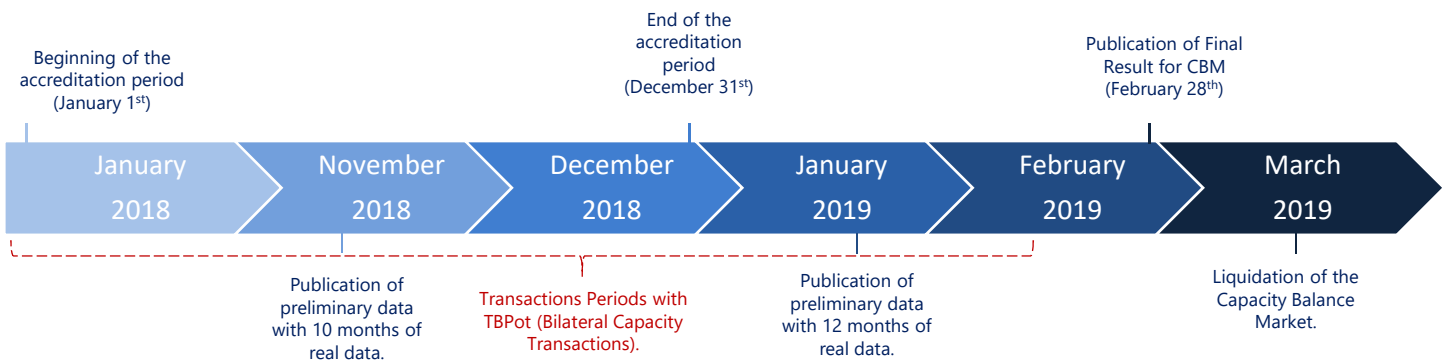


Retrospective Of The Capacity Balancing Market

On January 28th, 2019 CENACE has published on their website the preliminary results (On february 28th the final results will be published) for The Capacity Balancing Market. As the numeral 2.1 from the Balancing capacity manual estates: A) **It's purpose** is to stablish the price indicators that respond to the conditions of shortage or surplus of generation capacity in the National Electric System, which will foment an appropriate demand to engage medium and long term capacity and B) **It's objective** consists on making easier for the market participants to buy and sell capacity and establish a net price for this market.

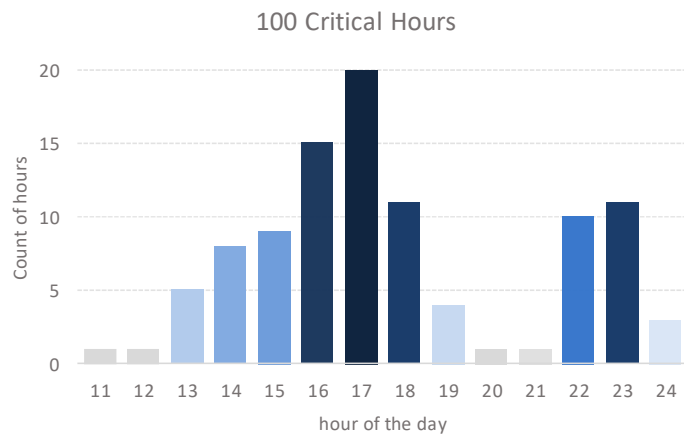


Critical Hours (SIN-2018)

The concept of Capacity is a commercial product made by CENACE. They acknowledge generators for being available on the system's 100 critical hours and require the representatives of load centers to stay available in function of the demand of the loads for those critical hours. For 2018 the 100 critical hours where the ones with lower level of ancillary services.

| Critical Hour | Day of the Week | Day | Hour | Ancillary services (MW) |
|---------------|-----------------|-----------|------|-------------------------|
| 1 | Thursday | 5/16/2018 | 16 | 2,405 |
| 100 | Wednesday | 7/24/2018 | 23 | 2,039 |
| Máx | Wednesday | 7/24/2018 | 14 | 2,562 |
| Mín | Tuesday | 6/11/2018 | 16 | 204 |
| Average | - | - | - | 1,997 |

Critical Hours registered between May 16th and July 24th, 2018.



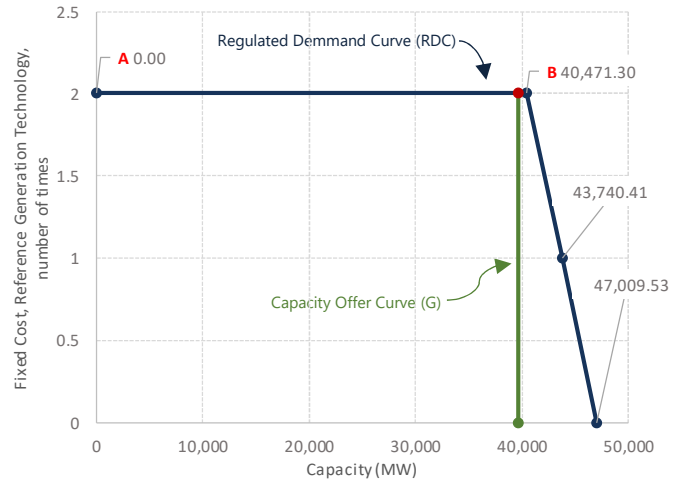
Supply (Generators -G-) y demand (Representatives of Load Centers-ERC-) Capacity calculation by CENACE

