

State of Connecticut
Department of Transportation

EXPANDING RAIL SERVICE ON SHORE LINE EAST

Pursuant to Public Act 06-136, Section 2(d)

January 1, 2007

EXPANDING RAIL SERVICE ON SHORE LINE EAST

OVERVIEW

Public Act 06-136, Section 2(d) requires the Commissioner of the Department of Transportation (Department) to identify obstacles to improved rail service on Shore Line East (SLE), including, but not limited to, increased frequency of service, bi-directional commute service, and weekend service. This paper identifies obstacles to improved rail service on SLE and contains three recommended phases of expansion of service. The cost elements contained in this analysis represent 2006 dollars and are based on existing contractual provisions with Amtrak as operator of the SLE service.¹

SLE is a commuter rail service operating in southeastern Connecticut. The National Railroad Passenger Corporation (Amtrak) operates the SLE service for the Department between New London and New Haven on the Amtrak-owned Northeast Corridor (NEC) tracks. Stations east of New Haven - Union Station include New Haven - State Street, Branford, Guilford, Madison, Clinton, Westbrook, Old Saybrook, and New London.

SLE operates primarily during peak morning and evening hours on weekdays. During the morning peak, service consists of seven trains from Old Saybrook to New Haven - Union Station with two trains operating through to Bridgeport and Stamford. Amtrak honors SLE monthly tickets from New London on two Amtrak morning trains westbound. Two early morning trains provide nonstop reverse commute from New Haven - Union Station to Old Saybrook.

During the afternoon peak, SLE operates nine trains east to Old Saybrook with one continuing to New London. Three afternoon trains travel nonstop westbound from Old Saybrook to New Haven - Union Station with one of these trains originating in New London. SLE monthly ticket holders can use two evening Amtrak trains eastbound to New London.

The average monthly ridership on SLE in 2004 was 33,786, and was 35,289 in 2005. The average monthly ridership through September 2006 was 38,207, which is more than 8 percent higher than 2005 levels. The Department's Statewide Travel Model estimates an annual rate of growth in ridership of approximately four percent annually without factoring any service expansion.

OBSTACLES TO IMPROVED SERVICE

- Amtrak owns the NEC - The Department would have to negotiate and obtain agreement with Amtrak, as owner of the railroad, to expand service.
- Current Agreements with Amtrak - One significant obstacle to expansion is the 2003 Lease Agreement (2003 Agreement) with Amtrak that obligates the Department to construct double-sided platforms if the Department adds new SLE service outside the current rush hour periods.² Adding service before north side platforms are constructed would require the 2003 Agreement to be amended.
- User Fee – An amendment and revised budget tied to increased service for the NEC Access Rights would have to be developed.

¹ Funding scenarios must be adjusted for inflation and project delivery dates.

² Lease Agreement by and between National Railroad Passenger Corporation and State of Connecticut Department of Transportation for Shoreline East Commuter Rail Service Station and Platform Areas, dated May 14, 2003.

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- Operational Restrictions
 - Personnel – For any level of expansion, the availability of Amtrak personnel for train operations and mechanical servicing would have to be addressed.
 - Moveable Bridges – Increasing train traffic over the Connecticut, Niantic, and Shaws Cove moveable bridges would require agreement from Amtrak, the U.S. Coast Guard, the Connecticut Department of Environmental Protection (DEP), and the Marine Trade's Association.
 - Operating and Maintenance Costs – Costs directly related to additional train service expansion would increase.³
 - Equipment – Additional rail cars and locomotives may be needed depending on additional service levels. Additional rail cars would have to be purchased to operate the SLE service under an electric power system.
 - Capital Railroad Infrastructure – As owner of the railroad, Amtrak may require the Department to construct additional infrastructure improvements along the rail line to accommodate additional service levels.

SLE EXPANSION OPTIONS

PHASE ONE – Old Saybrook Weekend Service and Expanded Weekday Frequency

In a proposed first phase of expansion, the Department would add eight round trips per day on weekends, and one mid-day round trip and one late evening off-peak outbound train per day on weekdays (47 new trains per week) between New Haven and Old Saybrook. Existing rail equipment would be utilized to operate the new service.

