Opportunities for Increased Greenhouse Gas Reductions from Farmland Conservation

A White Paper on the Sustainable Agricultural Lands Conservation (SALC) Program

by
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Executive Summary

Initiated in Fiscal Year 2014-15, the State of California's Sustainable Agricultural Lands Conservation Program (SALC) is an important step toward reducing greenhouse gas (GHG) emissions caused by farmland conversion to urban and suburban uses. At the same time SALC can potentially help catalyze implementation of Sustainable Communities Strategies (SCSs) and improved local land use planning and practice in California. This white paper explores approaches to strengthen SALC in 2016 and future years to meet both sets of goals.

Main recommendations include the following:

Opportunities for Improving Project-Level Evaluation of GHG Reductions

1. Incorporate the inevitable upzoning of farmland within GHG reduction calculations.

2. Include other GHG emissions from the CalEEMod model—especially building energy use—in addition those related to vehicle-miles-traveled.

Opportunities for Optimizing Program Design and Impact

3. Take regional or local agricultural preservation and urban growth management policies into account when considering SALC applications.

4. Take into account how well both easement and planning grant applications complement regional Sustainable Community Strategies (SCSs) or their rural equivalent when scoring applications, and award extra points to applications consistent with SCS maps, goals, and implementation strategies.

5. Reduce or eliminate the matching dollars required for SALC grants.

6. Provide geographic diversity in funding, especially targeting easements and planning grants in key agricultural regions such as the San Joaquin Valley.

Opportunities for Achieving Complementary Goals of AHSC and SALC

7. Undertake long-term scenario modeling of integrated farmland conservation and infill development programs to provide guidance on program strategy and funding levels. Tie evaluation of AHSC and SALC applications more closely to SCS implementation, and increase funding levels for both programs.

8. Incentivize agricultural preservation through the Affordable Housing and Sustainable Communities (AHSC) program by awarding extra points to AHSC applications from regions with agricultural land preservation policies and/or application of agricultural land policies as part of the development (e.g. transfer of development rights).

Overall, SALC should be viewed as a long-term investment in more sustainable local land use planning and practice in California, one that can be augmented and improved over time. Along with the AHSC program, it can provide important funding to implement SB 375 and other state climate mitigation policies. Expanded funding will be essential, as will strategies to better evaluate emissions and optimize grant allocation. SALC and AHSC should be coordinated more closely in the future with the SCSs and other land use-related climate initiatives.

Introduction

Although land use is an essential dimension of the State of California's climate policy framework, it is a difficult policy arena for several reasons. First, land use changes happen slowly over time, and significant greenhouse gas (GHG) savings will occur mainly in longer time frames such as 2035, 2050, and 2100. Second, land use is tied to many other social, economic, and political dimensions of the California context, and the GHG reduction benefits of land use strategies are more difficult to model than, say, changes to motor vehicle fuel formulations. Lastly, land use changes on agricultural land and open space ("greenfield" development) are tied to changes on existing urban land ("infill" development), so attention to both sides of this equation is essential. Put another way, only if greenfield development is limited will developers fully explore opportunities for infill. However, such linkages are also challenging to model.

To its great credit, the State of California is looking long-term. Governor Jerry Brown and the State Legislature are currently focusing on extending the state's climate policy so as to meet 2030 and 2050 emission reduction targets. Thus, the importance of developing long-term land use strategies now becomes all the more important.

In Fiscal Year (FY) 2014-15 the State of California launched two incentive grant programs funded by cap-and-trade revenues to address both sides of the land use picture. The Sustainable Agricultural Lands Conservation Program (SALC) provides funds to acquire conservation easements permanently restricting development on agricultural land at risk of development, and for planning initiatives related to this purpose, and was initially funded at $5 million for its first year. The Affordable Housing and Sustainable Communities Program (AHSC) provides funds for projects related to infill and compact development or associated planning efforts, and was funded at $125 million for FY 2014-15.

