Plan Santa Barbara
Travel Model Results

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Travel Model Results

Introduction:

- AMEC, Fehr & Peers, Nelson\Nygaard
- 4th meeting in series
- Early result for the DEIR

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Introduction:

- May, 2008 - overview & expectations
- August, 2008 – model assumptions
- March – model calibration achieved, presentation of “No Project”

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2030 Scenarios:

- No Project
- Plan Santa Barbara
- Lower Growth – Alt. 1
- Increased Housing – Alt. 2
- Existing Condition (2008)

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2030 Scenarios Assumptions:

Summary of Policy and Gro		
	Plan Santa Barbara[1]	**No Pr**
Growth Assumptions		
Residential Growth to year 2030 (assumptions for EIR impact analysis)	2,795 net new homes in existing City limits 403 net new homes in Sphere of Influence 3,198 total	2,795 403 3,198
Non-Residential Growth to yr 2030 (Policy limit)	2,000,000 net new s.f. in existing City limits 178,200 net new s.f. in Sphere of Influence 2,178,200 total	2,291,7 178,2 2,469,9
LU Policies and Assumptions		
Limits on Non-Residential Growth (within City to the Year 2030)	Continue existing Measure E policies. Limit non-residential growth to 1.5 million s.f., and separate 0.5 million s.f. for Minor	Continu Limit n s.f. (ren

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2030 Scenarios Assumptions:

- Growth limits
- Height Limits
- MODA Boundary
- TDM/Parking Assumptions

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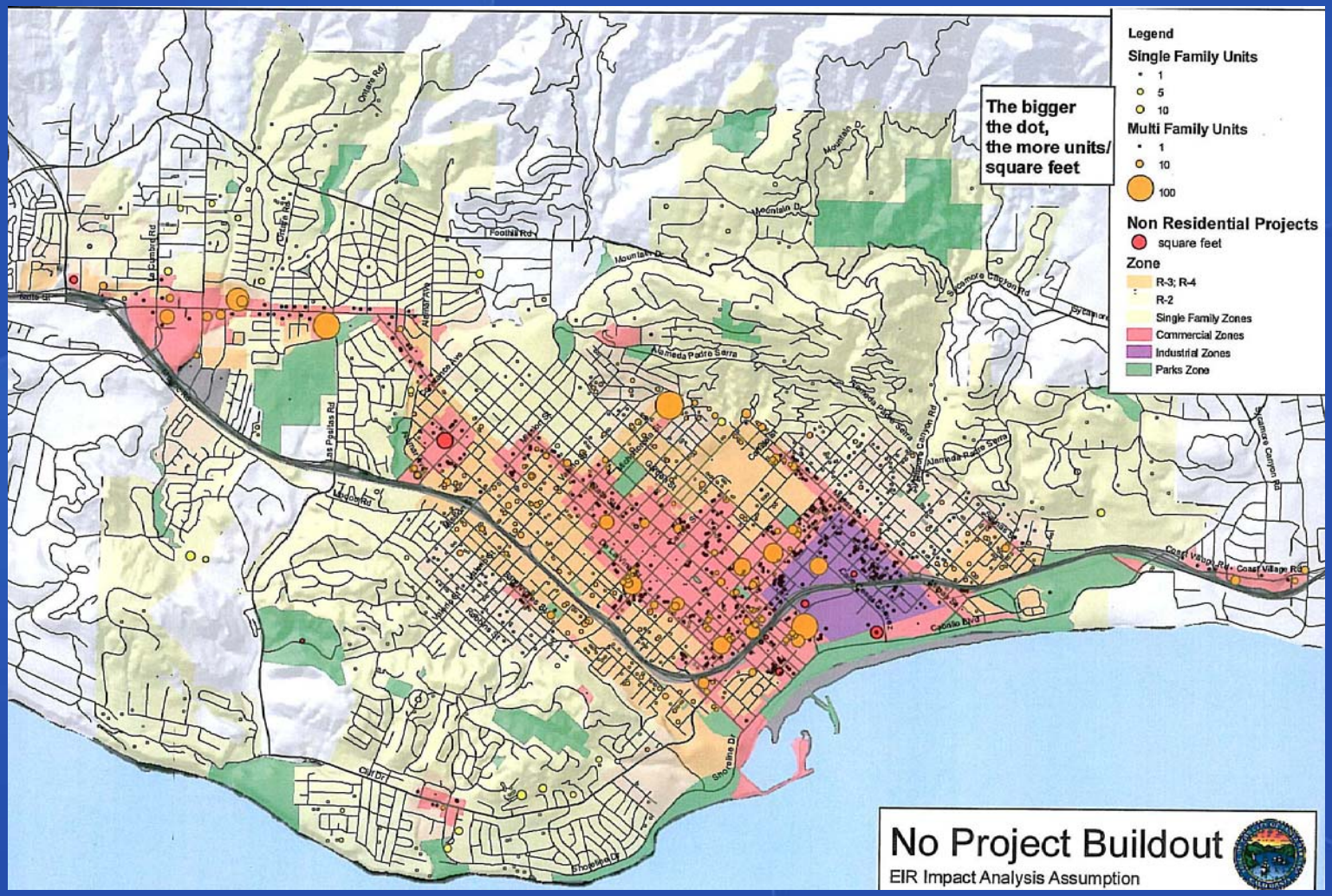
2030 Scenarios Maps:



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Purpose of the meeting:

- Learn more about model performance
- Advantages/limitations
- Help develop better DEIR section
- Refine/articulate transportation vision
- Not limited to current alternatives

Presentation Overview

- Purpose of the trip reduction analysis
- Inputs: TDM policies and programs evaluated
- Methodology used
- Outputs:
  - Stand-alone TDM for each policy/program
  - Aggregate TDM effects for each scenario
- Key Findings

Purpose of the Analysis

- Improve on conventional traffic models
- Complement the 4-D traffic model
- Inform policy decisions on Plan SB General Plan Update
- Allow comparisons between the likely results of different future scenarios
- Planning-level, order-of-magnitude analysis

Policies and Programs Evaluated

- Parking Pricing
- Unbundled Parking
- Subsidized Transit Passes
- Parking Cash-out
- Carsharing
- Safe Routes to School
- Carpooling
- Telecommuting/Alternative Work Schedule
- Transit System Improvements
- Pedestrian and Bike System Improvements
- Reduced/Eliminating Minimum Parking Requirements
- Bikesharing

Land Use Scenario	TDM Programs
No Project	No change in TDM from existing conditions
Plan Santa Barbara	Moderate parking management changes in MODA Modest expansion of subsidized transit passes Modest expansion of parking cash-out program Implementation of a modest carsharing program Moderate increase in telecommuting
Alternative 1	No change in TDM from existing conditions
Alternative 2	Robust parking management program in MODA Robust expansion of subsidized transit passes Robust expansion of parking cash-out program Implementation of a robust carsharing program Large increase in telecommuting

