THE NEW YORK THRUWAY:
THE EMPIRE STATE'S MAIN STREET

A National Transportation Research Nonprofit

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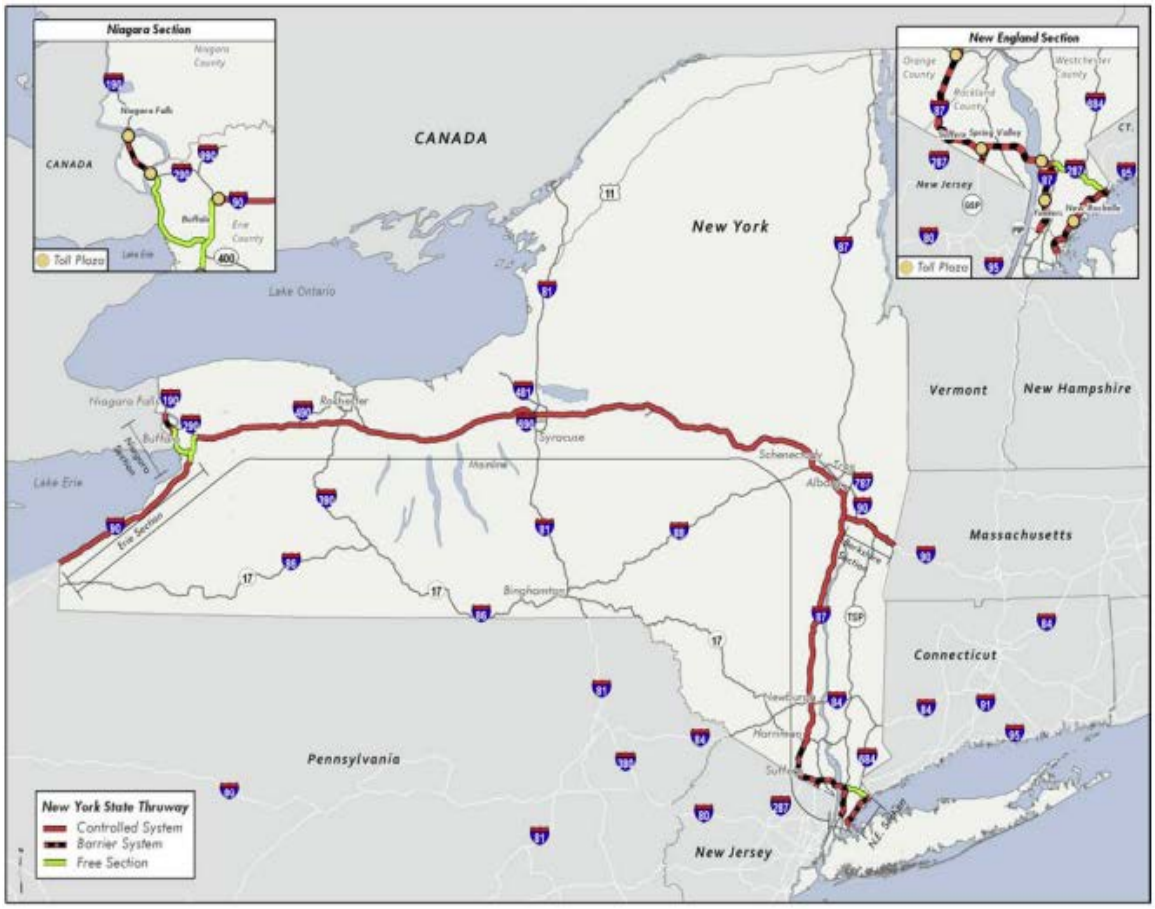
Founded in 1971, TRIP ® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Since its opening 68 years ago, the New York Thruway System has functioned as the Empire State's Main Street. It serves as an essential central artery, connecting the state's largest urban areas from New York City to Albany, and on to Utica, Syracuse, Rochester and Buffalo, while providing a critical link between the state of New York and the rest of the nation and beyond.

