

Crediting Adaptation Strategies through the National Flood Insurance Program's Community Rating System Coordinator's Manual

A Resource for Florida's Local Governments



Prepared by University of Florida, Levin College of Law, Conservation Clinic in Partnership with Florida Department of Economic Opportunity



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This guide provides information to Florida local governments on the connection between the Community Rating System (CRS) and implementing sea level rise (SLR) adaptation strategies.

Many local government planners, public information officers, landscape architects, watershed managers and other policy leaders consider SLR adaptation strategies as part of their work planning for the long-term success of their communities. Simultaneously, communities' CRS coordinators address flood risks through activities prescribed in the *Community Rating System Coordinator's Manual (CRS Manual)*.

This guide seeks to break down silos between those working with SLR adaptation strategies and those working within the CRS. This is not a technical guide to the CRS program but a tool to demystify the *CRS Manual* for local government professionals who work with SLR adaptation but have had limited exposure to CRS.

The guide includes an introduction to the CRS, an introduction to SLR adaptation strategies and a series of focus sheets—organized by SLR adaptation strategy—that connect individual SLR adaptation strategies to applicable provisions of the *CRS Manual*. This guide serves to draw a connection

between the *CRS Manual* activities and SLR adaptation strategies. With this guide, local governments can identify which strategies to address SLR will also lead to CRS credit.

“With this guide, local governments can identify which strategies to address sea level rise will also lead to Community Rating System credit.”

An Introduction to the Community Rating System

The CRS is a part of the National Flood Insurance Program (NFIP) that encourages communities to take actions to reduce the risk of floods.¹ The program accomplishes this end by pursuing three goals.² The first is lowering actual flood damage to insurable property by reducing existing and new buildings' exposure to flood damage.³

The second goal of the Community Rating System is strengthening and supporting the insurance aspects of the NFIP.⁴ This second goal includes two strategies: improving actuarial ratings of insured properties by

¹ National Flood Insurance Program, *Community Rating System Coordinator's Manual* 110-1 (Federal Emergency Management Agency 2013).

² *Id.* at 110-2.

³ *Id.*

⁴ *Id.*

| CRS Class | Credits | Premium reduction | |
|-----------|-----------------|-------------------|--------------|
| | | In SFHA | Outside SFHA |
| 1 | 4,500 and above | 45% | 10% |
| 2 | 4,000 to 4,499 | 40% | 10% |
| 3 | 3,500 to 3,999 | 35% | 10% |
| 4 | 3,000 to 3,499 | 30% | 10% |
| 5 | 2,500 to 2,999 | 25% | 10% |
| 6 | 2,000 to 2,499 | 20% | 10% |
| 7 | 1,500 to 1,999 | 15% | 5% |
| 8 | 1,000 to 1,499 | 10% | 5% |
| 9 | 500 to 999 | 5% | 5% |
| 10 | 0 to 499 | 0 | 0 |

Table 1. CRS classes and premium discounts. National Flood Insurance Program, *supra* note 1, at Table 110-1.

generating improved data and dispersing risk of flood events by expanding the policy base.⁵

The third goal is to have local governments implement comprehensive floodplain management programs.⁶ Unlike the first two goals, this third goal is not directly related to risk of loss of property and the National Flood Insurance Program. Rather, it seeks improved floodplain management for other

reasons such as enhanced water quality and reduced habitat loss.⁷

The *CRS Manual*, the Federal Emergency Management Agency (FEMA) document which establishes the details for the Community Rating System, provides a series of nineteen activities that local governments may undertake to accomplish the above mentioned goals.⁸ When communities undertake these activities, they can request CRS credit and earn one of ten CRS ratings. In recognition of this rating, owners of property in their jurisdiction pay lower flood insurance premiums.⁹ The rate reduction incentive is the FEMA’s tool to accomplish local government implementation of the activities outlined in the *CRS Manual*.

The CRS system: credits, impact adjustments and multipliers

The CRS Coordinator’s Manual describes how completing its nineteen activities makes communities eligible for flood insurance rate reductions. If a community earns 4,500 credits or more, it qualifies for Class 1, the highest class.¹⁰ In Class 1, the owners of property within the floodplain receive a 45% discount.¹¹ Nine remaining classes are available at 500 credit increments.¹² Each offers rate reductions at 5% increments.¹³ Table 1 summarizes the ten classes, required credits for each and the rate reductions for which the policy holders are eligible.

