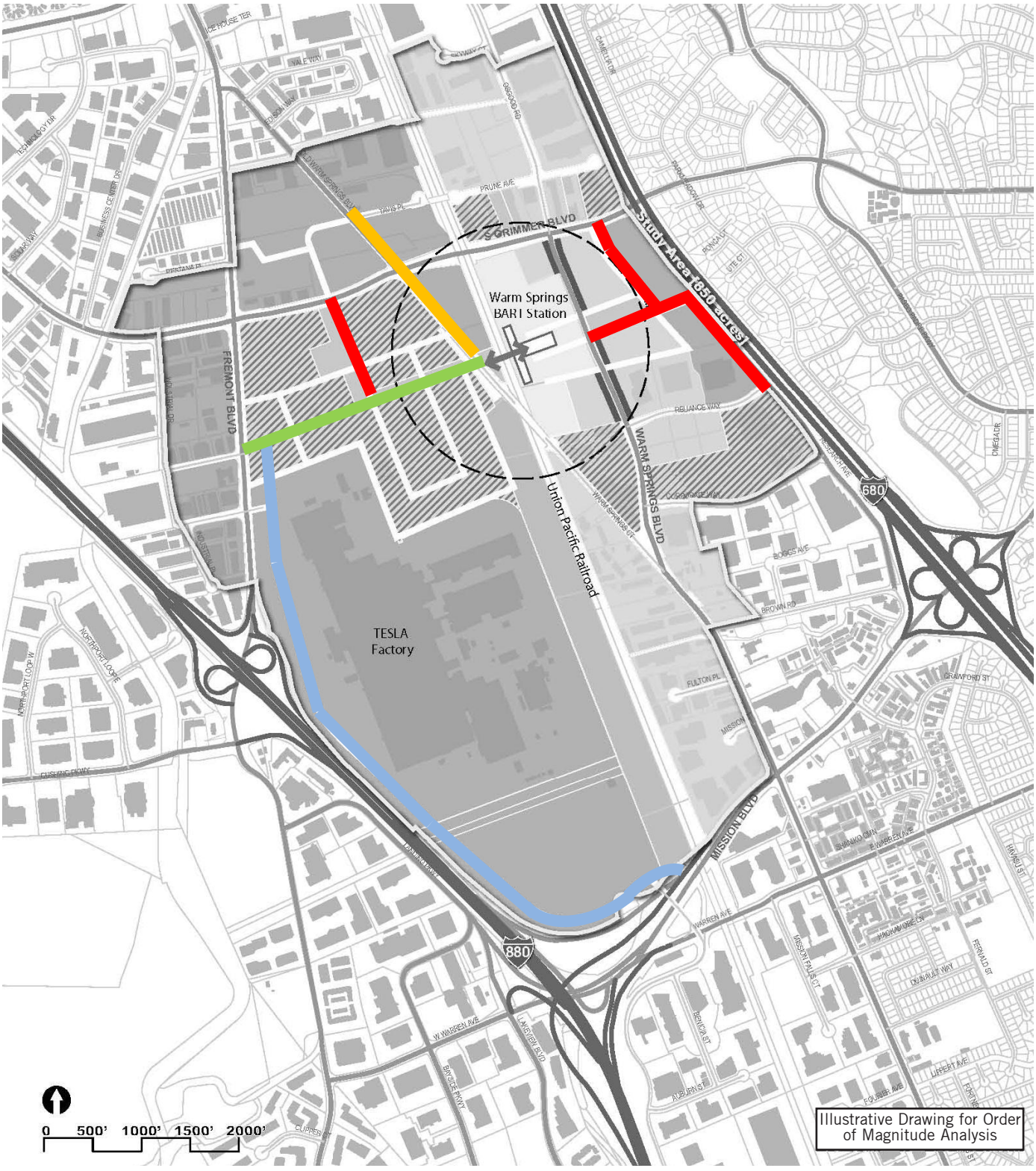
Figure 10: Fremont Study Area Transportation Strategies

