

In anticipation of MTA releasing the Draft Environmental Impact Statement (DEIS) Tom Autrey sent several emails to various organizations asking them thirteen questions to find out how other communities may have addressed certain issues that could be common to just about any light rail or bus rapid transit project. The following are the answers to Tom's questions from Seattle, W.A., Los Angeles, C.A., Pittsburg, P.A., and Charlotte, N.C.

## Planning Experiences in Other Areas

<b>Questions</b>	<b>Seattle</b>	<b>Los Angeles</b>	<b>Pittsburg</b>	<b>Charlotte</b>	<b>Portland</b>
<b>Tunnel or at grade</b>	Tunnel due to large ROW takings	Not grade-separated any BRT		At grade	Tunnel & at grade
<b>Shared or dedicated lanes</b>	Dedicated lanes	BRT exclusive lanes LRT curb separated	No in-street running	Within railroad ROW	Always dedicated lanes
<b>Median or curb</b>	Median	BRT curb lanes; LRT center of street	N/A	Median 0.4 mi	
<b>Factors used for congestion impacts</b>			Level of Service (LOS)	DEIS & FEIS, consultants, CDOT	Optimize signals
<b>Pedestrian safety</b>	Z crossings; push-button signal; education	LRT gates at car & ped. Crossings; initial speed constraints	At-grade segments eliminated	CIP – ped signals, refuge, bridges, lighting	Z crossings; a few ped. gates; signals; signing
<b>Diversion of traffic</b>	None expected	traffic calming measures; parking policies	N/A	Studied impacts & coordinated signals	None
<b>Impact on property values</b>	Presumption increase values except where located close to track	Increase in commercial values; increase in multi-family values; single family increase/decrease values	No determination of impacts	Land within station areas rising faster than countywide ave. by 12%	Risen in station areas
<b>Mitigating environmental impacts</b>	Listed mitigation in DEIS	Conform with National Environmental Policy Act (NEPA)	Tunneling over a bridge	Relocated endangered sunflower	
<b>System funded (capital &amp; operating)</b>	0.4% sales tax; 0.3% motor vehicle excise tax \$500 mill. in federal capital money; no state funds	Local funding; 1% countywide sales tax; used to match state & federal grants from gas taxes & New Starts	60% New Starts; 20% flex; 16% state; 3% county; Fare revenues; state & county sources	City has ½ % sale tax, which funded 32% of project & operations; 43% fed; 25% state	
		Bike Path		Bike trail	

## Planning Experiences in Other Areas

### **Seattle**

#### **Growth Management context**

Local and regional planning here occurs within the context of our state Growth Management Act (<http://www.gmhb.wa.gov/gma/index.html>). As applied in our region, growth management includes the imposition of an Urban Growth Boundary, which generally follows the outer limits of suburbia. The intent of the GM policy is to put new urban and suburban development inside that boundary and outside the boundary preserve rural lands for traditional rural uses: agriculture, forestry, state and regional parklands, and small towns that remain small towns, without evolving into bedroom communities for the cities.

Inside the Urban Growth Boundary, we have identified major Regional Centers as well as a number of smaller urban villages – areas where higher density development is to be directed. The focus for Link is to provide the major transit trunk routes connecting urban centers – at least the largest and most central of them. Link is the 20-hours/day, high-frequency, high-capacity transit connector. And in between the connected Urban Centers, we can also serve urban villages. See <http://www.psrc.org/projects/mtp/index.htm>.

And Transit Oriented Development is obviously a closely-related issue here. When the route and station locations were established for the line within the City of Seattle, the City undertook a station-area planning project, the intended goal of which was to change zoning in those urban villages to allow higher-density development within convenient walk distance of the stations (+/-quarter-mile). Again, all a part of the overall growth management scheme. My personal assessment is that they didn't do enough with zoning, at our neighborhood stations in SE Seattle – most was pretty timid, allowing new apartments to go from 3 stories to 4 stories, that sort of thing. The highest allowed (at only 2 stations) is 65 feet. Planning authorities experienced a good deal of resistance from neighborhood citizens who feared the higher densities and/or didn't believe that many of the new residents would actually ride the trains.

#### **Rail transit background**

The Seattle region tried to build rail transit earlier. In 1968 and 1970, there were two public votes that failed to approve rail transit – a system with 80% federal funding (!) and we couldn't come up with the local match. Those federal dollars went to Atlanta to build MARTA, and Atlanta citizens have been grateful to us ever since. Voters did approve public acquisition and consolidation of bus service in the region, however, in a Nov. 1972 vote, which was the beginning of the Metro Transit system now run by King County.

Tremendous growth in our region has put more and more stress on our transportation system since 1972, and the bus system can't keep up with needs in the major corridors. Very few people want to expand the freeway system to the extent necessary to accommodate peak-hour traffic growth. The environmental costs of new freeways (or significantly widening the ones we have) are too great, not to mention the dollar costs.

## Planning Experiences in Other Areas

So after a painfully long and involved process (as only Seattle can do process...) we have made the decisions to build Link light rail.

