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THE COSTS & BENEFITS OF THE CRS PROGRAM IN VIRGINIA

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Sea Level Rise

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EXECUTIVE SUMMARY

Interest in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) is growing in Virginia, as flood insurance policy premiums continue increasing, but information gaps may prohibit or slow program participation and success. The costs of joining the CRS and maintaining participation in the program were previously unknown, leaving local governments in the dark when weighing the decision to join the program. This report aims to fill some of the information gaps related to the costs and benefits of the CRS program in Virginia by analyzing information reported during interviews with staff from localities across Virginia in various stages of involvement in the CRS: localities enrolled, joining, and interested in learning more information. Results from these interviews, both data points and anecdotal comments, inform this analysis. Barriers to joining and succeeding in the CRS and potential methods for overcoming the barriers are identified and included in the report.

THE COSTS

Staff time is the primary cost for joining and maintaining participation in the CRS program. Interviews with localities reveal how the costs influence decisions to join or succeeding in the CRS program.

When asked to estimate the percentage of time spent on the CRS each year, 84% of the CRS Coordinators in Virginia reported percentages ranging from 1% FTE to 100%. The median is 13% FTE spent on the CRS each year.

An estimated CRS Coordinator salary of $89,000 was used to calculate the correlative cost of staff time spent on the CRS each year. Using the 13% median percentage of staff time, CRS Coordinators spend $11,570 each year working on the CRS.

THE BENEFITS

The primary benefit of the CRS program is the flood insurance premium discount for policyholders in high-risk flood zones.

Benefit cost ratios (BCR) are calculated for all CRS localities in Virginia, measuring the cost of staff time against the benefit of flood insurance premium discounts for each community. The costs were generated by using the actual percentages of staff time provided by localities that granted permission to use reported time and using the 13% median staff time for the remaining localities. The largest BCR is 68:1 (Norfolk, VA) and the median BCR is 8:1. Only two of the twenty-five localities measured negative BCRs; one of the two would turn positive with permission to use the actual percentage of time instead of the 13% median. The second negative BCR also used the median percentage, however an actual percentage was never reported for the locality.

The secondary benefits of the CRS program are difficult to monetize, however, this report outlines those benefits, as determined by CRS Coordinators. Coordinators weigh in on which benefits are most important to the locality and whether they sway increased staff time and attention to joining or succeeding in the CRS program.

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ABOUT WETLANDS WATCH

Wetlands Watch, an environmental non-profit located in Norfolk, Virginia, operates statewide to conserve and protect wetlands through education and advocacy. Sea level rise is the biggest threat to our tidal wetlands; we work with local governments to encourage nature based adaptation solutions to sea level rise adaptation.

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In an effort to broaden public engagement in sea level rise adaptation, Wetlands Watch developed an app to track flooding. The logo above is from the “Sea Level Rise” app, downloadable on all app stores.

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INTRODUCTION: THE COSTS AND BENEFITS OF THE CRS PROGRAM IN VIRGINIA

Interest in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) is growing in Virginia, but information gaps may prohibit or slow program participation and success. Non-participating localities want to know more about the requirements for joining the CRS, participating localities want to know the costs required for class improvements, policyholders want better discounts as their flood insurance premiums continue rising, and Wetlands Watch wants to know how to market the CRS as a tool for building resilience to the impacts of sea level rise in the Commonwealth. Significant data gaps related to the costs of enrolling and maintaining participation in the CRS Program, as well as limited marketing of the Program in general, likely contribute to a low state CRS participation rate of 9%. Wetlands Watch received a grant from the Virginia Coastal Zone Management Program (CZM) to fill some of the CRS data gaps in Virginia by analyzing the costs and benefits of participating in the CRS. The data was collected through interviews with staff at localities in various stages of involvement in the CRS: localities enrolled, joining, and interested in learning more information about the Program. The interviews revealed information related to the amount of staff time spent both joining the CRS and maintaining enrollment in the Program. After monetizing staff time/effort through an estimated average CRS Coordinator salary for Virginia ($89,000), the costs of running a CRS program were weighed against the benefit of premium discounts earned by each locality,[1] thereby generating a benefit-cost ratio for CRS localities that participated in the project. Other costs, outside those related to CRS Coordinator staff time, were discussed in the interviews, as was how Coordinators weigh the costs and benefit of pursuing higher class ratings or specific CRS activity credit. The interviews revealed which secondary benefits (or benefits in addition to the premium discounts) of enrollment in the CRS are most important to CRS localities. This report summarizes the content of the interviews and identifies potential barriers to CRS participation, while proposing strategies for overcoming these barriers. Many coastal CRS localities link the CRS with resilience initiatives, but not all CRS communities make this connection. This paper will include feedback from localities about how they market the CRS as a tool for resilience and offer suggestions for how other localities could similarly market their program to grow CRS participation and build resilience in Virginia and beyond.

1 Although the localities earn the discounts, flood insurance policyholders in high risk flood zones receive the discount.

CRS: UNDERUTILIZED PROGRAM, UNTAPPED SAVINGS

The CRS is a voluntary incentive-based program that rewards actions taken by localities to reduce flooding and flood damage with lower flood insurance premiums for high risk policyholders. As of May 1, 2017, only 25 of the 290 eligible localities in Virginia participate in the CRS (9%).[2] Out of the 50 Virginia localities with the largest number of flood insurance policies in force, only 20 participate in the CRS, signifying an opportunity to save more Virginia policyholders money, while also improving floodplain management across the state.[3] Virginia's participation rate, although low, is reflective of nationwide participation, which as of May 1, 2017 is 6% (1,444 out of the eligible 22,273 NFIP localities); this suggests the CRS is an underutilized program across the country.[4] Interest in the CRS is growing as flood insurance premiums increase due to Congressional reforms to stabilize the NFIP's debt.[5] In the last two years, 128 localities joined the CRS and the number of CRS Class 5 communities increased by 31%, exhibiting a growing interest in joining the CRS and improving class rating in the Program.[6] This

2 CRS Virginia Participation Map, http://crsresources.org/files/100/maps/states/virginia_crs_map_may_2017.pdf

3 Id.

4 FEMA, CRS Fact Sheet, June 2017. https://www.fema.gov/media-library-data/1507029324530-082938e6607d4d9eba4004890dbad39c/NFIP_CRS_Fact_Sheet_2017_508OK.pdf

5 FEMA, Flood Insurance Reform, https://www.fema.gov/flood-insurance-reform

6 NFIP/CRS Update Newsletter, December 2016/January 2017, https://www.

interest translates to substantial savings; in 2016 the CRS Program awarded over $355 million in premium discounts.[7] To provide local context, 7 localities are pursuing participation in the CRS, and policyholders in Virginia saved $4.8 million in 2017.[8]

Figure 1[9]

CRS Savings for Localities in Virginia (Oct. 2017)		
Virginia NFIP Policies in Force	Total NFIP Premium	CRS Savings
59,980	$44,834,268	$4,863,880

CRS COSTS AND BENEFITS DATA: OVERVIEW OF THE RESEARCH

Calculating the costs of enrolling in and managing the CRS program presents the greatest data gap, which this report aims to address, however, several studies quantify the flood loss reduction benefits of CRS participation. The following is an overview of relevant studies. Most studies compare CRS success with flood damage loss avoidance.