NEW YORK THRUWAY SYSTEM

The 570-mile Thruway System, constructed between 1949 and 1960, is an important part of the Northeast's transportation network, along with the Massachusetts Turnpike (I-90), Connecticut Turnpike (I-95), New Jersey's Garden State Parkway, and several other Interstate routes such as I-287 from New Jersey; I-90 in Pennsylvania; I-290 around the north side of Buffalo; I-390 and I-490 serving Rochester; I-81, I-481 and I-690 at Syracuse; I-790 in Utica; I-87 (the Northway), I-88, I-90, I-787, and I-890 at Albany; and I-84 at Newburgh.

Chart 1. New York Thruway System.



Source: New York Thruway Authority.

The Thruway is comprised of two types of toll systems – a controlled cashless tolling system and a barrier system, as shown in Chart 1.

The controlled system (approximately 481 miles) makes up the largest portion of the Thruway, running from Woodbury (in the southeast corner of New York) north along I-87 to Albany, then west on I-90 to Buffalo and south of Lake Erie to the Pennsylvania border. In addition to this main stretch of

the controlled system, a small branch south and east of Albany provides a connection to the Massachusetts border and the I-90 Massachusetts Turnpike.

The barrier systems - located in the southeast and northwest corners of the state - are comprised of the Governor Mario M. Cuomo Bridge (formerly Tappan Zee Bridge barrier), Yonkers Barrier, New Rochelle Barrier, Spring Valley Barrier (where passenger cars only are toll-free), Harriman Barrier, and the Grand Island Bridges.[1]

The Thruway System includes 816 bridges, the largest of which is the twin-span Governor Mario M. Cuomo Bridge over the Hudson River, which is located approximately 20 miles north of New York City and replaced the 61-year-old Tappan Zee Bridge.[2] Other large and unique bridge structures on the Thruway include: the Castleton-on-Hudson Bridge across the Hudson River on the Berkshire Section; the four Grand Island Bridges spanning branches of the Niagara River north of Buffalo; and the three bridges crossing the Catskill, Kaaterskill, and Normanskill Creeks in the Catskill Region.[3]

THRUWAY TRAVEL

Travel on the New York's Thruway system was increasing modestly prior to the COVID-19 pandemic, which caused vehicle travel to dip significantly. After rebounding in 2021 to near pre-COVID levels, travel on the New York Thruway is anticipated to grow modestly through 2031. From 2012 to 2019, the number of annual trips on the New York Thruway increased by eight percent before dropping 19 percent in 2020, then returning close to pre-pandemic levels in 2021.[4] The number of annual trips on the New York Thruway System is expected to increase by nine percent from 2022 to 2031.[5] In 2021, 83 percent of Thruway travel was by passenger vehicles and 17 percent was by large trucks or other commercial vehicles.[6] The following chart indicates the Thruway's busiest interchanges.

Chart 2. New York Thruway System's Busiest Interchanges (2019).

Rank	Busiest Interchanges	Annual Vehicles (in Millions)
1	Exit 24: Albany, Montreal, I-90 East; i-87 North	14.1
2	Exit 50: Williamsville (Buffalo)	10.1
3	Exit 55: Lackawanna (Buffalo)	9.4
4	Exit 15: Woodbury	7.9
5	Exit 25: Schenectady, I-890, NY Routes 7 &146	7.3
6	Exit 45: Rochester, Victor, I-490	6.9

Source: 2022 Stantec Report.

