



MEMORANDUM

To: Marc Heilesen, Sierra Club, and Roger Borgenicht, Utahns for Better Transportation
From: Lucinda E. Gibson, P.E. and Norman L. Marshall
Date: 9 February 2007
Re: Comments on Mountain View Sequencing Analysis

The MVC Sequencing Analysis conducted by Parsons Brinckerhoff fails to meet the basic purpose of exploring the longer term effects on future land use patterns of alternate transportation investment strategies. The basic purpose of the sequencing analysis is aptly described in the Mountain View Corridor Voluntary Agreement, excerpt as follows:

4. *Balanced Transportation*

We desire a balanced transportation system for our future that will involve more transportation choices. The phasing and implementation of transportation investments over the next decade will affect the land use development patterns and therefore affect future travel needs and the availability and effectiveness of other viable transportation choices. The sequencing of transportation investments needs to be studied to recommend the most effective and cost efficient way to meet future travel needs, reduce the rate of growth of vehicle miles traveled, improve air quality through a better balance between auto, transit, walk and bike trips, and to recommend the best way to encourage the types of land uses throughout the corridor that will support these improvements.

The excerpt above from the MVC Voluntary Agreement suggests that the investments made over the next decade will affect land use development patterns, which in turn affect vehicle-miles-traveled. However, land use effects are not limited to the next decade, but will unfold over a much longer time period. Further, the goals of reducing vehicle miles, improving air quality, etc., are not just goals for the next 10 years; they are long range goals. People in the MVC area don't want cleaner air and lower transportation costs just for the next ten years; they want these for their children and grandchildren. The sequencing analysis should therefore have a horizon year well beyond 2015, such as 2030 or 2040.

Apparently, the consultants are reluctant to alter the future land use assumptions from the Mountain View Vision scenario, claiming that the horizon year land use patterns are fixed and cannot be varied. This claim is not supported by the Voluntary Agreement, which states that the proposed land use and transportation assumptions in the Growth Choices vision may well vary from the actual land use:

What the Map Is and Is Not

The Map delineates transportation preferences that are feasible, but may or may not represent the eventual transportation decisions from the Mountain View Corridor EIS. The EIS process incorporates additional technical and cost/benefit analysis which might alter the transportation elements in the Vision Map.

The Map delineates the approximate location and type of pedestrian-oriented mixed use centers endorsed by the signatories of the Vision. The actual location, size, land uses, and densities that are implemented by individual jurisdictions may vary from the map.

The land use forecasts used in the EIS represent “feasible preferences”. Actual land use patterns will vary substantially based on a complex variety of factors, including the sequencing of transportation investments. The influence of transportation investments on land use patterns is now widely accepted by the planning and engineering community, and can no longer be considered speculative. Numerous EIS and other planning studies include alternative land use forecasts for alternative scenarios, including EIS processes in Illinois, New Hampshire, and other locations. The EIS is not using the “official” WFRC land use forecasts, nor are they bound by any regulation or accepted practice to use only a single land use forecast for future scenarios with different investment sequencing.

It is no longer speculation that transportation investments profoundly affect the location and form of land development. The Dallas region provides an excellent case study of how their new light rail system has spurred many highly successful transit-oriented developments in the suburban areas. The following excerpts from the Dallas Area Rapid Transit – TOD website describes the phenomena:

A TOD “sea change” has occurred in the first-generation suburbs of Richardson, Plano, and Addison, where committed local officials have worked with savvy developers to proactively plan and develop station areas. Whereas DART initially led the TOD charge, now local cities are.

The TOD leadership in this property-rights-friendly state, where government and planning have historically had relatively limited roles, has come from suburban communities and the region’s transit authority.

TOD is helping to create unique downtowns to attract growth that would otherwise go to the sprawling fringe of the region.

Located 4 miles north of downtown Dallas (a 15-minute train ride), Mockingbird Station is a mixed-use, urban “chic” village linked directly to a light-rail station (after which it is named) via a welcoming pedestrian bridge. The assemblage of offices, shops, restaurants, and lofts near the station cost around \$145 million to build, a substantial sum given that such a “product” had absolutely no track record in automobile-friendly Texas.

