



**Storrow Drive Tunnel Project
Joint Meeting of the Landscape and Transportation Advisory
Committees Joint Committee Meeting Number 6**

June 20, 2007

Summary Minutes

Welcome and Introductions

Co-Chairs Patrice Todisco and Elliott Laffer called the meeting to order at 5:50. Mr. Laffer asked those in attendance to introduce themselves, and there is a list of participants at the end of the minutes.

Mr. Laffer briefly reported on a subcommittee meeting of those interested in transit issues. He said that the group developed a list of 8-9 ideas or possibilities for encouraging transit use during Storrow Drive construction. He met with representatives of the MBTA, EOT and DCR earlier in the day and had a fruitful meeting. About half the subcommittees' ideas might be applicable, and the Draft Environmental Impact Report (DEIR) will address this information. He thanked those who participated.

Presentation of Traffic Data for Options B-3 and D-3

Sanjay Kaul reminded the committee members that he had presented traffic modeling data on the main options – A, B, C and D – for the forecast year of 2030. Since that time, the team has modeled two new options, B-3 and D-3. Mr. Kaul reminded everyone of the details of the modeling process.

The focus for the study covers the area from West of North Harvard Street to Leverett Circle. The results include traffic volumes on Storrow Drive and turning moves for 38 preselected intersections within this area. Mr. Kaul outlined elements of the Travel Demand Model. The model set covers 164 cities and towns in eastern MA. The model simulates travel on the entire eastern MA highway and transit system and estimates daily transit ridership and highway traffic volumes. Mr. Kaul said the presentation would focus on the AM and PM peak segments. The base year for the model is 2006 and the forecast year is 2030. For the forecast year, the demographic and socio-economic data are provided by the Metropolitan Area Planning Council (MAPC). Smart Growth Plus

land use scenario has been used, which is approved by the MPO for the current Regional Transportation Plan (RTP).

Mr. Kaul explained that the model used Option A, which involves rebuilding the tunnel in its basic configuration, as the No Build option, comparing the other options to the traffic data for A. He reminded the audience of the major elements of the B options, which have already been reviewed:

- B is an at-grade parkway with traffic signals at Arlington and Berkeley Streets and no footbridge
- B-1 has no signals at Berkeley and Arlington Streets, a new footbridge, no Arlington Street ramps and no Berkeley Street westbound ramp
- B-2 has no signals going westbound and has signals on the eastbound side at Berkeley and Arlington Streets as well as a new footbridge (and it operates much like option C)
- B-3 is a largely surface option with no signals and an eastbound boat (depressed) section near Arlington Street to accommodate a westbound exit ramp to Arlington Street; there is no eastbound exit at Arlington, no westbound ramp at Berkeley and there is a new eastbound exit ramp at Dartmouth Street

Mr. Kaul presented the travel demand model results for the morning peak first for option B-3 (as compared to option A). Traveling eastbound, there is no major change in the traffic entering or exiting the facility. Mr. Kaul said that 1800 cars a day now take the Arlington and Clarendon Street exits, combined; in B-3, most of these vehicles – 1650 – take Clarendon Street, resulting in almost doubling the traffic there. Others choose to take the Charles Circle exit ramp or use the Mass Turnpike. Since there is an exit to Dartmouth Street, traffic volume on Kenmore Sq. off-ramp sees a reduction as most of those cars take Dartmouth Street exit. Traveling westbound, there is very little or no change. There is a 3% increase in exit ramp traffic at Arlington Street. Because there is no westbound on-ramp at Berkeley Street, about 1100 vehicles have to find another way west in the morning peak hours: 18% use the Mass Turnpike; 9% get on Memorial Drive; 40% enter Storrow Drive at Charlesgate or Charles Circle; and a small number use local roads. In the PM peak period, there is little change eastbound from option A. Some of the drivers who had used Kenmore switch to Dartmouth Street. The combination of Arlington and Clarendon Streets had seen 2200 vehicles and some continue to use Clarendon (1700), with 500 switching to Charlesgate or Charles Circle. Traveling westbound, there is little change, with a 2% increase in use of the Arlington Street ramp. The 2200 vehicles that used Berkeley Street westbound on-ramp now use Charles Circle (20%), Charlesgate (48%) and the Mass Turnpike (11%).

