

Using California's Farmland Preservation Programs to Reduce Greenhouse Gas Emissions

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Abstract

California has long tried to preserve land devoted to agricultural production. Recently it became the leader in creating a statewide policy to reduce greenhouse gases. The State's policy choices regarding farmland preservation and reducing greenhouse gas emissions are interrelated. California's environmental and agricultural stakeholders point to the presence of three farmland conservation programs (and other programs and multiple policies throughout different codes) as encouraging the retention of agricultural land and thus resulting in less urban sprawl, less vehicle miles travelled, and less green house gases generated in the state. The purpose of this paper is to examine this claim and to tender an opinion on its validity. Offered also are suggestions on how to tie together better the dual goals of farmland preservation and greenhouse gas reduction in California.

**The California Department of Conservation commissioned the production of this paper. The opinions expressed here are only my own and in no way represent the opinions of the California Department of Conservation. Al Sokolow, Larelle Burkham-Greydanus, Peter Detwiler, Fielding Greaves, Brian Leahy, Scott Limpach, and Charles Tyson offered helpful comments on an earlier draft. Any errors that remain are my own. This is a condensed version of Wassmer (2009).*

Introduction

California has long attempted to preserve land devoted to agricultural production. Recently it became the leader in creating a statewide policy to reduce greenhouse gases.

California's Williamson Act of 1965 allows the payment of lower local property taxes by farmers and ranchers for a 10-year renewable term in exchange for agreeing to keep their land in agricultural production or open space. The Open Space Subvention Act of 1972 provides for the State to partially reimburse county governments directly for the property taxes foregone under this program, and indirectly reimburse school districts. The California Farmland Conservancy Program (CFCP) of 1996 uses grant funding to protect farmland in exchange for permanent conservation easements that compensate the landowner based upon the appraised value of lost development rights. The 1998 Williamson Act Easement Exchange Program allows the release of agricultural land from a previous Williamson Act contract if it enters into an agricultural conservation easement through the CFCP or through other state agencies that also engage in the purchase of agricultural conservation easements. Furthermore, this "Super Williamson Act" of 1998 allows agricultural property to enroll for a 20-year term in exchange for property tax payments that are 35 percent less than under the Williamson Act.

With a 2005 Executive Order (S-3-05) from Governor Schwarzenegger declaring climate change a reality, California became the policy leader among the states in efforts to

reduce greenhouse gas emissions (GHGs). Furthermore, the Global Warming Solutions Act (AB 32, Nunez, 2006) requires the state to reduce its 2010 GHGs to 2000 levels; by 2020 to reduce them to 1990 levels; and by 2050 to reduce GHGs to 80 percent of 1990 levels. By early 2009, AB 32 also requires a specific plan that will achieve the required GHG emission levels through regulation, market mechanisms, and/or other actions. As noted by the Economic and Technology Advancement Advisory Committee (ETAAC, 2008, pp. 1-2) commissioned to advise the California's Air Resources Board on the implementation of AB 32, transportation activities generate just over 40 percent of the State's current GHGs. Thus, a reduction in automobile use is necessarily required if California desires to meet the GHG reductions required under AB 32. As described by Ewing *et al.* (2008), the required reduction in automobile use can only come about if Californians chose to live in more compact and mixed-use land use patterns that allow walking, biking, and mass transit as replacements for current automobile trips.

California's policy choices regarding farmland preservation and reducing greenhouse gas emissions are interrelated. California's environmental and agricultural stakeholders point to the presence of the State's three major farmland conservation programs (and other programs and multiple policies throughout different codes) as encouraging the retention of agricultural land and thus resulting in less urban sprawl in the state. The purpose of this paper is to examine this claim in as unbiased a manner as possible and to offer an opinion on its validity. Such an examination is necessary to offer an informed comment on the desirability of reforming and/or expanding the State's system of farmland preservation to reduce the degree of sprawl experienced in California and achieving the reduction in GHGs mandated by AB 32.

The remainder of this paper contains four additional sections. Section 2 offers a definition of sprawl and describes how the presence of sprawl contributes to the generation of GHGs. The battle to reduce sprawl occurs at the urban/rural boundaries or "urban fringe" that surround urban areas. Land use at this fringe is often agricultural and if preserved appropriately, can effectively slow or stop the spread of sprawl. Section 2 also looks at the available information on the likely effect of sprawl reduction on the generation of fewer GHGs in California. Section 3 provides a description of California's farmland conservation programs and previous empirical studies that have examined the effects of farmland conservation programs in California and the United States. Section 4 concludes with a summary of the available evidence on the influence of California's farmland conservation policies on the appropriate conservation of agriculture land to reduce urban sprawl. Where the conclusion warrants that a farmland conservation policy is not doing all that it could to reduce sprawl, I offer potential policy solutions to increase this effect.

Urban Sprawl, Farmland Preservation, and GHGs

What is Urban Sprawl?

