THE CITY OF

PLEASANTON

Revised Letter

May 23, 2006

Mr. James Paxson
General Manager
Hacienda Owners Association
4473 Willow Road, Suite 105
Pleasanton, CA 94588

Dear James:

This letter is in response to a request from Fehr & Peers, Transportation Consultants, and yourself for City approval of the proposed Hacienda TOD Specific Plan Interim Modeling Methodology, outlined in memos dated April 17 and April 25 and an update dated May 15, 2006. We have reviewed this information and have had phone conversations with Rick Lee and Patrick Golier of Fehr & Peers. The proposed trip reductions by TAZ have been presented, providing a general understanding of the assumptions regarding internal capture, mode split, and urban design adjustments that are being proposed. However, the methodology supporting those reductions has not been described, so we are unable to comment on the specific percentage reductions proposed for the interim Specific Plan model. I would note that the reductions shown appear reasonable as an interim modeling procedure, and we do support the concept of decreasing trips where there is a mix of residential and commercial uses and where uses are within walking distance of a transit hub. For the full model, we would want to ensure that the trip reduction assumptions are not duplicative of those in the City's traffic model and that they are practical and make sense for Pleasanton's conditions.

We support your proceeding with the interim modeling procedure in order to assess the relative traffic impacts of Hacienda's three preliminary development scenarios and to test the validity of the modeling assumptions. I anticipate that we will continue to discuss the assumptions and outputs of this analysis so that any necessary adjustments for the full model run for the Hacienda Specific Plan, the General Plan, and Environmental Impact Report analysis can be made.

Sincerely,

Jerry Iserson,
Planning Director

c. Jeff Knowles, Public Works/Transportation
Janice Stern, Principal Planner
Richard Lee, Fehr and Peers
Patrick Golier, Fehr and Peers

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FEHR & PEERS
TRANSPORTATION CONSULTANTS

MEMORANDUM

Date: April 17, 2006

To: James Paxson, Hacienda Business Park;
Nick Haskell and Adena Friedman, EDAW

From: Richard Lee and Patrick Golier, Fehr & Peers

Subject: ***Outline of Hacienda-TOD Modeling Procedure***

WC05-2218

INTRODUCTION

Since the 1980s, the City of Pleasanton has used citywide traffic models to assist in the assessment of traffic impacts from land use plans and development projects. Traffic models quantify observed traffic relationships between land uses and travel demand (trip-making).

Over time, the City of Pleasanton model has become increasingly complex, in order to better account for the regional as well as local traffic patterns through Pleasanton's roadway network. This memo outlines additional steps that will be appended to the standard modeling process. These additional steps will enable the model to account for the transit- and pedestrian-oriented development proposed as part of the Hacienda Specific Plan.

The City's traffic model is currently undergoing an update: new traffic counts and land use data reflecting early 2006 conditions are being collected and will be used to adjust the many formulae and calculations embedded in the model so that it better replicates actual, observed traffic conditions. The model is also being updated to reflect different regional traffic patterns and to more accurately account for cut-through traffic and other traffic issues of local concern. This update process will likely take through the entire month of May, in part because recent rainy weather has delayed the traffic count program.

The delay in receiving the updated City model necessitates an additional "interim" modeling step that will allow us to provide some indication as to the relative impacts of the proposed Hacienda TOD land use scenarios. The results of the interim step will allow the Core Stakeholders to gain a good sense of the locations and comparative magnitudes of the traffic impacts of the land use scenarios, and a base from which informed consideration and discussions of the scenarios can begin. These results can help focus the efforts of subsequent analyses using the City's model by providing a means by which we can develop substantive data for review. Thus, the interim modeling effort will provide useful information that can be used to begin to develop a preferred scenario. The steps involved in the interim modeling procedure are detailed below, following the description of the Hacienda land use scenarios to be examined.

SCENARIOS TO BE EXAMINED

The following three land use scenarios were developed to represent a range of densities and intensities for the Park and will be further examined to test their viability in meeting the goals of the Hacienda Specific Plan Process. The scenarios are summarized in the spreadsheet in Attachment 1 and in the

descriptions that follow. More detailed parcel-level information is found in the attached Excel spreadsheets.

Scenario 1: Maximum Development

This scenario is the highest density and intensity scenario that is being analyzed as part of this Specific Plan process. This scenario includes a residential unit count of 2,420 units, and a suggested commercial program of 80,000 square feet. This scenario also includes the entirety of Hacienda's currently approved office program of 9.8 million square feet. (Note: based on their request, 300,000 square feet of office development has been allocated to the CarrAmerica site as a part of this and all of the other development scenarios).

While this scenario exceeds the City of Pleasanton's current housing cap, it is included in the analysis because densification of residential units near existing and future transit, job and retail sites will lessen the transportation impacts of the new housing units.

