

Calculating Community Return on Investment

Economic impact analysis model overview



Regional Project Assessment System (RPAS)

The Greater Sacramento Economic Council utilizes the RPAS tool, developed by Applied Economics, to calculate return on investment to the community. The model is designed to estimate the economic and revenue impacts of new and existing businesses, as well as the impacts of multiple projects over a particular time period. The model includes multipliers that are specific to the 29 cities and unincorporated areas and the six counties in the Greater Sacramento Region plus the region as a whole. The model contains two main modules: an economic impact and a revenue impact. Each module estimates marginal changes in particular variables, based on current conditions in the region.

The **economic impact portion** of the model estimates the direct, supplier and consumer impacts of a new or existing business. This part of the model measures both the construction impact if a business builds a new facility, and the on-going operations impact on the host city. The model is specific to each area in that it allows for a level of supplier and consumer purchases that are consistent with that city's economic base. Depending on the type of company and its supply needs, some companies would be able to make more local purchases and would therefore have a greater multiplier effect than others. **In addition to impacts for specific projects, the model can also calculate the impact of a group of projects in the same city or different cities.** The underlying economic model is based on input-output matrices from the Minnesota IMPLAN Group, Inc.

Data Sources Utilized by the Model

- Applied Economics has customized this model to ensure that project impacts to each community are calculated according to their local rates. Annually, the database is reviewed and updated to ensure accurate **Property Tax, City Sales Tax, County Sales Tax, and Utility Taxes** for each community.
- **Demographic rates** such as workers per household, population per household, etc. are based on 2013 US Census American Community Survey data for each community in the region.
- **NAICS codes** (industry classification data) are sourced from IMPLAN Group for the purposes of then categorizing into industry types and subtypes
- **US Census intra-regional commuting pattern data** to estimate percent of employees within the host city

Model Inputs and Assumptions for Specific Impact Calculations

For each business which located or expanded in the region that can be attributed to material influence by GSEC, the following is input into the model:

- County and city location of the business (which then applies the appropriate sales and property tax rates to other inputs)
- Industry type (which ensures that average wages estimated are consistent with the industry)
- Number of employees expected to be employed each year (if exact payroll is provided from the client, those figures are utilized; if not, averages are utilized according to industry type); this then automatically populates total payroll estimates
- Value of direct taxable purchases (this is optional, if information is available from the company regarding what purchases they expect to be making locally, and IF they are taxable)
- Percent of employees living in the city (the database includes an estimate from the developers of the model using US Census data on intra-regional commuting patterns and is then used in the calculation of indirect local revenues and supported population; these estimates can be adjusted but are not adjusted unless more accurate information is obtained from the employer)
- Construction cost, land cost, property purchase, annual lease cost – these are included as applicable for tax and impact implications
- Value of taxable and non-taxable equipment purchases (information is obtained from the company)
- Annual Utility Expenditures are used in the calculation of utility user taxes (however, utility user taxes only apply in Sacramento County and in the City of Winters)
- Corporate income, if known, is included for the purposes of calculating state income tax contributions

Outputs and Reports Available from the Model

The model offers a variety of outputs based on selection factors in the reporting tool.

Reports can be run for the following areas, over any period of time chosen:

- Only the local host community
- The County the business is located in
- The entire Greater Sacramento region

In addition, reports can be run for results of one SINGLE project, or a compilation of a select group of projects. In the case of GSEC's annual ROI analysis for communities, it provides a compilation of all project impacts. It then can provide that information at the Region, County or local city level. **Based on the model's commuting assumptions established from US Census data, it also reports the impact that a project located anywhere in the region is estimated to induce in any other single community or county in the region.**

For the purposes of the Yuba City Five-Year Community Return on Investment report (attached), the model was run on:

- All projects with material influence by GSEC locating/expanding in the region, aggregating their direct and indirect impact to Yuba City
- Modeled over a 5-year period
- Results are as of March 19, 2020 (in order to transmit with draft contract)

Attached: Full Methodology and Report Descriptions from Applied Economics, the developer of the model.

3.0 METHODOLOGY AND REPORT DESCRIPTIONS

ECONOMIC IMPACTS

The economic impact portion of the model estimates the direct, supplier and consumer impacts of a new or existing business. This part of the model measures both the construction impact, if a business builds a new facility, and the on-going operations impact on the host city. The model is specific to each area in that it allows for a level of supplier and consumer purchases that are consistent with that city's economic base. Depending on the type of company and its supply needs, some companies would be able to make more local purchases and would therefore have a greater multiplier effect than others. In addition to impacts for specific projects, the model can also calculate the impact of a group of projects in the same city or different cities. The underlying economic model is based on input-output matrices from the Minnesota IMPLAN Group, Inc.