THRUWAY SYSTEM FUNDING

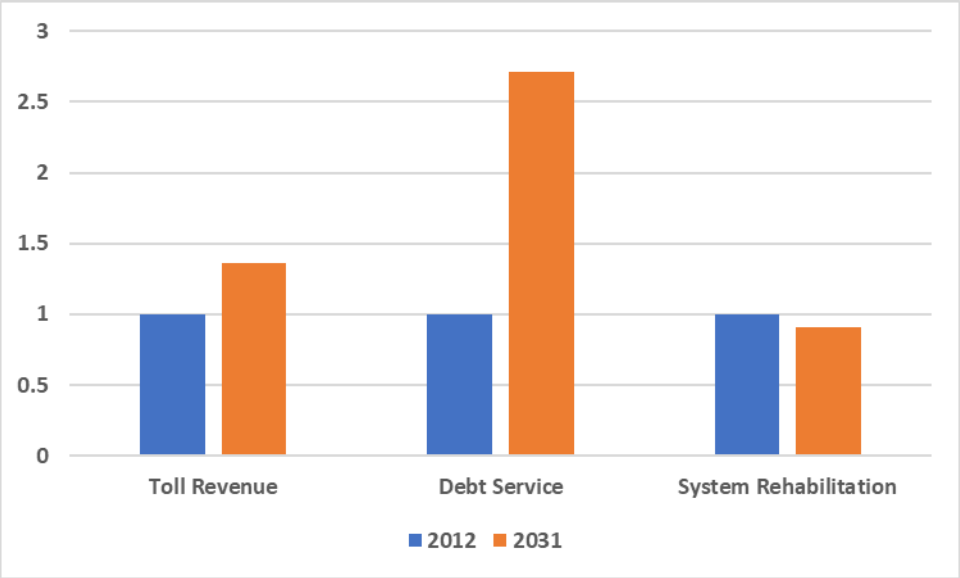
New York's Thruway system is funded from tolls and payments received from concessionaires at the Thruway's 27 service areas' restaurant and gasoline stations. The Thruway is currently in the process of a $450 million program to rebuild 23 of the 27 service areas.[7] A 2022 report prepared for the New York State Thruway Authority by Stantec Consulting Services found that annual revenue from tolls on the Thruway increased 16 percent from 2012 to 2019, from $638 million to $740 million. Thruway toll revenues decreased 17 percent from 2019 to 2020 as a result of the COVID-19 pandemic. 2021 revenue rebounded above pre-COVID levels to $760 million and is anticipated to total $811 million in 2022. From 2022 to 2031 New York Thruway toll revenue is expected to increase by seven percent, reaching $867 million, with the number of New York Thruway trips anticipated to increase by

nine percent.[8] From 2012 to 2031 New York Thruway toll revenue is projected to increase by 36 percent.[9]

Additional investment in system rehabilitation coupled with an increased reliance on borrowing has resulted in increased debt service payments. New York Thruway annual debt service payments increased by 69 percent from 2012 to 2021, from $200 million to $340 million.[10] From 2022 to 2032, New York Thruway annual debt service is anticipated to increase by 78 percent, from $306 million to $543 million.[11] From 2012 to 2031, New York Thruway annual debt service is projected to increase by a total of 171 percent.[12]

From 2012 to 2022 annual investment in highway and bridge rehabilitation on the New York Thruway decreased by 37 percent, from $322 million to $236 million.[13] And while annual investment in highway and bridge rehabilitation on the New York Thruway is expected to increase 24 percent from 2022 to 2031, reaching $294 million, this is still nine percent below the level in 2012.[14]

Chart 3. Percentage Increase 2012-2031 New York Thruway Toll Revenues, Debt Service and Highway and Bridge Spending.