Higher densities and a higher amount of retail development (lending to the mixed-use nature of the community) contribute to characteristics of successful transit oriented development, which is dependent on residential density, as well as design factors. In short, increased density of housing, jobs and retail helps to produce mixed-use opportunities that create far fewer trips per unit than if the land uses are not accessible to each other. Additionally, one of the goals of this project is creating a vibrant community that is an amenity to the city at large, as well as for people who live and work in Hacienda. Higher densities and intensities, and mixed land uses will help to create a sense of place and a destination, which will contribute to the overall character and well-being of the city. The Consultant Team suggested that this scenario would be important to analyze to fully demonstrate the beneficial effects of the relationship of uses found in transit-oriented development, although it is realized that the Core Stakeholders may decide not to furnish it to the City Council.

Scenario 2: Moderate Development

This scenario includes a moderate development scheme, and is primarily based on the preferred development program that the Core Stakeholders provided for their sites. The dwelling unit count in this scenario is 1,665 with a commercial program of 65,000 square feet distributed at several different locations within the core properties. Additionally, this scenario contains a proposed office program of 210,000 square feet at the BART site.

This scenario is being analyzed considering two different alternative conditions:

- Replace existing office programs with the programs shown in the scenario program (see attached spreadsheet)
- Retaining Hacienda's current buildout office program, in addition to the newly proposed scenario program

The land use program proposed in this scenario is within the City of Pleasanton's housing cap, but does not leave much room for additional development within the City. Given the comments made during the initial presentation of the Hacienda Specific Plan concepts to the Pleasanton City Council and Planning Commission, the political feasibility of this scenario is in question.

Scenario 3: Minimum Development

The minimum development scenario contains a total of 1,271 dwelling units, dispersed among the core property sites within the Plan Area. The minimum development land use program is being analyzed in an attempt to address the request of the City Council and the Planning Commission to determine a minimum viable project, with a reduced overall number of residential units. This scenario also contains a

commercial development program of 25,000 square feet. The minimum development scenario also contains an office program of 210,000 square feet at the BART site.

Similar to Scenario 2 (Moderate Development), this scenario is also being analyzed considering two different alternative conditions:

- Replace existing office programs with the programs shown in the scenario program (see attached spreadsheet)
- Retaining Hacienda's current buildout office program, in addition to the newly proposed scenario program

While this scenario falls below the City's housing cap, it may present some challenges in terms of feasibility for the Core Stakeholders, as the densities and total number of dwelling units fall below the preferred programs for the core properties. This analysis is being presented as a way to address the requests of the Planning Commission and City Council. However, it is not based on feasibility data provided from Stakeholders, and is therefore subject to discussion and approval, as are all of the scenarios being analyzed.

INTERIM MODELING PROCEDURE

Since it may be some time before the new citywide model is ready for use, an interim modeling procedure is outlined below that will utilize trip generation data for the three Hacienda land use scenarios in conjunction with data from the most recent city traffic model runs. The subsequent section describes the full modeling procedure with the revised citywide model.

It important to note that the analysis of the scenarios will first consider the different trip generation characteristics of office versus retail and residential uses on a parcel-by-parcel basis. This "trade-off analysis" will look at each of the Core property's current office entitlement and how it relates to the particular proposal being advanced for that site under the various scenarios.

In essence, we will first estimate trip generation (i.e., how many trips there will be) under Hacienda's current entitlements, and then adjust this trip generation estimate for the land use scenarios under consideration. Further adjustments will be made based on the best available information on how mixtures of complementary uses, proximity to BART, and local measures that encourage alternatives to automobile use influence trip making.

Another important point to note is that that while the adjustments will change the quantity of trips bound to and from Hacienda, we are *not* assuming a different pattern of origins and destinations for the trips that have one end external to Hacienda.

The interim tasks described below are intended to give Stakeholders and City decision makers a meaningful comparison of the traffic generation characteristics of the land use scenarios, and a good sense of each scenario's relative level of impacts on Pleasanton roadways. This procedure will consider land use scenario impacts on a smaller set of intersections than the full model run; specifically, signalized intersections within the Hacienda Business Park and those intersections immediately surrounding the Hacienda Business Park (on Hacienda roadways leading to I-580 and I-680) that are already operating at deficient levels-of-service. Preliminary investigation of the latest City model indicates that these deficient intersections outside the boundaries of the Park include:

- I-580 Westbound Off-Ramp/Santa Rita Road

- I-580 Eastbound Ramps/Santa Rita Road
- Stoneridge Drive/Santa Rita Road
- Stoneridge Drive/I-680 Northbound Off-Ramp (PM Peak Hour)
- Stoneridge Drive/Johnson Road (PM Peak Hour)
- Stoneridge Drive/Franklin Road (PM Peak Hour)

This analysis will allow a comparative analysis of scenarios, which should, in turn, help move towards a preferred Specific Plan scenario, or at least reduce the number of scenarios that need to be analyzed using the updated City model, when available. The full City model run, on the other hand, will include full citywide impacts.

On acceptance of this methodology by the City of Pleasanton, it is anticipated that this work will take approximately three weeks to complete.