The CRS Coordinator’s Manual breaks activities into component elements. Many

⁵ *Id.*
⁶ *Id.*
⁷ *Id.*
⁸ *Id.* at 110-4.
⁹ *Id.* at 110-3.
¹⁰ *Id.*
¹¹ *Id.*
¹² *Id.*
¹³ *Id.*

| Term | Explained |
|-------------------|--|
| 300 series | activities related to public information |
| 400 series | activities related to mapping and regulations |
| 500 series | activities related to flood damage reduction |
| activity | one of the nineteen actions for which the CRS program credits local governments |
| element | a sub-action within an activity |
| impact adjustment | a ratio by which the CRS program multiplies credits earned for an activity to raise or lower the total credit available |
| multiplier | a percentage amount by which the CRS program increases credits earned for an activity to increase the total credit available |

Table 2. Getting to know the CRS: commonly used terms.

elements simply award communities a fixed credit amount for completing an action. Some elements, however, determine awarded credits through impact adjustments and multipliers.

Impact adjustments alter the credits a community might earn for completing an action. Each impact adjustment is a ratio by which a community multiplies the credits calculated in a related part of the manual. For example, Activity 410 awards points for mapping flood data.¹⁴ Section 413 subjects this activity to an impact adjustment.¹⁵ The impact adjustment is the ratio of the mapped area to the size of the special flood hazard area (SFHA) within the community.¹⁶ The SFHA is the base floodplain and an area the NFIP requires communities to regulate.¹⁷ Therefore, when a community maps less than all of its SFHA, the credits available to

that community through Activity 410 are diminished proportionately.

Multipliers similarly alter the points a community might earn for completing an activity. Each multiplier is a percentage by which a community increases the credits calculated in a related part of the manual. For example, Element 332.a. awards credits for conducting outreach projects.¹⁸ Section 332.c. is a multiplier that increases the credits available through outreach projects by 40% when communities integrate their outreach projects into a more comprehensive program for public information.¹⁹

¹⁴ *Id.* at 410-2.

¹⁵ *Id.* at 410-27.

¹⁶ *Id.*; Title 44 C.F.R. Section 59.1 (The special flood hazard area is the land in the flood plain within a community subject to a 1 percent or greater chance of flooding in a any given year. The area may be designated as Zone A on the FHB. After detailed ratemaking has been completed in preparation for publication of the flood insurance rate map, Zone A usually is refined into Zones A, AO, AH, A1-30, AE A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, or V1-30, VE, or V).

¹⁷ *Id.* at 120-8.

¹⁸ *Id.* at 330-6.

¹⁹ *Id.* at 330-12.

Organization of the *CRS Manual* and what activities get credit

The manual presents its nineteen actives in four sections: the 300 series, the 400 series, the 500 hundred series and the 600 series.²⁰ The 300 series groups activities related to public information.²¹ Activities in this series increase general public awareness of flood risk and improve actuarial aspects of the flood insurance program through collecting and sharing information.²²

“The fact that the Coordinator’s Manual does not list a specific credit for some activities does not mean that they should not be implemented by communities that need them. ... An activity may deserve credit even if the Coordinator’s Manual does not include it.”

The 400 series groups activities related to mapping and regulations.²³ Activities in this series focus on new development.²⁴ Example activities include preserving open space, improving stormwater management and mapping new areas prone to flooding.²⁵

The 500 series groups activities related to flood damage reduction.²⁶ Activities in this

series focus on protecting existing structures from flood damage.²⁷

This guide does not reference activities in the 600 series which relate to flood warning and response.²⁸

A community action to address flood risk or SLR may be a creditable activity even if the *CRS Manual* does not explicitly address that action. The manual addresses its limitations saying in Section 113.d.:

The CRS activities are not design standards for local floodplain management. The Coordinator’s Manual is an insurance tool that describes methods of calculating credit points for various community activities. The fact that the Coordinator’s Manual does not list a specific credit for some activities does not mean that they should not be implemented by communities that need them.