Local Economic Impacts

In order to calculate the economic impact, the user must supply information about the type of industry, location, direct employment by the new company and payroll over a single or multi-year period. Based on this information, the model calculates the multiplier effects of this new employment and output on the host city. The multiplier effects are separated into supplier and consumer impacts. Supplier impacts are new jobs, output and income that will be generated in industries that supply goods and services directly to the new company. Consumer impacts consist of the new jobs, output and personal income in industries that serve the new employees and their families. The consumer impact includes not only the end-use consumer products, but also any locally purchased intermediate products that were used in producing the consumer goods.

The results of the model show the breakdown of direct and indirect impacts in terms of employment, output, personal income and supported population for the selected city. This level of detail is shown annually for both the construction impact, if applicable and the on-going operations impact over multiple years. An additional economic impact summary is available for the host city or the metro area using multipliers for those geographies. The direct impacts will be the same, but the supplier and consumer impacts will be larger. The same is true for construction impacts.

In addition, the breakdown of output and employment by industry sector is shown for the direct and supplier, consumer and total operations impacts in the disaggregated impact reports. This additional detail by industry sector allows the user to see which other parts of the city's economy are being impacted by particular types of new companies. A detailed listing of all the industries that make up each of the 66 industry types included in the model is shown in Appendix A. The industry categories are consistent with NAICS codes.

**Greater Sacramento Area Economic Council Regional Project Assessment System
Economic Impact by Type for the City of Placerville**

Operation of Example Project

Impact Type	Year	Employment	Personal Income	Output
Direct				
	2015	150	\$8,584,767	\$50,721,263
	2016	200	\$11,446,356	\$67,628,350
	2017	200	\$11,446,356	\$67,628,350
	Total:		\$31,477,479	\$185,977,963
Supplier				
	2015	40	\$1,839,561	\$5,800,724
	2016	53	\$2,452,748	\$7,734,299
	2017	53	\$2,452,748	\$7,734,299
	Total:		\$6,745,058	\$21,269,322
Consumer				
	2015	54	\$1,978,496	\$7,359,007
	2016	71	\$2,637,995	\$9,812,010
	2017	71	\$2,637,995	\$9,812,010
	Total:		\$7,254,485	\$26,983,027
Total				
	2015	244	\$12,402,824	\$63,880,994
	2016	324	\$16,537,099	\$85,174,659
	2017	324	\$16,537,099	\$85,174,659
	Total:		\$45,477,023	\$234,230,312

Nonlocal Economic Impacts

In addition to looking at local and regional economic impacts, the model also includes an estimate of nonlocal domestic purchases by industry. The level of local purchases, based on multipliers for the selected city, is compared to the level of purchases typically made by an industry of that type and size on a national level. Subtracting local purchases from national purchases yields nonlocal purchases. This result helps to identify industry sectors where supplier leakages are likely to occur.

Population and Household Impacts

Along with jobs, personal income and output resulting from a particular company or development, the model calculates the total population that will be supported by the new company. Population impacts are based on the current average number of workers per household and average household size in the host city. These residents support themselves and a portion of their families based on the income derived from the new company being modeled. So for example, supported population = (employment/workers per households) * population per household. The number of workers per household and population per household used in each city or county are based on American Community Survey. These figures are adjusted based on the percent of workers living in the host city from the Census Bureau On The Map tool. The user can modify these rates for interim updates, although these types of demographic rates change very slowly over time.

The operations impact for the economic module also includes an estimate of school age population, based on resident population supported by the project. The user can also modify student generation rates per household for grade school and high school students. It is important to note that these students may not be new to the region. They are simply being "supported" by the project being analyzed.

**Greater Sacramento Area Economic Council Regional Project Assessment System
Demographic Impact by Type for the City of Placerville**

Operation of Example Project						
Impact Type	Year	Employment	Supported Population	Grade School Population	High School Population	Supported Households
Direct						
	2015	150	111	12	6	44
	2016	200	147	16	9	59
	2017	200	147	16	9	59
Supplier						
	2015	40	29	3	2	12
	2016	53	39	4	2	16
	2017	53	39	4	2	16
Consumer						
	2015	54	40	4	2	16
	2016	71	53	6	3	21
	2017	71	53	6	3	21
Total						
	2015	244	179	19	11	72
	2016	324	239	26	14	95
	2017	324	239	26	14	95

Household Spending

The household spending report translates total (direct + supplier + consumer) personal income into household spending by type. Using the relationship between employment and supported households described above, total household income is inferred from average personal income per employee and workers per household. Then using data from the Census Bureau Consumer Expenditure Survey, a percentage is applied to personal income indicating the relationship between gross income and household expenditures at the implied household income level. This relationship varies significantly by income level. Low income households actually spend more than they make due to government transfer payments. As household income increases, the share that is spent decreases. In the case of the household spending report, average personal income per employee is calculate separately for direct, supplier and consumer jobs.