Methodology

1. Defined range of relevant policies/programs from previous analysis and City direction

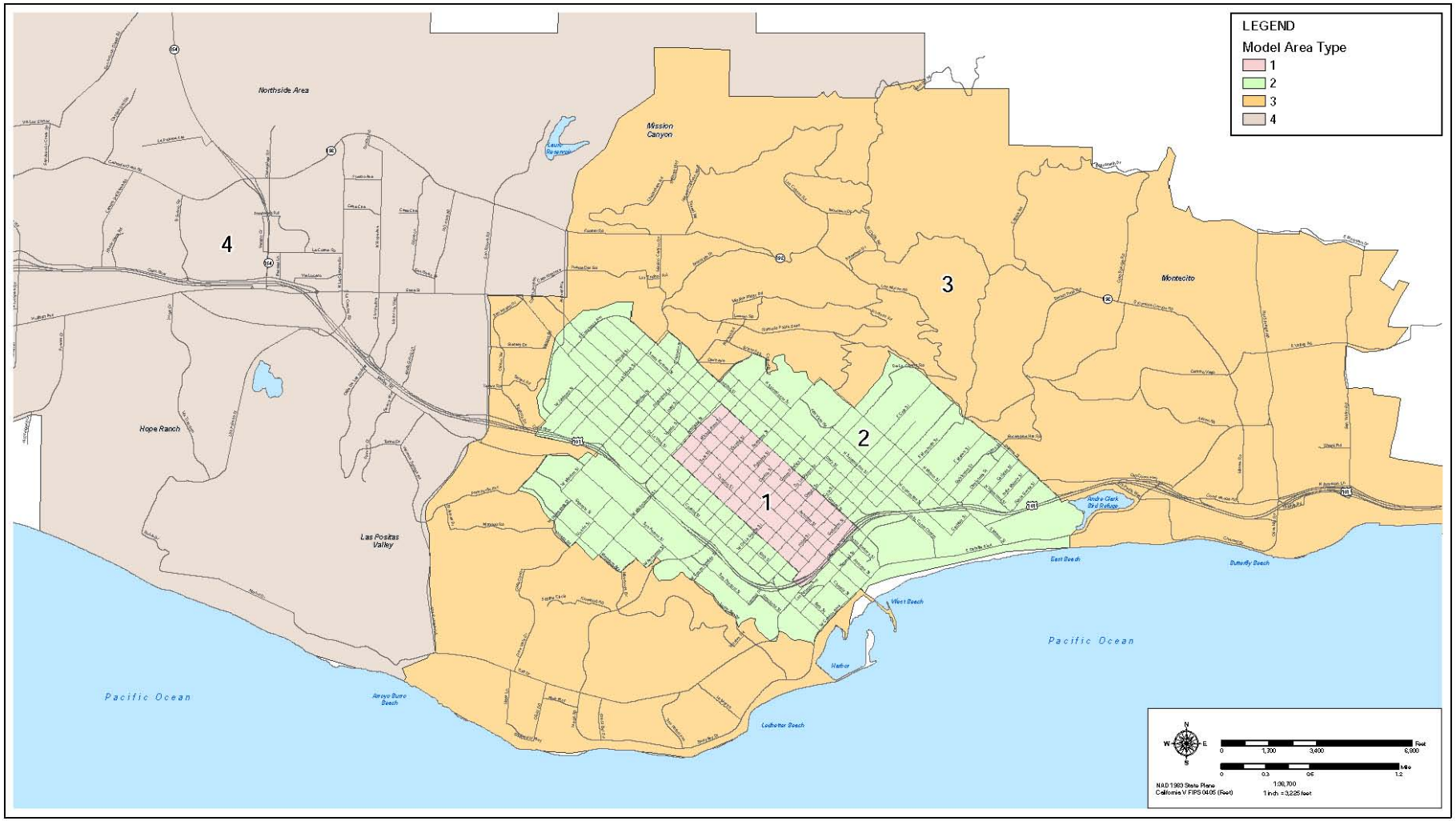
2. Tailor policies/programs for each scenario (example: no change, modest, robust, etc.)

3. Reviewed available literature and studies on effects of travel demand management on:
   - Reducing vehicle trips
   - Reducing vehicle ownership

Methodology

3. Focused on sources determined to be:
   - Reliable and rigorous with empirical data
   - Applicable to Santa Barbara context

4. Estimated stand-alone and aggregate impacts of each policy/program
   - Reduction in auto ownership OR peak-hour trips
   - For each General Plan scenario
   - For each area type (Area 1 & 2 and Area 3 & 4)
   - For each trip type (commuter, non-commuter)
   - Available data didn't allow estimated impacts for all policies
   - Conservative in all calculations and assumptions



FEHR & PEERS
TRANSPORTATION CONSULTANTS

PLAN SANTA BARBARA MODEL AREA TYPES
FIGURE 2

Summary of Estimated Reductions in Peak Hour Vehicle Trips

Plan Santa Barbara Policy Scenarios

Strategy	Trip Type Affected[1]	Reduction in Peak Hour Vehicle Trips[3]				Impact on Household Auto Ownership			
		Plan SB	No Project	Alternative 1	Alternative 2	Plan SB	No Project	Alternative 1	Alternative 2
Reduced or Eliminated Minimum Parking Requirements	Commuter	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Unbundled Parking	Commuter, Non-Commuter	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: 15% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 15% Area 3/4: 0%
Public Parking Pricing	Commuter	Area 1/2: 25.1% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 44.2% Area 3/4: 0%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Bike System Improvements[4]	Commuter	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Pedestrian System Improvements	Commuter, Non-Commuter	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Transit System Improvements	Commuter, Non-Commuter	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Subsidized Transit Passes	Commuter	Area 1/2: 5.5% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 8.2% Area 3/4: 0%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Parking Cash-Out	Commuter	Area 1/2: 3% Area 3/4: 1%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 12% Area 3/4: 6%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Car Sharing	Non-Commuter	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: 12.5% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 12.5% Area 3/4: 5%
Bike Sharing[5]	Commuter, Non-Commuter	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Safe Routes to School[6]	Non-Commuter	Area 1/2: 9% Area 3/4: 3%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 12% Area 3/4: 6%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Carpooling[7]	Commuter	Area 1/2: 5% Area 3/4: 5%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 10% Area 3/4: 10%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Telecommuting/Alternative Work Schedules[8]	Commuter	Area 1/2: 10% Area 3/4: 5%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 0% Area 3/4: 0%	Area 1/2: 25% Area 3/4: 15%	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]	Area 1/2: N/A[2] Area 3/4: N/A[2]
Commuter Trip Impact (Areas 1 & 2)[9]	Commuter	25.4%	0%	0%	45.3%	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Commuter Trip Impact (Areas 3 & 4)[10]	Commuter	5%	0%	0%	15%	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Non-Commuter Trip Impact (Areas 1 & 2)[11]	Non-Commuter	5%	0%	0%	6%	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Non-Commuter Trip Impact (Areas 3 & 4)[11]	Non-Commuter	2%	0%	0%	3%	N/A[2]	N/A[2]	N/A[2]	N/A[2]

Stand-alone TDM Effects

Reduction in Peak-Hour Commuter Vehicle Trips

- **Parking Pricing**
  - Plan SB (Areas 1 & 2) : **25.1%**
  - Alternative 2 (Areas 1 & 2): **44.2%**

- **Telecommuting**
  - Plan SB (Areas 1 & 2): **10%**, (Areas 3 & 4): **5%**
  - Alternative 2 (Areas 1 & 2): **25%**, (Areas 3 & 4): **15%**

- **Subsidized Transit Passes**
  - Plan SB (Areas 1 & 2): **5.5%**
  - Alternative 1 (Areas 1 & 2): **2.7%**
  - Alternative 2 (Areas 1-4) : **8.2%**

Stand-alone TDM Effects

Reduction in Peak-Hour Commuter Vehicle Trips

- **Carpooling**
  - Plan SB (Areas 1-4): **5%**
  - Alternative 2 (Areas 1-4) : **10%**

- **Parking Cash-Out**
  - Plan SB (Areas 1 & 2): **3%**, (Areas 3 & 4) : **1%**
  - Alternative 2 (Area 1 & 2): **12%**, (Area 3 & 4): **6%**

Reduction in Peak-Hour Non-Commuter Vehicle Trips

- **Safe Routes to School**
  - Plan SB (Areas 1 & 2): **9%**, (Areas 3 & 4): **3%**
  - Alternative 2 (Area 1 & 2): **12%**, (Area 3 & 4): **6%**

Aggregate TDM Effects

Reduction in Peak-Hour Vehicle Trips

Area	Trip Type	No Project	Plan SB	Alt 1	Alt 2
1 & 2	Commuter	0%	25.4%	0%	45.3%
3 & 4	Commuter	0%	5%	0%	15%
1 & 2	Non-Commuter	0%	5%	0%	6%
3 & 4	Non-Commuter	0%	2%	0%	3%

- Greatest reduction in commuter and non-commuter trips: Alt 2, Areas 1/ 2 (Plan SB Areas 1/ 2 also show large reductions)
- Smallest reduction in commuter trips: Plan SB, Areas 3/4
- Smallest reduction in non-commuter trips: Plan SB, Areas 3/4
- Extremely conservative (e.g. non-additive to avoid double counting)

Key Findings

- Greatest stand-alone reductions likely to be achieved with:
  - Public parking pricing to discourage commuter parking
  - Parking cash-out programs
  - Subsidized transit pass programs
  - Safe Routes to School
  - Carpooling incentives
  - Telecommuting and alternative work schedules

- Greatest aggregate reductions likely to be achieved in Alt 2, followed by Plan SB

Key Findings

- In reality, many of the policies/programs showing “N/A” or 0% reduction in vehicle trips would in reality help reduce vehicle trips:
  - Ex: Transit service improvements
  - Ex: Bike facility improvements

- This analysis is extremely conservative, likely underestimates the effects of TDM policies and programs and multimodal investments

PLAN SANTA BARBARA

Travel Demand Model Results

City of Santa Barbara

Joint Meeting of the
Planning Commission and
Transportation & Circulation Committee

October 22, 2009

Presentation Overview

- How the Team Completed the Model Runs
- What the Results Show
- What the Results Mean

Key Inputs to Model Runs

- 2030 Land Use Data (Supplied by City Staff)
- Trip Reduction Strategy Assumptions
  - Aligned with Land Use Assumptions
- Transportation Network

Typical 4D Elasticities

	Vehicle Trips Per Capita	VMT per Capita
Density	8%	9%
Diversity	6%	7%
Design	4%	7%
Destinations	17%	35%