Source: <http://www.dart.org/about/economicimpact.asp>

Alternative Land Use Forecast Methodologies

There are a number of techniques that can be used to develop alternative land use scenarios that will reflect the effects of transportation investments.

UrbanSim

One tool is UrbanSim, which has been the focus of a significant effort of the Wasatch Front Regional Council to develop as a planning tool. WFRC staff has been directed to use UrbanSim for a variety of uses, including NEPA projects.

Mr. Chappell briefly reported the Council’s UrbanSim guidance. He noted that he has directed the staff to use UrbanSim in the following applications:

- Analysis for and by public agencies (WFRC and MAG) and,
- Analysis on a regional (4 county) scale vs. for sub-regional planning project analysis (i.e. NEPA), and
- For analysis and comparison studies within the Regional Transportation Plan (RTP), through 2006, and

- Only as a tool to the RTP process and not as the official projections input to the transportation demand models.

August 25, 2005 minutes, WFRC meeting, <http://www.wfrc.org/committee/minutes/wfrc/Aug05.pdf>

While UrbanSim results are not to be used as “official projections”, the MVC EIS process is not using the official projections anyway. The MVC EIS modelers have substantial flexibility in using alternative land use forecasts, since they are not preparing an “official” RTP model run, but rather are conducting “what if” scenarios, with different configurations of the MVC. The fact that WFRC is spending substantial effort to refine UrbanSim to make it useful for regional planning emphasizes the need for and utility of tools to evaluate the land use implications of transportation investments.

Expert Panel (Delphi)

If UrbanSim is not ready for use in this type of analysis, another option for the MVC consultants is the use of an Expert Panel, or the Delphi process. In the Delphi process, a panel of experts are provided information about the area and its potential for development, and asked to identify potential effects of the MVC alternatives on the area’s growth and development. The panel members are then given feedback about the responses of others, and afforded an opportunity to revise their estimates. The Delphi process is an accepted technique for evaluating different transportation scenarios. A report done for the American Association of State Highway and Transportation Officials (AASHTO) in 2002 described the I-93 Delphi process and five other similar processes elsewhere in the U.S. (Seskin, Samuel N., Katherine Gray Still, John Boroski, all of Parsons Brinckerhoff Quade & Douglas, Inc., “The Use of Expert Panels in Analyzing Transportation and Land Use Alternatives”, completed as part of National Cooperative Highway Research Program (NCHRP) Project 8-36, April 2002). The report concludes (p.24):

Our research, the case studies, and the resulting guidelines, have shown that expert panels can be used for a variety of applications and be conducted using a broad range of techniques. Expert panels can be used as a primary analysis method or in conjunction with other tools, and is a cost-effective technique that can produce reliable results. Expert panels combine an understanding of the theory of urban development, empirical knowledge of transportation/land use relationships, and detailed understanding of local conditions.

Given that the authors of this document are employed at the same consulting firm that is conducting the MVC EIS, there should be at least some degree of awareness of these published methods for determining how land use patterns are influenced by transportation investments.

Need for Travel Demand Improvements for Transit

The Wasatch Front Regional Travel Demand Model, typical of modeling techniques that were largely developed for planning of highway capacity, is not sufficient for modeling transit ridership without substantial adjustments. Some of these were implemented in the Legacy Highway sequencing analysis as postprocessing, but still were not sufficient to accurately show the potential for transit and transit-oriented development to reduce the need for highway capacity.

In our review of the Legacy Parkway modeling (done in collaboration with Robert Cervero)¹ we identified a large number of modeling deficiencies, including:

¹ DSEIS Legacy Parkway Comments and Citizens Smart Growth Alternative, March 2005.

- failure to account properly for induced travel demand from new roadways
- inappropriate basing of work trip numbers on vehicle availability
- unrealistic future land use and travel assumptions
- underestimating potential for TOD
- underestimating effect of TOD on vehicle trip rates
- underestimating elasticity of transit ridership to density
- underestimating elasticity of transit ridership to fare
- underestimating elasticity of transit ridership to parking price
- underestimating elasticity of transit ridership to service frequency
- underestimating synergistic effects of transit service improvements

We believe that most, if not of these deficiencies are also present in the Mountain View Corridor modeling.

