

Commuter Rail: Is Connecticut on the Right Track?

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Connecticut is eyeing upgrades to the long-haul passenger rail line running between New Haven and Springfield, MA, that could extend commuter service to central Connecticut. Ideally, better service would shorten the trips to New Haven and Fairfield counties and to New York, reduce congestion on interstate highways, and attract businesses to the Hartford-Springfield corridor. But analysis of the existing railway network—Metro-North, Amtrak and Shore Line East—suggests that if a new commuter line were to yield significant pecuniary benefits, they would largely be confined to towns where the trains stop and would diminish with distance from New York City.

Current events are renewing public interest in mass transit, including commuter rail. Last year's spike in gasoline prices led to surges in bus and rail ridership and in carpooling. Longer term, the continued volatility of fuel prices and growing highway congestion may be prompting a change in tastes away from suburban and toward higher density urban living, buttressed by public incentives for urban redevelopment. Similar dynamics are spawning the growth of a "green" movement with emphasis on eco-friendly lifestyles and energy efficiency. The tilt in public priorities is also evident in the Obama Administration's stimulus plan, which provides significant resources for mass transit, particularly for passenger rail systems.

RAIL SERVICE TODAY

Three railways provide passenger service in Connecticut: Metro-North,

from New York to New Haven; Shore Line East (SLE), from New Haven to Old Saybrook; and Amtrak, from New York to Boston and to Springfield, MA. Metro-North is jointly owned and operated by Connecticut's Department of Transportation (DOT) and New York's Metropolitan Transit Authority (MTA). SLE is a DOT venture operated by Amtrak. Together Metro-North and SLE offer local commuter services to Connecticut residents living along Long Island Sound and along the interior rail branches to New Canaan, Danbury and Waterbury. The federally-funded Amtrak runs a more limited long-haul passenger service along the commuter shore route, and on a branch extending from New Haven northward, as part of its northeast-corridor railway.

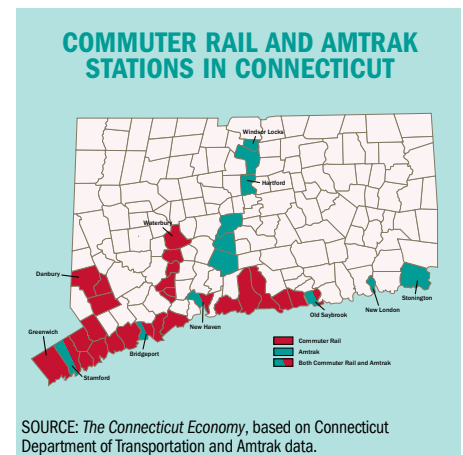
Turning that Amtrak branch line into a commuter route has long been on the state DOT's wish list, but its high price tag, as much as \$1 billion by some accounts, has made it prohibitively expensive. Enter the Obama stimulus plan. The package earmarks money to rebuild Amtrak's shoreline bridges, and sets aside \$8 billion to develop a nationwide high-speed rail system. The stimulus funds might free up resources that could potentially be reallocated to a commuter line between New Haven and Hartford, the cost of which may be substantially reduced if the commuter trains could piggyback on the high-speed tracks.

A STORIED PAST

Ironically, the expense of upgrading Connecticut's rail lines is largely tied to rebuilding tracks that were dismantled late in the 20th century in a cost-cutting effort. It was an ignominious turn

for what had been a storied railroad. Connecticut's rail system began in the early 1800s as a patchwork of tracks with isolated links to towns and businesses, where passengers and freight moved by horse-drawn cars. Steam supplanted horse-power as expansion knitted the rails together into a network, and mergers brought together under common ownership three private railways, each with a terminus in New Haven but with lines extending in separate directions to New York, Hartford and New London. An 1872 marriage produced the New York, New Haven and Hartford Railroad (known simply as the New Haven).

Its 19th-century successes enabled the New Haven to enter the 20th century as a pioneer in the use of electric and diesel engines, thanks in no small measure to the ambitions of J.P. Morgan, who bought the railway in 1903 in a bid to build a vast transportation empire in the northeast. At its zenith in the roaring 1920s, the New Haven operated more than 2,000 miles of track stretching throughout New England, with service to New York City, Boston and Providence. Nationalized, as were all railroads, dur-



ing WWI, the New Haven went bankrupt during the economic collapse of the Great Depression. The railroad exited receivership after WWII, only to re-enter it in the early 1960s, plagued by mismanagement, overregulation and competition from autos, trucks and airplanes.

