



AGENDA REPORT

Meeting Date: October 18, 2011
Item Number: H-17
To: Honorable Mayor & City Council
From: Aaron Kunz, Deputy Director of Transportation
Subject: AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND HEXAGON TRANSPORTATION CONSULTANTS, INC. FOR AS-NEEDED TRAVEL DEMAND AND TRANSIT RIDERSHIP CONSULTING SERVICES

AUTHORIZE A PURCHASE ORDER IN THE AMOUNT OF \$25,000 TO HEXAGON TRANSPORTATION CONSULTANTS, INC. FOR THE CONSULTANT SERVICES

Attachments:

1. Agreement
2. Professional Experience

RECOMMENDATION

Staff recommends approval of an agreement with Hexagon Transportation Consultants, Inc. to conduct an independent review of travel demand and transit ridership statistics for the Westside Subway Extension; and authorize a purchase order in the amount of \$25,000.

INTRODUCTION

The Los Angeles County Metropolitan Transportation Authority (Metro) is near completion of the Westside Subway Extension Final Environmental Impact Statement/Report (FEIS/FEIR). Metro currently plans for the release of the FEIS/FEIR in Fall 2011 and Metro Board action on the FEIS/FEIR, including selection of the alignment between Beverly Hills and Century City, is expected in Winter 2012. While the City may submit comments to the Metro Board, there is not a formal comment period on the FEIS/FEIR. A minimum of 10 days is required between the release of the FEIS/FEIR and Metro Board action.

At its July 7, 2011 Study Session, per the Legislative Committee's recommendation, the City Council agreed to allocate an initial \$350,000 for efforts related to the City's position

on the Westside Subway Extension. The City Council agreed this amount could be augmented with additional City funds if deemed necessary. The intent of this allocation is to retain experts related to tunneling as well as geotechnical experts, consultant firms, public relations firms and legal services.

On September 27, 2011, the City Council approved agreements with Exponent, Inc. and Shannon & Wilson, Inc. to provide an independent review of geotechnical and seismic data and findings. Public Works & Transportation staff is recommending that the City Council approve an agreement with Hexagon Transportation Consultants, Inc. to provide expertise with travel demand and ridership forecasting, particularly with relation to the Century City station options.

DISCUSSION

Hexagon Transportation Consultants, Inc has expertise in travel demand and transit ridership forecasting with locations in the San Francisco Bay Area and Phoenix, AZ. Once Metro releases the FEIS/FEIR, staff will be able to refine the scope of services as deemed necessary. At this time, the following work has been identified for Hexagon Transportation Consultants, Inc. to perform:

- Provide an analysis of the validity of the travel demand forecasting assumptions in the Westside Subway Extension Final Environmental Impact Statement/Report (FEIS/FEIR); specifically related to the ridership forecasts for the Century City station locations.
- Provide recommendations for alternative methodologies for forecasting ridership at the Century City station locations and an estimation of how those methodologies would change the underlying assumptions in the FEIS/FEIR.
- After release of the FEIS/FEIR, conduct independent ridership studies as needed and agreed upon by the City

FISCAL IMPACT

Staff has identified funding up to \$350,000 from the year end FY 2010-11 fund balance for consulting services related to the Westside Subway Extension.



Scott Miller
Finance Approval



David Gustavson
Approved By

Attachment 1

AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND
HEXAGON TRANSPORTATION CONSULTANTS, INC. FOR AS-NEEDED
TRAVEL DEMAND AND TRANSIT RIDERSHIP CONSULTING SERVICES

NAME OF CONSULTANT: Hexagon Transportation Consultants, Inc.

RESPONSIBLE PRINCIPAL OF CONSULTANT: At van den Hout, Vice President & Principal Consultant

CONSULTANT'S ADDRESS: 111 W. Saint John Street, # 850
San Jose, CA 95113-1122

CITY'S ADDRESS: City of Beverly Hills
345 Foothill Road
Beverly Hills, CA 90210
Attention: Aaron Kunz
Deputy Director of Transportation

COMMENCEMENT DATE: Upon receipt of a written notice to proceed

TERMINATION DATE: December 31, 2012

CONSIDERATION: Not to exceed \$ 25,000.00 based on the Schedule of Rates set forth in Exhibit B

AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND
HEXAGON TRANSPORTATION CONSULTANTS, INC. FOR AS-NEEDED
TRAVEL DEMAND AND TRANSIT RIDERSHIP CONSULTING SERVICES

THIS AGREEMENT is made by and between the City of Beverly Hills (hereinafter called "CITY"), and Hexagon Transportation Consultants, Inc. (hereinafter called "CONSULTANT").

RECITALS

A. CITY desires to retain the services of CONSULTANT to assist the City Council, Commissions and staff with respect to traffic, circulation and technical issues. CITY also desires to engage CONSULTANT to provide traffic consultant services for special projects, and provide other traffic engineering services as CITY may request ("Project").

B. CONSULTANT represents that it is qualified and able to perform the Scope of Works.

NOW, THEREFORE, the parties agree as follows:

Section 1. CONSULTANT's Scope of Work.

A. CONSULTANT shall perform the Scope of Work described in Exhibit A in a manner satisfactory to CITY and consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. The Scope of Work set forth in Exhibit A may be modified by purchase orders issued by CITY and executed by the City Manager or his designee as described in paragraph B of this Section. Upon CITY's request, CONSULTANT shall submit a written proposal for services to be performed by CONSULTANT and the cost for such services shall be negotiated by the City Manager or his designee and CONSULTANT.

B. The City Manager or his designee may issue purchase orders throughout the term of this Agreement to CONSULTANT which shall set forth the services to be performed by CONSULTANT, the time within which CONSULTANT shall complete performance of those services and the amount of compensation to be paid CONSULTANT for those services. In the event CONSULTANT determines that a sub-consultant must be retained to perform any of the services required by this Agreement, CONSULTANT shall obtain the prior written approval of the City Manager or his designee.

Section 2. Time of Performance.

CONSULTANT shall commence its services under this Agreement upon receipt of a written notice to proceed from CITY. CONSULTANT shall complete the performance of services by the Termination Date set forth above and/or in conformance with the project timeline established by the City Manager or his designee.

Section 3. Compensation.

(a) Compensation

CITY agrees to compensate CONSULTANT for the services and/or goods provided under this Agreement, and CONSULTANT agrees to accept in full satisfaction for such services, a sum not to exceed the Consideration set forth above and more particularly described in Exhibit B, attached hereto and incorporated herein, based on the hourly rates set forth in Exhibit B.