To consider the impact that California's system of farmland preservation programs has on the conversion of agricultural land, the impact this agricultural conversion has on the generation of urban sprawl, and the greater production of greenhouse gases that comes from urban sprawl, it is first necessary to define urban sprawl. I characterize urban sprawl as low-density residential and "strip-mall" commercial development that is distant from an urban area's employment centers. Such noncontiguous and non-integrated forms of development at the fringe of an urban area concerns planners and policymakers due to the dependence it creates on the automobile for personal transportation and the driving distances necessary for the typical commute to work.

“The construction of state and federally subsidized highways, and the relatively low private cost of using an automobile to get to work, has further facilitated urban sprawl.”

Economists (see Brueckner, 2000; Mills, 1999; and Wassmer, 2008 as examples) describe the following cause and effect occurrences as the primary reasons for urban sprawl. As population increases in an urban area of a fixed land area, it becomes increasingly difficult to locate new residential and business activity in the area’s existing employment centers. Land prices increase in employment centers and new residents increasingly decide to tradeoff a longer commute to work for less expensive housing options at the fringe of the urban area. Even if an urban area experiences no population growth, as the real incomes of some existing residents rise, they often desire to live in larger houses and lots. The inexpensive land to build these on is more likely on the urban/rural fringe that surrounds urban areas. In addition, the “flight from blight” occurring as residents that are more affluent seek the real and perceived lower crime rates and higher performing public schools outside of a metropolitan area’s central places also generates urban sprawl (see Wassmer, 2008). The construction of state and federally subsidized highways, and the relatively low private cost of using an automobile to get to work, has further facilitated urban sprawl.

A household makes a choice of residence by weighing the private benefits of a decentralized location (cheaper land to build a larger house with a larger lot on, perceived “better” public schools, lower crime rates, newer infrastructure, neighbors they would rather associate with, closer to public open space, etc.) against the private costs of this decentralized location (a longer and more expensive commute, greater traffic congestion in the commute, less urban amenities, etc.). If a household chooses to be a contributor to an urban area’s sprawl, it has very likely determined that the private benefits of living on the urban/rural fringe of the area are greater than the private costs. However, in making this decision it is unlikely that the household has fully considered the social costs inherent to it (greater air pollution from a longer commute, greater freeway congestion to others, increased publicly-funded infrastructure costs, the social and economic isolation of the poor and/or racial/ethnic minorities left behind at the core of the metropolitan area, the social loss of prime agricultural land and/or open space valued at greater than its market price, etc.). The immortal words of a Pogo comic strip from Earth Day 1971 still rings true concerning the primary cause of urban sprawl: “Yep son, we have met the enemy and he is us.” Nevertheless, as Levine (1997, p. 280) points out: “What to one person is sprawl, to another is his/her home.”

Economists refer to privately ignored social costs as negative externalities. Thus, a policy prescription often given by economists to reduce sprawl is to get housing consumers (or the developers that build houses for them) to consider the external costs of choosing a decentralized location through the payment of fees/charges equivalent to these social costs. However, due to both the difficulty of determining the appropriate fees to charge and the strong political resistance to implement them, fringe development rarely pays fees for the social costs just described. Policy activists interested in reducing urban sprawl have instead chosen to conceptualize forms of suburbanization in which they are certain that the total private and social costs of their development are greater than the total benefits.

The Sierra Club (1998) defines urban sprawl as low-density development away from places of employment and shopping, and requiring the use of automobiles to get to these non-residential places. Continuing this theme, the *Planning Commissioners Journal* (2002) describes sprawl as dispersed development outside of compact urban and village centers along highways and in the rural countryside. Downs (1998) recognizes urban sprawl by observable traits such as unlimited outward extension of new development, low-density developments in new-growth areas, leapfrog development, and strip commercial development. Ewing (1997 and 1994) takes a very deliberate approach to conceptualizing urban sprawl. Surveying 15 academic articles on the subject, he found that the terms low-density, strip or ribbon, scattered, or leapfrog development are most often used by urban planners to characterize sprawl. Ewing lumps these characteristics under the term “non-compact development”.

In California, where demographers at the Department of Finance anticipate that population will grow from 32.5 million in 2000 to near 50 million in 2025, the question of how to accommodate a greater than 50 percent increase in population in 25 years is widely asked.¹ How environmentally and fiscally feasible will it be to live and work in a state if a majority of its population growth continues to occur at low density at the fringe of its current urban areas?

How Sprawl Contributes to GHG Emissions

Urban sprawl is low density residential development far removed from the major employment centers in an urban area. As discussed in Frumkin, Frank, and Jackson (2004), such lower density (or less compact development) forces residents on more frequent trips, limits their transportation options, and greatly increases the necessity of owning an automobile. Residents must travel outside of their neighborhood to work, and to consume office, retail, entertainment, and other service activities because there is very little mixing of the non-residential land uses with housing subdivisions.

