

## **IBX COST ESTIMATE EXCESSES AND ERRORS**

**By John B. Pegram**

The Interborough Express (IBX) cost estimates indicate that the MTA is on track to create another excessively expensive project. In particular, the total estimated soft costs for design, project management and contingencies, exceed the direct costs of materials, labor and equipment. The excessive amounts allocated for “soft” costs could inflate the total IBX project cost by as much as a billion dollars.

This article outlines the methodology used in the IBX infrastructure construction cost estimates, and points out excessive soft costs and some apparent errors. A future article will discuss the excessive estimated costs of railcars, stations and a new tunnel for the Conventional Rail (CR) mode, which the MTA rejected as too expensive.

### **1. Background**

The IBX Planning and Environmental Linkages Study report (PEL Report) Appendices 1.10 through 1.13 contain cost estimates for the capital costs of constructing the IBX system, and for operating and maintenance, each preceded by an explanation of the methodology used. The estimates were made in November 2022, updating estimates made in February 2021.<sup>1</sup> Because the MTA apparently has not published the detailed cost estimates, which it has provided to me,<sup>2</sup> copies of these four appendices are attached to this article.

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<sup>1</sup> PEL Report Appendix 1.11, in its Appendix A at p. 2.

<sup>2</sup> When the IBX Interim Report (January 2022) and the Planning & Environmental Linkages Study report (PEL Report ) (January 2023) were published, the underlying, detailed reports were not disclosed. Because it was difficult to understand the basis for many of the statements in the published reports. I made requests for the underlying reports under the NY Freedom of Information Law (FOIL). Other people did the same. The MTA initially delayed and denied the requests. I made administrative appeals and filed petitions in the NY State Supreme Court, seeking those underlying reports. Part of Appendix 1 to the Interim Report were produced to me. Then, the MTA quietly published part of Appendix 1 to the PEL Report in August 2023 at

## 2. The Capital Cost Estimating Methodology

As discussed in more detail in the attached Appendix 1.10, the MTA’s cost estimation consultants started by estimating the “direct” costs in 2020 dollars for the various components of the IBX project. Direct costs are primarily the costs of labor, materials and equipment. These were estimated in one of two ways. Where sufficient design detail was available, the costs were estimated using unit costs for components of the design. When sufficient design detail was not provided, data compiled from similar projects was utilized to estimate costs for various aspects of the project.<sup>3</sup> For example, the estimate states that the budgeted cost of an underground station for the Conventional Rail mode was “based on actual construction costs for 2<sup>nd</sup> Avenue Subway 86th St Station.”<sup>4</sup>

Adjustments also were made for increased costs expected in New York City.<sup>5</sup>

The soft costs for design and project management by the agency, consultants and contractors were “markups,” which were estimated as percentages of the direct costs and collected in “Professional Services” and “Contractor Markup” categories.<sup>6</sup>

Two main allowances for contingencies were made in the IBX cost estimates.<sup>7</sup> First, an “Engineering Contingency,” calculated as a percentage of direct costs, was included in the “Sitework & Special Conditions” category of direct costs, Second, a general “Contingency” category, described as “Allowance for Indeterminates,” was calculated as a percentage of direct costs. Additional, smaller allowances for contingencies are buried in the direct costs, and—as a result—are part of the basis for the other markups discussed above.<sup>8</sup>

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<https://new.mta.info/document/114891>, but that omitted the cost estimates. In August 2023, the MTA produced the remaining, cost estimate parts of PEL Report Appendix 1 to me.

<sup>3</sup> PEL Report, Appendix 1.10, p. 4.

<sup>4</sup> PEL Report, Appendix 1.11, in its Appendix A, p. 16 at item 20.0320.

<sup>5</sup> PEL Report, Appendix 1.11, p. 5.

<sup>6</sup> PEL Report, Appendix 1.10, p. 5; Appendix 1.11 at p. 6.

<sup>7</sup> See PEL Report Appendix 1.11, p. 4, and its Appendix A at pp. 2 & 6-9.

<sup>8</sup> See, e.g., *id.* at its Appendix A, p. 12 at items 10.0410 & 10.0420.

