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## Harvard study: North South Rail Link would cost less than thought

<https://www.bizjournals.com/boston/news/2017/08/17/harvard-study-north-south-rail-link-would-cost.html>

A new study conducted by Harvard University students and faculty, due to be released Thursday, says the North South Rail Link could be built for as little as \$3.8 billion for a slimmed-down version or as much as \$5.8 billion for a larger one — both significantly smaller than the most recent previous cost estimates for the project.

The study was conducted by graduate students at Harvard Kennedy School and overseen by Linda Bilmes, professor of public policy at Harvard University's Kennedy School of Government. Bilmes, who spent 10 years as a principle at Boston Consulting Group and served as assistant secretary of commerce under President Bill Clinton, said that her class undertook the project at the suggestion of Congressman Seth Moulton, a former student of hers.



A map from the Harvard white paper shows the proposed route of the North South Rail Link.

Courtesy Harvard Kennedy School

In an interview, Bilmes said the goal of the study was to come up with “rough order-of-magnitude estimates” to build a tunnel connecting North and South stations about 2.5 to

3 miles long. The idea, which was part of the original plans for the Big Dig project, would allow trains to move through the city rather than forcing them to stop and turn around, making easy commutes possible to and from anywhere in the greater Boston area. Proponents of the plan say it would contribute to economic growth in the city for years to come and also ease traffic on the city's main highways.

The estimate in the study is based on historical project data from the Federal Transit Administration, then verified with a "regression analysis" using comparable projects around the world.

"This is the kind of order of magnitude estimate you'd get from a consulting firm," said Bilmes. "This is as good as you'd get, or better, than if you asked for an order of magnitude estimate from a consulting firm like McKinsey or Boston Consulting Group."

The Harvard study did not look at the potential benefits of the link. A state-funded cost-benefit analysis is now underway, with results and a separate cost estimate expected early next year.

The most recent previous estimate of the cost to build the link, completed in 2003, was \$5.2 billion for a one-tunnel, two-track link, and \$8.5 billion for a two-tunnel, four-track version, adjusted for inflation to the year 2010. The new estimate from Harvard is calculated in 2025 dollars, the estimated midpoint of the project if it began in 2021. Adjusting the 2003 estimates for inflation in 2025 nearly doubles them to \$9.4 billion for the one-tunnel version and \$15.8 billion for two tunnels.

The report describes the estimate as "highly conservative," with all costs for items in the federal spreadsheet increased by 16.4 percent "to account for higher-than-average construction costs in Boston," plus a 50 percent contingency supplement and a "Monte Carlo simulation to model the actual cost of historical projects, including cost overruns if they incurred, rather than using average costs."

Bilmes said that while it's unclear exactly what caused the cost to go down in the past 15 years, it's likely because of the widespread use of tunnel boring machines that operate under the Earth without disturbing the ground above.

"I think it's important not to think of the 2003 study as wrong," she said. Modern tunnel boring technology was brand new 15 years ago. Today there are many more examples of similar projects using tunnel boring machines, she said, making cost comparisons easier. "What we do know is some portion of the difference is due to the introduction of tunnel boring machines."

Besides Bilmes, the students who worked on the study are Jean-Louis Rochet, Laura White, Pete Mathias and Kate O'Gorman. Biomes said of all the authors, "we didn't come into this as advocates or opponents."

"Our updated estimates suggest that the economic case for the project may be significantly more attractive than earlier understood," the report says. "We recommend further study of the link proposal to develop detailed cost estimates, assess the potential benefits, and determine its benefit-cost ratio."