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Challenges Facing USDA's Conservation Reserve Program

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- Reductions in maximum Conservation Reserve Program (CRP) acres mandated by the 2008 Farm Act, along with relatively high agricultural commodity prices, could lead to reduced overall environmental benefits and higher CRP costs.
- ERS is analyzing alternative enrollment policies and practices that could increase environmental benefits per enrolled acre and lower program costs.
- The effectiveness of changes will depend on improved data and models to more accurately estimate the environmental benefits provided by competing offers to enroll land in the CRP.

USDA's Conservation Reserve Program (CRP) pays rural landowners to convert environmentally sensitive cropland to long-term grass, tree, and wetland covers. To help maximize the CRP's effectiveness, program managers use an Environmental Benefits Index (EBI) that factors in cost and environmental attributes when ranking competing offers to enroll land in the program's periodic general signups. Scientific literature clearly documents the benefits of the CRP, including reduced erosion, increased wildlife abundance, and improved water quality. ERS research conservatively estimates CRP benefits of \$1.3 billion per year, excluding carbon sequestration, ecosystem protection, and other less easily quantified benefits.

After a period of relative stability, the CRP faces a number of changes. The 2008 Farm Act reduced the CRP's maximum enrollment to 32 million acres—4.6 million acres less than the program's peak acreage in 2007. Moreover, increases in agricultural commodity prices since 2006 not only increase CRP costs, but may decrease landowner interest in the CRP if further increases are expected in the future. And, if program goals evolve in response to emerging environmental concerns, such as climate change, the location and types of practices installed on CRP lands may change, possibly affecting wildlife habitat and other environmental services provided by the program.



These factors create additional incentives for USDA to pursue efforts focusing on improved targeting, encouraging the use of better conservation practices, and heightening competition among bidders—steps that hold promise for increasing the environmental benefits and lowering the cost of the CRP. Such efforts would benefit from better—even if still imperfect—scientific information.

Acreage Limit Has Reduced CRP Enrollment

As of October 1, 2009, the CRP is capped at 32 million acres—nearly 20 percent below the cap of 39.2 million acres allowed under the 2002 Farm Act. To meet the new cap, USDA allowed approximately 2 million acres in contracts that expired on or before September 30, 2009, to leave the program without an offer to renew or extend the contracts. However, even under the lower CRP acreage cap, USDA will have continuing opportunities to add new enrollments or to seek modifications on currently enrolled acres, since contracts on 3.3 million to 6.5 million acres are scheduled to expire annually between 2010 and 2014 (see box, “History of the Conservation Reserve Program”).

Higher Crop Prices Could Raise Program Costs and Influence CRP Enrollment

Beginning in 2006, prices for many commodity crops rose, nearly doubling by the summer of 2008. While prices have since dropped, they are still high by historical standards, which will increase program costs as CRP rental rates increase to remain competitive with market returns.

High price expectations may also affect incentives to enroll. While CRP rental rates on new enrollments are based on

yearly estimates of market rates provided by USDA’s National Agricultural Statistics Service (NASS), to the extent that these estimates fail to capture expectations of future price increases, offered acreage could decline. On the other hand, many landowners may value the certainty of CRP rental payments and may appreciate the environmental benefits their retired cropland provides. These landowners may be willing to remain in the program even when crop production would provide higher revenues.

In 2006, contract holders of approximately 83 percent of the 28 million acres set to expire from the CRP between 2007 and 2010 accepted offers to reenroll or extend their contracts for 2 to 5 years. While this high rate of renewal came at the beginning of the surge in crop prices, very few landowners who reenrolled in 2006 elected to withdraw from the program in 2008. Many current CRP participants, therefore, may be relatively unresponsive to changes in commodity prices, or may view higher prices as temporary.

Eventually, however, if higher commodity prices (net of input costs) persist, CRP rental rates must increase to maintain landowner interest in the program. Thus, relative to the program’s status as of February 2010, either costs will increase or environmental benefits will likely decrease.

Economists Estimate Impact of Alternative Prices and Acreage Scenarios

Simulation models can highlight the relationships between crop prices, CRP rental rates, and environmental benefits. ERS analysts conducted several simulations using a data-rich model that incorporates information from USDA’s Natural Resources Inventory, agricultural commodity prices, and EBI weights.