CRS Localities Experience Less Flood Damage

- CRS communities experienced ~38% less insured flood damage in the *Special Flood Hazard Area (high risk flood zones)* compared to non-CRS communities[10]
- CRS communities experienced ~36% less insured flood damage *outside the Special Flood Hazard Area (high risk flood zones)* compared to non-CRS communities[11]

CRS Activity Points = Flood Loss Savings[12]

1 CRS Point for Freeboard (activity 430) = **$8,289** flood loss savings/year

1 CRS point for Open Space (activity 420) = **$3,532** flood loss savings/year

1 CRS point for Flood Protection (activity 530) = **$4,175** flood loss savings/year

Higher CRS Classes = More Savings

A Florida study found that class 5 localities had "lower claim amounts" as compared to localities rated classes 6 through 9.[13]

CRS Mitigation = Flood Damage Reduction

After the 1997 flood in Fort Collins, Colorado, "[M]itigation as a result of CRS led to between $2.8 and $5.5 million [estimated] of flood damage reduction."[14]

CRS Savings Reinvested in Locality

When considering joining the CRS, the City of Virginia Beach, Virginia (not yet joined) analyzed how the premium savings from a hypothetical class 8 rating ($853,813) would circulate back into the local economy. The City determined that of the $853,813 saved, $362,666 (roughly 43%) would be spent directly in the City. Of the $362,666 spent

fema.gov/media-library-data/1485176263796-fd50f1151a318b16336892a89ff3da81/Dec_2016_Jan_2017_Update_508.pdf
7 Id.
8 Analysis from the Virginia Department of Conservation and Recreation, October 1, 2018 data.
9 Id.
10 Highfield, W. E., & Brody, S. D. (2017). Determining the effects of the FEMA Community Rating System program on flood losses in the United States. International Journal of Disaster Risk Reduction, 21, 396-404.
11 *Id.*
12 Highfield, W. E., & Brody, S. D. (2013). Evaluating the Effectiveness of Local Mitigation Activities in Reducing Flood Losses. *Natural Hazards Review*, 14, 229-236.
13 Michel-Kerjan, E., and Kousky, C. (2010). "Come rain or shine: Evidence on flood insurance purchases in Florida." J. Risk Insur., 77(2), 369–397.
14 Grigg, N., et al. (1999). "Fort Collins flood 1997: Comprehensive view of an extreme event." J. Water Resour. Plann. Manage., 125(5), 255–262.

directly, $145,831 would also be spent in the City by the business recipients of the direct spending.[15]

Valuation of Open Space Preservation (activity 420) Points in Virginia[16]

Open space in floodplains helps reduce flooding to nearby infrastructure, which is of particular benefit to low-lying urban localities where high-risk flood zones account for significant percentages of total area. The value of this flood reduction is difficult to monetize precisely, but the CRS Program attaches a tangible fiscal value to open space features like wetlands, open lots, and vegetated shorelines. Two Virginia localities score very high in Open Space Preservation (activity 420); Stafford County (class 7) and Fairfax County (class 6), earning more than 1,000 credit points, which equals two full class ratings (500 points per class increase). Stafford County earned 1,065 open space points, roughly translating to premium savings of $26,533 and Fairfax County earned 1,064 points, roughly translating to $216,412 in premium savings. Figure 2 delineates the Open Space points for each locality, showing the vastly different impact virtually identical numbers of points have in one locality versus another.

Closer analysis of this data reveals different impacts of importance to showcase the value of this CRS action. Fairfax County, with 3,021 more policies than Stafford County, receives greater overall savings. However, because Stafford County's average NFIP premium is $179 greater than Fairfax County, the individual benefit to policyholders is $12 greater. Analysis like this is important in revealing ways to reinforce CRS actions with the public.

Note: A significant portion of Stafford County's Open Space credits were awarded for Chesapeake Bay Resource Protection Area (RPA) buffers. Few Virginia localities receive 420 credit for the RPA, but if other localities submit their buffer areas for credit they earn an automatic bargaining chip against unwanted exemption proposals that may appear before the locality decision making board.

Figure 2[17]

Valuation of Open Space Preservation Points (Activity 420): VA Locality Examples							
Locality	Open Space Preservation (420) Points	Total Premium Savings from Open Space Points (estimate)	Value of 1 Open Space Point (estimate)	Eligible Policies for Premium Savings	Premium Savings Per Policy for total Open Space Points (estimate)	Percentage of Total CRS Points from Open Space Preservation	Percentage of SFHA in open space
Stafford County (Class 7)	1,065	$26,533	$25	179	$44	75%	68%
Fairfax County (Class 6)	1,064	$216,412	$203	3,200	$32	44%	63%

15 Email from City of Virginia Beach staff, July 20, 2017. Analysis reported in 2015.
16 This analysis is not from a report, but a part of this white paper and derived from current CRS score break downs.
17 This chart would benefit from including the total acreage of the SFHA and total acreage of open space land in the SFHA. Credit for Open Space Preservation (420) is calculated by dividing the acres of open space land by the total acres in the special flood hazard area. Localities submit the total acreage of the special flood hazard area to ISO via the "Program Data Table." Program data tables were not provided by the localities and the SFHA acreage was therefore not included in this analysis.

CRS Benefit Cost Ratio: Barnstable County, Massachusetts

There is one full-time regional CRS Coordinator in the United States who works for Barnstable County, Massachusetts. Funded through a cost share with Massachusetts Woods Hole Sea Grant and the County, this first of its kind position received an award from the national Association of State Floodplain Managers (ASFPM) in 2017. The regional CRS Coordinator provides technical assistance to the 15 incorporated towns, saving the town designated CRS Coordinators an estimated 75% of time spent on enrolling in the CRS and maintaining CRS ratings.[18] As of October 2017, the benefit-cost ratio of the regional CRS Coordinator position is 3:1, with 8 towns enrolled. Once the "reasonable goal" of enrolling all 15 towns at a class 7 is achieved, the benefit cost ratio will be 20:1, with a total of $2 million in premium savings.[19]

VIRGINIA CRS COST BENEFIT ANALYSIS

The Costs: Virginia CRS Coordinators Discuss Program Costs

As localities consider joining the CRS Program, locality staff need to know how much time they should expect to spend enrolling in the Program and in each consecutive year thereafter, but this data is unknown. Locality staff in non-participating localities report that the CRS has a reputation of being a time and documentation-intensive program, which could account for the low participation rate, but until this data is collected localities cannot budget time or resources accordingly.

The CRS Program Guidance Misses the Mark

The CRS Coordinator's Manual, the "bible" of the Program, offers an estimated "burden disclosure" for joining and maintaining participation each year, but according to Virginia CRS Coordinators, the suggested hours are extremely under estimated.

See Figure 3 for an analysis of the burden hours included on page 2 in the most recent versions of the CRS Manuals (2007-2017).[20] It is not likely that the manual guidance is impacting CRS Coordinators or localities interested in joining as no staff interviewed knew the manual included an estimated burden rate.

18 Information obtained through a phone conversation with Shannon Jarbeau, CRS & Floodplain Coordinator Barnstable County/Cape Cod Cooperative Extension & Woods Hole Sea Grant

19 This benefit cost ratio analysis included fringe and benefits, whereas the benefit cost ratio calculations for VA localities does not include any benefits.

20 National Flood Insurance Program Community Rating System Coordinator's Manual, FIA-15/2017, http://crsresources.org/manual/

Figure 3

CRS Coordinator's Manual Burden Disclosure Analysis		
CRS Coordinator's Manual Version	Application Process Hours (Joining the CRS)	Annual Recertification Hours (Maintaining CRS Rating)
2007	31 hours (1% FTE)	4 hours (manual error, should report 24 hours) (<1% FTE, but the correct percentage is 1%)
2013	46.6 hours (includes completing environmental & historic preservation certifications) (2% FTE)	4 hours (some manual versions report 4, some report 24, but should report 24 hours) (<1% FTE, but the correct percentage is 1%)
2017	46.6 hours (includes completing environmental & historic preservation certifications) (2% FTE)	4 hours (manual error, should report 24 hours) (<1% FTE, but the correct percentage is 1%)

Note: Most manuals contained an error for the annual recertification hours – the correct number of hours is 24, not 4.

CRS Application Process Hours: Virginia Locality Perspectives

Although the CRS Manual's burden disclosure suggests the application process will consume 46.6 hours of time, Virginia localities report a different experience. In contrast, the following information came from Virginia localities that joined (or started the process of joining) the CRS within the past year. A CRS Coordinator from a locality that recently joined reportedly spent 80-120 hours on the application process, over double the time estimated in the Manual. *"There was information that wasn't in a form that FEMA [ISO] could accept. I had to create it. I spent a lot of time creating documentation."* When asked about whether the Manual's estimated 45 hours was reasonable the Coordinator responded no, *"unless it's looking at 2-3 people that each spend 45 hours on the application."* The two localities engaged in the process of joining the CRS vary tremendously in size and staff capacity and their approach to joining the Program similarly varies. The smaller locality formed a committee of department heads to discuss submitting a letter of interest and filled out the required preliminary form (CRS Quick Check) over the course of an afternoon. The larger locality hired a part time intern who has worked for 1 year thus far to manage the process of joining the CRS, through nearly monthly meetings of a CRS Committee similarly comprised of department heads. The intern is paid $10/hour, works 20 hours each week, and spends roughly 70% of the time on CRS specific activities, with the remainder spent on general floodplain management. Over the past year the intern worked an estimated 728 hours on the CRS, costing the locality $7,280 this year. To make the case for this intern in the locality budget, the locality staff created cost savings graphics (Appendix, Figures A & B) to justify the costs and illustrate the benefit of the intern position.