And:

An activity may deserve credit even if the Coordinator’s Manual does not include it. The Coordinator’s Manual cannot predict or list everything that can be done to support the goals of the CRS. Communities are always welcome to request credit for alternate approaches or innovations that are not included in the Coordinator’s Manual.

²⁰ *Id.* at 110-4.

²¹ *Id.*

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

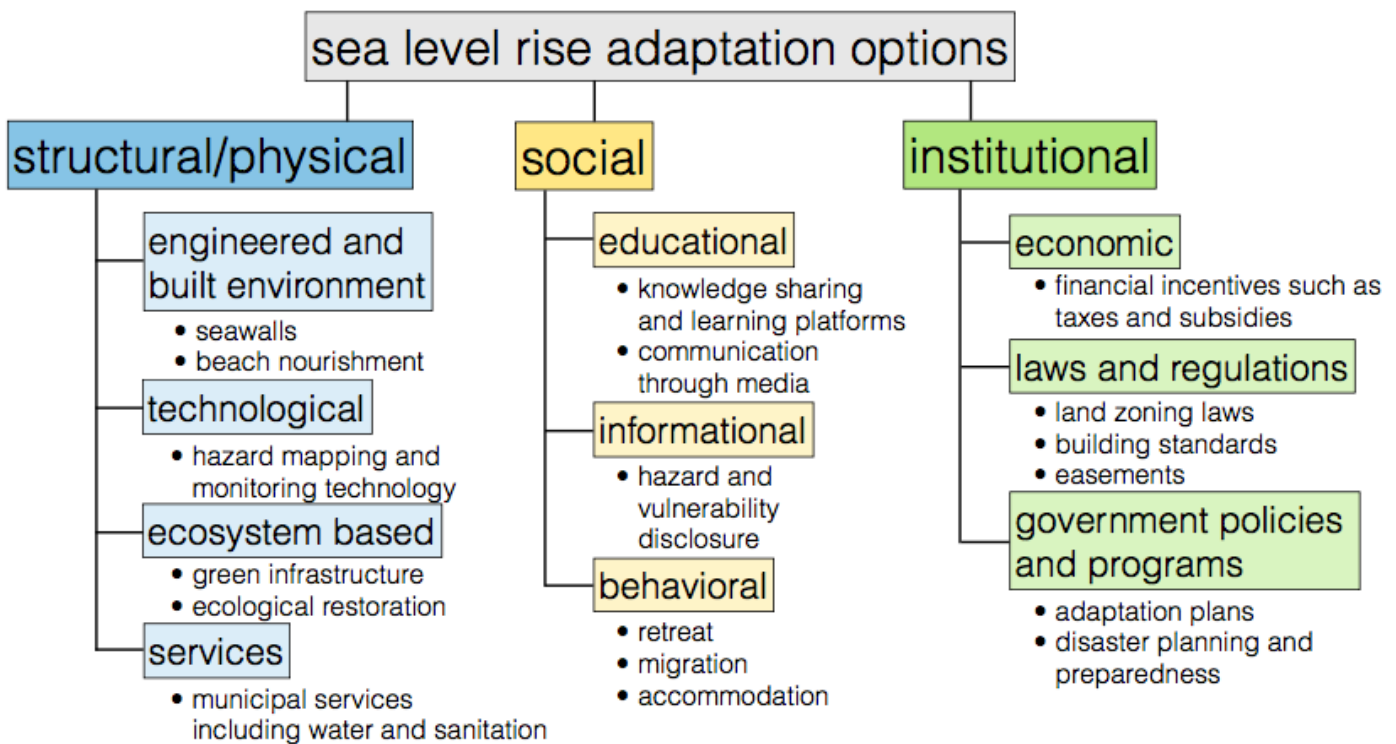


Figure 1. Categorizing sea level rise adaptation options. Adapted from Noble, *supra* note 35, at 845.

Like the *CRS Manual* itself, this guide is not comprehensive but provides a menu of some likely SLR strategies that may make a community eligible for varying amounts of credit under the CRS program.