(b) Expenses

The amount set forth in paragraph A shall include reimbursement for actual and necessary expenditures reasonably incurred in the performance of this Agreement including, without limitation, traffic data collection, reproduction costs, postage, transportation, mileage at Fifty (\$ 50) Cents per mile, and telephone at cost ("reimbursable expenses").

(c) Additional Services. City may from time to time require CONSULTANT to perform additional services not included in the Scope of Services. Such requests for additional services shall be made by City in writing and agreed upon by both parties in writing. The City Manager may, by written amendment, increase the compensation paid to CONTRACTOR for services in an amount not to exceed Fifty Thousand Dollars (\$50,000).

Section 4. Method of Payment. Unless otherwise provided for herein, CONSULTANT shall submit to City a detailed invoice, on a monthly basis or less frequently, for the services performed pursuant to this Agreement. Each invoice shall itemize the services rendered during the billing period and the amount due. Within 30 days of receipt of each invoice, CITY shall pay all undisputed amounts included on the invoice. CITY shall pay CONSULTANT said Consideration in accordance with the schedule of payment set forth in Exhibit B.

Section 5. Independent CONSULTANT. CONSULTANT is and shall at all times remain, as to CITY, a wholly independent CONSULTANT. Neither CITY nor any of its agents shall have control over the conduct of CONSULTANT or any of CONSULTANT's employees, except as herein set forth. CONSULTANT shall not, at any time, or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of CITY.

Section 6. Assignment. This Agreement shall not be assigned in whole or in part, by CONSULTANT without the prior written approval of CITY. Any attempt by CONSULTANT to so assign this Agreement or any rights, duties or obligations arising hereunder shall be void and of no effect.

Section 7. Responsible Principal(s)

(a) CONSULTANT's Responsible Principal set forth above shall be principally responsible for CONSULTANT's obligations under this Agreement and shall serve as principal liaison between CITY and CONSULTANT. Designation of another Responsible by CONSULTANT shall not be made without prior written consent of CITY.

(b) CITY's Responsible Principal shall be the City Manager or his designee set forth above who shall administer the terms of the Agreement on behalf of CITY.

Section 8. Personnel. CONSULTANT represents that it has, or shall secure at its own expense, all personnel required to perform CONSULTANT's Scope of Work under this Agreement. All personnel engaged in the work shall be qualified to perform such Scope of Work.

Section 9. Permits and Licenses. CONSULTANT shall obtain and maintain during the Agreement term all necessary licenses, permits and certificates required by law for the provision of services under this Agreement, including a business license.

Section 10. Interests of CONSULTANT. CONSULTANT affirms that it presently has no interest and shall not have any interest, direct or indirect, which would conflict in any manner with the performance of the Scope of Work contemplated by this Agreement. No person having any such interest shall be employed by or be associated with CONSULTANT.

Section 11. Insurance.

(a) CONSULTANT shall at all times during the term of this Agreement carry, maintain, and keep in full force and effect, insurance as follows:

(1) A policy or policies of Commercial General Liability Insurance, with minimum limits of Two Million Dollars (\$2,000,000) for each occurrence, combined single limit, against any personal injury, death, loss or damage resulting from the wrongful or negligent acts by CONSULTANT.

(2) A policy or policies of Comprehensive Vehicle Liability Insurance covering personal injury and property damage, with minimum limits of One Million Dollars (\$1,000,000) per occurrence combined single limit, covering any vehicle utilized by CONSULTANT in performing the Scope of Work required by this Agreement.

(3) Workers' compensation insurance as required by the State of California.

(4) Professional Liability Insurance.

A policy or policies of Professional Liability Insurance (errors and omissions) with minimum limits of One Million Dollars (\$1,000,000) per claim and in the aggregate. Any deductibles or self-insured retentions attached to such policy or policies must be declared to and be approved by CITY. Further, CONSULTANT agrees to maintain in full force and effect such insurance for one year after performance of work under this Agreement is completed.

(b) CONSULTANT shall require each of its sub-consultants to maintain insurance coverage which meets all of the requirements of this Agreement.

(c) The policy or policies required by this Agreement shall be issued by an insurer admitted in the State of California and with a rating of at least a B+,VII in the latest edition of Best's Insurance Guide.

(d) CONSULTANT agrees that if it does not keep the aforesaid insurance in full force and effect CITY may either immediately terminate this Agreement or, if insurance is

available at a reasonable cost, CITY may take out the necessary insurance and pay, at CONSULTANT's expense, the premium thereon.

(e) At all times during the term of this Agreement, CONSULTANT shall maintain on file with the City Clerk a certificate or certificates of insurance on the form set forth in Exhibit C, attached hereto and incorporated herein, showing that the aforesaid policies are in effect in the required amounts. CONSULTANT shall, prior to commencement of work under this Agreement, file with the City Clerk such certificate or certificates. The commercial general liability insurance and auto liability insurance shall contain an endorsement naming the CITY as an additional insured. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty (30) days prior written notice to CITY, and specifically stating that the coverage contained in the policies affords insurance pursuant to the terms and conditions as set forth in this Agreement.

(f) The insurance provided by CONSULTANT shall be primary to any coverage available to CITY. The policies of insurance required by this Agreement shall include provisions for waiver of subrogation.

(g) Any deductibles or self-insured retentions must be declared to and approved by CITY. At the option of CITY, CONSULTANT shall either reduce or eliminate the deductibles or self-insured retentions with respect to CITY, or CONSULTANT shall procure a bond guaranteeing payment of losses and expenses.

Section 12. Indemnification. CONSULTANT agrees to indemnify, hold harmless and defend CITY, City Council and each member thereof, and every officer, employee and agent of CITY, from any claim, liability or financial loss (including, without limitation, attorneys fees and costs) arising from any intentional, reckless, negligent, or otherwise wrongful acts, errors or omissions of CONSULTANT or any person employed by CONSULTANT in the performance of this Agreement.

Section 13. Termination.

(a) CITY shall have the right to terminate this Agreement for any reason or for no reason upon five calendar days' written notice to CONSULTANT. CONSULTANT agrees to cease all work under this Agreement on or before the effective date of such notice.

(b) In the event of termination or cancellation of this Agreement by CITY, due to no fault or failure of performance by CONSULTANT, CONSULTANT shall be paid based on the percentage of work satisfactorily performed at the time of termination. In no event shall CONSULTANT be entitled to receive more than the amount that would be paid to CONSULTANT for the full performance of the services required by this Agreement. CONSULTANT shall have no other claim against CITY by reason of such termination, including any claim for compensation.

Section 14. CITY's Responsibility. CITY shall provide CONSULTANT with all pertinent data, documents, and other requested information as is available for the proper performance of CONSULTANT's Scope of Work.