CRS Annual Recertification and 5-Year Cycle Visit Hours: Virginia Locality Perspective

When discussing the time required for annual recertification, one CRS Coordinator stated there are *"time costs above and beyond to assembling the report."* The Coordinator commented that even though all the files are digitally assembled, a *"solid week of work"* is needed to double check and ensure all files and documentation are submitted.[21] Time spent preparing for 5-year cycle visits is not included in the Manual's burden estimate, but feedback from one CRS Coordinator

21 Not all Virginia CRS Coordinators were interviewed about this specific time burden; gathering additional CRS Coordinators' perspectives would be helpful in the future.

who experienced a cycle visit within the last 2 years (under a substantively different Manual version) suggests it should be considered. The new manual (2013 version) created a *"more complex program"* that requires a *"massive amount of effort."* This specific locality created a new position after their 5-year cycle visit under the new manual that expressly states the staff position devotes 49% on CRS and 51% on stormwater management.

CRS Annual Management: Virginia Locality Perspectives – "There is never enough time"

The CRS Manual burden estimates do not include hours for general management of the CRS Program, although they are presumably categorized in the Annual Recertification hour calculation. The bulk of this project assessed and monetized the percentage of time CRS Coordinators spend on the CRS each year.

Finding an accurate estimate for staff burden time in an average year proved problematic for a number of reasons: high locality staff turnover and shifting CRS responsibility across departments results in limited knowledge about the time when the locality joined the Program and an increased learning curve for staff new to the CRS to come up to speed that would otherwise not exist in localities where the same department or same staff managed the program. Locality departmental complications aside, those staff serving as long-term CRS Coordinators indicated estimating a percentage of time or number of hours spent solely on the CRS during an period of time would be *"really so difficult to pin down."* CRS Coordinators in Virginia, much like the rest of the country, wear a number of different hats; managing the CRS is just one of their many different responsibilities, therefore accounting for the time spent on the CRS exclusively is difficult. In localities where multiple staff in different departments share the burden of the CRS program, calculating CRS time was also reportedly difficult. According to one CRS Coordinator, and reiterated by all interviewees, *"no one is tracking the number of hours spent on CRS."* Therefore, all percentages of staff time cited in this report are estimates.

CRS Coordinators' Other Responsibilities Influence Management Time

CRS Coordinator job descriptions impacted their ability to easily provide an amount of time spent on the CRS. Coordinators carry many different job titles, some of which include, environmental planner, emergency manager, and stormwater engineer. The other duties for which Coordinators serve directly impacts CRS staff time and possibly even CRS ratings. A stormwater engineer serving as CRS Coordinator mentioned *"when we look at flood crossing points we always look at drainage to see where improvements can be made."* A stormwater engineer in charge of this locality's CRS program may result in a higher score for Drainage System Maintenance (activity 540), whereas another locality where a Building Official serves as CRS Coordinator may score higher in Elevation Certificates (activity 310) or the many activities under Higher Regulatory Standards (activity 430) that require a strong knowledge of building code requirements. When explaining the difficulty in identifying a percentage of time spent on the CRS a Building Official CRS Coordinator reported the *"CRS is always in the back of my mind"* because *"everything I do on the building inspection side is always CRS & floodplain management."* In contrast, an Environmental Specialist CRS Coordinator reported his time was less difficult to estimate because his daily duties intersected less frequently with activities credited by the CRS.

Virginia CRS Coordinators: Percentage of Time Spent on the CRS

CRS Coordinators from 21 of the 25 CRS localities reported the amount of time spent on the CRS program each year (84% participation). The percentages reported reflect the time for one full time employee (FTE) working 2,080 hours each year. Percentages exclude general floodplain management work, while capturing a higher percentage of time spent during 5-year cycle visits. The percentage does not capture time spent by localities that "shop out" duties to

another locality. For example, some small CRS towns may contract with a County to inspect their drainage system or perform building inspections. These percentages do not capture the time spent by County staff for the benefit of the Town. Reported percentages ranged from 1% FTE to 100% FTE. The locality reporting 100% FTE employs two staff who share the responsibilities of CRS Coordinator; this locality is rated a class 6. At the outset of this project, the average percentage of staff time was intended to generate benefit cost ratios. However, given the extreme range in percentages, the median percentage was determined the more accurate option, as the 100% response proved to be an outlier.

This analysis uses the percentage of time from staff contributing the majority of CRS work, however it is important to note that all but 3 of 17 interviewed localities reported additional staff support throughout the year. The average number of support staff positions is 4.5, with ranges from 1 to 8. When asked whether localities had administrative support to help stuff envelopes, make copies, etc., 11 of 17 CRS localities responded no. One small locality does not hire any full-time employees, but the percentage of time for the Coordinator is included in the median calculation.[22]

22 The Town of Wachapreague's CRS Coordinator does not work full time for the Town and expressed interest in knowing the CRS savings per the cost of an hourly wage. This per hour measurement is helpful in a work share scenario or for localities that hire part time employees who work by the hour. This feedback will be the basis of future work.

The median estimated percentage of time CRS Coordinators in Virginia spend on the CRS Program each year is 13%

Virginia Estimated CRS Coordinator Salary and Time Valuation

An estimated median Virginia CRS Coordinator salary of $89,000 monetized the percentage of staff time for the benefit cost ratios. The salary is an average of yearly median wages for 5 different occupation categories, including emergency management directors, engineers of varying levels, and planners; these categories align most closely with CRS Coordinator positions. This salary estimate intends to capture a variable cost of living in different regions of the Commonwealth, as well as differences in salary for senior and junior career positions. Estimated wage information does not include benefits and was obtained through Virginia Labor Market Information.[23]

Virginia CRS Benefit Cost Ratios: Methodology & Results

The benefit cost ratios (BCR) generated in this report were calculated through responses from 21 of the 25 CRS Coordinators. Benefit cost ratios (BCR) were calculated for all CRS localities in Virginia, measuring the cost of staff time against the benefit of flood insurance premium discounts for each community. As stated above, during initial stages of the project, the average median percentage of staff time was intended to generate BCRs, however, if 13% of time is used to calculate each locality's BCR, the ratio is skewed for those localities that reported spending 1% FTE in localities with low premium savings. Spending 1% FTE in localities with low savings corresponds to a positive benefit cost ratio, whereas devoting 13% of time would turn the positive ratio to negative. This disparity lead to the decision to ask each individual CRS Coordinator permission to use the actual percentage of time in the BCR calculation. Most localities, 17 of the

23 Virginia Labor Market Information, https://data.virginialmi.com/vosnet/lmi/default.aspx?pu=1&plang=E.

21, granted permission to use the actual percentage reported during their interviews, which will reflect a more accurate ratio. The Virginia median percentage of time (13%) was used to calculate the BCRs for the remaining 4 localities.[24] BCRs compare the monetized average staff time spent yearly on the CRS Program against the total CRS premium reductions earned by the locality. The CRS premium savings were collected from FEMA's database through the creation of "What-Ifs," which were acquired by Wetlands Watch from the Virginia Department of Conservation and Recreation on September 13, 2017. Results from the analysis are displayed in Figure 4.