As noted in Frumkin (2002, pp. 202-203), carbon dioxide emissions (CO₂) account for about 80 percent of the green house gases emitted in the United States. Transportation activities resulted in about one-third of all of CO₂ emissions in the country. Noteworthy is the fact that transportation activities generated as much as 60 percent of all CO₂ emissions in California (see www.smartgrowthamerica.org/documents/State_Emissions_by_Sector). As described in Ewing *et al.* (2008), a policy to reduce CO₂ emissions in California (and thus achieve the ambitious GHG reductions mandated by AB 32) must stand on a “three-legged stool”. One leg rests on improving fuel economy, a second on reducing the carbon content of fuels, and a third on reducing vehicle miles traveled (VMT). The necessity of improvements in the first two legs of this stool are widely discussed and being encouraged through public policy. The same is not necessarily true about the third.

VMT in the United States since 1980 has risen three times faster than the country’s population. Observers attribute this to the increase in urban sprawl that occurred over the same period. This has led many to conclude (for an example see Steinbach, 2007) that technological advancements in fuel efficiency and reducing the carbon content of fuel will not be enough to meet the ambitious goals for GHG reduction set by AB 32. VMT will need to come down, and this is only possible if Californians chose more compact and mixed-use forms of residential development.

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California’s Economic and Technology Advancement Advisory Committee (2008, pp. 3-12), charged with coming up with a plan to reach the GHG goals laid out in AB 32, calls for the need to shift demand for VMT through greater smart growth planning:

Planning measures can shift investments in housing and transportation infrastructure in a way that would reduce GHG emissions over the long term by providing desirable and low GHG transportation options, largely by replacing automobile trips. Partnerships between the state government and regional and local agencies are critical to achieving these goals.

Furthermore, this same report notes the possibility of revising California’s current farmland preservation policy to meet the GHG reductions required by AB 32 (p. 3-14):

The current Williamson Act mechanism, used to keep farmland in agricultural use and delay housing or commercial development may not provide sufficient incentives for farmland owners to prevent urban sprawl and halt the growth of VMT.

¹ This paper takes this assumption as a given. An alternative approach could also look a ways to attack sprawl through policies designed to reduce California’s future population growth.

Estimates of the Contribution of Sprawl Reduction to GHG Reduction

In a review of over 50 empirical studies on the relationship between compact development and automobile use, Ewing and Cervero (2001) report the consensus finding that the built environment determines the amount of vehicle miles traveled (VMT). Ewing, Pendall, and Chen (2003) specifically found, after accounting for income and socio-economic differences in 83 of the United State's largest metropolitan areas, that VMT was 25 percent less in compact metropolitan areas. Ewing *et al.* (2008) reports that it is reasonable to assume that individuals in a household located in an area with twice the prevalence of density, diversity of uses, accessible destinations, and interconnected street grids, drive about one-third less. A CalTrans estimate offered in the ETAAC (2008, p. 3-12) reports that a family living in a compact transit village could reduce its household's VMT by 20 to 30 percent.

Ewing *et al.* (2008) find that residence in a compact, non-sprawled neighborhood results in a 30 percent reduction in VMT. This study uses an elaborate simulation model to predict that by 2050 total transportation related CO₂ emissions could fall by seven to 10 percent from current trends if a feasible percent of future development is steered toward mixed-use and high-density neighborhoods. They point out that by shifting just 60 percent of new development to a more compact form by 2030 would be equivalent to a 28 percent increase in federal vehicle efficiency standards (or the same as the new development being sprawl and all residents in the new sprawl driving a hybrid automobile). Of course, GHG emissions fall even further if new development is compact and residents of it drive a hybrid and used an automobile fuel with lower carbon content (or relied more upon mass transit, walking, or biking).

The Appropriate Preservation of Agricultural Land to Reduce Sprawl

As noted by Daniels and Lapping (2005), there are two types of land preservation associated with the discouragement of urban sprawl and the encouragement of a form of compact development that most people would likely desire to live in. These include (1) the preservation of lands for parks, recreation, and green spaces within built-up areas and (2) the preservation of rural land for agriculture, to maintain valuable natural areas, and to channel development into more compact and mixed uses. If applied appropriately – and within the necessary use of regulatory programs, general plans, consistent zoning, and subdivision ordinances – California's state-level farmland conservation programs are potential policy instruments that could achieve both of these desirable forms of land preservation. However, appropriateness requires preserving enough farmland to constitute a greenbelt that surrounds an urban area and effectively becomes a growth boundary for it.

California's farmland preservation programs can be a powerful policy tool in helping to defeat the State's urban sprawl if applied in a well-coordinated and contiguous manner around the entire fringe of each of the State's growing urban areas. Such a greenbelt arises if the vast majority of agricultural lands within it enroll in current farmland preservation programs. This greenbelt can effectively become a growth boundary for an urban area if it is wide enough, and/or if other methods discourage development beyond the greenbelt. Such a greenbelt would steer future development into the existing urban area it surrounds. This could very likely result in the desired mixed-use and compact development that, as described previously, yields the lower statewide average household VMT necessary to reduce GHG emissions as required by AB 32. I next examine the extent to which California's farmland preservation programs have achieved these desired anti-sprawl goals.

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California's Farmland Preservation Programs and Sprawl

This section provides an examination of the three main farmland preservation policies in California. It explores the structure and intent of these programs. It also questions how well they work at preserving agricultural production in California in a manner that reduces urban sprawl and the greater greenhouse gas emissions that can arise from it.

