



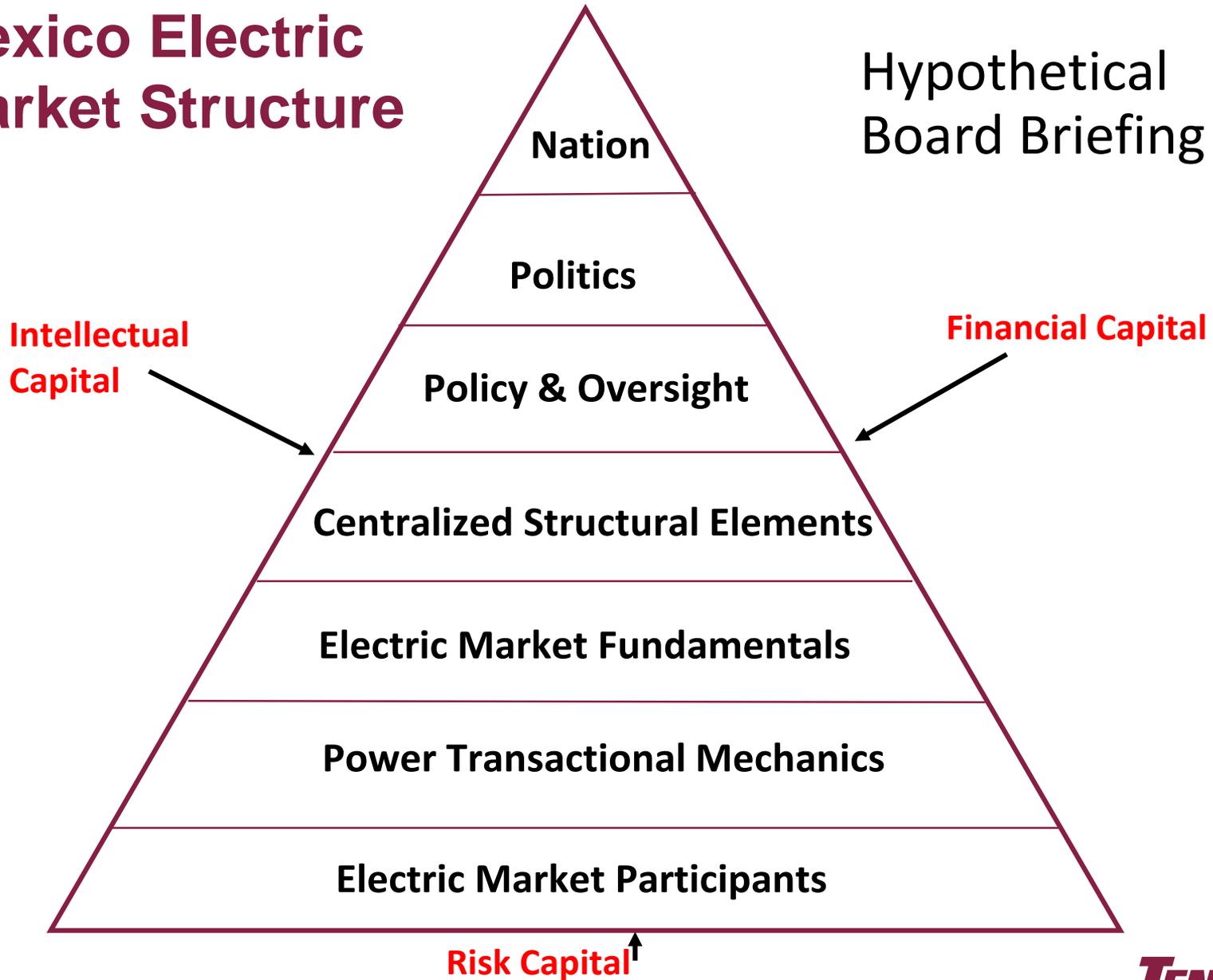
The Mexican Electric Market Meets Socialism in the AMLO Dimension