Figure 4

Virginia CRS Benefit Cost Ratios				
CRS Locality	CRS Rating	Locality Wide Savings	Total Eligible Policies	Benefit Cost Ratio (Average Year)
Accomack County	8	$142,454	1,524	18:1
Alexandria, City of	6	$224,740	998	7:1
Arlington County	8	$16,916	482	4:1
Ashland, Town of	9	$1,197	27	1:1
Bridgewater, Town of	8	$7,126	45	1:1*
Cape Charles, Town of	9	$1,063	34	0.1:1*
Chesapeake, City of	8	$431,296	5,113	19:1
Chincoteague, Town of	8	$140,530	1,202	12:1*
Fairfax County	6	$432,822	3,200	37:1*
Falls Church, City of	6	$36,341	176	1:1
Gloucester County	6	$287,084	1,200	25:1
Hampton, City of	8	$867,643	8,456	49:1
James City County	7	$65,910	420	9:1
Norfolk, City of	8	$789,211	8,314	68:1
Poquoson, City of	8	$304,420	2,925	9:1
Portsmouth, City of	7	$355,453	2,862	31:1
Prince William County	8	$53,077	340	5:1*
Richmond, City of	8	$40,198	274	6:1
Roanoke County	8	$43,226	290	2:1
Roanoke, City of	7	$196,898	516	22:1
Stafford County	7	$39,187	179	3:1*
Vienna, Town of	8	$4,316	35	0.4:1*
Vinton, Town of	8	$7,305	34	1:1*
Wachapreague, Town of	8	$5,010	49	6:1
York County	7	$260,861	1,652	20:1

* Median Percentage of Time (13%) Used to Calculate Benefit Cost Ratio
Town of Vinton joined within the past year, so did not provide an annual percentage

Average Benefit Cost Ratio for 21 participating CRS localities = 15:1
Median Benefit Cost Ratio for 21 participating CRS localities = 8:1
Highest Benefit Cost Ratio = 68:1 (City of Norfolk)

CRS Direct and Indirect Costs in Virginia: A Closer Look

CRS Coordinator interviews revealed costs of administering the CRS program that may fall outside the yearly staff time devoted to managing the Program.

24 One locality requested to use the average, while the other 3 localities did not respond to permission requests.

Direct Costs

The most obvious direct cost is staff time, the principal focus of this analysis, but additional costs may include the following, depending on pursuit of specific activity credit:

- Costs to produce, print, and mail materials for credit under Outreach Projects (activity 330). Examples: advertisements in newspapers or locality publications, swag for events, air time on local access television channels, high water mark initiatives, etc. (Outreach to repetitive loss areas/properties may be required for participation in the CRS. *See CRS Manual page 500-8 for more information.*)
- GIS or online mapping support, if no GIS staff within the locality, helps earn credit in many CRS activities as a form of credit itself or as documentation required for credit consideration. Comments like *"GIS is integral to reporting data"* were echoed by many CRS Coordinators interviewed. Rural localities may incur costs associated with online hosting fees if mapping is shopped outside the locality.
- Acquisition requires a one-time cost to the locality, but subsequent costs could include mowing and clearing of debris or trash (activity 520).
- Structural elevations, or other mitigation strategies, if financed in part or whole by a locality, also requires a one-time cost (activity 530).

Indirect Costs

CRS Coordinator interviews identified the following indirect costs of participating in the CRS Program:

- CRS and floodplain management training (examples: FEMA L-273 & E-278 courses)
- Maintenance of Certified Floodplain Manager (CFM) designation & membership in the Association of State Floodplain Managers (ASFPM)
- Membership in the Virginia Association of State Floodplain Managers (VFMA)
- Attendance at Conference and CRS Workgroup meetings (mileage, registration, accommodations, etc.)

THE BENEFITS: VIRGINIA CRS COORDINATORS DISCUSS PRIMARY AND SECONDARY BENEFITS

Primary Benefit – Flood Insurance Premium Discounts

The primary benefit of participation in the CRS is the savings earned for policyholders with policies in high-risk flood zones. According to one Coordinator, the benefit has a *"shocking impact."* When the Coordinator reported in a public meeting that the CRS saves policyholders over $300,000 a year, the Mayor asked the Coordinator to repeat the savings, at which point the Coordinator was met with applause, an unusual response for the typically formal meetings. In the face of increasing flood insurance premiums, this reduction proves critical. Staff in another locality unsuccessfully approached their Town Council to join several years ago and were told *"so few people would benefit"* at the expense of *"so much staff time."* Staff approached the Council after recent NFIP Congressional reforms and were asked to proceed with joining because citizens began complaining about increasing flood insurance premiums. One Coordinator remarked, *"As the premiums increase, the savings will also increase, even if people can't see the deductions, the savings are there."* During discussions about the various secondary benefits of enrollment in the CRS program several Coordinators responded that the secondary benefits do not factor into any decision making at the locality level because they are difficult to measure, while the premium discounts are easily measured and therefore the main focus on their program. Enrollment in the CRS is described as a *"no-brainer"* by some Coordinators and another said it is only one way to affect insurance rates in a *"concrete, proved way."*

Public Awareness of Premium Discounts

CRS Coordinators were asked whether the citizens knew the locality participates in the program and were aware of their savings. Two coordinators were not confident the CRS savings were included on flood insurance bills, which proposes a significant problem when considering how to raise awareness or market the CRS program to increase participation. A northern Virginia locality reported that citizens are likely unaware of their savings for two reasons, most residents are affluent so the increases may have a smaller impact and the premiums are significantly lower than those in coastal communities, where media focuses attention on premium increases. Responses from other Coordinators varied, but most seemed somewhat confident their residents knew of their savings. No localities survey their residents' awareness.

Secondary Benefits – Virginia CRS Coordinator Responses

CRS Coordinators interviewed (17 of the 25 CRS localities) were asked to reply yes or no to a list of secondary benefits of the CRS Program. Benefits listed were derived from conversations with CRS Coordinators prior to formal interviews. Responses are illustrated in Figure 5. Coordinators were prompted to provide any additional secondary benefits; these additional benefits are discussed below.

Figure 5

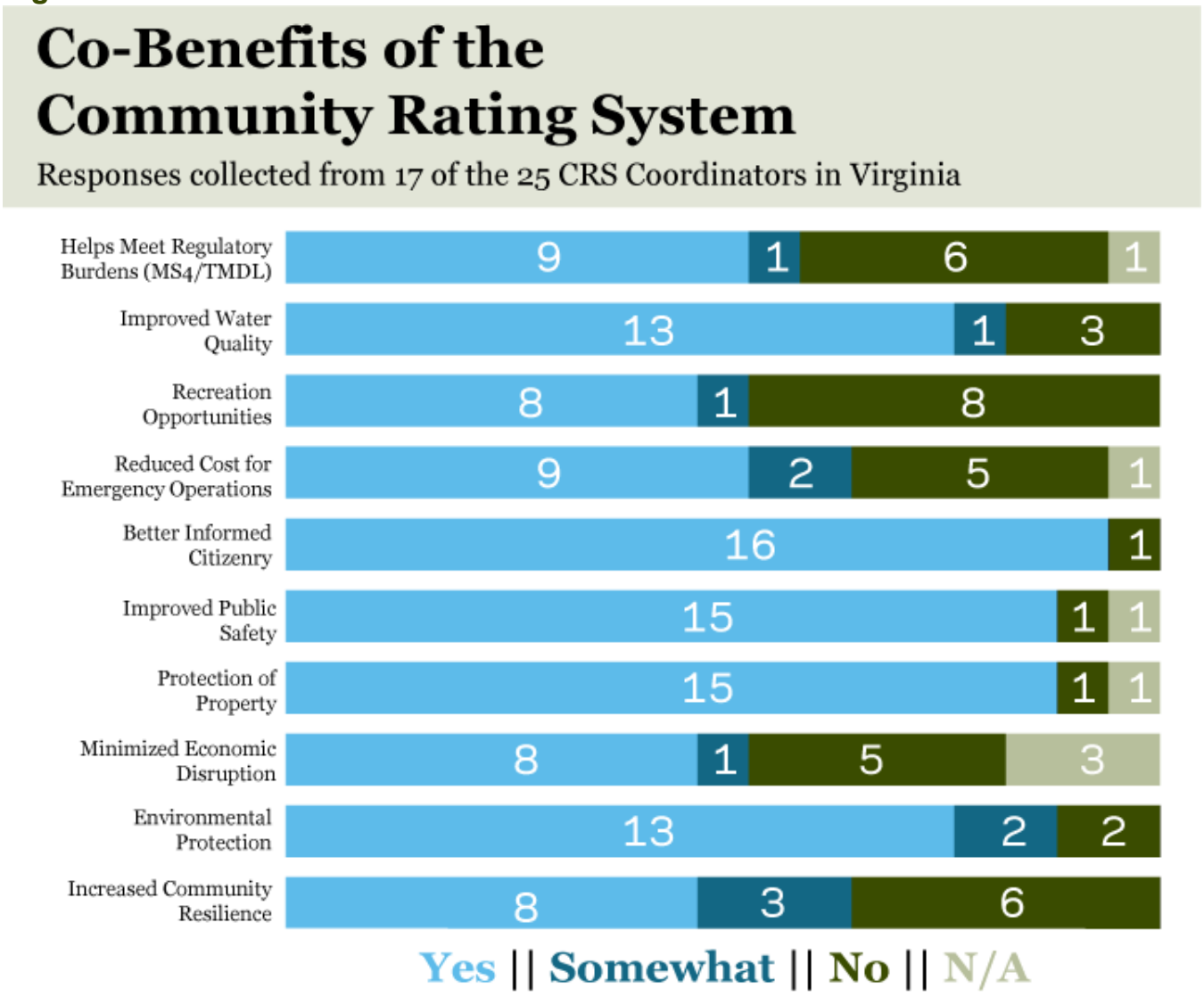
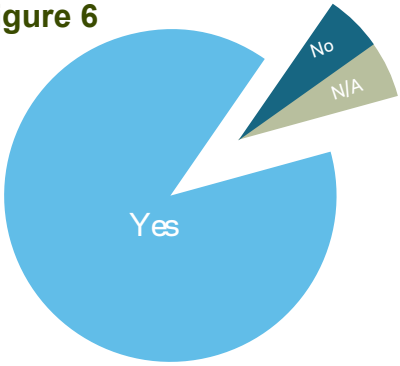


