

SAN JOAQUIN VALLEY PRELIMINARY SCENARIO RESULTS

BUSINESS AS USUAL:

Growth pattern based on past trends. A significant portion of growth takes place at the edges of urban areas, with a fair amount of larger-lot single family development.

COMPACT GROWTH:

Focuses a majority of growth in and around existing cities and towns and aligns with the housing demand profile of the recent *A Home for Everyone: San Joaquin Valley Housing Preferences and Opportunities to 2050* report (CIB, 2013).

2050 SCENARIO RESULTS

Scenarios analyzed using
Calthorpe Associates' RapidFire Model
(See reverse for assumptions.)

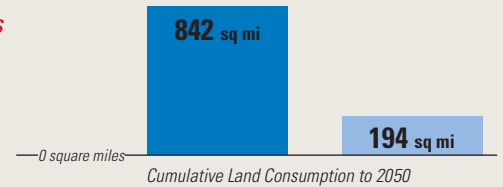
BUSINESS AS USUAL

COMPACT GROWTH

LAND CONSUMPTION

Trend development patterns will expand the San Joaquin Valley's urban footprint by 2050, consuming an additional 842 square miles of farmland, open space, and recreation areas. The Compact Growth scenario **saves over 648 square miles** of this resource.

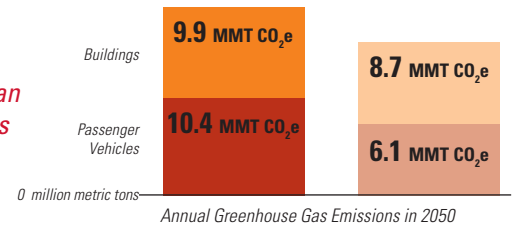
*Saves nearly six times
the land area of
the City of Fresno.*



GREENHOUSE GAS EMISSIONS

More compact development patterns, along with more efficient cars and buildings, cleaner fuels, and a cleaner energy portfolio are all essential in reducing GHG emissions. The Compact Growth scenario prevents the release of **5.4 million metric tons** of carbon dioxide equivalent in 2050, or 27% less than a Business as Usual future.

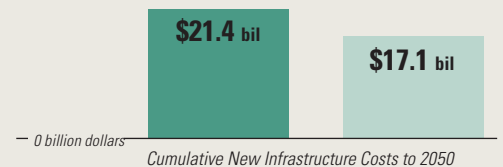
*GHG reduction
equivalent to taking
2.4 million cars off San
Joaquin Valley roads
for a year.*



INFRASTRUCTURE COSTS

Infrastructure costs rise in line with land consumption, as dispersed development calls for longer extensions of sewers, water pipes, local roadways, and utility lines. Through 2050, the Compact Growth scenario **saves more than \$4.2 billion** in infrastructure capital and operations and maintenance costs, about \$5,000 per new housing unit.

*Saves \$5,000 per new
housing unit, or over
\$100 million per year.*



PUBLIC HEALTH

Auto-related air pollution results in a spectrum of respiratory and cardiovascular health issues, leading to hospital visits, work loss days, and premature mortality. Health incidences, and their related costs, are reduced along with VMT. The Compact Growth scenario avoids **21,000 health incidences and \$342 million in health costs** in 2035. (Results for 2035 only due to availability of assumptions.)

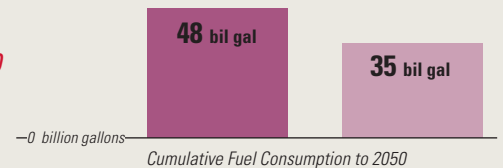
*Less pollution avoids
\$342 million in health
costs.*



FUEL CONSUMPTION

The Compact Growth Scenario, with more walkable, transit-oriented development, significantly reduces vehicle miles traveled (VMT), which in turn saves **nearly 14 billion gallons** of automobile fuel to 2050.

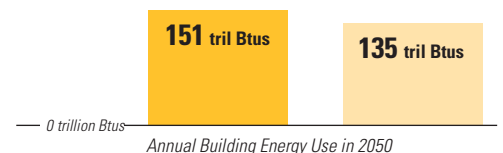
*Saves the average
household over \$3,500
per year.*



BUILDING ENERGY USE

Due to its greater proportion of more compact building types, the Compact Growth scenario **cuts annual energy use in our homes and businesses by 16 trillion Btus**. This leads to lower household utility bills, greater energy security, and lower carbon emissions.

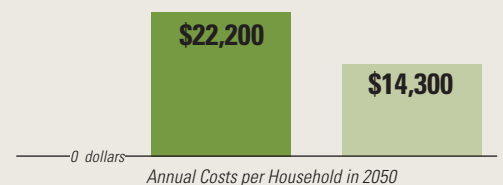
*Saves enough energy
annually to power
over 300,000 homes.*



HOUSEHOLD COSTS

More centrally located homes and more compact building types can dramatically reduce household driving and utility costs. Households in the Compact Growth scenario spend **\$7,900 less per year** on auto-related costs and utility bills.

*Saves \$7,900 per
household on annual
auto costs and utility
bills.*



Scenarios cover the eight counties that comprise the San Joaquin Valley, including Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.

Housing demand profile of Compact Growth scenario based on Nelson, Arthur C., 2013. *A Home for Everyone: San Joaquin Valley Housing Preferences and Opportunities to 2050*. Council of Infill Builders. Available online at councilofinfillbuilders.org/resources/valley-housing.html.

SAN JOAQUIN VALLEY SCENARIO ASSUMPTIONS:

Preliminary scenario results are calculated using policy-based assumptions for automobile and fuel technology, building energy and water efficiency, and energy generation and emissions. The assumptions used for these scenarios were developed in coordination with relevant state agencies to reflect the direction of adopted policy into the future. Assumptions for the year 2050 are as follows:

Transportation

- On-road passenger fleet average fuel economy: 37.2 mpg by 2050. (This reflects a passenger vehicle fleet mix (including sales rates and vehicle efficiency) that meets the Governor's Executive Order for 1.5 million ZEVs on the road by 2025. On-road new vehicle fleet average performance aligns with the EPA standard of 54.5 mpg by 2025, with the assumption that real-world fuel economy is typically a certain percentage lower.)
- Fuel emissions: 17.7 lbs per gallon.
- Fuel cost: \$15 per gallon. (2012\$)
- Auto ownership and maintenance: \$0.40 per mile. (2012\$)

Buildings and Energy Generation

- Energy and water efficiency of new buildings: 35% reduction from baseline usage rates for residential buildings, 60% reduction for commercial buildings.
- Energy and water use efficiency of existing buildings: 0.5% reduction, year-upon-year.
- Electricity emissions: 0.61 lbs CO₂e per kWh.
- Natural gas emissions: 11.7 lbs CO₂e per therm.
- Residential electricity cost: \$0.35 per kWh. (2012\$)
- Residential natural gas cost: \$3.74 per therm. (2012\$)
- Water cost: \$1,634 per acre-foot. (2012\$)

Public Health Impacts

- Estimated based on tons of criteria pollutants emitted, which in turn are estimated based on per-mile emission rates from the California Air Resources Board Emissions Factors (EMFAC 2011) model. Health incidence and valuation assumptions developed by TIAx, LLC for the American Lung Association (Oct 2011).

Fiscal Impacts

- Infrastructure costs are one-time costs that include the construction of streets, parks, water, and wastewater infrastructure. Operations and maintenance costs are ongoing costs that are incurred annually to maintain that infrastructure. Costs vary by dwelling unit type, and are based on data collected from a number of representative cities/areas in California.

All cost metrics are expressed in 2012 dollars.