Key steps for the interim traffic modeling of the Hacienda Business Park land use scenarios are as follows:

1) Trip Generation
   Estimate AM and PM peak hour volumes generated by Hacienda land uses using City of Pleasanton trip rates and assuming Hacienda's currently approved/entitled land use plan. This becomes the No Project or Base Case.

   These baseline forecasts will then be adjusted in subsequent steps for each Hacienda TOD Specific Plan scenario.

2) Adjust for "Internal Capture"
   - For each traffic analysis zone (TAZ), adjustments for internal capture will be made ("internal capture" refers to trips that are served within Hacienda traffic zones).
   - Internal capture adjustments to vehicle trips will be based on the Institute of Transportation Engineers' (ITE) *Trip Generation Handbook* (March 2001), Chapter 7 methodology and rates. This method was chosen since:
     - ITE represents an industry standard, and ITE trip rates and procedures are accepted and used by the City of Pleasanton
     - The rates are conservative – they are based on studies of suburban developments that are similar in size to proposed developments within the Hacienda TOD.

   Using the ITE methodology, the magnitude of the internal capture for the proposed Hacienda TOD parcels is estimated to be on the order of 1 – 4 percent on a daily basis, but 7 – 10 percent on in the PM Peak hour, as shown in Attachment 2.

3) Adjust for Mode Split
   - Adjustments to the vehicle trips to and from each Hacienda TAZ will be estimated based on use of alternative modes:
     - Auto-driver mode split will be estimated for two types of park "user" – residents and workers – and for work and non-work trips.
     - Mode split will be estimated using 2000 Metropolitan Transportation Commission Bay Area Travel Survey (BATS2000) data and 2000 Census data.
     - For TAZs within one mile (walking distance) of BART, we will use recent BATS2000 survey data on households and jobs for all East Bay BART station areas, excluding BART stations in or near traditional downtowns. The BATS East Bay Station Area data set is large and robust (747 households) and has been thoroughly analyzed by

MTC. In effect, travel behavior within walking distance of Dublin-Pleasanton BART will be assumed to parallel observed travel behavior at other non-downtown East Bay BART station areas. These data indicate that development within walking distance of BART would have vehicle trip rates 15 – 25 percent lower than Pleasanton norms. (Attachment 3 contains more specific details).

- For all other TAZs beyond one mile, no change in mode split will be assumed from the Pleasanton model.

4) Adjust for Urban Design

Further adjustments to vehicle trips may be made to account for further mode shifts due to:

- Proposed design changes to Hacienda roadways that:
  - Increase the directness of pedestrian routes to/from BART
  - Offer viable alternative routes to transit connections such as new shuttle services, including potential Personal Rapid Transit (PRT) services.
  - Enhance safety for pedestrians and bicyclists.
  - Provide an improved retail interface for pedestrians.
- Proposed shuttle improvements to/from the housing, office, and retail locations throughout the Park and BART, including possible implementation of Personal Rapid Transit (PRT).
- Proposed Travel Demand Management (TDM) programs at Hacienda.

National studies conducted by Fehr & Peers under the auspices of the US Environmental Protection Agency indicate that physical improvements that increase the directness of pedestrian paths can result in modest reductions in vehicle trips (on the order of 2 – 5 percent). These reductions would be in addition to reductions due to the integration of complementary land uses and proximity to BART.

Fehr & Peers will base the interim intersection impact analysis on Cumulative year AM and PM peak intersection data from the latest citywide land use model (Bernal Phase II Specific Plan) as recommended by Jeff Knowles at the City of Pleasanton.

Potential mitigation measures for impacted locations will be discussed and will be used to assist in the assessment of the feasibility of the Specific Plan scenarios. Mitigation can occur in a variety of ways, from land use changes, improved urban design, intersection and signal improvements, additional mobility services such as shuttles, and roadway enhancements. A full mitigation program will be developed in the final modeling phase.

Results (discussed above) from the interim modeling step will be disseminated to the Core Stakeholders and the City of Pleasanton for consideration and discussion. At this time, the following can be discussed and refined in the full modeling procedure, as necessary:

- Relative advantages and disadvantages of the land use scenarios from a traffic standpoint
- Internal capture and other trip generation adjustments

In summary, Fehr & Peers will develop the following information for the Interim Analysis:

- Comparative trip generation for each land use scenario.
- Projected routes used by project traffic, based on trip distribution patterns determined by Dowling Associates (the City's traffic consultant) and the City.
- Traffic impact analyses (i.e., analysis of the effects added traffic on Hacienda and congested intersections surrounding the park).

After the review and refinement period, Fehr & Peers will be able to continue with the Full Modeling Procedure, described below.

FULL HACIENDA MODELING PROCEDURE

Upon completion of the citywide model updates, it will become possible to analyze one or more of the Hacienda Specific Plan scenarios in conjunction with the latest land use and transportation assumptions incorporated into the model, including the General Plan buildout land use and transportation network.