Section 15. Information and Documents. All data, information, documents and drawings prepared for CITY and required to be furnished to CITY in connection with this Agreement shall

become the property of CITY, and CITY may use all or any portion of the work submitted by CONSULTANT and compensated by CITY pursuant to this Agreement as CITY deems appropriate.

Section 16. Records and Inspections. CONSULTANT shall maintain full and accurate records with respect to all matters covered under this Agreement for a period of 2 years. City shall have access, without charge, during normal business hours to such records, and the right to examine and audit the same and to make copies and transcripts therefrom, and to inspect all program data, documents, proceedings and activities.

Section 17. Changes in the Scope of Work. The CITY shall have the right to order, in writing, changes in the scope of work or the services to be performed. Any changes in the scope of work requested by CONSULTANT must be made in writing and approved by both parties.

Section 18. Notice. Any notices, bills, invoices, etc. required by this Agreement shall be deemed received on (a) the day of delivery if delivered by hand during the receiving party's regular business hours or by facsimile before or during the receiving party's regular business hours; or (b) on the second business day following deposit in the United States mail, postage prepaid to the addresses set forth above, or to such other addresses as the parties may, from time to time, designate in writing pursuant to this section.

Section 19. Attorney's Fees. In the event that either party commences any legal action or proceeding to enforce or interpret the provisions of this Agreement, the prevailing party in such action shall be entitled to reasonable attorney's fees, costs and necessary disbursements, in addition to such other relief as may be sought and awarded.

Section 20. Entire Agreement. This Agreement represents the entire integrated agreement between CITY and CONSULTANT, and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by a written instrument signed by both CITY and CONSULTANT.

Section 21. Exhibits; Precedence. All documents referenced as exhibits in this Agreement are hereby incorporated in this Agreement. In the event of any material discrepancy between the express provisions of this Agreement and the provisions of any document incorporated herein by reference, the provisions of this Agreement shall prevail.

Section 22. Governing Law. The interpretation and implementation of this Agreement shall be governed by the domestic law of the State of California.

Section 23. City Not Obligated to Third Parties. CITY shall not be obligated or liable under this Agreement to any party other than CONSULTANT.

Section 24. Severability. Invalidation of any provision contained herein or the application thereof to any person or entity by judgment or court order shall in no way affect any of the other covenants, conditions, restrictions, or provisions hereof, or the application thereof to any other person or entity, and the same shall remain in full force and effect.

EXECUTED the _____ day of _____ 20____, at Beverly Hills, California.

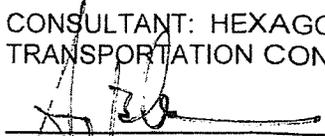
BARRY BRUCKER
Mayor of the City of
Beverly Hills, California

ATTEST:

BYRON POPE
City Clerk

[Signatures continue]

CONSULTANT: HEXAGON
TRANSPORTATION CONSULTANTS, INC.



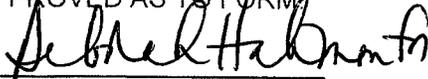
GARY BLACK
President



BRETT WALINSKI
Chief Financial Officer

[Signatures continue]

APPROVED AS TO FORM:



LAURENCE S. WIENER
City Attorney

APPROVED AS TO CONTENT:

JEFFREY KOLIN
City Manager



DAVID D. GUSTAVSON
Director of Public Works & Transportation



KARL KIRKMAN
Risk Manager

EXHIBIT A

SCOPE OF WORK

CONSULTANT shall perform the following services:

- Provide a detailed analysis of the validity of the travel demand forecasting assumptions in the Westside Subway Extension Final Environmental Impact Statement/Report (FEIS/FEIR) specifically related to the ridership forecasts for the Century City station locations;
- Provide recommendations for alternative methodologies for forecasting ridership at the Century City station locations and an estimation of how those methodologies would change (if any), the underlying assumptions in the FEIS/DEIR;
- After release of the FEIS/FEIR conduct independent ridership studies as agreed upon in writing with the City Manager or his designee; and
- Prepare a summary of findings and recommendations.

EXHIBIT B

SCHEDULE OF PAYMENT AND RATES

<u>Professional Classification</u>	<u>Rate per Hour</u>
President	\$240
Principal	\$195
Senior Associate II	\$180
Senior Associate I	\$165
Associate II	\$145
Associate I	\$130
Planner/Engineer II	\$115
Planner/Engineer I	\$105
Admin/Graphics	\$95
Senior CAD Technician	\$85
Technician	\$75

CITY shall reimburse CONSULTANT for direct expenses reasonably incurred in the performance of the Agreement at actual costs, with the exception of mileage, which is reimbursed at the current rate per mile as set by the Internal Revenue Service.

Billing rates show are effective January 1, 2011, and subject to change in January 1, 2012 upon giving CITY thirty (30) days prior written notice.

EXHIBIT C

CERTIFICATE OF INSURANCE

This is to certify that the following endorsement is part of the policy(ies) described below :

NAMED INSURED

COMPANIES AFFORDING COVERAGE

ADDRESS

- A.
- B.
- C.

COMPANY (A.B.C.)	COVERAGE	POLICY NUMBER	EXPIRATION DATE	B.I.	LIMITS P.D.	AGGREGATE
	<input type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> GENERAL LIABILITY <input type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS <input type="checkbox"/> BLANKET CONTRACTUAL <input type="checkbox"/> CONTRACTOR'S PROTECTIVE <input type="checkbox"/> PERSONAL INJURY <input type="checkbox"/> EXCESS LIABILITY <input type="checkbox"/> WORKER'S COMPENSATION					

It is hereby understood and agreed that the City of Beverly Hills, its City Council and each member thereof and every officer and employee of the City shall be named as joint and several assureds with respect to claims arising out of the following project or agreement:

It is further agreed that the following indemnity agreement between the City of Beverly Hills and the named insured is covered under the policy: Contractor agrees to indemnify, hold harmless and defend City, its City Council and each member thereof and every officer and employee of City from any and all liability or financial loss resulting from any suits, claims, losses or actions brought against and from all costs and expenses of litigation brought against City, its City Council and each member thereof and any officer or employee of City which results directly or indirectly from the wrongful or negligent actions of contractor's officers, employees, agents or others employed by Contractor while engaged by Contractor in the (performance of this agreement) construction of this project.

It is further agreed that the inclusion of more than one assured shall not operate to increase the limit of the company's liability and that insurer waives any right of contribution with insurance which may be available to the City of Beverly Hills.

In the event of cancellation or material change in the above coverage, the company will give 30 days' written notice of cancellation or material change to the certificate holder.