Turning to the D options, Mr. Kaul briefly described the qualities of Options D, D-1 and D-2, which include new tunnels in both directions with vent openings. D-3 includes two tunnels between Arlington and Berkeley Streets (short enough to avoid the need for vent openings), with no eastbound exit at Arlington Street, a new eastbound ramp at Dartmouth Street and new open space above the tunnels connecting the Esplanade to Arlington Street. Mr. Kaul said that there are no major changes in traffic patterns during

the AM peak period, with the exception that exiting traffic takes Clarendon Street (1650 cars) because there is no eastbound exit ramp at Arlington Street (formerly 1800 vehicles exited at Arlington and Clarendon combined). Dartmouth Streets takes some exiting vehicles from the Kenmore ramps and there is a minimum amount of shifting to other roadways. There is little change westbound. In the afternoon peak time, Mr. Kaul reported that there is not much change from option A patterns. With the Arlington Street eastbound exit ramp closed, traffic uses Clarendon and Dartmouth Streets.

Traffic Queuing

Tom Lisco, CTPS, next addressed the queues and delays for options B-3 and D-3. He reported that for the most part, the queues are in the same locations as they are today. For the most part, the queues have changed in the modeling with the options where signals are added.

For B-3, the queues resemble the pattern seen today in the morning, with traffic slow from River Street to Fenway and with solid queues from Route 93 approaching Charles Circle. In the afternoon, Mr. Lisco said there is also little difference from current patterns (although he lengthened the queue to reflect observations from Beacon Hill residents about the length of the backups from Route 93, which extend further back toward Berkeley Street). Option D-3 has no new bottlenecks and looks very much like today's queues.

Mr. Lisco said that his main concerns are about Storrow Drive's throughput capacity and ramp capacity. Some of the options could have major impacts on local streets in Back Bay, on Charles Street and affecting local access. Eliminating ramps could have major impacts in these neighborhoods. Mr. Lisco suggested that the members need to think carefully about the changes; for example, the Arlington Street westbound ramp now carries 5,000 vehicles a day and B-3 eliminates the westbound entrance ramp at Berkeley Street. It also cuts Storrow Drive down to two lanes, offering the Esplanade perhaps 10 to 12 more feet of width in that area. There are four westbound entrances on to the Mass Turnpike, but using those ramps will have impacts on Back Bay traffic. He pointed out that in B-3, less than 5% of the vehicles used the Mass Turnpike westbound while 40% used the Charles Circle or Charlesgate ramps, which are pretty full. Mr. Lisco suggested that the members think about what would happen if DCR put some Jersey barriers up today on a couple of ramps to see what would happen. He said that thinking about the effects of ramp closures should, in his opinion, be an important part of any decision.

Level of Service Data

Mike Wasielewski, Beta Group, presented the Level of Service (LOS) analysis for the options. He used four figures prepared for the DEIR – Figures 9-26, 9-27, 9-33 and 9-34 – to illustrate his remarks. Mr. Wasielewski reminded the audience of the elements of the chart (grey = unchanged; red = a worse condition; and green = an improvement over the option A conditions). LOS ranges from A (good operations) to F (poor operations) with

F' being a special condition used by this project for intersections with exceptionally poor operations.

Mr. Wasielewski said that the conditions for B-3 are relatively unchanged from option A on the eastern and western ends of the study area. There are some notable exceptions in the Back Bay and Beacon Hill areas due to the ramp changes. In the AM peak hours, for example, there is a decrease in traffic at Arlington and Beacon Streets due to the elimination of the Arlington Street eastbound exit ramp and there is more congestion on Clarendon Street where the LOS drops from B to C. In the PM peak, LOS improves at Berkeley and Beacon with the removal of the westbound on ramp and there is an increase in volume at the intersection of Beacon and Massachusetts Avenue (LOS goes from D to E during the PM peak hour).