Then, the estimates were adjusted to account for inflation from Q1 2020 to Q1 2027, which apparently is when the construction was predicted to occur. That adjustment was a total increase of 34.9%. (Delay in proceeding with the project appears to be costing over 100 million dollars each year, which suggests that it might be worth spending a lesser amount to accelerate the planning and funding, and start construction).

Finally, costs for adding a second freight track between Bay Ridge and Fresh Pond Yard and for vehicles (railcars), which had been included in the original calculations, were deducted. (Errors made at this stage are discussed in the next section). The resulting sums are approximately the same as the numbers that appear in the PEL Report itself.<sup>9</sup>

### **3. Calculation Errors**

First, it appears likely that when the costs from a prior project were used, such as the actual construction costs of a Second Avenue subway station, those costs already included a full markup for soft costs. Therefore, soft cost markups should not have been applied in making the estimates for those items. Also, the costs of prior New York City projects presumably included the increased costs of working in the city; therefore, an adjustment for New York City should not have been added to those items.

Second, when the consultants originally estimated the costs for the IBX line, they included estimates of the costs of vehicles and a second, new freight track between Bay Ridge and Fresh Pond Yard. Apparently, a decision was made to remove those items from the infrastructure cost estimates disclosed in the PEL Report.<sup>10</sup> That was done by deductions from the original calculations and that is where the errors appear.

When those deductions were made, the direct costs in 2020 dollars for the vehicles were deducted from the original calculation in 2027 dollars. The second freight track calculations are not clearly disclosed, but it appears likely that the direct costs in 2020 dollars also were deducted in that case. Both the vehicle and freight track deductions apparently failed to deduct the 34.9% adjustment between 2020 and 2027 dollars, which had been included in the original calculations.

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<sup>9</sup> PEL Report, p. 15

<sup>10</sup> PEL Report, Appendix 1.11 at p. 10 and its Appendix A at p. 3.

The adjustments may also have overlooked the soft costs included in the original calculation for the second freight track, but that is not clear in the documents provided to me by the MTA.

Additional errors in estimating the costs of tunnelling and an underground station for the MTA's proposed Conventional Rail mode will be discussed in a future article.

#### 4. "Soft Costs"

According to the *Transit Costs Project* report, published by the NYU Marron Institute in 2023,<sup>11</sup>

Soft costs include design, planning, force account, insurance, construction management, and contingencies; breakdowns differ by city. Nonetheless, we harmonized definitions around third-party costs. Those add 5-10% on top of the hard contract costs in our comparison cases, most commonly 7-8%. But in English-speaking countries, soft costs add much more; for Second Avenue Subway, it was 21%. Moreover, this is 21% of an already inflated amount—by at least a factor of 1.5 for labor, since third-party project management costs don't grow when contractors are overstaffed. Overall, this contributes to a New York cost premium factor of about 1.2, which we also see in other English-speaking cities. The factor has some uncertainty and may be as high as 1.3 with additional soft costs, but those are absorbed into procurement costs.<sup>12</sup>

PEL Report Appendix 1.11 states that the various markups for soft costs were agreed-upon as applicable to this project, "based on conversations that the [consultants] had with the estimating teams from NYC MTA, Long Island Rail Road (LIRR) and MetroNorth Railroad (MNR)."

As discussed below, the MTA's PEL report Appendix 1.11 apparently projects an amazing, over 100% markup for soft costs, apparently even higher than the soft costs markup incurred for Phase 1 of the Second Avenue subway. As a result, projected IBX construction soft costs would be over 50% of the total infrastructure project cost for both CR and LRT modes. Details follow.

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<sup>11</sup> Goldwyn, Levy, Ensari & Chitti, *Transit Costs Project: Understanding Transit Infrastructure Costs in American Cities*, (NYU Marron Institute of Urban Management 2023), available at <https://transitcosts.com/Final-Report/>.

<sup>12</sup> *Id.* at p. 17.