Light rail technology was chosen because it's the most flexible – it can run underground like a subway, or on elevated platforms, or at grade on city streets or in fenced right-of-way. As you will note from the descriptions below, about 2/3rds of this line is grade-separated, as will be the extension north to the University that we discussed on the phone. So it's a mixed system, mostly grade-separated in the higher-density areas of the central city, with the expectation that as the lines are lengthened into the suburbs, more of the track will be at-grade in city streets.

### Link light rail

The line under construction is approx. 16.7 miles and runs from Westlake Station in the downtown Seattle transit tunnel south to Sea-Tac airport. Service between Westlake and Tukwila will begin in July 2009 and the extension to the Airport in December of that year. Trains will operate every six minutes in both directions during rush hours, with 10-minute headways during midday hours and 15-minute headways in late evening and early morning hours. Service will run from 5 a.m. to 1 a.m. seven days a week. Estimated maximum travel time, end to end, is 36 minutes.

Our 35-car fleet is from Kinkisharyo, of Osaka Japan. Cars are 95 feet long, double-ended with driver cabs at both ends. They can be connected in trains of up to 4 cars, and all of our station platforms can accommodate 4-car trains. Our initial service next year will operate with 2-car trains, which we expect will provide sufficient capacity to meet initial demand. We can expand the fleet to allow longer trains when demand increases.

In understanding this line, it's useful to keep in mind the very different territories the line travels through. Each of the six different zones described here was a separate construction contract, involving six different contractors. In downtown Seattle, the line runs through the transit tunnel that was built in the late 1980's by Metro Transit to accommodate suburban bus routes. Rail transit was anticipated by Metro, so the tunnel was designed for later conversion. That conversion has been completed and the tunnel re-opened for buses. When rail service begins next year, it will be joint use with rail and buses, both vehicles serving the existing tunnel stations.

South of downtown, the line serves an older industrial/commercial area, the SODO district. In between downtown and SODO are our two new sports stadiums (Safeco Field for Mariners' baseball and Qwest Field for Seahawks football) and a large exhibition center. The north-south part of the line is at-grade in a reserved right-of-way adjacent to Metro's exclusive busway. There 3 grade crossings where pedestrians and vehicles must cross the tracks. The vehicle crossings are gated and have the usual bells and lights associated with railroad grade crossings.

After SODO, the line tunnels through Beacon Hill and serves an underground station that was mined out in the middle of the hill. As the line enters and exits Beacon Hill, it is

## Planning Experiences in Other Areas

on elevated structure and away from traffic and peds. Obayashi is our contractor, a firm with specialized expertise in mining and tunneling.

On MLK in Rainier Valley, the line runs 4.3 miles at-grade down the middle of the street, in a curb-separated median. On either side of the rail median are 2 travel lanes, with no on-street parking allowed. The street widens at stations and major intersections where left-turn pockets are provided. The only places where motor vehicles and peds come into contact with the tracks are at intersections. Nowhere do trains and vehicles share a lane, not even at left-turn pockets. This is different from many systems, and we expect it will allow our trains to move faster and with fewer accidents than would be the case with shared lanes. There are no railroad gate-arms or bells.

The curb on the rail median is mountable, allowing emergency vehicles to cross the tracks to turn into side streets, or even to drive down the tracks if necessary to get around traffic congestion. Train operators will be instructed to always yield to emergency vehicles. Trains will observe the maximum 35mph speed limit on this street. On the grade-separated portions of trackway, speed limit will be 55mph (cars' governed maximum) or a slower speed required by track conditions (curves and/or grades).

The traffic signal system is fully integrated with the trains. The control computer will know the real-time schedule of trains, and it will adjust the signals accordingly, to provide maximum green time for the trains, without unduly disrupting cross-traffic. (This is more sophisticated than a simple "pre-empt" system that just turns lights green for the train when it arrives; that would be too disruptive to cross-traffic.)

The Tukwila segment is 5 miles of mostly-aerial trackway, built using precast concrete segmental construction. Most of this segment follows the edge of existing urban freeways, where issues of shadows and view blockages were minimal.

The 1.7-mile Airport segment, civil construction still under way, is a combination of elevated and fenced at-grade track. As with Tukwila, grade-separated so no conflicts with peds or motor vehicles.

1. Along route segments where you have had to take a close look at whether it should be a tunnel or at grade, what did you choose and why?

Seattle is a city of hills and waterways, and with few arterials that are wide enough to support at-grade light rail without excessive ROW takes. And as an older, built-up city, there are few streets that can be widened significantly to accommodate at-grade light rail. These factors tended to limit where we could reasonably put our light rail line, and ultimately lead to major segments being put in tunnels. The Beacon Hill tunnel was necessary due to both grades (a surface route over the hill would've been too steep). We didn't even get to the issue of no workable surface ROW. The tunnel was the *only* way to get from one side of the hill to the other. For the Capitol Hill tunnel on our University Link segment, there was simply no surface street, or combination of streets,

## Planning Experiences in Other Areas

that lent themselves to surface or elevated construction. Tunneling is the only way to connect the University of Washington campus to downtown Seattle, the second and first largest Urban Centers in our region, respectively.

2. Along route segments where you have had to consider running in either shared or dedicated lanes which did you choose and why?

We never considered shared lanes. Our planning began with the assumptions that high train frequencies precluded the use of shared lanes. Shared lanes would increase train/vehicle conflicts and resulting accidents, thus reducing service reliability. Running time would also be increased due to the extra precautions that would be needed to avoid accidents.