For the D-3 option, in general, there is an improvement at the intersection of Arlington and Beacon Streets with a volume reduction leading to a C LOS from a D previously. In the AM peak, there are slightly worse conditions at Commonwealth Avenue at Clarendon Street and an F condition at Commonwealth Avenue and Arlington Street. In the afternoon, there is some improvement at Arlington Street from a reduction in turning movements. There would be a degradation in LOS at Commonwealth Avenue and Clarendon Street due to an increase in turning movements. There would be no change at Beacon Street and Mass Avenue during the morning or afternoon peak hours.

Questions

Responding to a question, Mr. Laffer pointed out that the Dartmouth Street ramp delivers traffic to Beacon Street, which then has to turn right and go west for at least a block to Exeter Street since the direction of Dartmouth Street does not change. This protects the playground at the intersection of Clarendon and Commonwealth Avenue from more traffic.

Steve Wintermeier observed that there appears to be little or not growth between current conditions in the model as compared to the future year no build. He asked if growth is expected and included in the model. Mr. Kaul said that the model does include growth and Mr. Lisco added that growth in volume on Storrow Drive has been modest over the last 20 years while it has mushroomed elsewhere.

The committee members discussed some of the results of closing the Berkeley Street westbound ramp on the local streets. Most agreed that if it is gone, Back Bay people will go to Charlesgate or to Charles Circle, and both are already heavily used during peak periods. Steve Kaiser said that no one really understands the implications of taking the traffic currently using Storrow Drive out of its corridor and putting it on local streets. Reliance on Charlesgate is the Achilles Heel of B-3. It has a dangerous blind curve and would not be able to handle the added traffic. Christie Apicella said that she has been talking with the team about what percentage of the traffic exiting at Charlesgate is actually going to the LMA versus Kenmore, Fenway or other Back Bay destinations. She asked why – if there is a decrease in Storrow Drive traffic – there is no change shown on

Boylston Street or Park Drive. Mr. Kaul said that there are more trips on local streets in the study area that are not contained within the current map area. It would be possible to get that information. Mr. Laffer said he understands that DCR is considering improvements to the Charlesgate on ramp. Karl Haglund said that DCR is looking into taking down the Yield sign and changing the existing merge into a lane addition by reducing the mainline to one through lane. It would involve simple changes and the improvement could be implemented soon.

Presentation of Landscape Options for B-3 and D-3

Harry Fuller, Carol R. Johnson Associates, distributed maps of options B-3 and D-3 and an updated tree removal assessment chart. Mr. Fuller described elements of B-3, including the addition of a long thin area of new space on the Esplanade (north of Storrow Drive between Berkeley Street and the Bowker Interchange, where there would be two lanes of traffic as opposed to three); more open space at Arlington Street for a connection to the Esplanade; and new pedestrian bridges. This option adds 29,700 sf to the Esplanade and 15,700 to the median area for a combined gain of 45, 400 sf.

Mr. Fuller addressed the issue of tree removal. On the south side of Storrow Drive, a constant number of trees (52) will be removed for construction of the temporary roadways. North of the roadway, 13 trees are expected to be removed, 8 on the edge of the road and 5 around the Fiedler Bridge location. As in all of the options, there is a location on the Esplanade for staging, which will require removal of 4 trees. The team has looked around for other space, but there is little open space nearby and this site involves removing fewer trees than others. This plan includes replacement of the lost trees and addition of new trees for a net gain of 21 trees. These tend to be 4-inch caliper trees. Mr. Fuller said the contractor can plant larger trees but the smaller ones will have a faster rate of growth.

Turning to option D-3, Mr. Fuller said that it does impinge on the Esplanade slightly (about 12 feet) to permit a westbound entrance at Berkeley St.; however, it also opens the surface area between Arlington and Berkeley Streets, allowing a green connection toward the corner of the Public Garden. This option does not include tunnel vents, since the tunnels are shorter than other D options, and it eliminates the eastbound exit at Arlington Street. There is a traffic-free pedestrian crossing at Arlington Street into the Esplanade and no pedestrian crossing at Clarendon, Berkeley, Chestnut, Mt Vernon or Pinckney. Because of the green space over the new tunnels, there is a net gain of 24,800 square feet.