Lynn Betts, USDA/NRCS



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After calibrating the model against contracts and conditions existing in 2005, researchers simulated a 30-million-acre general signup, focusing on enrollment levels and environmental benefits under a baseline and two projected scenarios. The baseline uses 2007 commodity prices (which were similar to 2009 prices) and holds CRP rental rates at 2007 levels. The two projected scenarios incorporate likely changes in CRP rental rates to illustrate possible program costs and benefits—as measured by the EBI—if (1) 2007 commodity prices persist in the long run and (2) summer 2008 prices return and persist for the long run.

These illustrative scenarios highlight several possible outcomes. The baseline represents a “do nothing” scenario—where rental rates are held constant. In this scenario, only 29 million acres would be offered for enrollment. Accepting all offers with no competitive pressure holding down bids results in a yearly cost of about \$1.8 billion. In comparison, CRP payments for the best 29 million general signup acres were about \$1.1 billion in 2008. Furthermore, under this scenario, average per acre environmental benefits (based on EBI scores) are below those of currently enrolled acres.

Since USDA periodically adjusts rental rates as market rates change, the first projection considers an across-the-board 60-percent increase in CRP rental rates, which allows the program to achieve 30 million acres with per acre environmental benefits similar to current contracts. This would lead to a further increase in annual rental payments to nearly \$2.5 billion.

The second projection shows that if crop prices return to the high levels of mid-2008, a

120-percent increase in per acre CRP rental rates would allow the quality and quantity of CRP acreage to be largely retained, but yearly program costs would increase to \$3.0 billion.

While these scenarios focus on price increases, the overall conclusion holds even after factoring in USDA projections of near-term minor price declines. Since overall prices are still likely to be higher than average prices when most current contracts were accepted, higher program payments will be needed to maintain the program’s environmental benefits as these contracts expire and are replaced with new enrollments.

Improved Data and Models Could Help Guide Policy Decisions

Management of the program has evolved continuously, incorporating new information to improve monitoring, assessment, and evaluation, with a goal of increasing benefits and reducing costs (for further details, see the Farm Service Agency’s Economic and Policy Analysis: Natural Resource Analysis at www.fsa.usda.gov/FSA/webapp?area=home&subject=ecpa&topic=nra). Continued advances can further expand these capabilities. The following examples suggest a variety of approaches that could leverage geographic and other information to improve the program’s cost effectiveness.

Relaxed eligibility rules. To be eligible for the CRP’s general signups under current rules, a parcel must have a cropping history and either have highly erodible soils or be located in a National or State Conservation Priority Area. Given the multiple objectives of the program, extending eligibility might increase net benefits by, for example,

granting eligibility to nonhighly erodible parcels that have the potential to provide excellent wildlife habitat or have a disproportionate impact on water quality. While CRP’s continuous signup enrolls parcels with exceptional benefits, increasing the flexibility of the general signup could provide additional environmental benefits at lower cost in some cases.

Use of auctions to control program costs. In advance of enrollment, USDA calculates the maximum per acre CRP rental rate for each offer. This parcel-specific, per acre bid cap is based on the relative productivity of the soils in each county and the average cash rent or cash-rent equivalent. Under the CRP’s evaluation process, producers may offer land at the bid cap or at a lower rental rate to increase the likelihood that their offer will be accepted.

While the current evaluation system can hold down program costs, it could be improved upon. While each parcel’s bid cap is based on NASS cash rent survey data and Natural Resources Conservation Service (NRCS) productivity indices, these are estimates that may be too high or too low. A parcel with a bid cap that is higher than the land’s actual rental value allows the landowner to request and possibly receive unnecessarily high CRP payments. Conversely, parcels with overly stringent bid caps may dissuade landowners from enrolling in the CRP, even if retiring their land would provide significant environmental benefits.

A possible alternative approach is to choose offers using a more complex procedure. For example, parcels having low agricultural land rents on highly erodible land will receive high EBI scores, even when the

simplest, least expensive ground cover is installed. Owners of such parcels have little financial incentive to lower their asking price or to offer to install more beneficial practices. However, experimental economics research conducted by ERS indicates that a “quota” auction, which limits the number of offers accepted from these kinds of parcels, can encourage competition and lead to lower overall costs. Further work that fully considers the range of negative and positive impacts of such complex auctions could prove useful.