What followed was a series of reorganizations, from a merger with Penn Central just before its own 1969 bankruptcy, to incorporation (along with other bankrupt rail lines) into Conrail in 1976. Conrail balked at having to continue to provide money-losing passenger services (which had long been subsidized by freight traffic), so Congress responded by transferring that responsibility to local public authorities, thus establishing the current structure. Now commuter traffic is handled by MTA and DOT, long-haul passenger travel by Amtrak, and freight by CSX (the regional successor to Conrail) and other private lines.

TRACKING THE BENEFITS

In 2008, the New Haven branch of Metro-North carried more than 3 million riders per month, many of them commuters from Fairfield County to Manhattan, while SLE served another 50,000 riders. For some, the train may hold a nostalgic appeal, and for others it may represent a socially-conscious

transportation choice. But for most, its attraction is purely practical. Rail travel allows commuters to avoid highway congestion, and to work, rest, or read while en route to and from their jobs.

To the extent that commuter rail offers expanded access to economic opportunities worth more than the cost of train fare, we would expect the value of such benefits to be capitalized into the prices of residential properties. Homebuyers, in other words, should be willing to pay a premium to live near a Metro-North or SLE station and will thus bid up home prices in close proximity to commuter stops. Measuring the size of that premium would enable us to gauge the value of existing commuter services, and also help determine whether extending the service to central Connecticut is worthwhile.

To estimate the premium, we set up a so-called hedonic price model using data for all 169 towns in Connecticut. A hedonic price model relates the value of a good, in this case the median-priced home, to its constituent characteristics. Our regression analysis (see table) helps distinguish the relative contribution of each characteristic to a home's value.

The question we pose is whether, after controlling for other factors, prices depend on proximity to a commuter railway (*commute*) or Amtrak (*amtrak*) stop. Naturally, prices vary by a home's size, so for each town we paired information on median home price with the median number of rooms (*rooms*). Since these data are from the 2000 U.S. Census, we used data for the same time period for other local characteristics included in the model, such as local property tax rates (*mill*), and per-pupil education (*ed*) and per-capita non education spending (*noned*), as reported by the Connecticut Policy and Economic Council (CPEC). For other dimensions of community characteristics, we also included town crime rates (*crime*), taken from the FBI's Uniform Crime Report, and the percent of the popu-

lation that is college educated (*ba*). And property values vary by region, depending upon the distance to major employment and population centers like New York City (*distny*) and Boston (*distbos*).

The regression explains nearly 95% of the variation in the (natural log of) median home prices. As one might expect, home prices vary positively with those characteristics that tend to make a home or community attractive: *rooms*, *ed*, *noned* and *ba*. Prices vary inversely with less desirable qualities: *mill*, *crime*, *distny* and *distbos*. These control variables are highly significant statistically: each has a probability of less than 1% that its coefficient value occurred by chance.

The regression also offers evidence that having in-town train access boosts property values, at least for commuter rail. Though the results are less significant statistically than for other variables, towns with Metro-North or Shore Line East stops have homes worth about 5% more than in other, similarly situated towns, as shown by the 0.0498 coefficient value on the dummy variable *commute*. In 2009, median home prices in towns with a commuter rail stop averaged about \$237,000, so the regression suggests that residents paid a premium of about \$11,500 for that convenience. The coefficient estimate on *amtrak* is not significant, so access to long-haul rail service does not appear to influence property values.

LOCATION, LOCATION

Though the average town with commuter rail access might enjoy 5% higher property values, it stands to reason that the closer a town is located to New York City, the steeper the premium might be. In a second regression we tested that possibility by creating an interaction term *commute*distny*, which should have a negative coefficient if living farther from the Big Apple reduces the commuter rail premium. That appears to be the case. Each mile away from New York reduces the prop-

PROPERTY VALUES RIDE ON COMMUTER RAIL

	Simple Model		Expanded Model	
	Coefficient	p-value	Coefficient	p-value
Intercept	12.0606	0.0000	11.8086	0.0000
rooms	0.1017	0.0000	0.1077	0.0000
mill	-0.0184	0.0000	-0.0173	0.0000
ed	0.0000	0.0000	0.0000	0.0006
noned	0.0002	0.0001	0.0001	0.0052
crime	-0.0046	0.0000	-0.0033	0.0003
ba	1.0308	0.0000	1.0353	0.0000
distny	-0.0070	0.0000	-0.0052	0.0000
distbos	-0.0027	0.0036	-0.0014	0.0953
commute	0.0498	0.0656	0.5767	0.0000
amtrak	0.0132	0.6953	-	-
commute*distny	-	-	-0.0070	0.0000
near	-	-	0.1710	0.1347
near*distny	-	-	-0.0021	0.0986

SOURCE: *The Connecticut Economy*.