Both the SALC and AHSC programs are administered by the state's Strategic Growth Council (SGC), in consultation with the Air Resources Board (ARB). For SALC, the state Department of Conservation (DoC) within the Natural Resources Agency (NRA) plays the implementing role in formulating policy and evaluating applications.

This White Paper focuses on the SALC program, and seeks to determine how it might most effectively help to meet the State's climate mitigation goals over multiple time horizons. A joint project of the California Agriculture and Climate Network (CalCAN) and the Center for Regional Change (CRC) at UC Davis, the paper presents recommendations in three main areas: (1) Opportunities for improving project-level evaluation of GHG emissions reductions; (2) Opportunities for optimizing SALC program design and impact; and, (3) Opportunities for achieving the complementary goals of AHSC and SALC.

Recommendations

I. Opportunities for Improving Project-Level Evaluation of GHG Reductions

Funded by the State of California's Greenhouse Gas Reduction Fund with revenue from the cap-and-trade system, SALC's fundamental purpose is to reduce greenhouse gas emissions resulting from the conversion of agricultural land to urban uses. Many other co-benefits from agricultural land preservation will also result, as highlighted in the SALC program

Increases in greenhouse gas emissions from the conversion of farmland to more energy-intensive land uses come from many sources, including:

- Emissions from initial construction activities
- Embodied energy in building and site materials
- Emissions from residents' use of motor vehicles
- Emissions from building electricity and gas usage
- Emissions related to the use of water
- Emissions related to the food and household products consumed by new residents
- Emissions related to wastewater, solid waste, and recycling systems

Modeling tools are increasingly available to calculate such emissions from particular development projects, and also to estimate broad patterns of emissions from different development scenarios across large areas. The CalEEMod model prepared for the California Air Pollution Control Officers Association is an example of a tool for modeling site emissions. The Urban Footprint model prepared for the Strategic Growth Council by Calthorpe Associates and others is an example of a modeling tool for land use trends across large areas. Both of these tools could be applied more effectively as discussed below.

In FY 2014-15 the Air Resources Board established an initial methodology for quantifying GHG reductions from potential SALC projects (ARB, 2015a). The SALC easement application requires applicants to describe "the potential or actual development pressure that may be impacting the surrounding area" and "the contributions the easement might make toward meeting AB 32 greenhouse gas reduction goals and objectives, and other co-benefits."

After applications are submitted, the Air Resources Board staff uses the CalEEMod model to estimate GHG emissions resulting from the change in vehicle miles traveled. Emissions are quantified for a project life of 30 years. ARB uses "a conservative estimate of development that could have occurred at the proposed easement project site." It also only considers CO_2 emissions, and does not currently consider potential sequestration of carbon in farmland or potential improvements to agricultural practices that would reduce emissions. As a consequence, potential GHG reductions from SALC easements are underestimated.

We see two main areas of potential improvement in GHG emissions calculations:

A. Incorporating Upzoning

The DoC currently instructs applicants to consider "Minimum Parcel Size (current zoning)" when calculating the number of units that might be developed on an existing piece of agricultural land (DoC, 2015). However, as the American Farmland Trust eloquently pointed out in its comment letter of August 20, 2015, the land development process routinely involves upzoning of land to higher densities. Gaining entitlements to higher-density development is how urbanization occurs, and a main mechanism by which developers make money.

In California, agricultural zoning typically restricts development to one dwelling unit per 20, 40, 80, or 160 acres (depending on the jurisdiction and type of land). In contrast, Californian suburban residential densities are typically at least six dwelling units per net acre. Thus urban and suburban densities are typically 120 to 960 times as great as rural ones. Some exurban jurisdictions allow large-lot zoning with one dwelling unit on parcels of between one-half and five acres. However, such low-density zoning is relatively rare, and is strongly discouraged by the American Planning Association[1] and other professional and environmental organizations. It was more common historically than in the present. Rising land prices in California as well as desires for compact and sustainable development have pushed residential densities upwards in recent decades, especially near urban areas, while discouraging large-lot zoning.