The next step is to distribute expenditures by type (i.e. utilities, rent, transportation, various categories of retail, etc.). These expenditures generally represent expenditures that are made in the region by direct and supported employees. This information can be valuable in demonstrating the benefit of economic development to existing local businesses.

Purchases are further divided into three categories: local, regional and non-site based.

- **Local** – items such as groceries and household supplies and services that are typically purchased within a three to seven mile radius from home.
- **Regional** – larger items such as vehicles, appliances, home furnishing, apparel and entertainment that are purchased from a regional mall or a specialized provider located throughout the urban area.
- **Non-Site Based** – expenditures like housing, utilities and insurance that may ultimately flow outside the region, or do not necessarily impact local business establishments.

Total Household Spending Impact

Example Project

Spending Type	Year:	2015	Amount	Spending Type	Year:	2016	Amount
Local retail & services			\$3,110,066	Local retail & services			\$4,146,755
Groceries			\$908,928	Groceries			\$1,211,904
Restaurants & bars			\$580,400	Restaurants & bars			\$773,866
Personal services			\$87,608	Personal services			\$116,810
Other household expenses			\$131,411	Other household expenses			\$175,215
Housekeeping supplies			\$142,362	Housekeeping supplies			\$189,816
Gas & motor oil			\$591,351	Gas & motor oil			\$788,468
Vehicle repairs			\$153,313	Vehicle repairs			\$204,418
Drugs			\$109,509	Drugs			\$146,013
Medical supplies			\$21,902	Medical supplies			\$29,203
Personal care products			\$131,411	Personal care products			\$175,215
Tobacco products			\$65,706	Tobacco products			\$87,608
Misc services			\$186,166	Misc services			\$248,221
Regional Retail & Services			\$2,387,305	Regional Retail & Services			\$3,183,073
Home repairs & maintenance			\$251,872	Home repairs & maintenance			\$335,829
Home furnishings & appliances			\$350,430	Home furnishings & appliances			\$467,240
Apparel & shoes			\$394,234	Apparel & shoes			\$525,645
New cars and trucks			\$284,724	New cars and trucks			\$379,633
Used cars and trucks			\$284,724	Used cars and trucks			\$379,633
Other vehicles			\$32,853	Other vehicles			\$43,804
Medical services			\$153,313	Medical services			\$204,418
Entertainment fees, admission			\$229,970	Entertainment fees, admission			\$306,626
Audio visual equipment			\$229,970	Audio visual equipment			\$306,626
Pets, toys, hobbies			\$175,215	Pets, toys, hobbies			\$233,620
Non-Site based expenditures			\$5,453,567	Non-Site based expenditures			\$7,271,423
Mortgage expenses			\$832,271	Mortgage expenses			\$1,109,695
Property taxes			\$383,283	Property taxes			\$511,044
Housing rent			\$744,664	Housing rent			\$992,885
Utilities			\$799,418	Utilities			\$1,065,891
Vehicle finance charges			\$65,706	Vehicle finance charges			\$87,608
Vehicle insurance			\$240,921	Vehicle insurance			\$321,228
Vehicle licenses			\$98,558	Vehicle licenses			\$131,411
Public transportation			\$109,509	Public transportation			\$146,013
Health insurance			\$361,381	Health insurance			\$481,841
Life insurance			\$65,706	Life insurance			\$87,608
Education			\$229,970	Education			\$306,626
Cash contributions			\$372,332	Cash contributions			\$496,443
Pensions			\$1,149,849	Pensions			\$1,533,131
TOTAL:			\$10,950,938	TOTAL:			\$14,601,251

REAL ESTATE IMPACTS

The real estate impact module is designed to estimate the additional nonresidential square footage and housing units that would be supported by a new company in the city. The number of additional direct, supplier and consumer jobs by industry sector, calculated in the economic impact, is translated into jobs by land use, based on information from the Bureau of Labor Statistics, National OES matrices.

Next, based on average employment per square foot ratios for different types of land uses, jobs by land use are translated into total nonresidential square footage supported by the new company. The land use categories included in the real estate impact are hotel, retail, office, industrial, hospitals, utilities, government, and other.

