LAND CONSERVATION AND COMPACT GROWTH CAN REDUCE GREENHOUSE GAS EMISSIONS

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Conserving California's Heartland

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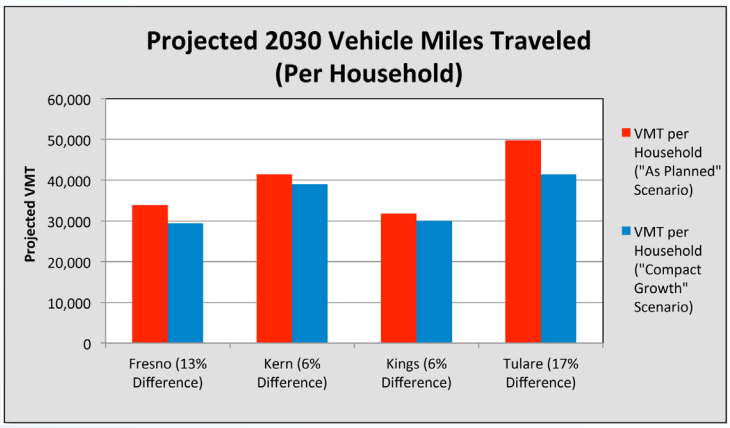
California's SB 375 requires regional planning agencies to reduce greenhouse gas emissions from automobiles and light trucks to meet targets set by the California Air Resources Board.[1] Under the final targets adopted by the California Air Resources Board, the San Joaquin Valley must reduce per capita greenhouse gas emissions 5% (from a 2005 baseline) by 2020 and 10% by 2035.[2] These targets can be met through changed land use and transportation patterns, including reductions in vehicle miles traveled.

Photo: "Steewen1," 2007.

A number of studies have found that land conservation and compact growth can significantly reduce vehicle miles traveled. For example, a 2011 article specifically focusing on the San Joaquin Valley compared 2030 vehicle miles traveled under a business-as-usual ("As Planned") scenario as well as a "Compact Growth" scenario.[3] Both scenarios were modeled using UPlan, a program that correlates expected population increases with land use and transportation outcomes.[4] By 2030, the Compact Growth scenario would produce lower vehicle miles traveled in seven of the San Joaquin Valley's eight counties (including all four counties of the Southern San Joaquin Valley) than the As Planned scenario.[5] Urbanized counties would experience greater reductions, with decreases of more than 10% in Fresno, San Joaquin, Stanislaus and Tulare.[6] Results for the Southern San Joaquin Valley are shown below.



Projected 2030 per-household vehicle miles traveled for the four counties of the Southern San Joaquin Valley under "Compact Growth" vs. "As Planned" scenarios. Adapted from Table 8 in Niemeier et al., 2011.

Studies focusing on nearby regions, including Yolo County and the Sacramento area, support this result. A 2012 report for the California Energy Commission modeled different development patterns in Yolo County, and found that preserving agricultural land by directing development into existing population centers would reduce greenhouse gas emissions from 2010 to 2050.[7] The authors noted that annual emissions from developed areas can be up to 70 times greater than those of an equivalent area of irrigated cropland, and 217 times greater than from an equivalent area of rangeland.[8] For this reason, they concluded that "[s]uburban or exurban development increases [greenhouse gas] emissions per land area substantially when compared with agricultural land uses."[9] Similarly, modeling of the Sacramento Area Council of Governments' "Preferred Blueprint" scenario, which favors compact growth, predicted reductions in greenhouse gas emissions associated with home construction.[10] In short, land conservation and compact growth can play a significant role in meeting the region's SB 375 targets.

They may also create new revenue streams for local landowners through California's carbon market. The cap-and-trade system is still in its infancy, but an initial auction held in November 2012 revealed nearly $290 million worth of demand for carbon credits.[11] Offsets—programs that reduce emissions or actively remove carbon from the atmosphere—can be used to satisfy a portion of this demand, and certain types of forestry projects qualify as offsets.[12] Oak woodlands and forests in the Sierra foothills already sequester millions of tons of carbon: in Fresno County, 3.60 million metric tons of carbon are sequestered in oak woodlands and 2.92 million in oak forests; in Kern, 3.35 million in woodlands and 2.31 million in forests; in Kings, 54,775 in woodlands and 836 in forests; and in Tulare, 3.98 million in woodlands and 2.03 million in forests.[13] While not directly applicable to SB 375 targets, management programs that sequester additional carbon, such as reforestation not already required by law, could qualify for offset credits.[14] Thus, reducing greenhouse gas emissions may benefit the region not only by helping it to meet SB 375 requirements, but also by providing additional revenue for local landowners.

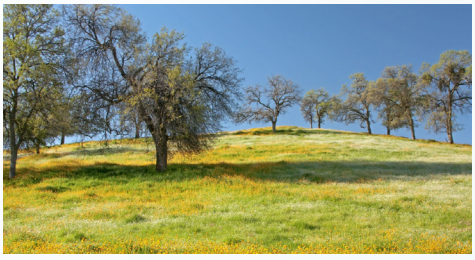


Photo: John Greening, 2012.

[1]California Statutes, 2008.
[2]CARB, 2010.
[3]Niemeier et al., 2011.
[4]Niemeier et al., 2011.
[5]Niemeier et al., 2011.
[6]Niemeier et al., 2011.
[7]Jackson et al., 2012.
[8]Jackson et al., 2012.
[9]Jackson et al., 2012.
[10]Rodier et al., 2012.
[11]Lopez, 2012.
[12]CARB, 2013.
[13]Gaman, 2008; Gaman and Firman, 2006.
[14]CARB, 2013.