

New Hampshire Capitol
Corridor Project Overview

Based on a White Paper
Prepared for Amtrak

On Behalf of the NH Rail
Transit Authority, the NH
DOT, and the Nashua
RPC

March 2010

by

TranSystems

New Hampshire Capitol Corridor Project Overview

Table of Contents

1.0	Purpose of this White Paper	3
2.0	Background and Project Overview.....	3
3.0	Proposed Service.....	5
4.0	Ridership Forecast	9
5.0	Economic Impact	17
6.0	Agreements with MBTA, Host Railroad, Amtrak & Other Stakeholders	20
7.0	NHDOT/ NHRTA Roles & Organization	22
8.0	Environmental Permitting/Status	24
9.0	Project Design & Engineering Status.....	26
10.0	Capital Costs & Estimates	27
11.0	Operating Costs and Fare Revenues	29
12.0	Project Schedule.....	32
13.0	Support for the Project.....	35
14.0	Next Steps	37

New Hampshire Capitol Corridor Project Overview

Tables

Table 1: Initial Service Schedule for the NHCC Service	6
Table 2: Downeaster Schedule 10/26/09	7
Table 3: Boston and Maine Timetable No. 8, October 25, 1964	8
Table 4: Downeaster Station Population, Amtrak Boarding/Alighting Counts, Fares and Bus Fares.....	12
Table 5: Downeaster Ridership over Time.....	13
Table 6: NHCC Station Population, and Estimated Annual Ridership	15
Table 7: Forecast of Ridership	16
Table 8: Total Economic Impact of Rail Expansion in 2030	18
Table 9: Capital Costs for the NHCC	27
Table 10: Downeaster Operating Costs 2008	29
Table 11: Operating Cost Estimate for NHCC (Constant 2008 dollars)	30
Table 12: Fare Revenue Forecast	31

Figures

Figure 1: NHCC Study Area Base Map.....	25
Figure 2: Project Schedule.....	34

1.0 Purpose of this White Paper

This White Paper is based on a document developed for Amtrak by TranSystems on behalf of the New Hampshire Rail Transit Authority, the New Hampshire Department of Transportation and the Nashua Regional Planning Commission. Amtrak requested a document that would present the details of the New Hampshire Capitol Corridor (NHCC) Project, showing its state of readiness for implementation as part of the High Speed Rail (HSR) program. That document was entitled the *New Hampshire Capitol Corridor Project Elements and Overview, December 2009*. It included a brief narrative along with background documents on ridership, environmental documents, and an operating plan among other information. This White Paper incorporates the key information from the background documents to provide a comprehensive project overview. This paper also incorporates updated analyses and data from the paper for Amtrak.

2.0 Background and Project Overview

Fifty years ago northern New England had the basics in place of a rail passenger transportation system. The Boston & Maine had worked with the Central Vermont to speed up service to Montreal and cut the travel times from ten hours to eight hours. But over the next 12 years all of the system was lost. First long distance trains between Boston and Montreal were eliminated, then trains between Boston and Portland disappeared, then the corridor level trains connecting Concord NH to Boston disappeared, and then finally when Amtrak began, service disappeared along the western edge of New Hampshire on the New York to Boston Connecticut River Valley route.

Slowly over the last twenty plus years our region has been taking steps to restore these lost services and infrastructure. The re-establishment of the NHCC service is the next step in that process.

The NHCC connects the two state capitals of Boston and Concord. This corridor is part of the federally designated Boston to Montreal High Speed Corridor. Because of the existing MBTA passenger rail capability and right-of-way (ROW) ownership across Massachusetts, and the NH population centers that can be reached purely with track improvements on the existing corridor, the NHCC project is the obvious first phase of a multi-phase project to complete the Boston to Montreal high speed corridor.

The current use of the right of way for the NHCC includes commuter service provided from Lowell, MA to Boston, MA (North Station) by the Massachusetts Bay Transportation Authority's (MBTA) service provider Massachusetts Bay Commuter Rail (MBCR). The freight line from Lowell to the NH/MA state line is owned by Massachusetts Department of Transportation (MassDOT) formally the Executive Office of Transportation (EOT). The freight corridor from the NH/MA state line to Concord, NH is owned by Pan Am Railways (PAR).

The NHCC will serve Boston, Lowell, Nashua, Manchester and Concord. It will connect with the existing Amtrak Downeaster service at Boston's North Station. Ultimately this corridor will continue to Montreal, PQ for a total of 329 miles.

New Hampshire Capitol Corridor Project Overview

Proposed online station stops include:

- Lowell MA
- Nashua NH
- Bedford NH (Manchester Boston Regional Airport or MHT)
- Manchester NH
- Concord NH

Improvements to the Boston-Concord corridor vary by area. Improvements by line segment govern the planning process, centering on environmental clearances and engineering:

- *Boston-Lowell:* Additional platforms at North Station (possibly shared with other High Speed Rail (HSR) applications), improvements to interlockings, removal of slow orders at crossings, crossing improvements.
- *Lowell-Nashua:* Addition of second track on original two-track right-of-way; crossing improvements, signal and interlockings, construction of passenger and storage facility at Nashua.
- *Nashua-Concord:* Upgrading of existing trackage with welded rail, signaling, crossing improvements; construction of intermodal platform at Manchester; construction of passenger and interim equipment layover facility at Concord.

Proposed connectivity to other modes and existing services is extensive:

- *Boston North Station:* Four existing MBTA commuter rail lines, two existing subway lines, Amtrak services to Portland, ME (Downeaster); connectivity to any HSR corridors proposed from Boston-north. Existing subway services include connections to Back Bay Station (Amtrak to Albany, NY), and Massport express bus services to Logan Airport.
- *Lowell, MA:* Existing Gallagher Transportation Terminal - 695-space parking garage facility, terminal for all LRTA local and paratransit bus, streetcar under development, and existing MBTA commuter rail terminal.
- *Manchester:* Planned express bus linkage between Manchester-Boston Regional Airport and a new rail service location adjacent to airport (sufficient initial interest to have Southwest Airlines as one of the entities providing matching funds toward this application).
- *Concord:* Potential boarding location near the Concord Transportation Terminal for local and intercity bus transfer.

NHDOT will evaluate ownership and operating options for the Pan Am right-of-way to enhance it for rail transportation purposes. Massachusetts and New Hampshire have jointly worked on a variety of ongoing commuter and intercity rail proposals between Boston and Concord, with the most recent being in 2008. As the HSR corridor overlays this same route, the goals of improved rail service and infrastructure is equally shared.

3.0 Proposed Service

The NHCC Project will serve many purposes. It will be an intercity corridor connecting the capital cities of Massachusetts and New Hampshire and connecting Boston with Manchester Boston Regional Airport. It will be the first leg of the Boston to Montreal High Speed Rail. It will provide the infrastructure for a commuter rail service between Boston, Lowell and the cities of southern New Hampshire.

The proposed initial service for the NHCC is focused on the intercity market between Concord and Boston, and is patterned after an operating plan that was operated by the B&M Railroad in 1964. That plan consisted of five round trips per day between Concord and Boston, running express south of Lowell. The B&M also ran a commuter rail-style service between Lowell and Boston with 8 intermediate stops. According to the B&M timetable, the run between Concord NH and Boston MA took roughly an hour and a half, as is being proposed for the initial HSR service.¹ The proposed initial service is also similar to the current Downeaster service, which operates five round trips a day.

In order to design the initial operating plan for the NHCC, the MBTA Director of Railroad Operations was consulted in order to insure that NHCC trains could fit with the current MBTA Lowell to Boston service.