Incorporating realistic development densities into GHG emissions calculations for the SALC program is an urgent need. Doing so will increase GHG reduction estimates many-fold and provide a more accurate picture of the comprehensive GHG emissions reduction potential of farmland on the urban/suburban edge compared to rural areas. This change will favor applications for easements on farmland at the urban edge, which is desirable from both farmland protection and climate policy perspectives since this land is usually at the highest risk of development and easements on it can most effectively contribute to compact urban development policies that reduce GHG emissions.

Upzoned density estimates could be determined in several ways:

(a) If a developer has already submitted a development proposal for the site, or if the local jurisdiction has already prepared a revised zoning proposal or land use plan for the site, the density number from those relevant documents (in the above order of precedence) should be used.

(b) An average of recently approved or constructed greenfield development projects within five miles of the site and within the same jurisdiction could be used.

(c) The future housing density estimate for developed land within the Census block group could be applied. These density estimates for future years are generated by Metropolitan Planning Organizations within regional Sustainable Community Strategies.

Recommendation #1: Incorporate the inevitable upzoning of farmland within GHG reduction calculations.

B. Incorporating Non-motor-vehicle Emissions

In the SALC program's first year the DoC considered only GHG emissions related to vehicle-miles-traveled within its project evaluation—that is, using the amount that residents of new development would drive. However, the CalEEMod model is able to estimate emissions from many other sources besides motor vehicle use. Of these, building energy emissions (from use of electricity and natural gas) are the most important, often accounting for a quarter or more of residential household emissions. For example, in a study of Yolo County (near Sacramento), Wheeler et al. (2013) estimated building electricity and gas use to be 57 percent of transportation emissions. Information about electricity and gas use for different housing types and climate zones is readily available from

[1] See: https://www.planning.org/policy/guides/adopted/smartgrowth.htm

analyses by the state's utilities and can be estimated with considerable confidence (e.g. CEC, 2010).

Recommendation #2: Include other GHG emissions from the CalEEMod model—especially building energy use—in addition to those related to vehicle-miles-traveled.

II. Opportunities for Optimizing Program Design and Impact

As estimates of GHG emissions savings from preserving agricultural land improve, choices about where to invest in conservation easements will also improve. Other strategies could also potentially optimize SALC's easement scoring procedures and resulting GHG reductions. These are itemized below.

A. Regional or Countywide Agricultural Preservation and Infill Development Policies

New conservation easements within counties or regions with well-developed agricultural preservation and infill development policies have a greater chance of reducing long-term GHG emissions than easements in jurisdictions without such policies. This is because these jurisdictions have analyzed farmland protection and infill development needs and put tools in place to systematically conserve agricultural land and steer development towards existing urban areas. Such jurisdictions are also likely to have smaller amounts of farmland still in need of protection, and are in a position to make more effective use of easement dollars. These jurisdictions may have adopted stand-alone Agricultural Preservation Policies or may have placed such policies within General Plans. They may also have adopted growth management tools such as Urban Growth Boundaries, Urban Limit Lines, Urban Service Boundaries, or Priority Infill Areas (or the equivalent). Conservation easement applications from such jurisdictions should receive preferential consideration within the SALC process.

Recommendation #3: Take regional or local agricultural preservation and urban growth management policies into account when considering SALC applications.

B. Coordination with Sustainable Community Strategies

In addition to funding conservation easements, the SALC Program provides farmland conservation planning grants for cities and counties. Local plans and policies can help create a framework for long-term land conservation and compact development. For example, Yolo County recently adopted a new 3-to-1 farmland mitigation program requiring developers to conserve three acres of farmland for every acre that is convert to non-agricultural uses. Such a mitigation plan can fund permanent farmland conservation and further the county's General Plan goals of compact development as well as the region's GHG mitigation targets.