On Martin Luther King Jr. Way S. (MLK) in Rainier Valley, we have center running on a curb-separated trackway. MLK had a basic 90-foot ROW that allowed the center trackway to be built with minimal widening of the ROW, and still maintain two 11-foot lanes for general traffic in each direction. There are 18 signalized intersections where vehicular traffic crosses the tracks, plus another 9 signalized ped-only crossings. The 18 cross streets are all either local access streets or 2-lane collector arterials; none is a high-volume arterial.

3. What considerations came into play when considering whether the running way was in the median or next to the curb?

We did not consider curb lanes for reasons similar to our response to Q.2. Curb running also creates conflicts with every driveway crossed, substantially increasing accident hazards. Curb running also complicates intersections, and motorists adapt better to center-running trains.

4. What factors did you generally take into consideration when taking a look at the impact the project may have on traffic congestion – both with respect to potential operational conflicts between vehicles and the project trains or buses as well as the impact on traffic congestion within the corridor?

MLK is the only street where we operate at-grade in a mixed environment (aside from the 3 grade-crossings in SODO). MLK is a busy urban thoroughfare but not a major route for the suburb-to-city commute. It was our judgment that the street would function adequately (or better) with light rail in place, and overall traffic congestion would not significantly worsen. The trackway location precludes mid-block left turns, which may result in traffic flowing better than it did under the old configuration, which included a center 2-way left-turn lane. The integrated traffic signal system will also work to minimize conflicts and congestion.

## Planning Experiences in Other Areas

5. What proactive steps did you take to address pedestrian safety issues? Which in your view have been the most effective?

All ped crossings are signalized with push-button signal calls. There are special “train” signs that light up each time a train approaches. Some of our ped/track crossings are Z crossings, which basically require peds to turn towards oncoming trains, before stepping across the tracks. As noted elsewhere, the 3 crossings in SODO (along the Busway) also have bells and flashing lights.

Prior to commencing train operations (even testing), we have an aggressive outreach effort to people in the surrounding communities, to educate them about safety around the trains. Schools are a major focus of this effort. We participate in community fairs and festivals, and there will be a mass mailing to a wide area surrounding the MLK surface trackway. We cooperate with the Operation Lifesaver program, at <http://www.oli.org/>. When testing begins on MLK this summer, we will have an aggressive staff presence at most (hopefully all) signalized crossings. Since our system is not operational yet, beyond limited testing on the SODO segment, we can't offer conclusions about what steps has been most effective; we have had no incidents so far.

6. What impact have you had or do you expect with respect to the diversion of vehicle traffic onto other neighborhood streets?

On MLK, we don't expect to divert significant traffic to neighboring streets. Our agreement with the City of Seattle required us to rebuild the street with two travel lanes in each direction, plus left-turn pockets at major intersections. The capacity of these new lanes approximates the capacity of the street previously, when it had a 5-lane configuration plus on-street parking. Please see my response to the similar question above.

7. What was community reaction to the initial proposal for the project? Has the reaction changed since implementation? If your project is not yet operational, has the reaction changed over the course of the project planning and design or are many of the same issues still being examined?

The segment where we had the most community issues was where we put the trains on the surface on MLK. When initial planning occurred in the 1990's, most of the community response supported the at-grade configuration, in the middle of the street. However, by the time we were doing final design, in 2000-2001, a different group of people emerged who wanted us to put it in a tunnel. And not a disruptive cut-and-cover tunnel, but a bored tunnel. The conflict was more complex because SE Seattle is also the most diverse, the most multi-ethnic area of the state. Census data show approximately equal percentages of white, black, and Asian peoples, with many being fairly recent immigrants. We routinely translate materials into a dozen languages for this community.

## Planning Experiences in Other Areas

After a lot of civic contentiousness, we prevailed. Local electeds, including our Board of Directors, stuck with the program. Since the completion of civil construction, people can visualize the trains on the street and the service it will provide, and most now seem to be supportive and ready for service to begin (more than ready, now with gasoline approaching \$4/gallon). And MLK is now a beautiful street, nothing like the neglected old arterial that we replaced. We rebuilt it all, from property line to property line: all new sidewalks, planting strips and landscaping, curbs and gutters, concrete pavement, street lighting, traffic signals, and of course new trackway with rails embedded in concrete.

8. Has there been any impact on property values?

There are so many factors affecting property values, it is difficult to provide a solid answer to this question. I am not aware of any studies that have looked at this issue. With the modest emphasis on station area development (transit-oriented development), there is a presumption that LRT has increased property values around stations, but I would also expect that there are some individual properties located very close to the trackway that have gone down in value. In either case, I expect we are dealing with single-digit percentages here; nothing dramatic.

9. What approaches did your project take with respect to mitigating environmental impacts?

We provide suggested mitigation in the Draft EIS for any significant adverse impacts. Once the preferred alternative is identified we develop a specific list of mitigation measures that are listed in the Final EIS and ultimately end up in the Record of Decision as commitments for the project. For example, on MLK the trackway construction resulted in the general traffic lanes being pushed a few feet closer to dwellings. In some cases, this pushed allowed noise limits over the minimum and mitigation was required. In this example, we implemented a residential noise insulation project on the affected dwellings. In Tukwila, along the elevated trackway, there were several dwellings that were close enough to the track to require noise mitigation, and there the city's recommendation was to install a noise barrier along the edge of the trackway.