Williamson Act

According to Daniels and Bowers (1997), the statewide movement to encourage the preservation of family farms by allowing farmers to owe property taxes on the use value of their land instead of the development value began in the United States during the late 1950s. California's program began in 1965 with the Williamson Act. By the early 1970s, every state had instituted some form of a program that allows farmers, under agreed upon restrictions, to pay lower than normal property taxes. California's program includes a "restrictive agreement." Agricultural land (and some grazing land) receives preferential property tax treatment after the farm owner signs a legally binding agreement to maintain the land as a farm for 10 years (with annual renewal). A penalty of 12.5 percent of the land's market value occurs if conversion happens before the contract expires (Institute for Local Self Government, 2002, p. 67). Similar programs exist in New Hampshire, Pennsylvania, and Vermont.

California's Williamson Act is a state policy, voluntarily administered by its city and county governments. If a local government desires the possibility for its farmers to enter into a Williamson Act contract, it first must set up rules regarding the establishment of agricultural preserves within its boundaries. Some local leeway exists for determining the extent that nonagricultural uses can qualify, but a designated preserve must be at least 100 acres. The minimum parcel sizes for prime and non-prime agricultural land within a preserve is respectively 10 and 40 acres. A local government's planning department must also describe the consistency of a proposed agricultural preserve with its general plan, and subject the proposal to a public hearing before approval. As described above, the local government may then offer Williamson contracts to privately owned parcels seeking them within established agricultural preserves.

In 2007, about 17 million of California's 27 million acres of acres used for agricultural purposes were subject to preferential tax treatment due to the Williamson Act. Since 1972, the State of California has partially reimbursed its local governments for the property tax revenue lost due to Williamson contracts. In 2005, these intergovernmental transfers amounted to nearly \$39 million dollars (California Department of Conservation, 2006, p. 18). A 1997 State Board of Equalization study found that in the 27 counties where Williamson contracts were most prevalent, potential property tax revenue lost by counties was \$27 million. Counties received over 90 percent of this lost local revenue back in the form of state funded subvention payments (Governor's Office of Planning and Research, 2003, p. 4). However, these subvention payments have come under attack. The Legislative Analyst's Office (2008) recommended the enactment of laws that prevents the State of California from renewing or entering into new Williamson Act Contracts. They base this recommendation on their assessment that the act is not "cost-effective". In their words: "In many cases, it may subsidize landowners for behavior they would have taken regardless" (p. 1).

If a farm currently under a Williamson contract wishes to end its commitment without penalty, it must undertake a nine-year process in which the assessed value each year increases by formula to its market value. Kovacs (2008) has recently examined the pattern of Williamson contract non-renewals in California and notes a steady statewide increase in yearly initiations of acres of farmland put up for non-renewal between 2001 and 2007. He

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attributes this to the housing market boom over most of this period that fueled subdivision developer demand at the urban fringes, especially in the San Joaquin Valley, South Coast, and the Desert regions.

Responding to criticism that the offerings of the Williamson Act did not do enough to encourage farmland preservation in California, Senate Bill 1182 (or the “Super Williamson Act”) added a Farmland Security Zone (FSZ) provision. An FSZ originally fell within an existing agricultural preserve at the request of landowners to the appropriate local government, but in 2000, a new FSZ could exist outside of an earlier created agricultural preserve. A farmland security zone must contain one or more of the following: prime agricultural land, farmland of statewide significance, unique farmland, and/or farmland of local importance. A farmer who finds his land in a FSZ may enroll in a Super Williamson contract that allows a 35 percent reduction in property tax payments below the already reduced Williamson Act amount. The cost to the farmer of obtaining this benefit is a 20-year commitment to maintain the land in agricultural production, required state approval of a cancellation of this commitment, and a higher penalty for cancellation that is 25 percent of the land’s market value. The public benefit of agricultural land enrolled in this program is the increased likelihood it remains in agriculture production for 20 or more years without reverting to the establishment of a permanent farm easement, that can create long-term lock-in problems. In 2005, there was about 818,000 acres of prime California farmland enrolled in Super Williamson contracts. This represents only five percent of the total farmland enrolled in any Williamson Act program. I now turn to an assessment of how well the traditional and “Super” variants of the Williamson Act work to preserve agricultural production in California and for the specific purpose of this paper, to saving farms in a manner that reduces urban sprawl.

If we measure the success of the Williamson Act by farmland participation alone, it is triumphant. Over two-thirds of all California acres in agricultural production are currently under a Williamson contract. However, the vast majority of this land has only committed to 10 years or less in agricultural production. Only five percent of the acres under Williamson contract fall under the longer 20-year commitment allowed in a FSZ. Also noteworthy is that acres of new enrollment since 2003 have continually fallen behind the cumulative non-renewal of existing acres covered under Williamson contracts (Kovacs, 2008, p. 5).