Table 1 shows the initial schedule. Table 1 also indicates the two train sets that are used to operate the schedule, as well as the time points when the north and south bound trains meet. For comparison purposes, the current Downeaster Schedule is shown in Table 2 and the 1964 B&M schedule is shown in Table 3. Additional improvements are planned to allow service to be increased to 10 round trips a day by 2019 and 12 round trips a day by 2024.

¹ Boston and Maine Timetable No. 8, October 25, 1964

New Hampshire Capitol Corridor Project Overview

Table 1: Initial Service Schedule for the NHCC Service

Read Down					Station	Miles	Read Up				
5:35	9:00	13:30	17:28	22:00	Boston	0	8:10	13:00	17:00	19:15	21:30
6:07	9:32	14:02	18:00	22:32	Lowell	25	7:38	12:28	16:28	18:43	20:58
6:24	9:49	14:19	18:17	22:49	South Nashua	36	7:21	12:11	16:11	18:26	20:41
			18:21							18:21	
6:39	10:04	14:34	18:32	23:04	Bedford/Airport	52	7:06	11:56	15:56	18:11	20:26
6:44	10:09	14:39	18:37	23:09	Manchester	56	7:01	11:51	15:51	18:06	20:21
6:52							6:52				
7:05	10:30	15:00	18:58	23:30	Concord	74	6:40	11:30	15:30	17:45	20:00

Version 1 (9/8/2009)

Train set A
 Train set B
 Train meets

New Hampshire Capitol Corridor Project Overview

Table 2: Downeaster Schedule 10/26/09

Read Down					Station	Read Up				
AM 9:05	AM 11:05	PM 5:00	PM 5:40	PM 11:00	Boston	AM 8:15	AM 10:25	PM 3:15	PM 5:05	PM 10:20
9:23	11:23	5:18	5:58	11:18	Woburn	7:51	10:07	2:57	4:39	10:02
9:52	11:52	5:47	6:32	11:47	Haverhill	7:25	9:38	2:28	4:13	9:33
10:12	PM 12:12	6:07	6:49	AM 12:07	Exeter	7:04	9:17	2:07	3:52	9:12
10:25	12:25	6:20	7:02	12:20	Durham	6:49	9:04	1:54	3:39	8:59
10:33	12:33	6:28	7:10	12:28	Dover, NH	6:42	8:57	1:47	3:32	8:52
10:49	12:49	6:44	7:26	12:44	Wells, ME	6:24	8:39	1:29	3:14	8:34
11:05	1:05	7:00	7:42	1:00	Saco/Biddeford, ME	6:07	8:22	1:12	2:57	8:17
AM 11:30	PM 1:30	PM 7:25	PM 8:10	PM 1:25	Portland, ME	AM 5:45	AM 8:00	PM 12:50	PM 2:35	PM 7:55

New Hampshire Capitol Corridor Project Overview

Table 3: Boston and Maine Timetable No. 8, October 25, 1964

Read Down					Station	Read Up				
AM	PM	PM	PM	PM		AM	AM	PM	PM	PM
9:00	12:45	4:00	5:20	7:45	Boston	8:22	9:30	1:40	7:30	11:00
9:30	1:16	4:32	5:55 6:58	8:17	Lowell	7:50 7:40	8:58	1:05 12:53	6:55	10:23
9:36	1:23	4:40	6:03	8:22	North Chelmsford	7:36	8:51	12:48	6:49	10:18
9:47	1:33	4:51	6:16	8:32	Nashua	7:25	8:40	12:38	6:39	10:08
9:50	1:36	4:54	6:19	8:35	Tie Plant	7:21	8:36	12:35	6:36	10:05
10:02	1:47	5:05	6:30	8:46	South Manchester	7:09	8:24	12:24	6:22	9:54
10:05	1:51	5:09	6:32	8:50	Manchester	7:06	8:21	12:21	6:19	9:51
10:09	1:54	5:12	6:35	8:54	Amoskeag	7:02	8:17	12:18	6:15	9:47
10:21	2:07	5:25	6:48	9:09	Bow	6:48	8:03	12:04	6:01	9:33
10:26	2:12*	5:30	7:00	9:15	Concord	6:45	8:00	12:00	5:58**	9:30

* Continues to White River Junction ** Starts from White River Junction, VT

4.0 Ridership Forecast

Background

A ridership forecast was made for the proposed intercity service between Boston and Concord NH for the purposes of the White Paper for Amtrak. The reason a new forecast was needed was that prior forecasts were for services that are different than the proposed intercity service. One of the prior forecasts was for a Boston to Montreal service done in 2003. Another forecast was for a commuter rail service done in 2008 which focused on the commuter market between Boston and Manchester. These ridership forecasts were examined for this analysis, but ultimately, it was determined to use the Downeaster ridership data for forecasting for the NHCC since the intercity service is somewhat similar, and since there was not time nor budget to develop a model-based forecast.²

The 2003 study provided ridership estimates for a high-speed-rail service between Boston and Montreal.³ These ridership estimates were provided for varied assumptions regarding speed of travel and frequency of service. The 2008 study provided a ridership estimate for a commuter rail service extending from Lowell, MA to Nashua, Manchester, and Concord. The commuter rail ridership forecasts assumed that service would be an extension of existing MBTA services, with interim stops and some express.⁴

The HSR Track 2 application for the initial phase of the NHCC between Boston and Concord is different from what was examined in the prior ridership forecasts. It is based on a service plan that is dependent on a significant increase of track speed and capacity north of Lowell, no interim station stops at all between Boston and Lowell (i.e. it is not intended to be commuter-rail like service) and no initial phase beyond Concord in the ridership estimates. It will operate out of North Station in Boston, and connect to a populated, on-rail demographic distribution that runs parallel to a major expressway system that is frequently congested, particularly in peak periods. Ridership is expected to consist both of longer-distance commuters and conventional corridor intercity riders. The initial service consists of 5 round trips.

² The scope for the work for TranSystems assumed that NHRTA would provide forecasts for the current effort, but due to the differences between the start-up intercity- service and commuter service, new ridership estimates needed to be derived.

³ *High Speed Rail Boston to Montreal Planning and Feasibility Study, Phase I*, for Vermont Agency of Transportation, NH DOT and MA EOTC by Parsons Brinkerhoff Quade and Douglas et. al., April 2003.

⁴ Ridership Estimates for Capital Corridor Passenger Rail Service, Southern New Hampshire Planning Commission, PB Americas, Inc., Sept. 2008. <http://www.nh.gov/dot/programs/nhrta/documents/ManchesterRailRidershipReport09044082.pdf>.

New Hampshire Capitol Corridor Project Overview

The best parallel for this operating plan is the Downeaster schedule operated between North Station in Boston and Portland, ME. The similarities include:

- Same destination for both corridors - North Station in Boston
- Operation over existing MBTA commuter routes with one inbound station serving both services (Haverhill, MA) where ridership is split between alternatives (similar to Lowell)
- Same likely equipment set (P42 with Amcoach and cab car run push-pull)
- Same number of daily trips between endpoints, on a similarly distributed all-day, non-commuter schedule
- Similar markets focused from outlying population centers to the metropolitan center of Boston, in a rail-aware and transit-familiar market
- Direct competition with parallel Interstate highway corridor (I-95 v. I-93)
- Interim station stops provide significant boardings – Downeaster #2 heaviest loading station is Exeter, NH (50 miles out from Boston) – similar to Manchester NH.

The value of using the Downeaster service to help estimate ridership for the NHCC is the fact that operationally, and statistically, the service has been closely monitored, measured, and scrutinized since its inception – including passenger boardings by station by year. Given the similarities in service frequencies and target markets, this observed Downeaster ridership provides a real world analogy which can be used for the proposed NHCC service.

There are some important differences between NH Capitol Corridor and Downeaster service.