10. If your project happens to have a segment that it shares with a trail, we would be very interested in finding out how that is going

We don't have any segment that parallels or shares ROW with a trail, at least nothing that compares with your situation. The City of Seattle did ask us to build a 10-foot wide bicycle path paralleling our surface trackway in SODO. That facility is a simple 10-foot asphalt lane, separated from the trackway by a 4-foot chain link fence that sits on top of the ballast wall.

11. Briefly explain the process your area used to review the DEIS/AA – the process beyond the required public hearing and project sponsor response. Was there a specific group charges with a detailed review? Have you found the project concepts at the



## Planning Experiences in Other Areas

DEIS/AA stage to have remained largely in place as the project developed through PE and Final Design (and implementation as applicable)?

All cooperating and participating agencies review and comment on the EIS analysis methodologies prior to beginning the Draft EIS. All cooperating agencies have the opportunity to review and comment on a preliminary administrative Draft EIS prior to publishing the Draft EIS. For our current light rail EIS we are providing some impact analysis results to stakeholders prior to releasing the Draft EIS. We have not formed formal groups such as Citizen Advisory Committees etc. to review the EIS or project development.

For every major light rail EIS we have had to publish a supplemental Draft EIS or EA after the first Draft EIS and prior to the Final EIS because of project changes resulting from the public comment period. Our first light rail EIS for a 25 mile light rail project had two supplemental Draft and Final EISs and two supplement EAs after the first Final EIS and PE were completed.

12. How is your system funded (capital and operating expenses)?

Our system is funded by voter-approved local taxes (0.4% sales tax and 0.3% motor vehicle excise tax, assessed against the calculated value of motor vehicles). We have also received \$500m in federal capital money, and we expect a further \$750m for the extension to the University of Washington. There are no state monies available for transit in Washington, except indirectly, such as the state DOT funds used to build the HOV lanes that our buses use.

13. Are there any other specific issues that you think we should watch out for – things that may have caught your community by surprise or required more focus than you anticipated at the beginning?

First, we underestimated the degree of disruption along MLK during construction. Much of this was due to utility relocation. The wet utilities (water and combined sewer) were under the trackway, and if we left them there, every utility repair project would result in a major service shutdown. To avoid this, we had to rebuild the utilities and relocate them under each side of the street. And of course, this meant adding a separate storm sewer also, a required upgrade, at our expense. And in a cooperative agreement with the City of Seattle, we also undergrounded all the overhead utilities under the new sidewalks (telephone, electric power, and cable TV). Even the local service feeds were undergrounded, all at no expense to property owners.

Be prepared for almost daily changes in the contractors' construction schedules. The finest, most detailed plans get shifted around regularly. This created major challenges to our public communications efforts, trying to keep accurate information flowing to our construction neighbors, a major responsibility of our Community Outreach staff. And make sure that pre-construction photos are taken of every neighbor's property. Many

## **Planning Experiences in Other Areas**

claims for damages will be filed, and it's extremely useful to have photographic evidence of the condition of property prior to construction.

An essential part of our project was the active involvement of our Community Outreach team. At our peak, we had a dozen staff to assign to the 6 different construction segments. Their role was to be in regular communication with our neighbors, let them know what was coming and when it was scheduled, and to respond to inquiries, issues, and complaints as they arose, day or night. We used a wide range of tools: public meetings, door-to-door contacts, Construction Alert flyers, mailed Construction Updates, telephone, community newspaper advertising, email, our Web site; our communications effort used them all. We tried to maintain a Good Neighbor policy, and even when people were seriously annoyed or inconvenienced, they at least knew there were people to talk to, who cared about their situation and who would work to solve problems. The agency's reputation actually increased over the 5 years since light rail construction began (although not all of that can be attributed to our "good neighborliness.")

Our Community Outreach coordinators were "embedded" in the Construction Management teams, working directly with the RE's and the field inspectors in the construction trailers, not in a central office "downtown."

Your Community Outreach effort should begin during the planning phase. Give people opportunities for input and comment as the design progresses. The C.O. coordinators should run the public meetings, serve as the point of contact for citizen inquiries and responses, and be the primary conduit for agency contacts with the public.

There is a risk that a 16-mile line that is all at-grade in city streets can be a slow ride end-to-end. I just got a report on the new Phoenix line, 20 miles long and a 57-minute ride, terminal to terminal. Trains go through 150 signalized intersections. In downtown Portland, their MAX light rail takes 23 minutes to travel, in mixed traffic, from Goose Hollow to Lloyd Center – a distance of 2.3 miles. I suggest looking for opportunities to operate on fenced ROW, or elevated or in tunnel, in the interest of speeding travel, especially in areas where there is a mile or more between stations. On surface street configurations, avoid complex intersections (not at 90-degree angles) and avoid turning from one busy arterial to another – signalization gets really complex, and you risk increased congestion, motorist confusion, and higher accident rates.

## **Los Angeles**

I have provided brief responses to your questions below based on our experience in the planning of BRT and LRT projects in Los Angeles.

