Memorandum

To: David Schonbrunn, TRANSDEF
From: Norm Marshall
Subject: Traffic Impacts of Narrowing Monterey Highway
Date: April 26, 2010

The revised Pacheco Pass alignment of the proposed High Speed Train requires that a section of Monterey Highway be reduced in width from 6 lanes to 4 lanes. The revised Environmental Impact Report (EIR)[1] presents level-of-service calculations and concludes that with the narrowing, "traffic congestion is projected to increase slightly in both directions." (p. 2-11) The analysis presented is woefully inadequate because the impacts of the narrowing fall primarily on other roadways, and these congestion impacts on other roadways are not even mentioned, and certainly not analyzed. The EIR also fails to evaluate congestion impacts during other time periods, particularly during the weekday morning peak hour.

The level of service information provided in the EIR is limited to that given in the table below.

Table 2-4
Traffic Conditions on Monterey Highway With and Without the Project During Evening Peak Period (Year 2035)

MONTEREY HIGHWAY SEGMENT		Northbound						Southbound					
		6 LANES – BASE CASE			4 LANES – WITH HST PROJECT			6 LANES – BASE CASE			4 LANES – WITH HST PROJECT		
From	To	Peak Hr Vol	V/C	LOS	Peak Hr Vol	V/C	LOS	Peak Hr Vol	V/C	LOS	Peak Hr Vol	V/C	LOS
Southside	Capitol	1,791	0.629	B	1,490	0.784	C	2,753	0.966	E	1,880	0.989	E
Capitol	Senter	2,101	0.737	C	1,504	0.792	C	2,894	1.015	F	1,907	1.004	F
Senter	Branham	2,114	0.742	C	1,593	0.839	D	2,790	0.979	E	1,853	0.975	E
Branham	Chynoweth	2,330	0.818	D	1,746	0.919	E	2,727	0.957	E	1,835	0.966	E
Chynoweth	Blossom Hill	2,574	0.903	E	1,947	1.025	F	2,637	0.925	E	1,885	0.992	E
Blossom Hill	Bernal	1,807	0.623	B	2,004	0.691	B	3,252	1.121	F	3,019	1.041	F
Bernal	Metcalf	3,081	1.027	F	3,153	1.051	F	3,148	1.049	F	2,919	0.973	E
Metcalf	Bailey	2,800	0.933	E	2,869	0.956	E	3,071	1.024	F	2,846	0.949	E

Source: San Jose Department of Transportation 2010.
Peak Hr Vol = peak hour volume.
V/C = volume-to-capacity ratio.

From EIR p 2-11.

Table 2-4 does not include capacity numbers. However, capacity can be approximated from the traffic volumes and volume-to-capacity ("V/C") ratios shown. I was able to obtain the capacity values precisely from model files provided by the City of San Jose. The assumed capacity north of Blossom Hill is assumed to be 950 vehicles per lane per direction, or 2850 vehicles per hour per direction in the 6 lanes *Base Case* and 1900 vehicles per direction in the 4 lanes *with HST Project* case. The model assumes 4

[1] Bay Area to Central Valley High-Speed Train Revised Draft Program Environmental Impact Report Material. California High Speed Rail Authority, March 2010. http://www.cahighspeedrail.ca.gov/library.asp?p=9275 (captured 4/8/10)

lanes south of Blossom Hill in both scenarios except that the capacity per lane is assumed to be 1450 vehicles per hour, or a capacity of 2900 vehicles per direction per hour.

In the text above Table 2-4, the EIR states:

> As discussed above in the Affected Environment, Monterey Highway in the San Jose to Central Valley Corridor is six lanes wide from Southside Drive to Blossom Hill Road, and four lanes wide south of Blossom Hill Road. For the HST project, segments of Monterey Highway from Umbarger Road to Metcalf Road (near Bailey Road) are proposed to be narrowed from six lanes to four lanes to provide a cost-effective right-of-way corridor for HST by minimizing property acquisition along the HST alignment. (EIR, p. 2-11)

This excerpt is contradictory as it describes Monterey Highway south of Blossom Hill Road to be four lanes without the project and also describes it as being narrowed with the project to four lanes. It is possible that the capacity of the four-lane section actually is higher than the capacity of the six-lane section if the four-lane section is more of an expressway with extremely limited access. However, these assumptions should be justified in the EIR. If there is narrowing that would affect capacity south of Blossom Hill Road, the effects of this narrowing were not modeled.