The process parallels the interim procedure, but will be performed in the context of the official citywide model, which will enable full analysis of all critical locations: We will first estimate trip generation (i.e., how many trips there will be) under Hacienda's currently entitled land use plan, and then adjust this trip generation estimate for the Specific Plan scenarios. The analysis of the scenarios will first consider the different trip generation characteristics of office vs. retail and residential uses. These adjustments will be made based on the best available information on how mixtures of complementary uses, proximity to BART, and local measures that encourage alternatives to automobile use influence the number of trips made. This will potentially include new information developed in the course of the Interim analysis.

As under the interim procedure, these adjustments will change the quantity of trips bound to and from Hacienda, but will not assume changes in the pattern of origins and destination for the trips that do have one end outside Hacienda.

On acceptance of this methodology by the City of Pleasanton and the Core Stakeholders and upon receipt of the citywide model, it is anticipated that this work will take approximately 8 weeks to complete.

Key steps for the full traffic modeling procedure for the Hacienda Business Park land use scenarios are as follows:

1) Trip Generation
   Start with the updated citywide model's AM and PM peak hour volume estimates (see Attachment 3 for a flowchart of the City's modeling procedure) assuming Hacienda's currently approved/entitled land use plan – this becomes the No Project or Base Case.

   This approach ensures that City-approved trip generation rates will be employed and city – approved adjustments in travel demand (e.g. for peak hour spreading) are reflected in the peak hour baseline traffic forecasts of vehicle trips.

   These baseline forecasts will then be adjusted in subsequent steps for each Hacienda TOD Specific Plan scenario:

Note: Steps 2 – 4 are conceptually the same as the corresponding steps under the Interim Procedure, but the data and procedures used will be refined on the basis of information gained during the Interim analysis, including feedback received from City staff.

2) Adjust for Internal Capture
   - For each traffic analysis zone (TAZ), adjustments for internal capture will be made ("internal capture" refers to trips that are served within Hacienda traffic zones).
   - Internal capture adjustments to vehicle trips will be based on the Institute of Transportation Engineers' (ITE) *Trip Generation Handbook*, Chapter 7 methodology and rates. This method was chosen since:
     - ITE represents an industry standard, and ITE trip rates and procedures are accepted and used by the City of Pleasanton

- The rates are conservative – they are based on studies of suburban developments that are similar in size to proposed developments within the Hacienda TOD.

The internal capture adjustment will start with the intra-zonal trips estimated by the model and then increase the capture rate as needed to reflect the ITE estimates.

3) Adjust for Mode Split
   - Adjustments to the vehicle trips to and from each Hacienda TAZ will be estimated based on use of alternative modes:
     - Auto-driver mode split will be estimated for two types of park "user" – residents and workers – and for work and non-work trips.
     - Mode split will be estimated using 2000 Metropolitan Transportation Commission Bay Area Travel Survey (BATS2000) data and 2000 Census data.
     - For TAZs within one mile (walking distance) of BART, we will use recent BATS2000 survey data on households and jobs for all East Bay BART station areas, excluding BART stations in or near traditional downtowns. The BATS East Bay Station Area data set is large and robust (747 households) and has been thoroughly analyzed by MTC. In effect, travel behavior within walking distance of Dublin-Pleasanton BART will be assumed to parallel observed travel behavior at other non-downtown East Bay BART station areas, This data indicates that development within walking distance of BART has vehicle trip rates 15 – 25 percent lower than Pleasanton norms.
     - For all other TAZs beyond one mile, no change in mode split will be assumed from the Pleasanton model.

4) Adjust for Urban Design
   Further adjustments to vehicle trips will be made to account for mode shifts due to:
   - Proposed design changes to Hacienda roadways that:
     - Increase the directness of pedestrian routes to/from BART
     - Offer viable alternative routes to transit connections such as new shuttle services, including potential Personal Rapid Transit (PRT) services
     - Enhance safety for pedestrians and bicyclists.
     - Provide an improved retail interface for pedestrians.
   - Proposed shuttle improvements to/from the housing, office, and retail locations throughout the Park and BART, including possible implementation of Personal Rapid Transit (PRT).
   - Proposed Travel Demand Management (TDM) programs at Hacienda.

National studies conducted by Fehr & Peers for under the auspices of the US Environmental Protection Agency indicate that physical improvements that increase the directness of pedestrian paths can result in modest reductions in vehicle trips (on the order of 2 – 5 percent). These reductions will be in addition to reductions due to the integration of complementary land uses and proximity to BART.

Steps 2 – 4 above summarize the quantitative adjustments to the Pleasanton modeling process. These will define the trip generation characteristics for each Specific Plan scenario. Once steps 2 – 4 are completed, the adjusted external traffic volumes for Hacienda will be reassigned using the model's standard assumptions regarding the distribution and assignment of trips.