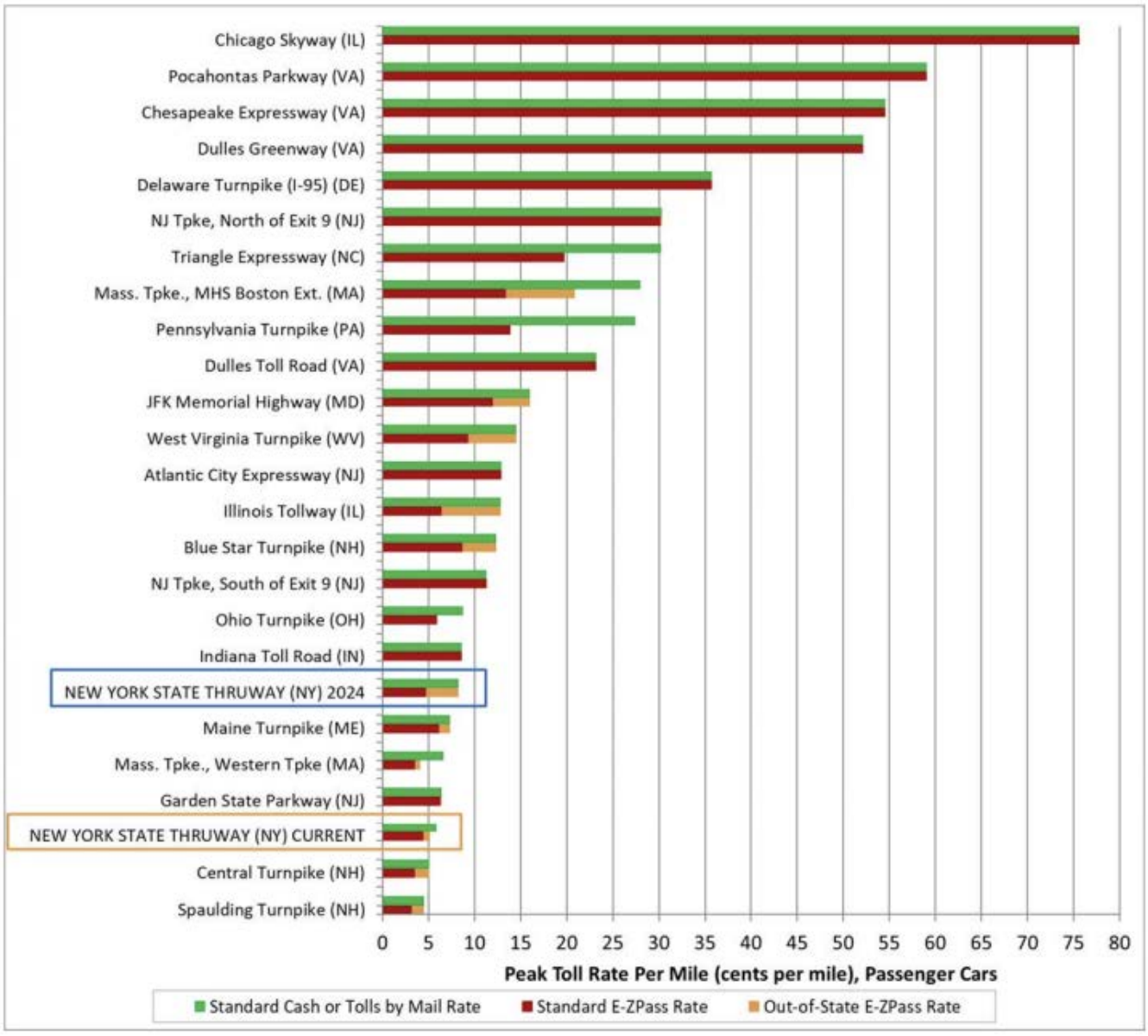
Source: TRIP Analysis of 2022 Stantec Report.

Projected Thruway revenues through 2031 are not anticipated to be sufficient to meet the systems' rehabilitation needs. The Stantec report found that through 2031 the Thruway Authority has a $1.2 billion funding gap in revenue needed to maintain the Thruway's high levels of safety and service, maintain good infrastructure conditions, support Thruway operations, and maintain debt service coverage at appropriate levels.[15]

Significant increases in the cost of highway and bridge improvements could threaten the ability of the Thruway Authority to improve the condition, safety and reliability of the Thruway. The Federal Highway Administration's national highway construction cost index, which measures labor and materials cost, increased by 50 percent during the 21 months from the start of the first quarter in January 2021 to the end of the third quarter in September 2022.[16]

Current and proposed (2024) toll rates per-mile on the New York Thruway System are below rates on most similar toll facilities in the northeastern quadrant of the United States.

Chart 4. Peak Toll Rates Per-Mile on Toll Roads in the Northeastern U.S.- Passenger Cars.



Source: 2022 Stantec Report

TRAFFIC SAFETY ON THE NEW YORK THRUWAY

Highway safety features on the New York Thruway, traveler information and effective policing have contributed to a very low traffic fatality rate on the system. In 2021 the Thruway-wide fatality rate was 0.21 fatalities per 100 million vehicle miles traveled, much lower than the nationwide traffic fatality rate of 1.35 and the New York State traffic fatality rate of 1.00.[17]

