FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM UPDATE

Presented to the Board of Supervisors

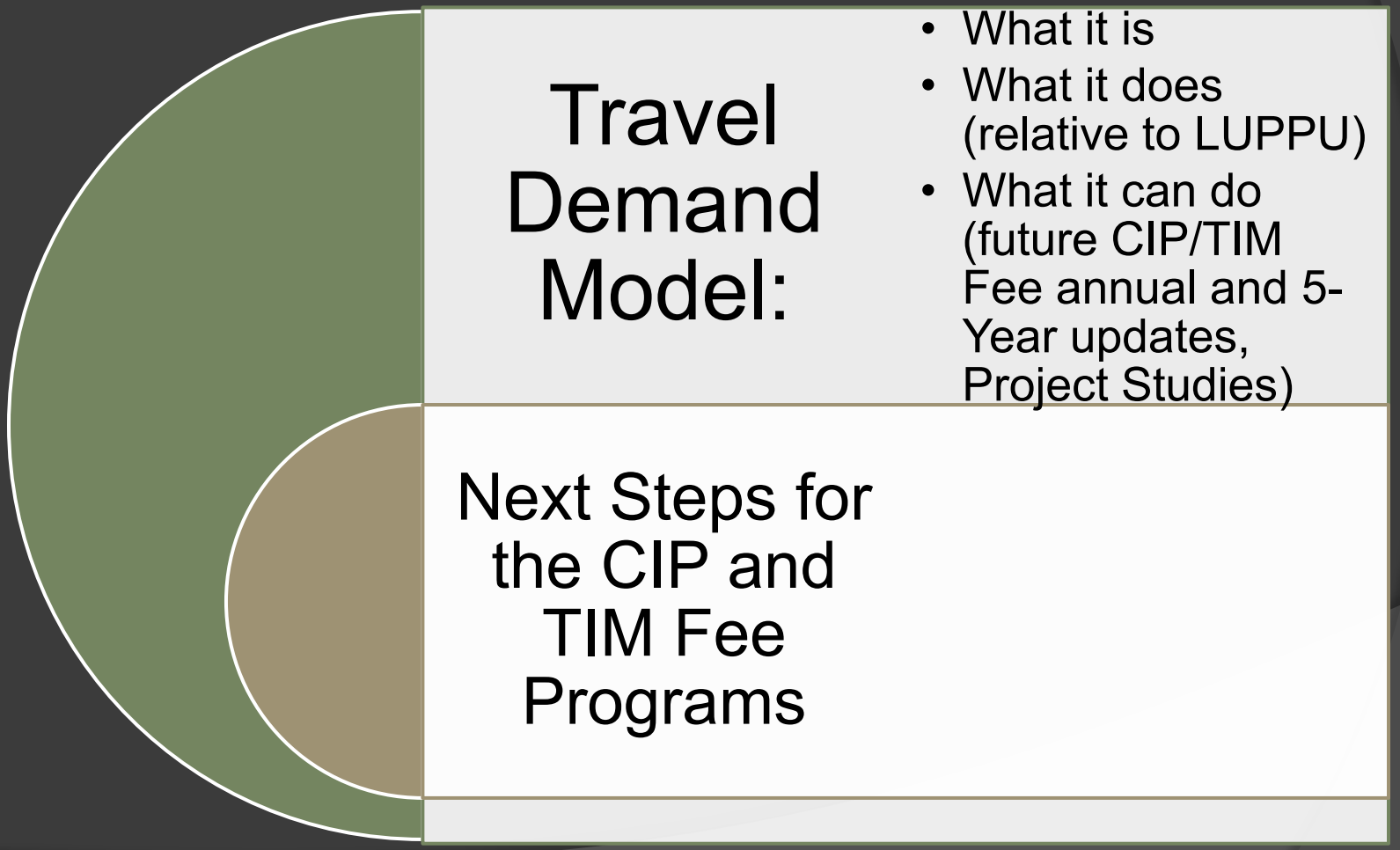
July 30, 2013

Legistar #13-0924

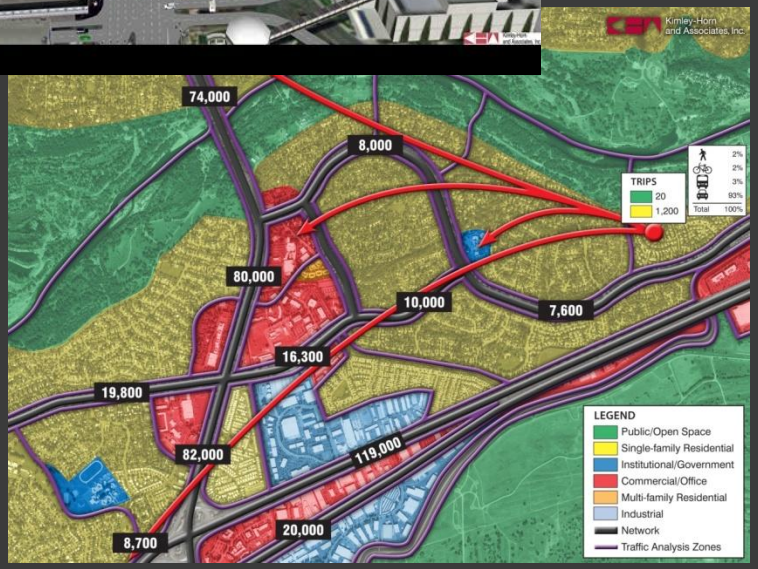
Today's Discussion:

- Draft Travel Demand Model (TDM) overview
- Why the TDM results are needed for the 5-Year CIP and TIM Fee updates
- Direction needed today to move forward: Board preferred forecast scenario for 2035

5-Year update of the CIP and TIM Fee Programs



New Travel Demand Model – Why?



- Old Model outdated and software no longer supported
- Needed for TGPA and ZOU traffic analysis as part of EIR
- Future uses include:
  - CIP and TIM Fee 5-Year and annual updates
  - "What if…" scenarios for TIM Fee analysis
  - Base data and model for future project-specific traffic studies
  - Can be run "in house" rather than using outside consultants

Existing vs. New Model

Existing

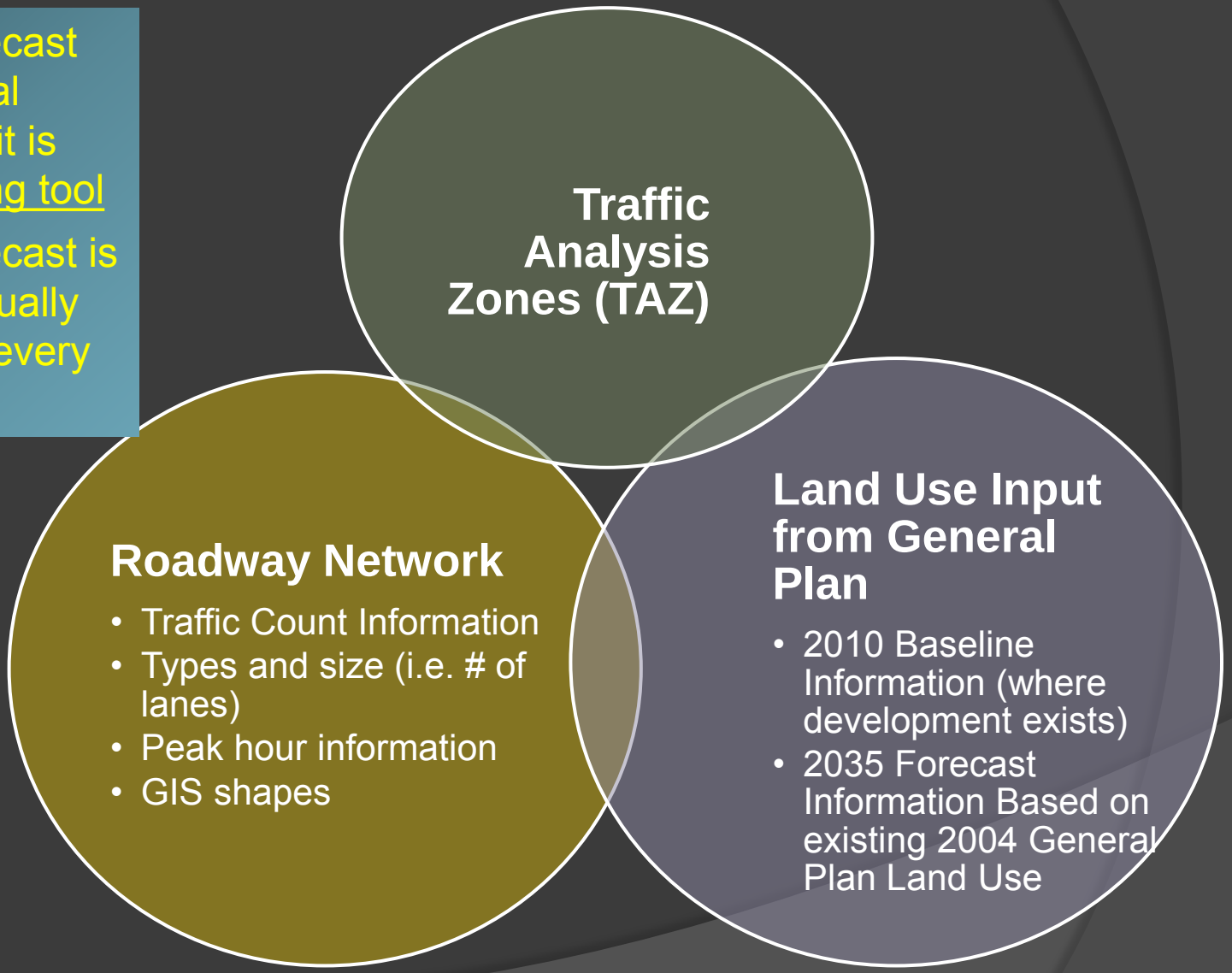
- Market area
- General Plan land use
- Uses only "gateways" instead of Traffic Analysis Zones (TAZs) outside of El Dorado County

New

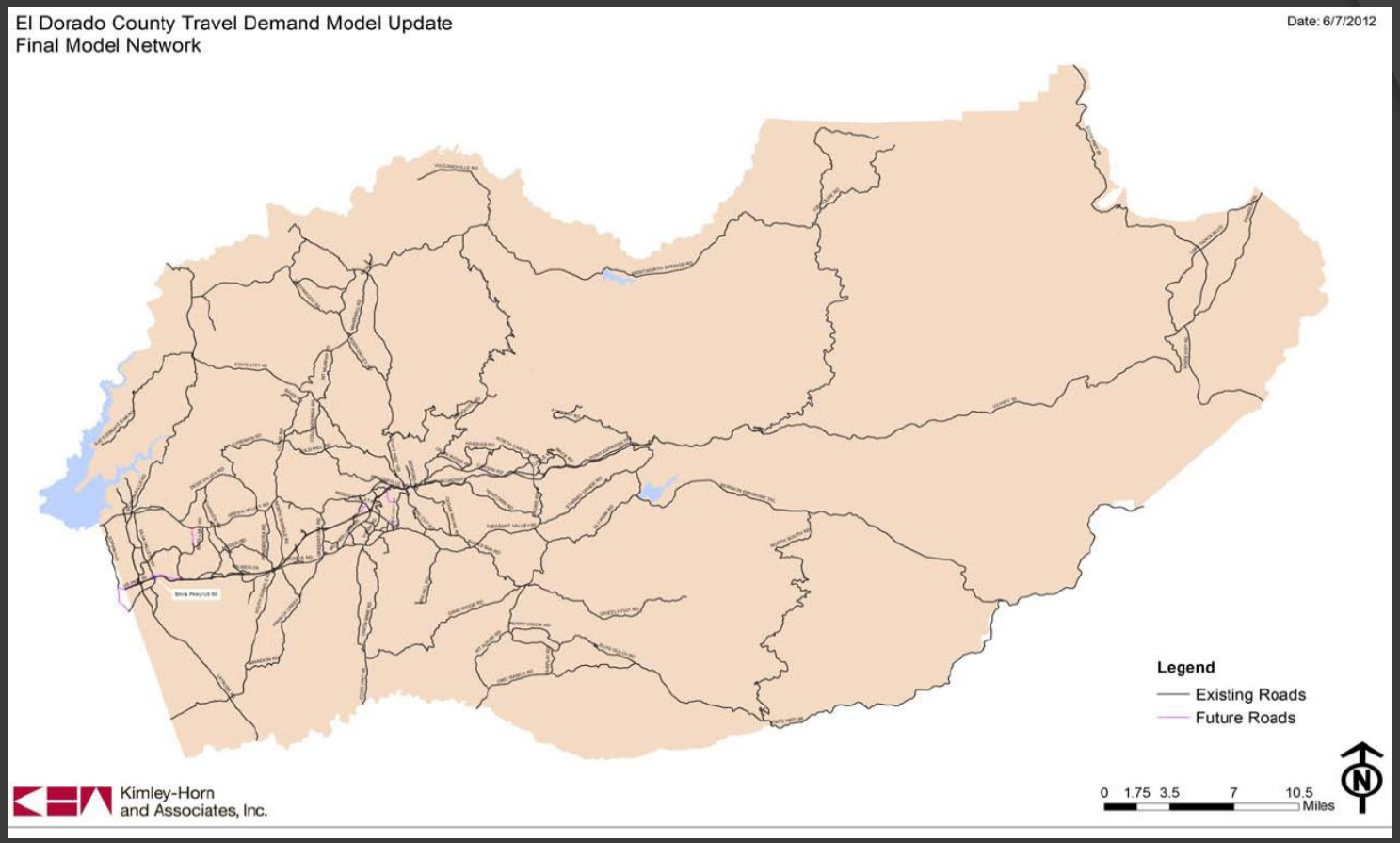
- GIS based software
- General Plan land use and Zoning
- Market Areas and Community Regions
- More TAZs
- Incorporates Exterior TAZs
- Allows for modal choice
- Incorporates a 5D methodology
- Can analyze HOV lanes

Components of Model

1. Land use forecast does not equal entitlements, it is only a planning tool
2. Land use forecast is reviewed annually and updated every 5 years



Roadway Network



- **Estimating travel time between TAZs**
- **Traffic assignments**
- **Understanding of how trips are distributed**
- **Displaying the level of traffic congestion associated with different development scenarios**

Roadway Network

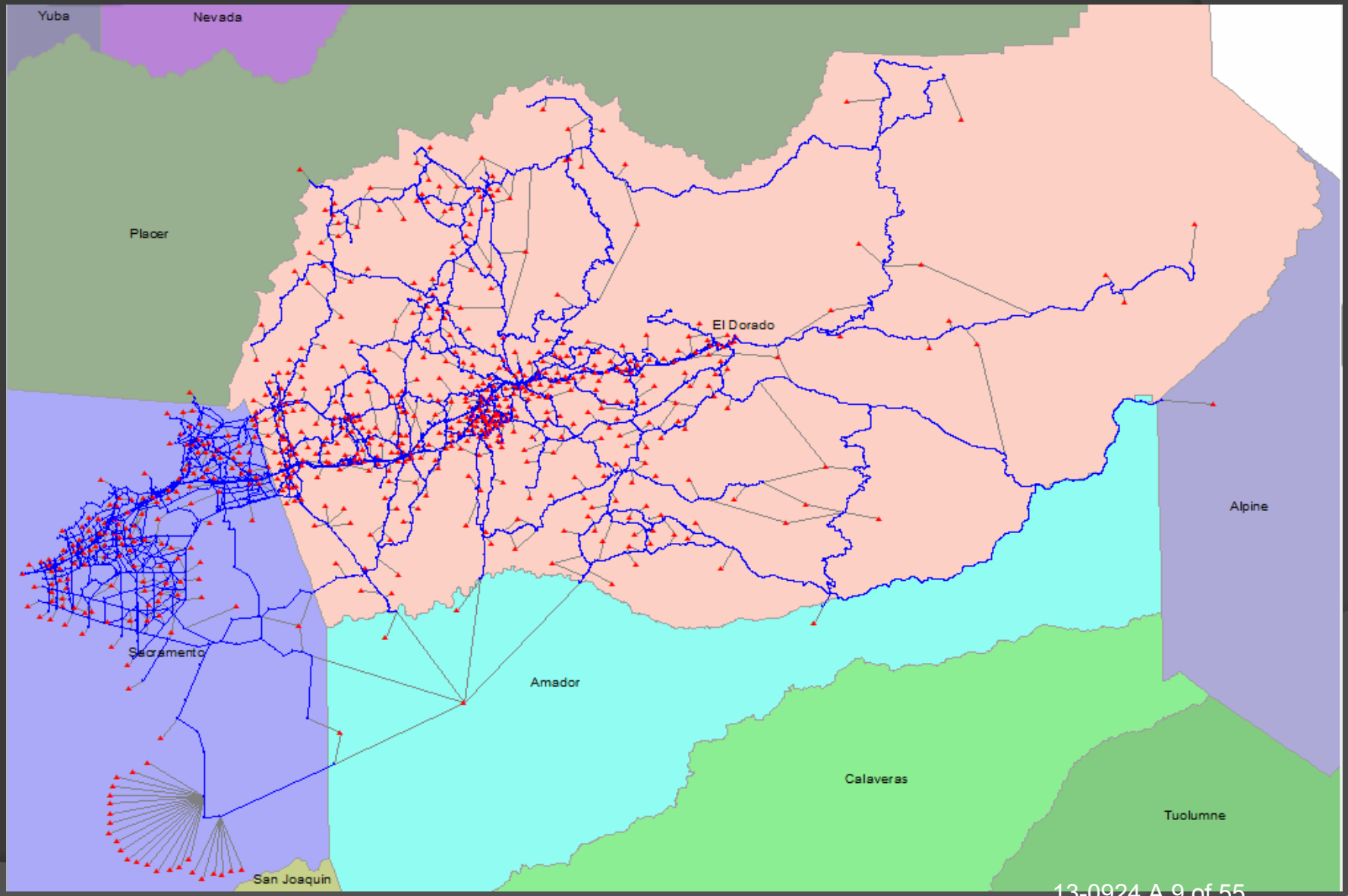
The Roadway Network was developed by reviewing the following networks :

- GPS Roads Layer from existing County GIS data
- 2025 EDC Model Network
- 2025 SACMET Network
- 2035 Future Roadway Network
- Current Traffic County Data

Roadways in the Tahoe Basin are not a part of the network, as this area is managed by the Tahoe Regional Planning Association.