The amount of new nonresidential construction actually generated by the direct and indirect impacts of a new industry in the city will depend on vacancy rates for various types of retail, office, and industrial property. The model simply shows the amount of square footage that could be supported by a new business and its suppliers.

In addition to nonresidential square footage, the real estate impact also shows the number of housing units supported directly and indirectly by a new business. Based on the supported

population that would live in the city and average household sizes, the real estate impact shows the number of units, new or existing, that would be occupied by people working directly for the new company, as well as employees of impacted supplier and consumer industries.

Greater Sacramento Area Economic Council Regional Project Assessment System											
Real Estate Impact for the City of Placerville											
Operation of Example Project											
Year	Non-Residential Square Footage by Type									Total Non-Res. Square Feet	Total Housing Units
	Hotel	Retail	Office	Industrial	Hospital	Utilities	Government	Schools	Other		
2015	4,473	13,045	20,493	96,036	1,361	64	195	2,972	815	139,455	72
2016	5,964	17,394	27,324	128,048	1,814	86	260	3,963	1,087	185,940	95
2017	5,964	17,394	27,324	128,048	1,814	86	260	3,963	1,087	185,940	95

REVENUE IMPACTS

The revenue impact model calculates the direct and total marginal impact of a new company or development on the region in terms of real and personal property, sales and income taxes. The revenue impacts are also divided into local and state. Property and utility user taxes are included in local revenues. Sales taxes are included in both state and local revenues. Corporate income taxes as well as personal income taxes are exclusively state revenues. The model includes the revenue impacts related to real property, capital equipment, new construction, property leases, corporate income and taxable purchases from the company itself, as well as revenues generated by supported supplier and consumer businesses and households. Note that the direct revenue impacts (taxes paid by the company) will be the same in either the city, county or regional impacts, however, the total impacts will be higher for county and regional impacts.

Because this is a regional model, it does not account for expenditures that would also be associated with supporting a new company or development. The level of expenditures for municipal services, as well as for possible infrastructure improvements, would vary greatly depending on the jurisdiction where the company was located. The purpose of this model is simply to provide estimates of the major revenues that would be generated in the host region as a whole. A more detailed fiscal analysis at a local level may be required for some projects to supplement the results of the regional economic impact model.

The revenue impact can be expanded to cover a multi-year period to account for projects that may develop in phases over multiple years. All revenue projections are in current dollars and are therefore not inflated. It is important to note that the projections are based on current tax rates in each of the cities and counties included in the model and the state. Tax rates, especially property taxes, may change from year to year, and can be updated by the user.

**Greater Sacramento Area Economic Council Project Assessment System
Direct and Total Revenue Impacts for the City of Placerville**

Operation of Example Project

Year	Local Taxes					State Taxes			
	Real Property	Personal Property	Local Sales Tax	Utility User Tax	Local Total	State Sales Tax	Corporate Income Tax	Personal Income Tax	State Total
Direct Impact									
2015	\$76,328	\$93,410	\$21,563	\$0	\$191,300	\$323,438	\$0	na	\$323,438
2016	\$76,328	\$98,877	\$7,750	\$0	\$182,955	\$116,250	\$132,600	na	\$248,850
2017	\$76,328	\$88,620	\$1,500	\$0	\$166,448	\$22,500	\$132,600	na	\$155,100
Total	\$228,984	\$280,907	\$30,813	\$0	\$540,704	\$462,188	\$265,200	na	\$727,388
Total Impact									
2015	\$293,081	\$93,410	\$27,522	\$0	\$386,491	\$611,803	\$0	\$674,323	\$1,286,126
2016	\$365,333	\$98,877	\$15,696	\$0	\$464,210	\$500,738	\$132,600	\$901,715	\$1,535,053
2017	\$365,333	\$88,620	\$9,446	\$0	\$453,953	\$406,988	\$132,600	\$901,715	\$1,441,303
Total	\$1,023,747	\$280,907	\$52,664	\$0	\$1,304,654	\$1,519,528	\$265,200	\$2,477,753	\$4,262,482

The direct revenue impact results include only revenues generated directly by the business based on data from the project information form such as real and personal property values, new construction, payroll, utility usage, corporate income and taxable purchases. Additional revenues generated by related supplier and consumer jobs, residents and personal income are included in the total revenue impact results.

The section below describes the methodology behind the calculations used in the revenue impact in greater detail. A list of the formulas used in the revenue estimates is shown in Figure 2.