With the full model, impacts can be analyzed and a full set of recommended mitigation measures will be developed on a comprehensive citywide basis for those intersections impacted by the land use scenario.

ADDITIONAL QUALITATIVE ANALYSIS

For both the Interim and Final analyses, Fehr & Peers will the examine the efficacy of many factors that are known to influence people's travel choices, but which are difficult to precisely quantify and/or incorporate into a traffic forecasting process at the scale of Hacienda. Specifically, we will document *qualitatively* (off-model) the potential effectiveness of the following factors and strategies:

- Possible effects of self-selection of the Hacienda TOD by households who prefer not to drive.
- Synergistic effects among existing Hacienda residents and workers: e.g., the proposed TOD improvements to the park could enable Hacienda workers and residents to shift away from the auto.
- Household income and car ownership levels.
- Other demographic variables.
- Parking regulations that may encourage alternatives to driving.
- Potential additional transportation options, such as "casual carpool" incentives at the Dublin-Pleasanton BART station.
- "Walk-to-work" incentives for residents of Hacienda housing.

At the conclusion of the Interim analysis, potential means of incorporating some of these measures into the final quantitative model procedure will be explored with the City and Core Stakeholders. Once the effects of these qualitative strategies are quantified, they may become the basis of additional mitigation measures.

ATTACHMENT 1: Draft Land Use Development Scenarios

Hacienda Business Park
Land Use Development Scenarios

DRAFT

			Scenario 1 - Maximum Development				Scenario 2 - Moderate Development [7]				Scenario 3 - Minimum Development			
Core Group Stakeholder	Total Site Acres[1]	Acres within Core Planning Area[2]	Density (DU/Acre)	Dwelling Units	Commercial Sq. Ft.	Office Sq. Ft.	Density (DU/Acre)	Dwelling Units	Commercial Sq. Ft.	Office Sq. Ft.	Density (DU/Acre)	Dwelling Units	Commercial Sq. Ft.	Office Sq. Ft.
BART[3]	14.93	6.95	50	348	10,000	0	-	0	10,000	210,000	-	0	5,000	210,000
WP Carey (1)[4]	28.73	8.41	60	505	50,000	0	52	437	40,000	0	42	353	10,000	0
WP Carey (2)		8.17	55	449		0	49	400		0	37.5% 18 62.5% 40	55 204		0
Roche	33.36	12.40	45	558		0	28	347		0	24	298		0
CarrAmerica [6]	60.90	10.50	40	420	20,000		38	400	15,000		28	294	10,000	
Nearon	5.59	5.59	25	140	0	0	14.5	81	0	0	12	67	0	0
Total	143.51	52.02	-	2420	80,000	0	-	1665	65,000	210,000	-	1271	25,000	210,000
Alternative Assumptions														
			A. Only analyze with the full buildout of the current Hacienda office program (9.8M SF total, with an additional 725,000 SF)				A.Analyze with the full buildout of the current Hacienda office program (9.8M SF total, with an additional 758,000 SF) B. Analyze only with the additional 300,000 SF on the CarrAmerica non-residen				A.Analyze with the full buildout of the current Hacienda office program (9.8M SF total, with an additional 833,000 SF) B. Analyze only with the additional 300,000			

Notes:

1. Source - Hacienda Owners Association, Site Data, 2005
2. Source - City of Pleasanton GIS Parcel Data and Aerial Photography, 2005
3. The BART acres within the core planning area excludes the area needed for a 5 story parking garage for BART site (approximately 2.43 acres); and easements, internal circulation, and pedestrian plazas (approximately 5.55 acres).
4. The WP Carey developable acreage does not include the southern portion of the site that is potentially developable for office, retail, or structured parking, which consists of 2
5. For Scenario 3, the WP Carey(2) site is envisioned as having 2 separate density products within the same site, indicated by % of site.
6. 10.5 acres for residential, in additiona the development of approximately 300,000 square feet of newly entitled office space is envisioned for the CarrAmerica site, consisting of approximately two 25,000 square feet floorplates on 1.5 acres.
7. Based on preferred program from core stakeholders.

Attachment 2
Hacienda TOD
Internal Capture Estimates

Scenario 1

		Land Use			Internalization	
	TAZ	Residential	Retail	Office	PM	Daily
BART Site	292	348	10	0	10%	3%
WP Carey	54	954	50	581	10%	4%
Roche	62	558	0	409	9%	1%
CarrAmerica	21	420	20	987	8%	2%
Nearon	70	140	0	106	9%	1%

Scenario 2

		Land Use			Internalization	
	TAZ	Residential	Retail	Office	PM	Daily
BART Site	292	0	10	210	1%	1%
WP Carey	54	837	40	581	9%	4%
Roche	62	347	0	409	9%	1%
CarrAmerica	21	400	15	987	8%	2%
Nearon	70	81	0	106	9%	1%

Scenario 3

		Land Use			Internalization	
	TAZ	Residential	Retail	Office	PM	Daily
BART Site	292	0	5	210	0%	1%
WP Carey	54	612	10	581	9%	2%
Roche	62	298	0	409	9%	1%
CarrAmerica	21	294	10	987	7%	1%
Nearon	70	67	0	106	8%	1%

Note: Scenarios represent land use from the Buildout scenario with the proposed Hacienda TOD land use options.