The protection of California’s farmland through the Williamson Acts is occurring within the shorter window than existing policy allows for. Protection over time is falling, especially in regions of the state experiencing greater increases in population and the urban sprawl it can generate. The low enrollment in the Super Williamson contracts indicates that the vast majority of California’s farmers have evaluated the expected cost of putting their property in a FSZ as being higher than the expected benefit. This is perhaps not a surprise given the 20-year commitment that such a contract requires, the potential for high-market value non-agricultural development on much of these lands, and the steep penalties faced for violation of the 20-year commitment.

Figure 1 offers a map of California in which the state’s urban areas (defined as an accumulation of Census blocks in which the population density in each is at least 1,000 people per square mile) are represented in black. Population density varies within these urbanized areas, with higher densities usually occurring in an urban area’s employment/shopping/residential hubs and falling as you move away from these hubs of compact development to the urban/rural fringe that surround an urban area. In Figure 1, light gray represents land under a Williamson Act contract of either type. Though the scale is large, it is telling to look at this map of California and notice that a ring of white frames most of the state’s urban areas (denoted in black). White rings represent land that is neither urban nor protected by Williamson Act contracts. These white rings are a visual representation of the urban/rural fringe discussed earlier. This is where sprawl is occurring and/or will occur in the upcoming decades.

figure 1

GIS map created by
James Nordstrom



Source : California Department of Conservation.

Placing the current farmland around California's urban areas into one of the forms of Williamson Act contracts would slow urban sprawl in the state. If land at the urban fringe were designated farmland security zones, sprawl would slow for at least 20 years. If land at the fringe consisted of agricultural preserves, population growth in an urban area could be contained within an agriculturally imposed growth boundary for at least 10 years. A slowing of sprawl will help achieve the mandated AB 32 policy goal of reducing green house gas emissions in the state.

Figure 1 illustrates California's current lack of using either of the two forms of the Williamson Act to surround its urban areas with a boundary for stopping growth. The best examples of where this is close to occurring is in the Central Valley counties of Yolo, San Joaquin, Stanislaus, Madera, Fresno, Kings, and Tulare. Nevertheless, even in these counties where agricultural land under Williamson contract (designated in gray) surrounds urban areas (designated in black), there is a very telling band of white between the black and gray. Also revealing is the fact there is very little to no use of Super Williamson contracts around these rapidly growing Central Valley urban areas, or for that matter, around any

of California's urban areas. The vast majority of FSZs in California are in Kings, Kern, and Glen counties. With the exception of the Willows urban area in Glenn County and Corcoran urban area in Kings County, farmland security zones are not adjacent to the state's urban areas. Even in these two urban areas, they are only used to any extent on one side of the urban area.

The use of Williamson Act contracts in the California is extensive, but they are fulfilling far less than their full potential at preserving farmland at the urban fringe for the purpose of slowing sprawl and working to curb future GHG emissions. Where a growth boundary in the form of farmland under Williamson Act contracts surrounds an urban area, it is largely in place for no more than 10 years and there is a ring of unprotected property at the urban fringe waiting to accept sprawling development. Since protected farmland is only under Williamson contract for 10 years or less, farmers at these existing growth boundaries rescind their commitment when this ring of unprotected land fills with sprawl. In essence, no long-term urban growth boundaries exist around California's urban areas through Williamson Act contracts.

To examine this depiction in further detail, Figure 2 offers a similar map for the Sacramento Region. I define this area by Sacramento, Yolo, Sutter, Placer, and El Dorado Counties. The primary urban area within this region extends from the City of Sacramento north and south along interstate highways 5 and 99, and east along Interstates 50 and 80. West of the City of Sacramento, the urban area jumps the Sacramento River into the City of West Sacramento, but a flood plain and farmland protected by 10 year Williamson contracts offers a buffer between the primary urban development in the Sacramento Area, and the Davis and Woodland urban areas in Yolo County. Important to note is that the County of Sacramento maintains an urban service boundary in its southeast corner that effectively curtails non-agricultural development there without the need for farmland to enter into Williamson contracts.