Figure 6



94% of localities interviewed agree the CRS program helps improve public safety

Coordinators were divided into different geographical[25] and capacity categories to offer prospective on responses. Categories included: Urban Well-Staffed Tidewater, Rural Well-Staffed Tidewater, Rural Limited Staff Tidewater, and Urban/Rural Limited Staff Mountain. Responses, grouped by category, are listed below:

Figure 7

Urban Well-Staffed Tidewater Communities (8 Interviewed)				
CRS Co-Benefit	Yes	Somewhat	No	N/A
Helps Meet Regulatory Burdens (MS4/TMDL)	6		2	
Improved Water Quality	7		1	
Recreational Opportunities	5	1	2	
Reduced Costs for Emergency Response Operations	4	2	1	1
Better Informed Citizenry	7		1	
Improved Public Safety	8			
Protection of Property	8			
Minimized Economic Disruption	4		3	1
Environmental Protection	8			
Increased Community Resilience	4	1	3	

Figure 8

Rural Well-Staffed Tidewater Communities (3 Interviewed)				
CRS Co-Benefit	Yes	Somewhat	No	N/A
Helps Meet Regulatory Burdens (MS4/TMDL)			3	
Improved Water Quality	1	1	1	
Recreational Opportunities			3	
Reduced Costs for Emergency Response Operations	1		2	
Better Informed Citizenry	3			
Improved Public Safety	1		2	
Protection of Property	2		1	
Minimized Economic Disruption			2	1
Environmental Protection	1	1	1	
Increased Community Resilience		2	1	

25 Tidewater communities include those located in "Virginia's Coastal Zone," as defined by the VA Coastal Zone Management Program. Designations of rural and urban communities were made using the Bureau of the Census definitions: urban = 1,000 people per square mile (including extended cities) and rural = less than 1,000 people per square mile. *The Urban & Rural Classifications*.

Figure 9

Rural Limited Staff Tidewater Communities (3 Interviewed)				
CRS Co-Benefit	Yes	Somewhat	No	N/A
Helps Meet Regulatory Burdens (MS4/TMDL)	1	1		1
Improved Water Quality	2		1	
Recreational Opportunities	1		2	
Reduced Costs for Emergency Response Operations	3			
Better Informed Citizenry	3			
Improved Public Safety	3			
Protection of Property	3			
Minimized Economic Disruption	2	1		
Environmental Protection	1	1	1	
Increased Community Resilience	3			

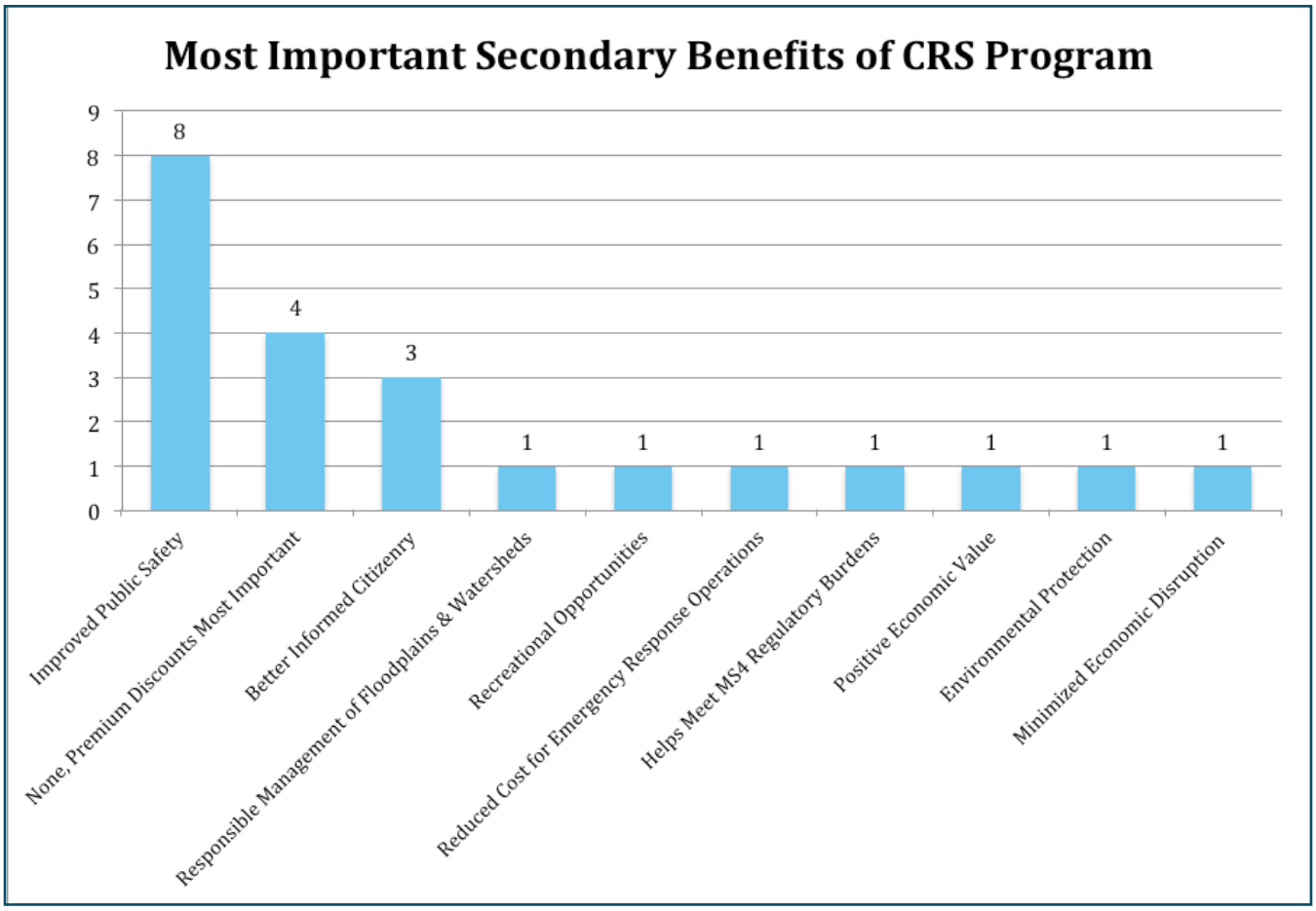
Figure 10

Urban/Rural Limited Staff Mountain Communities (3 Interviewed)				
CRS Co-Benefit	Yes	Somewhat	No	N/A
Helps Meet Regulatory Burdens (MS4/TMDL)	2		1	
Improved Water Quality	3			
Recreational Opportunities	2		1	
Reduced Costs for Emergency Response Operations			2	
Better Informed Citizenry	3			
Improved Public Safety	2			1
Protection of Property	2			1
Minimized Economic Disruption	2			1
Environmental Protection	3			
Increased Community Resilience	1		2	

Most Important Secondary Benefit – Virginia CRS Coordinator Responses

CRS Coordinators were asked which secondary benefit was most important to the locality. Responses are outlined in Figure 11 and include responses not necessarily included in the interview list. Several coordinators listed two secondary benefits as most important, accounting for the larger response size.