SACMET – Sacramento Regional Model

Model Extent



Travel Demand Model

Data Sources:

- 2008 El Dorado County Housing Element
- 2010 Living Units database
- 2010 EDC parcel shapefile
- 2010 US Census data and shapefiles
- 2000 Sacramento Area Household Travel Survey: Final Report
- 2008 SACOG Small Area Data Set
- 2008 SACOG Traffic Analysis Zones
- 2008 Model Update Report: SACMET 07
- Capital Improvement Program

Travel Demand model inputs:

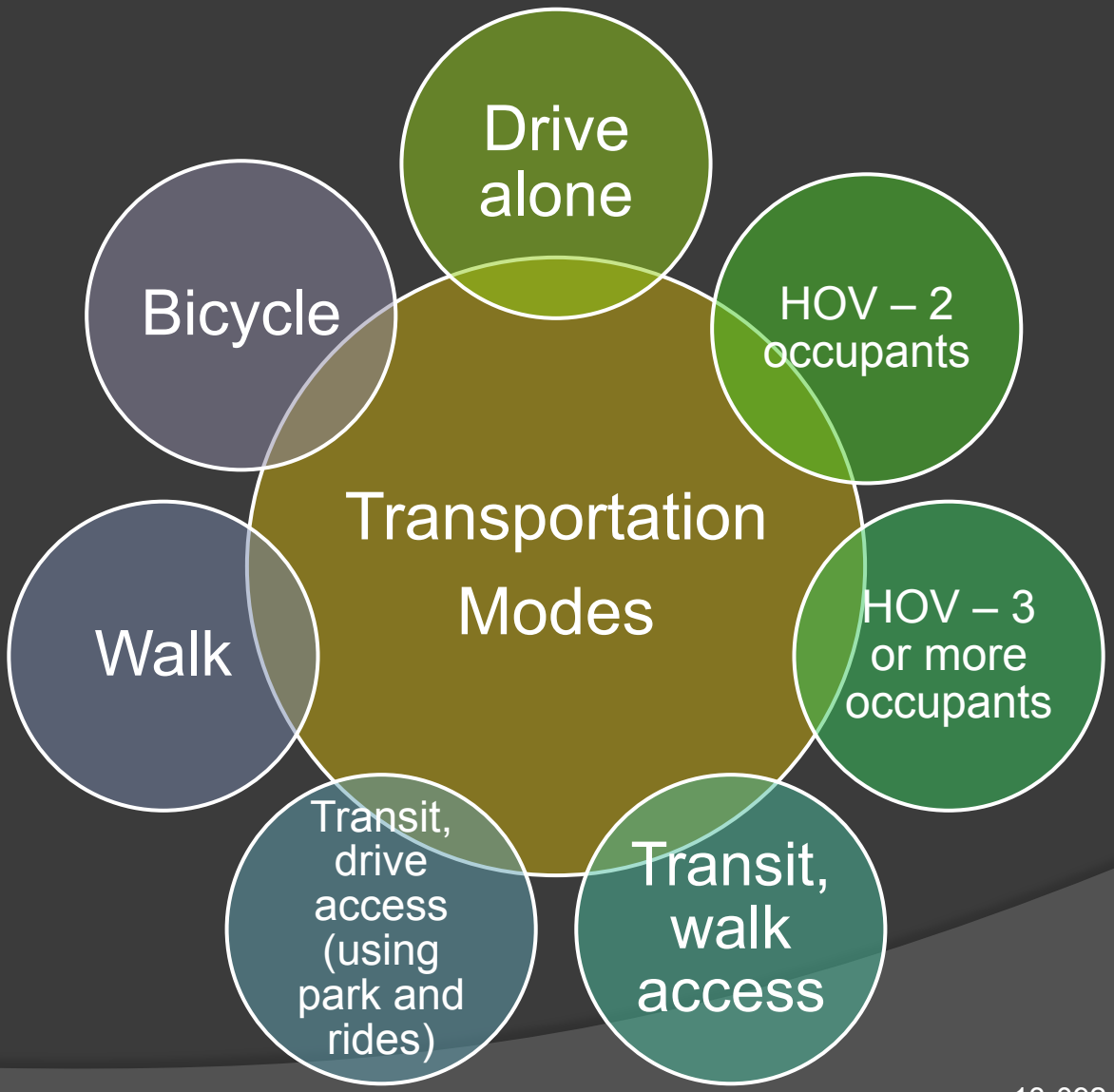
Residential

- Persons per household
- Workers per household
- Auto ownership

Non-residential

- Manufacturing employees
- Office employees
- Medical employees
- Education employees
- Other employees
- K-12 enrollment
- College enrollment

Travel Demand Model Modes



LUPPU

Land Use Policy Programmatic Update

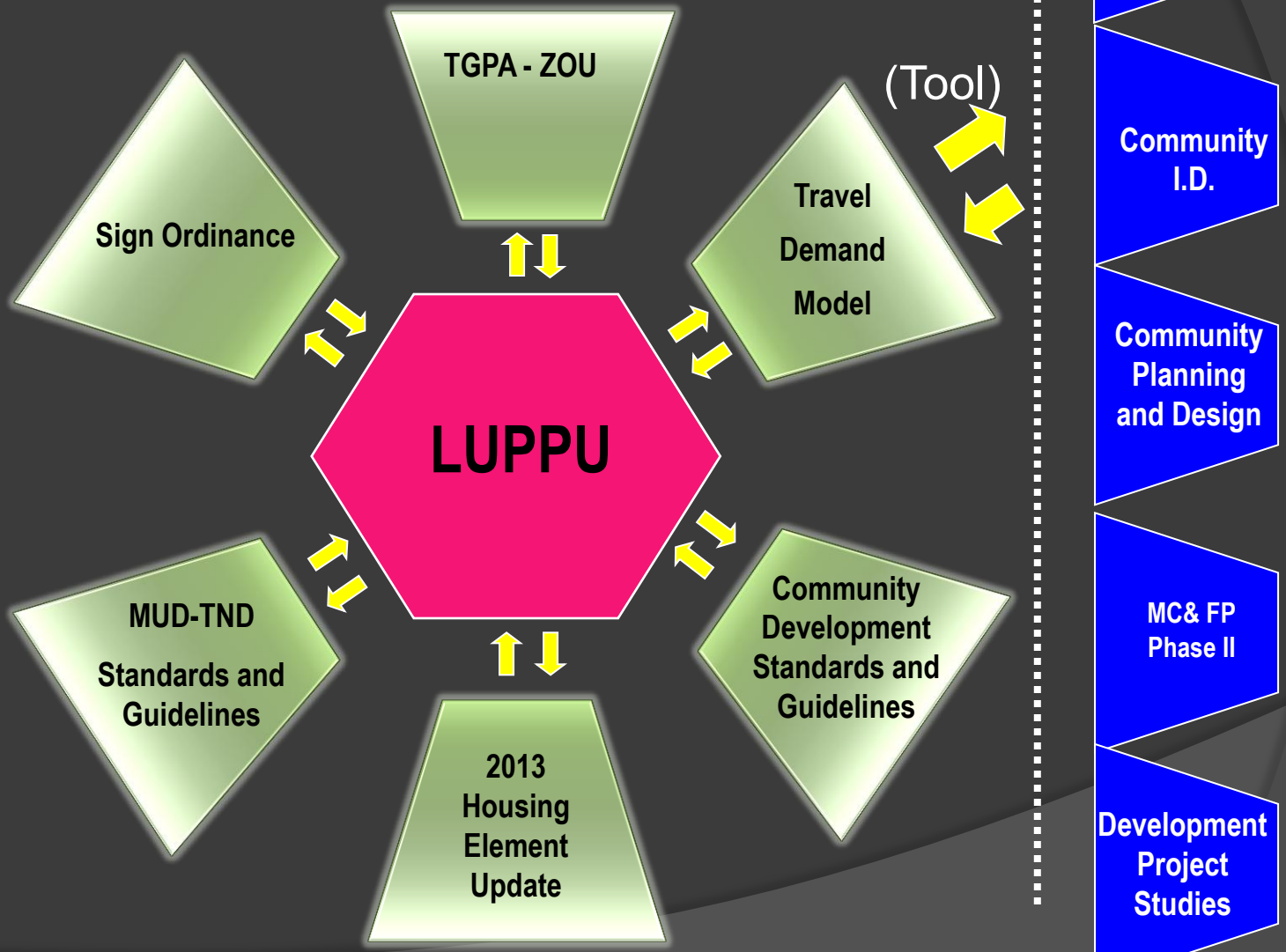
& Beyond

(Travel Demand Model)

- Targeted General Plan Amendment
  - Retains Land Use Map
- Comprehensive Zoning Ordinance Update
  - Zoning Consistent with General Plan at low end of density range
- Housing Element Update
- Travel Demand Model
  - Identified Existing, Allowed, Entitled and Mandated
  - Inventoried Realistic Capacity
  - Traffic Analysis for CEQA review of TGPA and ZOU

- 5-Year TIM Fee Update
- "What if…" scenarios for TIM Fee analysis
- 5-Year CIP
- Base data and model for future project-specific traffic studies
- Can be run "in house" rather than using outside consultants

LUPPU Components



What can the model do in the future?

- 5-Year CIP and TIM Fee Updates
- “What if…” scenarios for TIM Fee analysis

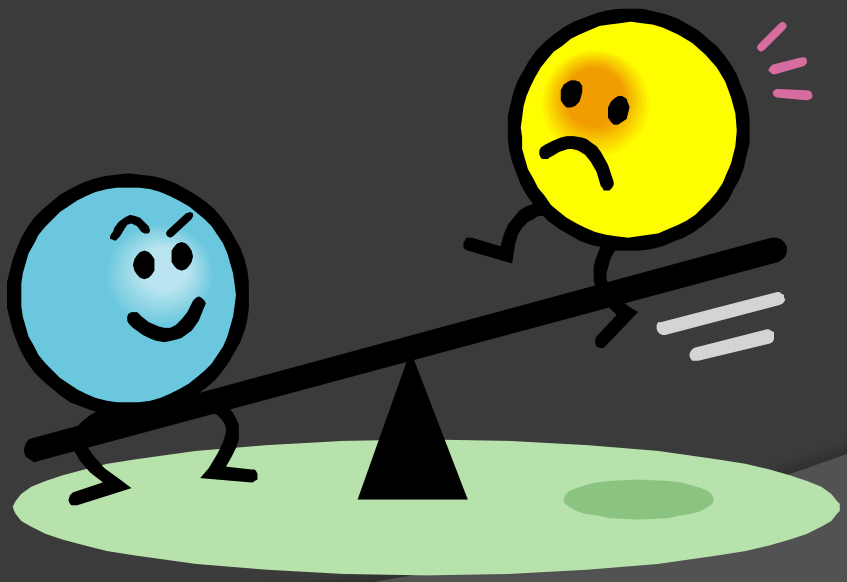
We must begin with Forecasting

If we had a crystal ball, forecasting would be easy…

There are consequences in forecasting too high or too low.

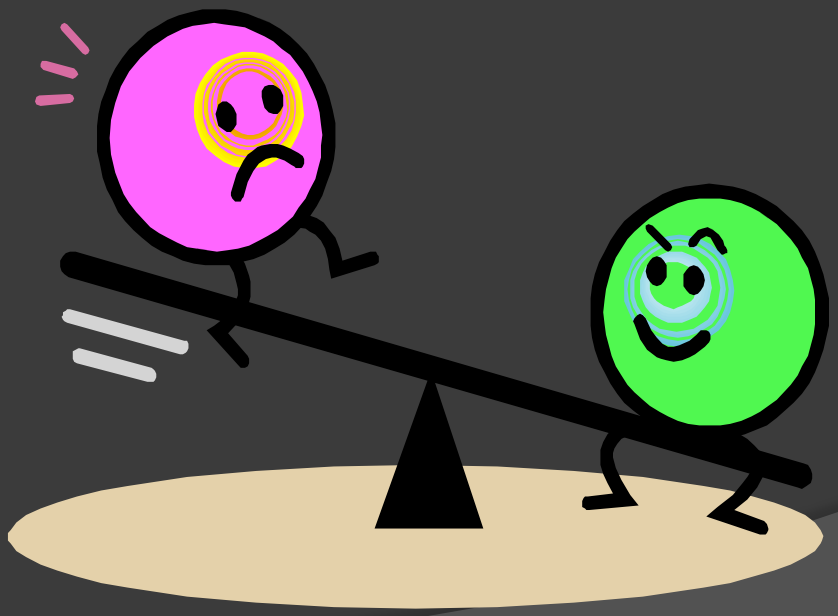
Forecasting too high:

- Lack of revenue to complete programmed projects
- Adding new CIP projects may result in inability to repay current obligations

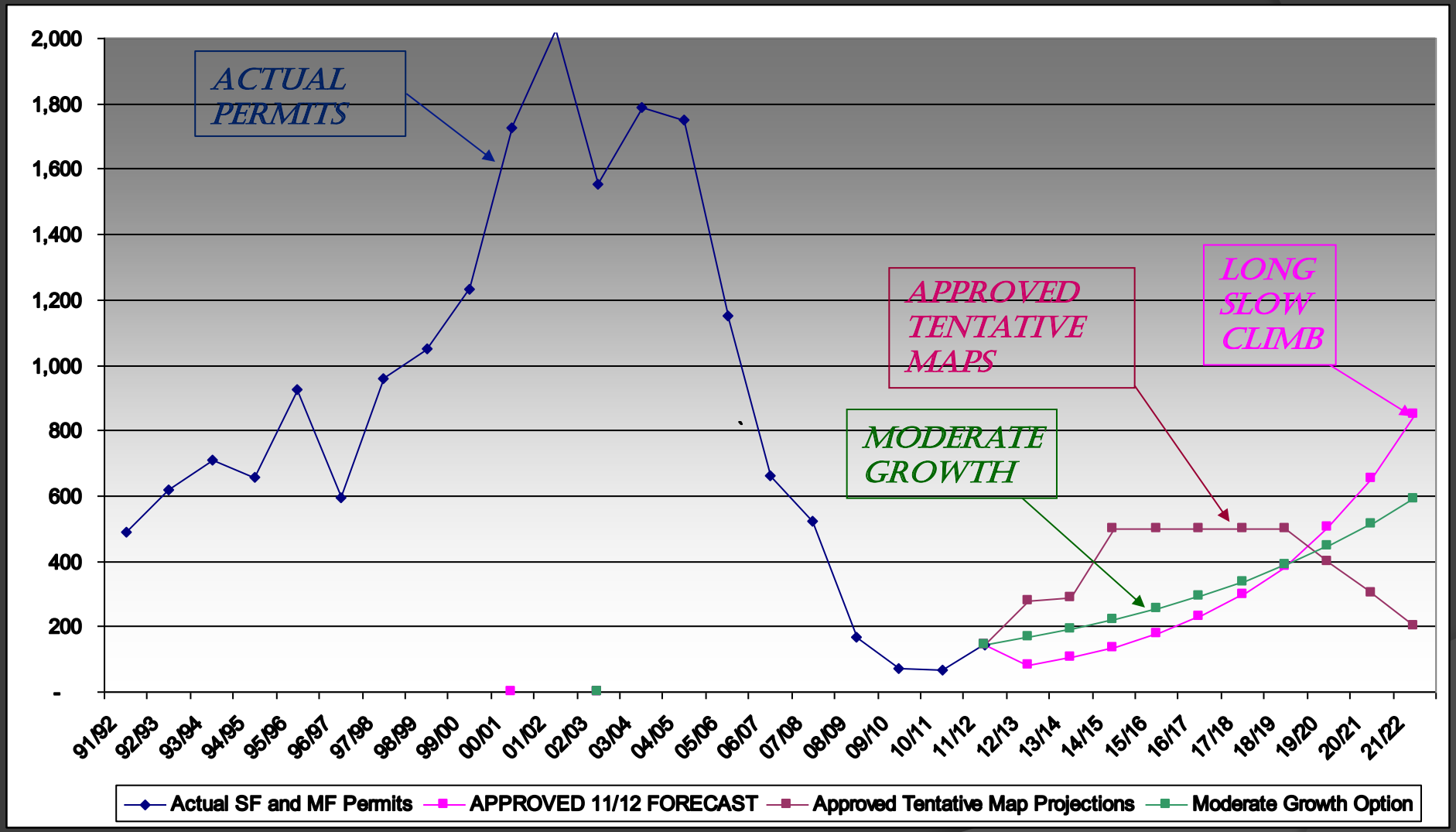


Forecasting too low:

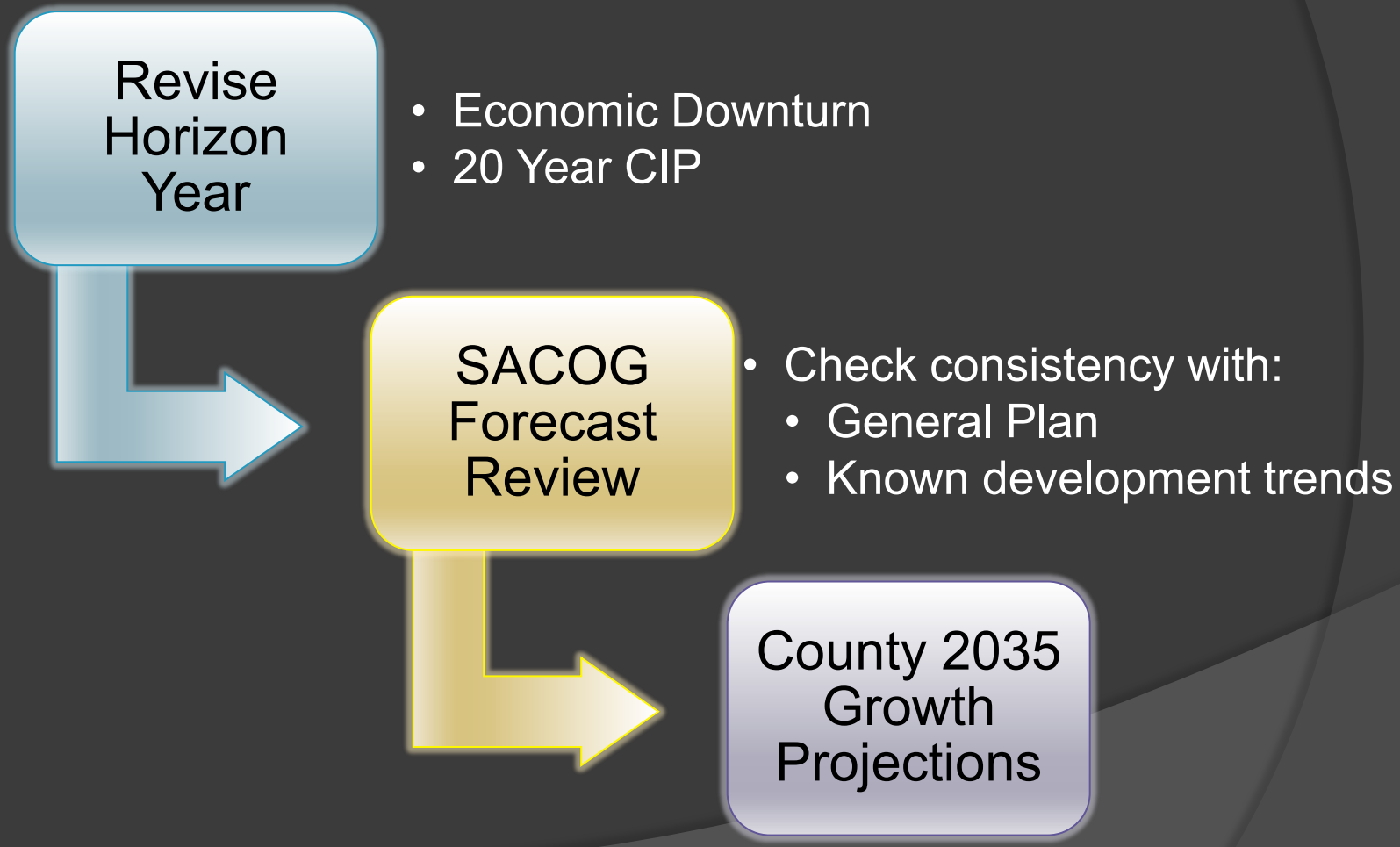
- May lose ability to add needed CIP projects due to lack of budget



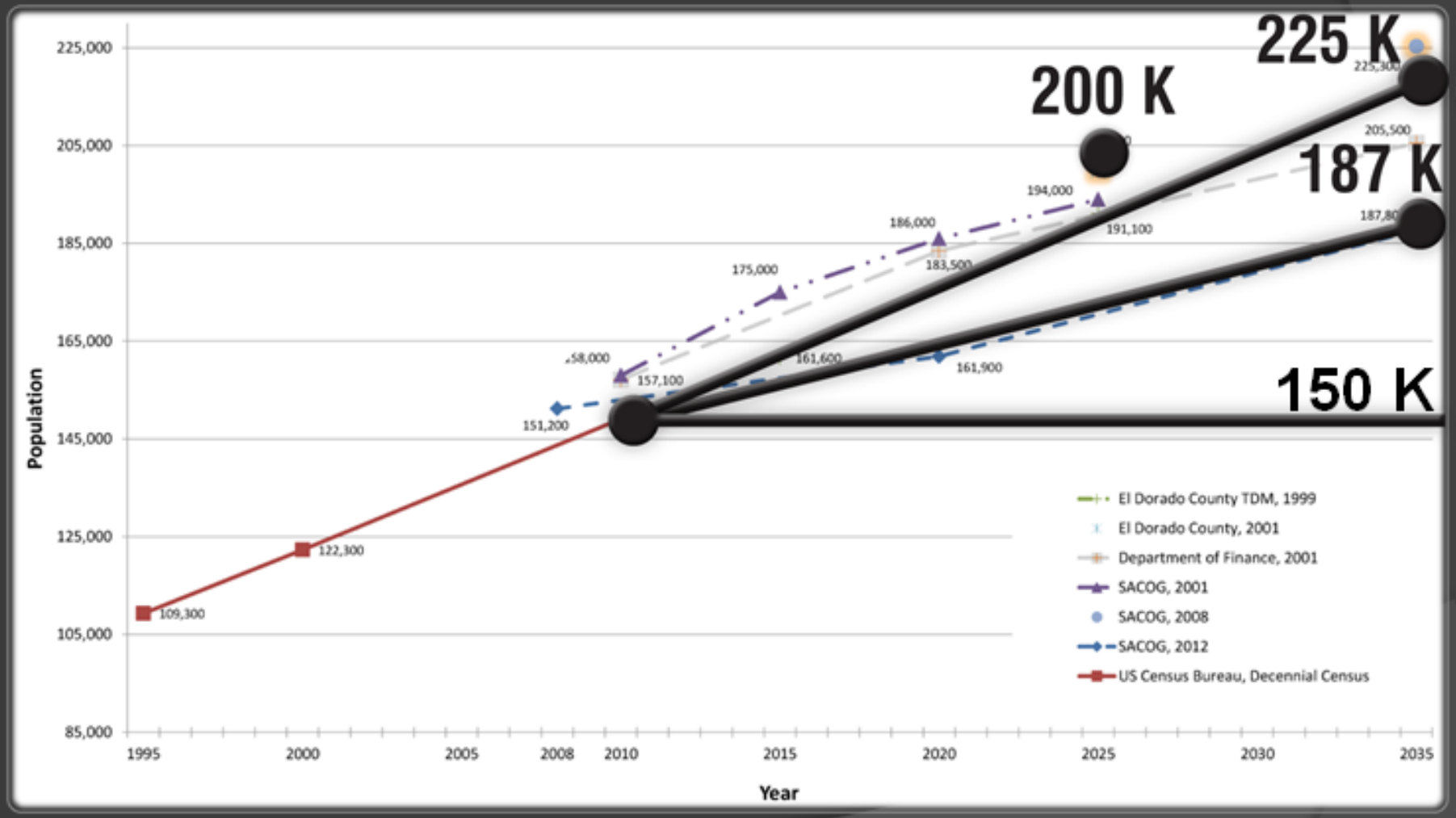
Historical Actuals and Permit Forecasts:



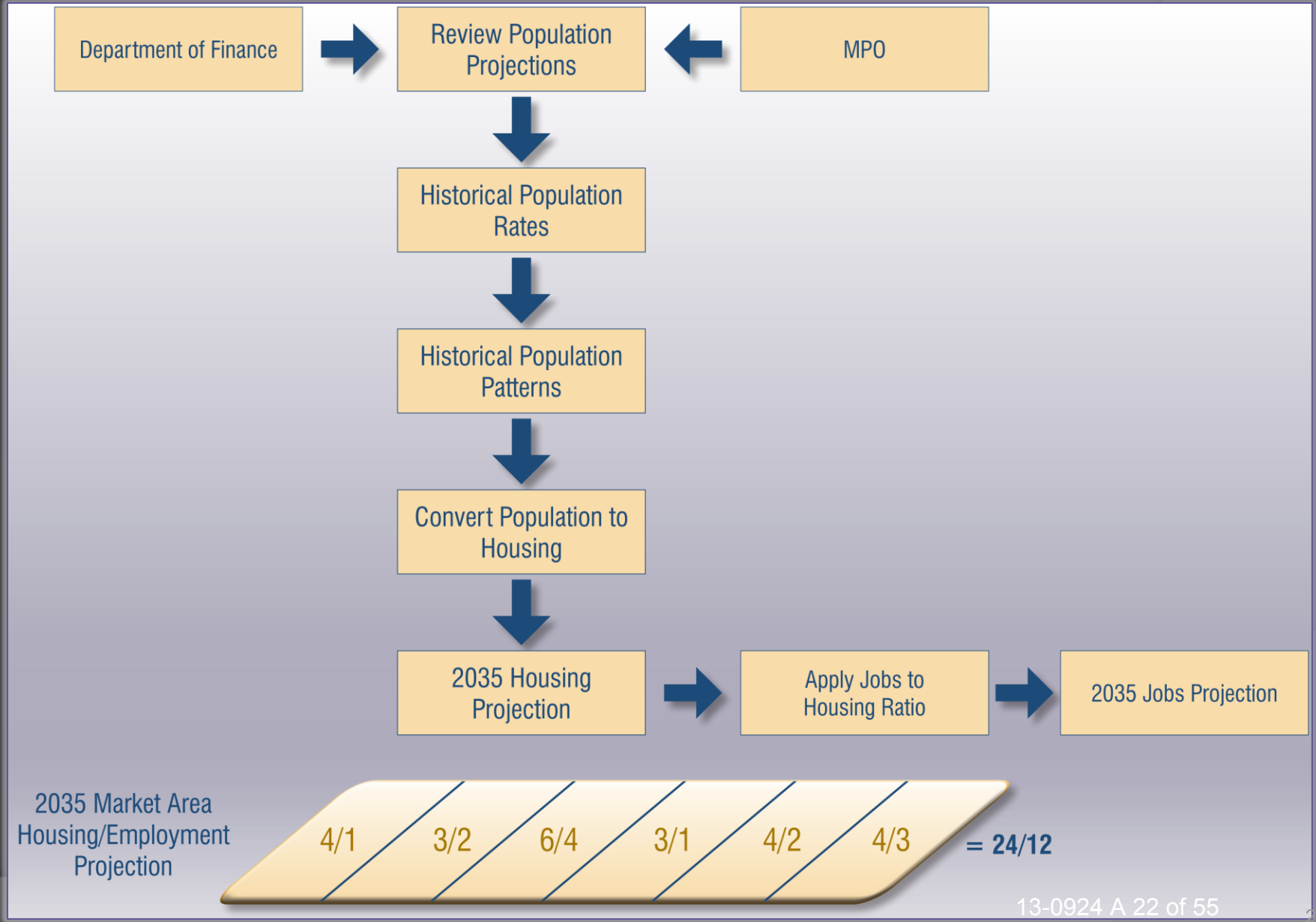
Evolution of Revised Growth Projections:



Initial Projection Approach



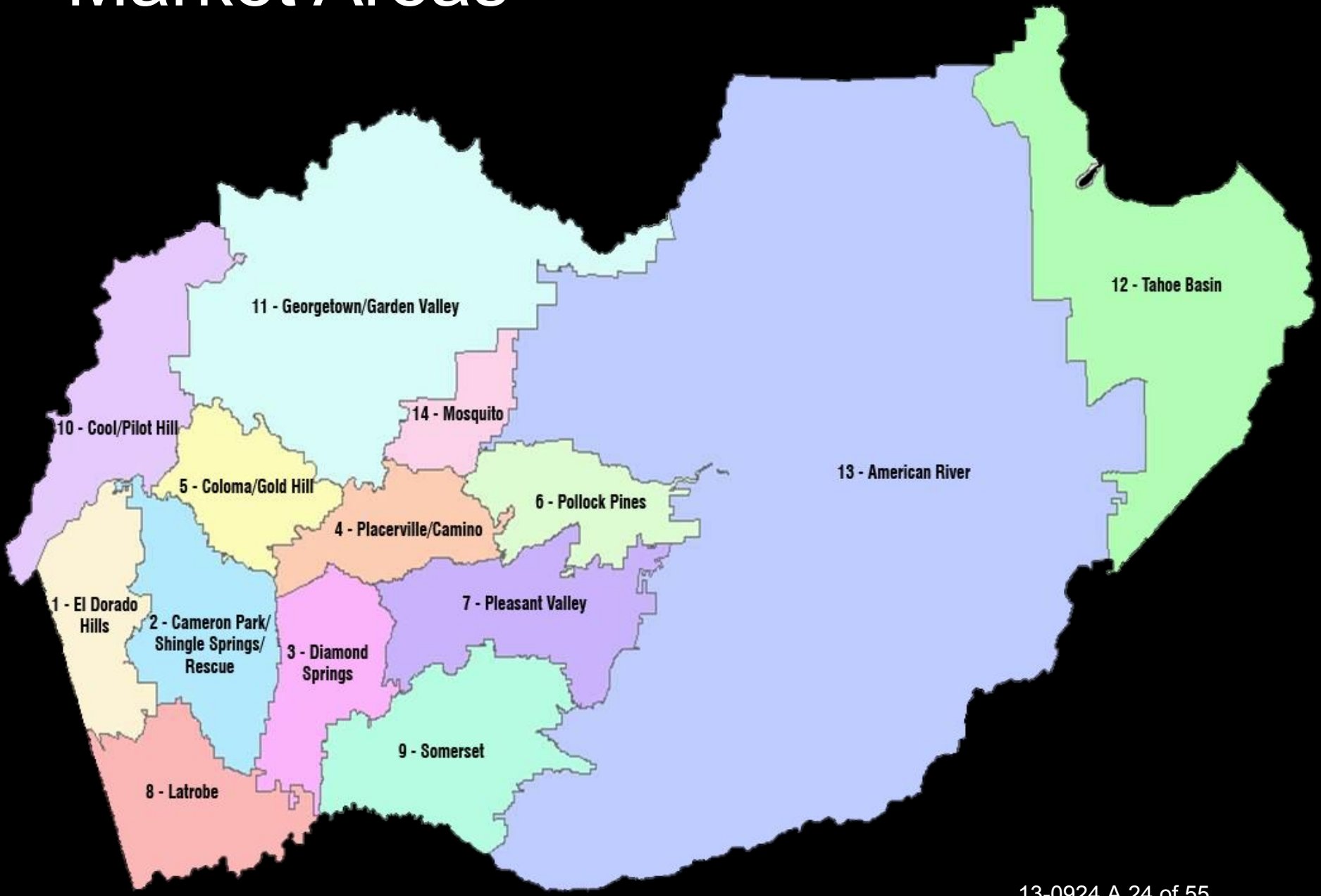
County Revised Projections



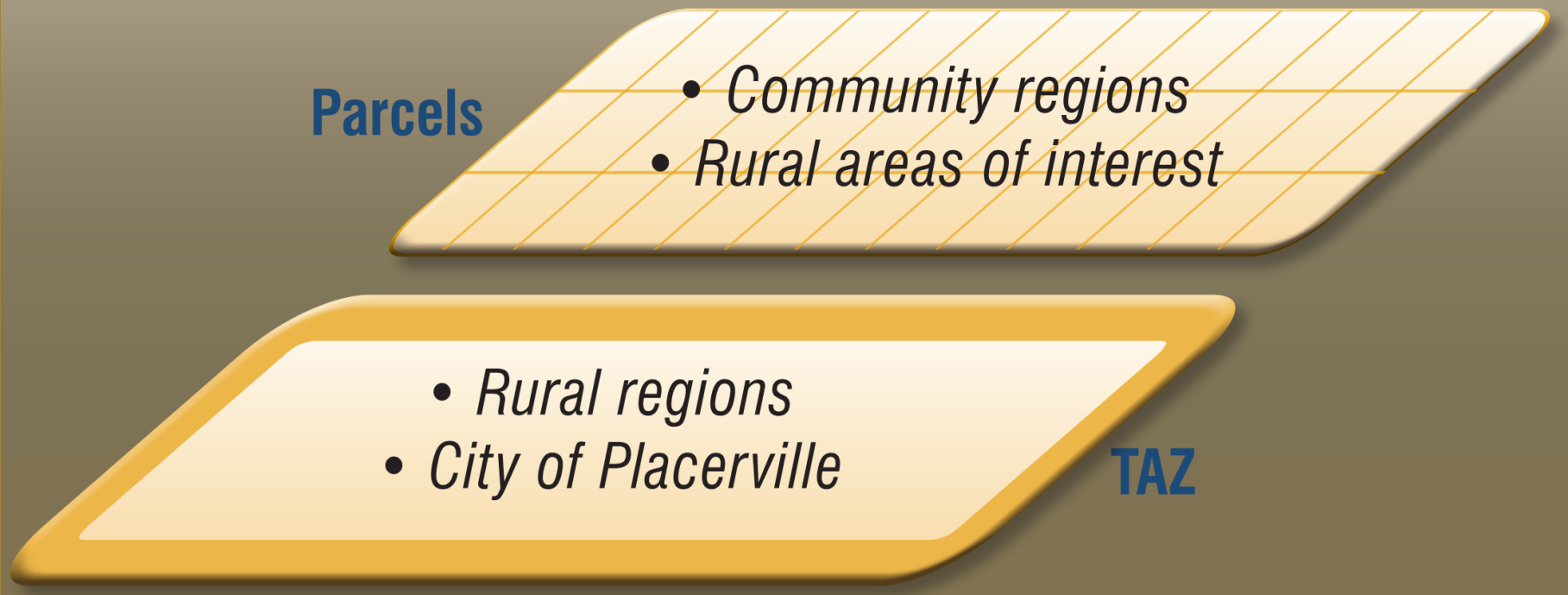
Revised Growth Projections Principles

- County *General Plan* land use goals and objectives and relevant State legislation
- Historical trends for Community Regions, Rural Regions, and Rural Centers
- Proximity to existing or planned infrastructure including site access (transportation, roadways, public water and sewer)
- Approved project status where applicable
- Historical growth patterns and trends
- Proximity to US-50 and other major commute corridors
- Proximity to other ancillary land uses and public services

Market Areas



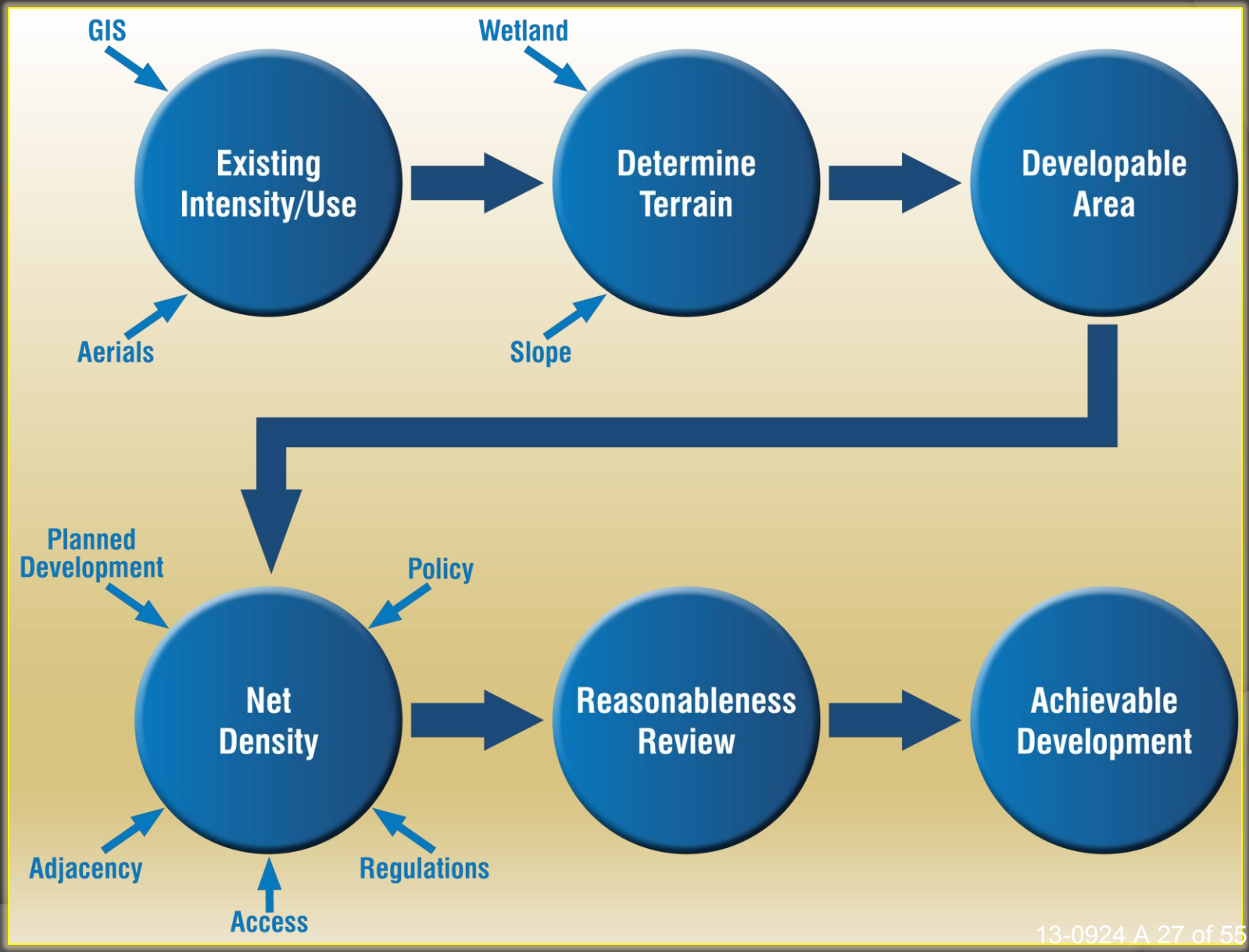
Land Use Analysis



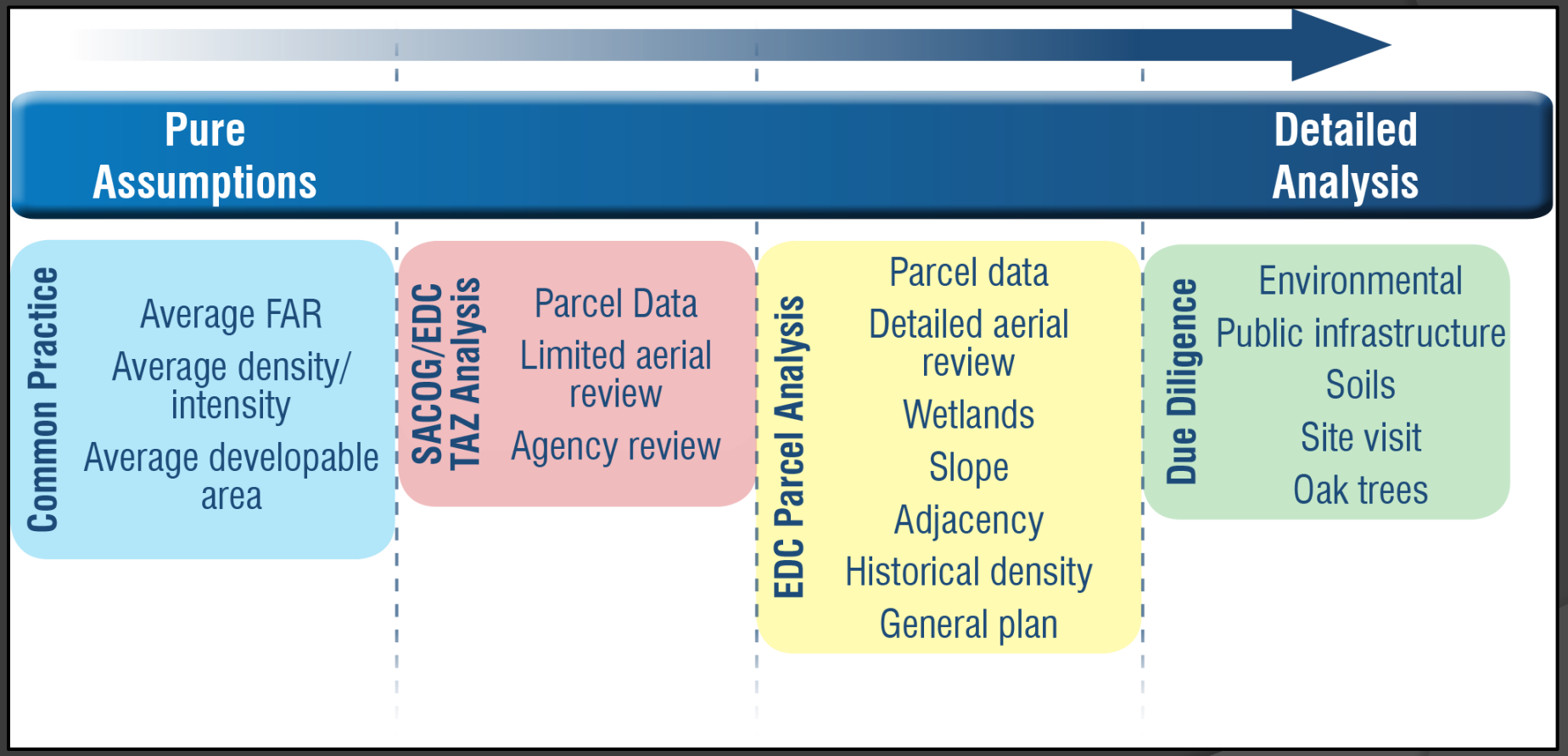
Achievable Development

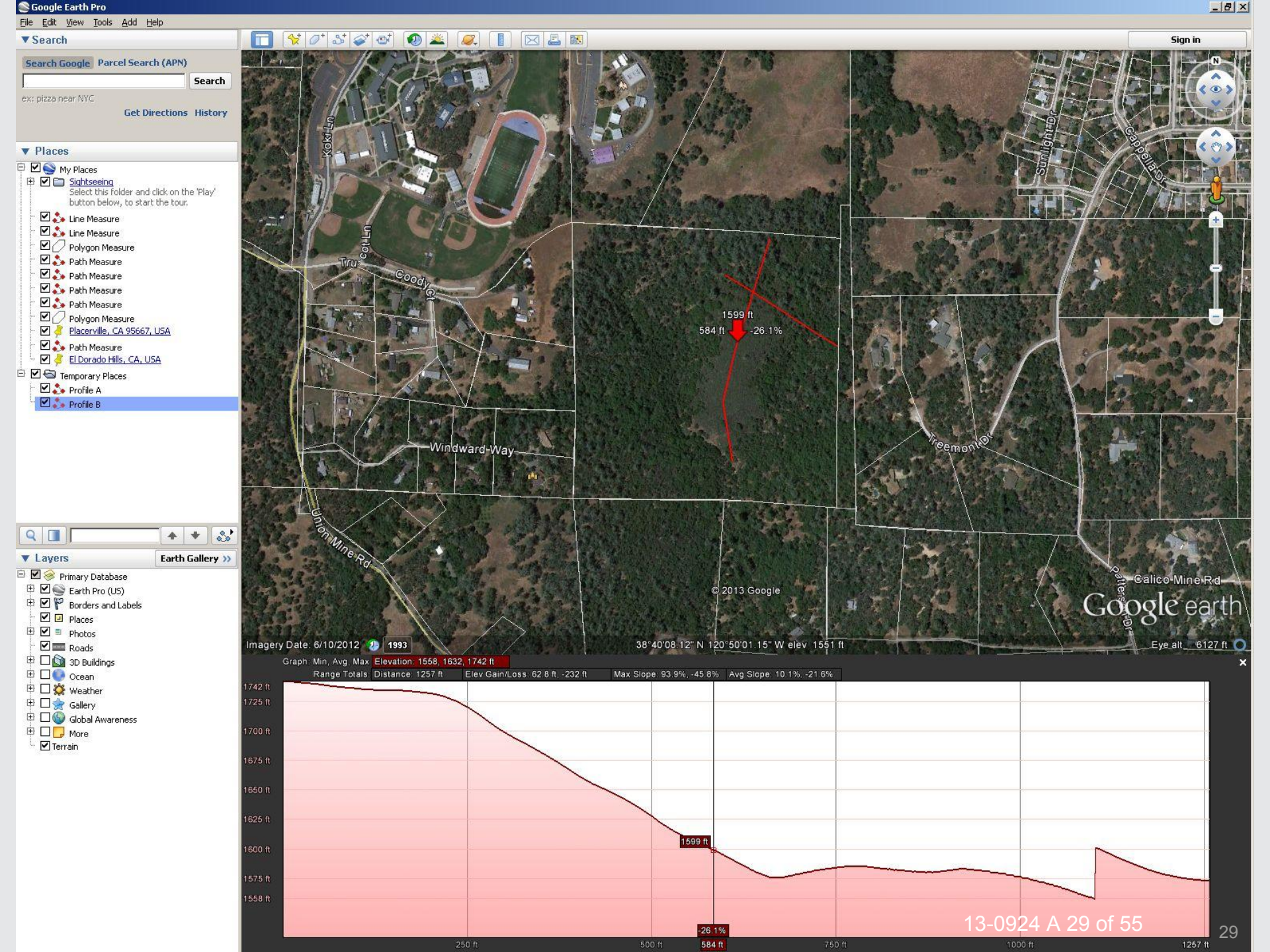
Achievable Development is an estimate of the reasonably expected intensity of development that is anticipated for a particular land use or parcel given known opportunities, constraints, and assumptions