Sources: National Syntheses, Twin Cities, Sacramento, Holtzclaw

Effect of the 4D Model Features

- 100 percent increase in density would yield a 4 percent decrease in vehicle trips
- 100 percent increase in diversity would yield a 6 percent decrease in vehicle trips
- 100 percent increase in design would yield a 2 percent decrease in vehicle trips
- 100 percent increase in destination would yield a 3 percent decrease in vehicle trips

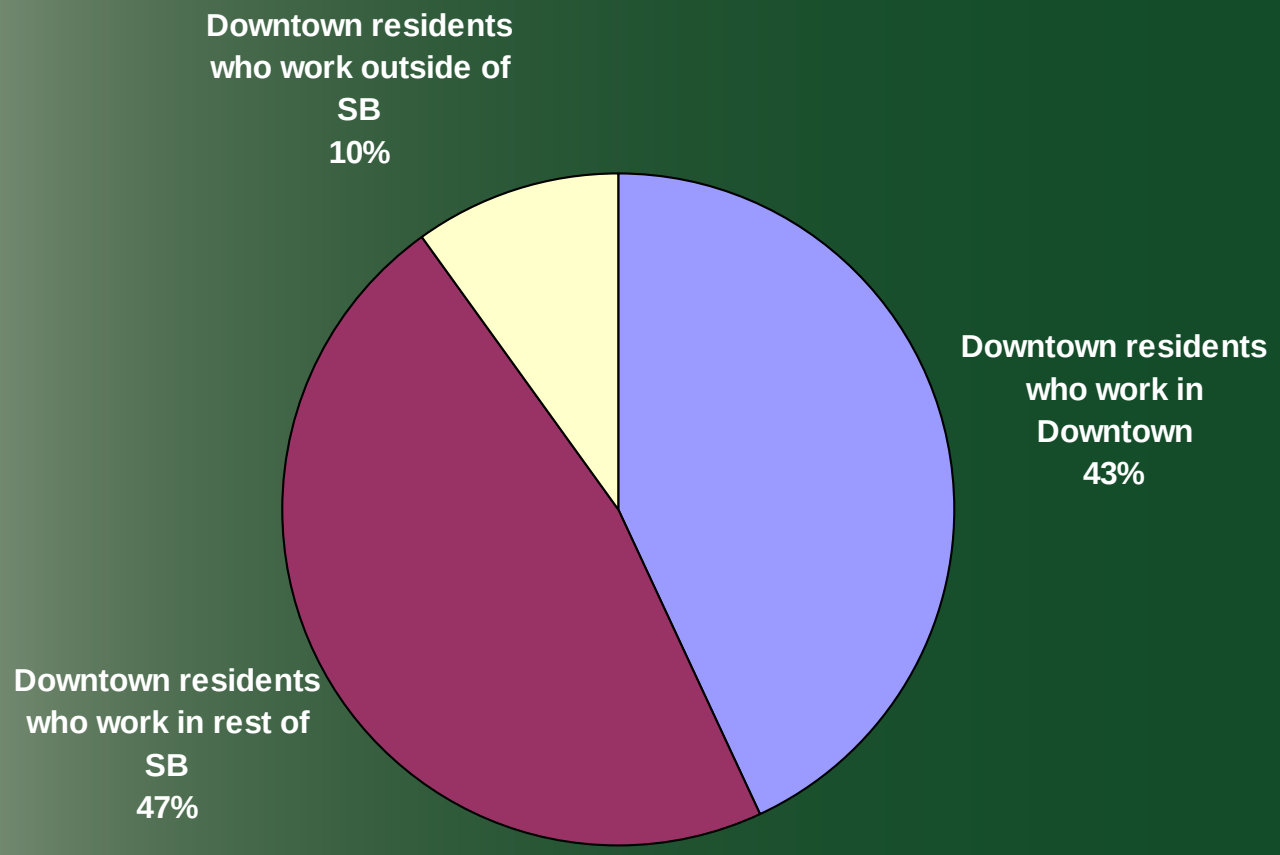
Effect of the 4D Model Features (continued)

- *Plan Santa Barbara* characterized by less than 8 percent increase in population and just over 8 percent increase in employment.
- So the existing built environment plays a significant role in future trip making.
- Santa Barbara's base condition is characterized by beneficial densities, good diversity, excellent design, and a strong role as a destination.

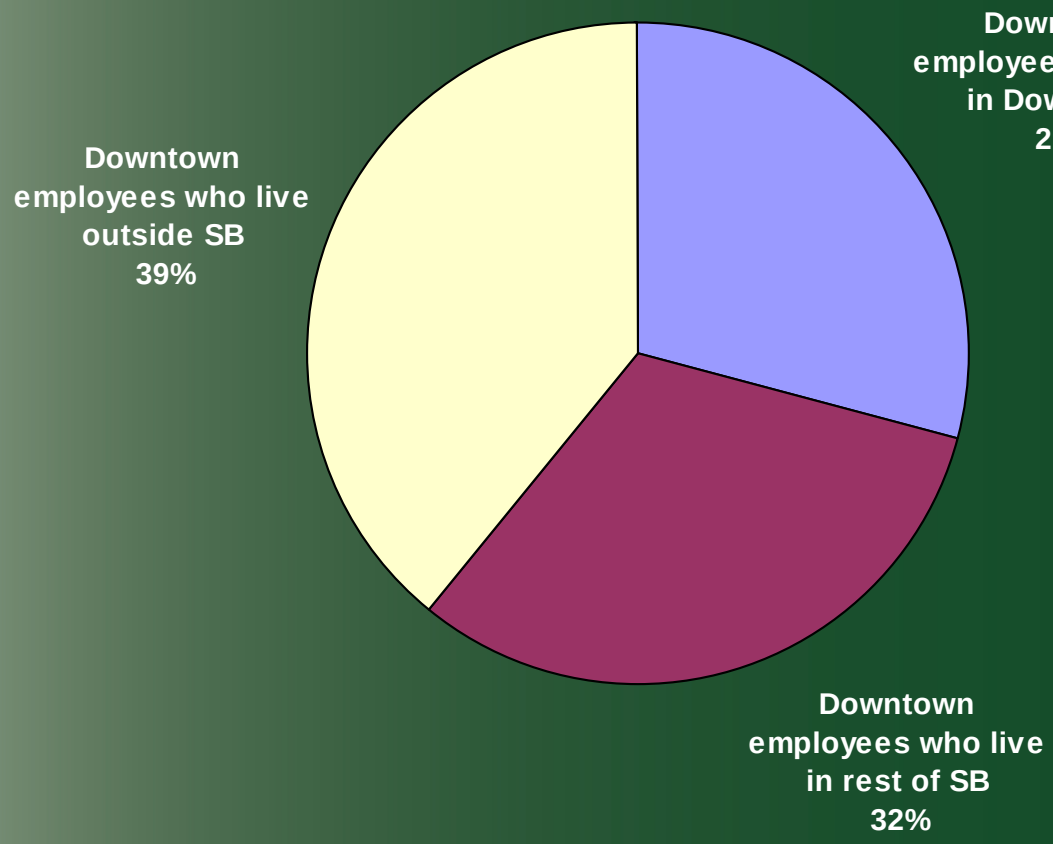
Effect of the 4D Model Features: *Plan Santa Barbara*

- The Ds reduced peak hour volumes by less than 1 percent.
- Trip reduction strategies reduced peak hour volumes *and* daily trips by nearly 5 percent.
- The beneficial relationship between Santa Barbara's existing 4D qualities *and* policy-based trip reduction strategies is significant.