Except to certify that the policy(ies) described above have the above endorsement attached, this certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

DATE : _____ BY : _____

 Authorized Insurance Representative
 TITLE : _____
 AGENCY : _____ Address : _____

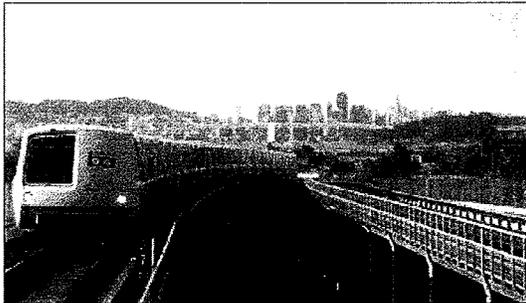
Attachment 2



Travel Demand Forecasting – Transit Forecasting

Silicon Valley Rapid Transit Corridor MIS/EIR/EIS

San Jose, California



The Santa Clara Valley Transportation Authority is the lead agency conducting the Silicon Valley Rapid Transit Corridor Major Investment Study (MIS), the Environmental Impact Statement/Report (EIS/EIR), and the 10% Conceptual Engineering Plans.

The study evaluated a wide range of major transit investments that could significantly improve the quality of transit services between southern and eastern Alameda County and the employment opportunities in the Silicon Valley. The alternatives studied included improved light rail services, enhanced commuter rail service, exclusive busways, and extending the Bay Area Rapid Transit (BART) system into Silicon Valley. The Major Investment Study (MIS) included the planning work required to evaluate various mode and alignment alternatives, and to develop a 'locally-preferred' improvement strategy. VTA officially endorsed a

locally preferred alternative consisting of a BART Extension from Warm Springs to Milpitas, San Jose and Santa Clara. The study team prepared the environmental documents that are a prerequisite for Federal funding opportunities.

Hexagon Transportation Consultants provided transportation planning, travel demand forecasting, and traffic engineering support for this major planning study. Transportation planning services have included providing assistance defining transit operating plans for each study alternative, evaluating and equilibrating the quality of transit service, and estimation of fare box revenues. Hexagon prepared the travel demand forecasts for all the study alternatives. The MTC Regional Travel Demand Model was used in an enhanced form that includes a nested logit mode choice structure for transit access submodes. Traffic engineering services included assessing projected traffic impacts and necessary mitigations in the vicinity of proposed stations.

References:

George Naylor, Principal Transportation Planner
Santa Clara Valley Transportation Authority
3331 North First Street
San Jose, CA 95134-1906
Phone: (408) 321-5763



Caltrain Commuter Rail Projects Travel Demand Forecasts

San Francisco Bay Area, California



Hexagon Transportation Consultants recently used an EMME/2 based model to complete a comprehensive set of travel demand forecasts for a wide range of Caltrain commuter rail improvement projects in the San Francisco Bay Area. The transportation plans and documents that were prepared using these forecasts include:

- Caltrain Strategic Plan,
- Caltrain Short Range Transit Improvement Program,
- San Mateo county Station Access Plan,
- San Mateo countywide Transportation Plan,
- Caltrain Downtown San Francisco Extension Environmental Impact Report, and
- Caltrain electrification Environmental Impact Report.

The modeled operating scenarios included adding future “baby bullet” trains that will provide running times of about one hour between San Francisco and San Jose. The baby bullet service will also provide significantly improved travel times between the key activity and employment centers along the San

Francisco peninsula, including the San Francisco International Airport.

Hexagon also developed a set of patronage forecasts for various service plan scenarios for Caltrain under the 1996 Measure A Transportation Program. Train service ranged from 68 to 86 daily trains with added trains to both the mainline (San Jose to San Francisco) as well as the Gilroy extension. Various strategies ranged from adding service to the reverse peak direction; adding trains to the off-peak periods (mid-day and evening); as well as adding trains in the reverse peak and the mid-day periods and running Caltrain service with turn-backs in Palo Alto. The patronage forecast results suggested that the various strategies for adding new trains to the system would add somewhere between 5,130 and 6,440 entries/exits to the system, and would require between 2,420 and 2,860 additional parking spaces to accommodate new riders. The patronage estimates and parking forecasts were used as the basis for the 1996 Measure “A” Transportation Program Caltrain Plan, which was later adopted. The project was completed on schedule and within the budget.

References:

Walter Martone, San Mateo County
Department of Public Works
San Mateo City/County Association of
Governments
555 County Center, 5th Floor
Redwood City, California 94063-1665
Phone: (650) 599-1465



Central Phoenix / East Valley Light Rail Transit Project

Phoenix, Arizona



Hexagon is under contract with the RPTA to provide service planning, operations assistance and support for the Central Phoenix/East Valley Light Rail Project. Hexagon's primary responsibility is to use the Phoenix EMME/2 based regional model to assist with planning and patronage forecasting tasks. The major focus is to provide travel demand forecasting services for the LRT project. This project includes the following activities:

- Implementation of MAG's recently updated travel demand forecasting model
- Implementation of the Special Events Model
- Detailed transit network coding, for alternative alignment plans

- Provide travel demand forecasting data for the New Starts Submittal
- Provide transportation data to support environmental analysis
- Evaluate alternative land use projections
- Run project alternatives as required
- Attend meetings with the Project Management Consultant and other agencies
- Run FTA's SUMMIT program and analyze results

Hexagon staff is working closely with MAG staff to improve the model's transit forecasting capabilities. During the course of this project, Hexagon has identified and implemented several model refinements to better forecast transit ridership levels in the study corridor. These refinements include school transit modeling, automation of transit access coding procedures, and the inclusion of a new land-use data set that more accurately reflects existing and future trends. Additional enhancements to better estimate ridership levels are currently being developed and include updating the non-work distribution models and the calibration of a new set of volume-to-delay functions.

References:

Marc Soronson
Vice President HDR
Phoenix, Arizona
602.744.5545

Vladimir Livshits, Ph. D, M. Sc
System Analysis Program Manager
Maricopa Association of Governments
302 North 1st Ave., Ste. 300
Phoenix, Arizona 85003
(602) 452-5079



Houston Metro

Houston, Texas



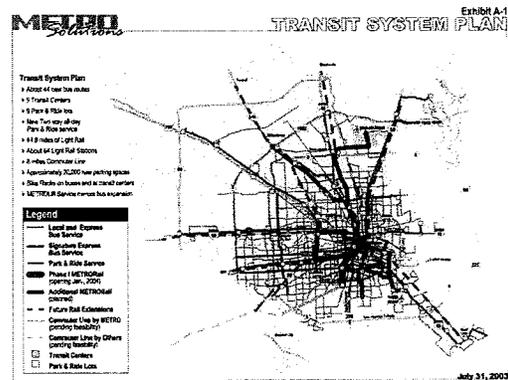
Hexagon worked under S.R. Beard and Associates, the General Planning Consultant (GPC) for the Houston Metro Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS), to use the Houston EMME/2 based model to prepare travel demand forecasts for two separate corridors and compile the system user benefits for the associated alternatives using SUMMIT.