Tree loss includes the 52 along Back street and 36 trees along the Esplanade and the staging area and at the new westbound exit on to Arlington St. New and replacement trees will total 113.

Mr. Fuller also handed out an assessment of the condition of the trees to be removed for each option. (Although there was not time to review the table in detail, the list shows that for options A, B, B-3, C, D and D-3, about half the trees to be removed are in Good

condition; between 31 and 38% are in fair condition and the remainder are in poor condition – 13-17% - or dying 1-2%.)

In response to a question, Mr. Fuller said the trees added on Arlington Street will be on both sides and the ramp of the new Fiedler footbridge in option B-3 will not reach all of the way to the Arlington and Beacon Street intersection.

Construction Phasing and Cost Information for Options B-3 and D-3

Mike McCall, Project Manager for SGH, the project engineers, distributed a chart showing the temporary traffic conditions during construction for a partial closure. The matrix lists the principal construction stages for each option and highlights the stages with critical traffic impacts (in yellow). Mr. McCall explained that options B-3 and D-3 most resemble option D for construction impacts since they require eliminating the existing tunnel structures and building new ones. Construction phasing for all of the options but A will require using traffic signals for lane movements and exits. In A, the construction actually uses the existing tunnels in phases, so the signals are not needed.

Mr. McCall also distributed a handout with similar information on construction duration and critical stages for traffic impacts, as well as a summary table estimating construction duration, construction costs and maintenance costs. In presenting the material, Mr. McCall reminded the committee members that the design work is at the 10% level, so they should view the costs as more useful for comparison than as specific total costs. The maintenance costs might be a bit high because they are estimates at this point as well.

Bob O'Brien asked Mr. McCall about the useful life of all of the options and suggested that factor be added to this table for the DEIR. Mr. McCall said that option A, the rehabilitated tunnel, has a useful life of 40 years, a subject of discussion in previous meetings. After 40 years, it will need major maintenance. Mr. McCall said that if the tunnel were a new structure, he would estimate a useful life of 75 years. B contains no major structures, so its limits are replacement of the pavement. B-3's underpass has a 75-year useful life, with the roadways subject to repair. D-3 would be similar. There were suggestions that the cost and life span issues be compared directly in this summary chart. (A copy of the chart appears below.)

Summary of Estimated Construction Duration, Construction Costs, and Maintenance Costs

Impact	Option					
	A	B	B-3	C	D	D-3
Construction Duration	2.4 yrs	1.9 yrs	3.5 yrs	3.0 yrs	5.0 yrs	4.2 yrs
Construction Cost	\$55 million	\$24 million	\$61 million	\$83 million	\$216 million	\$131 million
Total Annual Maintenance Cost	\$200,000	\$100,000	\$150,000	\$300,000	\$900,000	\$600,000
Pumps, Lighting, Drainage Oper. & Maintenance Costs	\$175,000	\$75,000	\$125,000	\$250,000	\$750,000	\$500,000
Landscape Maintenance Costs	\$25,000	\$25,000	\$25,000	\$50,000	\$150,000	\$100,000

Noise and Air Quality Follow-up

Victoria Fletcher, Epsilon, followed up on some questions and suggestions that arose at the June 6 meeting on the noise and air quality monitoring and modeling. She noted that several committee members had expressed concerns that the data for air quality was optimistic since it is for 2030, when automobile emissions should presumably be improved. In response, Epsilon did another analysis and found that there was not much difference between the options whether 2006 or 2030 emission rates were factored in. In both years, the air quality for all of the options under consideration would be well below national air quality ambient standards. The chart below summarizes the data: for all main options, the results for 2006 are still significantly below the national standards. The highest 1-hour level of CO is 6.9 parts per million (ppm) for options B and C and the 1-hour standard is 35. For the 8-hour CO impacts, the highest 2006 level is 4.5 and the national standard is 9. (See the chart for more details for each option.) Ms. Fletcher reminded everyone that emissions are expected to become cleaner over time, so today