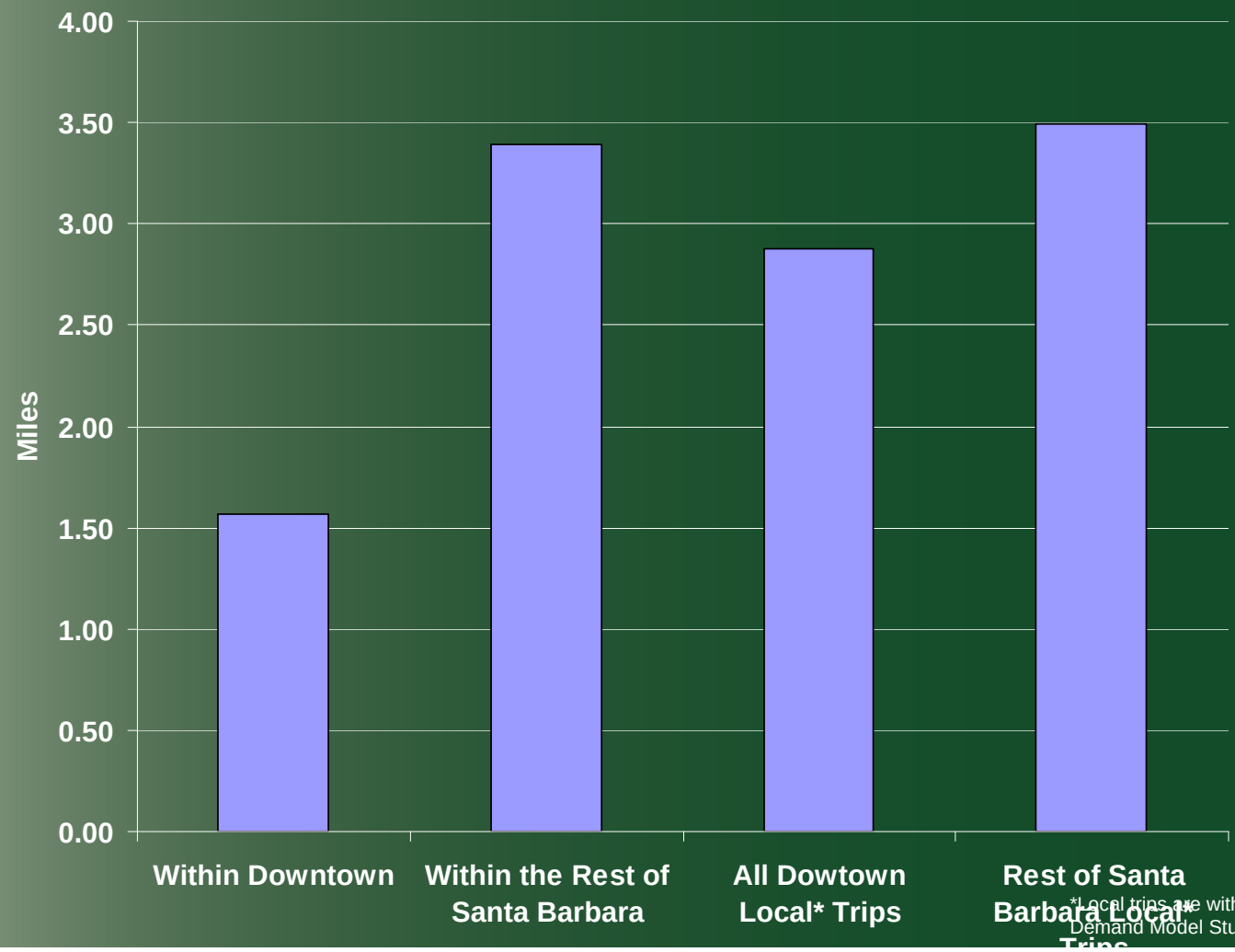
Downtown Resident and Worker Travel Characteristics



Downtown Resident and Worker Travel Characteristics



Downtown Resident and Worker Travel Characteristics



*Local trips are within the Santa Barbara Travel Demand Model Study Area

U.S. 101 Peak Hour Freeway Volume Trends: *Plan Santa Barbara*

- Freeway volumes expected to increase by 12 percent during AM peak and 13 percent during PM peak.
- Fewer Santa Barbara internal trips will use the freeway in the future when compared to existing conditions.
- Santa Barbara share of freeway volumes due to external-internal trips will be higher than current percentages.

U.S. 101 Peak Hour Freeway Volume Trends: *Plan Santa Barbara* (continued)

- Busiest freeway segments will include:
  - North of Mission, northbound AM and southbound PM
  - North of Milpas, northbound AM
  - South of Hot Springs, northbound AM and southbound PM
- Results are similar for No Project

2030 Intersection Level of Service Results

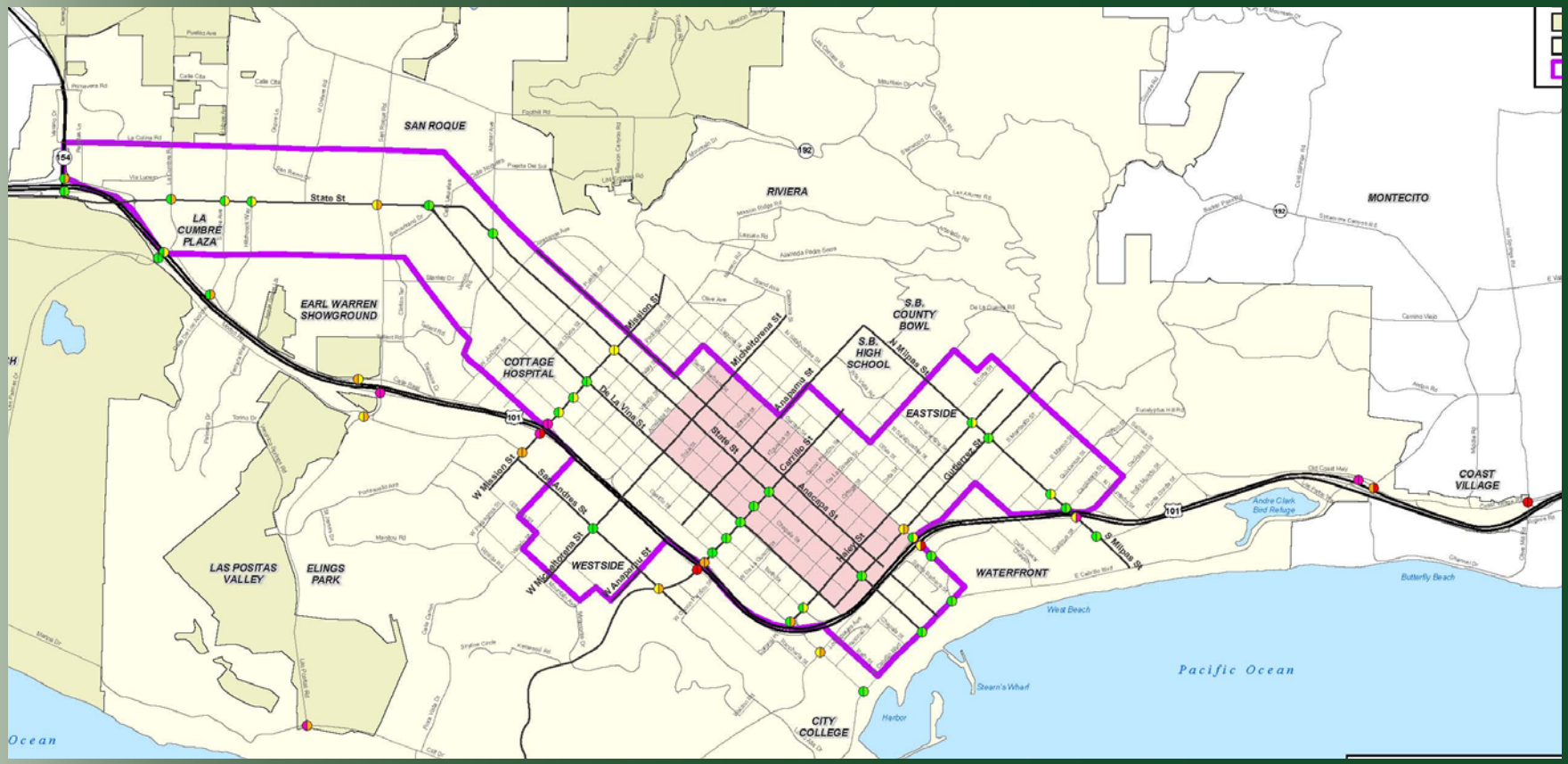
- City's Primary Measure of Effectiveness for the Transportation System
- Target is LOS C (V/C 0.77)
- All 2030 Scenarios Involve Degradation Worse than City Threshold

2030 Intersection Level of Service Results
(continued)

- Most congested intersections are at or near freeway on and off ramps.

- Should not be extrapolated throughout City, since study intersections are selected based upon relative levels of congestion.

