

## IBX Conventional Railcar Cost Estimates Were Excessive

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This article continues my study of the Interborough Express (IBX) cost estimates, which I recently obtained from the MTA. Generally, the estimates appear high. The good news is that the IBX line could be built more cheaply. The bad news is that estimates often become a baseline from which costs increase.

In this article, I focus on the estimated costs of railcars for the IBX line, in particular, the apparent gross overestimate of the cost of railcars for the Conventional Rail mode. Although railcar costs are not included in the total cost estimates in the MTA's IBX Planning & Environmental Linkages Study report (PEL Report) itself, railcar cost estimates are included in its Appendix 1.11.<sup>2</sup> Because such costs are an important part of a choice of mode, they are discussed here.

Please see my prior article, "IBX Cost Estimates and Errors"<sup>3</sup> for background and a summary of the MTA consultants' cost estimating methodology.

### 1. What Is "Conventional Rail"

The term "Conventional Rail" refers to railcars that comply with Federal Railway Administration (FRA) regulations. Passenger railcar operators must comply with those regulations for operation on tracks also used by freight trains, or obtain waivers.

The MTA's IBX reports wrongly give the impression that specialized railcars would have to be designed and built for use if the Conventional Rail mode is to be used on the IBX line. For example, on one page the PEL Report says "'CR would require specialized, FRA-compliant

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<sup>1</sup> © John B. Pegram 2023, [bqrail@earthlink.net](mailto:bqrail@earthlink.net). This memorandum expresses the personal views of the author and does not express the views of his employer, or any client or organization. The author has degrees in law and physics, and has taken several engineering courses. After five years of work as an engineer, he has practiced law primarily in the field of patents for over 50 years, dealing with a wide variety of technologies. He is a life-long railfan and user of public transportation in the United States, Europe and Japan.

<sup>2</sup> Attached to my article, "'IBX Cost Estimates and Errors,'" available at <https://bqrail.substack.com/p/ibx-cost-estimate-excesses-and-errors>.

<sup>3</sup> *Id.*

heavy rail rolling stock.”<sup>4</sup> and on another it says that an advantage of the Light Rail mode would be that “Light Rail vehicles can be procured ‘off-the-shelf’ without modification,” whereas “Conventional Rail... would require more extensive modifications.”<sup>5</sup>

In fact, as the MTA has conceded, the existing PA-5 railcars operated on the PATH system between New York and New Jersey are examples of FRA-compliant railcars.<sup>6</sup> Such railcars could be used on the IBX line without “extensive modifications.” Physically, the PA-5 cars are very similar to NYC Transit subway cars of the types used on the A Division (numbered lines). Such existing cars could be used if appropriate FRA waivers are obtained. (FRA waivers apparently also would be necessary also for Light Rail on the IBX line, because its tracks would cross freight tracks).



**PATH PA-5 Railcar**

## **2. Conventional Railcar Cost Estimates**

The MTA estimated that the Conventional Rail mode would require 100 railcars at a total cost of \$4,852,632 each in 2020 dollars.<sup>7</sup> The basis for that estimate is not disclosed in the IBX reports and is not apparent from the publicly available appendices. Presumably, design costs were

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<sup>4</sup> MTA, *Interborough Express: Planning & Environmental Linkages Study* (January 2023) (PEL Report) at p. 24

<sup>5</sup> *Id.* at p. 3.

<sup>6</sup> *Id.* at p. 20; Pel Report Appendix 1.15 at p. 6.

<sup>7</sup> Appendix 1.11. \_\_\_\_\_

included. New design railcars would not be necessary on the IBX line, because the PATH PA-5 or NYC Transit A Division subway cars could be used without “extensive modifications.”

Let’s consider the cost of recently purchased PA-5 and NYC Transit cars as a basis for evaluating the IBX railcar cost estimate.

In December 2017, the PATH Board authorized purchase of 50 PA-5 railcars at a negotiated cost of \$2.63 million per car.<sup>8</sup> In June 2018, it authorized purchase of an additional 22 cars at an estimated cost of \$2.38 million per car.<sup>9</sup> The average cost per car for 72 cars, a quantity comparable to 100 cars for the IBX line, is about \$2.5 million per car. The dollar had an average inflation rate of 1.50% per year between 2018 and 2020, producing a cumulative price increase of 3.02%. Therefore, the average cost of PA-5 railcars in 2020 dollars was \$2.58 million. The MTA’s IBX Conventional Railcar estimate was about 88% more than that.