Some of your questions could generate rather lengthy replies, so let me know if there are any issues that you would like to discuss in greater depth.

I was impressed with your Purple Line website and the presentation materials that I briefly reviewed. You seem to have a very worthwhile project and the greater

## Planning Experiences in Other Areas

Washington DC region has a tremendous track record of integrating land planning with transit.

1. Along route segments where you have had to take a close look at whether it should be a tunnel or at grade, what did you choose and why?

LA Metro developed a Grade Crossing Policy for Light Rail Transit in 2003 for use in early planning stages of light rail projects. These preliminary determinations are then refined through the EIS/PE phase and ultimately decided by the California Public Utilities Commission which approves all grade crossings after PE but prior to construction. To date, Metro has not grade-separated any BRT projects.

2. Along route segments where you have had to consider running in either shared or dedicated lanes which did you choose and why?

We always operate in dedicated lanes when we have available right of way to do so. In cases where LRT runs on public streets, we normally have a curb separation between the LRT trackway and the mixed flow traffic. We generally do not operate LRT in mixed-traffic operation, except in very limited circumstances (not preferred). For BRT, we operate in dedicated right of way whenever possible (such as an abandoned RR ROW) and are seeking approvals for peak period dedicated bus lanes in some new projects on public streets. To date, we have only operated BRT in exclusive lanes on city streets in a demonstration project but we currently have an FTA Very Small Starts Grant to implement a 9 mile peak period bus lane on Wilshire Boulevard during the next 3 years. Dedicated BRT lanes on city streets is still a relatively new concept and has not yet been accepted by many city transportation departments due to perceived adverse traffic impacts.

3. What considerations came into play when considering whether the running way was in the median or next to the curb?

You may wish to refer to the literature on this because this is a highly technical discussion and there are not firm rules. In our experience to date, LRT runs in the center of the street and BRT runs in the curb lanes. Center median running is difficult to implement for BRT due to impacts to left turn pockets, existing median landscaping and more difficult access for pedestrians and general requirements for buses with doors on both sides to facilitate center platform boarding. Such buses are only now becoming available on the market. LRT operation in the curb has not been feasible because we use high platform cars which would adversely impact the sidewalks. Low floor LRT makes sidewalk boarding more feasible.

4. What factors did you generally take into consideration when taking a look at the impact the project may have on traffic congestion – both with respect to potential operational conflicts between vehicles and the project trains or buses as well as the impact on traffic congestion within the corridor?

## Planning Experiences in Other Areas

This is again a highly complex question that cannot be summarized concisely. A full traffic impact assessment is always required which identifies traffic impacts and mitigation measures. FTA has extensive criteria in their evaluation of projects which rely on the cost per hour of travel time savings. This requires a project to demonstrate how it will overcome congestion to provide improved travel speeds. In general, while transit projects provide additional capacity in the corridor, there is also evidence to suggest that congestion levels may not be reduced since traffic growth will generally expand to fill any available roadway capacity unless other controls such as congestion pricing are put into place.

5. What proactive steps did you take to address pedestrian safety issues? Which in your view have been the most effective?

LRT and BRT are modern day versions of the streetcar and are generally designed to operate at-grade in highly pedestrian environments. For LRT, we now have crossing gates for both cars and sidewalks. We also have state regulations for warning bells and horns on trains. Proactive safety campaigns are initiated prior to the opening of new lines to inform area residents and businesses of safety issues. In some cases, speed constraints have been imposed during initial operations until motorists and pedestrians become accustomed to the new transit line.

6. What impact have you had or do you expect with respect to the diversion of vehicle traffic onto other neighborhood streets?

Because transit lines are located on highly used arterial streets in denser parts of the city, traffic diversion into residential areas usually is a problem that predates the implementation of the transit line. In such cases, neighborhoods often try to reduce cut through traffic and spillover parking by imposing neighborhood parking policies and traffic mitigation measures such as turn prohibitions during peak periods and other traffic calming measures. The transit project planning team normally works with such communities to identify such measures that may be needed when the transit project is implemented.

7. What was community reaction to the initial proposal for the project? Has the reaction changed since implementation? If your project is not yet operational, has the reaction changed over the course of the project planning and design or are many of the same issues still being examined?

In our experience, the first projects met with the most opposition and subsequent projects have had more support. People are fearful of what they don't understand, and we have generally led tours to the existing lines on the system to educate people about the benefits of public transit. Many concerns of communities are legitimate and need to be addressed during the planning and environmental phases. Our first line opened in 1990 and today we have many communities proactively working to get new lines extended into their communities because of the perceived success of the system.

## Planning Experiences in Other Areas

8. Has there been any impact on property values?

There are many technical studies on this topic that generally show an increase in commercial property values and an increase in multi-family property values. The record for single family property values is mixed with some lines showing increases in values and some showing negative impacts.

9. What approaches did your project take with respect to mitigating environmental impacts?

All of our projects must comply with the National Environmental Policy Act and the California Environmental Quality Act. There is extensive case law and precedent that guides the environmental analysis of transit projects.

10. If your project happens to have a segment that it shares with a trail, we would be very interested in finding out how that is going

We have a bike path along our Metro Orange Line BRT project and are constructing a bike path along our new Expo LRT Project (to open in 2010). We are supportive of these projects and are actively funding them. We have a Metro Bike Program which is proactively working to improve the link between bikes and transit.