A significant obstacle to implementing the first expansion phase is the 2003 Agreement with Amtrak that requires the Department to fund and construct platforms on both sides of the tracks at the Branford, Madison, Clinton, and Westbrook Stations in the event the Department adds new SLE service outside the current rush hour periods. Current stations under design would require capital to construct.

Another obstacle in this phase of expansion includes an increase in operating and maintenance costs and the need for additional Amtrak personnel to operate, maintain, and service the trains estimated at \$2.7 million annually.⁴

Additional capital costs recommended in this expansion phase would include \$6.0 million for a 500-space parking improvement to accommodate increased ridership.⁵ To improve operating flexibility, the siding in Clinton should be upgraded to a functional train passing location estimated at \$400,000.

Effectiveness - See Attachments A and D

A ridership increase commensurate with the increase in the level of service is anticipated. It is anticipated that the Department could implement this phase in the 2008-2009 timeframe, but it could be later based on the 2003 Agreement with Amtrak. Based on this level of service, the net estimated operating incremental cost is \$2.5 million and the total estimated capital cost is \$6.4 million.

³ These costs include fuel, train crew, user's access fees due to mileage, associated risk charge, general and administrative charges, management fees, maintenance of stations, maintenance per mile, and mechanical servicing.

⁴ Adding personnel would include hiring surcharges according to the terms of the SLE Agreement.

⁵ In general, the average cost for surface parking is \$8,000-\$10,000 per space and structured parking is significantly higher.

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PHASE TWO – New London Daily Service Expansion

A proposed second phase of expansion would be to extend all trains, including those added in the first phase, east to New London (156 total trains per week to/from New London). Extending all trains east to New London could be implemented with the purchase of an additional locomotive and four rail cars estimated at \$13.0 million.

One major obstacle to increasing SLE service east of Old Saybrook to New London is the three moveable bridges that Amtrak has responsibility for maintaining -- the Connecticut, Niantic, and Shaws Cove bridges. The U.S. Coast Guard and DEP regulate the Connecticut waterways and marine traffic activities.

The additional train traffic over the moveable bridges would require agreement from Amtrak, the DEP, the U.S. Coast Guard, the Maritime Trade's Association, and possibly re-opening the Coastal Environmental Impact Statement. The Movable Bridge Operating and Capital Improvement Plan (Operating Plan) between Amtrak and the DEP allows 2 SLE trains and 39 Amtrak trains daily over the Amtrak-owned movable railroad bridges crossing the Connecticut, Niantic, Thames, Mystic, and Shaws Cove bridges. Operation of additional SLE trains across the bridges would require Coast Guard and DEP approval.

An additional obstacle to service expansion is the 2003 Agreement with Amtrak that specifies that the Department will not extend any additional SLE trains east from Old Saybrook to New London for a period of 15 years.

As information, the Department is also exploring other service scenarios and has had preliminary discussions with Rhode Island on possible expansion options. Any expansion east of New London would necessitate passage over two additional movable bridges at the Thames River and Mystic River and would require agreement from the agencies mentioned above. Operating costs would increase and additional station stops would need to be addressed in further detail.

Another obstacle associated with this phase of expansion includes an increase in operating and maintenance costs and the need to hire additional Amtrak personnel to operate, maintain, and service the trains estimated at \$4.0 million annually.

Other obstacles would include capital costs. A 500-space parking improvement estimated at \$6.0 million is requested to accommodate increased ridership.⁶ Additional north-side station platforms may be required at Branford, Madison, Clinton, and Westbrook.⁷ The portion of the New Haven Rail Yard that is being used to store SLE equipment is at full capacity. An expansion of the yard is necessary to store the SLE equipment, which is especially important given the anticipated arrival of the Virginia Railway Express (VRE) cars. The project would include storage tracks, switches, and ties and would cost an estimated \$800,000.⁸

⁶ In general, the average cost for surface parking is \$8,000-\$10,000 per space; structured parking is significantly higher.

⁷ According to 2003 Agreement, double-sided platforms may be required prior to increasing service.

⁸ This contingency is being addressed as part of the new facility design.