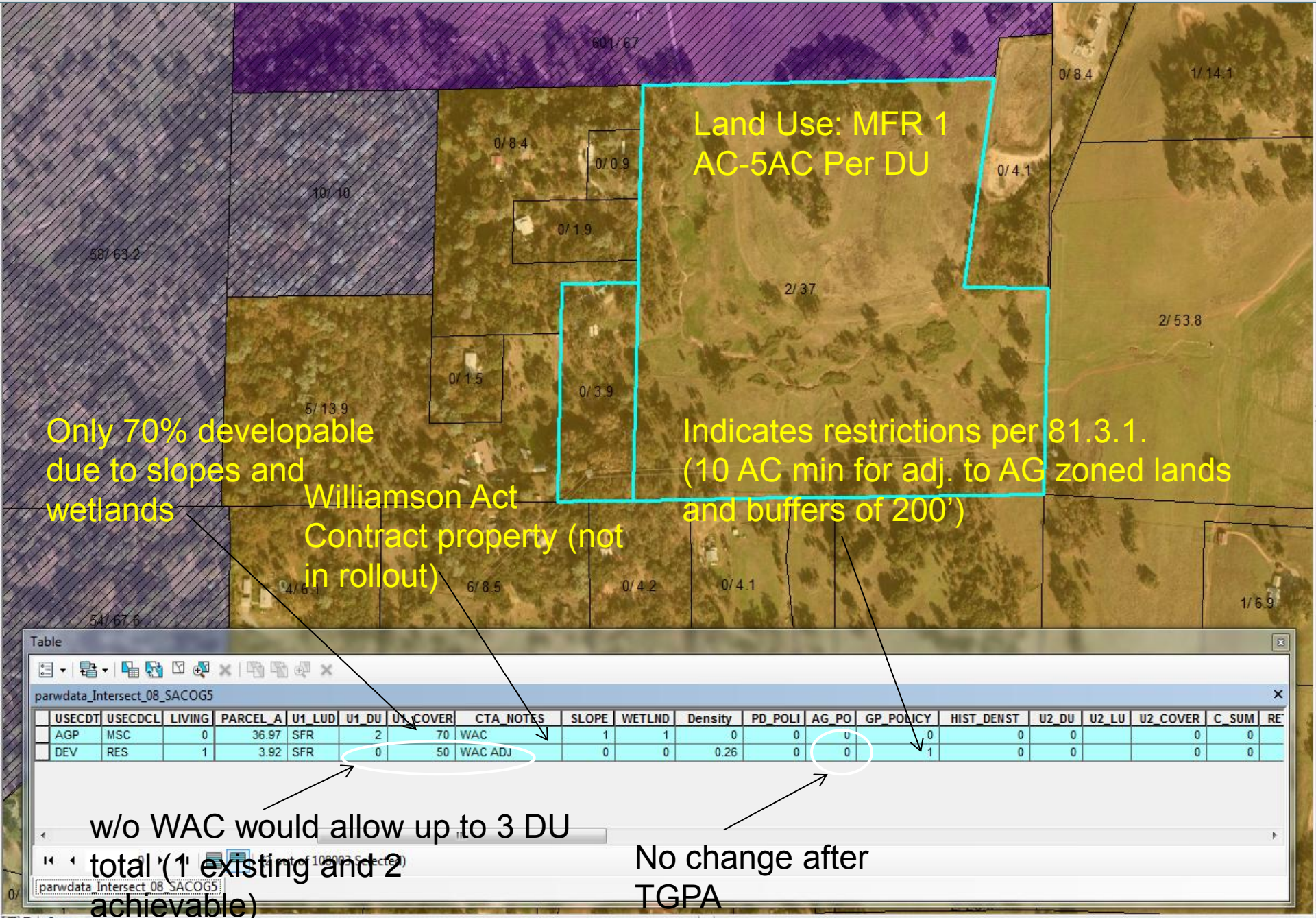
Community Region Analysis:



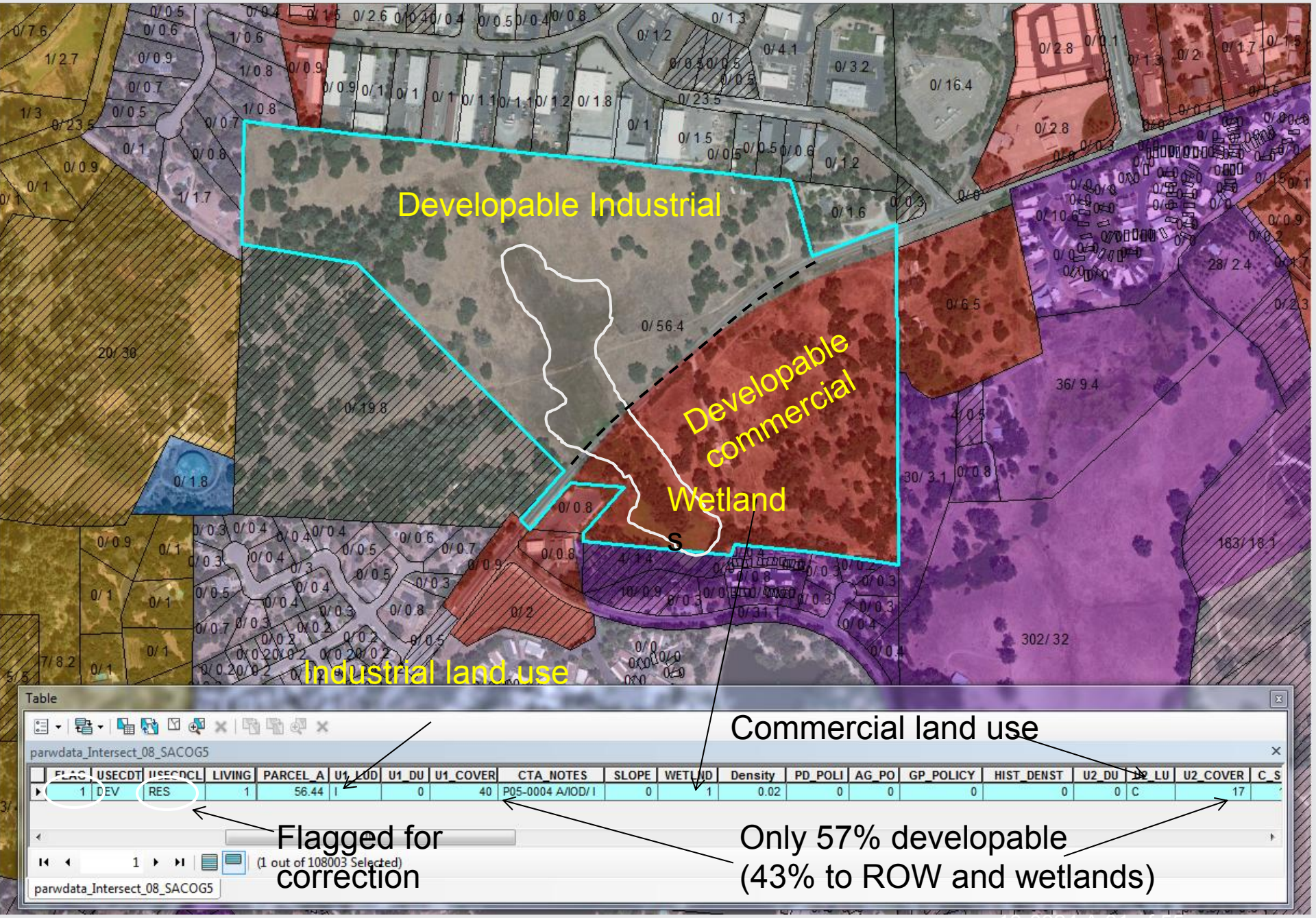
Community Region Analysis:

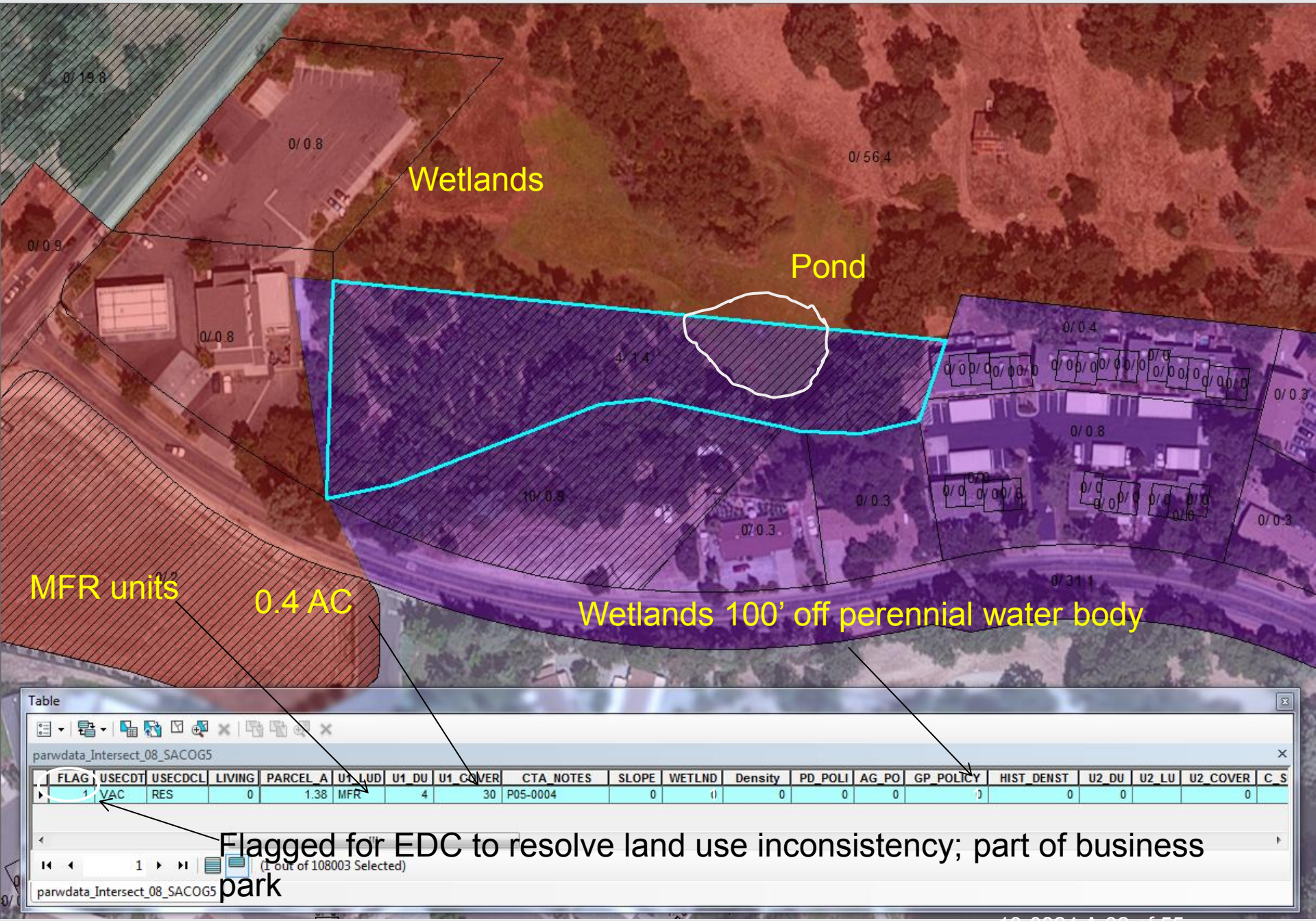



Google Earth Pro
File Edit View Tools Add Help
Search
Search Google Parcel Search (APN)
Search
ex: pizza near NYC
Get Directions History
Places
My Places
Sightseeing
Select this folder and click on the 'Play' button below, to start the tour.
Line Measure
Line Measure
Polygon Measure
Path Measure
Path Measure
Path Measure
Path Measure
Polygon Measure
Placerville, CA 95667, USA
Path Measure
El Dorado Hills, CA, USA
Temporary Places
Profile A
Profile B
Layers
Earth Gallery
Primary Database
Earth Pro (US)
Borders and Labels
Places
Photos
Roads
3D Buildings
Ocean
Weather
Gallery
Global Awareness
More
Terrain
Sign in
Koki Ln
Tru Loop
Goody Ct
Windward Way
Union Mine Rd
Sunlight Dr
Cappella Dr
Treemont Dr
Calico Mine Rd
Patterson Dr
1599 ft
584 ft
-26.1%
© 2013 Google
Google earth
Imagery Date: 6/10/2012 1993
38°40'08.12" N 120°50'01.15" W elev 1551 ft
Eye alt 6127 ft
Graph: Min, Avg, Max Elevation: 1558, 1632, 1742 ft
Range Totals: Distance: 1257 ft
Elev Gain/Loss: 62.8 ft, -232 ft
Max Slope: 93.9%, -45.8%
Avg Slope: 10.1%, -21.6%
1742 ft
1725 ft
1700 ft
1675 ft
1650 ft
1625 ft
1600 ft
1575 ft
1558 ft
1599 ft
-26.1%
250 ft
500 ft
584 ft
750 ft
1000 ft
1257 ft



USECDT	USECDCL	LIVING	PARCEL_A	U1_LUD	U1_DU	U1_COVER	CTA_NOTES	SLOPE	WETLND	Density	PD_POLI	AG_PO	GP_POLICY	HIST_DENST	U2_DU	U2_LU	U2_COVER	C_SUM	RE
AGP	MSC	0	36.97	SFR	2	70	WAC	1	1	0	0	0	0	0	0		0	0	
DEV	RES	1	3.92	SFR	0	50	WAC ADJ	0	0	0.26	0	0	1	0	0		0	0	


Developable Industrial
Developable commercial
Wetland
Industrial land use
Commercial land use
Flagged for correction
Only 57% developable (43% to ROW and wetlands)
Table
parwdata_Intersect_08_SACOG5
FLAG | USECDT | USESDCL | LIVING | PARCEL_A | U1_LUD | U1_DU | U1_COVER | CTA_NOTES | SLOPE | WETLND | Density | PD_POLI | AG_PO | GP_POLICY | HIST_DENST | U2_DU | U2_LU | U2_COVER | C_S
1 | DEV | RES | 1 | 56.44 | I | 0 | 40 | P05-0004 A/IOD/ I | 0 | 1 | 0.02 | 0 | 0 | 0 | 0 | 0 | C | 17
(1 out of 108003 Selected)
parwdata_Intersect_08_SACOG5