In addition to the *CRS Manual*, this guide references the 2006 NFIP Community Rating System’s *CRS Credit for Management of Coastal Erosion Hazards (CE Manual)*. That manual supplements the *CRS Manual* and communities must use this supplemental manual to apply for CRS credit for management of areas prone to special flood related hazards.²⁹

When the focus sheets included in this guide cite to the *CRS Manual*, references are

generally to section numbers, rather than to page numbers. When focus sheets cite to the *CE Manual*, references include the letters “CE” following the section number.

Sea level rise strategies

Sea level rise strategies are sometimes organized into the three categories of retreat, accommodation and protection.³⁰ Retreat strategies remove insured structures from areas of flood hazard.³¹ Accommodation strategies allow structures to survive flood events with less damage.³² And protection strategies defend properties from potential flood events.³³

²⁹ National Flood Insurance Program, *Community Rating System Credit for Management of Coastal Erosion Hazards* 10 (Federal Emergency Management Agency 2006).

³⁰ Florida Department of Economic Opportunity *Adaptation Planning* (2014), <http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/community-resiliency/adaptation-planning>.

³¹ *Id.*

³² *Id.*

³³ *Id.*

While this taxonomy is usefully straightforward and easily comprehensible, it fails to accommodate many SLR adaptation strategies. For example, the *CRS Manual* emphasizes public information activities and mapping activities.³⁴ These important activities are related to SLR adaptation strategies but do not fit in any of the retreat, accommodation or protection categories.

This guide, therefore, presents adaptation strategies organized in the following categories: structural/physical, social and institutional. In turn, each of these categories includes three or four subcategories. The Intergovernmental Panel on Climate Changes' (IPCC) Fifth Assessment Report includes additional information on SLR adaptation strategies. Examples of these strategies, categorized as described above, are summarized in Figure 1.³⁵

³⁴ National Flood Insurance Program, *supra* note 1, at 300-1, 400-1.

³⁵ Noble, I.R., S. Huq, Y.A. Anokhin, J. Carmin, D. Goudou, F.P. Lansigan, B. Osman-Elasha, and A. Villamizar, 2014: Adaptation needs and options. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, at 845.

| category | subcategory | adaptation strategy | Public Information Activities (300 series) | | | | | | | | | | |
|----------------------------------|----------------------------------|--|--|----------------------------|----------------------------------|---|--------------------------------------|-------------------------------------|--|--|--|---|---|
| | | | 302.a. Counting Buildings | 310 Elevation Certificates | 311.a. Elevation Certificates... | 322.c. Other flood problems not shown on the FIRM | 322.e. Special flood-related hazards | 322.g. Natural floodplain functions | | | | | |
| structural/ physical | engineered and built environment | beach nourishment | | | | | | | | | | | |
| | | hard stabilization (e.g., seawalls) | | | | | | | | | | | |
| | | increase stormwater storage | | | | | | | | | | | |
| | ecosystem-based | land acquisition | | | | | | | | | | | |
| living shoreline | | | | | | | | | | | | ✓ | |
| oyster reef restoration | | | | | | | | | | | | ✓ | |
| social | educational | knowledge sharing and learning platforms | | | | | | | | | | | ✓ |
| | | outreach projects | | | | | | | | | | | |
| | Informational | elevation certificates | | ✓ | ✓ | | | | | | | | |
| | | hazard and vulnerability mapping | | | | | ✓ | | | | | | |
| | | infrastructure inventory | | ✓ | | | | | | | | | ✓ |
| | | public information campaign | | | | | | | | | | | |
| real estate disclosures | | | | | | | | | | | | | |
| institutional | economic | adaptation financing | | | | | | | | | | | |
| | laws and regulations | extended planning horizon | | | | | | | | | | | |
| | | freeboard | | | | | | | | | | | |
| | | low impact development standards | | | | | | | | | | | |
| | | low intensity zoning | | | | | | | | | | | |
| | | riparian/littoral buffers | | | | | | | | | | | ✓ |
| | | rolling conservation easement | | | | | | | | | | | |
| government policies and programs | adaptation action area | | | | | | | | | | | | |

Beach nourishment

structural/physical

engineered/built environment

Beach nourishment is replacing beach sand lost through longshore drift or erosion. Sand is pumped from a source outside of the eroding beach to the eroding beach.