- Downeaster is 114.7 miles from North Station to Portland; NH Capitol Corridor is 73.5 miles
- Total projected train miles on similar schedules are 423,400 miles on Downeaster vs. 268,275 on the NH Capitol Corridor.
- Downeaster features nine station stops; NH Capitol Corridor would have five.
- The population along the Boston-Concord corridor is much larger than for Boston-Portland. There are an estimated 347,000 residents for the communities with stations along 75 route miles for the NHCC vs. 217,849 on 114 miles for the Downeaster. Overall, the NH Capitol Corridor service area is estimated at around 500,000 people.
- The Downeaster ridership is heavily tourism oriented, due to its location along the coast.⁵ There is the potential for tourism on the NHCC (especially the Lowell National Park), but the Maine and New Hampshire coast probably still have more tourism than the NHCC.

⁵ Early market research in May and August of 2002 found that 53 (May) and 39 (August) percent of Downeaster ridership was for recreation or vacation on weekdays. On weekends, it was 65 (May) and 76 (August) percent. The commuter market has grown since the early years. Source for market research was the *Downeaster Service Strategic Planning and Analysis, Analysis of Operations Report*, by KKO & Associates, July 2003, pp. 62-64.

New Hampshire Capitol Corridor Project Overview

Methodology

Each community on the Downeaster was analyzed in relationship to passenger boardings, boardings compared to Census Data population, and competition from other transportation sources (MBTA, express bus services, etc.) In addition, the fares were compared to the competitive sources of transportation to see if Downeaster fare rates by miles from Boston could be directly applied to similar distances on the NHCC and remain competitive to transportation alternatives.

Table 4 shows 2008 Amtrak boarding and alighting counts for the Downeaster by station. Note that each passenger counts twice—once on boarding and once on alighting. Also note that not all passengers travel to or from Boston—the Boston and Woburn total is around 80% of the total count from Haverhill Station north to Portland.

To translate these counts into 1-way passenger trips requires dividing by two. The total based on counts of 474,492 passengers is close to the total passengers reported by the NNEPRA for calendar year 2008 (482,949 passengers), indicating good correspondence between the Amtrak boarding counts and overall ridership figures.

The next step was to compare these counts to prior counts and forecasts which ignored the Boston end. Table 4 shows an estimate of passengers boarding or alighting at outer stations, factored up to equal the total CY 2008 Downeaster passenger count.⁶

A final step computes the number of passengers per capita from each municipality along the Downeaster. This is a very rough way of estimating riders by examining nearby population, and assessing how yearly boardings relate to population. A model that recognizes not only trip generation but also total trip making along the corridor would provide a better estimate, but a much more quick and inexpensive methodology was needed for the purposes of this analysis.

⁶ This method treats each trip as if it has a Boston end, whereas some trips do not end in Boston. Estimates of fares assuming a Boston start or end for each trip will thus be slightly higher than if the shorter trips were considered.

New Hampshire Capitol Corridor Project Overview

Table 4: Downeaster Station Population, Amtrak Boarding/Alighting Counts, Fares and Bus Fares

Station	2007 Municipal Pop.	Miles from North Station	Amtrak 08 Boarding/Alighting*	Passengers (One-way)	Allocate Passengers to Outer Stations Using CY 2008 Total	Annual Boardings per Capita (Pop. of Station Municipality)
Boston N. Station	609023	0	414835	207418		
Woburn	36871	10	14406	7203		
Haverhill, MA	60500	32.9	36050	18025	33,498	0.55
Exeter, NH	14735	50.4	95204	47602	88,464	6.00
Durham, NH	13684	61.7	66173	33087	61,489	4.49
Dover, NH	28775	67.1	56187	28094	52,209	1.81
Wells, ME	9950	84.9	48452	24226	45,022	4.52
Saco, ME	18164	99.1	35346	17673	32,844	1.81
Old Orchard Beach	9480	103.7	12226	6113	11,361	1.20
Portland, ME	62561	114.7	170105	85053	158,063	2.53
Total Passengers				474,492	482,949⁷	2.22

*Note that Amtrak counts each passenger twice—once when boarding and once when alighting. One way passenger trips are thus ½ the Amtrak counts.

As can be seen in Table 4, the one-way trip boardings per capita for the Downeaster ranged from 1.20 in Old Orchard Beach to 6.00 for Exeter. As expected, Haverhill boardings were less per capita since the MBTA fare is much lower than the Downeaster. A similar situation can be expected at Lowell Station on the NHCC. The average ridership/population factor for all stations was 2.22 annual one-way riders per capita for the municipalities at each stop.

⁷ Total passengers for CY 2008 based on monthly performance reports from the Downeaster.

New Hampshire Capitol Corridor Project Overview

The Downeaster ridership did not start at 2008 levels however. Table 5 shows how ridership and revenues for the Downeaster grew over time. Between 2002 and 2008, ridership grew by 66 percent.⁸ On an annualized per train basis, this growth is 4.8 percent per year. However growth is not uniform. As explained by an early observer of the Downeaster, the first year represented early adopters trying the service for the first time. There was a drop in riders after most of the initial riders tried the service. Ridership began to build after the 3rd year when the Downeaster became a proven service, riders began to use it more often and commuters joined the tourists.⁹

Table 5: Downeaster Ridership over Time¹⁰

Calendar Year	Ridership	Comment
2002	291,794	From http://www.amtrakdowneaster.com/userfiles/file/DOWNEASTERPERFORMANCEUPDATEDecember2005.pdf . Four round trips per day
2003	257,801	Same as above
2004	248,571	Same as above
2005	293,653	Same as above
2006	n/a	
2007	381,745	Computed from several monthly reports. August 2007 was the start of the 5 th round trip
2008	482,950	Computed from several monthly reports. Five round trips per day

Ridership estimates for the NHCC were made assuming a trip generation factor of 0.55 for Lowell (same as for Haverhill on the Downeaster), and using a Portland ME factor of 2.53 for the stations north of Lowell. Since the Bedford-MHT stop serves a different clientele, the estimate of ridership from the PB America study was used, except that ridership was reduced to account for the smaller number of trains and then halved again, due to the likely sensitivity of airport bound travelers to frequency of rail service.¹¹

Another adjustment needs to be made to the NHCC ridership estimates, since the 2008 Downeaster estimates represent 6 years of ridership adjustment and growth with that service. In fact the first year ridership (CY 2002) on

⁸ In 1990, Multisystems (now TranSystems) prepared ridership estimates for the Downeaster using experience from elsewhere to estimate mode splits and also an Ohio based demand model. Later estimates were done by TMS. The Multisystems estimates were 73% and 75% of actual first year ridership. TMS estimates were over 3 times first year ridership.

⁹ Conversation between David Nelson (of URS and previously KKO) with Karla Karash, explaining the early drop in ridership. David Nelson was the author of a report on early Downeaster Performance: *Analysis of Operations Report, Downeaster Service, Strategic Planning and Analysis*, prepared by KKO and Associates, subconsultants to VHB, July 2003.

¹⁰ Based on Monthly Performance Reports from NNEPRA.

¹¹ Steven A. Morrison, "The Value of Amtrak," *Journal of Law and Economics*, Volume 33 no. 2, October 1990, pp. 361-382.

New Hampshire Capitol Corridor Project Overview

the Downeaster was 291,794 passengers, or 60% of the CY 2008 ridership. Thus the initial NHCC ridership should be factored down to account for first year conditions.

Table 6 shows the resulting ridership estimates for the NHCC, along with the population of municipalities served, distance to North Station, fare levels, competing bus services and bus fares. In general the NHCC fares are assumed to be slightly greater than competing services.

As shown in Table 6, this methodology results in projected passenger boardings of approximately 442,000 one-way trips versus 291,794 trips for the Downeaster in its initial year. The presence of much larger on-line population centers at interim distances on the NHCC makes the case for this estimate.