SALC can broaden its impact on GHG emission reductions if planning grants and conservation easements are coordinated with regional Sustainable Communities Strategies (SCSs) or their rural equivalent as required by Senate Bill 375.[2] Municipal Planning Organizations develop SCSs in coordination with regional transportation plans to meet Air Resources Board-prescribed transportation GHG emission reduction targets for 2020 and 2035.

For example, a potential SALC easement site that falls within an open space, recreation, agriculture, resource, critical habitat, conservation, or rural zone on the region's SCS maps of future land use could receive extra points in application scoring.[3] A potential easement site that falls within projected low-density residential zones (usually less than four units/acre) on SCS maps might also

[2] See: http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf

[3] Different Sustainable Community Strategies use different terminology for land use types and have different future scenario dates (for example, 2035, 2040, and 2050).

receive extra points since a main purpose of SCSs is to steer development towards more compact, higher-density locations in which per capita GHG emissions will be lower. Similarly, easement grants that demonstrate how their investment can further SCS implementation can broaden the impact of the SALC program.

Recommendation #4: Take into account how well both easement and planning grant applications complement regional Sustainable Community Strategies (SCSs) or their rural equivalent when scoring applications, and award extra points to applications consistent with SCS maps, goals, and implementation strategies.

C. Matching Requirements

The current SALC guidelines set out a "standard match" of 50 percent, with the caveat that "compelling applications which include a lesser match may also be considered." This is a high bar for land trusts and other governmental or nonprofit agencies, especially in urban fringe areas in which land is expensive. Yet such fringe locations are often the most important places to preserve agricultural land in light of immediate development threats and potential fit with local growth management policies and regional SCSs. Urban fringe sites can also yield the greater GHG savings than rural sites if the resulting development is likely to be relatively intensive both in density and unit size. For such reasons, lowering the standard match to 20 percent or eliminating it all together on lands at high risk of development would be desirable as a way to assist applications for expensive urban fringe sites.

Recommendation #5: Reduce or eliminate the matching dollars required for SALC grants.

D. Geographic Distribution

Some of the most productive agricultural land in California is also among the most at risk of urban conversion. This is true in the San Joaquin Valley where agricultural land conservation planning and policy has been slower to develop compared to some coastal regions. SALC can support conservation of these highly productive farmlands by targeting a share of planning and easement funds towards such regions.

Recommendation #6: Provide geographic diversity in funding, especially targeting easements and planning grants in key agricultural regions such as the San Joaquin Valley.

III. Opportunities for Achieving Complementary Goals of AHSC and SALC

In line with the "Systems Approach" proposed in the ARB's "Draft Concepts" related to the Cap-and-Trade Proceeds Second Investment Plan (ARB, 2015b), greater long-term integration of SALC with AHSC and the regional SCSs would be desirable. This need to coordinate programs so as to meet long-term goals has been noted by a number of other SALC commenters as well.

As an initial step, applicants should be encouraged to make more specific mention of potential synergies between these programs within SALC grant proposals. For example, if a SALC easement application site is within a prime agricultural land area designated within the regional SCS and/or if multiple AHSC grants have been previously awarded in the general vicinity of the proposed easement, applicants could note those conditions within the application. DoC and the SGC could then give the application extra scoring points or preferential consideration.

However, to more fully take long-term GHG reductions into account a new generation of land use

models and GHG reduction calculations may be necessary. Such tools would build upon existing tools such as Urban Footprint.[4] Urban Footprint is a scenario-planning tool developed by Calthorpe Associates in conjunction with the Strategic Growth Council. It interacts with ArcGIS[5] to help users develop large-scale land development scenarios, and then can calculate land consumption; transportation variables such as vehicle miles traveled; other transportation-related GHG emissions; building energy and water consumption and related GHG emissions; household costs for housing, transportation, and utilities; public health impacts; and local fiscal impacts. Although Urban Footprint potentially has great functionality, it is still relatively new, and will almost certainly evolve in the future in ways that can help stakeholders maximize the benefits from land use incentive programs such as SALC and AHSC.