Flagged for EDC to resolve land use inconsistency; part of business park

2035 Housing:

Inputs

2035 Market Area Housing Projection

Achievable Development

Existing Plus Commitments

Output

2035 Land Use Forecast

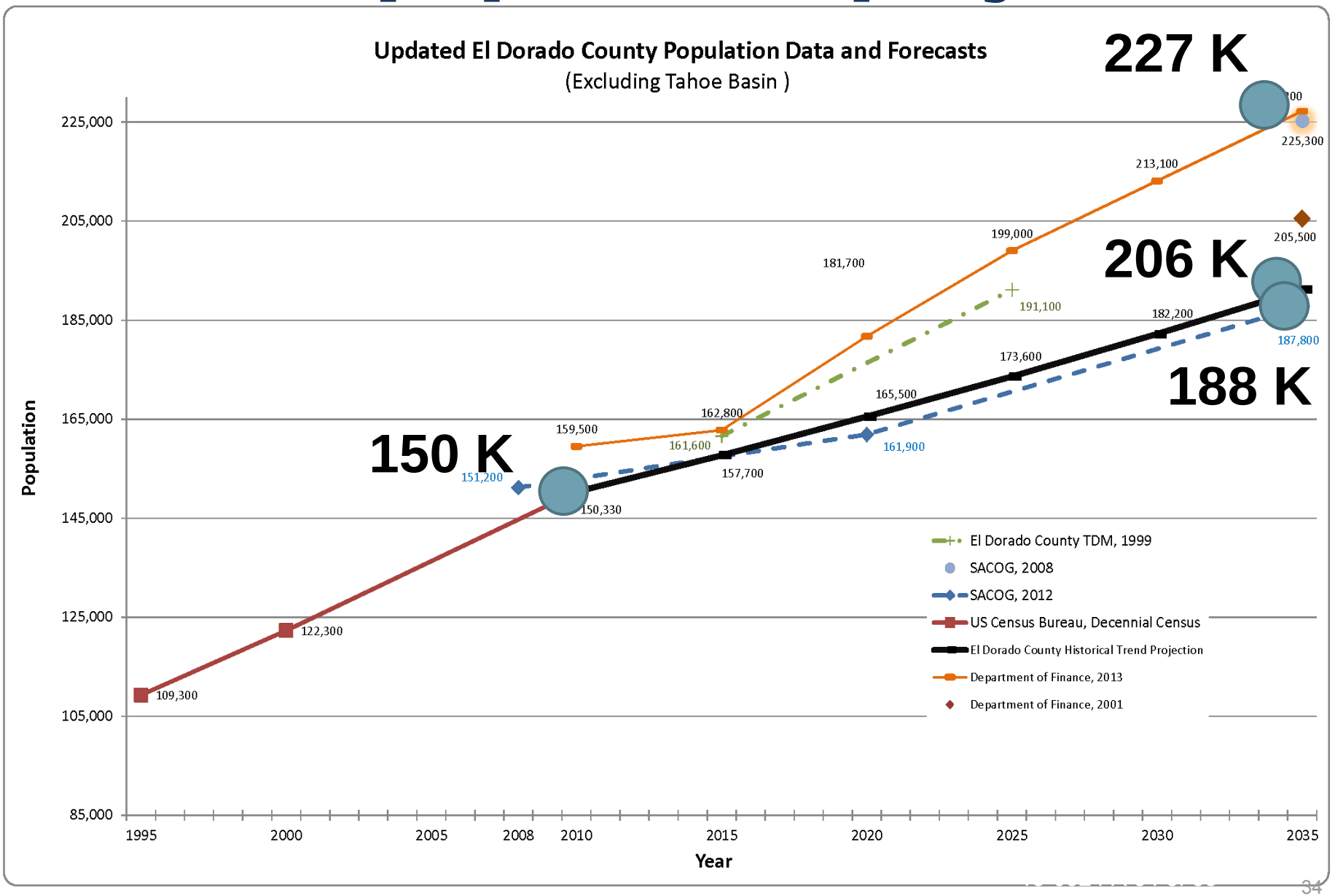
Travel Demand Model

2035 Traffic Analysis Zones

2035 Traffic Analysis Zone Data

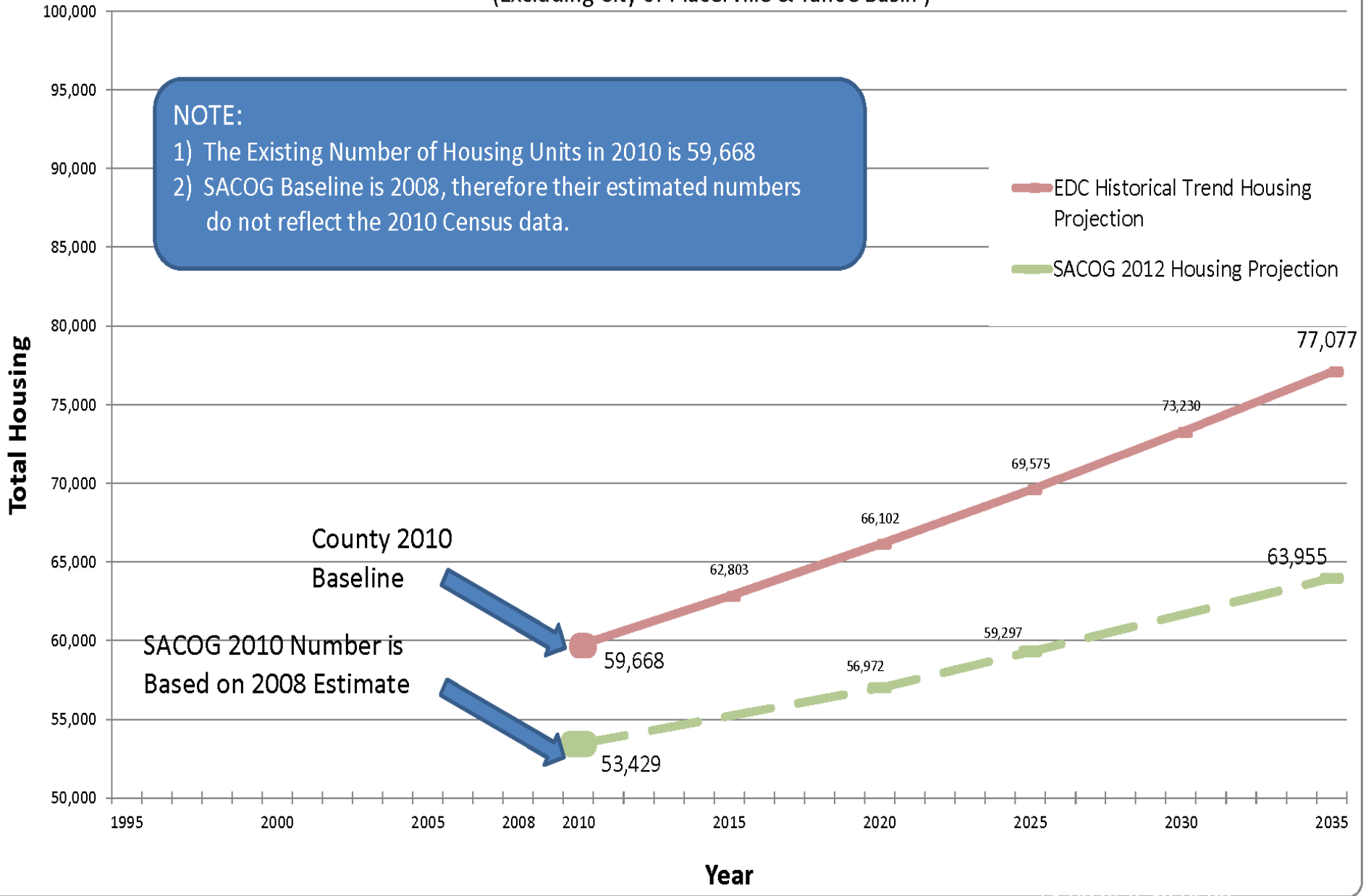
212	213	214	215	216	217	218	219	220	221	222	223	224	225	226
1	3	1	2	0	2	1	3	2	1	0	4	0	1	3

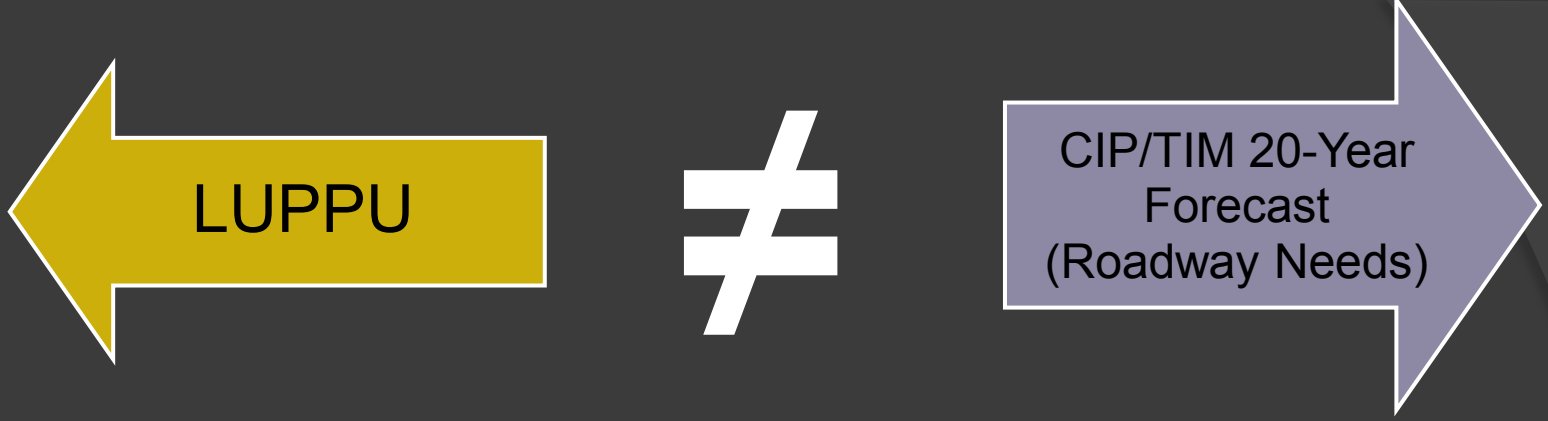
Revised population projections



El Dorado County Housing Projections

(Excluding City of Placerville & Tahoe Basin)





Analysis for Environmental Impact Report (EIR)

1. Review of 2002 Land Use Forecast
2. Baseline of 2010 conditions (existing road network, housing, employment, traffic counts, etc.)
3. Realistic Capacity of Remaining General Plan Forecast for Project and No Project (Achievable Development)

OPTIONAL Scenarios for 2035 Forecast

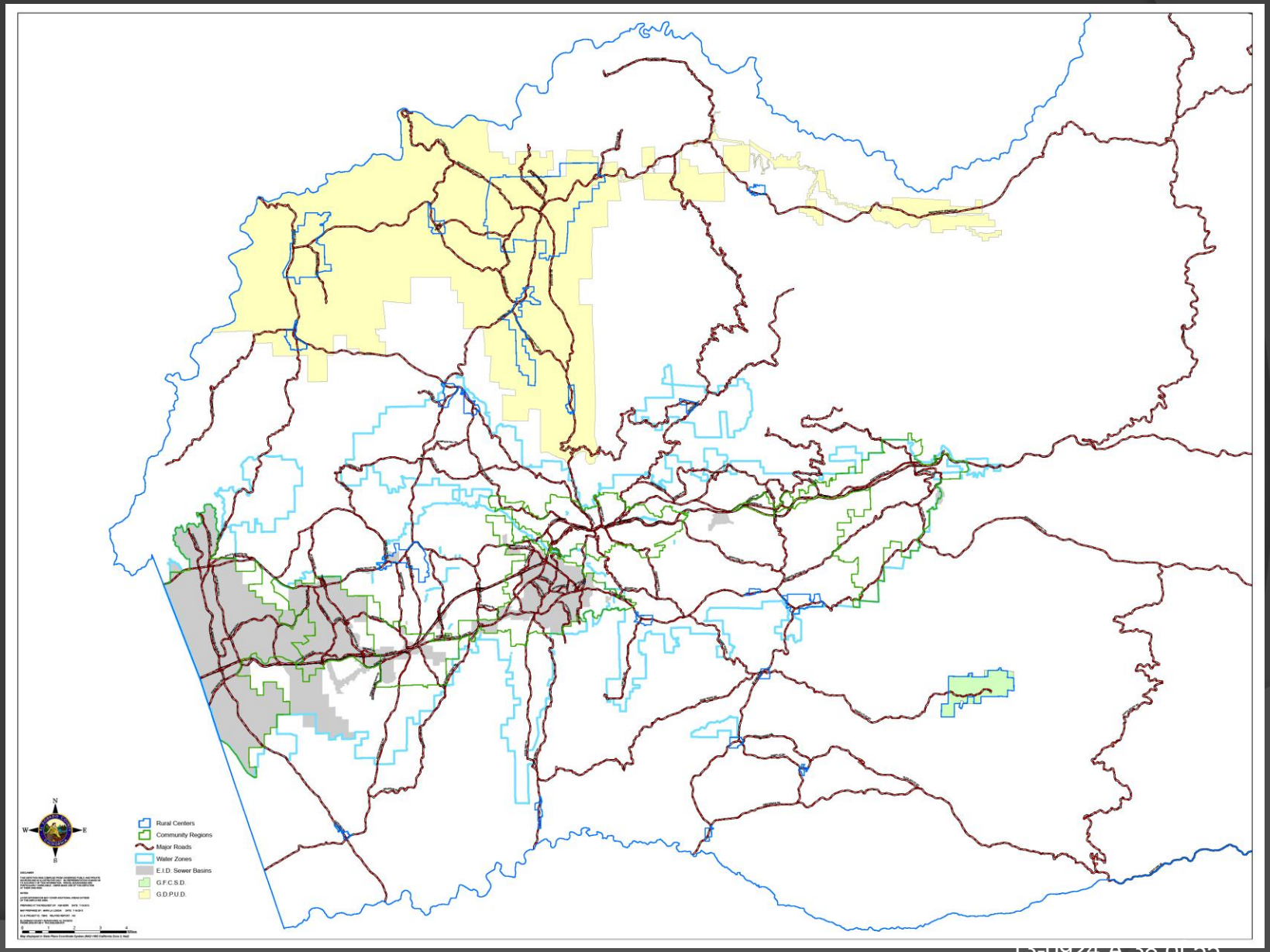
1. Historical Development Pattern (75/25) as presented
   - Economic Development
   - SB375 Transit Connector
   - RHNA
   - Entitlements
   - Existing Vacant Lots
2. Road Constraint
   - RHNA
   - Entitlements
   - Existing Vacant Lots
3. SACOG Sustainable Communities Strategy
   - RHNA
   - Entitlements
   - Existing Vacant Lots

CIP Scenario Example…75% Of Development in Community Region with Sewer and Water

Residential	TOTAL
Achievable Development based on Realistic Capacity	19,066
2035 Forecast (Historical Trend of 1.03% average per year)	17,409
75% of 2035 Forecast (Historical Trend of 1.03% average per year)	13,057
Vacant Single Family Residential Lots*	2,811
Entitlements (Residential lots)**	5,762
Mandated Affordable Units (RHNA - Moderate and below)	2,357
Potential Second Units within 2035 Forecast***	522
Residential Component of Mixed Use	257
Remaining Forecast units for Community Regions with Sewer and Water	1,348
Community Regions with Sewer	13,057
Source: El Dorado County GIS, Transportation and Planning Department Documents	
* Includes: All existing residential parcels including existing lots in Bass Lake Hills, Carson Creek, NW El Dorado Hills, The Promontory, Serrano, and Valley View Specific Plans (existing APN) ** Includes: Approved Specific Plans, Tentative and Parcel maps west slope only (no final map)	
*** Estimated 4% of Total Achievable Development	