Encouragement of better conservation practices to improve wildlife habitat. Every offer to enroll land in the CRP includes one or more proposed conservation practices. The costs and benefits of these practices can vary considerably. While almost all permanent covers have the same impact on erosion and water quality, the choice of conservation practice can affect wildlife habitat. In some cases, it may not matter what practice is installed—retiring land from active farming may provide sufficient habitat for local

species, even if the choice of conservation practice is driven primarily by cost (i.e., planting a single species of nonnative ground cover). Other times, however, an appropriate practice (such as mixed native-species ground cover) can greatly increase wildlife habitat benefits.

Currently, the competitive bidding process encourages participants to increase their EBI score by installing more wildlife-friendly conservation practices. However, owners of parcels that have high EBI scores regardless of their conservation practice (say, because their rental rates are low) may feel little need to increase their EBI score by installing even a slightly higher quality, but more costly, conservation practice. Thus, encouraging the installation of more wildlife-friendly practices could yield noticeable benefits.

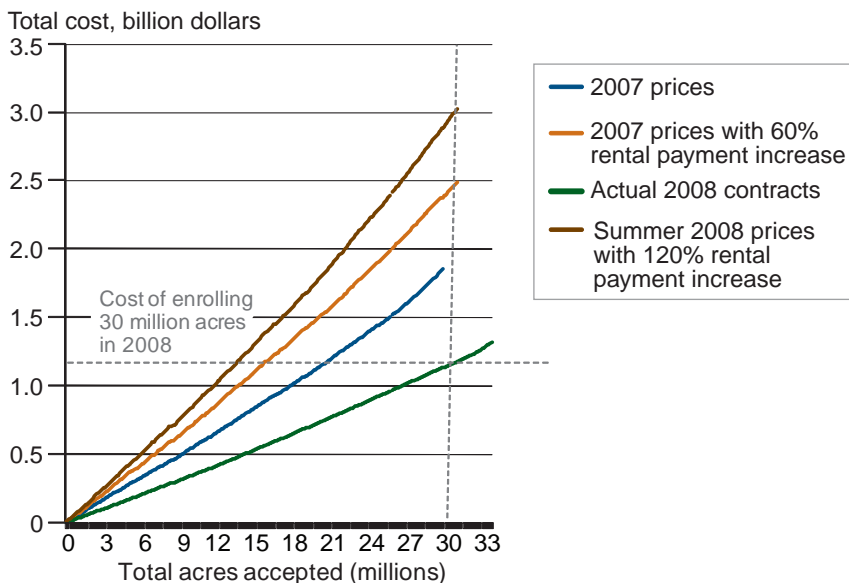
One possible approach would be to reconsider the traditional USDA practice of paying no more than 50 percent of the cost of installing conservation ground cover. If superior ground cover could significantly

increase a parcel’s wildlife benefits, then encouraging its installation by subsidizing a larger fraction of the installation cost may prove to be cost effective.

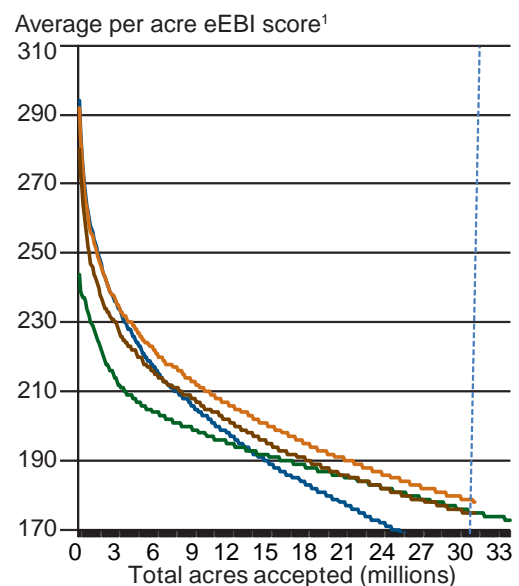
Alternatively, USDA could permit landowners to ask for more than the USDA-calculated maximum CRP rental rate by an amount commensurate with the cost of installing and maintaining desired conservation practices. This may introduce competitive discipline—the decrease in EBI score from asking for a higher payment would reduce the likelihood of acceptance into the program or could lead landowners to moderate increases in their requested cost shares.