Bob Anderson

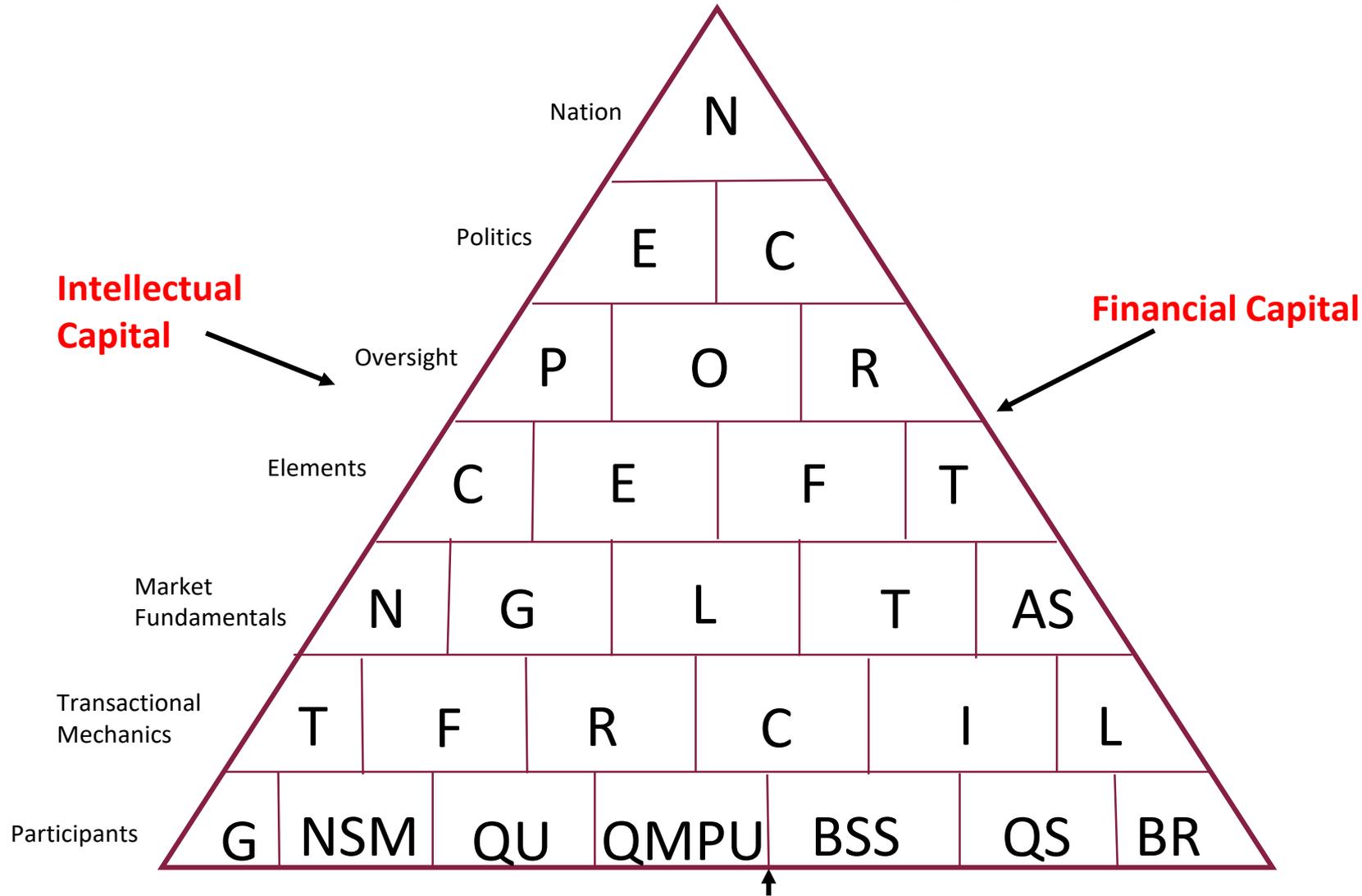
TENASKA[®]

Mexico Electric Market Structure

Hypothetical Board Briefing



Mexico Market Structure



Mexico

- The large majority of its citizens live in urban areas (79%). 132,000,000 people in Mexico making it the largest Spanish speaking country in the world. It is also the 10th largest country by population in the world. 21,000,000 live in Mexico City making it the most populous city in the western hemisphere.
- Mexico's GDP is roughly 125% of Texas's GDP with approximately 400% of its population. **Mexico City** is approximately 70% of the entire Texas population.
- Great solar and wind natural resources with Sonoran Desert, Isthmus and Mountain ridgelines.



Mexico

- Rule of Law and Constitution modeled after the U.S.
- Number 1 trading partner with U.S.
- Same time zones as central and western U.S.