**FIGURE 2
RATES AND BASIS FOR REVENUE IMPACT**

Revenue Item	Driver	Basis for Calculation
DIRECT		
Property Tax	Real and personal assessed value, inventory	Real=(tax rate * (construction value or purchase price + land value + (lease rate*7)) Personal=tax rate * ((total cumulative equipment purchases * annual depreciation) + inventory)
Local Sales Tax	Local equipment purchases, direct sales, building construction value	(tax rate * (direct local equipment purchases + taxable purchases + (65% *building construction value)))
Utility User Tax	Electric, gas and telecom expenditures	Annual electric, gas and telecom expenditure * utility user tax rate
Corporate Income Tax	California net corporate income	Corporate income * 8.84% less any credits
INDIRECT		
Property Tax	Total supported population, residential assessed value per capita	per capita residential AV * supported population * tax rate
Sales Tax	Total personal income	personal income * 31% * sales tax rate
Personal Income Tax	Total personal income, total employment	personal income - (\$4,012 * total employment) * graduated income tax schedule

Source: Applied Economics, 2015; California Board of Equalization.

Note: Direct and indirect taxes are added together to calculate total revenue impacts.

- Property taxes apply to real and personal property. Personal property includes capital equipment used directly by the new business. For the purposes of this model, personal property is depreciated using depreciation schedules from the California Board of Equalization. If a company is a manufacturer, a 10-year depreciation schedule is used as the default (Group 2). This schedule is used for all equipment specified in the input form. For office operations, the default is a 5-year depreciation schedule (Group 4). For all other projects a 15-year default depreciation schedule applies, which can be modified by the user.
- Real nonresidential property includes land and buildings occupied by a new business. The value of this property is equal to the value of the land plus construction value, or the building purchase price. In the case of leased property, the lease rate is converted into an approximate assessed value in order to calculate property taxes.
- Residential real property values attributed to employees are included in the total impact. These are based on per capita residential assessed value for each county. The appropriate local property tax rate is then applied to the per capita assessed value. Property tax rates used in the model vary depending on the city where the project is located.
- Sales tax revenues include equipment purchases, annual taxable purchases and new construction, as well as sales tax revenues from spending by supported population. Direct sales tax revenues in the years where there is new construction include construction materials, which are estimated at 65 percent of the total construction cost. The level of local equipment subject to sales tax is specified in the user input to the model. Also, some industries may have taxable annual purchases that can be specified in the input form and are included in the sales tax calculation.
- The model also captures retail purchases generated by the direct and indirect supported population living in the region. These sales tax revenues are based on 31 percent of personal income from the economic impact, which represents the portion of income spent on taxable goods, based on the Bureau of Labor Statistics, Consumer Expenditure Survey. Taxable spending is then multiplied by the state and local sales tax rates.
- Corporate income tax in California is based on a flat rate of 8.84 percent multiplied by corporate net income from the input form.
- Personal income tax is equal to total personal income per employee from the economic impact, less a \$4,012 standard deduction and personal exemption, times total employment, times the current graduated tax rate schedule.

INCENTIVE SUMMARY

In addition to the revenue impact, the model includes an incentive summary. This report is available for the host city only and will not appear if the regional reports box is checked in the report menu. All revenues in the revenue impact are shown net of incentives. The incentive summary shows the same state and local direct revenues, under Taxes Net of Incentives. On the right side of the report, the annual value of incentives by type is detailed. The purpose of this report is to show the value of incentives received and the remaining tax revenues that the company would generate after incentives. The information can be used to estimate a return on investment.

**Greater Sacramento Area Economic Council Project Assessment System
Incentive Summary for the City of Placerville**

Operation of Example Project

Year	Taxes Net of Incentives				Value of Incentives				
	Property	Sales and Utilities	Corporate Income Tax	Total Taxes	Sales Tax Exclusion*	California Competes	New Employment Credit	Other Incentives	Total Incentives
2015	\$169,738	\$345,000	\$0	\$514,738	\$700,000	\$150,000	\$0	\$0	\$850,000
2016	\$175,205	\$124,000	\$132,600	\$431,805	\$0	\$0	\$0	\$0	\$0
2017	\$164,948	\$24,000	\$132,600	\$321,548	\$0	\$0	\$0	\$0	\$0
Total	\$509,891	\$493,000	\$265,200	\$1,268,091	\$700,000	\$150,000	\$0	\$0	\$850,000

*The California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) provides a sales and use tax exclusion for advanced manufacturers and manufacturers of alternative source and advanced transportation products, components or systems.

**

This model serves as a tool for basic quantitative evaluation of economic development projects. Results are based on the current economic structure of the counties in Greater Sacramento, and current tax rates. The results of the model are order-of-magnitude estimates, and are intended only as a general guide as to how different types of businesses and development projects may impact the region.