

Emerging Fiscal Impact Tools

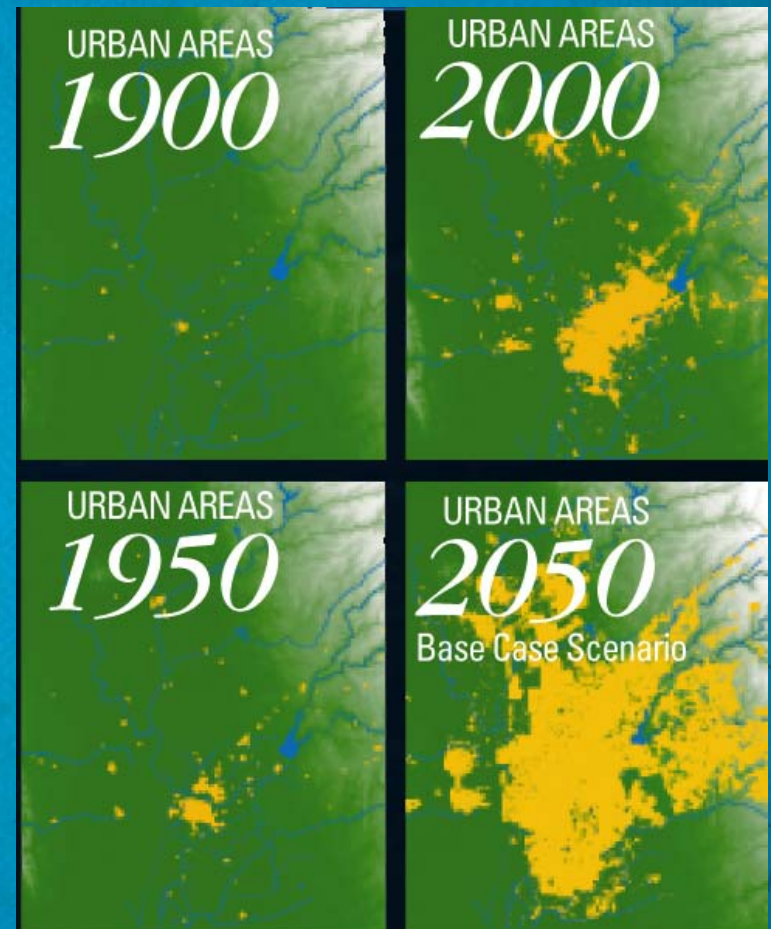
The Use of IMPACS in the Sacramento Region

New Partners for Smart Growth
Friday, February 14, 2014

Raef Porter
SACOG

To address concerns about regional growth, SACOG in 2002 launched the:

Sacramento Region Blueprint: Transportation/Land Use Study



MTP/SCS Principles



Smart Land Use



Economic Vitality



Environmental
Quality



Access and Mobility



Financial
Stewardship



Equity and Choice

Benefits of integrated land use and transportation planning...



ADDITIONAL URBANIZED LAND

Through 2050
(in square miles)

Base Case
Scenario

661 sm

Draft Preferred
Blueprint Scenario

304 sm

0

175

350

525

700

MTP/SCS Principles



Smart Land Use



Economic Vitality



**Environmental
Quality**



Access and Mobility

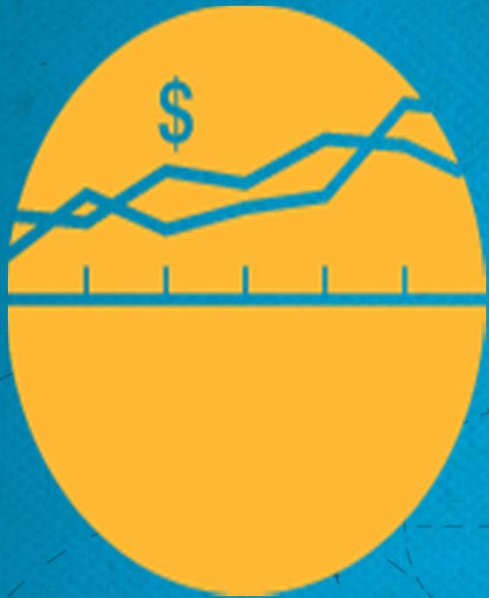


**Financial
Stewardship**



Equity and Choice

MTP/SCS Principles



Economic Vitality

IMPACS

LAND USE PLAN



INFRASTRUCTURE/FISCAL MODEL (IMPACS)



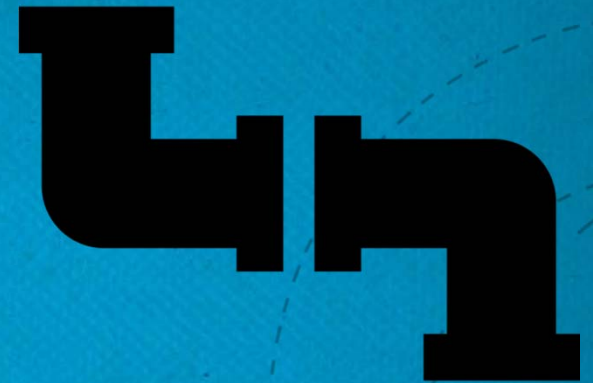
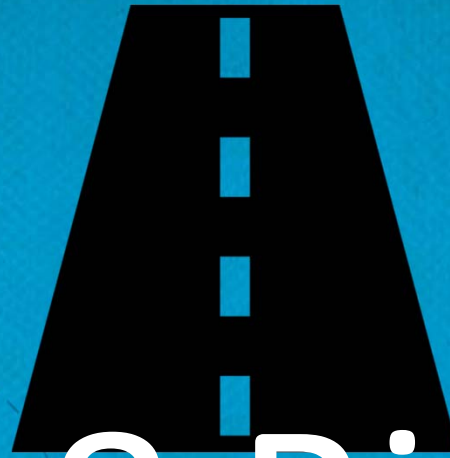
TYPE & AMOUNT
OF INFRASTRUCTURE &
SERVICES NEEDED