2030 Intersection LOS Locational Trends

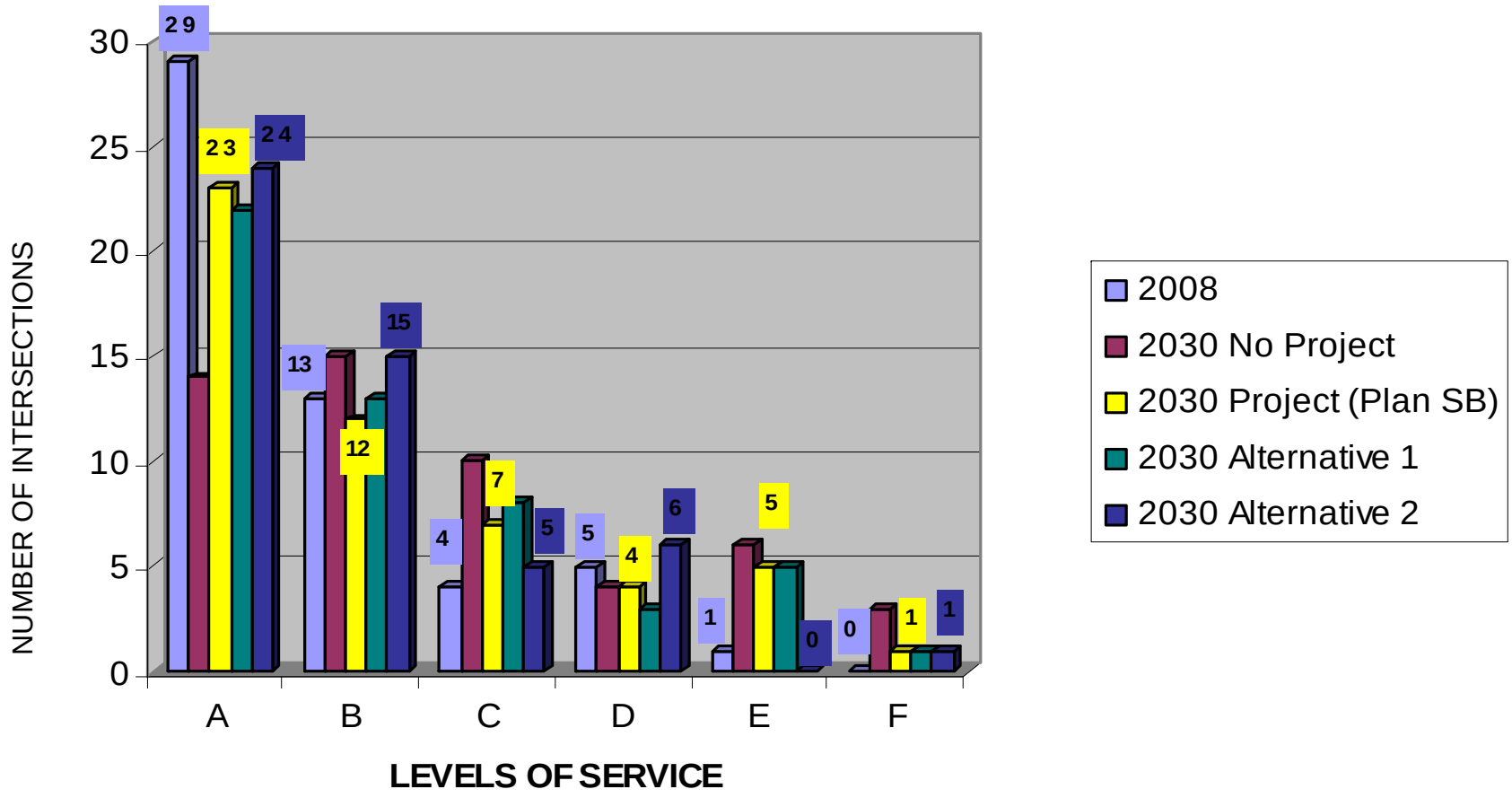


2030 Intersection Level of Service Results
(continued)

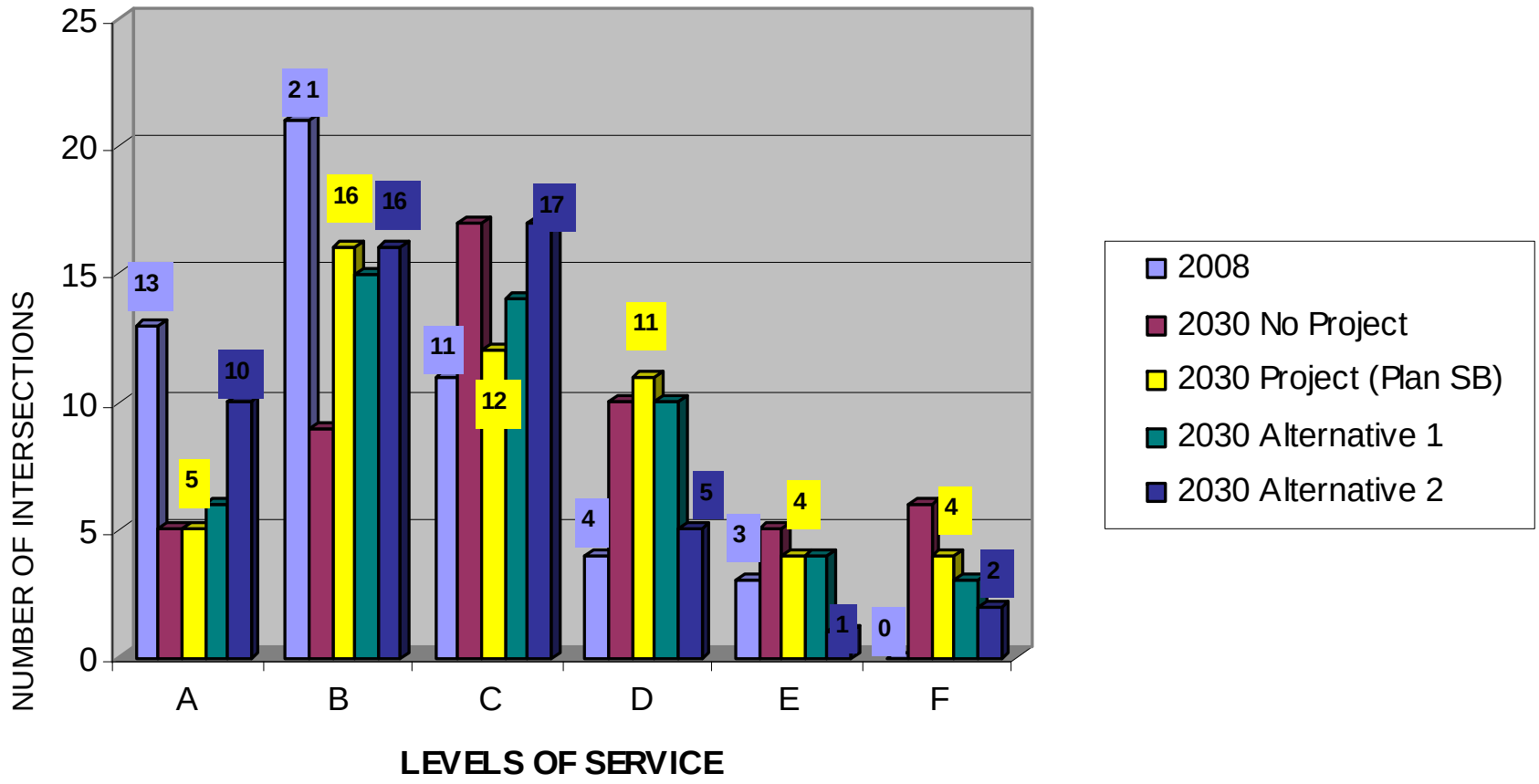
- *Plan Santa Barbara* results in fewer E and F intersections than No Project. Attributable to better jobs/housing mix and the trip reduction strategies.

- While freeway ramp terminal intersections represent only one-third of analyzed intersections, they represent 60 percent of intersections deficient in both peak hours.