	Alternative 1	Alternative 2	Alternative 3
Traffic and Roadway Improvements			
Interchange Improvements			
I-680 / Mission Boulevard interchange	Tier 1	Tier 1	Tier 1
I-680 / Auto Mall Parkway interchange	Tier 1	Tier 1	Tier 1
I-880 / Fremont Boulevard interchange	Tier 1	Tier 1	Tier 1
Intersection Improvements			
South Grimmer Boulevard / Warm Springs Boulevard / Osgood Road	Tier 1	Tier 1	Tier 1
Fremont Boulevard / South Grimmer Boulevard	Tier 1	Tier 1	Tier 1
New Signals			
Fremont Boulevard / Ingot Street	Tier 1	Tier 1	Tier 1
South Grimmer Boulevard / New N/S Road (Parcel 1)	Tier 1	Tier 1	Tier 1
Warm Springs Boulevard / Reliance Way	Tier 1	Tier 1	Tier 1
Warm Springs Boulevard / Corporate Way	Tier 1	Tier 1	Tier 1
Local Street Connections & New Streets			
Extend Research Avenue to E/W road connecting to BART Station and provide connection to Grimmer Boulevard	Tier 1	Tier 1	Tier 1
Convert the Tesla Factory access road to a public access road	Tier 1A	Tier 1A	Tier 1A
Extend Ingot Street east to BART station	Tier 1	Tier 1	Tier 1
Add N-S street between Ingot Street extension and Grimmer Boulevard (on Parcel 1)	Tier 1	Tier 1	Tier 1
Widen and add streetscape features to Lopes Court (this is considered a Tier 1A improvement south of Grimmer Boulevard, and a Tier 1 improvement north of Grimmer)	Tier 1A or 1	Tier 1A or 1	Tier 1A or 1
Transit Improvements			
Bus stop enhancements (shelters, benches, lighting, real-time passenger information)	Tier 1	Tier 1	Tier 1
Circulator shuttle bus	Tier 2	Tier 2	Tier 2
Evaluate Fremont Boulevard streetcar or BRT	Tier 2	Tier 2	Tier 2
Increase bus frequencies on Warm Springs Boulevard	Tier 2	Tier 2	Tier 2
Pedestrian Improvements			
BART west side pedestrian access bridge	Tier 1A	Tier 1A	Tier 1A
Streetscaping on all new Backbone Streets	Tier 1A or 1	Tier 1A or 1	Tier 1A or 1
Provide pedestrian improvements at key intersections	Tier 1	Tier 1	Tier 1
Bicycle Improvements			
East-West Bicycle Connections			
Class II bike lanes on Ingot Street and new BART Station E/W Road	Tier 1	Tier 1	Tier 1
I-880 bike/ped overcrossing from Tesla Factory Access Road to Landing Parkway	N/A	Tier 1	Tier 1
Tesla Factory canal bike/ped pathway	N/A	Tier 2	Tier 2
North-South Bicycle Connections			
Class II bike path on Research Avenue	Tier 1	Tier 1	Tier 1
Railroad alignment pathway	N/A	Tier 2	Tier 2
Class II path extension on Fremont Boulevard (from Ingot Street south across I-880) and Fremont Boulevard / I-880 interchange bike access improvements	Tier 2	Tier 2	Tier 2

Notes:
1. Highlighted blue cells indicate improvement applies to a particular alternative
2. Streetscaping includes ADA compliant sidewalk furniture, pedestrian amenities, on-street parking and landscaping

Figure 11: Utility Infrastructure Improvements: Land Use Alternative 2 (Innovation Campus/Residential TOD)



	UTILITY IMPROVEMENTS			
	Sewer Main	Water Main	Storm Drain	Joint Trench
New 2-Lane Road	FULL	FULL	FULL	FULL
New 4-Lane Road	FULL	FULL	FULL	FULL
2-Lane Tesla Frontage Road Conversion	650 LF	FULL	FULL	FULL
2-Lane Lopes Court Widening	N/A	HALF	HALF	FULL

Notes:
"FULL" represents improvements required over full length of street;
"HALF" represents improvements required over half length of street;
"X LF" represents improvements required over a specific distance;
"N/A" represents no improvements required.

UTILITY INFRASTRUCTURE IMPROVEMENTS

The Study Area benefits from a well-developed regional water, sewer and storm infrastructure network that has sufficient capacity to accommodate the three alternatives' proposed land uses and densities. This is yet another benefit to the high job growth industries and technology employers who are being targeted for this area.

New utility infrastructure improvements are substantially limited to extending facilities to the various development parcels within new streets or streets identified by the traffic study to be improved.