Attachment 3
Hacienda TOD Vehicle Trip Reduction Factors

Residential

Trip Purpose

	Within 1/2 mile			From 1/2 mile - 1 mile		
Work	% Auto**:	66.3	BATS[1]	% Auto**:	72.7	BATS[3]
Daily trips*	% Auto/Superdistrict 15***:	94.7	BATS[2]	% Auto/Superdistrict 15***:	94.7	BATS[2]
25%	% Auto Reduction:	30.0%		% Auto Reduction	23.2%	
	Trip Generation Reduction:	7.5%		Trip Generation Reduction:	5.8%	
Non-Work	% Auto**:	63.6	BATS[1]	% Auto**:	70.6	BATS[3]
Daily trips*	% Auto/Superdistrict 15***:	82.2	BATS[2]	% Auto/Superdistrict 15***:	82.2	BATS[2]
75%	Reduction:	22.6%		Reduction:	14.1%	
	Trip Generation Reduction:	17.0%		Trip Generation Reduction:	10.6%	

TOTAL RESIDENTIAL REDUCTION
1/2 mile from BART: 24.5% 1/2 to 1 mile from BART: 16.4%

Office

Trip Purpose

	Within 1/2 mile			Beyond 1/2 mile
All Trips	% Auto**:	79.4	BATS[1]	NO REDUCTION
	% Auto/Pleasanton:	92.9	CTPP[5]	
	% Auto Reduction:	14.5%		
	Trip Generation Reduction	14.5%		

TOTAL OFFICE REDUCTION
1/2 mile from BART: 14.5% 1/2 to 1 mile from BART: 0.0%

Retail

Trip Purpose

	Within 1/2 mile	Beyond 1/2 mile
All Trips	NO REDUCTION	NO REDUCTION

TOTAL RETAIL REDUCTION
1/2 mile from BART: 0.0% 1/2 to 1 mile from BART: 0.0%

Sources:

1 Summary_EastBayBART_halfmile.xls
2 BATS2000_34SuperD_TripTableData.xls
3 Summary_EastBayBART_halfmile_to_onemile.xls
4 CTPP2000_California_PlaceFlow_SelVars_fromPton.xls
5 CTPP2000_California_PlaceFlow_SelVars_toPton.xls

Notes:

* Daily trip purpose calculated by taking the number of home-based work trips over total daily trips, as reported by the BATS Summary of households within a mile of BART

** Households and jobs within 1/2 mile of select East Bay BART Stations (Excludes 12th Street, 19th Street, Downtown Berkeley, and Walnut Creek stations)

*** Superdistrict 15, based on 1980 Census Tracts and 550 TAZs, includes Pleasanton, Livermore and Dublin

ATTACHMENT 4: City of Pleasanton Travel Demand Model – Flow Chart

Module	Description	Input Files	Output Files
USER INPUTS			
	Set working directory and file prefixes		
	Select model year		
	Toggle model modules to run		
UPDATE HIGHWAY NETWORK			
	Update line layer with facility type data		
	Set speeds, times, capacities, alphas and betas		
	Set HOV capacity		
	Load turn penalty table and identify active centroids		
TRIP GENERATION			
	Balance Ps & As (Ps and As created outside TransCAD in Excel)		DaPtripsBal.bin
FEEDBACK LOOP…			
Create initial skims			
	Create initial AM assignment trip table		
	Assign initial AM assignment trip table		
	Skim AM "loaded" network		SkimFF.mtx SkimHBW.mtx
	Average free flow and congested flow skims		SkimAvg.mtx
Gravity Model			DaPTT.mtx
Mode Choice Percentages		DaPTT.mtx	DaVTT.mtx
Daily to AM Peak Hour		DaVTT.mtx	AMVTT(raw).MTX
AM Peak Hour Assignment			AM1HrFlows.Bin AM1HrTurns.Bin
Convergence Checks			
END FEEDBACK LOOP			
GRAVITY MODEL			
	K Factor to MTC County to County		
	Rerun Gravity Model w/ K Factors		
MODE CHOICE			
	CCTA Zone to Zone Person Trips to Vehicle Trips	DaPTT.mtx	DaVTT.mtx
CREATE AM PEAK HOUR TRIP TABLE			
	Daily to AM Peak Hour (by purpose)		
	Fratar to ITE Trip Generation (total trips)		
	MTC Peak Hour Adjustments (total trips)		
	Peak Hour Spreading (total trips)		
	Estimate P-based Percentages (by purpose)		
	Adjust HBW to Pleasanton Emp/Res Surveys		
	Adjust volumes in Hacienda TAZs (described in body of Memo)		
	Replace HBLSc with School Trip Table		