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Effectiveness - See Attachments B and D

This level of service assumes an increase in ridership commensurate with the added service. It is anticipated that the Department could implement this phase in the 2009-2010 timeframe. Based on this level of service, the net estimated operating incremental cost is \$3.8 million and the total estimated capital cost is \$19.8 million.

PHASE THREE – Bi-directional Commuter Service

A proposed third phase of expansion would introduce bi-directional service on weekdays between New Haven and New London. Service would be reconfigured to operate four all stop morning outbound trains and six evening all stop inbound trains to provide this bi-directional service (50 trains total per week).

There are several obstacles associated with implementing this phase including an increase in operating and maintenance costs and the need to hire additional personnel if available to operate, maintain, and service the trains estimated at \$1.5 million annually.

Equipment

Increased capital costs would be other obstacles under this scenario. SLE equipment operates on a diesel system and allows for operation of four train sets and two spare sets necessary for a proper maintenance program. In 2004, the Department purchased 33 coaches from VRE to increase its fleet size to accommodate higher ridership. These cars are being refurbished and are expected back in mid-2007. In the short-term, the VRE cars will be used on SLE and the Bombardier cars on SLE can be used on the NHL of MNR for net seat addition to both services. Service expansion as proposed in phase three would require the Department to acquire four additional rail cars and a locomotive estimated \$13.0 million.

Electric System

The long-term rail plan on SLE includes operating electric trains on the catenary system by 2012. Electrification is preferred since diesel-operated SLE trains generate emissions, and there are efficiencies associated under a seamless electric SLE service. To operate the SLE service under the electric power system, at least 24 M8 cars would have to be purchased for current service levels estimated at \$60.0 million. The third phase would necessitate the purchase of at least 8 additional M8 cars estimated at \$20.0 million. Once SLE becomes electric, the Department would utilize the current diesel equipment on the proposed New Haven-Hartford-Springfield Line or the Branch Lines.

The Department would work with Amtrak to assess the impact on the electric traction overhead system infrastructure. Infrastructure improvements estimated at \$15.0 million would be needed to improve operating flexibility and capacity, such as electrifying the Track 4 Siding at Guilford Station. High-level platforms would need to be constructed at all stations. Additional costs would be associated with operating on an electric system and offsets would be realized.⁹

⁹ Some of these costs could include electric power costs and maintenance of power system.

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Parking and Platforms / Pedestrian Bridges

The Department would have to complete several projects at the SLE stations prior to implementing the third phase. The lack of north-side platforms at most SLE stations is a significant obstacle to bi-directional service. A pedestrian bridge or tunnel linking the north to the south side of the tracks with elevators would have to be constructed at all stations. Parking capacity is an obstacle at the stations since SLE continues to experience ridership growth. In addition to planned parking improvements, an additional 1000-space improvement estimated at \$12.0 million is requested for this third phase to accommodate increases in ridership.¹⁰

The Department has initiated the design of these station improvements (i.e., north side platforms and overpasses) at the SLE stations. The Governor's initiative and recent legislation¹¹ provided \$7.0 million for the Department to undertake the design of these improvements at the SLE stations. However, the majority of the construction costs are currently unfunded. Once funding is in place and these projects are completed, all SLE stations will have high-level platforms on the north and south sides and will be capable of handling bi-directional commutation.

The Department notes that as the SLE expansion grows, there will be a need to advance additional projects to improve traffic flow and reduce operating costs.

Effectiveness - See Attachments C and D

A ridership increase commensurate with the increase in the level of service is anticipated. It is anticipated that the Department could implement the third phase in the 2011-2012 timeframe. Based on this level of service, the net estimated operating incremental cost is \$1.4 million and the total estimated capital cost is between \$105.0 to \$200.0 million depending on whether the Department elects to assure electrical capital costs and other infrastructure improvements.

SLE is a viable alternative to relieving increased congestion along the I-95 corridor and increasing mobility in the region. The Department is committed to improving rail service along SLE and this expansion plan reflects a recommended course of action. As part of the regular administration of the SLE commuter rail system, the Department continues to review train schedules and implement enhancements to the SLE train service. The phases and corresponding service levels offered here are recommended alternatives as the Department continues to explore other service scenarios. However, it should be noted that the strategy in this plan has many variables, issues, and assumptions subject to discussion and change.