In the forecast conditions for the 2035 weekday evening peak hour, the southbound volumes are higher than the northbound volumes, with the highest modeled volume for the section proposed to be narrowed from 6 lanes to 4 being between Capitol and Senter. In the 6-lane Base Case, the modeled volume is 2,894. The assumed hourly capacity is 950 vehicles per lane, so that the total directional capacity is 2,850 vehicles per hour. The volume-to-capacity ratio is 2,894/2,850 = 1.015. By definition, a volume-to-capacity ratio of greater than 1.0 represents failing level-of-service “F” conditions. In the 4-lane scenario, the modeled volume drops by 987 vehicles per hour or slightly more than the loss of capacity (950 vehicles per hour). The volume-to-capacity ratio is 1.004 (again level-of-service “F”).

In 2035, much of the roadway network for the Base Case in this area is modeled as operating at level-of-service F as shown in Figure 1.[2] There is severe congestion forecast for the major freeways surrounding the proposed narrowing, including the Bayshore Freeway, the West Valley Freeway, the Guadalupe Parkway and I-280.

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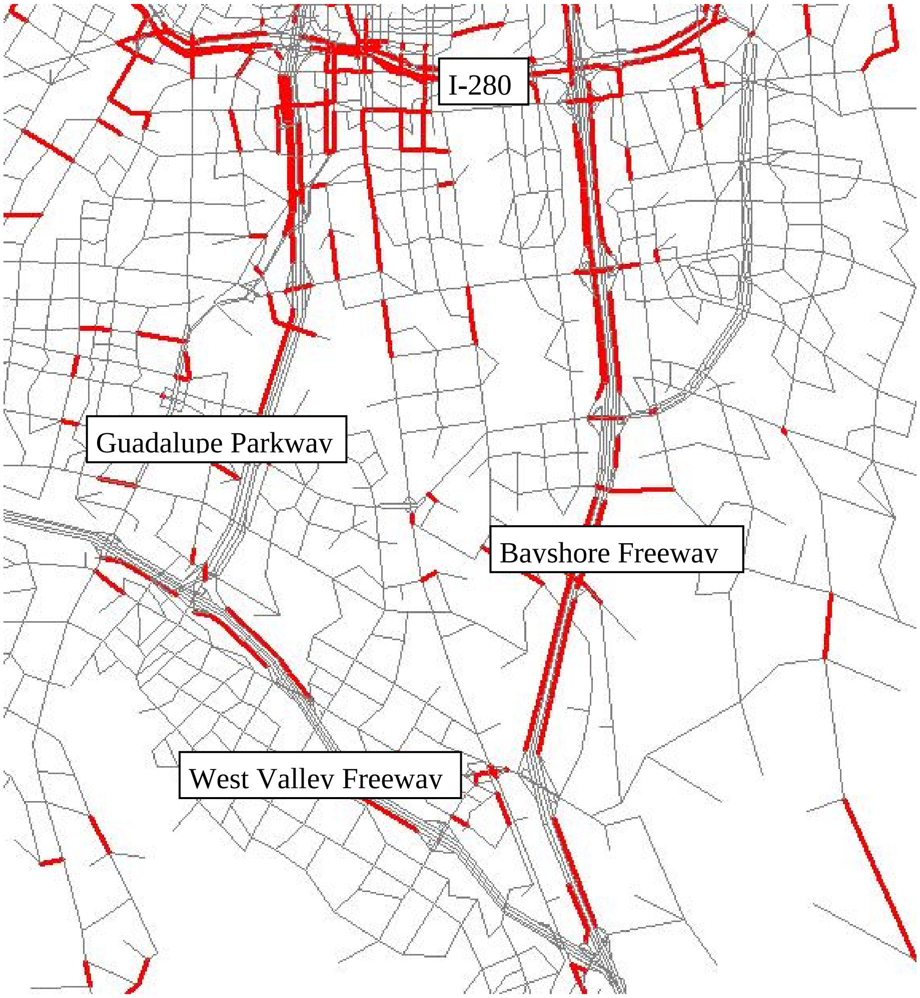
[2] This and subsequent graphics display information derived from Cube Voyager model files provided by the City of San Jose Department of Transportation.