Finally, comparison of this approach, methodology, and results to previous commuter-rail based assumptions is necessary. The ridership forecast based on analogy with the Downeaster in this analysis falls between the forecasts for the earlier services.

On the low side is the 2003 report for the Boston to Montreal service which had an option with 4 round trips per day and a top speed of 80 miles per hour, with average speeds around 42 miles per hour—slower than the expected average speed on the proposed NHCC service. The forecasted ridership was 213,276 passengers for the entire corridor, but with only 13,469 going the whole distance.¹² Even assuming most riders are in the southern end of the route, and recognizing that only 4 trips are offered rather than 5, this 2003 forecast implies ridership that is less than forecasted for the current service.

On the high side is the 2008 report which analyzed a variety of commuter service and ridership alternatives for Boston to Manchester. One most-comparable alternative, Option 5, initial services, was a basic “low frequency express 12 trip/day” alternative. It forecasted 4120 new transit trips from the stations between Lowell and Manchester. Using the PB annualization factor of 294, this is 1.2 million new one-way annual trips, which is less than total trips expected to take the service.¹³ Adjusting downward to reflect the lower service levels with 5 round trips versus 12, would yield around 500,000 new trips per year.¹⁴

¹² *High Speed Rail Boston to Montreal Planning and Feasibility Study, Phase I*, for Vermont Agency of Transportation, NH DOT and MA EOTC by Parsons Brinkerhoff Quade and Douglas et. al., April 2003, p. 5-4.

¹³ Ridership Estimates for Capital Corridor Passenger Rail Service, Southern New Hampshire Planning Commission, PB Americas, Inc., Sept. 2008. <http://www.nh.gov/dot/programs/nhrta/documents/ManchesterRailRidershipReport09044082.pdf>, p. 23.

¹⁴ This assumes an elasticity of 1 for the intercity service—that ridership will be reduced proportional to the reduction in service between 12 round trips and 5. Morrison (see footnote 10) found elasticities much higher than 1 for Amtrak services (between 1.27 and 4.02 depending on customer type), whereas many commuter rail services at higher frequencies have very low elasticities (0.13 for Southern California Rail—a 10% increase in service caused a 1.3% increase in ridership). An elasticity of 1 seems an appropriate compromise. Elasticity reflects the proportional change in ridership due to a change in service or fares or other variables.

New Hampshire Capitol Corridor Project Overview

Table 6: NHCC Station Population, and Estimated Annual Ridership

Station	2007 Pop	Miles from North Station	Explanation of Ridership Derivation	NHCC Riders based on Downeaster Trip Generation Rates	NHCC Riders Based on Down-Easter 2002 Experience	Fare Assumed	Competitive Service (bus and MBTA commuter rail) and 1-way fare
Lowell, MA	103,512	25.4	Use Haverhill factor of 0.55* population	57,313	34,628	\$8.00	\$ 6.75 MBTA Commuter Rail
Nashua, NH	86,837	35.3	Use Portland factor of 2.53*population	219,397	132,558	\$11.00	\$10 Boston Express to South Station
Bedford/Airport	Different	49.9	Reduce PB Est by 5/12 due to lower number of trains and by 50% again due to rider sensitivity to time between trains.	72,000	43,502	\$14.00	\$19 Flightline shuttle
Manchester, NH	108,874	55.6	Use Portland factor of 2.53*population	275,075	166,198	\$14.00	\$13 Boston Expr. to South Station
Concord, NH	42,392	73.5	Use Portland factor of 2.53*population	107,105	64,712	\$16.00	\$20 Logan (bus) \$15 Boston Express to South Station
Total Riders				730,890	441,597		

New Hampshire Capitol Corridor Project Overview

The proposed HSR NHCC service increases to 10 round trips a day after 5 years and then 12 round trips a day after 10 years. Ridership is assumed to increase over time as people become familiar with the service and change habits accordingly and as the service increases. Ridership is assumed to increase on a per train basis by 4.8% per year between 2014 and 2019, which is the annualized increase for the Downeaster between 2002 and 2008. We assume a lower growth the following 5 years of half the rate, or 2.4% per year. In addition ridership is expected to increase in response to the increase in service. Past experience with ridership increases due to service increases is quite varied, and in some cases response is at a greater percent of increase than the service increase.¹⁵ Generally, ridership response to service increases is greater when service starts from a low base and decreases as service increases. For the NHCC, we estimate that as service doubles between 2014 and 2019, ridership increases by 80 percent, and as service increases by 20% between 2019 and 2024, ridership increases by 16%. Table 7 shows the ridership for 2019 and 2024.

Table 7: Forecast of Ridership

Station	2014	2019	2024
Lowell	34,628	78,796	85,168
Nashua	132,558	301,637	326,028
Bedford/Airport	43,502	98,989	106,993
Manchester	166,198	378,185	408,766
Concord	64,712	147,253	159,160
Total	441,597	1,004,859	1,086,116

¹⁵ See for example, Steven A. Morrison, "The Value of Amtrak," *Journal of Law and Economics*, Volume 33 no. 2, October 1990, pp. 361-382. Also, calculations made from Downeaster ridership show that increasing service by 25% (going from 4 to 5 trains) brought an additional 28% in ridership.

5.0 Economic Impact

A separate economic impact of constructing and operating the NHCC is been completed in draft. The Executive Summary of the study follows:

Summary of Economic Impact

The purpose of [the economic impact report] is to assess the economic impacts of restoring intercity passenger rail service between Boston, MA and Concord, NH via the New Hampshire NHCC. The proposed service will extend an existing line of passenger rail service that now moves from Boston to Lowell, MA, onward to new stations in S. Nashua, Bedford, Manchester and Concord, NH. This report focuses on the long-term effects that this new service will have on job creation, increased labor income and improved business output. The most current available information about ridership, revenues, capital investments, and operations and maintenance (O&M) costs were used in developing this analysis.

The proposed service will provide four types of economic benefits primarily to residents and businesses in Southern and Central New Hampshire. It will provide: (1) time savings for those riding the train between NH and the Boston area, (2) reduced traffic congestion with faster travel, fewer accidents and greater reliability for those driving cars and trucks on I-93, (3) improved labor market access for businesses, and (4) expanded customer markets for tourism and business travel. Each of these benefits leads, in a different way, to reduce business and household costs and ultimately to expand business sales, income and jobs along the corridor. Construction of the rail line and operation of the rail service will also provide additional temporary and full-time jobs.

All of these direct impacts on income and job creation will also lead to further indirect effects on growth of business suppliers to the directly affected businesses, as well as induced effects as workers spend their added income on additional consumer purchases. The long-term economic growth impacts will occur throughout the corridor, which includes three counties in southern New Hampshire and parts of two counties in northeastern Massachusetts. These impacts will increase over time as ridership expands and service levels rise from 5 round-trips/day in 2014 to 12 round-trips/day in 2024.

The cumulative economic impact for the first 20 years of operation is projected to be:

- Over \$2.4 billion dollars of new business sales (expressed in constant 2008 dollars),
- Approximately 1.0 billion dollars of new wages (paid from the business sales), and
- 19,150 job-years (an average of 960 additional jobs sustained for at least 20 years).

Over 90% of these new jobs will be filled by New Hampshire residents.

Construction impacts are expected to be concentrated in the two years during which the project will be built, bringing in \$258 million/year in added business sales, supporting an added 1,740 more jobs/year with \$97 million in wages/year, for each of the two years.

In the long run, operations and maintenance of the service are expected to generate a further impact of \$24 million in business sales/year, supporting over 200 jobs more jobs/year with added wage income of approximately \$12 million/year.