THRUWAY CONDITIONS

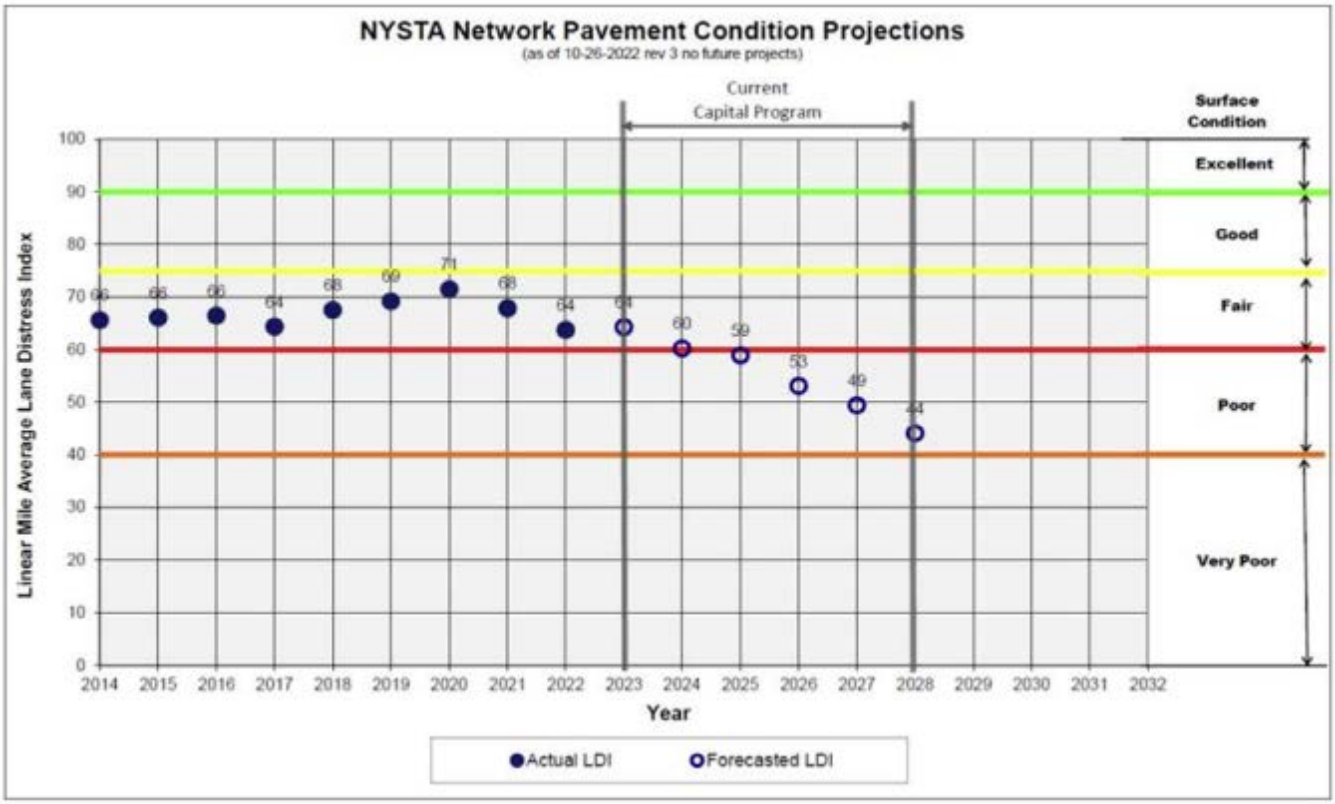
The life cycle of the Thruway's highways and bridges is greatly affected by the ability of the Thruway Authority to perform timely maintenance and upgrades to ensure that the system's highways and bridges last as long as possible.