(SIN-2018)

From the supply and demand intersection we deduce that the closing price for the **Capacity Balancing Market** is two times the fixed costs of the reference technology (Open Cycle) which has been published by CENACE as an Open Cycle of 191 MW on the price node of '06RIB-138' in REYNOSA with leveled fixed costs of 2,057,122.64 MXN/MW-year.

| | | Capacity (MW) | | |
|---------------------------|------------------------------------|---------------|--------|--------------------|
| Qualified Suppliers (ERC) | | Gross | TBPot* | Net |
| a | Capacity Buy Obligation (CBO) | 43,014 | -5,855 | 37,159.20 |
| b = a x 1.077 | Annual Capacity Requirements (ACR) | 46,326 | -5,855 | 40,471.30 B |
| c = a x 1.153 | Efficient Capacity (EC) | 49,595 | -5,855 | 43,740.41 C |
| | Efficient Capacity + (EC-ACR) | 52,865 | -5,855 | 47,009.53 D |
| Generators (G) | | | | |
| | Generators Assigned Capacity | 45,578 | -5,855 | 39,722.78 |

*TBPot is used between two Market Participants to transfer the obligation to get Capacity with each other, including the responsibility for producing and acquiring the Capacity indicated in the Capacity Balancing Market.



The conclusion is that the net supply (subtracting 5,855 MW from TBPot*) of available capacity from generators (39,722.78 MW) is less than the required by the representatives of load centers (40,471.30 MW) which means that there is a preliminary deficit in the system of 748.52 MW

CENACE's open data website: <https://www.cenace.gob.mx/MercadoOperacion.aspx>

Confiability of Mexican Generation Plants during the Critical Hours

(SIN-2018)

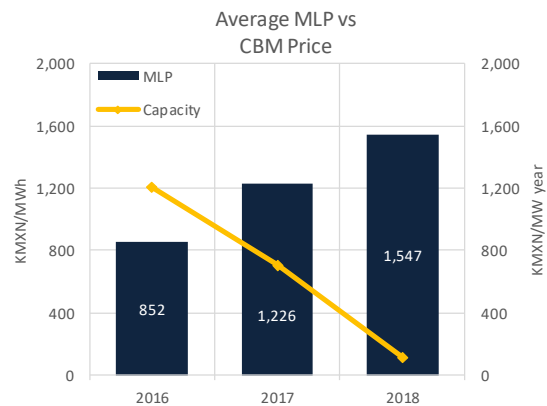
| Technology | Number of plants | | Available Capacity | | Installed Capacity | | Availability in critical hours |
|------------------------|------------------|---------------|--------------------|---------------|--------------------|---------------|--------------------------------|
| | | | PPD* | PPD* | | | |
| | | | MW | MW | MW | MW | |
| Thermal | 181 | 28.2% | 26,742 | 58.7% | 37,183 | 57.5% | 71.9% |
| Hydro | 63 | 9.8% | 9,674 | 21.2% | 10,783 | 16.7% | 89.7% |
| CIL (legacy contracts) | 234 | 36.5% | 6,198 | 13.6% | 10,444 | 16.1% | 59.3% |
| Non Dispatchable | 143 | 22.3% | 2,663 | 5.8% | 4,899 | 7.6% | 54.4% |
| Renewables | 20 | 3.1% | 301 | 0.7% | 1,384 | 2.1% | 21.7% |
| TOTAL | 641 | 100.0% | 45,578 | 100.0% | 64,693 | 100.0% | 70.5% |

PPD = Physical Production Disponibility; PDD = Physical Delivery Disponibility.

Historical of electricity prices vs capacity prices

(SIN-2018)

| | 2016 | 2017 | 2018 |
|--------------------------------|---------|---------|---------|
| Capacity (KMXN/MW) | 1,207.3 | 709.6 | 117.5 |
| Marginal Local Price (MXN/MWh) | 852.3 | 1,226.2 | 1,546.6 |



Net Capacity Price for the Capacity Balancing Market Calculation.

(SIN-2018)

$$\text{Net capacity price}_{2018} = \text{Closing capacity price}_{2018} \times \text{Fixed leveled costs from the reference technology}_{2018} - \text{Profit of the reference technology}_{2018}$$

$$117,486.7 \text{ MXN/MW year} = 2 \times 2,057,122.64 \text{ MXN/MW year} - 3,996,758.58 \text{ MXN/MW year}$$

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