COST TO
BUILD,
MAINTAIN &
PROVIDE SERVICES

\$\$\$
REVENUE GENERATED FROM
LAND USE PLAN

Regional Analysis of Growth Scenarios

\$13.8 Billion





Input Mode: **Enter Area** Import Defaults from Prototype

Code	Residential	Acres	% of Land	HH Size	Net Density (DU/Ac)	Avg Lot Size	Avg Bldg Footprint	# Floor	Avg DU/Bld	FAR	Set back	DU	Residents	FTE	GFA	ERU
LU_Res1	Rural Residential	0.0	0.0%	2.8	1	1	3,049	1	1	0.07	120	0	0	0	0	0
LU_Res2	Very Low Density Residential	4.0	7.8%	2.8	4	0.25	2,831	1	1	0.26	60	16	45	0	45,296	16
LU_Res3	Low Density Residential	19.0	37.3%	2.5	8	0.125	2,505	1	1	0.46	50	152	380	0	380,760	152
LU_Res4	Medium Density Residential	10.0	19.6%	2.25	12.1	0.083	1,012	2	1	0.56	40	121	272	0	244,904	121
LU_Res5	Medium-High Density Residential	0.0	0.0%	2.1	24.9	0.5	7,514	2	13	0.69	30	0	0	0	0	0
LU_Res6	High Density Residential	0.0	0.0%	1.75	43.5	2	19,602	4	87	0.9	20	0	0	0	0	0
Total		33.0	64.7%									289	697	0	670,960	289

Code	Mixed Use	Acres	% of Land	HH Size	FAR	Avg Lot	Avg Bldg Footprint	# Floor	Avg DU/Bld	sFF TE	Set Back	DU	Residents	FTE	GFA	ERU
LU_Mix1	Mixed Use Residential Focus	0.0	0.0%	1.5	1.36	1.5	22,216	4	56	576	20	0	0	38	0	0
LU_Mix2	Mixed Use Employment Focus	0.0	0.0%	1.5	1.08	1.5	17,642	4	52	350	20	0	0	50	0	0
Total		0.0	0.0%									0	0	88	0	0

Code	Non-Residential	Acres	% of Land	HH Size	FAR	Avg Lot	Avg Bldg Footprint	# Floor	Avg DU/Bld	sFF TE	Set Back	DU	Employees	FTE	GFA	ERU
LU_NRes1	Moderate Intensity Office	1.0	2.0%	0	1.02	0.25	5,554	2	0	350	100	0	126	126	44,431	17
LU_NRes2	Community/Neighborhood Commercial / Office	3.0	5.9%	0	0.29	0.25	1,053	3	0	350	100	0	108	108	37,897	15
LU_NRes3	Light Industrial Office	4.0	7.8%	0	0.3	0.5	3,267	2	0	350	50	0	149	149	52,272	20
LU_NRes4	Community / Neighborhood Retail	1.0	2.0%	0	0.28	0.5	6,098	1	0	576	100	0	21	21	12,197	4
LU_NRes5	Regional Retail	4.0	7.8%	0	0.34	5	74,052	1	0	576	100	0	102	102	59,242	23
LU_NRes6	Light Industry	0.0	0.0%	0	0.33	2	28,750	1	0	400	100	0	0	0	0	0
LU_NRes7	Heavy Industry	0.0	0.0%	0	0.23	2	20,038	1	0	2500	100	0	0	0	0	0
LU_NRes8	Warehouse /Storage	0.0	0.0%	0	0.33	2	28,750	1	0	20000	100	0	0	0	0	0
LU_NRes9	Recreation Center	0.0	0.0%	0	0.3	3	39,204	1	0	2175	100	0	0	0	0	0
LU_NRes10	Public/Quasi Public	0.0	0.0%	0	0.3	1.5	6,534	3	0	2175	100	0	0	0	0	0
LU_NRes11	Restaurant Dining	0.0	0.0%	0	0.28	1	12,197	1	0	482.5	50	0	0	0	0	0
LU_NRes12	Hotel	0.0	0.0%	0	0.34	3	11,108	4	0	2200	200	0	0	0	0	0
LU_NRes13	Medical / dental clinic	0.0	0.0%	0	0.98	1	42,689	1	0	350	50	0	0	0	0	0
LU_NRes14	Church	0.0	0.0%	0	0.23	2	20,038	1	0	2175	100	0	0	0	0	0
LU_NRes15	Schools	0.0	0.0%	0	0.3	5	65,340	1	0	1370	200	0	0	0	0	0
Total		13.0	25.5%									0	506	506	206,039	79



Total Residents: 697

	High	Median	Low	
Interior GPCD	70	55	50	gallons / capita / day
Toilets, Kitchen Sinks etc.	21	18	15	gallons / capita / day
Residential Interior Demand	17,808,350	13,992,275	12,720,250	gallons / yr
Residential Sewer	14,246,680	11,193,820	10,176,200	gallons / yr