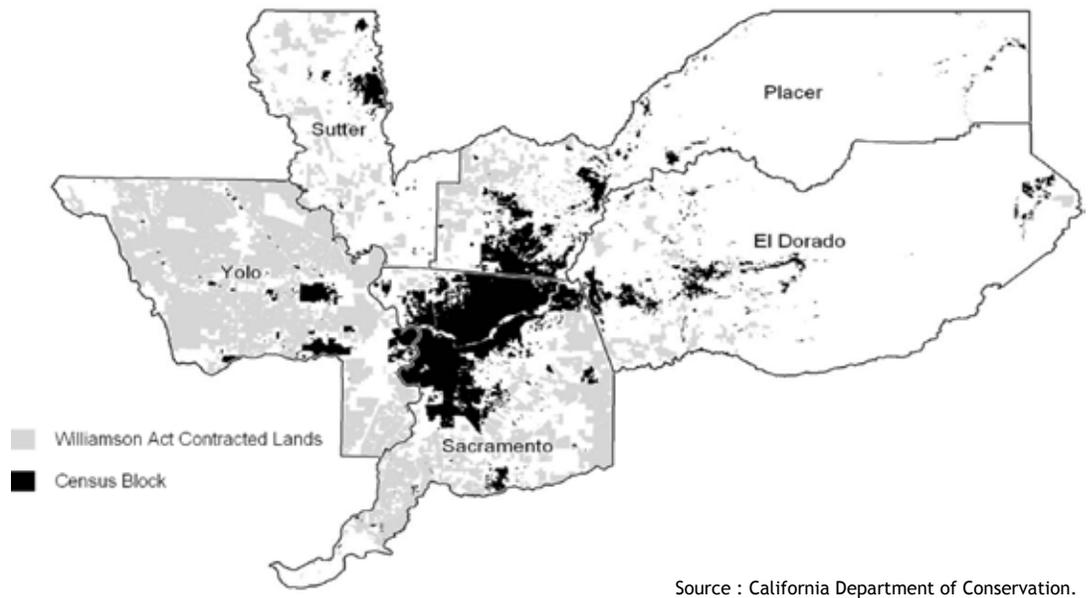


figure 2

GIS map created by
James Nordstrom

In Figure 2, the Sacramento Region offers a prime example of how the current implementation of the Williamson Act is not working as effectively as it could to slow the area's continuing urban sprawl. First, there are very few Super Williamson contracts used. In the counties of Sacramento, Placer, and Sutter, no FSZs exist. In the counties of El Dorado and Yolo, only 185 and 159 acres were respectively under Super Williamson Act contracts in 2008. The reason for the high use of farmland preservation in the western area of the

Sacramento Region is Yolo County's explicit planning desire to steer the limited residential development it allows to within the city limits of Davis and Woodland. This creates a form of compact development in these two cities, but even here, there is the telling ring of white around the two large black-designated urban areas in Yolo County.

Traditional Williamson contracts only exist haphazardly in the northern portion of the Sacramento Region. As such, this portion of the metropolitan area has seen its share of sprawling development over the last two decades. But the real occurrence of sprawl in the Sacramento Region has occurred along the northeast Interstate 80 corridor extending to Auburn City, and the southeast Interstate 50 corridor extending to Folsom City and beyond to Placerville City. As Figure 2 shows, the nearly non-existent practice of preserving farmland through Williamson Act contracts has facilitated this sprawl.

In the conclusion to this paper, I discuss potential policy alternatives to consider that would strengthen California's Williamson Act in a manner that would render it more effective in controlling the state's sprawl and subsequent emissions of GHGs. Before doing this, I offer descriptions of two other California programs designed to preserve the state's farmland. Again, I assess their effectiveness at doing this and reducing sprawl.

Farmland Conservation Program

In 1996, the California Farmland Conservancy Program (CFCP) began to offer state assistance, with local government collaboration, in the permanent conservation of economically viable farmland. The CFCP manages state provided dollars and private grant funds to purchase agricultural conservation easements, held and monitored by land trusts or transferred to local governments. As described in Daniels and Bowers (1997, Chapter 11), a land trust is a private, non-profit organization that exists to acquire farmland, natural areas, and open space. Daniels and Lapping (2005) describe conservation easements as restricting land in perpetuity from residential, commercial, industrial, or institutional uses, but allowing a farmer to make ongoing agricultural management decisions. A trust acquires such an easement from a private landowner in exchange for usually both a cash payment and the income/estate tax benefits available through the donation of a portion of the value of land to the non-profit trust. The benefit of this technique is the guaranteed long-term protection of farmland. However, the cost of achieving this can be large and includes the likelihood of paying a high price to purchase permanent development rights and the likely gaps of unpreserved land from holdout farmers who do not wish to remove forever the potentially lucrative option of future development.

Prior to 2000, CFCP grants were minimal and only funded by yearly appropriations from the state's General, Soil Conservation, and Environmental License Funds. Using an allocated \$25 million in bond funds from the passage of Proposition 12 in 2000, the CFCP has since helped fund 39 individual conservation easements on close to 11,000 acres of farmland (California Department of Conservation, 2006b, p. 2). In addition, California voters approved Proposition 40 in 2002 that allocated an additional \$45 million in funds to help support the further establishment of conservation easements in the state.

The scale of California farmland subject to conservation easements is miniscule in comparison to the state's 17 million acres of agricultural land currently under Williamson contracts. An obvious budgetary reason for the limited use of the farmland policy tool is the direct and large expenditure that the permanent acquisition of development rights entails. Even California's Department of Conservation (2006a, p. 4) concludes that agricultural conservation easements are not well suited to the preservation of urban fringe farmland for the sole purpose of directing growth back to the urban core. The high level of land speculation occurring at the urban fringe discourages most farmers from making a permanent commitment to agriculture. Instead, agricultural conservation easements work

to guarantee the perpetual conservation of prime farmland in rural regions far from where urban development should never occur. Here, farmers are much more likely to agree to not develop their land for the far less than infinite commitment of 10 or 20 years as required under a Williamson contract, and the cost to securing this agreement is more obtainable. Nevertheless, as emphasized in Daniel and Lapping (2005), if used appropriately, both Williamson type property tax forgiveness programs and conservation easements can offer an effective combination of policy tools to steer development from the urban fringe. An examination of the 39 CFCP grants offered through Proposition 12 show only a few attempts to preserve farmland in a manner that creates a growth boundary around any of California's urban areas. These have only been attempts and in no case has the CFCP created a complete growth boundary.

