New pipeline projects are oriented to address mid-term expected demand, but it does not have the vision of a potential, fully integrated US-Mexican market in the north-eastern border region. NAFTA for Shale?

Pipeline Systems

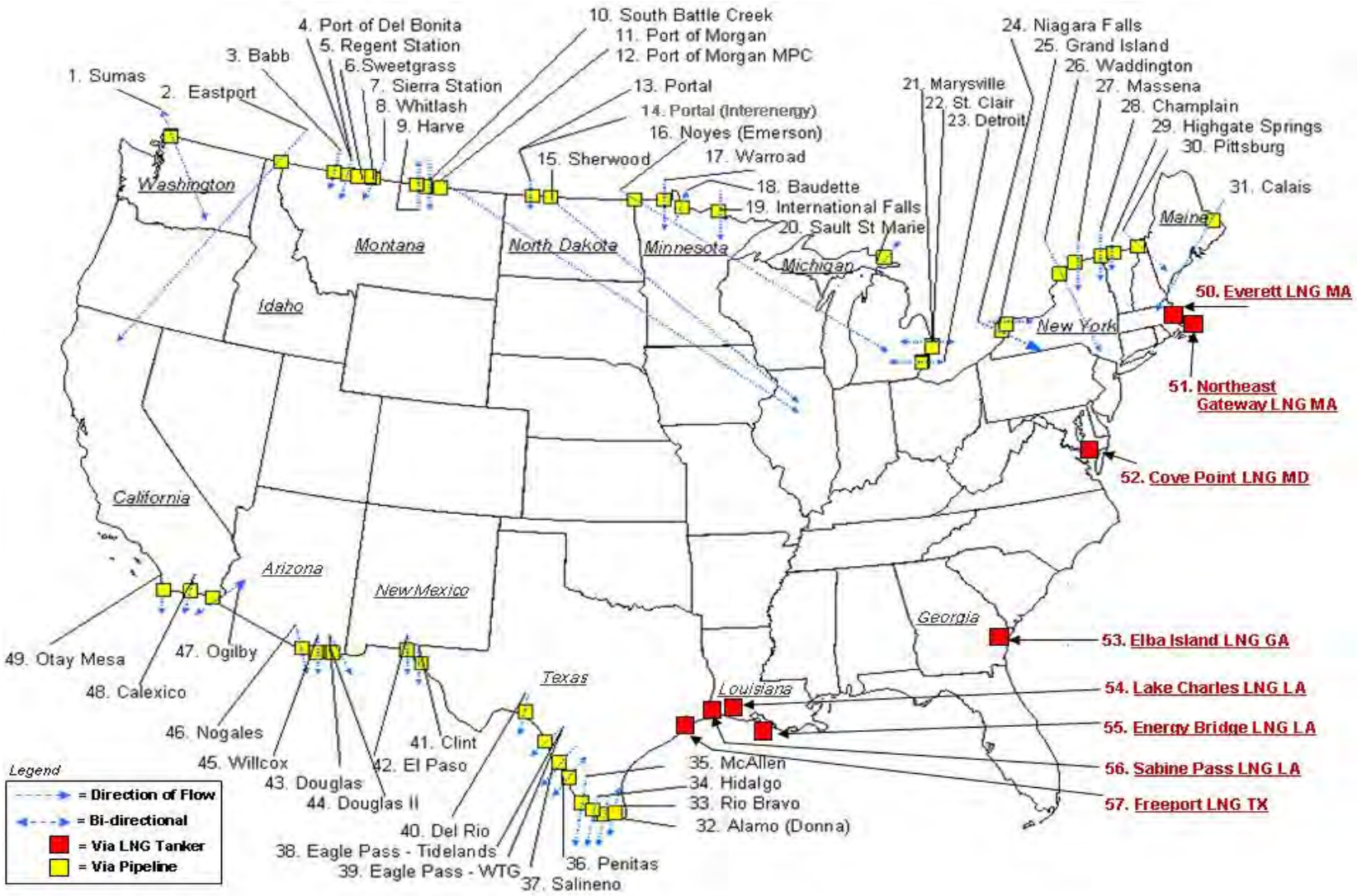
1. Manzanillo-Guadalajara
2. Tamazunchale-El Sauz
3. Morelos
4. Aguascalientes-Zacatecas
5. San Isidro-El Encino
6. Frontera - Los Ramones-San Luis de la Paz-Aguascalientes
7. Sasabe-Puerto Libertad-Guaymas – Topolobampo – Mazatlan – Jiménez – El Encino
8. Cactus-Cd.Pemex