Non-Residential Potable Water Demand Rates

Total Non Residential FTE 594

Land Use	FTE	Interior GPFE (gallons / FTE / Day)		
		High	Median	Low
Moderate Intensity Office	126	3,219,300	2,529,450	2,299,500
Community/Neighborhood Commercial / Office	108	2,759,400	2,168,100	1,971,000
Light Industrial Office	149	3,806,950	2,991,175	2,719,250
Community / Neighborhood Retail	21	536,550	421,575	383,250
Regional Retail	102	2,606,100	2,047,650	1,861,500
Light Industry	0	0	0	0
Heavy Industry	0	0	0	0
Warehouse / Storage	0	0	0	0
Recreation Center	0	0	0	0
Public / Quasi Public	0	0	0	0
Restaurant Dining	0	0	0	0
Hotel	0	0	0	0
Medical / dental clinic	0	0	0	0
Church	0	0	0	0
Schools	0	0	0	0
Mixed Use Residential Focus	0	0	0	0
Mixed Use Employment Focus	0	0	0	0
Totals	506	12,928,300	10,157,950	9,234,500

	High	Median	Low
Total Culinary Water Demand	30,736,650	24,150,225	21,954,750
Total Sanitary Sewer	24,589,320	19,320,180	17,563,800


Step 1
Step 2
Step 3

Introduction
Define Scenario Program
Calibrate Infrastructure Assumptions & Inputs
View Outputs & Reports
Data & References

Demand
Capacity
Cost
Revenue

Culinary Water
Secondary Water
Sanitary Sewer
Flood Control & Drainage
Streets and Transportation
Water & Wastewater Treatment

Landscape Definition Worksheet

Code	Land Use	0.8 % Roof	0.9 % Hardscape	0.4 % Turf	0.22 % Plantings
LU_Res1	Rural Residential	0.00%	5%	50%	45%
LU_Res2	Very Low Density Residential	1.62%	5%	50%	43%
LU_Res3	Low Density Residential	0.30%	5%	50%	45%
LU_Res4	Medium Density Residential	0.23%	5%	50%	45%
LU_Res5	Medium-High Density Residential	0.00%	5%	50%	45%
LU_Res6	High Density Residential	0.00%	40%	15%	45%
LU_Mix1	Mixed Use Residential Focus	0.00%	60%	25%	15%
LU_Mix2	Mixed Use Employment Focus	0.00%	60%	25%	15%
LU_NRes1	Moderate Intensity Office	12.75%	65%	10%	12%
LU_NRes2	Community/Neighborhood Commercial / Office	0.81%	85%	5%	9%
LU_NRes3	Light Industrial Office	1.88%	65%	10%	23%
LU_NRes4	Community / Neighborhood Retail	14.00%	85%	10%	0%
LU_NRes5	Regional Retail	42.50%	70%	0%	0%
LU_NRes6	Light Industry	0.00%	25%	50%	25%
LU_NRes7	Heavy Industry	0.00%	25%	50%	25%
LU_NRes8	Warehouse /Storage	0.00%	25%	50%	25%
LU_NRes9	Recreation Center	0.00%	10%	65%	25%
LU_NRes10	Public /Quasi Public	0.00%	30%	50%	20%
LU_NRes11	Restaurant Dining	0.00%	50%	25%	25%
LU_NRes12	Hotel	0.00%	50%	25%	25%
LU_NRes13	Medical / dental clinic	0.00%	65%	25%	10%
LU_NRes14	Church	0.00%	25%	50%	25%
LU_NRes15	Schools	0.00%	25%	70%	5%
LU_OS1	Parks	0.00%	5%	50%	45%
LU_OS2	OpenSpace	0.00%	5%	75%	20%
LU_OS3	Forest	0.00%	5%	0%	95%
LU_OS4	Urban Reserve	0.00%	5%	25%	70%
LU_OS5	Agriculture	0.00%	0%	0%	100%

chksum	composite c	wt. C
100.0%	0.344	0
100.0%	0.000	0
100.0%	0.454	0.169
100.0%	0.447	0.08759
100.0%	0.454	0
100.0%	0.296	0
100.0%	0.223	0
100.0%	0.345	0
100.0%	0.433	0.0085
100.0%	0.536	0.03155
100.0%	0.463	0.03633
109.0%	0.729	0.01429
112.5%	0.463	0.03631
100.0%	0.263	0
100.0%	0.175	0
100.0%	0.375	0
100.0%	0.413	0
100.0%	0.375	0
100.0%	0.275	0
100.0%	0.325	0
100.0%	0.413	0
100.0%	0.313	0
100.0%	0.343	0
100.0%	0.375	0.03676
100.0%	0.548	0
100.0%	0.430	0
100.0%	0.330	0
100.0%	0.950	0
Average C		0.42033



IMPACS2
.0

Step 1

Step 2

Step 3

Introduction

Define Scenario Program

Calibrate Infrastructure Assumptions & Inputs

Demand

Capacity

Cost

Revenue

View Outputs & Reports

Data & References

Water Systems Capacity


County	Community	Water Supply			Water Treatment			Water Storage			Sewer Treatment		
		Source	Existing	Designed	Source	Existing	Designed	Source	Existing	Designed	Source	Existing	Designed
UNITS		-	MGD	MGD	-	MGD	MGD	-	MG	MG	-	MGD	MGD
El Dorado	Cameron Park	11			11	32	32	12			10	4	6.1
El Dorado	Camino	11			11	32	32	12			10	4	6.1
El Dorado	Cool	1			1	4.6	5.3	8	0.5	0.5	9		
El Dorado	Diamond Springs/El Dorado	11			11	32	32	12			10	4	6.1
El Dorado	Fairplay	13			13			13			13		
Yolo	Dunnigan	5			5			5			3		
Yolo	Elkhorn	7			7			7			7		
Yolo	Knights Landing	4	1	4.3	4			4	0.015	0.015	4	0.01	0.105
Yolo	Madison	6	0.28	0.93	6			6			6	0.065	0.065
Yolo	Winters	2	10.1	19.4	2			5	0.2	0.2	2	0.6	3

Assumption: For Water Supply, unlimited amount of G.W. supply will be available.