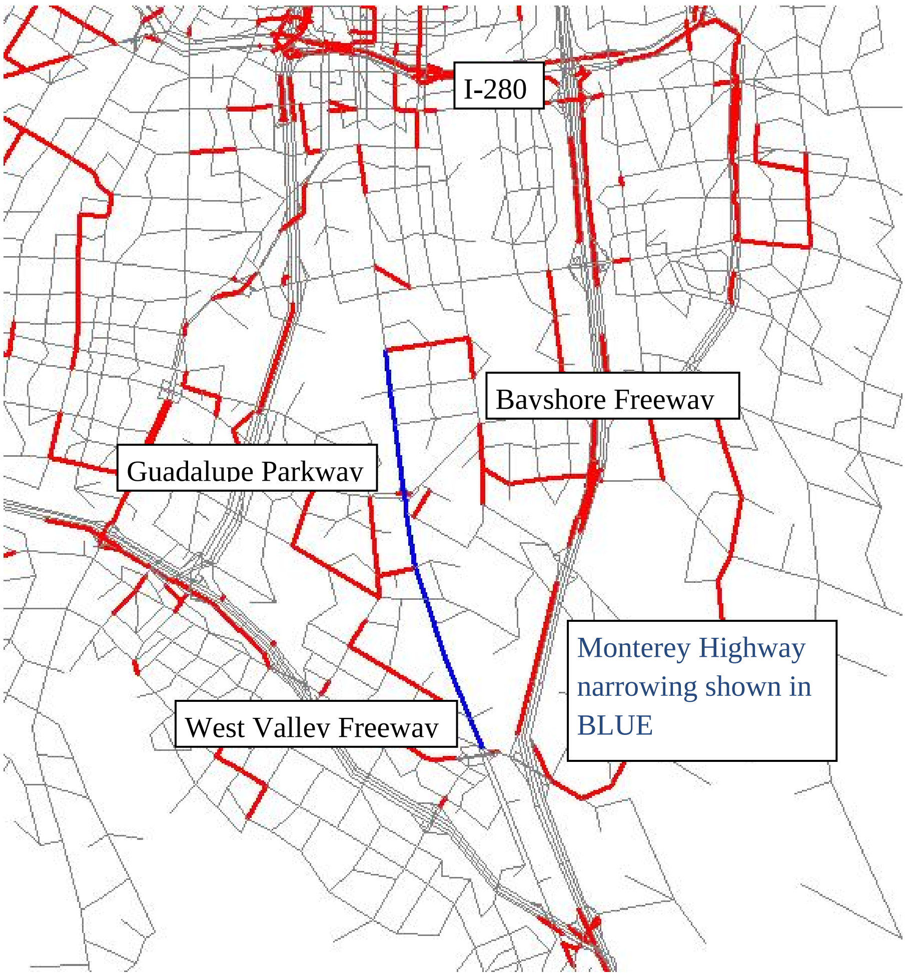
Figure 1: Base Case 2035 Roadways Forecast to Operate at LOS F in the PM Peak Hour



The EIR fails to consider the impacts of the proposed narrowing on any of these congested roadways. Whenever a loss of roadway capacity is considered, both the general public and local traffic engineers always are concerned about traffic diversion onto other streets and roads. The EIR's lack of analysis of such diversion is a fatal flaw. It is difficult to imagine how addressing such an obvious concern could have been left out of the documentation except through intentional neglect.