No Proposed General Plan Amendments Included in this Scenario

Water and Sewer Map



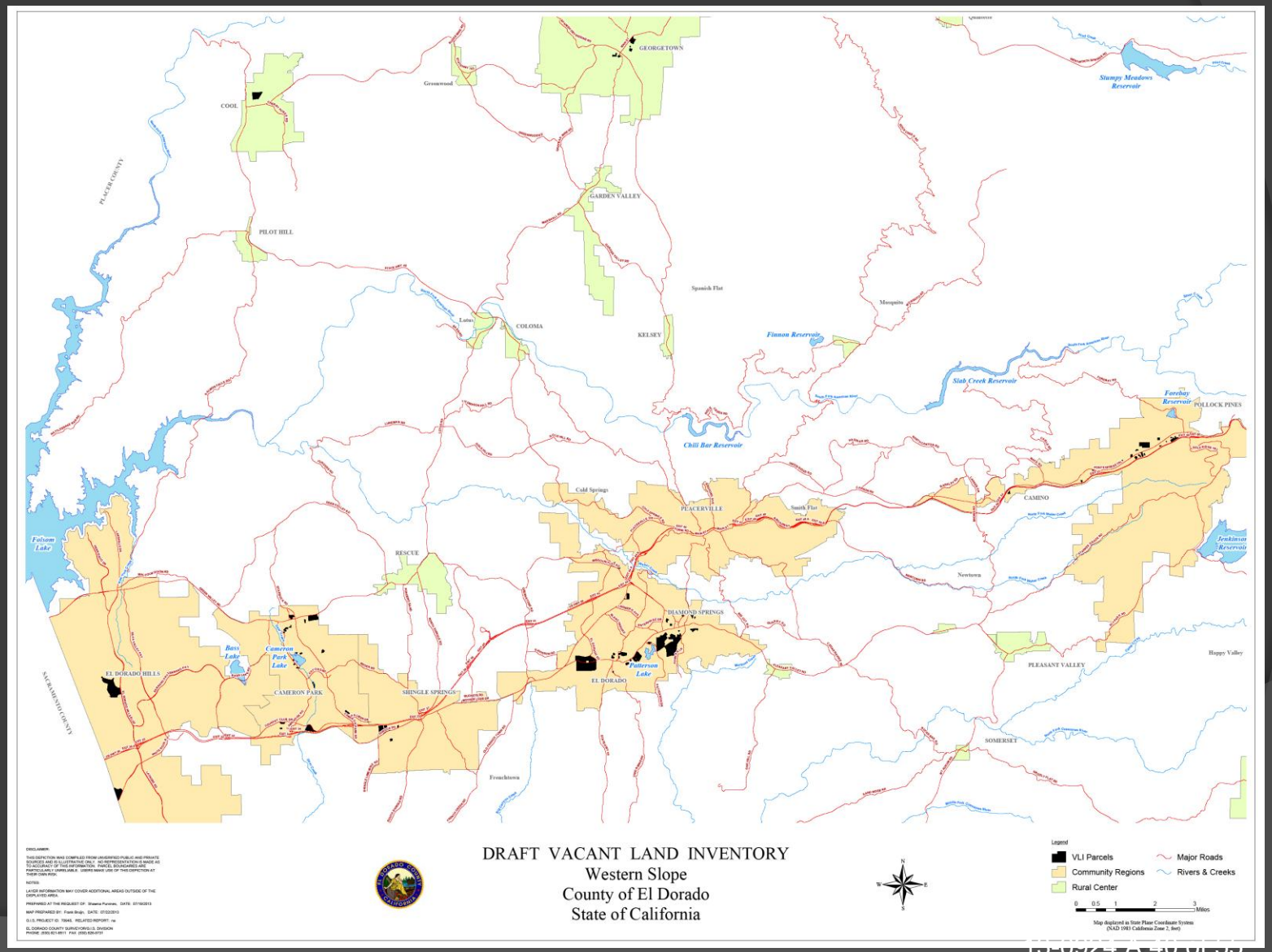
Accommodating RHNA

Importance of Accommodating 2013-2021 RHNA

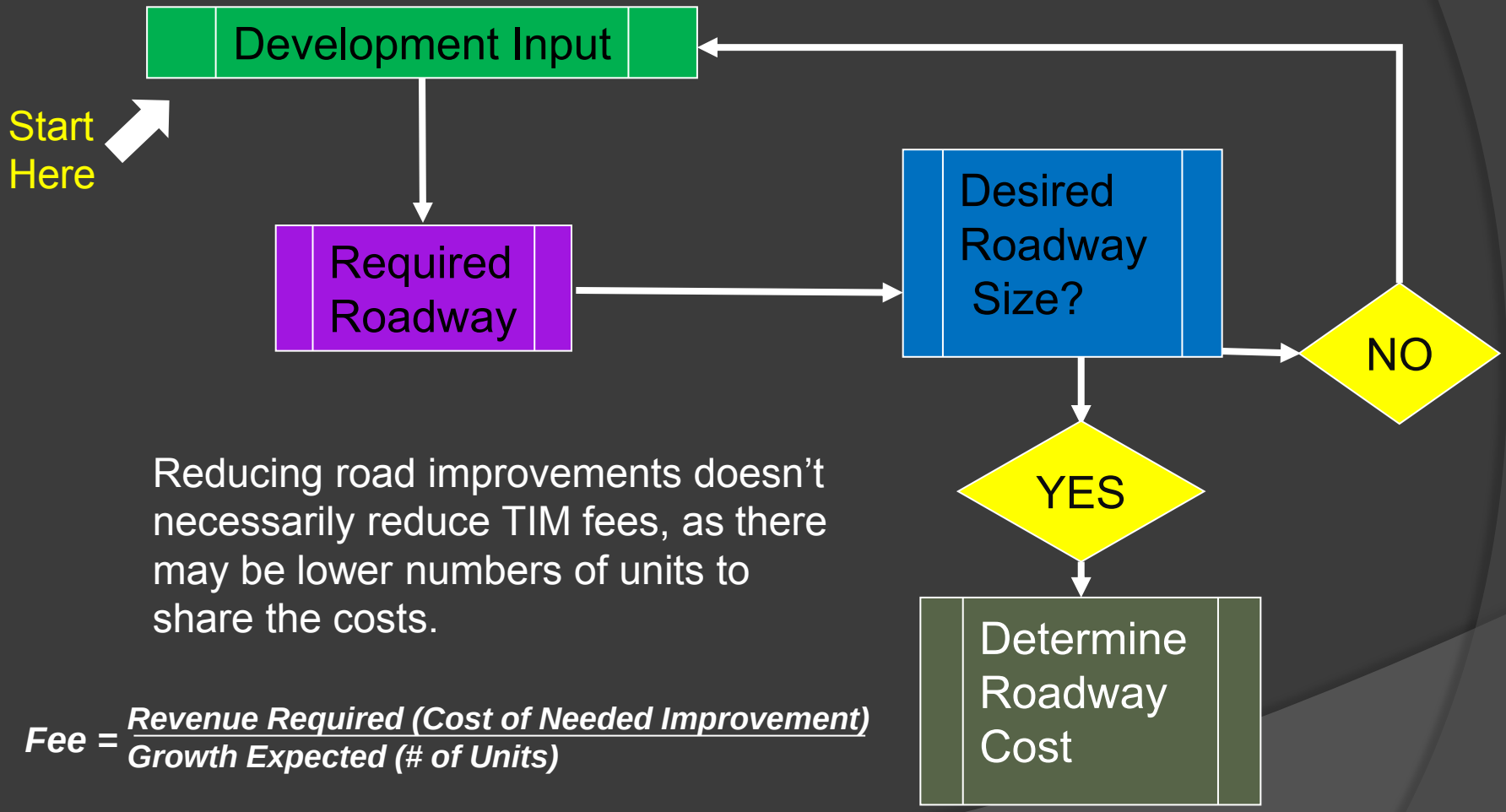
- Legal adequacy of the General Plan
- Local control of land use decisions
- Maintain eligibility to pursue grant funds (Including Transportation and Circulation Funds)

RHNA – Regional Housing Needs Allocation

Draft Vacant Land Inventory



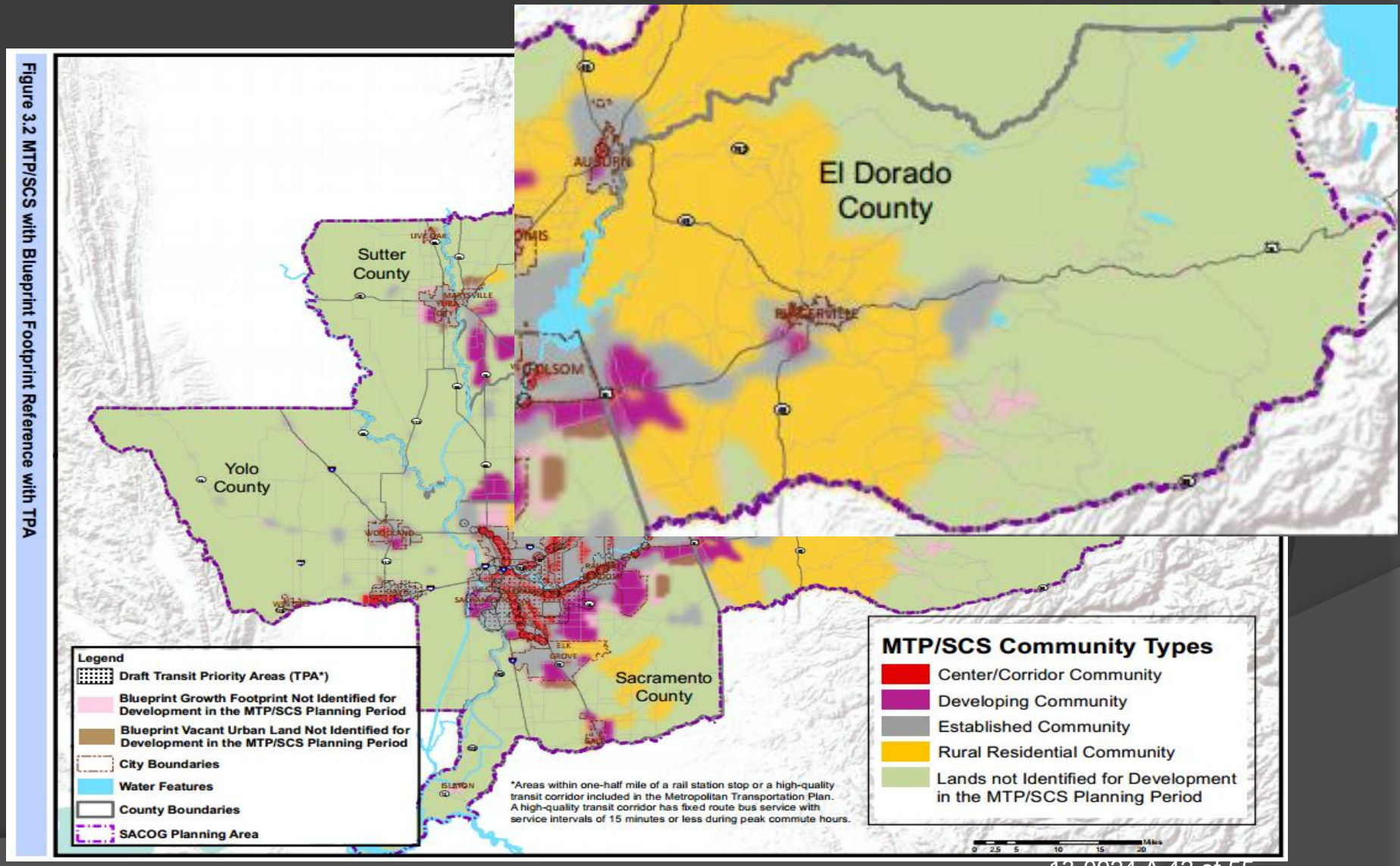
Road Constrained Scenario:



Reducing road improvements doesn't necessarily reduce TIM fees, as there may be lower numbers of units to share the costs.

$$Fee = \frac{Revenue\ Required\ (Cost\ of\ Needed\ Improvement)}{Growth\ Expected\ (\#\ of\ Units)}$$

SACOG SCS Growth Forecast



Sample Draft TDM Results

		Existing	2004 General Plan Table TC-2	Year 2025 Projections LOS (using 2004 GP Model)	Year 2025 Projections LOS (using 2013 GP Model)	Year 2035 Projections LOS (using 2013 GP Model)
Road	Segment	Functional Class (2010)	Max V/C (Volume to Capacity Ratio)	Weekday PM Peak Hour (V/C ratio) using HCM 2000	Weekday PM Peak Hour (V/C ratio) using HCM 2000	Weekday PM Peak Hour (V/C ratio) using HCM 2000
Cambridge Road	Country Club Drive to Oxford Road	2A	1.07	D (0.58)	C (0.49)	D (0.53)
Cameron Park Drive	Robin Lane to Coach Lane	4AU	1.11	D (0.89)	C (0.38)	C (0.42)
Missouri Flat Road	U.S. Highway 50 to Mother Lode Drive	4AD	1.12	D (0.92)	C (0.51)	D (0.73)
	Mother Lode Drive to China Garden Road	4AU	1.20	F (1.14)	D (0.80)	D (0.90)
Pleasant Valley Road	El Dorado Road to State Route 49	2U	1.28	D (0.65)	D (0.78)	E (0.83)
U.S. Highway 50	Canal Street to junction of State Route 49 (Spring Street)	3A(EB)/ 2A(WB)	1.25	C (0.55)	C (0.57)	C (0.61)
	Junction of State Route 49 (Spring Street) to Coloma Street	3A(EB)/ 2A(WB)	1.59	B (0.39)	C (0.57)	C (0.62)
	Coloma Street to Bedford Avenue	3A(EB)/ 2A(WB)	1.61	B (0.39)	C (0.63)	C (0.68)
	Bedford Avenue to beginning of freeway	4M	1.73	E (0.93)	F (1.25)	F (1.36)
	Beginning of freeway to Washington overhead	4F	1.16	B (0.41)	C (0.56)	C (0.80)
	Ice House Road to Echo Lake	2U	1.16	F (1.01)	F (1.02)	F (1.08)
State Route 49	Pacific/Sacramento Street to new four-lane section	2U	1.31	D (0.75)	E (0.80)	E (0.86)
	U.S. Highway 50 to State Route 193	2A	1.32	C (0.33)	C (0.40)	C (0.41)
	State Route 193 to County line	2R	1.51	D (0.78)	D (0.57)	D (0.63)

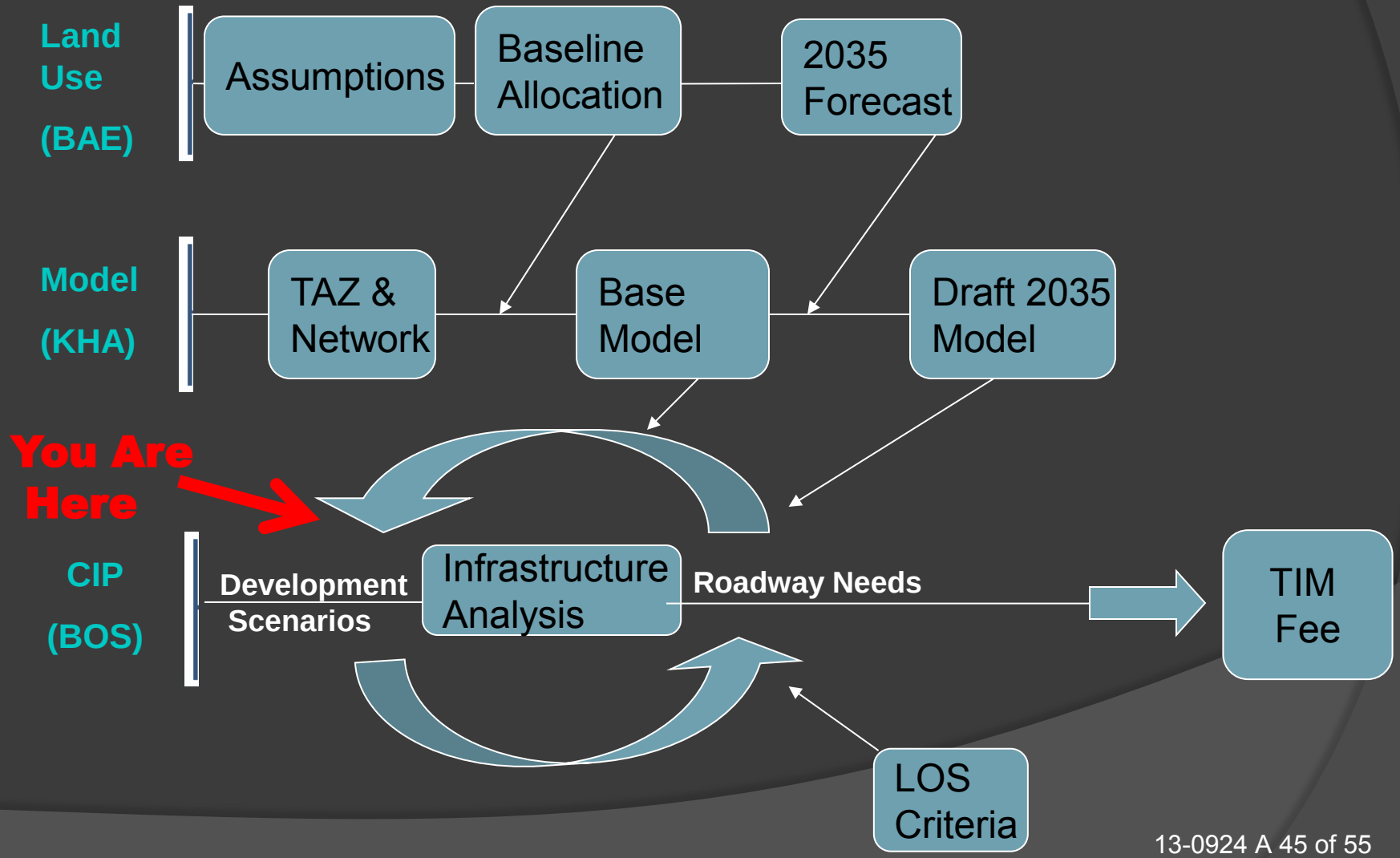
HCM = Highway Capacity Manual

V/C ratio = volume to capacity ratio calculated using t2000 HCM

Why does Level of Service (LOS) look better in some cases?