Assumption: For Water Treatment, Water Storage and Sewer Treatment, empty cells mean no public/community level service was found and/or documented.

Sources:

1. Georgetown Divide Public Utility District Capital Facility Charge Study
- 2: Yolo County Draft Winters Municipal Services Review Infrastructure Needs and Deficiencies. RMC Water and Environment, December 2006, City of Winters Water Master Plan
- 3: County of Yolo 2030 Countywide General Plan - Public Facilities and Services Element
- 4: Knights Landing Community Services District. Final MSR/SOI Municipal Services Review, 2006
- 5: Yolo County Integrated Regional Water Management Plan
- 6: Yolo County LAFCO - Madison CSD, 2008 - Serving 644 people currently
- 7: Telephone conversation with Elkhorn FD (530-666-8048). No community supply/collection/treatment of water/sewer utilities
- 8: Angel Camp Tank - one of the 11 storage tanks within the GDPUD service area
- 9: The closest community disposal service is at Auburn Lake Trails, however no information is available if it connects to Cool or it's capacity
- 10: El Dorado County General Plan EIR, Section 5.5-1 Water Resources, May 2003 - Combined Capacity for (El Dorado Hills WWTP + Deer Lake WWTP)
- 11: El Dorado County General Plan EIR, Section 5.5-1 Water Resources, May 2003. Unlimited Capacity from Forebay WTP and Sly Park WTP
- 12: No local/community level water storage information was found
- 13: Google Earth and Wikipedia


IMPACS2 .0

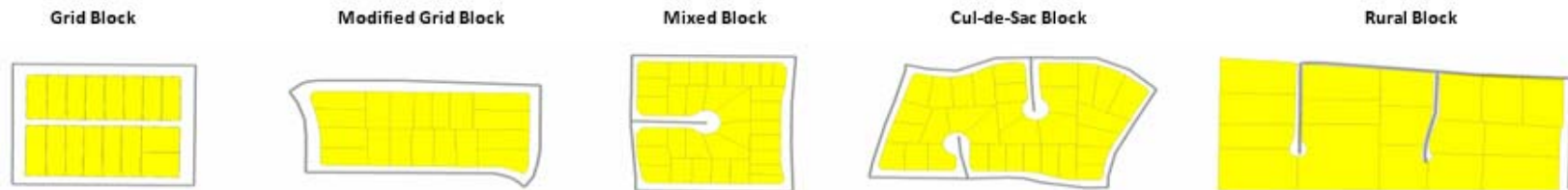
Step 1 **Step 2** **Step 3**

Introduction **Define Scenario Program** **Calibrate Infrastructure Assumptions & Inputs** **View Outputs & Reports** **Data & References**

Demand **Capacity** **Cost** **Revenue**

1. Specify Scenario Details **2. Enter Land Use Information** **3. Enter Development Parameters** **Import from Places3**

3-A BLOCK STREET PATTERN:



3-B STREET WIDTH:

Type	Description	ROW (ft)	Pavement width (ft)	Sidewalk Width (ft)	Sidewalk Completeness	Curb & Gutter Completeness	Lighting Spacing (ft)
StreetA	arterial street	80.00	48.00	6.00	100.00%	100.00%	300
StreetB	collector street	60.00	48.00	4.00	100.00%	100.00%	300
StreetC	local access 1	50.00	36.00	3.00	100.00%	100.00%	100
StreetD	local access 2	50.00	24.00	4.00	100.00%	100.00%	100
StreetE	parkway	50.00	24.00	0.00	0.00%	0.00%	500

Assign Development Pattern to Land Uses

Code	Land Use	Street Pattern
LU_Res1	Rural Residential	Rural Block
LU_Res2	Very Low Density Residential	Rural Block
LU_Res3	Low Density Residential	Cul-de-Sac Block
LU_Res4	Medium Density Residential	Modified Grid Block
LU_Res5	Medium-High Density Residential	Mixed Block
LU_Res6	High Density Residential	
LU_Mix1	Mixed Use Residential Focus	
LU_Mix2	Mixed Use Employment Focus	
LU_NRes1	Moderate Intensity Office	
LU_NRes2	Community/Neighborhood Commercial / Office	
LU_NRes3	Light Industrial Office	

- Default Street Pattern
Modified Grid Block
- Default Local Street
StreetC
- Default Major Street
StreetB



Step 1: Introduction, Define Scenario Program

Step 2: Calibrate Infrastructure Assumptions & Inputs (Demand, Capacity, Cost, Revenue)

Step 3: View Outputs & Reports, Data & References

Water Systems, **Transportation**, Services, Parks

Roadway Construction Costs (references Transportation Cost Tables)

Pavement (AC) /sf	\$6.63	Pavement Surface	Asphaltic Concrete (AC)	
Cost Pavement (PCC) / sf	\$7.44	# of Signalized Intersections	1	
Cost Sidewalk (PCC) / sf	\$4.69			
Cost Curb & Gutter+Drainage / LF	\$214.24			
Street Lighting (per Light)	\$8,000.00			
Signalized Intersection	\$250,000.00			