Better use of parcel location data. Currently, the EBI incorporates geographic information through the use of zones, such as water quality and wildlife priority zones. The EBI could more effectively discriminate among competing offers if more precise geographical information was available to refine these zones, enabling identification of

As commodity prices increase, higher Conservation Reserve Program (CRP) rental rates lead to greater program expenditures. . .



. . . if average per acre CRP environmental benefits are maintained



¹eEBI = “environmental” Environmental Benefits Index. The eEBI score reflects environmental factors but excludes cost considerations. Source: USDA, Economic Research Service using CRP contracts and the “Likely to Bid” model developed jointly by ERS and USDA’s Farm Service Agency.

parcels with the greatest potential benefits. For example:

- Water quality models combining detailed soil and hydrological information are increasingly able to measure the sediment and chemical runoff from a specific parcel to nearby water bodies, allowing more refined estimates of a parcel's environmental benefits.
- Ecological classifications of the landscape, using broad ecosystem or species measures, could offer an objective means of ranking the attractiveness of a specific parcel put into a particular conservation practice.
- Geographic Information System data on the location of protected lands could allow the EBI scoring process to reflect the added benefits associated with surrounding land uses (i.e., providing contiguous wildlife habitat).

Payments for carbon sequestration.

Since 2004, CRP's bid-ranking process has awarded a small number of points for practices that sequester more carbon. Current policy proposals to slow climate change often include a major role for agricultural carbon sequestration. Currently, land enrolled in the CRP is allowed to earn carbon sequestration payments. If these payments are significant, the extra revenue might induce landowners to offer more land to the program. For example, when a \$25 per metric ton carbon price is incorporated into the baseline scenario described earlier, the simulation model predicts that CRP cost could drop by 10 percent as landowners factor in the carbon payment when making their CRP bid, and environmental benefits could rise by about 7 percent. And, with a carbon price of \$50 per metric ton, the quantity and



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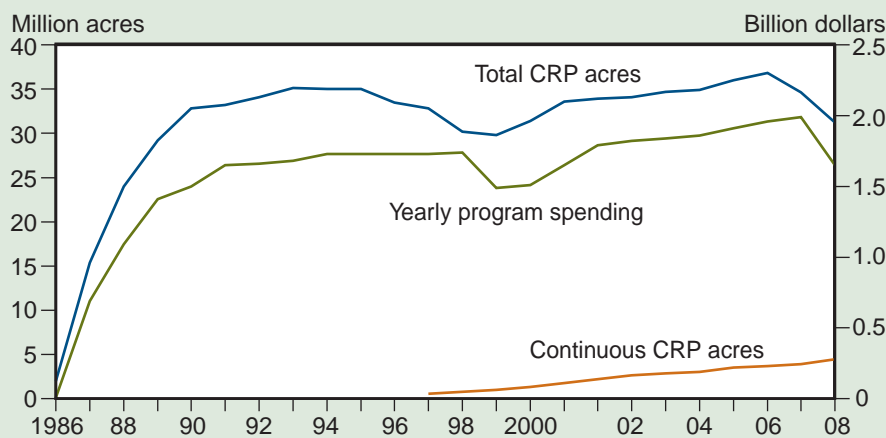
History of the Conservation Reserve Program

USDA's Conservation Reserve Program (CRP) was established in 1985 and by 1986 began enrolling highly erodible cropland using contracts that retired land from crop production for 10-15 years. Enrollment grew quickly, reaching 33 million acres by 1990 (see page 43). After the initial contracts were awarded, program goals were expanded to include water quality and wildlife habitat improvements in addition to reduced soil erosion. To capture these multiple objectives, starting in 1990, program administrators used an Environmental Benefits Index (EBI) to rank competing offers received during periodic "general signups." The EBI computes a score using a formula that weighs such factors as soil erodibility, location within a priority zone, the proposed conservation practice, and the requested rental rate—with offers accepted only if an EBI score exceeds a cutoff value.