Easement Exchange Program

“A trust acquires such an easement from a private landowner in exchange for usually both a cash payment and the income/estate tax benefits available through the donation of a portion of the value of land to the non-profit trust. The benefit of this technique is the guaranteed long-term protection of farmland.”

Beginning in 1998, legislation went into effect that allows the cancellation of a Williamson Act contract without the payment of the specified penalties of monetary penalties to California's General Fund if the landowner/local government arranges a conservation easement on other farmland in the jurisdiction. The stated goal of this program is the allowance of potential cancellation fees to work to preserve local agriculture. Requirements for this to happen are that the value of the new easement must be equal or greater in value than the possible cancellation fee paid, and the acreage of the new easement must be equal or greater than the acreage of Williamson contracted land cancelled. The easement exchange process is voluntary and begins with a Williamson Act contract holder submitting a proposal to a locality that must approve it and then pass it on for Department of Conservation approval.

California farmland under Williamson contract at the urban fringe is eligible if the termination of the contract does not result in “discontinuous” patterns of development (California Government Code Section 51256(a)). It is crucial as to how the Department of Conservation interprets this term in determining whether this exchange program contributes to the further generation of urban sprawl. Farmers most likely interested in facilitating an exchange hold land at the urban fringe. Development pressures there have driven up the market price of land such that the return from selling before the Williamson contract expires exceeds the return from farming even with property tax forgiveness. Furthermore, the conservation easement purchased with the equivalent penalty funds of 12.5 or 25 percent of the market value of this fringe land is farther from development pressure than the converted farmland. Thus, the presence of this exchange program very likely facilitates the break down of boundaries that have arisen around the urban fringe areas designated in white in Figures 1 and 2. Between 2000 and 2005 only 435 acres of farmland in Riverside County took advantage of the Easement Exchange Program. At present, its existence is exerting no effect on the generation of urban sprawl in California, but it would be wise to monitor its use in the future.

Conclusion and Suggested Policy Changes

Planners and academics, together with land preservationists, need to present more studies on how the acquisition of land and conservation easements can help to clarify where developments should or should not go, and how land preservation can help to achieve the smart growth goals of cutting sprawl and reviving cities and suburbs (Daniels and Lapping, 2005, p. 324)

With AB 32, California set itself on a track to reduce green house gas emissions in the state in 2050 to 80 percent or less of that emitted in 1990. This must be considered a highly ambitious goal given the growth anticipated in both the State's population and vehicle miles traveled (VMT) by the typical Californian. Since over 40 percent of California's current GHG emissions are generated in transportation activities, the achievement of this goal will only come about if public policy tackles all three of the elements that make the automobile currently such a large contributor to climate change: (1) the high carbon content of automobile fuel, (2) the low fuel efficiency of automobiles, and (3) the large VMT generated by the typical automobile owner in the state. As Ewing *et al.* (2008) shows, VMT can only decrease by the necessitated amount if Californians make future land use decisions that results in more compact and mixed-use development patterns.

With the goal of offering advice to state policymakers on how to reduce sprawl in order to reduce VMT and GHG emissions, this paper has looked at how California's farmland conservation programs influence the compactness of urban land use choices made in the state. I begin my concluding thoughts with a summary of the earlier reported upon evidence. This evidence is the basis of politically feasible policy suggestions that would likely reduce the positive influence that these factors have had on the generation of sprawl.

Summary of Evidence

Williamson Act and Farmland Security Zones: Since nearly two-thirds of all California's acres in agricultural production are under a Williamson contract, by participation alone the program is a success. However, a geographic representation of the use of these farmland preservation programs shows that it rarely provides an effective growth boundary around any of the state's urban areas. *Therefore, the current use of Williamson contracts are not fulfilling their full potential as a policy instrument in the fight to slow the state's sprawl and to help achieve the reduction in GHGs mandated by AB 32.*

Farmland Conservation Program: California farmland subject to conservation easements is miniscule in comparison to the millions of acres currently enrolled in Williamson contracts. *For this reason, and the observation that there has been little effort in the use of CFCP grants to assist in the generation of a fixed agricultural buffer around any urban area in California, it must be concluded that this program has not achieved the potential they have for effectively slowing the spread of sprawl in the state.*

Easement Exchange Program: This program potentially allows a farmer at the fringe of an urban are to get out of their Williamson commitment to agriculture production if they can find another plot of agricultural land willing to commit to entering into a perpetual easement. *However, the perpetually preserved farmland is farther from the urban fringe than the previous agricultural land lost to development. For this reason, the easement exchange program offers the potential of actually facilitating greater sprawl. However, the nearly non-existent use of its application in California makes this currently unlikely.*

Potential Policy Changes to Consider

I now offer a set of suggestions to consider regarding current California policy instruments and conservation of urban fringe farmland. I base my policy suggestions on both the causal relationships described earlier and my own assessment of the political likelihood of achieving them. However, to understand my policy suggestions concerning the use of current farmland preservation instruments, I first must offer my vision of the "ideal planning environment". This environment would allow compact and mixed-use

“Development pressures there have driven up the market price of land such that the return from selling before the Williamson contract expires exceeds the return from farming even with property tax forgiveness.”

development to occur in California's current urban areas and simultaneously protect as much of the prime farmland that surrounds these urban areas as possible.