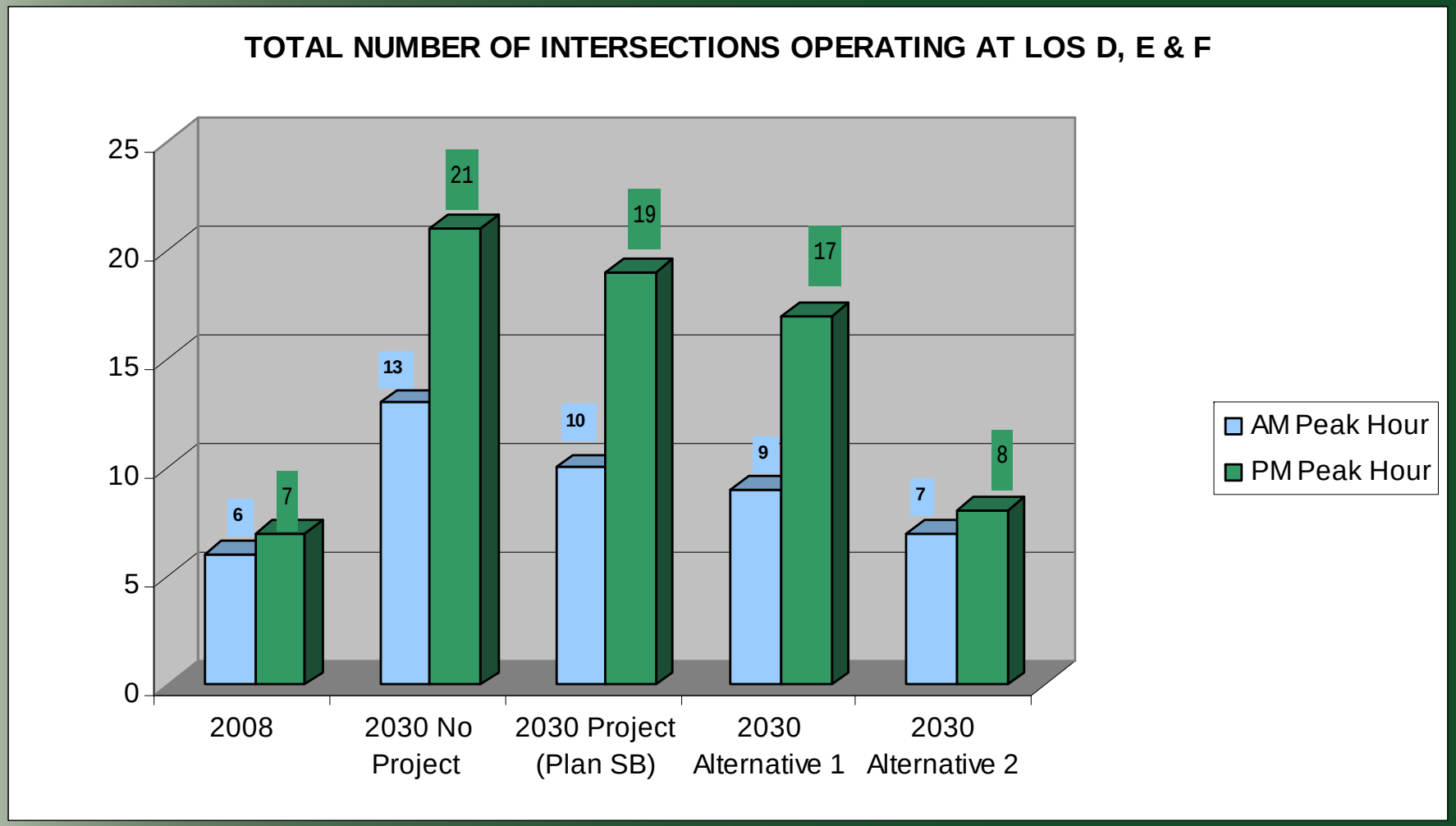
AM PEAK HOUR STUDY INTERSECTION LOS DISTRIBUTION



PM PEAK HOUR STUDY INTERSECTION LOS DISTRIBUTION



Comparison Summary: D, E, and F Locations



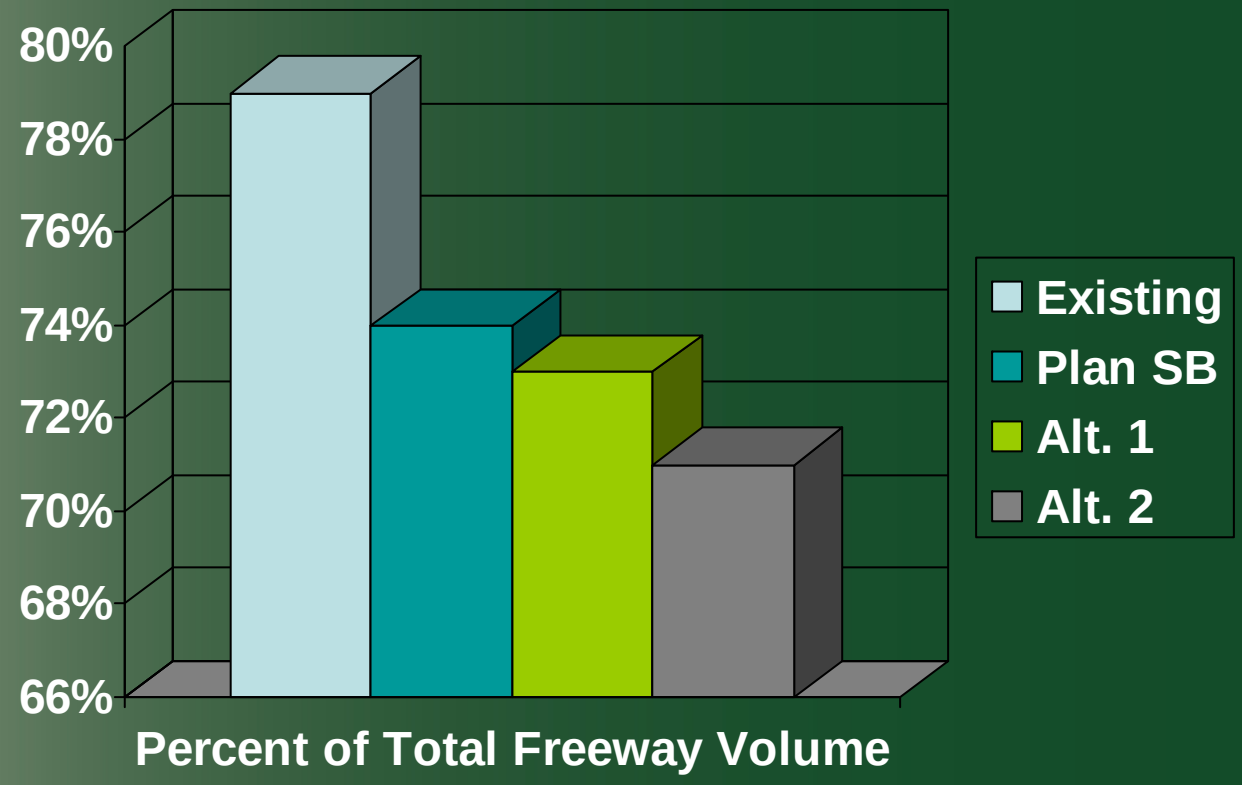
2030 Commute Trends: Balancing

- Jobs: Exported fewer Santa Barbara residents to work outside Santa Barbara, and imported more non-Santa Barbara workers to fill Santa Barbara jobs.

- Retail: Decreased the number of Santa Barbara residents leaving Santa Barbara and increased the number of non-Santa Barbara residents entering.

- This process was necessary for No Project, *Plan Santa Barbara*, and Alternative 1 – but not for Alternative 2.

2030 Freeway Traffic Composition Trends



Interpreting the Model Results: *Plan Santa Barbara*

- Total amount of growth is relatively modest.
- The model is sensitive to existing 4D characteristics within 2009 Santa Barbara.
- The location and character of new development does matter. Concentration within the MODA will have the most responsiveness to 4Ds and trip reduction strategies.
- Peak hour commute trips continue to be an issue. Santa Barbara is an existing and projected job-rich area – the model is attracting more trips than it produces, so more workers from outside Santa Barbara are imported.

Interpreting the Model Results: *Plan Santa Barbara* (continued)

- The trip reduction strategies are very effective at reducing vehicle trips. Trip for trip, they are going to have more significant incremental effect than the 4Ds *because many of the trip reduction strategies are not already in place – and those that are in place could be enhanced and expanded – and therefore have a more pronounced impact on existing and future trips*.

- Trip reduction strategies are most effective when employed simultaneously where the 4D effects are most pronounced.

Interpreting the Model Results: Alternatives 1 and 2

- Alternative 2 includes two key components that result in relatively more favorable freeway and intersection results when compared to Alternative 1, No Project, and *Plan Santa Barbara:*
  - Additional housing keeps more trips in Santa Barbara;
  - The aggressive trip reduction strategies; and
  - Trip growth in the off-peak direction.