Selected Street Details (from Site Development Details)

Description	ROW (ft)	Pavement width (ft)	Sidewalk width (ft)	Sidewalk Completeness	Curb & Gutter Completeness	Lighting Spacing (ft)
local access 1	50	36	3	100%	100%	100
collector street	60	48	4	100%	100%	300

	local access 1	collector street
Roadway Pavement Cost	\$2,512,978	\$1,272,814
Curb & Gutter + Drainage Cost	\$2,257,047	\$857,389
Sidewalk Cost	\$49,424	\$18,775
Street Lighting Cost	\$842,810	\$106,720
Signalized Intersection Cost		\$250,000
Total	\$5,662,260	\$2,505,698
Total Cost for Roadway		\$8,167,958
O&M Costs	\$2,948	\$1,391
Total O&M Cost	\$4,338	

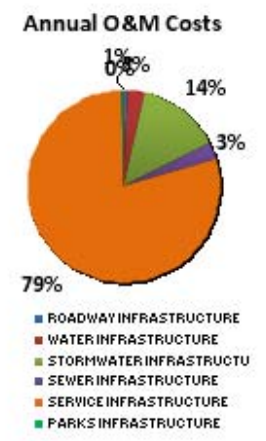
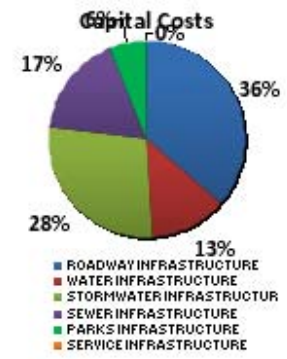
MUNICIPAL INFRASTRUCTURE SUMMARY

Select Standards Scenario: **Median**
 Select Cost Scenario:
 Select Capacity Scenario:

Public Sector Cost Implication
 Capital Cost: **\$811,830**
 Cost / ERU: **\$2,206**
 Annual O&M: **\$115,498**
 O&M / ERU: **\$314**

Component	Quantities		Capital Construction Costs		Annual O&M Costs		Check to Include Capital Cost or
	Total (ft)	Ft/ERU	Total	Per ERU	Total	Per ERU	
ROADWAY INFRASTRUCTURE							
Local Streets	3,164	24.3	\$4,325,203	\$13,384	\$2,564	\$7	<input type="checkbox"/>
Major Streets	3,519	3.6	\$2,233,459	\$6,069	\$1,223	\$3	<input type="checkbox"/>
Street Upgrades	0	0.0	\$0	\$0	\$0	\$0	<input checked="" type="checkbox"/>
Total Streets & Roadway	12,683	34.5	\$7,158,667	\$19,453	\$3,787	\$10	
WATER INFRASTRUCTURE							
Laterals	23,615	64.2	\$435,322	\$1,348	\$366	\$2.6	<input type="checkbox"/>
Distribution + Main	13,183	35.8	\$1,634,550	\$4,605	\$3,864	\$10.5	<input type="checkbox"/>
Total Water Distribution	36,798	100.0	\$2,190,471	\$5,952	\$4,830	\$13.1	
Supply, Treatment, Storage	-	-	\$315,000	\$856	\$9,660	\$26.3	<input checked="" type="checkbox"/>
Total Water	0	0.0	\$2,505,471	\$6,808	\$14,490	\$39.4	
STORMWATER INFRASTRU							
Laterals	23,615	64.2	\$1,586,350	\$4,312	\$18,892	\$51.3	<input type="checkbox"/>
Collection	12,683	34.5	\$3,835,272	\$10,422	\$57,073	\$155.1	<input type="checkbox"/>
Detention	-	-	\$62,196	\$163	\$5,000	\$13.6	<input type="checkbox"/>
Total Stormwater Infrast	36,298	98.6	\$5,484,417	\$14,903	\$80,965	\$220.0	
SEWER INFRASTRUCTURE							
Laterals	23,615	64.2	\$1,322,458	\$3,534	\$773	\$2.1	<input type="checkbox"/>
Trunk + Collection	13,183	-	\$1,802,525	\$4,898	\$3,091	\$8.4	<input type="checkbox"/>
Treatment	-	-	\$196,830	\$535	\$11,532	\$31.5	<input checked="" type="checkbox"/>
Total Sewer	36,798	100.0	\$3,321,813	\$9,027	\$15,456	\$42.0	
PARKS INFRASTRUCTURE							
Sports Facility	0	0.000	\$0	\$0	\$0	\$0.0	<input type="checkbox"/>
City Park	3	0.008	\$300,000	\$2,446	\$600	\$1.6	<input type="checkbox"/>
Pocket Parks/Tot Lots	1	0.003	\$300,000	\$815	\$200	\$0.5	<input checked="" type="checkbox"/>
Total Service	4	0.011	\$1,200,000	\$3,261	\$800	\$2.2	
SERVICE INFRASTRUCTURE							
Police Officer(s)	1	-	-	-	\$30,000	\$244.6	<input type="checkbox"/>
Fire Fighter(s)	1	-	-	-	\$35,000	\$258.2	<input type="checkbox"/>
Other (health, education, etc.)	-	-	-	-	\$267,080	\$725.8	<input type="checkbox"/>
Total Service	2	-	\$0	\$0	\$452,080	\$1,542	