It was Metro's intention to pursue New Starts funding for a total of four corridors, but the sequencing was chosen based on the agency's ability to develop locally preferred alternatives for the North and Southeast corridors fairly quickly, with the other two to follow behind within several months.

The Hexagon and the GPC enhanced the travel demand model over a period of several months in response to examining SUMMIT results for the alternatives. The travel demand model was developed

to be fundamentally consistent with the model for the Houston-Galveston Area Council. However, it has evolved into a much more detailed representation of transit access and transit services with much of the recent refinement consisting of better validation of transit travel times within the rail corridors and re-calibration of trips in geographic markets with dense employment.

An important strategy of Metro and the GPC was to develop a common Baseline Alternative for all of the corridors since doing otherwise could have a negative impact on consistent results of user benefits calculations. The Baseline Alternative was submitted to FTA for approval. The complete New Starts documentation is expected to be submitted in its final form to FTA by the



end of summer 2004.

A Consultant Team for each of the corridors was responsible for developing the alternatives and preparing the majority of the DEIS documents. The GPC modeled the alternatives as specified by the Consultant Teams and provided the resulting transportation data to support the engineering-related work and environmental studies. With respect to the Section 5309 New Starts report, Metro's strategy is to have the individual



consultant teams contribute pieces of the templates to the GPC, who has the ultimate responsibility of packaging the entire Section 5309 New Starts document, including the “Making the Case” report. The SUMMIT-produced maps and reports played a very central role in the creation of these documents. Regular Meetings between the GPC, Metro, and the Corridor Consultants were attended to ensure smooth coordination of activities, responsibilities, and action items.

Hexagon, as a sub consultant to STV Incorporated, has been selected to provide planning support for two Alternative Analysis studies in Houston, Texas. In November 2003, Houston voters approved the METRO Solutions Transit System Plan, a long-term plan designed to address Houston’s growing transportation needs. The plan includes construction in excess of 70 miles of rail service in the next 20 years. As part of the implementation of the plan, the Metropolitan Transit Authority (METRO) as the lead agency is conducting AA/DEIS studies for the Harrisburg and Westpark corridors. Hexagon Transportation Consultants will assist in the development of the patronage forecasts, which will include detailed coding of the transit alternatives, running the regional travel forecasting models, analyzing the results, and implementing FTA’s User Benefits program.

Tucson Major Transit Investment Study

Tucson, Arizona



As a member of SR Beard Consulting Team, Hexagon Transportation Consultants was selected to be the travel forecasting consultant for a Major Transit Investment Study in the City of Tucson, Arizona. The Pima Association of Governments (PAG) operates and maintains a multi-modal travel forecasting model which geographic coverage includes the City of Tucson. This model will be the building block for the travel demand forecasting work. The project is in the early stages and to date, two major tasks have been completed. First, a Travel Forecasting Methodology Report has been produced which describes our approach of modeling the alternatives and outlines several model enhancements that will be required to make the model meet FTA’s standards. The main model improvement will be to estimate and develop a new multi-modal nested logit model to better simulate Tucson’s transit travel market. Second, a comprehensive on-board bus survey was recently been completed for the purpose of determining the habits and patterns of the passengers riding the three transit providers (TICET, Sun Tran and Cat Tran) in the City of Tucson. The quality and quantity of the on-board survey have exceeded expectations. Approximately



5,500 usable survey forms were returned which is about 65% more than the statistically significant sample size of 3,300 surveys. In anticipation of the new mode choice model that is currently being developed, Hexagon will be using an incremental logit technique to screen a set of alternatives and produce forecasting data to help select the locally preferred alternative which will reflect the transportation performance and community values of the refined alternatives.

At van den Hout., *Vice President and Principal Associate*

Education

Bachelor of Science in Traffic Engineering and Transportation Planning, Nationale Verkeersacademie, Tilburg, The Netherlands

Experience

Mr. van den Hout is one of the founding partners of Hexagon Transportation Consultants, Inc. Mr. van den Hout has over twenty years of experience in transportation planning and traffic engineering with the emphasis on travel demand forecasting. Throughout his career, Mr. van den Hout has acquired extensive experience with multi-modal travel forecasting models. He is particularly familiar with the models from the Metropolitan Transportation Commission (MTC) in the San Francisco Bay Area, Contra Costa County, the Maricopa Association of Governments (MAG) in Phoenix, and the Pima Association of Governments (PAG) models in Tucson. Mr. van den Hout is familiar with all major travel demand forecasting software packages such as EMME/2, CUBE /VOYAGER, TRANPLAN, TransCAD, and MINUTP.

Representative Projects

Travel Demand Model Development Projects:

- Sunnyvale Citywide Model – Santa Clara County, California. Model Refinement and Validation (CUBE/VOYAGER), 2007)
- Gilroy Citywide Model – Santa Clara County, California. Model Refinement and Validation (CUBE/VOYAGER), 2007)
- 2000 Planning Area 2 Subarea Model Update - Alameda County, California. Model Calibration and Validation (EMME/2, 2003)
- Sun Valley Subarea Model—California. Model Validation (EMME/2, 1998)
- Watsonville Model Update—California. Model Development (EMME/2, 1998)
- Scottsdale Focused Subarea Model—Scottsdale, Arizona. Development of a modal split methodology to bypass the mode choice models and feedback loops to simplify and expedite the Scottsdale model for use in selected applications.(EMME/2, 1998)
- 1996 Planning Area 2 Subarea Model—Alameda County, California. Model Development (EMME/2, 1997)
- Bakersfield Model—Kern County, California. Distribution model calibration (MINUTP, 1995)
- Middle Rio Grande of Governments Regional Model—Albuquerque, New Mexico. Model Development (EMME/2, 1995)
- San Mateo Countywide Model—San Mateo, California. Model development (EMME/2, 1993)
- San Francisco International Airport Surface Transportation Air Passenger Model—San Francisco, California. Trip Generation/distribution model development, mode choice calibration, model validation (EMME/2, 1994)
- West Contra Costa County Subarea Model—Contra Costa County, California. Model development (EMME/2, 1992)
- Oakley Areawide Model—Contra Costa County, California. Model development (EMME/2, 1989)