Module	Description	Input Files	Output Files
AM PEAK HOUR ASSIGNMENT			
	By Purpose		
	By Internal/External		
CREATE PM PEAK HOUR TRIP TABLE			
	Daily to PM Peak Hour (by purpose)		
	Fratar to ITE Trip Generation (total trips)		
	MTC Peak Hour Adjustments (total trips)		
	Peak Hour Spreading (total trips)		
	Estimate P-based Percentages (by purpose)		
	Adjust HBW to Pleasanton Emp/Res Surveys		
	Adjust volumes in Hacienda TAZs (described in body of Memo)		
PM PEAK HOUR ASSIGNMENT			
	By Purpose		
	By Internal/External		

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MEMORANDUM

Date: April 25, 2006

To: Jeff Knowles – Deputy Director of Transportation and Traffic Engineer
Jerry Iserson – Planning Director
Janice Stern – Principal Planner

From: Richard Lee and Patrick Golier, Fehr & Peers

Subject: ***Hacienda TOD Modeling Procedure – Summary of Proposed Reductions***
WC05-2218

As requested, this provides the City of Pleasanton a summary of the trip generation reductions being proposed by Fehr & Peers as part of the Hacienda TOD Specific Plan. This serves as an addendum to our April 17, 2006 memorandum, which detailed proposed methodologies for our modeling procedures.

INTERIM MODEL APPROVAL

If the following is acceptable, we are seeking written approval from the City of our modeling procedure, including our proposed reductions, for our ***Interim Modeling*** procedure as outlined in the April 17, 2006 memorandum. We recognize that our full model methodology is subject to change, given the release of the City's updated model and further findings and research that might alter our assumptions.

SUMMARY OF PROPOSED TRIP GENERATION REDUCTIONS

The following describes our method of calculating trip generation reductions, summarized on the following attachment.

Step 1 – Adjust for Internal Capture:

Internal capture – total number of trips made within a TAZ (which should have no impacts on area intersections). The percent internal capture will be based on the particular land use mix in the TAZ, per the ITE *Trip Generation Handbook* (2001).

The following compares the range of internal capture (%) by Hacienda TAZ in the City's 1996 General Plan model versus what it proposed based on the proposed Hacienda TOD land use scenarios:

- Ranges (in Hacienda TAZs):
  - City of Pleasanton 1996 Model – 0.04% - 9.1%
  - Interim Model (proposed) – 0.0% - 10.0%

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Step 2 – Adjust for Mode Split:

Reduce total external trips by TAZ based on trip-type and TAZ distance from BART. It is based on recent MTC data (BATS survey) and reductions in percent of auto share from the baseline (BATS Superdistrict 15, which includes Pleasanton, Livermore, and Dublin).

Comparisons of the BATS baseline auto share versus the City's 2003 Commute Survey are below. The advantage of BATS versus City Commute Survey data is that BATS includes mode split by trip-type, which will be used to more accurately make trip generation reductions by land use type.

- % Auto from Residential to Work:
  - City of Pleasanton 2003 Commute Survey – 92.2%
  - BATS Superdistrict 15 – 94.7%
- % Auto from Residential to Non-Work:
  - City of Pleasanton 2003 Commute Survey – N/A
  - BATS Superdistrict 15 – 82.2%
- % Auto from Office (all trips):
  - City of Pleasanton 2003 Commute Survey – N/A
  - BATS Superdistrict 15 – 92.9%

Proposed trip generation reductions are calculated by comparing baseline auto mode share to auto mode share by trip type and distance from BART (based on households and jobs within ½ and 1 mile distance from non-downtown East Bay BART stations).

Step 3 – Adjust for Urban Design:

Final reductions in trip generation will be made to account for urban design improvements throughout the park that would promote further mode split shifts. Reductions will only be applied to those TAZs within a 1 mile distance to BART and proposed retail. Reductions would range from 0% - 4%, although most applicable TAZs would only receive a 2% reduction.

APPROVAL REQUEST

We welcome your comments and thoughts as we proceed. We are eager to begin the Interim Modeling stage of our analysis, which aims to illustrate the relative impacts of the five proposed land use scenarios. It is important that we receive approval from you on our procedure, including trip generation reductions, so that the results of our analysis will ultimately be acceptable to the City.

If our Interim Modeling methodology is acceptable to the City, please take a moment to sign the attached form and return to Patrick Golier by e-mail (p.golier@fehrandpeers.com) or by fax (925/933-7090). We would appreciate as timely a response as possible.

Thanks for your continued time and consideration.

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Hacienda TOD Specific Plan
Interim Modeling Methodology
City of Pleasanton Approval

I, _____ , of the City of Pleasanton, give approval to Fehr & Peers on the following traffic methodology for the Interim Modeling procedure associated with the Hacienda TOD Specific Plan as detailed in this letter and the memorandum from Fehr & Peers dated April 17, 2006.