Total Infrastructure Cost	\$19,670,369	\$53,452	\$567,578	\$1,542
On Site (Developer) Cost	\$17,958,540	\$48,800		
Public Sector Costs	\$811,830	\$2,206	\$115,498	\$314



Simple Payback Analysis

Total Public Sector Costs	\$811,830
Public Sector Annual O&M Costs	\$115,498
Annual Revenue (Taxes etc.)	\$144,785
Annual Net Revenue	\$29,287

Actual Simple Payback:	27.7 yrs
Desired Simple Payback (yrs)	20
Gap per ERU (desired payba	\$110 per year

Bond Analysis

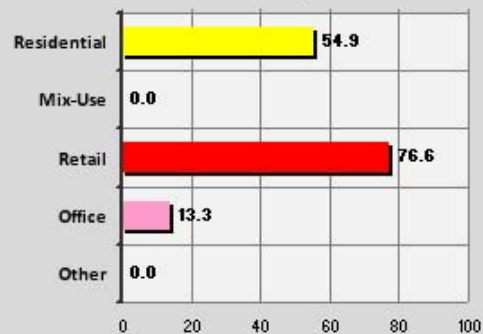
Maturity period (yrs)	20
Coupon Rate	5.0%
Annual Coupon Payments	\$40,591
Total Additional Funds:	-\$11,305
Bond Gap per ERU:	\$31

Life Cycle Cost Analysis

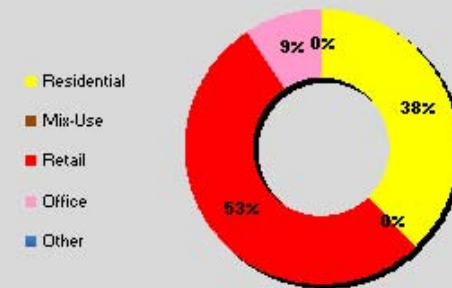
Discount Rate	5.0%
Analysis Time Period (yrs)	20
Maintenance Escalation rate	0.0%
Net Present Value (NPV) savings (20 yrs)	-\$277,203

Thousands \$

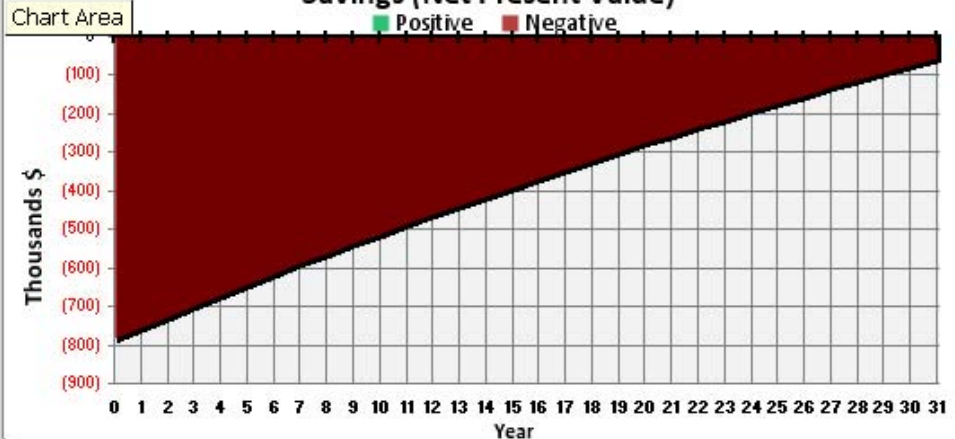
Revenue per Year



Positive Revenue Sources



Savings (Net Present Value)



SACOG IMPACS2 .0

Step 1: Introduction, Define Scenario Program

Step 2: Calibrate Infrastructure Assumptions & Inputs (Demand, Capacity, Cost, Revenue)

Step 3: View Outputs & Reports, Data & References

1. Specify Scenario Details | 2. Enter Land Use Information | 3. Enter Development Parameters | Import from Places3

Input Mode: Enter Area | Import Defaults from Prototype

Code	Residential	Acres	% of Land	HH Size	Net Density (DU/acre)	Avg Lot size	Avg Bldg Footprin	# Floor	Avg DU/Bld	FAR	Set back	DU	Residents	FTE	GFA	ERU
LU_Res1	Rural Residential	0.0	0.0%	2.8	1	1	3,049	1	1	0.07	120	0	0	0	0	0
LU_Res2	Very Low Density Residential	4.0	7.8%	2.8	4	0.25	2,831	1	1	0.26	60	16	45	0	45,296	16
LU_Res3	Low Density Residential	16.0	31.4%	2.5	8	0.125	2,505	1	1	0.46	50	128	320	0	320,640	128
LU_Res4	Medium Density Residential	10.0	19.6%	2.25	12.1	0.083	1,012	2	1	0.56	40	121	272	0	244,904	121
LU_Res5	Medium-High Density Residential	0.0	0.0%	2.1	24.9	0.5	7,514	2	13	0.69	30	0	0	0	0	0
LU_Res6	High Density Residential	0.0	0.0%	1.75	43.5	2	19,602	4	87	0.9	20	0	0	0	0	0
Total		30.0	58.8%									265	637	0	610,840	265

Code	Mixed Use	Acres	% of Land	HH Size	FAR	Avg Lot	Avg Bldg Footprin	# Floor	Avg DU/Bld	sf/F TE	Set Back	DU	Residents	FTE	GFA	ERU
LU_Mix1	Mixed Use Residential Focus	3.0	5.9%	1.5	1.36	1.5	22,216	4	56	576	20	111	167	38	177,725	182
LU_Mix2	Mixed Use Employment Focus	0.0	0.0%	1.5	1.08	1.5	17,642	4	52	350	20	0	0	50	0	0
Total		3.0	5.9%									111	167	88	177,725	182