Travel Demand Model Applications

- New Farm Traffic Impact Study – Contra Costa County, (TransCAD, 2010)
- Phoenix West Transit Study – Phoenix Arizona, (TransCAD, 2009-2010)
- Bollinger Canyon Road 2020 Forecasts - San Ramon, (TransCAD, 2008)
- BART Extension to San Jose- Santa Clara County (CUBE/VOYAGER 2007-2010)



- Eastside Specific Plan – Preliminary Traffic Analysis – Contra Costa County (TransCAD,2008)
- Tucson MIS and DEIS – Development of ridership forecasts for the proposed Streetcar project (CUBE/VOYAGER, 2006 – 2008)
- Bollinger Canyon Road 2020 Forecasts - San Ramon, (TransCAD, 2008)
- Eastside Specific Plan – Preliminary Traffic Analysis – Contra Costa County (TransCAD,2008)
- LRT Corridor Study – Phoenix Arizona – Development of ridership forecasts and evaluation criteria for numerous LRT configurations (EMME/2, 2008).
- Silicon Valley Rapid Transit Corridor MIS / EIS – Development of ridership and traffic forecast for the MIS, EIS, and EIR- Santa Clara County, California. (CUBE/VOYAGER, 2001 – 2007)
- North San Jose Area Development Policy Update – Development of multi-modal travel forecasts for several large development concepts in North San Jose (TP+, 2004)
- Dumbarton Commuter Rail – Patronage forecasts for commuter rail alternatives for the Dumbarton rail Project – Bay Area, California. (TP+, 2002)
- MAG Regional Travel Forecasting Model – Phoenix, Arizona – Development of ridership forecasts for the proposed Bus Rapid Transit Plan (EMME/2, 2001).
- MTC Regional Transportation Model – San Jose, California – Model refinement and patronage forecasting for the South Bay Rapid Transit Major Investment Study (TP+, 2001).
- MAG Regional Travel Forecasting Model – Phoenix, Arizona – Travel forecasting for the Phoenix/East Valley PE/DEIS. Development of traffic and transit data for all aspects of the DEIS document and cost effectiveness data for the New Starts submittal (EMME/2, 2000-2003).
- Milpitas Subarea Model- Santa Clara County, California – Travel Forecasts for the McCarthy Ranch R&D Project (TRANPLAN, 1999)
- Planning Area 2 Model—Alameda County, California. Travel Forecasts for the 880/92 Interchange (EMME/2, 1998)
- Carquinez Bridge Subarea Model—Contra Costa, Solano Counties, California. Travel forecasts for the Carquinez Bridge Re-placement Project (MINUTP, EMME/2, 1996)
- Santa Clara County Model—Santa Clara County, California. Travel forecasts for the Highway 85 widening and U.S. 101/Route 85 Inter-change Projects, development of year 2020 land use and demographic forecast (TRANPLAN, 1996)
- Hayward Citywide Model—Hayward, California. Model validation, Future forecasts for city's Transportation Plan, Route 238 Corridor Study, Mission Boulevard Widening Study, Route 84 Realignment Project (EMME/2, 1990-1995)
- Tri-Valley Subarea Model—Alameda and Contra Costa Counties, California. I-580/I-680 Interchange Project, Tassajara Valley EIR, Tri-Valley Transportation Plan (EMME/2, 1991-1995)
- Alameda Countywide Model—Alameda County, California. Travel forecasts and analysis for the Alameda County Transportation Plan, I-880 Intermodal Corridor Study, I-880 Cypress Replacement Project, Castro Valley Arterial Study (EMME/2, 1992-1995)
- West Contra Costa Subarea Model—Contra Costa County, California. Travel forecasts and intersection operation analysis for the Hercules General Plan, Richmond General Plan, West Contra Costa County Action Plan (EMME/2, 1993)

Environmental / Traffic Impact Studies

- City Center San Ramon – Peer Review Traffic Analysis- 2008
- McCarthy Ranch TIA – (2007-2008)
- Dougherty Valley Traffic Impact Studies and Intersection Design Projects (2003-2007)
- Gale Ranch Phase 3 Traffic Study/Roadway Improvement Phasing Study—Contra Costa County, California. Traffic and transportation impact analysis for a 1,443 unit residential development (2000-2003)
- McCarthy Ranch General Plan Amendment EIR – (2000)

- 301 Airport Boulevard Environmental Impact Report—Burlingame, California. Traffic and transportation impacts for a proposed office building (1999/2000)
- Franich Environmental Impact Report - Watsonville, Santa Cruz County. Traffic and circulation analysis of a 365 residential unit development in Watsonville. (1999/2000)
- McCarthy Ranch GPA Environmental Impact Report—Santa Clara County, California. Traffic and transportation impacts for a proposed 3,000,000 square feet research and development project. (1998/1999)
- Bayshore North Area Environmental Impact Report—Santa Clara County, California. Traffic and transportation impacts for a proposed commercial development (1998)
- Tassajara Valley General Plan Amendment and Environmental Impact Report—Contra Costa County, California. Traffic and transportation impacts for a development of 6,200 housing units (1997)

School Access and Circulation Studies

- Gale Ranch Elementary School Traffic Analysis (Dougherty Valley – Contra Costa County)
- Gale Ranch Middle School Circulation and Operational Analysis (Dougherty Valley – Contra Costa County)
- Alamo Creek Elementary School Traffic Analysis (Alamo Creek – Contra Costa County)
- Gale Ranch Elementary School Traffic Analysis (Dougherty Valley – Contra Costa County)
- School and Traffic – Comprehensive Data Collection and Analysis at 15 public schools (Santa Clara County)

Selected Publications/Presentations

- “Implementation of Highway Capacity Manual Based Volume Delay Functions in a Regional Traffic Assignment Process,” presented at the TRB Annual Meeting, Washington, D.C. January 1996
- “Utilizing a Gateway Constrained Methodology to Better Forecast Traffic Volumes,” presented at the I.T.E. Conference, Denver, Colorado. August 1995 (Co-Author)
- “Building a Path-Based Fare Matrix Using EMME/2 and TRANPATH,” presented at the International EMME/2 Conference, Montreal, Canada, November 1994
- “Travel Demand Forecasting Models in the San Francisco Bay Area,” presented at the First European EMME/2 Users Conference in London, England. April 1992
- “Air Quality Impact Analysis Using the EMME/2 Network Calculator,” presented at the International EMME/2 Conference in Pasadena, California. June 1991



Jill Hough, Vice President, Principal Associate & Chief Technical Officer

Education

Bachelor of Science—Civil Engineering, Carnegie Mellon

Experience

As a Principal Associate, Ms. Hough is primarily responsible for the development and application of travel demand forecasting models. With twenty years of consulting experience, Ms. Hough has provided transportation planning services to both public and private sectors in the areas of travel demand forecasting, transit planning, and areawide travel surveys. She also specializes in ridership forecasting for commuter rail and in the San Francisco Bay Area as well as other major metropolitan areas such as Chicago and Houston. Ms. Hough is one of the Hexagon's original founding partners.