¹⁰ In general, the average cost for surface parking is \$8,000-\$10,000 per space; structured parking is significantly higher.

¹¹ Public Act 06-136, Section 2(d), An Act Concerning the Roadmap for Connecticut's Economic Future.

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ATTACHMENT A

**PHASE ONE -- Weekend Service to Old Saybrook and
1 Mid-day and 1 Late Evening Weekday Added Train
Estimated Incremental Implementation Costs**

OPERATING AND MAINTENANCE COSTS

DESCRIPTION	Projected Annual Cost
<i>8 round trips per day on weekends between New Haven and Old Saybrook and 1 mid-day round trip and 1 late evening off-peak outbound train per day on weekends between New Haven and Old Saybrook (existing rail equipment would be utilized and additional Amtrak personnel would be needed)</i>	
ESTIMATED OPERATING AND MAINTENANCE COSTS	
Access Fee Due to Mileage (approx. \$1.40 per unit car mile)	\$ 479,000
Fuel	\$ 460,000
Train Personnel including benefits	\$ 413,000
Mechanical Servicing	\$ 150,000
Maintenance of Equipment	\$ 313,000
General and Administrative	\$ 99,000
Management Fees	\$ 144,000
Associated Risk Increases	\$ 14,000
Contingency (20 %)	\$ 414,000
Stations	\$ 250,000
TOTAL ESTIMATED OPERATING AND MAINTENANCE COSTS	\$ 2,737,000
REVENUE	\$ 209,000
ESTIMATED NET TOTAL	\$ 2,528,000

CAPITAL COSTS – PHASE 1

Surface Parking	\$ 6,000,000
Upgrade Clinton Siding	\$ 400,000
ESTIMATED TOTAL CAPITAL COSTS	\$ 6,400,000

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ATTACHMENT B

PHASE TWO -- New London Daily and Weekend Service Estimated Incremental Implementation Costs

OPERATING AND MAINTENANCE COSTS

DESCRIPTION	Projected Annual Cost
<i>Originating and ending all SLE trains daily, including those implemented in the first phase, east to New London (annual costs, assumes 1 additional locomotive and four rail cars, and additional Amtrak personnel)</i>	
ESTIMATED OPERATING AND MAINTENANCE COSTS	
Access Fee Due to Mileage (approx. \$1.40 per unit car mile)	\$ 849,000
Fuel	\$ 816,000
Train Personnel including benefits	\$ 620,000
Mechanical Servicing	\$ 100,000
Maintenance of Equipment	\$ 556,000
General and Administrative	\$ 161,000
Management Fees	\$ 225,000
Associated Risk Increases	\$ 25,000
Contingency (20 %)	\$ 670,000
Stations	\$ 0
TOTAL ESTIMATED OPERATING AND MAINTENANCE COSTS	\$ 4,022,000
REVENUE	\$ 260,000
ESTIMATED NET TOTAL	\$ 3,762,000

CAPITAL COSTS – PHASE 2

ESTIMATED CAPITAL COSTS	
Surface Parking	\$ 6,000,000
Locomotive	\$ 5,000,000
Rail Cars	\$ 8,000,000
Expansion of New Haven Rail Yard for Storage of SLE Equipment	\$ 800,000
ESTIMATED TOTAL CAPITAL COSTS	\$19,800,000

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ATTACHMENT C

Phase Three -- Bi-directional Commutation Service Estimated Incremental Implementation Costs