New Hampshire Capitol Corridor Project Overview

Based on the projected level of rail service, the total annual economic impacts attributable to on-going operations of the NHCC as of 2030 is expected to be:

Table 8: Total Economic Impact of Rail Expansion in 2030

	NH	MA	Total
Jobs (Number)	998	102	1,100
Business Sales (\$Millions)	\$120	\$15	\$134
Labor Income (\$Millions)	\$50	\$6	\$56

All monetary values in constant 2008 dollars

The study also included a preliminary assessment of the net present value of rail service benefits (including travel time savings, travel cost savings, car operating cost savings, enhanced safety and emissions benefits) and rail service costs (including construction, operations and maintenance). Using a typical constant dollar discount rate of 5%, the present value of rail service benefits is estimated to be \$557 million and the present value of rail service cost is \$435 million – yielding a positive net benefit of \$122 million and a benefit/cost ratio of 1.28.

Both the economic impact results and the benefit/cost results for the NHCC suggest that this project can produce meaningful and significant economic benefits for Southern New Hampshire and a portion of northeastern Massachusetts. However, this is only a preliminary assessment. It does not include an estimate for the economic impact of the effect of new service on land development near the new stations (that can also lead to increased property values and tax revenues) and the economic consequence of other development plans and transportation-oriented development that can enhance the local effects of new rail stations.

New rail service provided by the NHCC will also provide improved operating speeds and reliability for freight rail service, and will make future upgrades for high-speed intercity passenger rail to Concord, NH and Montreal easier to add. Taken together, these future freight and high-speed intercity passenger rail improvements will improve the ability of New Hampshire businesses to serve national markets (through improved freight rail service) and connect New Hampshire cities to major East Coast metropolitan centers. While none of these factors were counted in the economic impact and benefit analysis to date, they may be additional important factors to be considered in decision-making for funding and initiating the currently-proposed NHCC passenger rail service.

New Hampshire Capitol Corridor Project Overview

Next Steps with Assessing Economic Impact

Although very positive, the findings from the economic impact study of the NHCC project are incomplete for several reasons. The big remaining tasks are to:

- Develop a comprehensive assessment of concurrent land use and economic development initiatives that would be able to be successfully undertaken in conjunction with investments in renewed intercity rail service between Concord and Boston. Such studies would be in line with similar studies recently concluded for other rail service in New England (as noted below), and would be focused on the issues of land use, zoning, development and finance specific and unique to New Hampshire. They would be used to provide information that can be used to assess the economic impacts of land development near station areas, and should include an assessment of other induced development effects attributable to development of intercity rail service.
- Undertake a comprehensive region-wide, multimodal travel demand modeling exercise that assesses the effects of renewed intercity rail service on travel patterns, demand, diversion, access and mobility in Southern New Hampshire and Northeastern Massachusetts. Such a study would include the effects of mode shift on both passenger and commercial travel, and assess both peak and off-peak commuter travel as well as assess longer business and tourism travel patterns and mode use typical of intercity travel. This study would examine, in detail, the potential for rail service of various frequencies and service characteristics (e.g., express service) to provide service to air travelers to the Manchester-Boston Regional Airport.

There are also smaller tasks that could be pursued in conjunction with the above or independently.

- Conduct a stated preference survey of travel patterns and mode choice in the Southern New Hampshire region to assess the potential for use of the proposed intercity rail service by auto commuters, business travelers, tourists and other potential users of rail services. Develop a survey-based assessment of use, diversion, induced and new travel attributable to new rail service, including information about how labor, tourism and commuter markets may be affected by the introduction of such service.
- Conduct a travel and tourism spending survey and analysis that assesses the spending patterns of both business and tourism travelers in the region. This study could be conducted jointly with existing travel demand studies, or undertaken independently or in association with travel and tourism studies undertaken by the Travel Industry Association of America (TIAA). It should cover spending on day-trips, overnight, and extended stay travel. Spending on other New Hampshire-based tourism by travelers originating in the Boston market should be considered, as well as expenditures on Boston-bound New Hampshire travelers.

6.0 Agreements with MBTA, Host Railroad, Amtrak & Other Stakeholders

At this level of design it is envisioned that several agreements will be required between the NHDOT and other stakeholders (Pan Am Railways, MBTA, Mass Bay Commuter Rail, and MassDOT). The types of agreements necessary to design, procure long lead materials, build, place into revenue service and operate the passenger rail service will be:

- Operating agreements
- Access agreements
- Force account agreements
- Others to be determined

The MBTA Director of Railroad Operations provided a format for a Memorandum of Understanding (MOU) based on discussions between the MBTA and New Hampshire representatives nine years ago. The MBTA Director of Railroad Operations stated that he felt this was still a good base document from the MBTA perspective. That document has been updated and resubmitted to the MBTA for their consideration. The draft MOU is shown in the text box below:

Even though the Pan Am Railways had originally presented an outline to New Hampshire for a host railroad agreement, subsequent issues outside this effort have stopped any progress towards an agreement. It is hoped that this process of presenting Amtrak with more detailed information will assist in the goal of an agreement with Amtrak.

New Hampshire Capitol Corridor Project Overview

Joint Statement of Principles Concerning Proposed New Hampshire Capitol Corridor Service

The Commonwealth of Massachusetts, Department of Transportation, and the State of New Hampshire, Department of Transportation, recognize the benefits to be derived from an extension of rail passenger service beyond the MBTA's commuter rail services between Boston and Lowell into New Hampshire. Like other regional cooperative efforts, such as the Pilgrim Partnership and the Amtrak service to Portland, Maine, this intercity service extension provides an essential transportation option for citizens and visitors of the New England region.

The Agencies recognize that there are significant institutional issues that must be addressed before implementation of the proposed service. The following represents some of the issues, which must be addressed:

- The Capitol Corridor service will be designed to be compatible with the current MBTA and Lowell line operations.
- New Hampshire is responsible for all capital improvements, agreements and legal requirements needed to implement the service.
- New Hampshire will provide capital for acquisition of required rolling stock, and such rail equipment will meet all MBTA and FRA standards. If such equipment is to be used in Amtrak operated service it will also meet Amtrak standards.
- All construction and operations will be compliant with MBTA standards and operational requirements.
- New Hampshire, MBTA and Pan Am Rail System (PARS) will jointly establish protocols related to operations over Pan Am Rail System properties.
- New Hampshire will assist MBTA in meeting capital improvement needs on the New Hampshire main line (Lowell line of MBTA), and such investments will be balanced with operating deficits attributable to the Capitol Corridor service extension. Specifically, New Hampshire in its grant applications will acknowledge the capacity constraints on the MBTA Lowell Line and at North Station. It will try, through these applications, to develop funding to resolve any capacity issues that MBTA define.
- New Hampshire will implement a public awareness program aimed at public safety prior to implementation of service (Operation Lifesaver as a model).
- New Hampshire will coordinate with the Massachusetts Department of Transportation concerning legislative issues (in Massachusetts) pertaining to the proposed service extension.
- New Hampshire will be responsible for satisfying any and all claims arising out of the proposed service extension to Concord.
- New Hampshire will take into account, in the design of the service and operations, the concerns and interests of communities on the route located in Massachusetts, and will comply with requirements of the MBTA, NEPA, and MEPA, as may be applicable.
- New Hampshire will include provisions for double tracking and bi-directional signaling to support the proposed service extension.
- New Hampshire will include provisions or layover facilities as may be required to support the proposed service extension. MBTA will be granted a permanent easement to occupy and operate from the layover without regard for the level of service provided.
- New Hampshire will provide ongoing operational support for the service, including assisting with complaint management, coordination with other parties of interest, and ongoing capital investments required to maintain the service.
- MBTA has no objection to the designation of Amtrak as the operator of said Capitol Corridor service, as it has an existing similar arrangement for the operation of the Downeaster service out of North Station.