Numerous enhancements or adjustments to travel demand models to make up for these common deficiencies are outlined in recent publications by Cervero² and by Marshall and Grady.³

Other EIS Deficiencies

As we have reviewed the relevant EIS documents in our review of the sequencing analysis, we have several other significant concerns which should be brought to your attention.

Alternatives Screening

We are also concerned about earlier analyses that resulted in the rejection of variations of “transit only” scenarios that included transit, TDM, TOD, and arterial improvements rather than a limited access facility, were prematurely rejected due to use of travel demand modeling that is not sufficiently sensitive to land use and transit characteristics.

A “transit first” scenario, which includes aggressive investment in transit facilities serving the Mountain View Corridor study area, will result in a different land use pattern by the year 2030 than a “highway first” scenario. Further, a “transit only” scenario, which should be included in the sequencing analysis, will result in an even more compact, transit-oriented land use pattern. All of these should be considered in the sequencing analysis.

We have requested the modeling files from the alternatives screening process (completed in July, 2004), and will be able to comment more fully on this after receiving that material from Parsons Brinckerhoff.

Economic Impacts of Lower Transportation Costs

A further reason for undertaking the sequencing analysis is to evaluate the longer term economic effects of the alternative investment strategies.

This study suggests it is imperative for cities and regions to consider housing and transportation policy together. The study also points to the importance of infill development that expands the supply of affordable housing in inner city and older suburban neighborhoods that have good access to

² Cervero, Robert, “Alternative Approaches to Modeling the Travel-Demand Impacts of Smart Growth. *Journal of the American Planning Association*, p. 285-295, Vol. 72, No. 3, Summer 2006.

³ Marshall, Norm and Brian Grady, “Travel Demand Modeling for Regional Visioning and Scenario Analysis”. Presented at the Annual Meeting of the Transportation Research Board, Washington DC, January 2005; and *Transportation Research Record* No. 1921, *Travel Demand 2005*, 2005.

traditional job centers; the development of more affordable housing near transportation hubs and suburban employment centers; providing good quality and reliable transit for suburb to suburb commuting, as well as for helping families in the outer suburbs get into the central city; and policies to encourage car sharing and to reduce the costs of car ownership for families who cannot easily get to work via public transit.

A Heavy Load: The Combined Housing and Transportation Burdens of Working Families, by the Center for Housing Policy, October, 2006.

Lower commuting costs can bring other economic benefits to the corridor and to the region. Commuting costs can be lowered by careful integration of land use and transportation policy, and can result in many positive regional economic effects. The toll highway alternative, which has not been modeled, will increase the cost to automobile commuters in the Mountain View Corridor area, especially since the land use assumptions require long commutes using the toll facility. The economic effects of a transit first, transit only, and toll highway first scenario should be evaluated.

Conclusions: Recommended Changes to the MVC Sequencing Analysis

In order for the Sequencing Analysis to be meaningful and comply with the Voluntary Agreement statement on Balanced Transportation, substantial changes to the methodology are needed. The following provide the major areas that we are currently aware of. After we receive the modeling files, we may develop further concerns and recommendations for changes in the analytical procedure.

- 1) Develop two substantially different land use forecasts for the year 2030 or beyond, reflecting the results of the different transportation investment sequencing. UrbanSim may not be ready for this type of use. An expert panel would be an option for developing these alternative forecasts.
- 2) Analysis of all scenarios with appropriate modeling techniques that will accurately reflect transit and the benefits of transit-oriented development. The existing WFRC model is not adequate to reflect these differences. In the Legacy Parkway sequencing analysis, substantial modifications and adjustments were made to reflect future transit demand, and even these were not sufficient. The forecasts should include consideration of the different pedestrian environment factor and lower auto ownership in TOD developments, and not just place additional land use in the corridor to reflect transit's influence in land use patterns.
- 3) Given the potential lack of funding for a limited access freeway, revisit other alternatives, such as transit/TDM/arterial improvements, as these were rejected prematurely, as they were not tested with modeling techniques that are appropriately sensitive to land use and transit. A tolled highway will generate different travel demand and impacts than a freeway, and will result in different land use effects. The sequencing analysis should include a tolled highway in all scenarios that include a limited access facility.