Representative Projects

• **Travel Demand Model and Patronage Forecasting Projects**

Houston Metro North Corridor and Houston Metro Southeast Corridor MOS Light Rail Transit Projects; Houston, Texas. Developed and Analyzed Light Rail ridership estimates for minimum operable segments for two new light rail corridors in Houston. Prepared New Starts template submittals.

JPB and BART Patronage Study. Developed Rail ridership estimates at Caltrain and San Mateo County BART stations for various Caltrain "Express" Service plans and for AA/DEIS for the Caltrain Downtown San Francisco (DTX) Project.

Metra Kane/Kendall Extension Project; Chicago, Illinois. Calibrated a 2000 model set for work trips for Chicago Metra and expanded the model area coverage to include Kendall County.

San Mateo County and SFO Model 2000 Update and Transportation Plan; San Mateo County.

Developed a set of enhancements to forecast differences in transit alternatives in San Mateo County.

Caltrain Downtown San Francisco Extension EIS/EIR; Santa Clara, San Mateo, San Francisco Counties.

Created patronage forecasts for alternatives to extend Caltrain into Downtown San Francisco.

Caltrain Market Demand Study; Santa Clara, San Mateo, San Francisco Counties. Created forecasts of Caltrain demand for various Caltrain operating scenarios. Results of the study were used to create the 20-year Caltrain Strategic Plan that was adopted by the Joint Powers Board.

San Francisco/San Mateo Bi-County Transportation Plan. Developed a draft multi-modal transportation plan for the Candlestick Point, Executive Park, Hunters Point and Brisbane Baylands areas.

O'Hare Airport Layout Plan; Chicago, Illinois. Implemented and calibrated the Airport Trip Generation model and mode split procedure, and validated the year 1992 peak-hour models.

San Jose General Plan Amendments; San Jose, California.

Route 101 Auxiliary Lanes Project; San Mateo County, California.

Analysis of Route 101 Transportation Improvements/Travel Demand; San Mateo County. Created travel demand forecasts for various transportation improvements on Route 101 such as the addition of HOV lanes, through lanes, and auxiliary lanes. Results of the study were used to determine whether to pursue the process of converting the auxiliary lanes into through lanes.

Milpitas Traffic Model Update; Milpitas, California. Updated the Milpitas traffic model to be consistent with the Santa Clara County CMP Model and to reflect the city's land use database.

VTA Measure A/B Highway Improvement Projects; Santa Clara County, California. Applied the Santa Clara County CMP travel demand model to develop travel forecasts for a variety of alternatives relative to the Route 101 widening project and the Route 101/Route 85 Interchange project in South San Jose, and the Route 101/Route 85 Interchange in Mountain View.

Phoenix Model Conversion; Phoenix, Arizona. Converted the Phoenix Models in UTPS to EMME/2 for purposes of comparison and evaluation by the Maricopa Association of Governments (MAGTPO).





State Route 238 EIR; Hayward, California.

San Mateo County Travel Demand Model Development 1995; San Mateo County, California.

Developed a set of enhancements to forecast differences in transit alternatives in San Mateo County, support the congestion management program, and the needs assessment of future transportation improvements.

Mexico City Transportation Plan; Mexico City, Mexico. Provided Training in the use of EMME/2 transportation planning software.

Route 84 Realignment Study; Union City and Fremont, California. Developed year 2015 travel forecasts for the Route 84 corridor using the Alameda County Transportation Model.

Route 92/I-880 Interchange Study; Hayward, California. Developed travel forecasts for redesigning an urban interchange.

I-880/I-680 Cross-Connector Study; Alameda County, California. Applied the Southern Alameda County model to develop travel forecasts for a variety of cross-connector alternative corridors.

West Contra Costa Subarea Travel Demand Model; Contra Costa County, California. Assisted in implementing the Countywide Travel Demand Model for this subarea of the county.

• **Transit Studies**

Analyzed bus patronage, cost, and revenue data as well as demographic data and trends for identification of future service needs.

Houston Metro North Corridor and Houston Metro Southeast Corridor Light Rail Transit Projects; Houston, Texas.

VTA Caltrain Measure A Ridership and Parking Forecast Study; Santa Clara County.

CalTrain Policy Study; Santa Clara, San Mateo, San Francisco Counties.

Seminole County Mass Transit Element; Sanford, Florida.

Lakeland Transit Development Plan; Lakeland, Florida.

Tricounty Commuter Rail Bus Feeder Service; West Palm Beach, Florida.

Brevard County Transit Development Plan; Merritt Island, Florida.

Florida Statewide Transit System Plan—Phase III; Tallahassee, Florida.

Broward Boulevard Corridor Study; Ft. Lauderdale, Florida.

• **Corridor Studies**

Assisted in the development of future traffic volume forecasts for these corridors.

Route 101 Corridor Study between Whipple Avenue and Embarcadero Road; San Mateo County.

Vasona Corridor Conceptual Engineering; Santa Clara County.

U.S. 101 Major Investment Study; San Luis Obispo County.

Kelly Road Corridor Study; Ft. Myers, Florida.

Broward Boulevard Corridor Study; Ft. Lauderdale, Florida.

• **Traffic and Parking Studies**

Activities ranged from studying impact of a variety of citywide parking policies on parking revenues to addressing the impact of new development and population growth on parking conditions.

Bay Meadows/San Mateo Transportation Corridor Plan Joint EIR Traffic Impact Study, San Mateo, California

El Camino Real Preliminary Corridor Study, San Mateo County

Tully Road/Route 101 Project Study Report; San Jose, California.

Bailey Road/Route 101 Project Study Report; San Jose, California.

Walpert Ridge Traffic Analysis; Hayward, California.

Sarasota Parking Program Development; Sarasota, Florida.



Holly Hassett, *Principal Associate*

Education

Florida State University, Tallahassee, Florida **M.S. in Urban and Regional Planning**. Majored in transportation planning with emphasis on travel demand forecasting and advanced statistical techniques.

College of St. Catherine, St. Paul, Minnesota **B.A. Majors: Urban Planning and Sociology**

Fall Semester, 1976: University of Oslo, Blindern, Norway. **Scandinavian Urban Studies Term**. The program studies all aspects of planning and the various agencies involved in the planning system.