These principles establish the framework for agreements and other legal requirements necessary to achieve the goal of the proposed commuter rail service extension to Concord. Both Agencies agree to make a good faith effort to reach necessary agreements, and will work cooperatively toward that end. The Agencies recognize that the right-of-way for the proposed service is part of the US DOT designated New England High Speed Rail Corridor (Boston- Montreal), that is the subject of a three state agreement. Thus, these principles may also function to enhance the development of a long-range plan for high-speed passenger rail service for the region.

7.0 NHDOT/ NHRTA Roles & Organization

The New Hampshire Rail Transit Authority (NHRTA) role is to restore passenger rail service to the state of NH. Through legislation that was signed into law in 2009 the NHRTA is affiliated with the NH DOT. Federal grants used for the restoration of passenger rail service in NH will be applied for through the NHDOT.

NHDOT

The NHDOT will be responsible for overseeing the design and construction of the NHCC. The NHDOT was established and its functions defined by RSA 21-L:2 (Laws of 1985, Chapter 402), which combined the former public works and highways department with rail, aeronautics, and transit functions from other agencies. Other state laws specifically authorize the Department to undertake a variety of mass transportation projects (RSA 228:71). The Department includes the Commissioner, Assistant Commissioner, and Deputy Commissioner and the Divisions of Aeronautics Rail & Transit, Administration, Project Development, and Operations. Within those divisions, several Bureaus will play a role in this project, including the Bureau of Finance and Contracts, which oversees all transportation expenditures and drawdown of federal funds; the Bureau of Right of Way, responsible for acquisition of property for transportation projects, the Bureau of Highway Design, which oversees preliminary and final design of highway projects, the Bureau of Environment, responsible for environmental permitting, and the Bureau of Construction, responsible for oversight of construction projects. Other entities that may assist with the project are the Department's internal auditor and the labor compliance section, which report to the Commissioner.

In Fiscal Year 2010, the NHDOT's budget is \$565.8 million.

The NHDOT and its predecessor agency have been administering federal rail and public transportation grants since 1980. This function is the responsibility of the Bureau of Rail and Transit, part of the Division of Aeronautics, Rail & Transit, through a designation by the Governor as well as the provisions of state law previously cited. The Bureau has successfully administered the Federal Railroad Administration Local Rail Freight Assistance, rail planning, and rail relocation assistance programs, in addition to capital and other grants from the Federal Transit Administration.

The administrator of the Bureau of Rail and Transit is Christopher Morgan, who has held that position since 1994. The Bureau staff includes a rail planner, railroad operations engineer and rail safety inspector/investigator. The Bureau's management is under the direction of Jack Ferns, Director of the Division of Aeronautics, Rail & Transit. The work of the Division is overseen by Christopher D. Clement, Deputy Commissioner.

New Hampshire Capitol Corridor Project Overview

NHRTA

The NHRTA will assist the NHDOT in the design and construction phases of this project by handling coordination between the NHDOT, NHRTA, PAR and all other stakeholders. As the project construction nears completion, the NHRTA will need to begin preparation for revenue operations, including overseeing testing of systems, finalizing operating and other agreements, and so forth. In addition the NHRTA will need to oversee a marketing campaign to introduce the service.

Based on the experience with the Downeaster, it is expected that 4-5 person staff will be required to carry out the responsibilities of the NHRTA, including testing, start-up, marketing and overseeing the day to day responsibilities of revenue operations.

The first step going forward is to establish an office of the NHRTA with an address, telephone number and support staff. The NHDOT is currently developing a web site that is link to the NH DOT's current web site.

8.0 Environmental Permitting/Status

New Hampshire has been working with the FRA on the requirements for environmental permitting. Originally a Categorical Exclusion (CE) Worksheet was prepared with exhibits including:

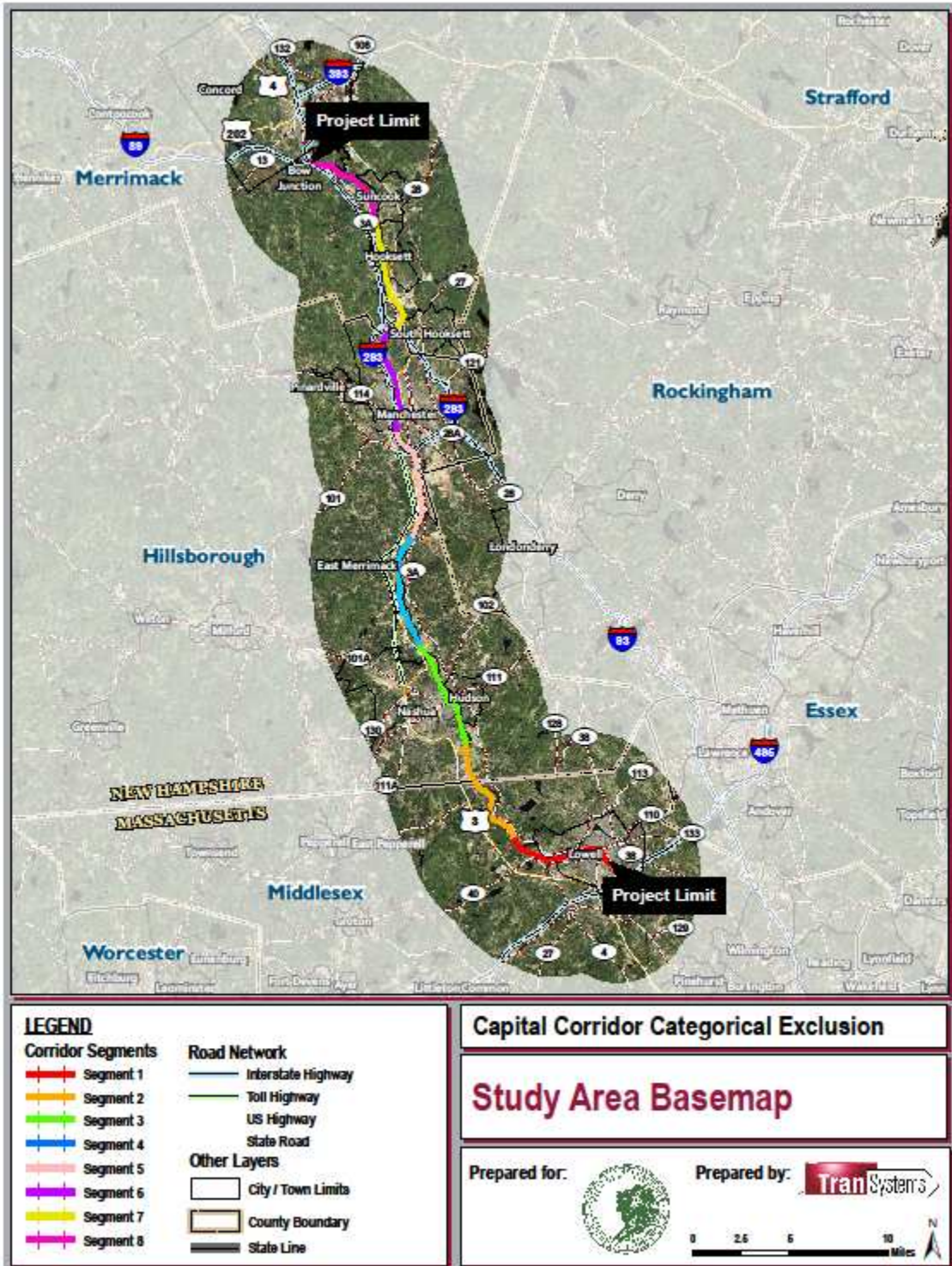
1. Environmental Constraints Map – New Hampshire North, New Hampshire South and Massachusetts.
2. Conservation Lands Map
3. New Hampshire Designated Rivers Map
4. Cultural Resource Agency Meeting Minutes
5. Natural Resource Agency Coordination Meeting Minutes
6. Sample Coordination Letter
7. List of Coordination Letter Recipients
8. Noise/Vibration/Air Quality Analysis
9. New Hampshire Prime Wetlands Map
10. New Hampshire Impaired Waters Map
11. US Fish & Wildlife Service Consultation Letter

Figure 1 shows the corridor segments included in the environmental analysis.