In the modeling done by the City of San Jose, the same vehicle trip table was assigned to both the Base Case and the HSR Project scenario. [3] Therefore, every single one of the 987 vehicles per hour that are subtracted from the Monterey Highway due to the narrowing are shifted to parallel routes. Figure 2 shows roadways where the modeled traffic increases by 100 or more vehicles in at least one direction during the afternoon peak hour due to the narrowing of Monterey Highway. The roadways with these modeled increases include the major freeways surrounding the proposed narrowing that are shown in Figure 1 to be operating at the failed level-of-service F in the Base Case. Adding traffic to these roadways as a result of the widening will make already unacceptable traffic conditions even worse.

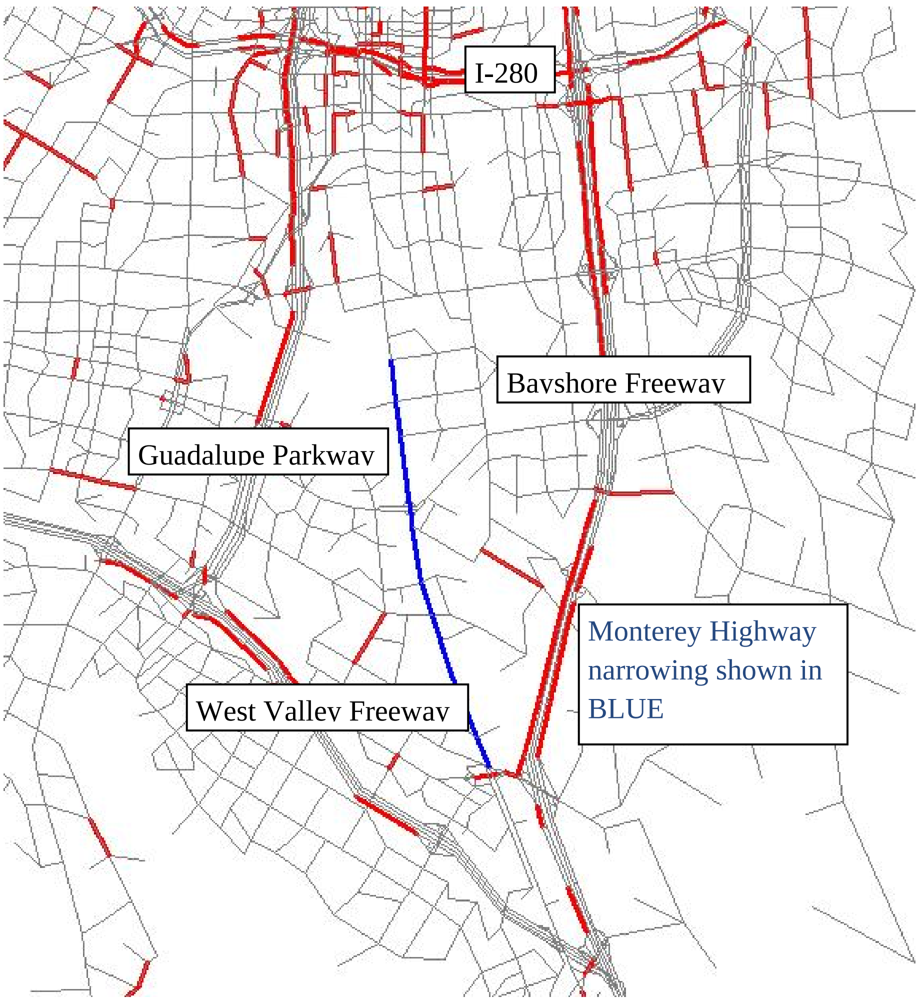
Figure 2: 2035 Roadways with Traffic Increases of 100 or More in at Least One Direction Due to Narrowing



[3] "For the purposes of evaluating traffic impacts on Monterey Road, the 2035 highway network and the 2035 PM peak hour trip table are\obtained from VTA's 2035 TDF." From "HSR Monterey Corridor Modeling Methodology", City of San Jose Department of Transportation.

Figure 3 combines level-of-service F conditions with traffic increases that would result from the narrowing. Specifically, it shows roadways that are modeled to operate at level-of-service F during the afternoon peak with the HSR project and where traffic volumes would be higher with the narrowing than in the Base Case. As with Figures 1 and 2, the highlighted roadways include the Bayshore Freeway, US 101; the West Valley Freeway, SR 85; the Guadalupe Parkway, SR 87; and I-280.