Figure 11



Additional Secondary Benefits – Virginia CRS Coordinator Responses

CRS Coordinators had the opportunity to include additional secondary benefits of enrollment in the CRS Program during the interviews. Their responses are listed below:

The CRS Program helps strengthen organization, coordination, and encourages the breakdown of silos across locality departments. One Coordinator formed a CRS team that meets every third week of the month for a half hour to discuss CRS action items. Another Coordinator stated they *"see a benefit in the way the CRS dovetails with other programs"* and it helps *"a little less planning in a vacuum so if someone is looking at changing an ordinance they have to think about how the ripple effects may impact other programs."* One Coordinator referenced the use of a multi-departmental organizational chart made by Wetlands Watch for the Coastal Virginia CRS Workgroup and a file share web-based platform to organize who and what department is responsible for what documentation. According to another Coordinator, the CRS keeps many efforts *"intertwined,"* which *"helps keep things going."* A barrier to success in the CRS was revealed by one Coordinator who indicated it can be difficult to get all departments on board because many staff view the CRS as an *"adjunct program to what they really do, which is a constant struggle to get people to realize it matters, it really matters."* A CRS program overcame this barrier by establishing a culture of support that came directly from department heads who told all relevant staff the *"CRS is a group effort for all staff."* The Coordinator said this leadership directive allows each department to take ownership over the credit activities for which they are responsible and reduces the amount of workload the Coordinator contributes to the CRS each year. Locality size also contributes to whether departments coordinate well. A Coordinator reported their locality size is *"a sweet spot, small enough that all the department heads know each other and work together a lot."* The same Coordinator noted that regional cooperation through the Coastal Virginia CRS Workgroup (started in 2008) was important.

The CRS Program helps minimize harmful impacts to the community.

The CRS Program helps promote shoreline protection.

Participation in the CRS Program provides positive economic value. For a locality with the majority of its population living in the floodplain, participation in the CRS is integral to economic development, reported a Coordinator. The Coordinator indicated the CRS helps increase the value of homes in the locality. Local realtors tell the CRS Coordinator the discounts earned through program *"has had a direct impact on helping sell houses faster."* The locality therefore sees the CRS *"as a marketing tool for economic development."*

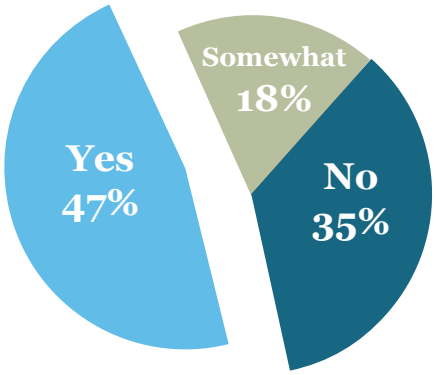
The CRS Program helps build political support for CRS earning activities.

The CRS Program may help earn more grant funding. One locality recalled that enrollment in the CRS helped award them a higher percentage of FEMA grant funding to elevate structures after Hurricane Floyd. The oral history amongst locality staff recounts a FEMA representative attributing this higher percentage to CRS participation.

The CRS Program helps save localities money. Most CRS localities self-insure the structures they own, although some localities take out NFIP policies on structures located in the floodplain. This information can be used as an incentive or persuasive tool to decision makers. One Coordinator includes the amount of money saved on these policies when reporting to the local board and finds the anecdote is "*very helpful*" to show the importance of the CRS in the community. A couple localities knew of structures in the floodplain owned by the locality, but were unaware of whether they were receiving a premium discount.

The CRS savings have a snowballing effect. One Coordinator said the CRS *"has a snowballing effect in those savings. It's savings in emergency management and response teams, damage assessment teams who don't have to go over the structure because it's basically intact. It saves resources across the board."*

The CRS Program and Resilience: Virginia Locality Perspectives



47% of localities interviewed are using the CRS as a tool for resilience

Wetlands Watch's work with the CRS Program grew out of a realization that the CRS is the first and only method of monetizing natural infrastructure, like wetlands and vegetated shorelines, in a manner that affects the personal finances of ordinary citizens. Natural infrastructure offers important protection against damage from flooding. In addition to natural infrastructure, open space preservation in high-risk flood zones results in less flood damage, increasing the economic resiliency of our communities. Preserving open space in the floodplain (activity 420) is just one example of a resilience-building locality action that earns CRS credit. The following is a brief list of other resilience-building activities creditable through the CRS:

- Adopting higher building code standards, like freeboard enforcing V-Zone buildings standards in Coastal A-Zones, ensures houses flood less frequently and residents and businesses have a structure to which they can return after evacuation. (activity 430)
- Stormwater management regulations reducing flooding and working to enhance

water quality. (activity 450)

- Actions related to emergency response operations, such as alerts systems, awareness building, and response planning protects property and people during flood events. (activity 610)
- Offering additional information related to flooding, such as historical flooding and hot-spots, on locality maps helps decision makers and citizens stay informed about risk. (activity 320, 410)
- Making information available to the community about flood risk builds awareness and prevents future harm to structures and people. (activity 330)
- Removing structures from the floodplain replaces impervious land with pervious, offering floodwater an opportunity to be absorbed by land. (activity 520)
- Removing debris from streams and other channels not only enhances water quality, but it allows water channels to transfer rain and flood water without obstructions. (activity 540)

During the interviews, CRS Coordinators were asked about how the CRS intersects with resilience efforts in their locality. Interviews discussed whether Coordinators think the CRS helps build resilience, whether improved resilience is a secondary benefit of enrollment in the program, and whether localities are linking the CRS with resilience efforts to build awareness about the CRS or market success in the program. An overview of Coordinator responses is outlined below:

- *"Most coastal communities are interested in coastal resilience and it's one of many things that needs to be accomplished, but there are so are the many issues presented to local governments that money is a problem. The CRS program and the yardstick it uses and structure it provides puts money towards resiliency. I'm not saying coastal communities wouldn't do all the things we do without the CRS, but the CRS is certainly a major driver to monetize the things we all think are important like higher standards."*

- The CRS *"provides structure for a community's resiliency efforts – we could be haphazard in trying to do a little of this and a little of that. The CRS helps us work through methodically – it helps provide that structure of our job of herding cats – at least we know a set of rules for herding cats – we may not like it, but at least it's a system."*

- Interest in the CRS is *"mostly complaint & dollar driven. People understand complaints & money, but they don't understand resiliency."*

- *"Our resiliency isn't necessarily coastal, it's just resilience in general,"* it is more related to how you can bounce back after an event.

- *"To some extent, but not especially, most of the high risk area is historic, so property owners are left to their own devises to decide if they want to do anything."*

- *"Primarily that linkage is through some of the sea level rise stuff with respect to doing work with the Planning District Commission to identify roads that could be flooded out in various scenarios of sea level rise. That started with one elected official asking the planning district commission about sea level rise impacts. There is the awareness piece … this past week I can't tell you how many phone calls I've received asking questions. Awareness of some people whether or not the community as a whole. Individual people will make that connection. Plenty of people work for volunteer rescue and fire and know they can't drive down roads to provide service. Not at whole community level of focus."*

- Building resilience is the ultimate outcome of the CRS. *"During the application process that was when we linked actions. The [CRS] Manual actually*

helped facilitate those connections nicely."

- *"Absolutely. There is more community resilience because of the CRS outreach program. You're reinforcing these concepts that help people protect their property each year."* The yearly requirement to *"continue with that messaging"* is helpful in a *"transient community like Hampton Roads"* with so many military families.

- *"Elevating houses is a short term resilience strategy." "The primary benefit is reduction, but ultimately it [CRS] gets you improved public safety, property losses, and economic interruption. Downtown businesses have to be able to jump back. Minimized economic disruption is a big goal."*

- *"We don't call anything 'resilience' by name. We're still using the term 'sustainability.'"*

- *"CRS is not driving any resilience programs, but we try to get CRS credit for any actions in programs that already exist."*

Success in the CRS: What Drives Participation and Higher Ratings?