OPERATING AND MAINTENANCE COSTS

DESCRIPTION	Projected Annual Cost
<i>4 all-stop morning outbound trains and 6 evening all-stop inbound trains per weekday between New Haven and New London (annual costs, assumes 1 additional locomotive and four rail cars, and additional Amtrak personnel)</i>	
ESTIMATED OPERATING AND MAINTENANCE COSTS	
Access Fee Due to Mileage (approx. \$1.40 per unit car mile)	\$ 0
Fuel	\$ 167,000
Train Personnel including benefits	\$ 413,000
Mechanical Servicing	\$ 200,000
Maintenance of Equipment	\$ 114,000
General and Administrative	\$ 49,000
Management Fee	\$ 94,000
Associated Risk Increases	\$ 0
Contingency (20 %)	\$ 208,000
Stations	\$ 300,000
TOTAL ESTIMATED OPERATING AND MAINTENANCE COSTS	\$ 1,546,000
REVENUE	\$ 189,000
ESTIMATED NET TOTAL	\$ 1,357,000

CAPITAL COSTS – PHASE 3

ESTIMATED CAPITAL COSTS	
Locomotive	\$ 5,000,000
Rail Cars	\$ 8,000,000
Parking	\$ 12,000,000
Station Improvements – Branford, Guilford, Madison, Clinton, Westbrook	\$ 80,000,000
ESTIMATED TOTAL	\$ 105,000,000

CAPITAL COSTS ASSOCIATED WITH ELECTRIC EQUIPMENT

ESTIMATED CAPITAL COSTS ASSOCIATED WITH ELECTRIFICATION	
M8 Cars (24 cars for current service levels)	\$ 60,000,000
M8 Cars (8 cars to implement phase three)	\$ 20,000,000
Electrification of Guilford Track 4 Siding and other infrastructure projects	\$ 15,000,000
ESTIMATED TOTAL	\$ 95,000,000

Attachment D

Procurement Schedule for SLE Expansion Fleet and Facilities (Figures do not include Operating or Maintenance Expenses)

Activity/Year		2007	2008	2009	2010	2011	2012	2013	2014	Totals
P H A S E 1	Obtain Legislative Authorization and Funding	█								
	Negotiate Amendment to 2003 Lease Agreement with Amtrak		█							
	Negotiate Amendment to Amtrak Operating and Access Fee Agreement and Budget		█	█						
	500 Parking Spaces Acquisition, Design and Construction		█	█	█					\$ 6.0
	Upgrade of Clinton Sidings		█	█	█					\$ 0.4
P H A S E 2	Obtain DEP and Coast Guard Approval for Added Moveable Bridge Crossings		█	█	█					
	Negotiate Amendment to 2003 Lease Agreement with Amtrak		█							
	Negotiate Amendment to Amtrak Operating and Access Fee Agreement and Budget			█	█					
	Acquire Locomotive and Rail Cars		█	█	█					\$ 13.0
	Expansion of New Haven Rail Yard for Storage of SLE Equipment		█	█	█					\$ 0.8
	500 Parking Spaces Acquisition, Design, and Construction		█	█	█					\$ 6.0
P H A S E 3	Negotiate Amendment to Amtrak Operating Agreement & Budget		█	█	█					
	Hire Added Railroad Labor			█	█	█				
	Acquire Property and Construct Rail Station Improvements at SLE Stations		█	█	█	█				\$ 80.0
	Acquire Locomotive and Rail Cars		█	█	█					\$ 13.0
	1000 Parking Spaces Acquisition, Design & Construction			█	█	█				\$ 12.0
	Electrified SLE Infrastructure		█	█	█	█	█			\$ 15.0
	Purchase Electric Rail Cars to Integrate Service for Current and Expanded Service Levels		█	█	█	█	█			\$ 80.0
	Locomotive and Cars Warranty					█	█	█	█	
F I N A N C I N G	FLEET Program Cash Needs	\$ 5.00	\$ 12.00	\$ 18.00	\$ 21.00	\$ 40.00	\$ 10.00			\$ 106.00
	FACILITIES Program Cash Needs	\$ 20.00	\$ 20.20	\$ 29.00	\$ 22.00	\$ 20.00	\$ 6.00	\$ 2.00	\$ 1.00	\$ 120.20
	TOTAL Program Cash Needs	\$ 25.00	\$ 32.20	\$ 47.00	\$ 43.00	\$ 60.00	\$ 16.00	\$ 2.00	\$ 1.00	\$ 226.20
	* Figures in Millions	2007	2008	2009	2010	2011	2012	2013	2014	Totals