Another basis for estimation would be the MTA’s contract for R211 subway cars for the NYC Transit B Division and Staten Island Railway. Those cars are 60 feet long, as compared with the 51-foot length of cars used on the NYC Transit A Division, PATH and –probably—the IBX lines. The R211 cost in 2017 was \$1,445 million dollars for 535 cars of the base contract. That was \$2.70 million per car in 2017 dollars (\$2.85 million in 2020 dollars).<sup>10</sup> Presumably, that included the cost of the design and tooling of that new car. In October 2022, the MTA Board authorized purchase of 640 additional R211 cars at an average price (in 2022 dollars) of \$2.78 million per car.

Adjusting the October 2022 cost of R211 cars to 2020 dollars<sup>11</sup> and adjusting for the shorter length of IBX Conventional Railcars results in an estimated cost of \$1.99 million. The MTA’s IBX Conventional Railcar estimate for the IBX line was about 143% more than that!

### **3. Effect of Railcar Costs on IBX Infrastructure Estimate**

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<sup>8</sup> Port Authority Trans-Hudson Corporation minutes, June 28, 2018, available at: <https://www.panynj.gov/corporate/en/board-meeting-info/board-minutes-contract-authorizations.html>.

<sup>9</sup> *Id.*

<sup>10</sup> The dollar had an average inflation rate of 1.83% per year between 2017 and 2020, producing a cumulative price increase of 5.59%. *CPI Inflation Calculator*, available at <https://www.in2013dollars.com/us/inflation/>.

<sup>11</sup> Between 2020 and 2023, the dollar had a cumulative price increase of 18.63%. *Id.*

As explained in my previous article, “IBX Cost Estimate Excesses and Errors,” the IBX project cost estimates were initially made including the costs of railcars. Then, the direct costs of the railcars were deducted in calculating the estimates published in the PEL Report. However, the 20% markup for Contingencies, which had been applied to all costs originally calculated, was not deducted. Also, the direct cost of railcars in 2020 dollars was deducted from total project cost in 2027 dollars, without deducting the markup for inflation of railcar cost. As a result, the published IBX infrastructure costs are overestimated, apparently by about \$300 million in the case of Conventional Rail.<sup>12</sup>

#### **4. Hidden Light Rail Costs**

The IBX cost estimates in 2020 dollars were a total of \$432 million for 72 Light Rail vehicles, to be operated in 3-car trains, and \$485 million for 100 Conventional Rail vehicles, to be operated in 4-car trains. As shown by the discussion above, suitable Conventional Rail vehicles might be purchased for half that amount.

When a comparison is made on a capacity basis, the cost of Conventional Rail vehicles is even more favorable than Light Rail. The MTA apparently contemplates use of articulated Light Rail vehicles, each with a capacity of 180 passengers. A 3-car Light Rail train could carry 540 passengers. The capacity of a typical 4-car train of NYC Transit A Division cars, which are similar to PATH PA-5 cars, is 728 passengers.<sup>13</sup> So, the capacity of the CR train in the IBX estimates is 35% more than that of the LRT train.

The MTA’s PEL Report indicates that additional costs would be associated with use of Light Railcars, saying, for example, “LRT would require operation of a new class of vehicle that is not used in other MTA services. The new class of vehicle would require new specialized maintenance and storage facilities to operate and maintain the vehicles and system.”<sup>14</sup> All of these factors indicate increased costs. Additionally, if the IBX line uses low-floor Light Railcars—like those on the NJ Transit Hudson-Bergen lines—the maintenance costs are likely to be higher than for high-floor subway or Conventional Railcars, which have more space for

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<sup>12</sup> \$485 million x 1.20 = \$582 million x 1.349 = \$785 million - \$485 million = \$300 million.

<sup>13</sup> Wikipedia “R142 (New York City Subway car),” available at [https://en.wikipedia.org/wiki/R142\\_\(New\\_York\\_City\\_Subway\\_car\)](https://en.wikipedia.org/wiki/R142_(New_York_City_Subway_car)).

<sup>14</sup> PEL Report at p. 22.

underfloor equipment and more workspace. These additional costs of the Light Rail mode are not clearly indicated in the IBX cost estimates.