In 1996, a continuous CRP signup was created to enroll parcels of land with high environmental benefits outside of the EBI ranking process. A year later, the Conservation Reserve Enhancement Program was created to continuously enroll land in designated State-Federal zones, offering CRP continuous signup rental payments that were augmented with State payments. Enrollment in continuous programs has steadily increased, as has their role in expanding CRP benefits.

Between 1990 and 2008, CRP enrollment fluctuated around 33 million acres, with a high of 36.8 million acres in 2007. As of February 2010, the program enrolled 31.2 million acres. This includes about 4.5 million acres of continuous signup acres.

While overall enrollment in the CRP is declining, continuous program acreage is increasing



Source: USDA, Economic Research Service, based on CRP contract data maintained by USDA's Farm Service Agency.

environmental benefits of enrolled CRP acres could match those achieved in the projected scenario presented earlier (where rental rates are increased by 60 percent) at substantially lower CRP rental rates.

Allowing the sale of carbon credits associated with current contracts does not necessarily reduce atmospheric greenhouse gases. Economic efficiency requires payment only for sequestration above that provided by current practices, such as if a current CRP participant agreed to convert grass ground cover to trees in return for a carbon sequestration payment. Moreover, if markets for carbon credits do not allow credits from current CRP acres, a carbon market might reduce interest in CRP, as non-CRP alternatives may become relatively more attractive to eligible landowners.

Increased use of continuous signups. Continuous signups, which are always open and not ranked using the EBI, are ideal for enrolling small parcels of land that have high environmental benefits based on location (e.g., land adjacent to a prairie pothole), landscape (e.g., in a stream buffer), or practice (e.g., wetland practices). If other kinds of criteria for choosing parcels can be identified, expanding the CRP's continuous signup effort could increase environmental benefits while enrolled acreage declines.

For example, lands with very highly erodible soils are currently awarded a high number of EBI points under CRP's general signups, but not necessarily enough to guarantee acceptance into the program. If these lands disproportionately impact water quality, a continuous practice aimed at "very highly erodible land" could increase per acre CRP environmental benefits.

However, the narrow targeting embodied in many continuous signup initiatives is

not without drawbacks. In particular, parcels offering a moderate level of many environmental services may never be eligible for the continuous signup program. Thus, the problem is one of scope: at what point does expansion of continuous signups, which noncompetitively accept parcels that are good at providing a particular benefit, cease to be clearly superior to competitive and multi-objective general signups?

Continued improvements in data collection, modeling, and monitoring efforts. Strategies for increasing the CRP's environmental payoff (or reducing program costs) often rely on the availability of geographic data, biophysical process models, and other kinds of parcel-specific information. For example, using measures of social benefit to help rank different parcels has clear advantages but requires more information on how the public values environmental services—information that is not readily available. Ensuring that promised conservation practices are well managed is another issue. As conservation practices become more complex, more investments will be needed in efforts to effectively monitor the activities of CRP participants and ascertain the environmental benefits.

Budget Rules Could Limit Program Adaptability

Currently, the range of data and the modeling capability discussed earlier are not fully available to USDA. In addition, the available data may not be sufficiently precise for use at the field level. Acquiring, upgrading, and maintaining this information can be costly and time consuming, even if it ultimately improves program cost-effectiveness.

However, investing in these kinds of changes in USDA's capability to monitor

and target conservation efforts is complicated by the need to keep costs to a minimum. Federal budget rules require that increased costs caused by administrative changes, such as adding a new practice or modifying incentive payments, must be offset by savings elsewhere or by increased revenues. In contrast, increases in program costs due to increased market rental rates do not have to be offset. This budgeting challenge may limit efforts to increase the cost effectiveness of the CRP in the years ahead. *W*

This article is drawn from . . .

Land Retirement Programs chapter in the ERS Briefing Room on Conservation Policy, available at: www.ers.usda.gov/briefing/conservationpolicy/retirement.htm

Balancing the Multiple Objectives of Conservation Programs, by Andrea Cattaneo, Daniel Hellerstein, Cynthia Nickerson, and Christina Myers, ERR-19, USDA, Economic Research Service, May 2006, available at: www.ers.usda.gov/publications/err19/

You may also be interested in . . .

Conservation Effects Assessment Project (CEAP), by USDA's Natural Resources Conservation Service, November 2009, available at: <http://nrsc.usda.gov/technical/nri/ceap/>

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