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FUTURE OF RAIL PUBLIC TRANSPORT IN MONTERREY, MEXICO

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Monterrey, being the industrial capital of Mexico, and the third largest city in the country, has a population of over 5 million people as of 2020, and a GDP of $140 billion in 2015.Currently, the city's population has access to several types of public transport [1]: Metro, Bus Rapid Transport (BRT), Transmetro, public buses, taxis and private taxis. It would be expected that such a key area in the country would have a well-developed public transport system that uses high-technology and operates efficiently; however, reality differs, as during the last years it has suffered from a crisis that has affected both users and non-users. Since 2021, a complete restructuring program of the public transport was launched by the new ruling political party of the state, projecting a huge invest to bolster the use of high technologies, improve its efficiency, constructing infrastructure for public transport, re-design the current routes of existing buses, and create new routes attending to the demand of areas within the city and its suburbs.

Focusing on the Metro, and its related system Transmetro, MXN$45 billion (US$2.5 billion) will be invested on its expansion with the construction of three new lines and a suburban train, connecting western, eastern and southern suburbs with downtown Monterrey and the International Airport. This would expand the current system to over 113 km of rail and totaling 88 stations.

Currently, Monterrey's Metro consists of 3 lines, which total 40 stations as of May 2023, a length of 40 km, and is divided as follows:

Line 1 – First opened in 1991, it has 19 working stations, and runs from the eastern part of the city to the northwest passing through downtown. Line 1 runs almost completely on an elevated structure, with the only exception being the terminal station on the northwest, having a ground level construction due to the closeness to the depots.

Line 2 –Opened in its entirety in 2008, with 13 stations and a length of 13 km, it runs on an elevated structure during the northern section, and underground in the city center. It has one station connecting with Line 1, and with the bus station.

Line 3 –The newest line of the system, finally opened duringearly 2021 after several years of delay.It comprises 8 stations, with a total length of 7.5 km runningfrom the northeast of the metropolitan area to the city center, with the southernmost section connecting with Line 2 at the terminal, and another station connecting with Line 1. Nowadays, both line 2 and 3 are operated jointly, with having to disembark and change trains.

The 13.5 km long Line 4, which is marked in green on the map shown belowwould connect the western suburb with the city center, offering comfortable connections with other lines of the system, such as lines 2, 3, 5 and 6;on the other hand, the Line 5, with a blue color, would head from downtown towards the southern part of the city, with an estimated route length of over 8 km and connecting with lines 2, 4 and 6 (Figure 1).

It was announced by the authorities that both lines 5 and 6, would be constructed using elevated structures, like the ones on the first two lines of the system, which caused backlash among neighbors from both the eastern and southern suburbs, which called for an underground system. Line 6, which was announced in the wake of this controversy, would have a running length of 18.5 km, making it the longest route of the Metro, connecting the city

center with the northeastern suburb of Apodaca, which nowadays receives a huge number of workers every day, as it has been established as a highly industrialized suburb where companies have their manufacturing facilities, with the likes of PCC Aerostructures, Lenovo, Johnson Controls, Denso, LG, Nidec, Haldex, Schneider Electrics. All in all, the expansion plans would effectively double the network's length and number of stations in six years [2]. Lines 4 and 6 already began construction as of April 2023, and will use monorail trains manufactured in China by CRRC [3; 4].

Figure 1 – The current network of Monterrey's Metro

Projected network is shown next (Figure 2).

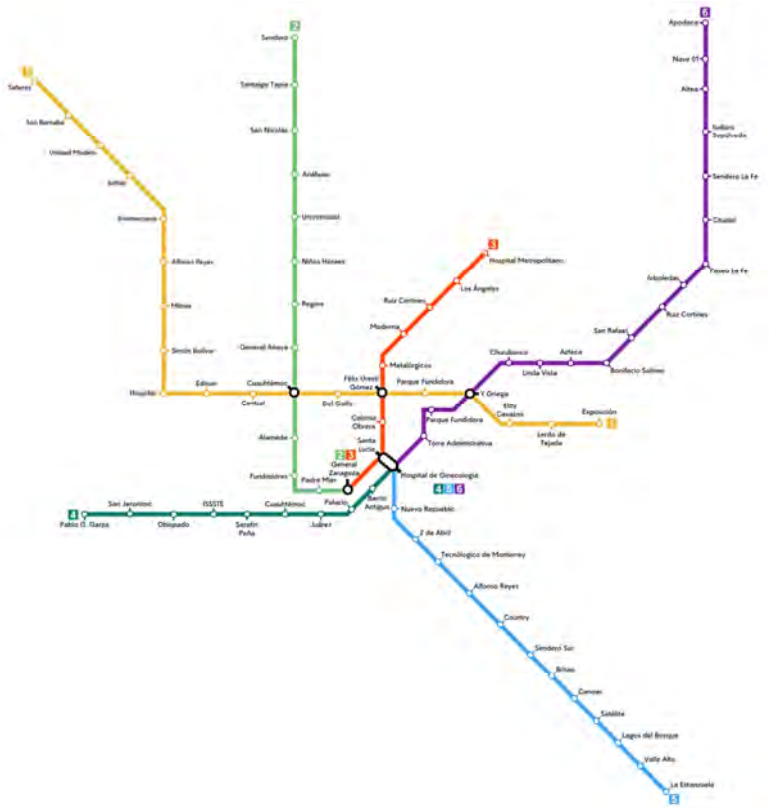

Figure 2 – The projected 2027 network of Monterrey's Metro

Conclusions. In this way, the expansion of Monterrey's Metro will greatly increase the capability of this method of public transportation, that currently already moves over 12 million passengers per month. The goal for this is to further reduce the use of private transport within the city and incentivize people to move on public transport, by greatly improving the mobility for the user and connecting more suburbs of the metropolitan area and downtown.

References

1. Plan Maestro de movilidad / Gobierno del Estado de Nuevo León. URL: https://www.nl.gob.mx/planmaestro-movilidad (accessed 11.05.2022).

2. Adjudican construcción de Líneas 4, 5 y 6 del Metro / Gobierno de Nuevo León. URL: https://www.nl.gob.mx/boletines-comunicados-y-avisos/adjudican-construccion-de-lineas-4-5-y-6-del-metro (accessed 11.05.2022).

3. Construcción de Línea 6 del Metro / Gobierno de Nuevo León. URL: https://www.nl.gob.mx/linea6-metrorrey (accessed 11.05.2022).

4. Samuel Garcia inicia obras de construcción de Línea 4 del Metro / Milenio. URL: https://www.milenio.com/politica/comunidad/samuel-garcia-inicia-obras-linea-4-metro-monterrey (accessed 11.05.2022).