Air Quality Modeling – 2006 vs. 2030 Emission Rates Beacon St/Arlington St

Option	Peak	2006 1-hr Total CO Impacts (ppm)*	2030 1-hr Total CO Impacts (ppm)*	1-hr Total CO NAAQS (ppm)	2006 8-hr Total CO Impacts (ppm)*	2030 8-hr Total CO Impacts (ppm)*	8-hr Total CO NAAQS (ppm)
Option A	PM	6.3	4.7	35	4.1	3.0	9
Option B	AM	6.9	5.3	35	4.5	3.4	9
Option C	AM	6.9	5.3	35	4.5	3.4	9
Option D	PM	6.2	4.7	35	4.0	3.0	9

*Total impact includes background (1-hr background = 3 ppm; 8-hr background = 1.8 ppm)



and in the future the air quality levels of CO are well below any hazard level.

Another suggestion at the last meeting was to look at a very congested intersection where there is a signal and traffic that backs up – in short, a failing intersection by level of service standards where cars idle and perhaps present a greater health hazard. Ms. Fletcher said that Epsilon used the intersection of River Street and Memorial Drive (the options were limited to locations where data is available). Again, the existing and anticipated conditions (2030) do not approach the federal standards level; for example, the 2006 1-hour level is 5.6 ppm for CO, the 2030 level is 4.5 and the standard is 30. See the table following for more details.

Air Quality Modeling River Street/Memorial Drive

Option	Peak	2006 1-hr Total CO Impacts (ppm)*	2030 1-hr Total CO Impacts (ppm)*	1-hr Total CO NAAQS (ppm)	2006 8-hr Total CO Impacts (ppm)*	2030 8-hr Total CO Impacts (ppm)*	8-hr Total CO NAAQS (ppm)
Option A	AM	5.6	4.5	35	3.6	2.9	9
	PM	5.6	4.6	35	3.6	2.9	9

*Total impact includes background (1-hr background = 3 ppm; 8-hr background = 1.8 ppm)



Turning to the noise issues, Ms. Fletcher said that the discussion at the last meeting had focused on city sounds, such as honking horns. Epsilon checked the data for the decibel level of a car horn at 50 feet, and it is quite high, 86 decibels, about the same level as a food blender. Ambient noise is about 60 decibels in the city and she noted that every 10 decibels is perceived by listeners as a doubling of sound.

MEPA Process

Ms. Fletcher presented the committee with a brief overview of the MEPA process and the schedule for the DEIR filing and review. The Environmental Notification Form (ENF) was filed on April 18, 2006. The original schedule had called for the DEIR to be filed this past spring, but the investigation and review process that DCR undertook was not complete. At this time, DCR anticipates filing the DEIR at the end of July and requesting a 60-day comment period based on the level of interest expected in the filing. The schedule is as follows:

File DEIR with MEPA	July 31, 2007
Comments due to MEPA	October 10, 2007
Decision from the Secretary	October 17, 2007

DCR anticipates holding one or two public meetings for informational purposes in September, possibly during the week of 9/10. DCR is asking committee members to submit letters summarizing their views of the options by Friday, July 13, so issues raised by the groups can be addressed in the DEIR filing. DCR anticipates choosing a recommended alternative in the document. Groups and individuals are welcome to make a choice or simply to evaluate the pluses and minuses of the options or to raise questions.

Discussion

Malek Al-Khatib and Bob O'Brien suggested that the summary table on the options include information on construction, useful life and operating costs over the same period of time to make the analysis useful. Mr. O'Brien suggested that the committees meet again before the letters are due to have time for open discussion, without any presentations. The committee members agreed that was a good idea. (NOTE: the meeting was subsequently held on June 28.)

Meg Mainzer-Cohen asked if DCR has met with the City of Boston on the traffic issues. Jim Gillooly said that John DeBenedictis has been participating in the meetings. Boston Transportation Department will need more details on the comparison to take a position on the options. One thing the city has to do is look at what kinds of hot spots are likely to develop and anticipate how to manage them. In Mr. Gillooly's experience, small changes can stress the system and there is not a lot of flexibility. He suggested that not reducing capacity in the corridor will be an important issue for Boston and what kind of service loss might an option result in and what is its impact on the greater good? The Boston Transportation Department has not completed that analysis yet.