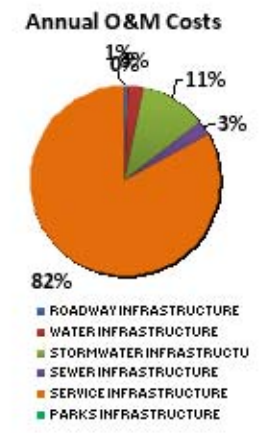
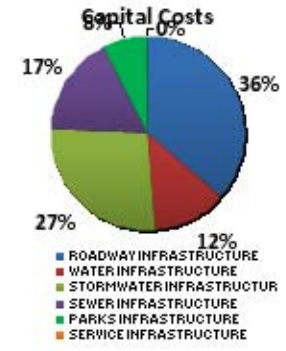
Code	Non-Residential	Acres	% of Land	HH Size	FAR	Avg Lot	Avg Bldg Footprin	# Floor	Avg DU/Bld	sf/F TE	Set Back	DU	Employees	FTE	GFA	ERU
LU_NRes1	Moderate Intensity Office	1.0	2.0%	0	1.02	0.25	5,554	2	0	350	100	0	126	126	44,431	17
LU_NRes2	Community/Neighborhood Commercial / Office	3.0	5.9%	0	0.29	0.25	1,053	3	0	350	100	0	108	108	37,897	15
LU_NRes3	Light Industrial Office	4.0	7.8%	0	0.3	0.5	3,267	2	0	350	50	0	149	149	52,272	20
LU_NRes4	Community / Neighborhood Retail	1.0	2.0%	0	0.28	0.5	6,098	1	0	576	100	0	21	21	12,197	4
LU_NRes5	Regional Retail	4.0	7.8%	0	0.34	5	74,052	1	0	576	100	0	102	102	59,242	23
LU_NRes6	Light Industry	0.0	0.0%	0	0.33	2	28,750	1	0	400	100	0	0	0	0	0
LU_NRes7	Heavy Industry	0.0	0.0%	0	0.23	2	20,038	1	0	2500	100	0	0	0	0	0
LU_NRes8	Warehouse /Storage	0.0	0.0%	0	0.33	2	28,750	1	0	20000	100	0	0	0	0	0
LU_NRes9	Recreation Center	0.0	0.0%	0	0.3	3	39,204	1	0	2175	100	0	0	0	0	0
LU_NRes10	Public/Quasi Public	0.0	0.0%	0	0.3	1.5	6,534	3	0	2175	100	0	0	0	0	0
LU_NRes11	Restaurant Dining	0.0	0.0%	0	0.28	1	12,197	1	0	482.5	50	0	0	0	0	0
LU_NRes12	Hotel	0.0	0.0%	0	0.34	3	11,108	4	0	2200	200	0	0	0	0	0
LU_NRes13	Medical / dental clinic	0.0	0.0%	0	0.98	1	42,689	1	0	350	50	0	0	0	0	0
LU_NRes14	Church	0.0	0.0%	0	0.23	2	20,038	1	0	2175	100	0	0	0	0	0
LU_NRes15	Schools	0.0	0.0%	0	0.3	5	65,340	1	0	1370	200	0	0	0	0	0
Total		13.0	25.5%									0	506	506	206,039	79

MUNICIPAL INFRASTRUCTURE SUMMARY

Select Standards Scenario: **Median**
 Select Cost Scenario:
 Select Capacity Scenario:

Public Sector Cost Implication
 Capital Cost: **\$867,092**
 Cost / ERU: **\$1,648**
 Annual O&M: **\$121,894**
 O&M / ERU: **\$232**

Component	Quantities		Capital Construction Costs		Annual O&M Costs		Check to Include Capital Cost or
	Total (ft)	Ft/ERU	Total	Per ERU	Total	Per ERU	
ROADWAY INFRASTRUCTURE							
Local Streets	3,344	17.8	\$5,022,004	\$3,548	\$2,614	\$5	<input type="checkbox"/>
Major Streets	3,519	6.7	\$2,233,459	\$4,246	\$1,223	\$2	<input type="checkbox"/>
Street Upgrades	0	0.0	\$0	\$0	\$0	\$0	<input checked="" type="checkbox"/>
Total Streets & Roadway	12,863	24.5	\$7,255,463	\$13,794	\$3,837	\$7	
WATER INFRASTRUCTURE							
Laterals	21,915	41.7	\$460,222	\$875	\$1,186	\$2.3	<input type="checkbox"/>
Distribution + Main	13,363	25.4	\$1,718,082	\$3,266	\$4,744	\$9.0	<input type="checkbox"/>
Total Water Distribution	35,278	67.1	\$2,178,304	\$4,141	\$5,930	\$11.3	
Supply, Treatment, Storage	-	-	\$315,000	\$599	\$11,860	\$22.5	<input checked="" type="checkbox"/>
Total Water	0	0.0	\$2,493,304	\$4,740	\$17,790	\$33.8	
STORMWATER INFRASTRU							
Laterals	21,915	41.7	\$1,472,710	\$2,800	\$17,532	\$33.3	<input type="checkbox"/>
Collection	12,863	24.5	\$3,889,733	\$7,395	\$57,883	\$110.0	<input type="checkbox"/>
Detention	-	-	\$59,800	\$114	\$5,000	\$9.5	<input type="checkbox"/>
Total Stormwater Infrastru	34,778	66.1	\$5,422,243	\$10,308	\$80,415	\$152.9	
SEWER INFRASTRUCTURE							
Laterals	21,915	41.7	\$1,227,258	\$2,333	\$349	\$1.8	<input type="checkbox"/>
Trunk + Collection	13,363	-	\$1,827,150	\$3,474	\$3,795	\$7.2	<input type="checkbox"/>
Treatment	-	-	\$252,092	\$479	\$14,232	\$27.1	<input checked="" type="checkbox"/>
Total Sewer	35,278	67.1	\$3,306,500	\$6,286	\$18,976	\$36.1	
PARKS INFRASTRUCTURE							
Sports Facility	0	0.000	\$0	\$0	\$0	\$0.0	<input type="checkbox"/>
City Park	4	0.008	\$1,200,000	\$2,281	\$675	\$1.3	<input type="checkbox"/>
Pocket Parks/Tot Lots	1	0.002	\$300,000	\$570	\$200	\$0.4	<input checked="" type="checkbox"/>
Total Service	5	0.010	\$1,500,000	\$2,852	\$875	\$1.7	
SERVICE INFRASTRUCTURE							
Police Officer(s)	1	-	-	-	\$90,000	\$171.1	<input type="checkbox"/>
Fire Fighter(s)	2	-	-	-	\$190,000	\$361.2	<input type="checkbox"/>
Other (health, education, etc.)	-	-	-	-	\$308,081	\$585.7	<input type="checkbox"/>
Total Service	3	-	\$0	\$0	\$588,081	\$1,118.0	