Figure 3: 2035 Roadways at LOS F, with Traffic Increases Due to Narrowing



These serious traffic impacts were not disclosed or analyzed in the EIR. Furthermore, there were no analyses of other time periods where significant traffic congestion impacts are likely, particularly the weekday morning peak hour. The conclusion in the EIR (p.2-12) that "the reduction of travel lanes on Monterey Highway and the addition of HST would not be anticipated to result in a significant impact for the southbound segments" may be true but completely misses the point. The EIR modeling shows highly significant traffic impacts on other roadways that are not disclosed in the EIR

Resume

NORMAN L. MARSHALL, PRINCIPAL

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EDUCATION:

Master of Science in Engineering Sciences, Dartmouth College, Hanover, NH, 1982
Bachelor of Science in Mathematics, Worcester Polytechnic Institute, Worcester, MA, 1977

PROFESSIONAL EXPERIENCE:

Norm Marshall helped found Smart Mobility, Inc. in 2001. Prior to this, he was at Resource Systems Group, Inc. for 14 years where he developed a national practice in travel demand modeling. He specializes in analyzing the relationships between the built environment and travel behavior, and doing planning that coordinates multi-modal transportation with land use and community needs.

Regional Land Use/Transportation Scenario Planning

Chicago Metropolis Plan and Chicago Metropolis Freight Plan (6-county region)— developed alternative transportation scenarios, made enhancements in the regional travel demand model, and used the enhanced model to evaluate alternative scenarios including development of alternative regional transit concepts. Developed multi-class assignment model and used it to analyze freight alternatives including congestion pricing and other peak shifting strategies. Chicago Metropolis 2020 was awarded the Daniel Burnham Award for regional planning in 2004 by the American Planning Association, based in part on this work.

Envision Central Texas Vision (5-countyregion)—implemented many enhancements in regional model including multiple time periods, feedback from congestion to trip distribution and mode choice, new life style trip production rates, auto availability model sensitive to urban design variables, non-motorized trip model sensitive to urban design variables, and mode choice model sensitive to urban design variables and with higher values of time (more accurate for "choice" riders). Analyzed set land use/transportation scenarios including developing transit concepts to match the different land use scenarios.

Mid-Ohio Regional Planning Commission Regional Growth Strategy (7-county Columbus region)—developed alternative future land use scenarios and calculated performance measures for use in a large public regional visioning project.

Baltimore Vision 2030—working with the Baltimore Metropolitan Council and the Baltimore Regional Partnership, increased regional travel demand model's sensitivity to land use and transportation infrastructure. Enhanced model was used to test alternative land use and transportation scenarios including different levels of public transit.

Chittenden County (2060 Land use and Transportation Vision Burlington Vermont region) – leading extensive public visioning project as part of MPO's long-range transportation plan update.

Burlington (Vermont) Transportation Plan – Leading team developing Transportation Plan focused on supporting increased population and employment without increases in traffic by focusing investments and policies on transit, walking, biking and Transportation Demand Management.

Transit Planning

Regional Transportation Authority (Chicago) and Chicago Metropolis 2020 – evaluating alternative 2020 and 2030 system-wide transit scenarios including deterioration and enhance/expand under alternative land use and energy pricing assumptions in support of initiatives for increased public funding.

Capital Metropolitan Transportation Authority (Austin, TX) Transit Vision – analyzed the regional effects of implementing the transit vision in concert with an aggressive transit-oriented development plan developed by Calthorpe Associates. Transit vision includes commuter rail and BRT.

Bus Rapid Transit for Northern Virginia HOT Lanes (Breakthrough Technologies, Inc and Environmental Defense.) – analyzed alternative Bus Rapid Transit (BRT) strategies for proposed privately-developing High Occupancy Toll lanes on I-95 and I-495 (Capital Beltway) including different service alternatives (point-to-point services, trunk lines intersecting connecting routes at in-line stations, and hybrid).