It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.[18] As roads and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

A 2019 report by the Transportation Research Board (TRB) on the actions needed to upgrade and restore the Interstate Highway System found that the repeated resurfacing of Interstate highways is not addressing the deterioration of roadway subbases and results in diminishing returns. This leads to shorter periods of serviceability between successive overlays and can produce higher life-cycle costs relative to full-depth periodic pavement reconstruction.[19]

New York Thruway pavement conditions improved 11 percent from 2017 to 2020, as measured by the Average Lane Distress Index, which increased from a rating of 64 to 71 during that time and indicates pavements in fair condition. [20] However, following these improvements, pavement conditions have declined in 2020 and 2021, returning to 2017 levels. Based on anticipated funding levels for highway rehabilitation, the Thruway's average pavement conditions are anticipated to decline by 31 percent from 2022 to 2028, from a rating of 64 to 44, declining into poor condition.[21]

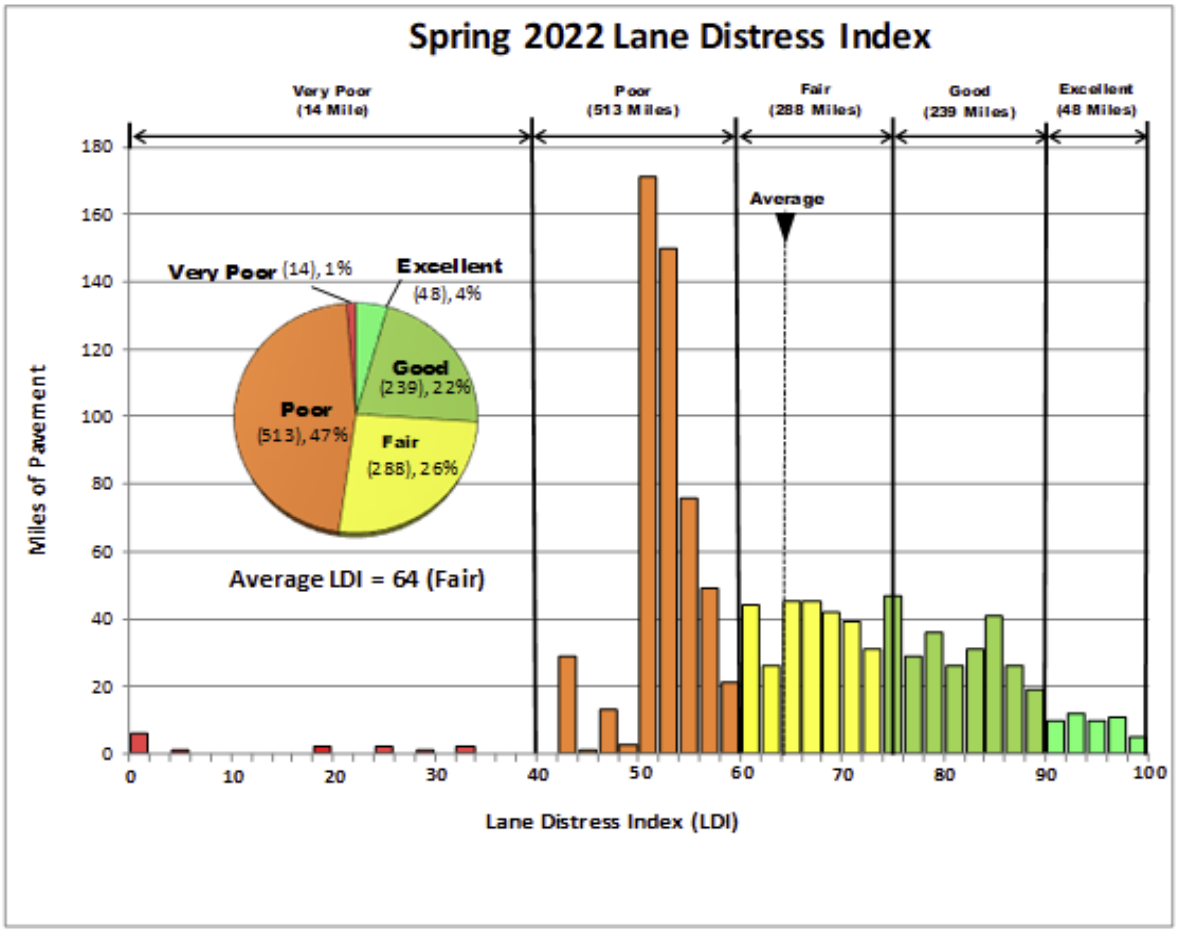
Chart 5. Historical and Forecasted Thruway Pavement Conditions.



Source: 2022 Stantec Report.

