

## The Nerve of Traffic Modeling

“In the 2025 Future With the Proposed Action . . . of the 238 intersections evaluated . . . seven intersections would have unmitigated significant adverse impacts during the weekday PM peak hour.” Delay was calculated to 1/10 of a second, and the conclusions identified four intersections predicted to have more than five minutes of delay.

I wrote that in a 2004 environmental impact statement about what traffic would do in Midtown Manhattan 21 years later. What nerve to believe I could predict something so far out—and down to a fraction of a second.

**Planners have long relied on traffic operations analysis software to “calculate” future conditions:** Input current conditions, identify what the proposed project would change about them, add some growth factors, assume some travel routes and the number of passengers in each car, and voila! Your software predicts the future. Mitigate some impacts with changes to traffic signal timing or physical changes and you’ve made them disappear. Maybe that’s viable for a short-term future. But two decades in advance?

Who are we kidding? According to a recent study by the Harten Group, “the likely inaccuracy in the 20-year forecast of major road projects is  $\pm 30\%$  at minimum.” Can you imagine changing the traffic lights on your street corner 20 years ago to make the intersection work today?

Only halfway to 2025, my projections are already anachronistic. They do not account for the then-unrecognized millennial generation, its higher use of transit and lower auto ownership rates, or the concept of bike share. Even the development and growth assumptions failed to predict the major economic shift of the Great Recession. Only by coincidence will our projections reflect actual conditions in 2025. Would it have been so different if we had not modeled anything and written instead, “In the 2025 Future With and Without the Proposed Action, there will be a lot of traffic in Midtown Manhattan. Plan for extra travel time”?

But the 2004 EIS analysis was required to receive federal funds for a transportation project. An extension of New York City’s subway network could not be built without them, so that sentence was needed. That’s one of the reasons planners continue to perform such analyses. Our officials require it, our government provides funds for it, and ultimately, no one checks our work.

**It’s time we take a lesson from the statistician George Box, who said, “Essentially, all models are wrong, but some are useful.”** Models are used to simplify our understanding of reality. The farther out that reality is, the less accurately we can project it.

So instead of using models that require long-term projections, let’s use modeling in two reasonable ways. The first is short-term projections, using conditions that we’re comfortable won’t change dramatically in that time frame. It won’t account for a global economic shift, but most other trends take a few years to be fully realized, so the results should be reasonable approximations.

Second, let’s use modeling as a tool to compare different approaches against each other, as with scenario planning. Whether it’s a few years out or a few decades, the point is to see major shifts in the future assuming different decisions today. For these efforts, the further out you project, the easier it is to compare decisions on zoning, transportation demand management, and financial incentives, without comparing site-specific changes.

Let’s tell our elected officials how planners can help the decision-making process. Let’s be clear that we’re not fortune-tellers. We’re planners who help communities make decisions based on what we know today. And let’s be honest about the true value of modeling, because it’s never going to tell us how long we’ll have to wait at a light in 20 years.



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