11. Briefly explain the process your area used to review the DEIS/AA – the process beyond the required public hearing and project sponsor response. Was there a specific group charges with a detailed review? Have you found the project concepts at the DEIS/AA stage to have remained largely in place as the project developed through PE and Final Design (and implementation as applicable)?

Federal guidelines require that a Locally Preferred Alternative be selected either at the conclusion of the AA Study or at the conclusion of the DEIS so that a project can be approved for entry into Preliminary Engineering. Generally, it is not feasible to make extensive changes to a project after the entry in the PE phase without redoing work on the AA/DEIS through a supplemental EIS. In some cases we have had to revisit the environmental phase due to changes in the project that came about later in project development. This adds cost and delay when it occurs, so we work very hard to avoid this and reach consensus on the definition of the project during the original AA or AA/DEIS.

Consensus is crucial to gaining such approvals and all major stakeholders and community groups are brought into the process as early as possible. The required community meetings (Scoping, Public Hearings) only constitute a small component of the overall outreach effort, which is continuous and extensive throughout the planning phase.

12. How is your system funded (capital and operating expenses)?

## Planning Experiences in Other Areas

Our funding is primarily local with the largest component coming from a 1% countywide sales tax. These funds are used to match state and federal grants which come primarily from gas taxes and competitive programs such as FTA Section 5309 New Starts.

13. Are there any other specific issues that you think we should watch out for – things that may have caught your community by surprise or required more focus than you anticipated at the beginning?

I would make sure your existing and planned land use densities are high enough to support a major transit capital investment and that you bring the transit into the heart of these activities centers to the greatest extent possible.

### Pittsburg

1. Along route segments where you have had to take a close look at whether it should be a tunnel or at grade, what did you choose and why?

The North Shore Connector is a 1.2-mile extension of Port Authority's existing LRT system from its current terminus at Gateway Station in the Golden Triangle to the North Shore area of Pittsburgh. A tunnel alignment was selected to cross the river in order to eliminate the need for a portal in a downtown street (which would have major traffic impacts) which would be required for a bridge across the river that would be associated with an at-grade alignment. Other concerns about at-grade alignments in the North Shore were impacts to planned development, compromised effectiveness of future extensions and safety concerns of at-grade alignments during baseball and football events.

2. Along route segments where you have had to consider running in either shared or dedicated lanes which did you choose and why?

The North Shore Connector is does not have any in-street running. No other LRT or BRT projects are currently in the planning phases although a Transit Development Plan currently underway will identify corridors which may warrant BRT investments.

3. What considerations came into play when considering whether the running way was in the median or next to the curb?

N/A

4. What factors did you generally take into consideration when taking a look at the impact the project may have on traffic congestion – both with respect to potential operational conflicts between vehicles and the project trains or buses as well as the impact on traffic congestion within the corridor?

For the North Shore Connector, the impact on Levels of Service was considered.

## Planning Experiences in Other Areas

5. What proactive steps did you take to address pedestrian safety issues? Which in your view have been the most effective?

All at-grade segments were eliminated in response to community concerns about safety during and after sports events.

6. What impact have you had or do you expect with respect to the diversion of vehicle traffic onto other neighborhood streets?

N/A

7. What was community reaction to the initial proposal for the project? Has the reaction changed since implementation? If your project is not yet operational, has the reaction changed over the course of the project planning and design or are many of the same issues still being examined?

The initial local reaction was disappointment that the proposed alignment was not providing more direct service into their neighborhoods. After over a year of discussion at community meetings, community began to support the project. The neighborhoods adjacent to the project area remain supportive. The project is under construction and planning and design issues are not actively being examined at this time.

8. Has there been any impact on property values?

Some property in the North Shore has been developed, in part, due to anticipation of the North Shore Connector Project. To date, no impacts on property values have been determined. (I believe that this would be considered in a "Before-and-after" study which FTA requires for New Starts Projects).

9. What approaches did your project take with respect to mitigating environmental impacts?

Selection of a tunnel over a bridge/surface alignment eliminated traffic and development impacts. Use of the tunnel boring machine instead of excavating a trench and dropping a tube in the river avoided major impacts on the Allegheny River.

10. If your project happens to have a segment that it shares with a trail, we would be very interested in finding out how that is going

An extension of the Martin Luther King, Jr. East Busway was built (opened in 2003) with a linear park and trail. This is a major community benefit.

11. Briefly explain the process your area used to review the DEIS/AA – the process beyond the required public hearing and project sponsor response. Was there a specific

## Planning Experiences in Other Areas

group charges with a detailed review? Have you found the project concepts at the DEIS/AA stage to have remained largely in place as the project developed through PE and Final Design (and implementation as applicable)?

During the DEIS and FEIS, 275 meetings were held with community groups, elected officials, local, state and federal public agencies, regional civic and business organizations and corridor stakeholders. An ad hoc neighborhood groups was formed to address the issues of development in the North Shore and this provided a forum for Port Authority to discuss the project, apprise the community of progress on the project and hear the residents' concerns. During much of the first year of the project, these meetings were held once per month, later the group met once per month. A Project Technical Committee was formed to provide input from staff of major private and public stakeholders. PennDOT convenes a monthly Agency Coordination Meeting (ACM) for project sponsors to provide information and updates and to discuss environmental issues associated with transportation projects. Federal environmental and transportation are also represented in the ACM.