A 2021 analysis of ride quality on the New York Thruway found that 69 percent of the system is rated good, 20 percent is rated fair, 10 percent is rated mediocre and one percent is rated poor.[22] But a 2022 assessment of surface distress on the Thruway, including cracking, rutting and shoulder defects, which is conducted annually to help forecast future paving needs and locations, found that 48 percent of the system is in poor condition, 26 percent is in fair condition and 26 percent is in good condition.[23]

Chart 6. New York State Thruway Lane Distress Index.



Source: New York State Thruway Authority

Bridges are the backbone of the New York Thruway System, providing access throughout the state for personal and commercial travel.

One percent (10 of 816) of the Thruway's bridges are rated in poor condition.[24] A bridge is rated in poor condition if there is significant deterioration of the bridge deck, supports or other major components.

Twelve percent (100 of 816) of the New York Thruway's bridges have been rated in fair condition.[25] A fair rating indicates that a bridge's structural elements are sound but minor deterioration has occurred to the bridge's deck, substructure or superstructure. The remaining 87 percent of Thruway bridges are rated in good condition.[26]

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, ensuring that a facility has good drainage and replacing deteriorating components. But most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

Most bridges are designed to last 50 years before major overhaul or replacement, although many newer bridges are being designed to last 75 years or longer. Seventy-five percent of Thruway bridges are more than 60 years old.[27]

Average bridge condition ratings on the Thruway improved by two percent from 2015 to 2020, before eroding from 2020 to 2022 by one percent.[28] Based on anticipated funding levels for bridge rehabilitation, the Thruway's average bridge rating is anticipated to decline by two percent between 2022 and 2027.[29]

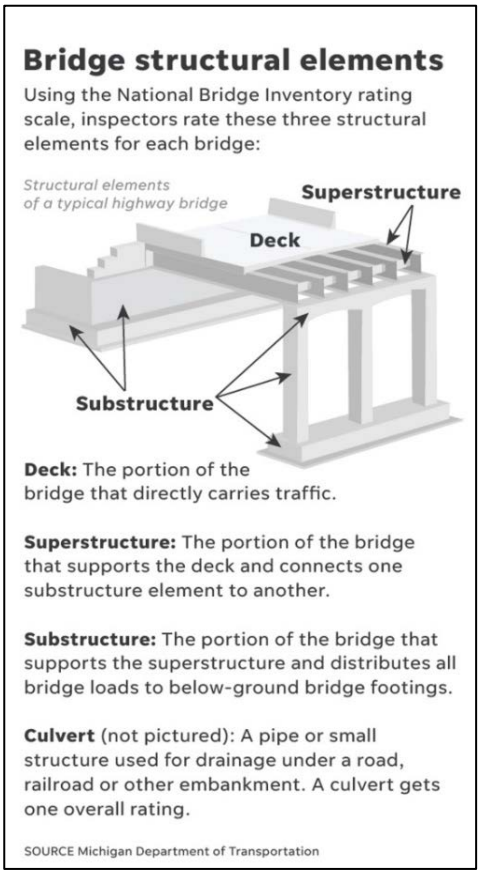
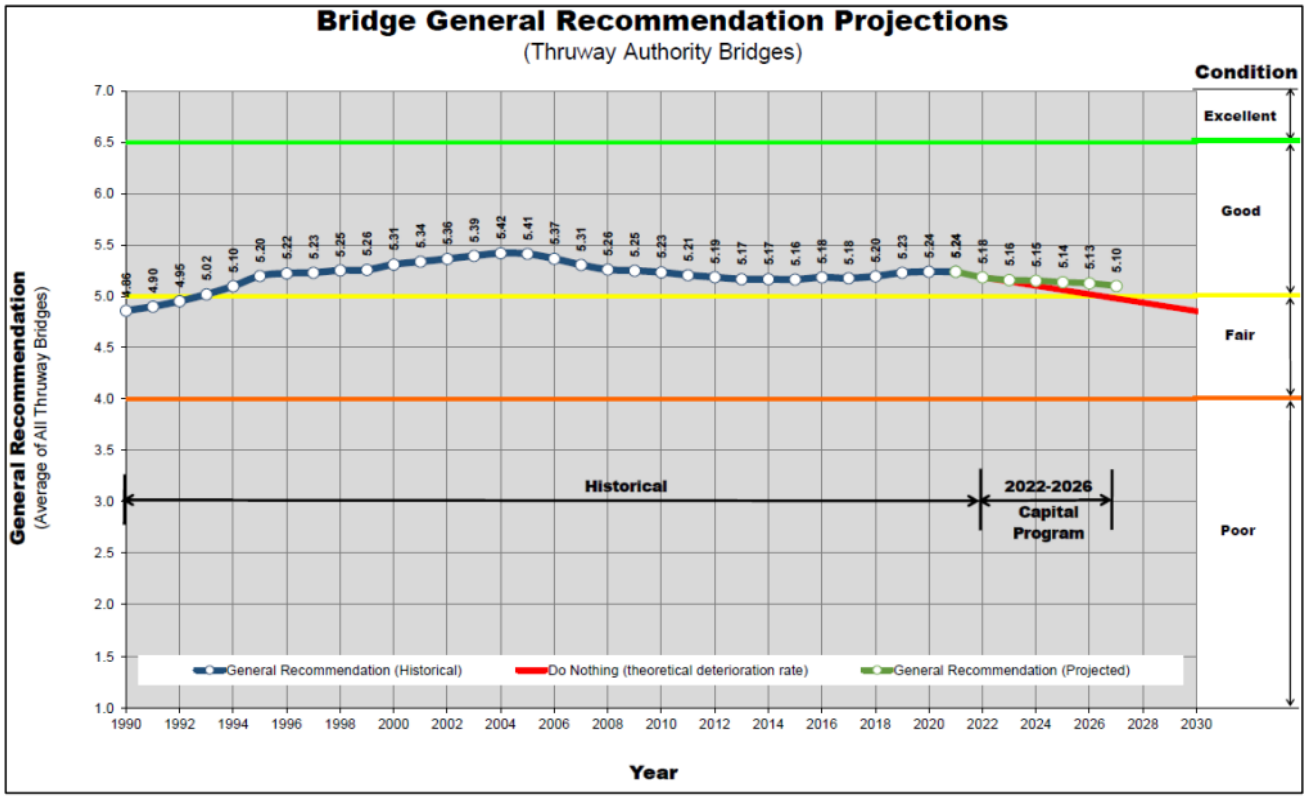