Mr. O'Brien asked about ramps changes on the westbound Bowker ramp. Mr. Haglund said that is something that has almost no cost and is under investigation and likely to happen soon.

Jeanette Herrmann asked if the elevation of the B-3 boat section matches the current tunnel depth, if the geometry is the same and if trucks will still be limited. Mr. McCall said that the depth of the boat section is the same, but with less length.

Ms. Todisco and Mr. Laffer said they would work on setting up the discussion meeting and would be in touch with the members.

ATTENDANCE – Landscaping Committee Members

Committee Members (+ indicates present at meeting, only for this category)

+	Margaret Dyson	City of Boston, Parks and Recreation Department
+	Bob Corning	Boston Society of Landscape Architects
	Tel McCormick	Mass Bike
+	Bob Sloan	Walk Boston
+	Patrice Todisco	The Esplanade Association
	Renata von Tscharner	Charles River Conservancy
	Pallavi Mande	Charles River Watershed Association
+	Stephanie Hurley	Charles River Watershed Association
+	Susan Barrow-Williams	Community Boating
	Sarah Monaco	Back Bay Garden Club
	Jackie Blombach	Back Bay Garden Club
+	Linda Cox	Beacon Hill Civic Association
+	Sharon Malt	Beacon Hill Garden Club

Attendance – Transportation Committee Members

Committee Members

+ indicates present at meeting

+	Tom Nally	A Better City
+	Meg Mainzer-Cohen	Back Bay Association
+	Peter Thomson	Beacon Hill Civic Association
+	Steve Young	Beacon Hill Civic Association
+	Elliott Laffer	Boston Groundwater Trust
	Michael Donovan	Boston University
	Jim Shaer	Boston University
	Leslie Greis	Cambridgeport Neighborhood Association
	Drew Phelps	Cambridgeport Neighborhood Association
	Kevin Casey	Harvard University
	Deborah Carrow	Back Bay Association
+	Bhupesh Patel	Livable Streets Alliance
+	Christi Apicella	MASCO
	Sarah Hamilton	MASCO
	Kelley Brown	MIT
+	Steven Wintermeier	Neighborhood Association of Back Bay
+	Barry Solar	Neighborhood Association of Back Bay
+	Philip Houck	Neighborhood Association of Back Bay
+	John Messervy	MGH/Partners HealthCare System, Inc.
	Bonnie Michelman	MGH/Partners HealthCare System, Inc.
+	Marilyn Wellons	Regional Transportation Advisory Council
	Larry Adkins	Riverside Neighborhood Association
+	Malek Al-Khatib	West End Civic Association

- + Carol Niemira West End Civic Association
- Wendy Landman Walk Boston
- + Bob Sloane Walk Boston
- + Adam Shulman City of Cambridge, Transportation Planning

Municipal and State Representatives

- Rep. Marty Walz
- Tom Lisco Central Transportation Planning Staff (CTPS)
- John DeBenedictis City of Boston
- John Gillooly City of Boston
- Kate Fichter MA EOT
- Sanjay Kaul CTPS
- Bill Kuttner CTPS
- Scott Peterson CTPS
- Michael O'Dowd Mass Highway Department

Project Staff

- Jim Baecker DCR
- Karl Haglund DCR
- David Lenhardt DCR
- Mike McCall SGH
- Nancy Farrell RVA
- Ken Petraglia Beta Group
- Mike Wasielewski Beta Group
- Kate Lesser Epsilon
- Victoria Fletcher Epsilon

Members of the Public

- Joe Crowley Mass General Hospital
- Bob O'Brien West End Civic Association
- Mac Daniel The Boston Globe
- Alex Valentine
- Bill Kuttner
- Jeannette Hermann Beacon Hill Civic Association
- Suzanne Besser Back Bay Sun, Beacon Hill Times
- Karen Taylor Beacon Hill Times, Back Bay Sun
- Michael J. Hall Tetra Tech Rizzo
- Carrie Russell CRussell@clf.org
- Steven R. Berke West End resident
- Steve Kaiser Association of Cambridge Neighborhoods
- Charles R. Leary Waltham
- Tom DiSarcina