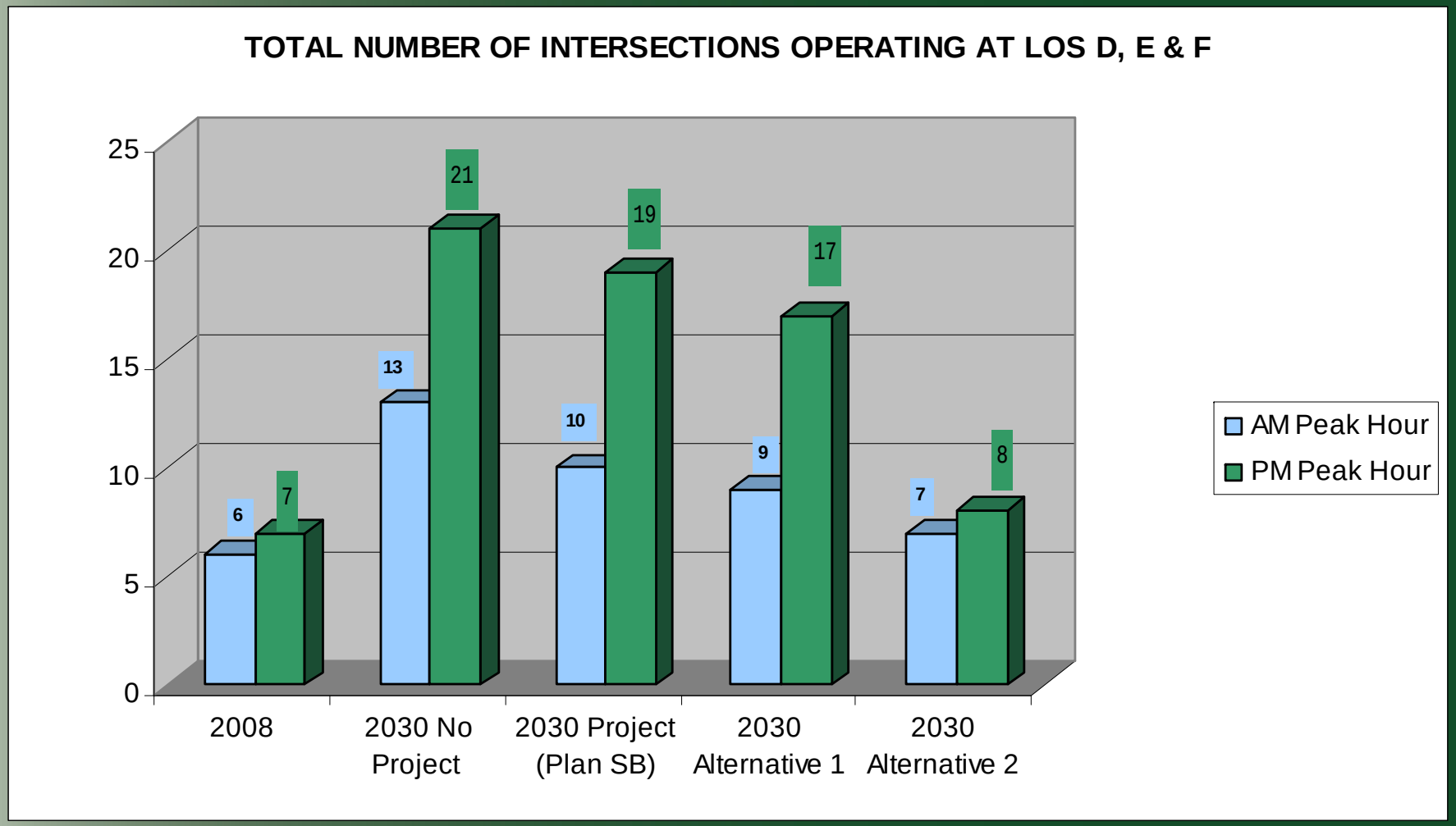
Interpreting the Model Results: Alternatives 1 and 2 (continued)

- Peak hour intersection deficiencies largely tied to commute trips – 25 percent of PM total.
- Generally concentrated on streets between employment areas and regional transportation facilities.
- Alternative 2 trip reduction strategies target the employment areas.
- Trip reduction strategies will reduce peak hour, peak direction impact on sensitive intersections.

Interpreting the Model Results: Alternatives 1 and 2 (continued)

- Peak hour/peak direction relatively strong in Santa Barbara – inbound AM, outbound PM.
- Alternative 2: Additional MODA housing, combined with reduction in non-residential development, adds relatively more workers seeking jobs outside Santa Barbara.
- These workers would utilize relatively less-congested reverse peak direction.
- Alternative 2 demonstrated measurably different freeway volume impacts.

Comparison Summary: D, E, and F Locations



Interpreting the Model Results: Conclusion

- Key *Plan SB* objective: 2030 intersection conditions no worse than current conditions.

- Changes to the built environment – both type and location – make a difference. However, these alone will not achieve the City's intersection LOS objectives.

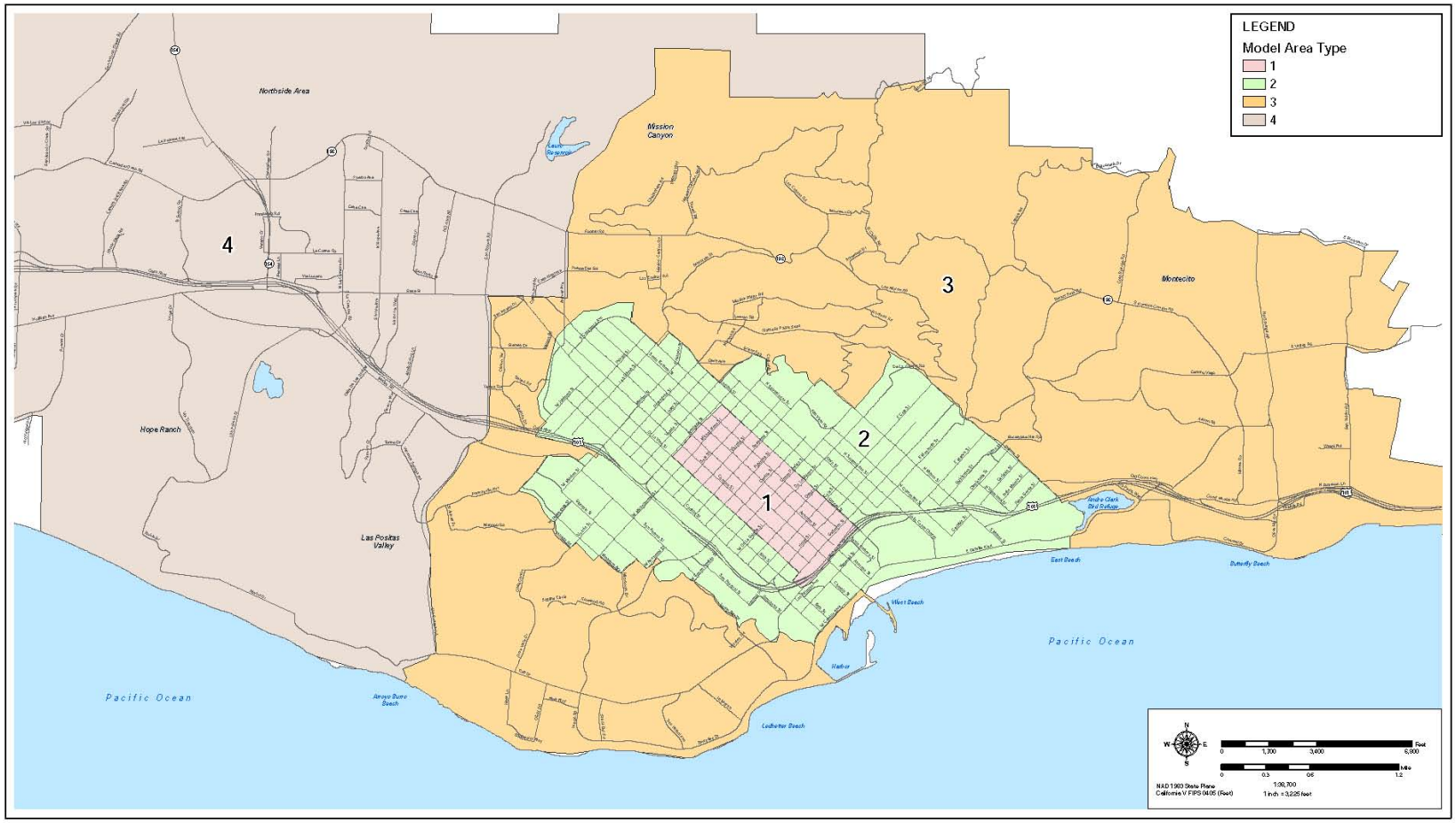
- Implementation of built environment strategies – *plus* aggressive trip reduction strategies – got the closest to achieving the City's intersection LOS objectives.

Summary of Input Data

- *Existing Conditions Report* documents data collection efforts
- Twenty-eight City land use categories
- 460 Travel Analysis Zones (TAZ)
- Freeways, highways, arterials, collectors
- Extensive traffic count program
- External gateways
- Trip generation input data (detail follows)

Trip Generation Rates

- **Santa Barbara model uses four different area types:**
  - Reflects unique trip-generating characteristics
  - Allows for much more sophistication in rates
  - Central Business District
  - Remaining “grid” portion of City
  - Surrounding areas, based upon interaction with surrounding communities
- **Stratified by auto-ownership**



PLAN SANTA BARBARA MODEL AREA TYPES
FIGURE 2

Trip Generation Rates (continued)

TABLE 5 DAILY VEHICLE TRIP GENERATION RATE COMPARISON					
Residential[1]					
Land Use Type	Units	2008 PlanSB Model Area Type 1	2008 PlanSB Model Area Type 2	2008 PlanSB Model Area Type 3	2008 PlanSB Model Area Type 4
Single-Family (SF)	Dwelling Units	8.05	10.56	11.98	11.98
Multi-Family Zero Cars (MF_0)	Dwelling Units	3.03	3.55	4.02	4.02
Multi-Family One Car (MF_1)	Dwelling Units	4.23	5.39	6.18	6.18
Multi-Family Two Cars (MF_2)	Dwelling Units	5.96	7.04	8.08	8.08
Multi-Family Three or More Cars (MF_3P)	Dwelling Units	7.60	8.89	10.24	10.24

Trip Generation Rates (continued)