Central Ohio Transportation Authority (Columbus) – analyzed the regional effects of implementing a rail vision plan on transit-oriented development potential and possible regional benefits that would result.

Essex (VT) Commuter Rail Environmental Assessment (Vermont Agency of Transportation and Chittenden County Metropolitan Planning Organization)—estimated transit ridership for commuter rail and enhanced bus scenarios, as well as traffic volumes.

Georgia Intercity Rail Plan (Georgia DOT)—developed statewide travel demand model for the Georgia Department of Transportation including auto, air, bus and rail modes. Work included estimating travel demand and mode split models, and building the Departments ARC/INFO database for a model running with a GIS user interface.

Roadway Corridor Planning

Hudson River Crossing Study (Capital District Transportation Committee and NYSDOT) – Analyzing long term capacity needs for Hudson River bridges which a special focus on the I-90 Patroon Island Bridge where a microsimulation VISSIM model was developed and applied.

State Routes 5 & 92 Scoping Phase (NYSDOT) —evaluated TSM, TDM, transit and highway widening alternatives for the New York State Department of Transportation using local and national data, and a linkage between a regional network model and a detailed subarea CORSIM model.

Twin Cities Minnesota Area and Corridor Studies (MinnDOT)—improved regional demand model to better match observed traffic volumes, particularly in suburban growth areas. Applied enhanced model in a series of subarea and corridor studies.

Developing Regional Transportation Model

Pease Area Transportation and Air Quality Planning (New Hampshire DOT)—developed an integrated land use allocation, transportation, and air quality model for a three-county New Hampshire and Maine seacoast region that covers two New Hampshire MPOs, the Seacoast MPO and the Salem-Plaistow MPO.

Syracuse Intermodal Model (Syracuse Metropolitan Transportation Council)—developed custom trip generation, trip distribution, and mode split models for the Syracuse Metropolitan Transportation Council. All of the new models were developed on a person-trip basis, with the trip distribution model and mode split models based on one estimated logit model formulation.

Portland Area Comprehensive Travel Study (Portland Area Comprehensive Transportation Study)—Travel Demand Model Upgrade—enhanced the Portland Maine regional model (TRIPS software). Estimated person-based trip generation and distribution, and a mode split model including drive alone, shared ride, bus, and walk/bike modes.

Chittenden County ISTEA Planning (Chittenden County Metropolitan Planning Organization)—developed a land use allocation model and a set of performance measures for Chittenden County (Burlington) Vermont for use in transportation planning studies required by the Intermodal Surface Transportation Efficiency Act (ISTEA).

Research

Obesity and the Built Environment (National Institutes of Health and Robert Wood Johnston Foundation) – Working with the Dartmouth Medical School to study the influence of local land use on middle school students in Vermont and New Hampshire, with a focus on physical activity and obesity.

The Future of Transportation Modeling (New Jersey DOT)—Member of Advisory Board on project for State of New Jersey researching trends and directions and making recommendations for future practice.

Trip Generation Characteristics of Multi-Use Development (Florida DOT)—estimated internal vehicle trips, internal pedestrian trips, and trip-making characteristics of residents at large multi-use developments in Fort Lauderdale, Florida.

Improved Transportation Models for the Future—assisted Sandia National Laboratories in developing a prototype model of the future linking ARC/INFO to the EMME/2 Albuquerque model and adding a land use allocation model and auto ownership model including alternative vehicle types.

Critiques

C-470 (Denver region) – Reviewed express toll lane proposal for Douglas County, Colorado and prepared reports on operations, safety, finances, and alternatives.

Intercounty Connector (Maryland) – Reviewed proposed toll road and modeled alternatives with different combinations of roadway capacity, transit capacity (both on and off Intercounty Connector) and pricing.

Foothills South Toll Road (Orange County, CA) – Reviewed modeling of proposed toll road.

I-93 Widening (New Hampshire) – Reviewed Environment Impact Statement and modeling, with a particular focus on induced travel and secondary impacts, and also a detailed look at transit potential in the corridor.

Stillwater Bridge – Participated in 4-person expert panel assembled by Minnesota DOT to review modeling of proposed replacement bridge in Stillwater, with special attention to land use, induced travel, pricing, and transit use.