When asked this question during interviews, CRS Coordinators provided diverse responses, which are summarized below:

- Key to participation and seeking higher ratings was understanding and commitment from the elected and appointed leadership: city council/board of supervisors, mayor, city manager, county administrator. This came in some cases from the economic focus of the elected leadership, wanting to see a good bond rating, low CRS rating, and good economic development. A good understanding of both the investment in staff time and the multiple benefits, apart from premium savings was also cited as a reason for leadership commitment to the program.

- Citizen involvement and understanding was cited by many as a necessary condition for elected and appointed leadership support. One Coordinator observed that their City Council is listening to what people are saying. *"When 35% of your locality land is in the SFHA the stakes are high."*

- The CRS Coordinator in one small locality speaks in the small community & surrounding region regularly, which may have an impact on the understanding of the public and the City leadership.

- In one case cited, *"a citizen found out [a nearby locality] went to a 6 and sent a message to County Administrator asking 'if they can do it why can't we?'"* After receiving this message the County Administrator asked the CRS Coordinator what was needed to get their score up to a 6. The Coordinator then looked into their rating to see where holes could be filled. Another Coordinator shared a similar story noting that improving the locality's CRS rating is driven by competition at the Board level. Board members received many complaints from residents about increasing insurance premiums and were aware of better CRS ratings in neighboring localities.

- One of the first localities to join the CRS in Virginia explained that participation was not a major focus for the City, but a side duty, until recently. Local government leadership requested an improved CRS rating in response to increased nation-wide attention to flooding and climate change. While the flooding and environmental concerns are main stream news issues influencing more attention at the local level, floodplain management is *"common to water quality & stormwater management in general, which is becoming very significant in urban areas."* This growing attention in news media and simultaneously increasing

premiums grows support for the CRS.

- In some cases, improvement was driven by pressure to participate in the resilience movement.
- Many Coordinators indicated that locality staff are driving participation and improved ratings in the program.
- The comprehensive plans in multiple communities included the goal to join the CRS program. One locality included the goal in the plan to be *"progressive"* and *"proactive"* for the benefit of residents, not just for premium reductions, but for the other benefits, such as community education and public safety.

Suggestions for encouraging participation and higher ratings: Appear before City/Town Councils often about the potential cost savings and secondary benefits of enrollment and success in the CRS. Staff may need to speak to these decision makers multiple times before the message is heard and remembered. Educate relevant locality staff about the CRS so all staff can rely upon 'talking points' if citizens complain about increasing flood insurance premiums or the negative impacts of higher standards like freeboard. These talking points should articulate the primary benefit (insurance premium discount), but should also describe the secondary benefits of enrollment and success in the CRS. Most of the CRS activities that earn credit also build safer and more resilient communities; articulate this connection to the public so they know they get additional benefits from the program. "The CRS saves our residents money AND it will reduce flooding in the community." The more staff representatives that know about the CRS the more citizens will learn about the program. Public outreach creates a multiplier effect in the community; residents share their knowledge with others at work, community, or other social events. Competition amongst localities is responsible for higher CRS ratings in the Commonwealth, but this competition will not grow in the locality if there is no awareness about the program.

Barriers to Earning Benefits in the CRS: Virginia Locality Perspectives

Success in the CRS: What are the Barriers to CRS Participation and Success?

CRS Coordinators and staff in non-participating localities were asked whether there are any barriers to maintaining their current class rating, earning a higher class rating, or joining the CRS program in general. Responses are listed below:

Limited staff time was referenced as a barrier to success by CRS Coordinators from every region. *"There is never enough time."* A Coordinator explained, *"Every class you go up is more man hours required to run the program so someone will have to make the decision to devote more time to get to the higher rating."* Another stated, *"If we ever improve a class they're going to have someone else help out. To get to the 7 we would need some more help."* The Coordinator from one of the first CRS localities to join in Virginia remarked, *"It's been a challenge to keep it going."* A Coordinator reported *"the minimal amount of time I was spending on the program would need to be increased significantly"* from *"5% to 20-25%,"* which would have a *"significant impact to the FTE and other duties required of that person."* The staff costs of improving CRS ratings could be spent on flood control projects. A Coordinator explained that the locality's interest in installing a flood control project brought up the debate over which is cheaper, an actual project or a better rating? The Staff time to increase ratings in the CRS weighed against the cost of installing a flood control project.

Suggestions for overcoming this barrier: Multiple Coordinators thought hiring a regional CRS Coordinator that works across jurisdictions through a locality cost-share presents *"the perfect solution,"* however this strategy may not work in every region. One Hampton Roads Coordinator said it would work in a perfect world, but not in Hampton Roads because the localities are too big and their organizational structures too diverse. One Coordinator though hiring someone essentially full time may be a solution, stating *"A lot of duties and activities [in the CRS] overlap, so I do see a benefit for a community that wants to be successful in the CRS to hire a person whose job is almost full time on the program."* Another recommendation comes from CRS Coordinators in localities where multiple staff share the burden of generating documentation required for CRS credit. To these Coordinators, CRS programs operating in silos do not always create a comprehensive approach to floodplain management in the community. Creating an interdepartmental team or committee to spread the workload across departments reduces the amount of stress and time spent by the CRS Coordinator to track down people and documents. CRS teams also need support and direction from the top. Encourage the top administrator to attend the inaugural team meeting and assign departments specific work. This approach will reduce the amount of time burden on the CRS Coordinator, while also helping ensure CRS credit points are earned from many different activities, not just the activity for which the Coordinator is responsible as Building Official, Stormwater Engineer, or Emergency Manager.

The CRS is too complex and documentation intensive. The complexity of the CRS *"gets in the way."* Another Coordinator reported the CRS is *"a little too complex at times,"* with *"pretty technical math."* To overcome this barrier, the Coordinator suggested to *"cut down the manual to 100 pages and make the scoring much simpler,"* which would *"cut down on the time it takes and the bureaucracy."*

Suggestions for overcoming this barrier: *"I wish they would make it not so complicated"* and put more effort into facilitating a *"here's an easy way to do this"* exchange of data for this *"overly complex"* program. One Coordinator thinks a 10-page quick start guide to joining the CRS that explains *"here are the simple steps to get you in. We have to make it less intimidating if you're talking about just getting started. There aren't enough resources anywhere."* One Coordinator suggested it would be helpful to have someone on staff take the time and align the locality's standard operating procedures with corresponding CRS checklists. This alignment would help guarantee CRS credit for activities the County already undertakes. Additionally, if someone could identify something that the locality could do slightly differently to get credit, then the locality would make the small adjustment to get those points. The Coordinator noted this process *"would be easy to start in a fresh locality joining the program. The CRS is heavy on reporting side & the manner in which reporting is done is specific, so having checklists is critical." Several stakeholders are working to address this issue.* Wetlands Watch continually creates checklists, plug-and-play templates, and other documentation to help address this barrier, available for download at www.coastalvacrs.com. Additionally, the Virginia Department of Conservation and Recreation is looking at how to simplify the CRS by creating a packet for "How to Join the CRS."

The costs of earning some CRS credits outweigh the points awarded. A Coordinator commented that localities *"don't get enough points for acquisition."* Another Coordinator explained that after attending a CRS course, they identified areas where the locality could earn credit, but these actions would not cumulatively earn enough points to advance one class, so the Coordinator decided the cost of staff time to complete the projects outweighed the benefit because a 5%

increase in savings would not be achieved.

> **Suggestions for overcoming this barrier**: Issues with point ability is less easily overcome and would involve potential reforms to the CRS program at the national level. It may be worthwhile to look into acquisition scores in other Virginia localities for guidance on this issue.