The project concept is essentially the same as the Locally Preferred Alternative selected at the end of the DEIS, except for the Convention Center Line which has been deferred due to increased project costs.

12. How is your system funded (capital and operating expenses)?

This project is funded 60% New Starts, 20% flex funding, 16 2/3% state funding and 3 1/3 Allegheny County funds. Other recent Port Authority projects and other capital expenses are funded at different federal ratios. Operating expenses are funded from fare revenues and State and County sources.

13. Are there any other specific issues that you think we should watch out for – things that may have caught your community by surprise or required more focus than you anticipated at the beginning?

Something for which I was unprepared was the residents' lack of familiarity with LRT even though an LRT system has been in operation in Pittsburgh since the 1980s. Accordingly, I took some residents on a tour of Port Authority's existing LRT system. On another day, I also took residents on a tour of the project corridor they could have a better understanding of the alignments being considered in the DEIS.

Historic and archaeological resources were not a major issue during the DEIS and FEIS because we had early and extensive coordination with the State Historic Preservation Office (SHPO). About a week after the DEIS started, I had a meeting with the SHPO in Harrisburg to explain the project and we also provided field tours to SHPO staff. I highly recommend this, because unresolved cultural resource issues can delay a project.



### Charlotte

1. Along route segments where you have had to take a close look at whether it should be a tunnel or at grade, what did you choose and why?

The LYNX Blue Line did not have any sections where a tunnel was necessary. However, the line does pass through the Charlotte Convention Center in an envelope preserved for it during the original design and construction of the Convention Center. This is actually a bridge surrounded by the Convention Center Buildings and roof; but, due to the enclosed nature of this segment, it is often described as a tunnel. The decision to pass through the Convention Center was dictated by the alignment of the preserved corridor and the prior planning to accommodate the Light Rail during the design of building.

2. Along route segments where you have had to consider running in either shared or dedicated lanes which did you choose and why?

The LYNX Blue Line is in its own guideway which is separated from any running traffic lanes. This project is primarily within railroad ROW purchased by the City and only has only one small section (approximately 0.4 miles) that is within the median of a street (South Blvd), near the Scaleybark Rd Station.

3. What considerations came into play when considering whether the running way was in the median or next to the curb?

The reason that we placed the alignment in the median of the South Blvd surrounding the station at Scaleybark was to serve as a catalyst for redevelopment and to improve land use access to South Blvd and the light rail. South Blvd was a 4 lane undivided street that had an abandoned freight railroad track, along the western curb, sealing off one side from vehicular access to South Blvd. The LYNX project reconfigured the road to become a 4 lane boulevard with light rail in the median and removing the old freight line. This configuration gave one side of South Blvd street frontage that it didn't have in the past and created a walkable station and new TOD site that is currently under development.

4. What factors did you generally take into consideration when taking a look at the impact the project may have on traffic congestion – both with respect to potential operational conflicts between vehicles and the project trains or buses as well as the impact on traffic congestion within the corridor?

## Planning Experiences in Other Areas

Traffic impacts were evaluated within the Draft and Final EIS phases of the project by our consultant in collaboration with the Charlotte Department of Transportation (CDOT). Additionally, CDOT provided specific traffic impact modeling that helped identify the need to grade separate the Light Rail Line and Archdale Drive after the completion of the FEIS. This was primarily based upon the potential adverse impact the crossing street (Archdale Dr) would face if the train maintained full priority at the intersection.

5. What proactive steps did you take to address pedestrian safety issues? Which in your view have been the most effective?

The City of Charlotte passed a bond to implement a Capital Improvement Program, which improved key intersections and signals that pedestrians would utilize to access the stations. These improvements included ped signals, refuge islands, pedestrian bridges, lighting, landscaping and general streetscape improvements.

6. What impact have you had or do you expect with respect to the diversion of vehicle traffic onto other neighborhood streets?

Neighborhood preservation was a high priority during the design and construction of the light rail line. The station locations and access were closely studied to minimize traffic impacts to neighborhoods and CATS worked closely with the CDOT to provide the best possible signal coordination between the LYNX Blue Line and the major streets to avoid creating delays that could lead to cut through traffic.

7. What was community reaction to the initial proposal for the project? Has the reaction changed since implementation? If your project is not yet operational, has the reaction changed over the course of the project planning and design or are many of the same issues still being examined?

The public was generally supportive of the project during planning and design, but during construction there were slips in the budget and schedule which drew some negativity to the project. Since the project opened, the public has been more than enthusiastic and ridership has been greater than projected.

8. Has there been any impact on property values?

Yes. The City of Charlotte has tracked existing and proposed investment in the station areas and estimates additional future investment between 2005 and 2011 of up to \$1.86 billion. This is exclusive of development in the Central Business District. When compared to the average countywide changes in land values, land within the station areas is rising in value faster than the countywide average by 12%. By 2011 this is anticipated to generate approximately \$24 million annually in new tax revenues to the City and County.