Prior to submission, FRA staff stated informally that due to requirements of the Federal Environmental Review Commission they could not accept a CE format for the Capitol Corridor. However, since the work that was done for the CE covers much of what is required for an Environmental Assessment (EA), New Hampshire should consider reformatting the CE worksheet into a document labeled Environmental Assessment and adding 30 days of public notice in the local newspapers. Such might be acceptable to the FRA as an EA.

New Hampshire Capitol Corridor Project Overview

Figure 1: NHCC Study Area Base Map



9.0 Project Design & Engineering Status

The line has not been digitally mapped to the level of accuracy needed for detailed site construction plans. However, it has been analyzed using Valuation mapping, track charts and aerial photography to lay out the location to tenth of mile accuracy for the needed improvements. An operational analysis was conducted of the corridor to establish the time slots for the five round trips of the initial operating schedule. This analysis was used in turn to establish the areas where double track needs to be re-established. Once the track layout was complete, the needed signal improvements were positioned on track charts to scale. Finally, the inventory of needed improvements was developed. This information has been presented to Amtrak for their consideration and comment.

New Hampshire Capitol Corridor Project Overview

10.0 Capital Costs & Estimates

The operating plan was used as the basis for projections of the capital program. This capital program was then checked against current bid pricing for accuracy and then adjusted for price changes expected in the next two years.

Table 9 shows the capital cost components expressed in Fiscal Year 2010 dollars.

Table 9: Capital Costs for the NHCC

Cost Component	2010 Costs	2011	total
TRACK STRUCTURES & TRACK	\$30,000,000	\$56,622,168	\$86,622,168
STATIONS, TERMINALS, INTERMODAL	\$7,450,000	\$17,750,000	\$25,200,000
SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		\$1,000,000	\$ 1,000,000
SITework, RIGHT OF WAY, LAND, EXISTING IMPROVEMENTS	\$ 50,000,000		\$50,000,000
COMMUNICATIONS & SIGNALING	\$ 33,717,600	\$ 30,000,000	\$ 63,717,600
ELECTRIC TRACTION			
VEHICLES	\$ 23,860,000	\$ 23,000,000	\$46,860,000
PROFESSIONAL SERVICES	\$14,692,516	\$10,000,000	\$24,692,516
UNALLOCATED CONTINGENCY		\$ 907,716	\$ 907,716
FINANCE CHARGES		\$ 1,000,000	\$ 1,000,000
Total Program Cost	\$ 159,720,116	\$140,279,884	\$300,000,000

It is envisioned that private developers will design, build, operate and maintain the station facilities including parking under an agreement with NHDOT and the NHRTA. Prior to the start of any construction the Public-Private Partnership (PPP) agreements must be in place and all permitting, approvals, etc received.

New Hampshire Capitol Corridor Project Overview

There are several sources of federal grants available for this project: stimulus, reauthorization of SAFETEA-LU and earmarks. If the State of NH is successful in obtaining stimulus dollars no match will be required because these grants are distributed for 100% of the estimated project value. However if other types of grants are secured a 20%-50% match may be required. The types of grants currently available for the project are:

- Stimulus (100%): FRA Intercity, FRA High Speed, FTA New starts, Intermodal discretionary: Final design and construction
- Reauthorization of SAFETEA-LU surface transportation bill (Moving Ahead for Progress in the 21st Century or MAP-21) (50%) : Final design and construction
- Earmarks (80%): Alternative Analysis FTA, preliminary engineering FTA

11.0 Operating Costs and Fare Revenues

There is always a challenge to accurately estimate the costs of a new operation. While several models are commonly used, it was felt that a realistic base was important. The operating cost estimates have been based on the existing Amtrak costs for the parallel Downeaster operation.

A breakdown of Downeaster operating costs for Fiscal Year 2008 is contained in Table 10. Table 10 also suggests a way to divide costs into those dependent upon train miles, those dependent upon stations, and fixed costs, and cost ratios or values for these categories. In fiscal year 2008, the Downeaster was operating 5 round trips between Portland and Boston. The estimated yearly mileage was computed as:

$$116 \text{ (one way train-miles)} * 10 \text{ (1-way trips per day)} * 365 \text{ (days/year)} = 423,400 \text{ train-miles/year}$$

Table 10: Downeaster Operating Costs 2008

Category	Cost ¹⁶	Subtotals	Cost Ratios
Train Operating Costs and Local Subsidies	\$10,618,068		
Food Service	725,338		
Subtotal Mileage Based Costs		11,343,406	Cost per train mile @ 423,400 train miles: \$26.79
Station Operations	387,350	387,350	Cost per station: \$38,735
Administration	404,347		
Marketing	479,163		
Other Expenses	311,400		
Subtotal Fixed Cost		1,194,910	Fixed Costs: \$1,194,910
Total Costs	12,925,666	12,925,666	

¹⁶ Northern New England Passenger Rail Authority Financial Report , June 30, 2008, MacDonald Page and Company, LLC.

New Hampshire Capitol Corridor Project Overview

Variable train-mile cost for the Downeaster is then estimated as \$26.79. Cost per station is estimated as \$38,735. Fixed costs are estimated as \$1.19 million. Applying this to the NHCC with its 73.5 miles and 6 stations, we have the following estimated costs shown in Table 11:

Table 11: Operating Cost Estimate for NHCC (Constant 2008 dollars)

	2010	2016	2021
NH Capitol Corridor Train-Miles	268,275	536,550	643,860
Mileage Based Cost (in constant dollars)	\$7,187,417	\$14,374,833	\$17,249,800
Station Based Costs	\$ 232,410	\$232,410	\$232,410
Fixed Cost	\$1,194,910	\$ 1,194,910	\$1,194,910
Total Estimated Cost	\$8,614,737	\$15,802,153	\$18,677,120

Given that Amtrak also provides Downeaster service, there could be cost savings due to shared facilities, such as ticketing at North Station. No allowance is made for such savings in Table 11, however. Also, as noted in Section 10, Public-Private Partnerships are envisioned to operate and maintain the station facilities. Nonetheless, a budget for station-based costs is included in Table 11, in order to provide a conservative estimate of operating costs.

New Hampshire Capitol Corridor Project Overview

The projected revenue for the NHCC can be computed from the estimated daily passengers times the fares paid times a discount factor, which accounts for various fare discounts, the fact that all trips do not have one end in Boston, and other reductions. The computed discount for the Downeaster was 0.71 which is applied to the NHCC. The resulting revenue estimates are shown in Table 12.

Table 12: Fare Revenue Forecast

	2010	2016	2021
Lowell, MA	\$ 277,024	\$ 630,372	\$ 681,346
Nashua, NH	\$ 1,458,136	\$ 3,318,005	\$ 3,586,312
Bedford/Airport	\$ 609,024	\$ 1,385,842	\$ 1,497,906
Manchester, NH	\$ 2,326,767	\$ 5,294,584	\$ 5,722,724
Concord, NH	\$ 1,035,391	\$ 2,356,044	\$ 2,546,563
Sum (with no discount)	\$ 5,706,344	\$ 12,984,847	\$ 14,034,852
Estimated Revenue	\$ 4,061,355	\$ 9,241,657	\$ 9,988,974
Fare Recovery Ratio	45%	53%	47%

Additional revenue sources will be needed to make up the difference between cost of operation and the fares collected. In order for the State of NH to secure a grant for the NHCC a reliable source of operating revenue is required.