A p-value is the chance of finding such an extreme value for the coefficient, if in fact no relationship actually exists between the dependent and independent variable. The smaller the p-value, the more statistically significant the result.

erty value premium by 0.7 percentage points, from a hypothetical 58% at mile zero. So Greenwich, the closest Connecticut town to New York at 31 miles distant, posts a 36% premium on property values, while in Fairfield, at 58 miles distant, the premium drops to 17%. By the time the commuter line reaches Branford, some 83 miles away from the City, the premium on property values is completely exhausted.

Our expanded model also allowed for the possibility that towns adjacent to those with commuter stops (*near*) experience spillover effects on property values from their better-served neighbors. Again allowing for a New York interaction term (*near*distny*), the evidence hints at the possibility, though the results are far less statistically significant. Weston is the town closest to New York (54 miles) that fits the bill, and it may boast a 6% premium in property values. But travel another 13 miles to Shelton and the premium drops to 3%; 16 miles farther in East Haven, it disappears.

In 2000, residential property values totaled about \$148.6 billion in the Nutmeg State. Our expanded model suggests that about \$10.6 billion, or about 7.2% of the total, traces to the net benefits associated with commuter rail. That's a significant sum, considering what the state spends to maintain the commuter system. On top of revenues (from fares and other sources) Connecticut spent \$43 million in fiscal year 2001 to operate the Metro-North New Haven line and Shore Line East.

Consider: property owners could invest \$10 billion at a “risk free” 2%, earning \$200 million every year in perpetuity, pay the state \$43 million annually for maintenance, and still be \$160 million ahead.

That doesn't, however, make an expansion of commuter service to Harford and beyond a no-brainer. Our model suggests an 82-mile radius, beyond which train service does not add to area property values. A horizon of that distance from New York makes sense. At the slowest average train speeds—34 mph on the Danbury branch, counting stops and transfers—a one-way 82-mile commute would take nearly 2½ hours. That's a five-hour round-trip commute on top of an eight-hour workday, a credible upper limit on what a working professional might be willing to endure on a daily basis. To bring Hartford within that ambit would imply a need to boost train speeds nearly 40% above those averaged on the Danbury line (113mi / 45 mph = 2.5 hrs). But trains do attain faster speeds along the route from New Haven to Grand Central, averaging about 43 miles per hour. Hartford to New York in 2½ hours would only require a slight improvement on that pace—something that the planned high-speed rail upgrade may allow. Without such efficiencies, however, it is difficult to see how a commuter line would generate benefits sufficient to justify the level of spending required to build and maintain it.

Consider Shore Line East. After a many-year hiatus, the service was resurrected in 1990 as a stopgap measure to ease traffic congestion on I-95 during a highway construction project. But the line proved so popular that DOT ultimately made the route permanent. Over the last decade, DOT has made significant capital investments in the Branford, Clinton, Guilford, and Madison rail stations, and there has been a concomitant increase in ridership. Neither of these developments is reflected in the 2000 Census data we used, and it's possible the next census may show increases to property values not found in the existing data.

But even if a central Connecticut line linking Hartford to New York proves economically tenuous, the evidence seems overwhelming that shorter links can yield enormous benefits. The New Haven line could serve as a template for a new generation of regional rail services radiating from smaller metros like Hartford. The fabled Griffin line, for instance, that planners imagine someday running between Bradley Airport and Hartford, might well pass a cost-benefit test. Central Connecticut may never be a short jaunt by rail away from the Big Apple, but there may well come a day when trolleys and trains again become a colorful part of the urban tapestry.

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BUILD IT, AND THEY WILL COME?

Still, building the new line could change land use patterns in a way that tips the scales in favor of the commuter line. Census data show that train riders are nearly six times more likely to live in a town with a commuter station than in one without, a fact that also helps explain the steep price gradient for homes shown in the regression results. So if Connecticut builds a new rail line, commuters may well come, and bid up property values in the process.