- Internal Capture Adjustments
- Mode Split Adjustments
- Urban Design Adjustments

Fehr & Peers understands that the methodology may change as they begin their full modeling procedure once the 2006 City of Pleasanton model is released.

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Hacienda TOD Modeling Procedure
Summary of Proposed Trip Generation Reductions

Step 1 - Adjust for Internal Capture (from Attachment 2)

Reduce total number of trips (per TAZ) by ITE Internal Capture Estimate

- Represents number of trips internal to zone
- Range: 0% - 10%
- Based on land use mix per TAZ
- Source: ITE

Step 2 - Adjust for Mode Split (from Attachment 1)

Reduce number of external trips (to TAZ) by TOD Vehicle Trip Reduction Factor

- Represents reduction in external trips (from TAZ) from TOD mode split shifts
- Based on trip-type and TAZ distance from BART
- Source: MTC BATS (2006)

Residential - within 1/2 mile

Work trips (25% of total trips):	30.0% auto reduction
Non-work trips (75% of total trips):	22.6% auto reduction
Weighted avg:	24.5% reduction

Residential - from 1/2 - 1 mile

Work trips (25% of total trips):	23.2% auto reduction
Non-work trips (75% of total trips):	14.1% auto reduction
Weighted avg:	16.4% reduction

Office - within 1/2 mile

All trips:	14.5% auto reduction

Office - beyond 1/2 mile

NO REDUCTION

Retail - all distances

NO REDUCTION

Step 3 - Adjust for Urban Design

- Represents reduction in external trips (from TAZ) from urban design improvements that promote further mode split shifts
- Based on distance to BART and proposed retail
- Range: 0% - 4%
- Source: U.S. Environmental Protection Agency

Range of Reduction in Vehicle Trips (all 3 steps applied):

Residential Development in mixed-use TAZ within 1/2 mile of BART: 38.5%
Residential Development in mixed-use TAZ within 1 mile of BART: 30.4%
Office development in TAZ within 1/2 mile of BART: 14.5%
Retail development in mixed-use TAZ within 1/2 mile of BART: 0%
Residential development in mixed-use TAZ 1-1/2 miles from BART: 0%

Update to April 25, 2006 Memo Revision date: 5/23/06
Interim Modeling Procedure

The following list further summarizes Fehr & Peers' interim modeling procedure for the Hacienda Specific Plan only. The purpose of this procedure is to compare the relative impacts of the Hacienda land use scenarios. It does not represent the procedure for our full model run which will be completed once the City's model has been updated.

- Fehr & Peers is building a "localized" model (Hacienda Park and nearby freeway exchanges) that will use cumulative traffic volumes from the Bernal Specific Plan.
    - The model will not take into account regional cut-through traffic or peak hour spreading beyond the extent that it was accounted for in the Bernal Specific Plan model
    - It should provide an appropriate representation of Plus Project conditions in and around the Park
    - The procedure will allow Fehr & Peers to compare the relative impacts of the land use scenarios outlined by EDAW
- The Interim Modeling procedure will be conducted in the following manner:
    - Land use (for each scenario) and intersection turn movement volumes will be entered into Traffix
    - Applicable trip generation reductions will be applied as outlined in the 4/17/06 and 4/25/06 memos.
        - An internal capture rate will be calculated (per ITE) for each TAZ and will be based on each zone's mix of land uses.
            - Only those TAZs with land uses that are changing as per the land use scenarios will receive internal capture and other TOD trip generation reductions.
    - Resulting Plus Project volumes will be exported into Synchro for a resulting analysis of signalized intersections
        - These intersections will include those within the Hacienda Business Park and the freeway interchanges
- We will analyze and compare the results against Janice's full model run using the existing 1996 G.P. model
    - We would like a better understanding of what land use assumptions this full model run will include
- If the results from the full model run don't fully capture some of the TOD findings from our Interim Modeling procedure, Fehr & Peers will recommend to the City and Dowling to make adjustments in the future model to account for some of the Hacienda Specific Plan's TOD elements.

Hacienda Specific Plan

Hacienda TAZ	Scenario 1: Maximum Development Scenario Internal Capture Reduction			Scenario 2A: Moderate Development Internal Capture Reduction			Scenario 2B: Moderate Development w/ Office Internal Capture Reduction			Scenario 3A: Minimum Development Internal Capture Reduction			Scenario 3B: Minimum Development w/ Office Internal Capture Reduction		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
21	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
23	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
52	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
53	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
54	5%	5%	5%	5%	5%	4%	5%	5%	4%	2%	2%	2%	2%	2%	2%
55	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
56	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
57	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
58	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
59	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
61	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
62	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
63	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
64	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
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66	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
69	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70	1%	1%	1%	1%	1%	2%	1%	1%	2%	1%	1%	2%	1%	1%	2%
71	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
72	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
73	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
74	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
75	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
76	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
77	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
78	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
79	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
81	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
84	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
107	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
112	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
113	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
115	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
146	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
236	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%