A likely potential source for initial years is Congestion Management and Air Quality (CMAQ) funds, as have been used by the Downeaster since its start in 2002. Other sources will be needed as the CMAQ funds can only be used for three years. Exceptions were which allowed the Downeaster to use CMAQ funds for a longer period, but other sources of operating funds will be required when the federal funds are no longer an eligible source.

12.0 Project Schedule

The implementation of this project is dependent on several factors. First is the availability of funding. Once funding is secured, the schedule will be determined mainly by procurement and construction timeframes.

Rolling Stock

The delivery of rolling stock (new or rehabilitated) normally takes 30-36 months from the date the order is placed with the manufacturer. To meet the projected passenger rail in service date of December 2014 rolling stock must be procured in 2011. The purchase of additional locomotives will have to be determined. Delivery of locomotives takes 24-36 months.

Long Lead Material/Construction

A major portion of the materials to be used for this project have a long lead procurement cycle of 6 to 18 months. Long lead materials include: rail, track special work, train control microprocessors, signal units, equipment houses, switch machines, cable, highway crossing equipment and associated ancillary materials.

NHCC infrastructure upgrades are estimated to take up to 24 months from start of construction or two construction seasons. Rehabilitation of the existing NHCC Infrastructure includes reconfiguring/replacing all of the existing track structure, adding sidings, rehabilitating existing bridges, installing a new signal and communication system, building a train layover facility (location to be determined), and providing for stations.

The procurement of the long lead materials and construction will be performed by a force account agreement with the railroad. Details of the infrastructure upgrades will be included in the operating/access agreement with the operator of the railroad. Applicable agreements with other stake holders will be determined and executed as the project enters the design phase.

Third Party Engineering Firm

In addition to the expertise provided by the operating railroad and the other stake holders the NHCC project will require the expertise of a qualified consulting engineering firm throughout the alternative analysis, environmental, design, procurement, construction, and testing phases of the project. To ensure that the project remains on schedule the process for selecting a consultant should start as soon as practicable.

New Hampshire Capitol Corridor Project Overview

The scope of work for the consultant should consist of five separate tasks:

1. Preliminary Design/Environmental analysis
2. Final Design
3. Long Lead Material Procurement
4. Bid Analysis/Review
5. Construction Management

To initiate the process a Request for qualifications should be advertised in the second or third quarter of 2010. Based on the number of submissions a short list of 3 firms should be selected to receive a request for proposal and attend an interview. Because funding is not secured for the entire project, just alternative analysis is earmarked, only that task that should be contracted with the selected consultant. As funds become available for the project tasks a defined scope of services and associated costs can be determined.

Summary of Project Schedule

The project schedule for this project is proposed as follows:

- Obtain federal (Stimulus) grants to complete preliminary design-Spring 2010
 - Advertise/select engineering firm to support design and construction efforts-September 2010
 - Complete preliminary design-by December 2011
 - Secure capital Money - by December 2011
 - Complete final design-by December 2012
 - Order long lead materials (track, signal grade crossings, rolling stock)-by December 2011
 - Complete construction-by December 2014
-
- ***Projected start of passenger rail service, fourth quarter 2014***

The Project Schedule is shown in Figure 2.

New Hampshire Capitol Corridor Project Overview

Figure 2: Project Schedule

	Start Date	End Date	2010	2011	2012	2013	2014	2015	2016	2017	2018
Preliminary Engineering (PE)	09/01/10	12/01/11									
Issue requests for bids, make awards of PE contracts			■								
PE Drawings, construction cost estimate and schedule, Project NEPA Documents				■	■						
Receive environmental determination for Project NEPA					■						
Submit request / receive FRA funding obligation for FD/Construction					■						
Final Design (FD)	01/01/12	12/01/12									
Issue requests for bids, make awards of FD contracts					■						
FD Drawings; and cost estimate, schedule refinement					■						
Acquisition of real estate, relocation of households and businesses					■	■					
Conduct reviews					■	■					
Issue requests for bids					■						
Submit request / receive FRA approval for Construction						■					
Construction	01/01/13	12/01/14									
Make awards of construction contracts						■					
Construct infrastructure						■	■	■	■		
Finalize real estate acquisitions and relocations						■	■	■	■		
Acquire and test vehicles						■	■	■	■		
Service Operations - Project/Program Close Date	12/01/14	03/01/14									
Service Operations								■	■		
Completion of project/program close-out, resolution of claims								■	■		

13.0 Support for the Project

The restoration of passenger rail service has strong support from the business community located along the NHCC and the southern part of NH. Also support for the extension of passenger rail service from Lowell, MA to Concord, NH has support from the MA business that would be served with passenger rail service and an upgrade freight service. The three Chamber of Commerce's located within the NHCC (Nashua, Manchester and Concord) support the project and are continuously meeting with major businesses and developers that would benefit from the passenger and freight service restoration and upgrades, respectively. Following are quotes from some of the project supporters:

"Re-establishing rail in New Hampshire is critical to our future economic growth as a state. It will help protect the environment and improve the overall quality of life in our state. That is why it is important we work together and take the necessary steps to bring commuter rail back to New Hampshire."

Governor John Lynch

"The City of Nashua recognizes the importance of all modes of transportation to the economic viability of New Hampshire and New England. Freight and passenger rail transportation are key components to a comprehensive transportation system for the City, the State and New England." *Donnalee Lozeau, Mayor of Nashua*

"The State of New Hampshire needs to explore the potential of, and provide for, an effective mechanism for developing additional rail service to reduce the State's dependency on the highway system."

Thomas Aspell City Manager Concord NH

"Rail service will make the Nashua region even more competitive in attracting today's businesses. Nashua already has a highly educated and skilled workforce, strong broadband capabilities, a solid infrastructure and a friendly tax structure. The introduction of commuter rail is the final piece that ties Nashua even closer to the Greater Boston market while retaining New Hampshire's quality of life."

Chris Williams President and CEO, Greater Nashua Chamber of Commerce

New Hampshire Capitol Corridor Project Overview

“We feel here in Manchester that we have a lot of assets that we can offer prospective business owners, but the one thing that we’ve are missing right now is that multi-modal transportation. We have the airport and we have the highways, but we need the train to come in and really complete the puzzle.”

Robin Comstock, President and CEO Greater Manchester Chamber of Commerce

Passenger rail service is vital to the growth of the airport.

Mark Brewer, Director of Manchester-Boston Regional Airport

New Hampshire Capitol Corridor Project Overview

14.0 Next Steps

In order to provide a quality freight and intercity passenger rail service between Concord, NH, and Boston, MA via the NHCC the following must occur and not necessarily in the order presented:

- Secure the necessary capital funding
- Identify and secure necessary operating subsidies
- Select and enter into an operating agreement/access agreement with an operator
- Enter into agreements with Mass DOT, MBTA, MBCR, and the host railroad
- Establish a design and construction schedule
- Advertise for an engineering firm to complete/support the engineering and construction phase
- Develop a passenger operating schedule and fare structure
- Staff and fund the NHCC project and NHRTA operations
- Purchase Long Lead Materials
- Rehabilitate track and signal infrastructure from Lowell to Concord
- Purchase rolling stock equipment
- Finalize NH passenger station locations and complete construction
- Enter into private public partnerships (P3) with station developers
- Continue working with our State legislators, Washington delegation, NH businesses and residents on the benefits of passenger rail and its positive impacts on economic development and quality of life for NH.

—End of Paper—

New Hampshire Capitol Corridor Project Overview

New Hampshire Capitol Corridor Project Overview



EXPERIENCE | Transportation