Mexican Executive Branch

- President Lopez Obrador of Mexico is in his 10th month of office. He ran for President twice before and was the Mayor of Mexico City.
- His current mantra is “The Fourth Transformation”. He has been described as a left leaning socialist and so far he has proved that to be true. Very strongly supported by the unions.
- He believes very strongly in Energy Sovereignty and sought like minded people with each energy related appointment.
- Tenacious as proven by three campaigns after being the Mayor of Mexico City.



- Incredible amount of “face” time.

Mexican Senate



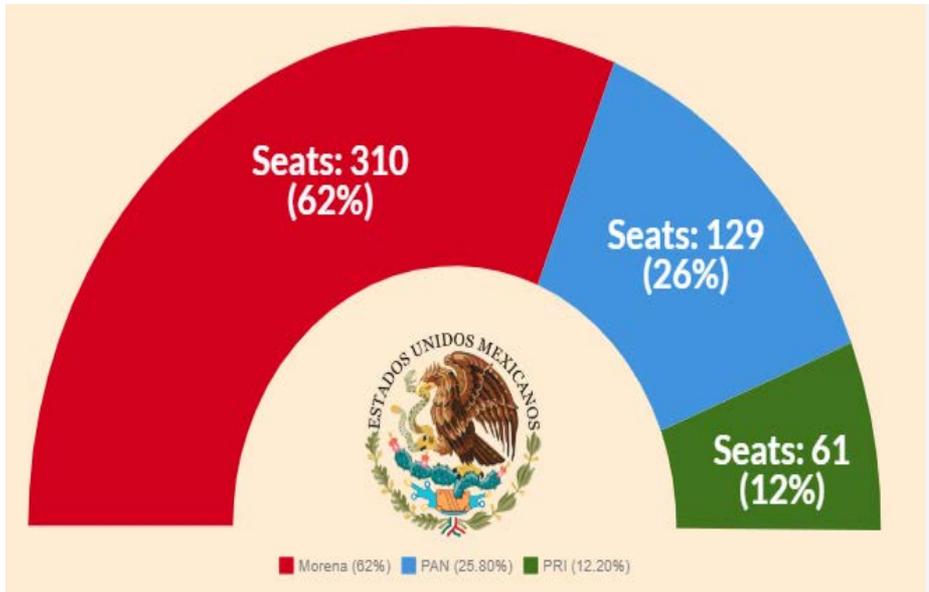
Senate Energy Commission's recent activities around confirming the CRE nominees was very combative.

MORENA party has a simple majority and nearly a super majority.



House of Deputies

- Lower House of Mexico's Congress
- 500 members all new.



Ministry of Energy (SENER)



- The Mexican Energy Secretary is accountable for the nation's three primary energy sectors of oil, natural gas and electricity policy.
- Senator Rocio Nahle Garcia is Mexico's current Energy Secretary.
- Energy Secretary Positions held:
 - Co-Chair of PEMEX Board
 - Co-Chair of CFE
 - Chair of CENACE Board
 - Chair of CENEGAS Board
 - Presidential Cabinet Member
 - Mexican Senator
 - Mexico's representative to the International Energy Agency.

CFE (Federal Electric Commission)

Director General Bartlett is in his 80s and has come in with a very determined mandate to “Make CFE Great Again”.



Carlos Morales was the president of the MORENA party in Veracruz and is also a CFE retiree.

He is now the Deputy Director General of CFE.

Mexican Electric Independent System Operator CENACE



Director General Morcos Flores started with CFE in 1966. He took office near December 1, 2018.

- As Mexico's ISO CENACE is responsible for the operation of the National Electric System (SEN) including its 3 electrical systems.
- Centralized market structural elements
- CENACE's Governance Structure
- Electric Bases and CCARM committee and sub committees
- Electric reform implementation

Energy Regulatory Commission (CRE)



- Seven commissioners with 7 year terms such that one commissioner's term ends each year.
- President Guillermo Garcia Alcocer took office on April 28, 2016.
- Recent power struggle resulted in his leaving the CRE in June of 2019.



José Alberto Celestinos Isaacs

Commissioner José Alberto Celestinos Isaacs is a Chemical Engineer from the National Autonomous University of Mexico (UNAM). He currently serves as Commissioner of the Energy Regulatory Commission (CRE).