The CRS only discounts policyholders in the floodplain. This barrier is one that surfaced only once in an interview with a CRS Coordinator, but repeatedly during interviews with staff from Virginia localities not enrolled in the CRS, but interested in learning more about the program. The feedback received from the locality enrolled in the CRS centered on the decision not to spend more staff hours to improve one class. To improve a class the Coordinator said they would have to take on additional projects, which *"would be hard to justify."* An activity that benefits all locality residents, like open space through the park system, is easier to justify. Localities not enrolled in the CRS, but interested in learning more, found this barrier extremely difficult to overcome and indicated it was a direct barrier to joining the program. One locality staff said the issue *"hits the nail on the head"* for many small rural localities in Virginia's coastal zone; *"decision makers don't care if FEMA comes and presents to them about savings, they care more about what a local insurance agent has to say than a federal agency."* According to one locality this inequity is compounded by the reality that in their community people who live on the water with flood insurance can afford to live in high valued real estate, *"so why should locality staff's salaries go towards helping those more fortunate receive discounted premiums?"*

> **Suggestions for overcoming this barrier:** Additional research into this issue would help better market the CRS to the localities resistant to join the program, however, a few examples from other localities may provide some guidance. Locality staff can look to the City of Virginia Beach economic study that showed direct reinvestment of 43% of CRS premium discounts. Focusing on credits for actions that all residents enjoy, like open space credits for locality owned parks or scenic shorelines may offer some assistance. Referencing those studies included in this report that quantify the flood loss avoidance from various CRS actions could also prove helpful, particularly the statistic: "CRS communities experienced ~36% less insured flood damage outside the Special Flood Hazard Area (high risk flood zones) compared to non-CRS communities."[26] A Coordinator who receives comments regularly from citizens who think the locality's floodplain management work does not impact them offers this advice: *"I ask them if they drive or rely on vehicular transportation daily."* Most people say yes and the Coordinator explains that *"if a street is flooded it impacts you whether you live in a flood zone or not."* Framing the CRS Program as something the locality is enrolled in because they are already doing all the things that earn credit and would continue doing them even if credit was not available: saying *"we are already doing it" instead of "we need to start this process."* The locality is already working to reduce flooded streets and flood damage to structures, so why not earn some people discounts at the same time?

26 Highfield, W. E., & Brody, S. D. (2017). Determining the effects of the FEMA Community Rating System program on flood losses in the United States. *International Journal of Disaster Risk Reduction*, 21, 396-404.

General CRS information is overwhelming and complicated. Staff from a locality not enrolled in the CRS, but interested in learning more about the program, said that when investigating the program requirements and enrollment process they found the amount of information available through the CRS website (CRSresources.org) overwhelming. Many resources, like webinars, jump directly into the details of various activities, which intimidates people unfamiliar with the program who may not know time-saving shortcuts. This staff said, *"it was way over my head."* The CRS's reputation as documentation and time intensive worries small localities who already struggle to manage the time burdens of existing locality programs.

> **Suggestions for overcoming this barrier:** Provide Virginia localities with a packet of information that distills the critical information necessary to know before joining the CRS could eliminate the confusion locality staff experience after visiting websites intended for experienced Coordinators.

Enrolling in the CRS could expose the locality to liability. Staff from a locality not enrolled in the CRS, but interested in learning more about the program said the 5-year cycle visit requirement represents yet another agency coming into the community to review or audit locality managed programs; *"collectively, with other reviews it could be overwhelming."* The time spent preparing for a review aside, one locality worried that *"the more information you provide on a program, the more exposure you have. If you're opening the door to be reviewed, what is the potential harm to the citizens if those reviews are negative?"* A recent issue uncovered during a FEMA Community Assistance Visit (CAV) in the Hampton Roads region of Virginia *"opened a lot of eyes to the potential harm"* a locality could unintentionally do to NFIP status.

> **Suggestions for overcoming this barrier:** Solutions to overcoming this barrier are not yet identified and present an opportunity for further research and discussion amongst CRS Coordinators.

CONCLUSION: A LOOK AT THE COSTS AND BENEFITS OF THE CRS PROGRAM IN VIRGINIA

The benefits of the CRS program outweigh the costs in most Virginia localities, but barriers to enrolling and succeeding in the program reveal the need for improved marketing of the CRS as a program worthy of staff investment and locality resources. This cost benefit analysis found that 92% of CRS localities in Virginia experienced a positive benefit cost ratio for CRS Coordinator staff time investment for the premiums earned by CRS ratings. This ratio is based on a salary of $89,000, which for many localities in Virginia may be a larger salary than that earned by the actual CRS Coordinator; in these localities the benefit cost ratio would more positive. Although the responses from CRS Coordinators on the secondary benefits of the CRS were varied, 94% agreed the CRS program helps build a better informed citizenry and 88% agreed improved public safety and the protection of property are secondary benefits of enrollment in the program. Wetlands Watch assumed most CRS localities were linking the CRS program with community resilience, however, interviews with CRS Coordinators indicated that only 47% are making the connection. Staff time devoted to the CRS varied tremendously in Virginia localities, ranging from 1% FTE to 100% FTE. This variability helps elucidate why many locality staff, whether or not enrolled in the CRS, expressed concerns over the burden of staff time to participate and succeed in the program. Other barriers to joining and succeeding in the CRS program disclosed during locality interviews suggest the current marketing of the CRS in Virginia is not effective, offering an opportunity to incorporate the results of this study and subsequent studies into a marketing strategy to build CRS participation and resilience in the Commonwealth.

DISCLAIMER

This report generates benefit cost ratios that do not capture the complete extent of the costs or benefits of participating in the CRS Program. When calculating the cost of the CRS, the ratios use an estimated salary that does not include a local government's additional costs associated with employee benefits (fringe, healthcare, workers compensation, etc.) and operational overhead (office space, supplies, etc.). Local governments relying on the benefit costs ratios reported herein should reflect this additional cost when reporting to stakeholder boards or calculating cost internally prior to joining the CRS Program. Similarly, the benefit cost ratios reflect a singular benefit, the total flood insurance premium reductions earned by a locality's CRS rating. Secondary benefits of participation in the CRS Program are disclosed in the report analysis, but calculating these co-benefits is difficult and outside the limited scope of this study, due to a small award size and lack of required economic expertise. Discussions around the benefits of the CRS Program should similarly take these uncalculated benefits into account. Future analysis to refine the benefit cost ratios could help present the most accurate representation of costs and benefits of participation in the CRS in Virginia.

APPENDIX

Figures A & B were created by staff at a locality joining the CRS as justification for the intern position.

Figure A Average Policy Holder Savings

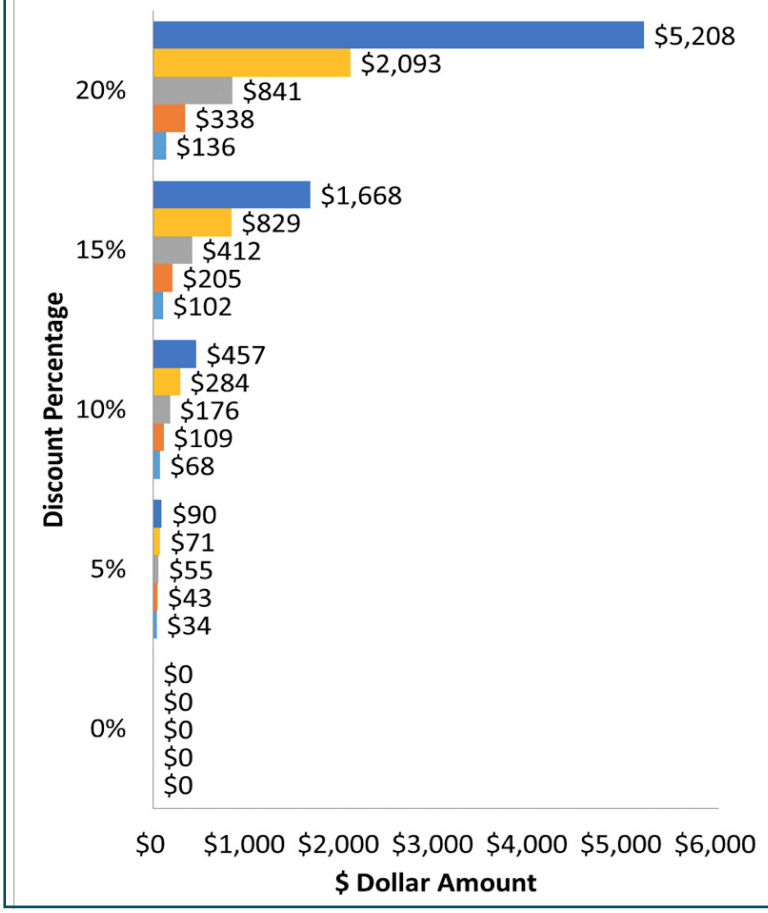


Figure B Total CRS Savings