



Technical Background Public Health Cross Roads Reports

In Public Health Crossroads, the American Lung Association in California analyzed the potential for respiratory health benefits in 2035 under a future growth scenario focused on more walkable communities interconnected with existing downtown and community centers rather than continued growth into fringe areas or new auto-oriented communities.

In developing these reports, The American Lung Association in California compiled data calculated by Calthorpe Associates that estimates the reductions in health outcomes and health costs through more compact growth and development types in the San Joaquin Valley using a profile of “market demand” based on the 2013 *A Home for Everyone*¹ report by the Council of Infill Builders. The market demand scenario (summarized on pp 34-5 of the report) includes significantly more walkable, mixed-use development patterns than business as usual scenarios in the San Joaquin Valley. To develop this data, Calthorpe Associates used its *RapidFire*² model to determine passenger vehicle criteria pollution reductions expected to be achieved in each county in 2035. The *RapidFire* model calculates reductions in health outcomes and costs using US EPA data on the health costs and health outcomes per ton of emissions of smog forming and particulate pollutants.

The calculations of air pollution-related health impacts and costs are based on:

- Tons of criteria pollution emitted on a county-wide basis, which in turn are estimated based on per-mile emission rates from the California Air Resources Board’s Emissions Factors (EMFAC 2011) model. Overall passenger fleet is assumed to meet Governor’s Executive Order for 1.5 million electric vehicles on the road, along with new federal vehicle fuel economy standards of 54.5 miles per gallon by 2025.
- Reductions in criteria pollution emitted through more compact, walkable development patterns as estimated by a comparison of the “market demand” scenario to a BAU scenario in 2035 using the Calthorpe *RapidFire* model.
- Reductions in health impacts include: vehicle pollution-related asthma attacks, heart attacks, hospitalizations and ER visits related to respiratory and cardiovascular issues, lost work days, premature deaths and additional respiratory health symptoms, as well as monetized health costs per ton of pollutant reduced.

¹ Council of Infill Builders. *A Home for Everyone: San Joaquin Valley Housing Preferences and Opportunities to 2050*. 2013. <http://www.councilofinfillbuilders.org/resources/valley-housing.html>. (See scenario summary and Table 3.5, pp. 34-5.)

² Calthorpe Associates. *RapidFire Model Technical Summary, Model 2.0*. http://www.calthorpe.com/files/Rapid%20Fire%20V%202.0%20Tech%20Summary_0.pdf

- Health incidences and valuation assumptions initially developed by TIAX, LLC (now TetraTech) for the American Lung Association in California utilizing US EPA BenMAP³ data on health costs and health outcomes calculated per ton on the emissions of smog-forming pollutants and particulate pollution on a county-wide basis.

The results presented in this series of reports are conservative because they refer only to possible reductions in air pollution-related health impacts and costs, and do not evaluate the significant health benefits of more active transportation modes, including walking and biking.

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³ United States Environmental Protection Agency. Environmental Benefits Mapping and Analysis Program (BenMAP), <http://www.epa.gov/air/benmap/>.