He has also worked in Petróleos Mexicanos (Pemex) as **Executive Refinery Production Coordinator** and as Industrial Subdirection Coordinator. He also served as Deputy Director of Refinery and Petrochemicals at the Mexican Petroleum Institute (IMP).

Mexico Sovereign Debt

Mexico - Credit Rating

Standard & Poor's credit rating for Mexico stands at BBB+ with negative outlook. Moody's credit rating for Mexico was last set at A3 with negative outlook. Fitch's credit rating for Mexico was last reported at BBB with stable outlook. DBRS's credit rating for Mexico is BBB (high) with stable outlook. In general, a credit rating is used by sovereign wealth funds, pension funds and other investors to gauge the credit worthiness of Mexico thus having a big impact on the country's borrowing costs. This page includes the government debt credit rating for Mexico as reported by major credit rating agencies.

Agency	Rating	Outlook	Date
Moody's	A3	negative	Jun 05 2019
Fitch	BBB	stable	Jun 05 2019
S&P	BBB+	negative	Mar 01 2019
Fitch	BBB+	negative	Oct 31 2018
Moody's	A3	stable	Apr 11 2018
Fitch	BBB+	stable	Aug 03 2017
S&P	BBB+	stable	Jul 19 2017
S&P	BBB+	negative	Aug 23 2016
Moody's	A3	negative	Mar 31 2016
DBRS	BBB (high)	stable	Mar 31 2014
Moody's	A3	stable	Feb 05 2014
S&P	BBB+	stable	Dec 19 2013

Mexico Sovereign Debt

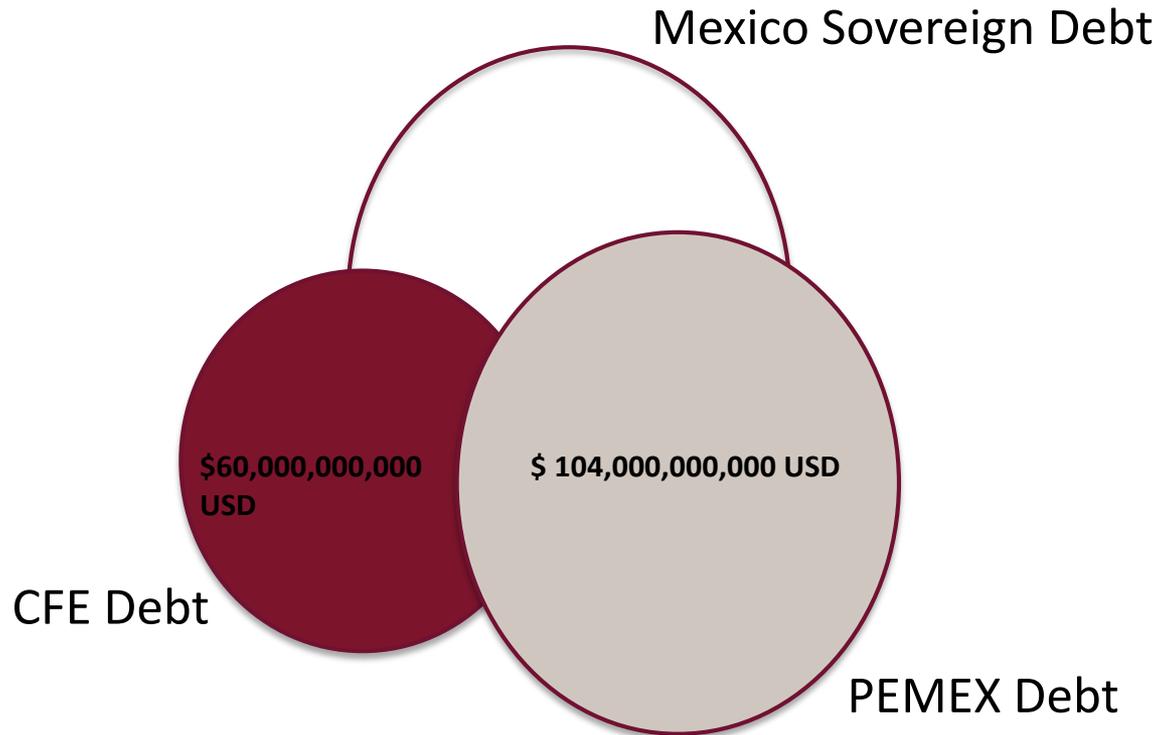
KEY POINTS

JUNE 5, 2019

- In a double blow for Mexico, credit ratings agency **Fitch** downgraded the nation's sovereign debt rating on Wednesday, citing risks posed by heavily indebted oil company Pemex and trade tensions.
- Cutting Mexico's rating to **BBB**, nearing junk status, Fitch said the financial woes of state oil company Pemex were taking a toll on the nation's prospects.
- Meanwhile, **Moody's** lowered its **outlook to negative**.