9. What approaches did your project take with respect to mitigating environmental impacts?

## Planning Experiences in Other Areas

The main environmental impact that was identified for mitigation was an endangered sunflower (Scheintz's Sunflower) that was relocated to a preserve.

10. If your project happens to have a segment that it shares with a trail, we would be very interested in finding out how that is going.

The City of Charlotte funded a ped/bike trail adjacent to the South Corridor project for approximately 4 miles. This was built incrementally and with the inner part being built before the South Corridor project and the outer part built with the South Corridor project. The trail is a successful amenity that is seeing high usage with little or no problems related to rail operations.

11. Briefly explain the process your area used to review the DEIS/AA – the process beyond the required public hearing and project sponsor response. Was there a specific group charges with a detailed review? Have you found the project concepts at the DEIS/AA stage to have remained largely in place as the project developed through PE and Final Design (and implementation as applicable)?

The South Corridor followed the DEIS/AA process as defined by NEPA and FTA. Beyond the public hearing, CATS published the EIS in several libraries around the City. Generally, the project definition remained consistent throughout the project life. The only major change was based on a decision to grade separate a road that was originally planned to be an at-grade rail crossing at Archdale Drive.

12. How is your system funded (capital and operating expenses)?

The City of Charlotte has a dedicated ½ percent sales tax to support transit, which funded 32% of South Corridor Project and also funds the operation of it. The balance of the project is funded by a combination of federal (43%) and, state (25%).

13. Are there any other specific issues that you think we should watch out for – things that may have caught your community by surprise or required more focus than you anticipated at the beginning?

The sharp increases in construction escalation along with a tight labor market in our area drove the final project cost above our original estimates and fueled negative press from project opponents. Although a small group, their vocal and organized campaign resulted in a recall vote on our ½ percent transit sales tax. This recall attempt was soundly defeated by the voters (70% against repeal); but, the energy and business community expense to counter it was costly. We are striving to keep the public better informed of the complexities of these types of projects and the likely changes that will occur as the project s progress. Additionally, we are working to fully define and explain the risks to project costs as we proceed with our next corridors.

## Planning Experiences in Other Areas

### Portland

1. Did you chose at grade or tunnels, and if so why?

Yes. We have done both. However, the only places we have done tunnels are to get underneath a set of very tall hills (over 700 feet) that stand between downtown Portland and the western suburbs of Beaverton and Hillsboro. Otherwise we have generally chosen at grade because it integrates much better into the surrounding land uses and is significantly less expensive so we can cover a much larger area with the same funds.

2. Along route segments where you have had to consider running in either shared or dedicated lanes which did you choose and why?

We always used dedicated lanes except in two unique circumstances: the Portland Mall where it shares only with buses and on the Steel Bridge crossing the Willamette where the middle of the bridge shares with all traffic in one direction only. Otherwise, we always used dedicated lanes. These are sometimes in the middle and sometimes on the side, depending on whether the traffic is one-way (side) or two (usually center) and other needs on a location-by-location basis. Safety, reliability, and integration into surrounding development tend to play key roles.

3. Where did you place the stations, in the middle or on the sidewalks?

Again, it depends. We placed station in the middle where we are center-running in the middle of two-way traffic (e.g., East Burnside or Interstate Ave). On the sidewalks generally where there is one-way adjacent traffic (e.g., downtown on Morrison and Yamhill and Lloyd district on Multnomah St)

4. What factors did you generally take into consideration when taking a look at the impact the project may have on traffic congestion – both with respect to potential operational conflicts between vehicles and the project trains or buses as well as the impact on traffic congestion within the corridor?

We worked with the local jurisdictions to optimize traffic signal operations. On crossing streets, the light rail crossing is rarely the deciding factor in capacity - there is generally an intersection on one side or the other that has far more effect on capacity.

5. What proactive steps did you take to address pedestrian safety issues? Which in your view have been the most effective?

We did intense review of likely pedestrian movements, signals and signage, learning more with each project. Signals and clear signage are generally adequate at standard intersections. "Z-crossings" which force pedestrians to face toward the on-coming tracks before they can cross by having the crosswalk be a "Z" shape with guardrails enhance safety at non-signalized intersections. In a very few cases we have even installed pedestrian gates (like railroad crossing gates but on the sidewalk) or pull-gates that require the pedestrian to stop and pull the gate toward them to get through ensuring they are stopping long enough to check for trains. Sight distances are very important.

## Planning Experiences in Other Areas

6. What impact have you had or do you expect with respect to the diversion of vehicle traffic onto other neighborhood streets?

What analysis we have done has not shown much.

7. What was community reaction to the initial proposal for the project? Has the reaction changed since implementation? If your project is not yet operational, has the reaction changed over the course of the project planning and design or are many of the same issues still being examined?

This is too large a question to give a simple answer. We are still working on the system, with a line slated to open in Sept 09 and two more in advanced alternatives analysis so we don't have a "final system" yet. Reaction has run the gamut from joy to fear. In all cases, we try to remain open to all input and understand exactly what the issues are to try to address them directly, recognizing we have to balance the needs of many with safety, reliability and efficiency. A lot of work and staff time.

8. Has there been any impact on property values?

Property values have risen throughout Portland, and Portland has been one of the few mostly stable property value communities in the country in the past year. Analysis has shown that property values have risen higher within station areas than can be explained otherwise.