The ideal planning environment starts with a region-wide planning group consisting of all cities and counties economically and environmentally connected in the desired future footprint of the region. Based upon the expected population growth in the designated region over the next 10 to 50 years, this planning group would need to reach a consensus on where this growth should occur to achieve the compact and mixed-use developments that are necessary to result in the region's share of reduction in GHGs specified in AB 32. In the short term, much of the population growth could be steered back into the existing urban areas within the region in the form of infill development. If long-term population growth is great enough, new land at the fringes of the urban areas within the region needs to be urbanized. A desire to preserve the greatest amount of prime farmland that abuts the urban area should drive the choice of this necessary expansion of an urban footprint. Through this consensus-based "ideal" form of regional planning, needed future development can be steered to not so prime farmland at an urban area's fringe.

The difficulty with a California region achieving the just described ideal planning environment for creating compact and mixed-use urban growth that preserves prime farmland is that there is no metropolitan-wide organization to bring an urban area's cities and counties together to make binding regional land use decisions. Currently, the closest things are the 18 Council of Governments (COGs) formed in California's large regions to facilitate the orderly distribution of federal transportation funds. Among these COGs, the Sacramento Area Council of Governments (SACOG) has garnered national attention in the creating the beginnings of the ideal set up just described (Campoy, 2008). Labeled the "Blueprint Project," representatives from the area's local governments, with the assistance of input from citizens, developers, and the agricultural community, reached a consensus on where they would like to see future development occur. The consensus was also that future development be at a higher rate of density and mixed use than originally projected. Though the implementation of the preferred development plan is voluntary, local officials in the Sacramento Area now have a region-wide blueprint to help guide their own land use decisions by.

"The ideal planning environment starts with a region-wide planning group consisting of all cities and counties economically and environmentally connected in the desired future footprint of the region."

Senator Steinberg, who represents the Sacramento Area in the California Legislature, has successfully authored Senate Bill (SB) 375 that in 2008 became law. It encourages the remaining 17 COGs in California to take a similar consensus approach to region wide land use. Under SB 375, the process must demonstrate how the resulting plan yields measurable green house gas reductions that are in line with those mandated statewide under AB 32 (Planning Report, 2007). SB 375 offers carrots in the form of state funded incentives for regions that achieve this. In addition, SB 732 also authored by Senator Steinberg in the 2007-2008 legislative session and signed into law in late 2008, creates the Sustainable Communities Council to coordinate the activities of various state agencies that aim to improve air and water quality, natural resource protection, affordable housing, and transportation. Both SB 375 and 732 are the beginnings of a public policy course in California that leads to the ideal set up described earlier.

Once a region reaches a consensus on a course of future development that helps to satisfy statewide goals regarding GHG reductions, the next policy concern that emerges is how to achieve it. This is where the existing tools of farmland preservation, used in coordination with appropriate local general plans, farmland zoning, and subdivision ordinances, could be more effectively utilized. If all the projected development for a metropolitan area over the next 10 years is expected to be accommodated through higher infill development in existing urban areas, then the relevant local communities in the area (most likely the unincorporated portions of counties at the region's fringe) should coordinate a ring of agricultural preserves

that surround existing urban areas in the region. All private farms in these preserves need to be strongly encouraged to take on a traditional Williamson contract. Since it is a landowner's choice to enter into a Williamson contract, stronger encouragement could come through appropriate forms of local zoning, and perhaps additional forms of farmland protection (transferable development rights, formal growth boundaries, etc.) that would heighten the attraction of farmers to enroll in Williamson Act contracts. An appropriately established ring of agricultural preserves would protect all currently unprotected farmland (as shown in Figures 1 and 2 with white bands) between current and desired future land in urban use, and currently protected farmland.

If infill development accommodates projected development over the next 20 years or more in an urban area, then this ring of preserved agricultural land around the urban areas in a region should be Farmland Security Zones. Again, private farms in these FSZs need to be better encouraged to take on a Super Williamson Contract. If there is a part of the current urban fringe in an urban area that will need to develop in 10 to 20 years from now, then this land should only be under traditional Williamson contracts, and the land beyond that under Super Williamson contracts.

Under this suggested policy course, Williamson contracts set growth boundaries around California's urban areas that work to steer development back to central places in an urban area. This will achieve more of the mixed-use and compact development necessary to satisfy AB 32. A permanent easement within a current or projected future urban area should only receive the support of the California Farmland Conservancy Program (CFCP) if used specifically to establish a permanent stopping point for urban development because of its encroachment on prime agricultural land. The same is required for setting up the criteria that California's Department of Conservation should use for the future approval of an easement exchange.

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