Whether Urban Footprint or other software packages become the modeling tool of choice, it would be desirable to develop long-term scenario modeling that could:

- Model likely regional changes in housing and land use mix over time deriving from various patterns of AHSC and SALC investment, and calculate GHG emissions savings and other variables.

- Perform such modeling for regions with differing amounts of available agricultural land and differing historical approaches toward development (i.e. relatively pro-growth policies under which land has been easily re-zoned into low-density suburban development vs. strong growth management policies restricting such development). This can help provide an understanding of emissions reductions possible within these different California contexts, helping guide state investments to those urban regions that would yield the greatest GHG savings.

- Model more general 2035 and 2050 policy scenarios and assumptions for both current trends ("business-as-usual") and strong GHG reduction policy ("AB 32-Plus") scenarios. SCSs already do this to some extent, but within the constraint of relatively weak ARB GHG reduction targets for 2035 that vary by region but are usually in the 12 to 15% range. Much steeper reductions will be necessary if the state is to meet its target of 80% reductions by 2050. Modeling of much stronger agricultural land preservation and urban growth scenarios, such as undertaken by Wheeler et al. (2013), can help provide a general understanding of the range of emissions reductions possible from strong policy directions, and can help give the public and decision-makers a sense of the synergies between different types of programs (urban infill, agricultural land preservation, transit investment, transportation pricing changes, etc.).

To increase long-term coordination between SALC, AHSC, and SCSs, AHSC project applications could receive additional scoring points for the following conditions:

(a) Location within a city or county that has a farmland mitigation program and/or that has received SALC grants. Such farmland protection activities are likely to increase the market for urban infill and the likelihood of success for AHSC projects.

(b) Use transfer of development rights to move density away from rural and farmland areas. Some communities have transfer of development rights (TDR) programs, such as the City of Brentwood. However, these programs may not be actively used as they require coordination across local jurisdictions. Prioritizing both AHSC and SALC applications from such jurisdictions can spur the use of these programs that use TDRs that move density away from rural/agricultural lands toward cities.

[4] See: https://courses.planetizen.com/course/scenario-plan-urbanfootprint
[5] See: https://www.arcgis.com/features/

(c) Meet the objectives of SCSs. As described above, if the AHSC project applicant can demonstrate that their project contributes to the implementation of the SCS (or its rural equivalent) then they should receive extra scoring points.

Recommendation #7: Undertake long-term scenario modeling of integrated farmland conservation and infill development programs to provide guidance on program strategy and funding levels. Tie evaluation of AHSC and SALC applications more closely to SCS implementation, and increase funding levels for both programs.

Recommendation #8: Incentivize agricultural preservation through AHSC program by awarding extra points to AHSC applications from regions with agricultural land preservation policies and/or application of agricultural land policies as part of the development (e.g. transfer of development rights).

Conclusion

California is still in the early stages of climate policy, especially as regards land use effects on GHG emissions. As the state advances toward goals such as 80 percent GHG reduction by 2050, land use will become a more important part of the equation. SALC and AHSC are nascent programs that can potentially play a large role in incentivizing better local and regional land use planning to meet GHG mitigation goals as well as a range of co-benefits including farmland protection.

The Strategic Growth Council, Natural Resources Agency, Department of Conservation, Air Resources Board, and other agencies are to be congratulated on getting these programs up and running. The next few years will be an important time for refining SALC and AHSC, expanding their funding, and linking them more tightly into implementation of the Sustainable Community Strategies.

By pursuing the recommendations above, we believe the state can more effectively measure the actual reductions of GHG emissions from SALC grants, and more effectively allocate SALC easement and planning grants. We look forward to a continuing dialogue about how both short- and long-term optimization of these programs can come about.

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