Ohio River Bridges Projects– Reviewed Environmental Impact Statement for proposed new freeway bridge east of Louisville Kentucky for River Fields, a local land trust and historic preservation not-for-profit organization.

PUBLICATIONS AND PRESENTATIONS (partial list)

Understanding the Transportation Models and Asking the Right Questions. Lead presenter on national Webinar put on by the Surface Policy Planning Partnership (STTP) and the Center for Neighborhood Technologies (CNT) with partial funding by the Federal Transit Administration, 2007.

Sketch Transit Modeling Based on 2000 Census Data with Brian Grady. Presented at the Annual Meeting of the Transportation Research Board, Washington DC, January 2006, and *Transportation Research Record*, No. 1986, "Transit Management, Maintenance, Technology and Planning", p. 182-189, 2006.

Travel Demand Modeling for Regional Visioning and Scenario Analysis with Brian Grady. Presented at the Annual Meeting of the Transportation Research Board, Washington DC, January 2005, and *Transportation Research Record*, No. 1921, "Travel Demand 2005", p. 55-63, 2006.

Chicago Metropolis 2020: the Business Community Develops an Integrated Land Use/Transportation Plan with Brian Grady, Frank Beal and John Fregonese, presented at the Transportation Research Board's Conference on Planning Applications, Baton Rouge LA, April 2003.

Chicago Metropolis 2020: the Business Community Develops an Integrated Land Use/Transportation Plan with Lucinda Gibson, P.E., Frank Beal and John Fregonese, presented at the Institute of Transportation Engineers Technical Conference on Transportation's Role in Successful Communities, Fort Lauderdale FL, March 2003.

Evidence of Induced Travel with Bill Cowart, presented in association with the Ninth Session of the Commission on Sustainable Development, United Nations, New York City, April 2001.

Induced Demand at the Metropolitan Level – Regulatory Disputes in Conformity Determinations and Environmental Impact Statement Approvals, Transportation Research Forum, Annapolis MD, November 2000.

Evidence of Induced Demand in the Texas Transportation Institute's Urban Roadway Congestion Study Data Set, Transportation Research Board Annual Meeting, Washington DC: January 2000.

Subarea Modeling with a Regional Model and CORSIM" with K. Kaliski, presented at Seventh National Transportation Research Board Conference on the Application of Transportation Planning Methods, Boston MA, May 1999.

New Distribution and Mode Choice Models for Chicago with K. Ballard, Transportation Research Board Annual Meeting, Washington DC: January 1998.

"Land Use Allocation Modeling in Uni-Centric and Multi-Centric Regions" with S. Lawe, Transportation Research Board Annual Meeting, Washington DC: January 1996.

Multimodal Statewide Travel Demand Modeling Within a GIS with S. Lawe, Transportation Research Board Annual Meeting, Washington DC: January 1996.

Linking a GIS and a Statewide Transportation Planning Model, with L. Barbour and Judith LaFavor, Urban and Regional Information Systems Association (URISA) Annual Conference, San Antonio, TX, July 1995.

Land Use, Transportation, and Air Quality Models Linked With ARC/INFO. with C. Hanley, C. Blewitt, and M. Lewis, Urban and Regional Information Systems Association (URISA) Annual Conference,: San Antonio, TX, July 1995.

Forecasting Land Use Changes for Transportation Alternative with S. Lawe, Fifth National Conference on the Application of Transportation Planning Methods, Seattle WA, April 1995.

Forecasting Land Use Changes for Transportation Alternatives, with S. Lawe, Fifth National Conference on the Application of Transportation Planning Methods (Transportation Research Board),: Seattle WA, April 1995.

Integrated Transportation, Land Use, and Air Quality Modeling Environment with C. Hanley and M. Lewis Fifth National Conference on the Application of Transportation Planning Methods (Transportation Research Board), Seattle WA, April 1995.

MEMBERSHIPS/AFFILIATIONS

Member, Institute of Transportation Engineers
Individual Affiliate, Transportation Research Board
Member, American Planning Association
Member, Congress for the New Urbanism