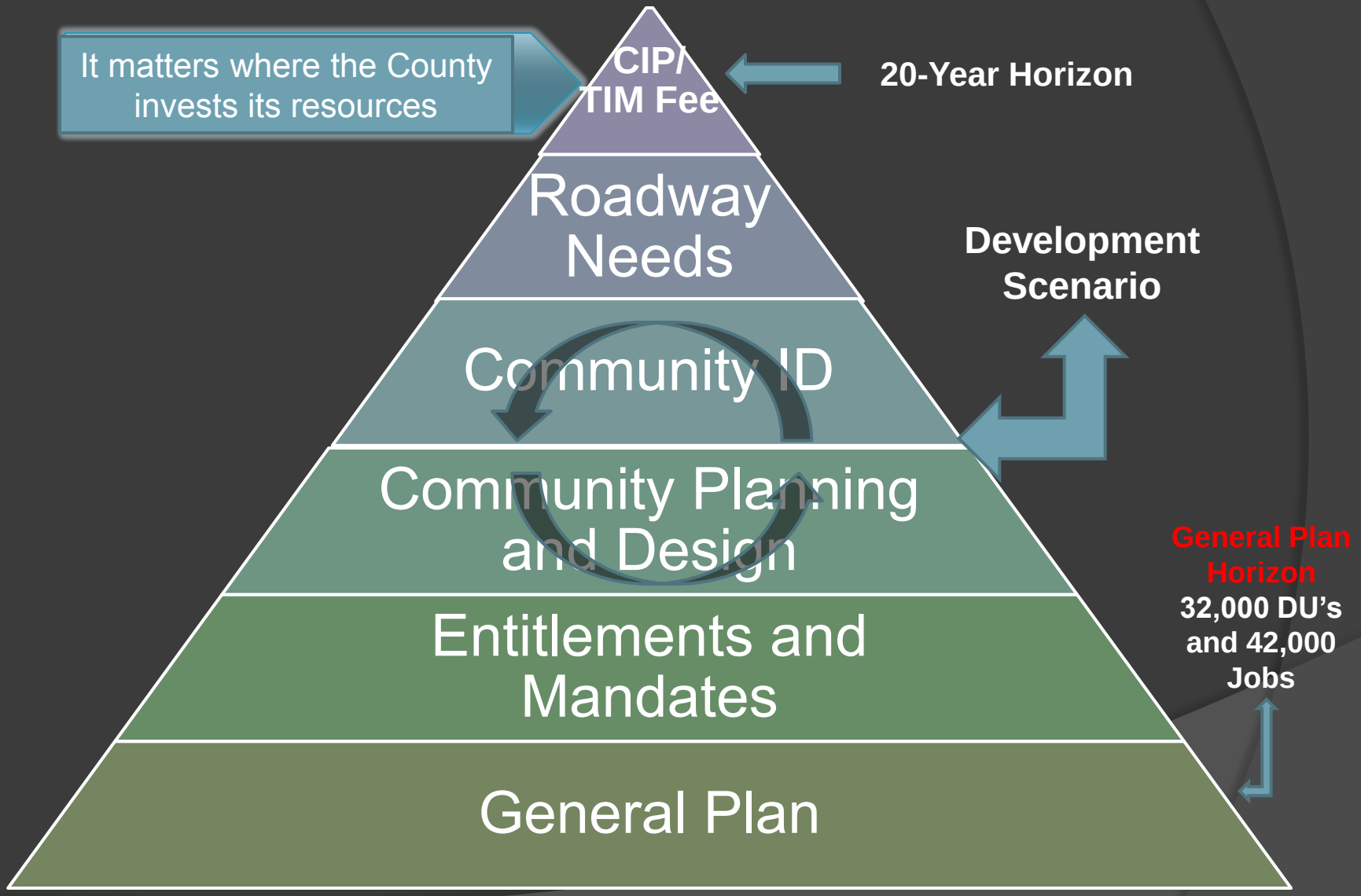
- Road Improvements since 2004 General Plan
- Reduction in growth projections
- Growth predicted didn't occur

Travel Demand Model




YIELD
LOCAL COURTESY
IS 5–7 CARS

“What If”…scenarios for TIM Fee



Travel Demand Model/Roadway Network Analysis* vs. Development Projects

TIM FEE/CIP

FINAL TDM

SCENARIO ANALYSIS/FEEDBACK FROM BOS

SCENARIO ANALYSIS/FEEDBACK FROM BOARD OF SUPERVISORS

SCENARIO ANALYSIS/FEEDBACK FROM BOARD OF SUPERVISORS

DRAFT TRAVEL DEMAND MODEL – BASELINE AND FORECAST

July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | March | April | May

TDM/Roadway Network Analysis

Developer receives info from TDM baseline and forecast

Proposed GPA projects are not considered in County analysis

Proposed GPA Projects

SUBMITS TO PC & BOS FOR CONSIDERATION

PROCESSES EIR

SUBMITS TO COUNTY FOR REVIEW AND COMMENT

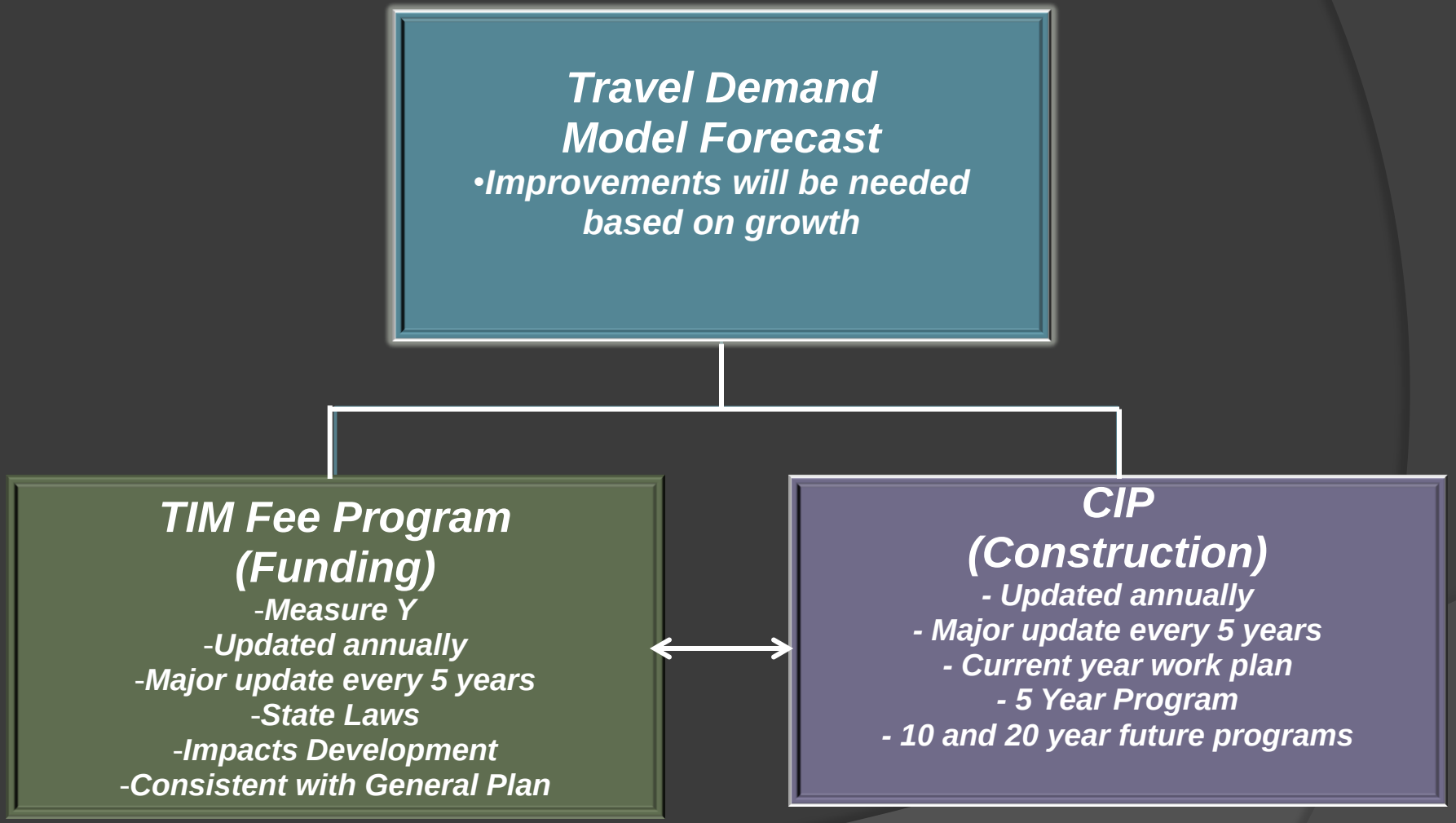
ANALYZES DEVELOPMENT AND ALL SURROUNDING DEVELOPMENT PROJECTS

RECEIVES DRAFT TRAVEL DEMAND MODEL DATA FROM COUNTY

RECEIVES SCOPE OF WORK FOR PROJECT FROM COUNTY FOR TRAFFIC IMPACT STUDY

*Based on adopted General Plan land use

Travel Demand Model feeds the TIM Fee Program and the CIP:



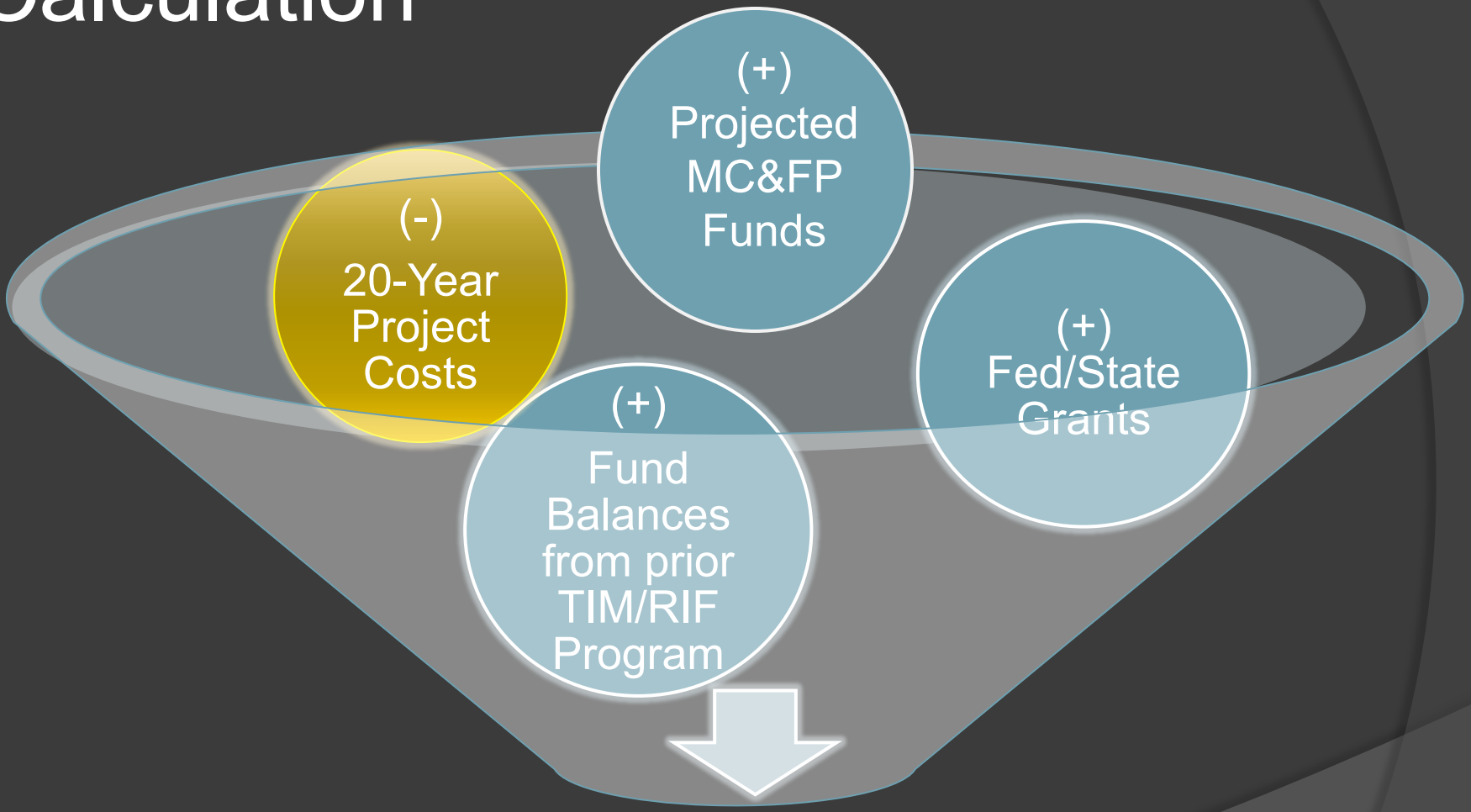
Basics to Remember

$$\text{TIM Fee} = \frac{\text{Cost of Required New Roadway Infrastructure}}{\text{Number of new homes}}$$

Limiting growth in community regions leads to whack-a-mole effect - growth in rural regions, which may increase required infrastructure in rural areas, increased CIP projects and TIM Fee Projects, therefore raising the Fees in Rural Areas.

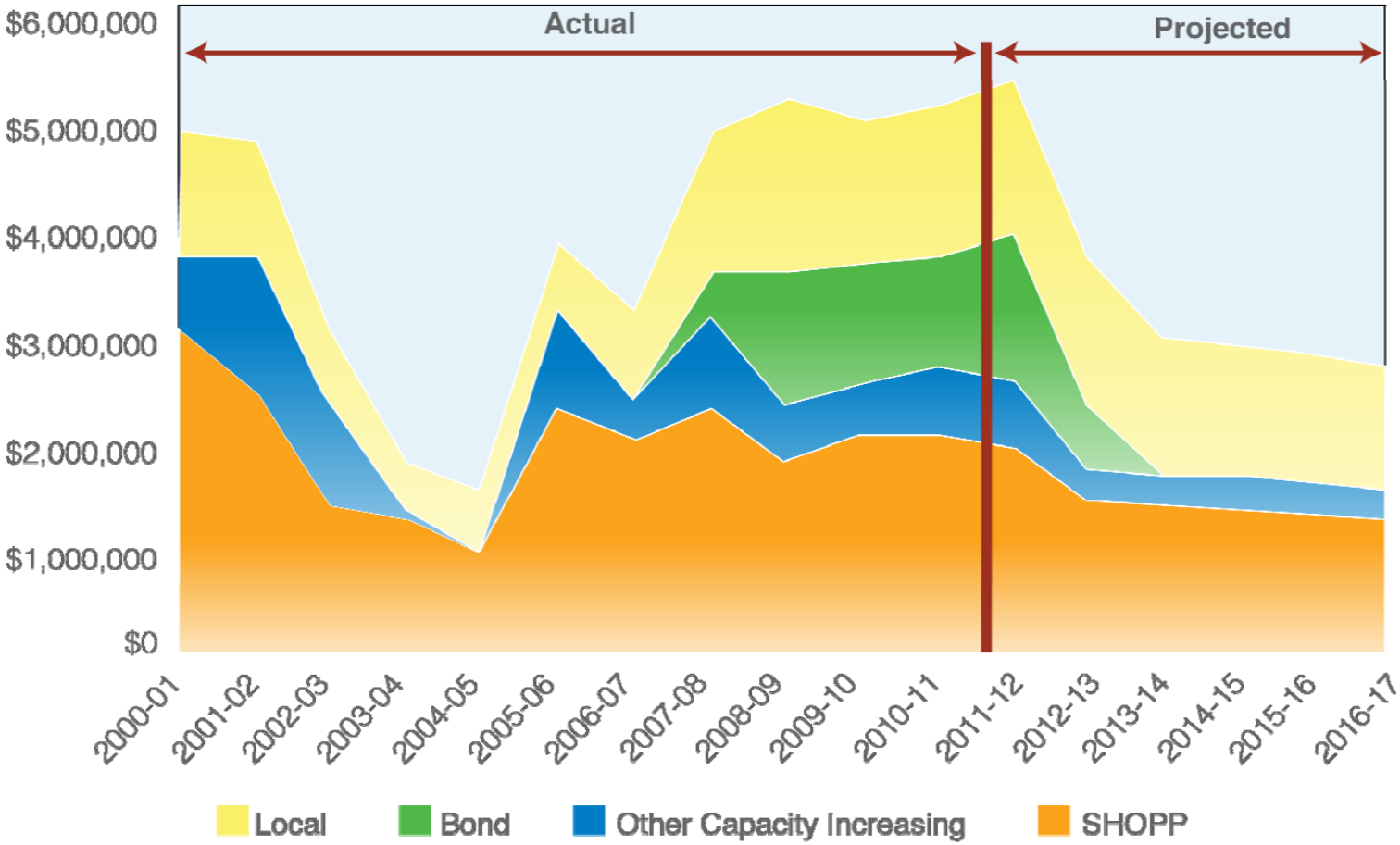
As a reminder, rural area fees were maintained low based on assumption that their impacts on major roadways could be reduced.

TIM Fee Program Cost Summary Calculation



* The projects are analyzed to meet General Plan LOS Policies and based on 2004 General Plan Land Uses. Proposed Development Projects are not considered.

Funding Will Collapse in 2013



Source: *Transportation Weekly*. Vol. 11, Issue 34

What is to come for the 5-Year CIP update:

- Update Design Standards
- Update Signal Priority & Intersection Mitigation list
- Review Project Soft Costs
- Analyze County's LOS Policies
- Board Discussion on Development Scenarios
- Board Discussion for 5-Year CIP
- Board Discussion for 5-YearTIM Fee Program

Board Direction

<u>OPTIONAL</u> Scenarios for 2035 Forecast

1. Historical Development Pattern (75/25) as presented
   - Economic Development
   - SB375 Transit Connector
   - RHNA
   - Entitlements
   - Existing Vacant Lots
2. Road Constraint
   - RHNA
   - Entitlements
   - Existing Vacant Lots
3. SACOG Sustainable Communities Strategy
   - RHNA
   - Entitlements
   - Existing Vacant Lots

Next Steps:

- With Board direction, CDA staff will:

  1) Run the TDM using the Board's preferred 2035 forecast scenario;

  2) Post preliminary results and assumptions of the TDM run on the County website; and

  3) Return to the Board in September or October of 2013 with results of the TDM, and what it means to the 5-Year CIP

- Next 2014 5-Year CIP Workshop – January 2014