Total Infrastructure Cost	\$19,977,509	\$37,980	\$709,975	\$1,350
On Site (Developer) Cost	\$17,910,418	\$34,050		
Public Sector Costs	\$867,092	\$1,648	\$121,894	\$232

Simple Payback Analysis

Total Public Sector Costs	\$867,092
Public Sector Annual O&M Costs	\$121,894
Annual Revenue (Taxes etc.)	\$168,290
Annual Net Revenue	\$46,396

Actual Simple Payback:	18.7 yrs
Desired Simple Payback (yrs)	20
Gap per ERU (desired payba	\$0 per year

Bond Analysis

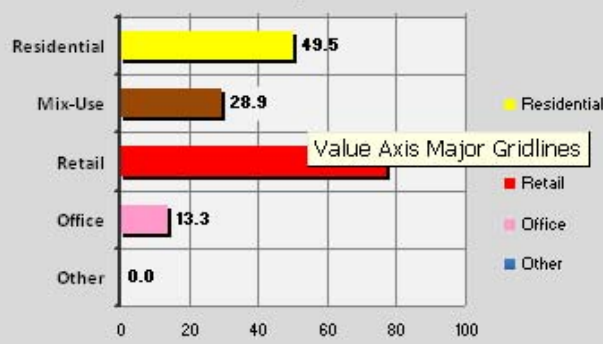
Maturity period (yrs)	20
Coupon Rate	5.0%
Annual Coupon Payments	\$43,355
Total Additional Funds:	\$3,042
Bond Gap per ERU:	\$0

Life Cycle Cost Analysis

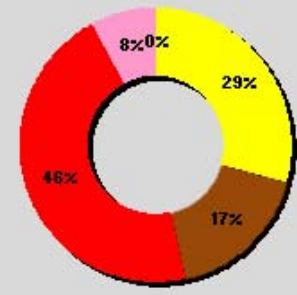
Discount Rate	5.0%
Analysis Time Period (yrs)	20
Maintenance Escalation rate	0.0%
Net Present Value (NPV) savings (20 yrs)	-\$20,139

Thousands \$

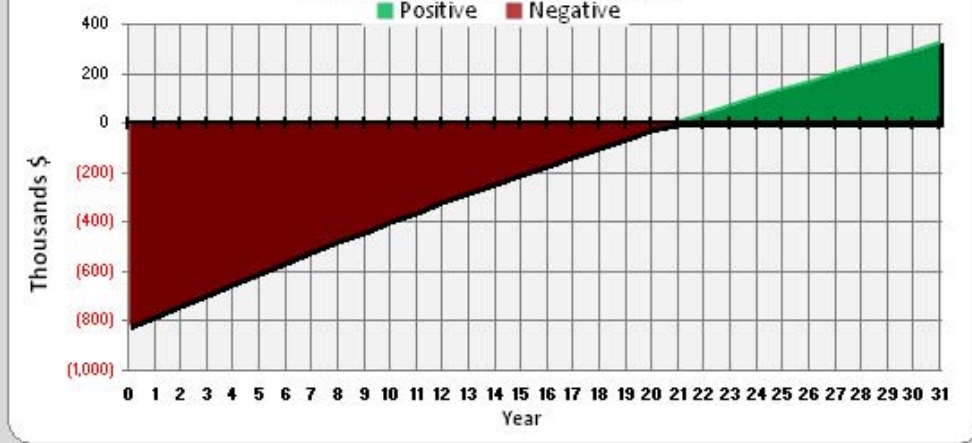
Revenue per Year



Positive Revenue Sources



Savings (Net Present Value)



Where has it been used...



Fresno Council of Governments



Next Steps...

- Simplify the user interface to make it more accessible,
- Enhance the road demand and cost piece to incorporate sketch level travel model data instead of ITE trip rates,
- Bring simplified version to the web.
- **More case studies**

Thank You

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