“Such a scenario, where we see two or three quarters of economic contraction, may lead us to move up the review before the end of this year and to ask whether it is consistent with the current rating or not,” Martinez said. S&P July 12, 2019

Mexico's Debt Trifecta



PEMEX Debt Strategy

- PEMEX is a 80 year old nationalized oil company that provides approximately 20% of the federal tax revenues Mexico depends on.
- PEMEX is the most indebted oil company in the world. Of the \$104,000,000,000 USD of debt it carries \$44,000,000,000 USD is due within the next 48 months.
- On top of this President Lopez Obrador has demanded that a new refinery be built in his home state of Tabasco. The stated budget of \$8,000,000,000 USD was viewed as unrealistic by the four international bidders so he declared that the Mexican Ministry of Energy would build it with PEMEX. (Ask yourself when the last time you heard that a refinery had been built?)
- The week of September 2, 2019 the Mexican Ministry of Finance brought forward a 2020 federal budget that reduced PEMEX's tax obligation by \$2,400,000,000 USD and then transferred another \$2,100,000,000 to PEMEX from the federal reserves.
- September 11, 2019 the Mexican Ministry of Finance announced that it would make a \$5,000,000,000 USD infusion into PEMEX to help attempt a much larger bond maturity reset. **The response from Moody's and Fitch was that it was insufficient.**

CFE Debt Strategy

CFE is the 80 year old nationalized electric company that has no effective financial operating room to build new transmission or generation.



For many in Tabasco, there's nothing to pay.

CFE forgives 11 billion pesos in debt owed by half a million in Tabasco

President López Obrador spearheaded the civil resistance movement in 1995

May 15, 2019

In late August CFE renegotiated natural gas pipeline force majeure debts with four transport companies by extending the agreements and levelizing the ongoing capacity payments.

The administration claimed victory but one company was heard to say that they were concerned that the deal was too good for them over the life of the contract not to expect them to be reopened again.



Mexican Wholesale Counterparty Credit

The Mexican wholesale electric market is composed of market participants that have very different risk profiles. These participants range from small LLCs that ring fence a single renewable asset all the way to a major international energy companies such as Ibradrola, Engie or ENL.

Some of the market participants often can't provide enough credit to do much more than exist in the spot market. This has been one of the biggest challenges to building a forward electric market. This is especially visible in the Retailer ranks.

ZONES / REGIONS

- 9 price zones:

- Central (SIN)
- Northeast (SIN)
- Oriental (SIN)
- Peninsular (SIN)
- Western (SIN)
- Baja California (BCA)
- Northwest (SIN)
- Baja California Sur (BCS)
- North (SIN)



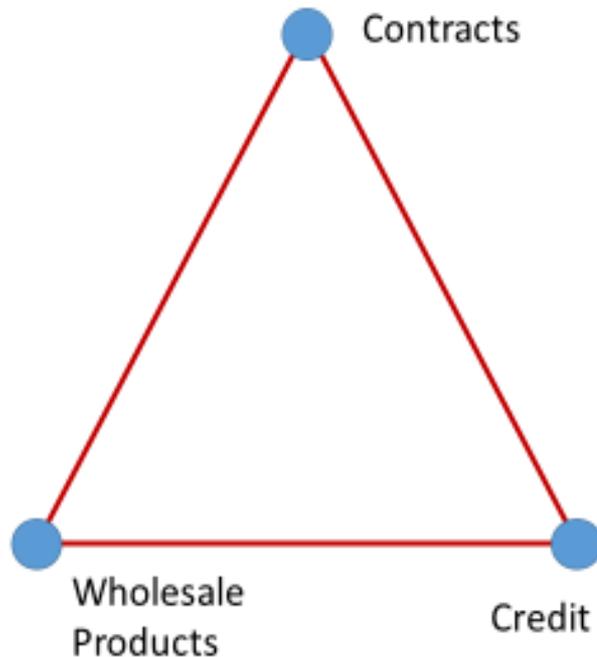
The Vitol Group is in the progress of creating a trading platform where they will make markets on the buy and sell side for

- Energy
- Capacity
- Clean Energy Certificates
- Congestion

The locations are listed to the left.