Experience

March 2000 – Present

Ms. Hassett is Manager of Travel Forecasting for Metro Light Rail, Phoenix, Arizona. As manager of travel forecasting Ms Hassett is responsible for providing travel forecasts and supporting analysis for all of Metro Light Rail projects including corridor studies AA/DEIS, system configuration studies and corridor feasibility studies. Her responsibilities include, providing traffic, environmental and ridership data for DEIS/FEIS documents. Implementing and running the FTA Summit model. Preparation of Section 5309 New Starts Documents. Preparing Making the Case documents and Travel Forecasting Methodology reports. Ms. Hassett has also presented the MAG travel forecasting model capabilities to the Federal Transit Administration. As part of her ongoing role using the MAG model, Ms. Hassett has been analyzing MAG's recently updated demand models and is overseeing the integration of the model update with the network application and path building procedures. Ms Hassett was also project manager for the data collection, survey and application of the Special Events model that is being used in conjunction with the MAG model. .

Metro Light Rail Projects:

- Central Phoenix/East Valley
- Metrocenter Project Corridor Extension
- City of Glendale Corridor Study
- Phoenix Rapid Bus Survey and Model Update
- Central Mesa Corridor AA/DEIS
- I-10 Corridor AA/DEIS
- South Tempe AA/DEIS
- System Configuration Study

Maricopa Association of Government Projects

- MAG Transit Framework Study:
- MAG On Call Model Update Project

Houston Metro Projects:

Ms. Hassett was part of a panel to review a model sketch planning technique for the Houston Metro 2025 project. This technique was used as a Tier 1 analysis tool to determine the highest potential transit corridors in the Houston Region.

Ms. Hassett also assisted in the preparation of travel forecasts for Houston Metro 2025. Ms. Hassett worked on the Houston Metro models with Metro staff. Her role was to review



network coding procedures, model output and assist in implementation of the summit model. Ms. Hassett also help Metro staff trouble shoot model output to determine the cause of unexplained ridership numbers.

Transportation Model Calibration/Applications

- MAG Transit Framework Study
- MAG On Call Model Update Project
- City of Tempe, South Tempe Corridor AA/DEIS,
- City of Mesa, Central Mesa Corridor AA/DEIS
- I-10 West Corridor AA/DEIS, Phoenix, Arizona
- Glendale Corridor feasibility Study, Glendale, Arizona
- System-wide Configuration Study, Phoenix, Arizona
- Houston METRO, 2025 Corridor Plan, Houston, Texas
- City of Phoenix Value Lanes Feasibility Study
- Orange County 91 Expressway HOT Lanes
- LAX Master Plan, Los Angeles County, California
- LA City Framework Model, Los Angeles County, California
- Wilmington CPU, Los Angeles County, California
- El Toro Master Plan, Orange County, California
- OCTAM III Model Update; Orange County, California
- Tri-Valley Model Development, Alameda and Contra Costa Counties, California
- San Mateo CMP Model, San Mateo, California
- Alameda County CMP Model, Alameda County, California
- Cypress Bridge Replacement Study, Alameda County, California)
- Metra Mode Choice Model Calibration, Chicago, Illinois
- Contra Costa County Travel Forecasting System)
- City of Savannah Transportation Model. Savannah, Georgia
- Southern California Rapid Transit District, Metro Rail Planning; Los Angeles, California
- Contra Costa County Trip Generation Models; Contra Costa County, California
- Hennepin County LRT Transit Model, Minneapolis/St. Paul, Minnesota
- Cleveland Dual Hub Alternatives Analysis, LRT Ridership Forecasting, Cleveland, Ohio
- Woodbury Subarea Analysis Study; St. Paul, Minnesota
- Metropolitan Council Modeling Update; Minneapolis/St. Paul, Minnesota
- SCAG Model Improvement Program; Los Angeles, California
- Hiawatha Corridor LRT Ridership Analysis; Minneapolis, Minnesota)
- Arapahoe County Thoroughfare Program; Denver, Colorado)
- Cheyenne Long Range Transportation Plan Update; Cheyenne, Wyoming
- Phoenix External Travel Survey; Phoenix, Arizona
- Pasco County Growth Management Plan; Pasco County, Florida

1985 – March 2000

Barton-Aschman Associates, Parsons Transportation Group - *Senior Associate*

As a member of the Barton-Aschman's travel demand forecasting division, Ms. Hassett has been project manager for several travel demand modeling projects. She finished the development of the OCTAM 3.0 model for the Orange County Transportation Authority. All components of the model were updated and an extensive and sophisticated mode choice model was calibrated. The mode choice model is applied by time of day (peak/off peak), contains nine access modes and up to 16 transit modes. The model was validated to 1997 conditions, it includes two rail



modes, and has the ability to model toll roads as separate a choice.

1984-1985

Metropolitan Council of the Twin Cities, St. Paul, Minnesota - *Transportation Planner*

Assisted in Travel Demand Forecasting. Assigned full time to the Metropolitan Council's consultant (Barton-Aschman Associates, Inc.) for the LRT feasibility study. Prepared and executed the majority of the demand model runs for ridership analysis. Assisted in the design of the background bus system. Designed and prepared all transit network alternatives, including access coding, feeder bus, LRT and Park and ride locations.

1980-1984

Post, Buckely, Schuh and Jernigan. Tallahassee, Florida - *Associate Transportation Planner*

Responsible for Transit Studies including Inter-City Bus Demonstration Project. Responsibilities included: demand estimation, cost/benefit analysis and environmental assessment for the tri-county express bus system.

Transit Development Project, Tallahassee, Florida. Worked with ATE Management Consultants in the redesign of the TalTran Transit System. Included route restructuring, ridership, and transit center concept and cost analysis.

Development Impact Statements. Worked on several large development projects throughout the state of Florida to determine transportation impacts and mitigation techniques. Examples include Bush Gardens Expansion, Big Bend New Town, and United States Postal Service expansion site selection environmental analysis.

1979-1980

Florida Department of Transportation, Urban Planning Section, Tallahassee, Florida - *Transportation Planner/Technician*

Responsible for updating the travel demand forecasting process and assisting in the standard model application procedures along with analysis of networks for the 1980 census validation project.

1979

Metropolitan Transit Commission Transit Development Department, St. Paul, Minnesota - *Intern*

Assisted in preparation of the 1980 Capital Program Budget, and the 1980 Interagency Work Program Budget. Assisted in certification procedures for the elderly and handicapped transportation program (Metro Mobility).

St. Paul Department of City Planning, St. Paul, Minnesota - *Intern*

The Downtown People Mover Project. Responsible for collection of data for the Environmental and Economic Impact Statement of the Downtown People Mover Project. Assisted with public participation and information hearings.

CIVIC/COMMUNITY SERVICE

City of Cypress Traffic Commissioner, April, 1997 to March 1999