The map on the facing page (Figure 11) locates all of the anticipated roadway changes and correlates them with utility improvements in terms of sewer mains, water mains, storm drains and joint trenches. The map is of Alternative 2, pictured as the plan for reference for all three alternatives. Cost for both transportation and utility infrastructure are then combined in Figure 12 for each of three Tiers of investment. All storm drain, sanitary, sewer, water and joint trench costs are therefore combined here with costs for new roads.

Tier 1A improvements are the same for all three alternatives, but costs for Tier 1 and Tier 2 vary by alternative. For a definition of the three Tiers, see the previous section on Transportation Improvements.

Figure 12: Infrastructure Cost Analysis

	TIER 1A IMPROVEMENTS		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Total Construction Costs	$23,500,000	$23,500,000	$23,500,000
Design, Soft Costs, Mapping (at 15%)	$3,525,000	$3,525,000	$3,525,000
Inspection, Staking, C/A (at 10%)	$2,350,000	$2,350,000	$2,350,000
Project Management (at 5%)	$1,175,000	$1,175,000	$1,175,000
TIER 1A GRAND TOTAL	**$30,550,000**	**$30,550,000**	**$30,550,000**

	TIER 1 IMPROVEMENTS		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Total Construction Costs	$82,150,000	$97,150,000	$97,150,000
Design, Soft Costs, Mapping (at 15%)	$12,322,500	$14,572,500	$14,572,500
Inspection, Staking, C/A (at 10%)	$8,215,000	$9,715,000	$9,715,000
Project Management (at 5%)	$4,107,500	$4,857,500	$4,857,500
TIER 1 GRAND TOTAL	**$106,795,000**	**$126,295,000**	**$126,295,000**

	TIER 2 IMPROVEMENTS		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Total Construction Costs	$625,000	$2,173,000	$2,173,000
Design, Soft Costs, Mapping (at 15%)	$93,750	$325,950	$325,950
Inspection, Staking, C/A (at 10%)	$62,500	$217,300	$217,300
Project Management (at 5%)	$31,250	$108,650	$108,650
TIER 2 GRAND TOTAL	**$812,500**	**$2,824,900**	**$2,824,900**

Notes:

1 Estimate based on Fehr & Peers November 17, 2011 South Fremont / Warm Springs Area Studies Transportation Infrastructure Improvements and associated Land Use Alternative Tier 1 Improvement Exhibits

2 All storm drain, sanitary sewer, water and joint trench are included in $/LF cost for new roads

3 Cost associated with Item D2 (Tesla Frontage Road) does not include land acquisition costs (estimated ROM of $6M)

FINANCIAL ASSESSMENT

A financial feasibility analysis was designed and conducted to characterize potential infrastructure financing issues associated with the build-out of three South Fremont/Warm Springs Study Area land use alternatives and the associated "backbone" infrastructure needs. The analysis drew conclusions at the Study Area-wide level based on the transportation and infrastructure analysis and findings.

Technical Findings

The key technical findings of the financial assessment include:

1. Substantial investment in new infrastructure will be required to serve new development under build-out of all three land use alternatives, estimated between $138 million and $160 million depending on the alternative.
2. The majority of these costs is associated with interchange improvements and automobile, pedestrian, and bicycle connections.
3. Even with significant infrastructure funding from Federal/State and regional sources, new development in the Study Area will need to fund substantial infrastructure cost, including local streets and associated utilities, as shown in Figure 13.
4. There is no one land use alternative that is clearly superior based on this preliminary financial assessment; the City's financing strategy should be weighed against its other policy considerations.
5. Feasibility of the infrastructure financing will depend on the level of land values generated within the Study Area. An initial test of the Study Area's financing capacity relative to infrastructure and capital improvements obligations suggests feasibility challenges could occur if development and land values are at the lower end of the potential value range.
6. The City's existing development impact fee schedule suggests that new development in the Study Area would also need to provide substantial funding for its fair share of other citywide infrastructure and capital facilities improvements.
7. The fair share contributions to citywide capital improvements through the City's current development impact fee structure are substantive. Reduction or elimination of this overall funding gap could be possible with more detailed consideration of the appropriate credits, reimbursements and discounts associated with Study Area. The new development impact fee program will need to address this issue.
8. Reduction in scale of the infrastructure program, such as Tier 2 improvements, could modestly reduce the funding gap.
9. Like other large-scale brownfield redevelopment projects, additional public financing such as an Infrastructure Financing District may be necessary to support the infrastructure and capital improvements envisioned for the Study Area.