- **Trip rates must balance "productions" and "attractions" for trip purposes:**
  - Home-based work
  - Home-based other
  - Non-home-based
  - Recreational
- **Various sources used to build, calibrate, and validate trip generation rates:**
  - ITE
  - SBCAG
  - National Household Travel Survey
  - Other model results: San Luis Obispo, Lompoc

Trip Generation Rates (continued)

- **Comparisons to familiar rates:**
  - ITE single-family average is 9.57 vehicle trips per day per dwelling unit
  - Santa Barbara model single family ranges from 8.05 to 11.98 vehicle trips per day per dwelling unit
  - ITE office is 11.01 vehicle trips per day per thousand square feet
  - Santa Barbara model office ranges from 8.27 to 12.92 vehicle trips per day per thousand square feet

- **Final customized Santa Barbara trip generation rates are developed during calibration and validation, rather than arbitrarily tied to national averages. Empirical data begins the process, which is *verified* through testing.**

Trip Distribution

- Gravity equation used to distribute trips to all zones
- Relative attractiveness of zones based on travel time and number of potential origins and destinations
- Trips travel within zones (limited); between zones within City; between City and surrounding areas (e.g. Goleta, Ventura)
- Through trips

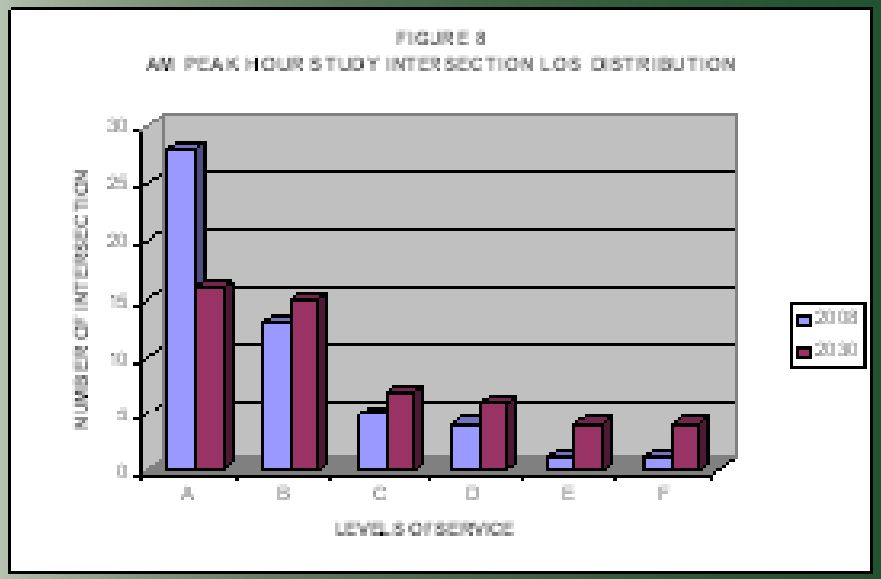
2030 Model Run

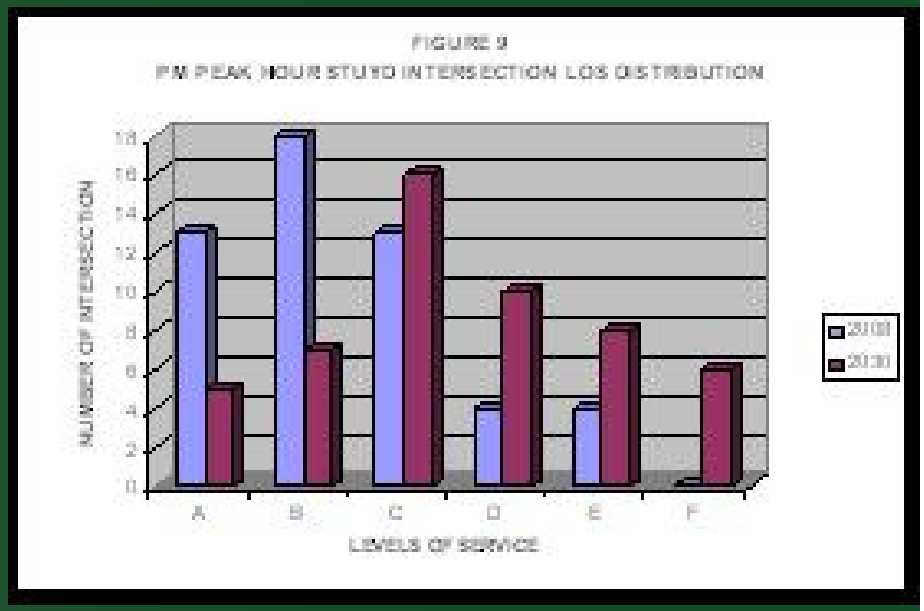
- From a CEQA standpoint, “No Project”
- Historical growth rates and distribution continue
- Current policies unchanged
- Nonresidential development based on Measure E development categories and square feet
- 2,800 additional residential units
- Should be regarded as reasonable worst case and conservative approach

2030 Model Run (continued)

- Traffic volumes across all study segments are assumed to grow by approximately 17% with the continuation of existing development trends.
- Traffic volumes on freeway segments are projected to grow by approximately 13%.
- Traffic volumes on surface streets (arterials, collectors and local streets) are projected to grow by 24%.

2030 Model Run (continued)





2030 Model Run (continued)

- Most congested intersections are at or near freeway on and off ramps.
- Should not be extrapolated throughout City, since study intersections are selected based upon relative levels of congestion
- "No Project" 2030 development does not reflect results of City development review process, which focuses on mitigation of significant impacts and rejection of applications which have unmitigated traffic impacts at study intersections
- Nonetheless, potential decline in LOS is a central challenge to be addressed in Plan Santa Barbara

PLAN SANTA BARBARA

Summary of Next Steps and Use of the Model

Next Steps and Use of Model

- Additional calibration and enhancements underway, based on review and insights by local, regional, and national experts.
- Model meets and/or exceeds applicable regional, State, and Federal guidelines.
- Future scenarios will combine land use, transportation, and policy/program assumptions
- Actual impact of future scenarios based upon empirical evidence, not subjective judgment – “You can’t achieve it if you can’t measure it”

The 4D Adjustment Process

The Ds will predict the degree to which each Plan Santa Barbara horizon-year land use scenario's trip generation will increase or decline with changes to the plan's:.

- Density - residential and non-residential development per acre;
- Diversity - mix of residential, retail and employment land uses on or in vicinity of a site;
- Design - connectivity and walkability of the site's transportation networks; and
- Destination Accessibility - location relative to major regional attractions; infill sites are documented to generate fewer and shorter vehicle trips than fringe area development.

Typical 4D Elasticities

	Vehicle Trips Per Capita	VMT per Capita
Density	8%	9%
Diversity	6%	7%
Design	4%	7%
Destinations	17%	35%

Sources: National Syntheses, Twin Cities, Sacramento, Holtzclaw

Empirical Evidence

Trip Reduction Benefits of Site Design

	Residential Density	Jobs Density	Job/ DU Diversity	Job Mix	Urban Design
Conventional Development	1.5	20	0.15	0.25	1270
Village	4.2	24	0.62	0.76	440
Percent Improvement	180%	20%	313%	205%	65%
Trip Reduction Elasticity	.05	.06	.04	0.10	0.05
Trip Reduction Percentage	9.0%	1.2%	12.5%	12.7%	3.3%

Total Trip Reduction **38.8%**

Empirical Evidence

New Findings on Trip Reduction at TOD, Mixed Use, Infill

TOD: 44%

MXD: 37%

Infill: 36%

Our key questions for next phase…

1. ***What will be most effective ways to shift some single-occupant drivers to another mode?***
   - High quality of service for alternative modes?
   - Targeted multi-modal improvements?
   - Demand-responsive pricing?
   - Marketing and outreach?
   - Transportation / Land Use / Urban Design connections?

2. ***What will be the relative effectiveness of different policies and programs in reducing the growth of peak-hour congestion?***

3. ***How will the built environment favorably alter "No Project" mobility and access?***

2030 Model Run: number of congested intersections increases from 13 to 32.

2008

- US 101 SB @ Garden Street
- Gutierrez Street & Garden Street
- Carrillo Street & US 101 NB
- Carrillo Street & US 101 SB
- Mission Street & Modoc Road
- Mission Street & US 101 SB
- Mission Street & US 101 NB
- Las Positas Road & Cliff Drive
- Las Positas Road & US 101 SB
- Milpas Street & US 101 SB
- Haley Street & Castillo Street
- Las Positas Road & State Street
- US 101 NB & Calle Real

Additional 2030

- Olive Mill Rd. & Coast Village Rd.
- Hot Springs Rd. & Coast Village Rd.
- Milpas Street & Haley Street
- Montecito Street & Castillo Street
- Carrillo Street & San Andreas St.
- Mission Street & State Street
- Las Positas Road & Modoc Road
- Hitchcock Way & State Street