#### 4.1 Professional Services

The markups for Professional Services, totaling 30.93% of direct costs, are itemized in the following extract<sup>13</sup> from Appendix 1.11:

PROFESSIONAL SERVICES	
Professional Services (applied to sections 10-50)	
Consultant Design (Engineering)	5.00%
Construction Consultant Management	4.27%
Agency Management Costs	
During Construction (Administration and Management)	3.65%
Agency Force Account	1.00%
OCIP	6.00%
Third Party Utilities	1.00%

To give a sense of the amounts that these percentages represent, the “Consultant Design” costs of 5% for the Light Rail Mode would be 160.9 million dollars in 2020 dollars, which would be 217 million in 2027 dollars, using the consultants’ adjustment.

#### 4.2 Contractor Markups

The “Contractor Markups,” totaling 31.5% of direct costs, are itemized in this extract<sup>14</sup> from Appendix 1.11:

Contractor Mark-ups (applied to direct costs from Sections 10-50)	
Contractor Design Costs	8.00%
General Conditions (Indirect Costs)	15.00%
Contractor Overhead	5.00%
Contractor Profit / Risk	10.00%
Contractor Profit on Subcontracted Work	2.50%
Performance Bond	1.00%

The “Contractor Design Costs” of 8% for the Light Rail Mode would be 247.4 million dollars in 2020 dollars, which would be 347.3 million in 2027 dollars. Thus, total consultant and contractor design costs in 2027 dollars would be over a half billion dollars!

<sup>13</sup> PEL Report Appendix 1.11, in its Appendix A at pp. 7 & 9.

<sup>14</sup> *Id.* at pp. 6 & 8.

### 4.3 Contingencies

Here is how Appendix 1.11 lists the “Engineering Contingency” estimate:<sup>15</sup>

40.0900	Engineering Contingency (applied to direct costs from Sections 10-50 and Contractor Markups)	15.00%
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Because the Engineering Contingency is applied to both direct costs and Contractor Markups, it is 19.72% of the direct costs. (Those direct costs include some smaller, “buried” allowances for contingencies, as noted in Section 2 above).

Finally, that Appendix provides for a general or overall contingency allowance:<sup>16</sup>

90	CONTINGENCY	
90.0100	Allowance for Indeterminates (AFI)	20.00%

This general Contingency is applied only to direct costs, including the buried contingency allowances.<sup>17</sup>

High contingencies, like those in the IBX estimates, are of particular concern, because—as the *Transit Costs Project* report pointed out—they just end up getting absorbed into the budget with little benefit.<sup>18</sup>

### 4.4 Sum of Markups

I added the categories of soft costs, as a percentage of direct costs, as follows:

Professional Services	30.93%
Contractor Markups (other than Engineering Contingency)	31.50%
Engineering Contingency	19.72%
General Contingency	20.00%
<b>Total Soft Costs</b>	<b>102.15%</b>

<sup>15</sup> *Id.*

<sup>16</sup> *Id.* at 7 & 9.

<sup>17</sup> Determined by back calculation, using Estimate Summary at Appendix 1.11, p. 11.

<sup>18</sup> *Transit Costs Project* at p. 39.

Another way of looking at this is to consider that these soft costs would be 50.5% of the total IBX infrastructure project cost.

In fact, the soft costs are an even greater percentage of the estimated project costs because of the buried contingency allowances identified in Section 2 and the calculation errors identified in Section 3.

## 5. Conclusion

In the end, riders and taxpayers pay for transit. We have a right to be concerned about excessive transit construction costs.

It should be remembered that the IBX project is only a 14-mile-long line using an existing right-of-way. It is not a complex project in comparison to most other new transit line projects.

I suggest that the MTA study and follow the recommendations at pages 37-39 of the *Transit Costs Project* report. As that report says,

The good news is that high-cost countries can adopt the practices of low-cost countries and build subways at costs more in line with those of low-cost Scandinavia, Southern Europe, and Turkey. To do this, it requires rethinking design and construction techniques, labor utilization, procurement, agency processes, and the use of private real estate, consultants, and contingencies. If it implements the best practices we detail in the rest of the overview, the highest-cost city in our database, New York, can reduce its construction costs to match those of Italy and match or even do better than Scandinavia.<sup>19</sup>

If the soft costs for the IBX project are brought down to percentages comparable to global standards for transit system construction, we might save a billion dollars!

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<sup>19</sup> *Transit Costs Project* at p. 18.