10. Without the regional funding through the passage of Measure B sales tax increase and extension, infrastructure financing will be substantially more difficult and/or the scale of the infrastructure program may have to be reduced.

11. Development timing will be an important determinant of the Study Area's infrastructure financing capacity. The timing of the attraction of new uses/businesses to the Study Area is uncertain and will depend on the pace of the market recovery.

Figure 13: Total Infrastructure Development Cost Allocation

Land Use	Tier	Total Cost	Cost Allocation Assumptions		
			Project	Regional (1)	State/Federal
Interchange Improvements (2)					
I-680 / Mission Blvd Interchange	Tier 1	$26,000,000	$0	$26,000,000	$0
I-680 / Automall Pkwy Interchange	Tier 1	$39,000,000	$0	$3,900,000	$35,100,000
I-680 / Fremont Blvd Interchange	Tier 1	$19,500,000	$0	$1,950,000	$17,550,000
Subtotal		$84,500,000	$0	$31,850,000	$52,650,000
Local Street and Intersection Improvements					
South Grimmer Blvd / Warm Springs Blvd	Tier 1	$390,000	$390,000	$0	$0
Fremont Blvd / South Grimmer Blvd	Tier 1	$390,000	$390,000	$0	$0
Subtotal		$780,000	$780,000	$0	$0
New Traffic Signals (3)					
Fremont Blvd / Ingot St	Tier 1	$325,000	$162,500	$162,500	$0
South Grimmer Blvd / New N/S Road (Parcel 1)	Tier 1	$325,000	$162,500	$162,500	$0
Warm Springs Blvd / Reliance Way	Tier 1	$325,000	$162,500	$162,500	$0
Warm Springs Blvd / Corporate Way	Tier 1	$325,000	$162,500	$162,500	$0
Subtotal		$1,300,000	$650,000	$650,000	$0
Local Street Connections and New Streets					
2-Lane Research Ave extension to BART and Grimmer	Tier 1	$7,280,000	$3,640,000	$3,640,000	$0
3-Lane Tesla Frontage Rd conversion	Tier 1A	$12,350,000	$6,175,000	$6,175,000	$0
4-Lane Ingot St Boulevard Extension (Fremont Blvd to BART)	Tier 1	$9,100,000	$9,100,000	$0	$0
2-Lane Lopes Ct Widening (UPRR to Travis Pl)	Tier 1A	$3,900,000	$1,950,000	$1,950,000	$0
2-Lane Parcel 1 N-S Extension (Ingot ext. to S Grimmer Blvd)	Tier 1	$3,380,000	$3,380,000	$0	$0
Subtotal		$36,010,000	$24,245,000	$11,765,000	$0
Transit, Bicycle, and Pedestrian Improvements					
Bus Stop Enhancements (shelters, benches, lighting)	Tier 1	$130,000	$65,000	$65,000	$0
BART west side pedestrian access bridge	Tier 1A	$14,300,000	$0	$14,300,000	$0
Pedestrian improvement at key intersections	Tier 1	$325,000	$162,500	$162,500	$0
Tesla Factory canal bike/ped pathway	Tier 2	$1,185,600	$592,800	$592,800	$0
Bike/ped I-880 bridge crossing	Tier 1	$19,500,000	$0	$9,750,000	$9,750,000
Railroad Alignment Pathway	Tier 2	$826,800	$413,400	$413,400	$0
CL II bike path extension on Fremont Blvd (Ingot to I-880)	Tier 2	$812,500	$406,250	$406,250	$0
Subtotal		$37,079,900	$1,639,950	$25,689,950	$9,750,000
TOTAL INFRASTRUCTURE COST		$159,669,900	$27,314,950	$69,954,950	$62,400,000
Allocation		*100%*	*17%*	*44%*	*39%*

(1) Reflects regional funding sources such as Measure B or ACTC.
covering a share of public transit-related costs.
(2) Assumed to be covered by state and federal grants based on the historic funding allocation pattern.
(3) Does not include three traffic signals for which BART and citywide funding has already been identified.

Sources: Perkins + Will; BKF Engineers, and Economic & Planning Systems, Inc.