Compression Stations

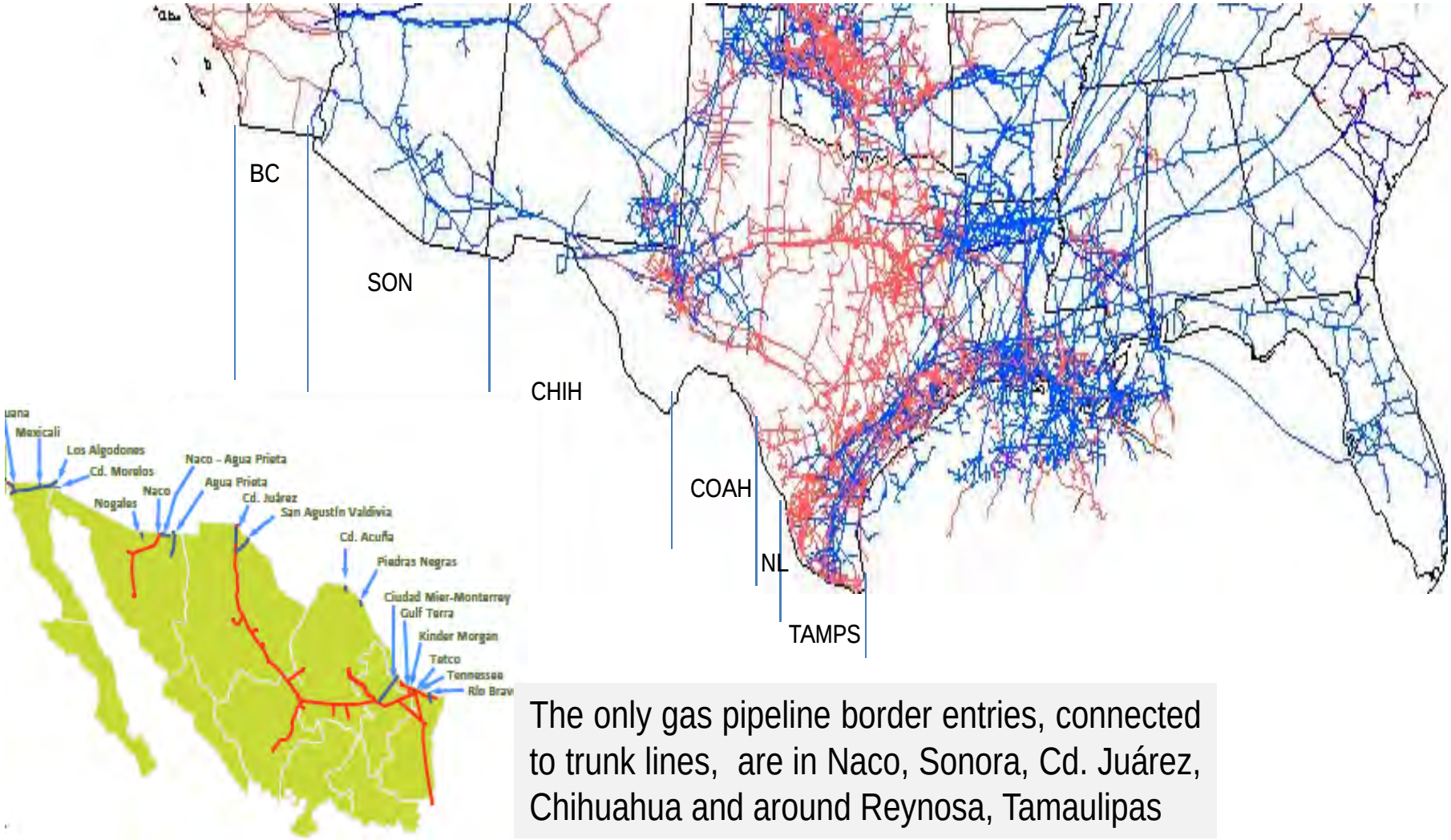
A.EC Golfo
B.EC San Rafael
C.EC El Castillo

Source: PEMEX/CFE

3. Existing US-Mexico border gas entry points are basically connected to short regional infrastructure, while Canada-US interconnections comprise numerous trunk lines



3.The US gas pipeline network is heavily concentrated near Coahuila, Nuevo León and Tamaulipas



The only gas pipeline border entries, connected to trunk lines, are in Naco, Sonora, Cd. Juárez, Chihuahua and around Reynosa, Tamaulipas

3. Shale plays: Eagle Ford and México

Topic	U.S.	Mexico
O&G sector ownership	All Private	State owned (Pemex)
Mineral rights/ Booking of reserves (?)	Land Owner	Mexican Nation
Land rights	State / Private	Private / communal (ejidos)
Exploration	Mature	Preliminary
Infrastructure (roads, pipelines)	Abundant	Very limited
Commercial production	Since 2008	None
Local capital / financing	Plenty	Scarce
Qualified labor	Sufficient	Limited
Safety	Under control	High Risk
Water availability	Adequate 1.7% of state use	Scarce
Benefits to local Communities	≈90%	Almost nill (federal royalties)
Regulatory Experience	Several Agencies	Only… (2009) very limited

After constitutional amendment in Mexico, we need to design a New NAFTA for Shale

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