Mexican Wholesale Electric Transactional Mechanics (Current Status)

Transactional Mechanics



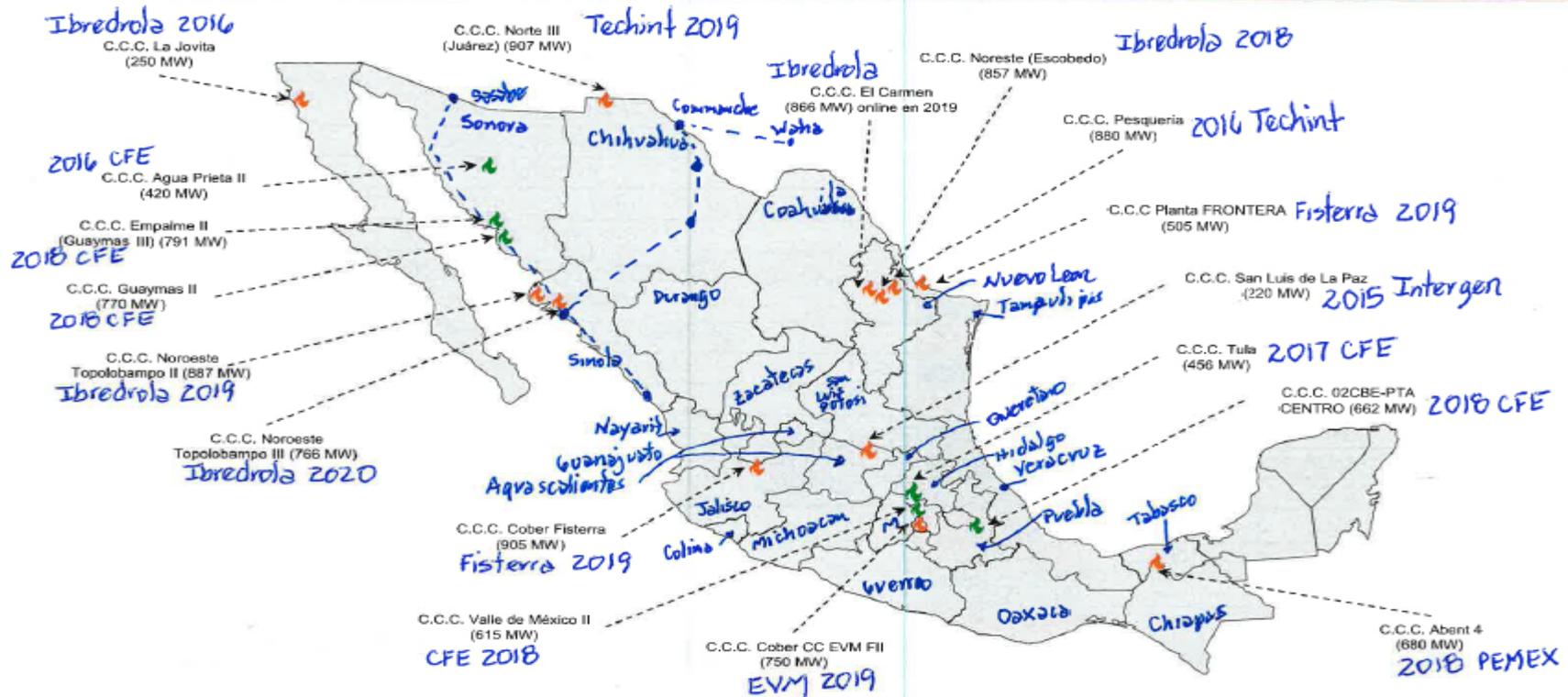
Transactional mechanics is the description of those things necessary to execute transactions in the wholesale markets. It is composed of the three facets of Contracts, Credit, and Wholesale Products.

Credit margining does not exist in Mexico as of right now. There are two primary factors preventing this:

- Counterparties are not yet experienced enough to manage daily or even weekly transfers.
- The forward electric market lacks the necessary liquidity to accurately mark the forward curve.

Mexican Generation

Combined Cycle Plants



Thank You