Chart 7. Historical and Forecasted Thruway Bridge Condition Ratings.



Source: 2022 Stantec Report.

CONCLUSION

The New York Thruway System is critical to the quality of life of New Yorkers and the health of the region's economy, allowing the state to maintain a reliable supply network, providing regional connectivity and allowing for personal mobility. Ensuring that the extensive and aging New York Thruway System continues to provide reliable and safe access in the future will require that an adequate level of investment is made in the system to improve its condition, safety and efficiency.

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ENDNOTES

[1] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 3. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[2] Ibid. P. 5.
[3] Ibid.
[4] Ibid. P. 15, 20.
[5] Ibid. P. 30.
[6] Ibid. P. 20
[7] Ibid. P. 7.
[8] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 16 and 30. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[99] Ibid.
[10] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 13. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[11] Ibid. P. 29
[12] Ibid. P 13, 29.
[13] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 11 and 25. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[14] Ibid.
[15] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 31. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[16] Federal Highway Administration (2023). National Highway Construction Cost Index. https://www.fhwa.dot.gov/policy/otps/nhcci/
[17] Ibid. P. 8.
[18] Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
[19] Ibid. P. 54
[20] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 26. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[21] Ibid.
[22] Thruway Authority (2022). Current Infrastructure Information. https://www.thruway.ny.gov/oursystem/capitalprogram/current-infra-info.html
[23] Ibid.
[24] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 27. https://www.thruway.ny.gov/news/adjustment/exhibit1.pdf
[25] Ibid.
[26] Ibid.
[27] Thruway Authority (2022). Current Infrastructure Information. https://www.thruway.ny.gov/oursystem/capitalprogram/current-infra-info.html
[28] Stantec (2022). New York State Thruway Financial Requirements and Proposed Toll Adjustments. P. 26
[29] Ibid.