Beach nourishment provides protection from storm events and substrate for establishment or migration of coastal vegetation. Once vegetation has been established, dune building and stabilization have an opportunity to occur — increasing protection to inland areas and habitat for coastal wildlife.

Creditable actions in the CRS Manual

- 542.f. Coastal erosion protection maintenance

Points available

A maximum of 100 credits are available for Element 542.f.

Notes

- Section 542.f. “Coastal erosion protection maintenance” credits preservation of dunes or mangroves, stabilization of bluffs and beach nourishment.
- To earn credit for this element, a community must meet the following prerequisites: the community must receive credit for regulating development in erosion-prone areas; the erosion protection program must not use hardened structures; the project must have been designed or evaluated by a professional expert; the ongoing program must have been in effect for at least two years; all required state and federal permits must have been obtained and the program must be based on adding more sand to the area.
- Subject to adjustment, 20 credits are available for a maintenance program with protection against a 10-year event, 50 credits are available for a maintenance program with protection against a 50-year event and 100 credits are available for a maintenance program with protection against a 100-year event.
- The adjustment is an impact adjustment with a numerator equal to the length of the protected shoreline and a denominator equal to the length of the erosion prone shoreline.

Hard stabilization (e.g., seawalls)

structural/physical

engineered/built environment

Hard stabilization is shoreline protection through constructed, man-made measures. An example of hard stabilization that protects against sea level rise is a seawall.

Shorelines change constantly. Wind and wave action not only erodes beaches but deposits material as well.

While hard stabilization halts the natural eroding and accrual action—and is therefore often considered a permanent solution to coastal erosion—in the long term this approach comes with additional costs.

Seawalls deflect wave energy to the surrounding sand and ecosystem. As a result, installing a seawall greatly changes the ecological, geomorphology, and aesthetic character of an area. Increased erosion is a consequence imposed on shoreline adjacent to a seawall and on the sea floor at the base of a seawall.

To be a truly permanent solution, seawalls require long-term maintenance and eventual replacement.

Creditable actions in the CRS Manual

- none

Points available

Constructing a seawall is not a creditable action.

Notes

- The CRS Coordinator’s Manual generally discourages hard stabilization in favor of natural or soft stabilization approaches.
- Section 531.b.(5)(f) explicitly exempts seawalls from contributing credit toward Activity 530 “Flood Protection.”
- Section 452.b. “Watershed master plan” discourages the use of hard stabilization.
- Sections 422.c. “Natural functions open space” and 422.g. “Natural shoreline protection” encourages the prohibition of seawalls.
- 430CE of *CRS Credit for Management of Coastal Erosion Hazards* credits up to 50 credits for prohibiting hardened structures.

Increase stormwater storage

structural/physical

engineered/built environment

Coastal communities will likely be impacted by decreased drainage capacity during storm events because elevated sea levels reduce the vertical storage volume (due to an increased hydraulic head at the land-ocean interface). Development typically increases the amount of impervious surface on a property and thereby increases stormwater runoff.

Large amounts of storm water cause many problems: high stream velocities cause erosion; sediment fills stormwater conveyances; and flood risks increase.

Stormwater detention is the practice of holding stormwater on a property during a storm event so that the discharge of water from the site is slowed.

Stormwater retention is the related practice of holding water on a property after the conclusion of the storm event. Retained runoff is not discharged off of the property but is used for irrigation, is used for groundwater recharge or is held to reduce pollution.

Planning for larger stormwater demands than a coastal property currently experiences is a proactive way to address sea level rise.

Creditable actions in the CRS Manual

- 452.a. Stormwater management regulations
- 452.b. Watershed master plan
- 432.a. Development limitations
- 432.b. Freeboard

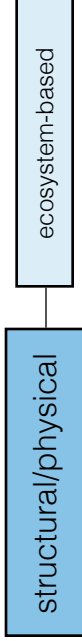
Points available

A maximum of 825 credits may be awarded for the actions described below.

Notes

- Activity 452.a. "Stormwater management regulations" relates to regulations on private stormwater facility development.
 - Sub-element 452.a.(2) "Design storms used in regulations" provides up to 225 credits depending on the storm event for which detention facilities are designed: up to 21 credits are available for storms less severe than a 10-year storm; an additional 54 credits are available for storms as severe as a 10-year to 100-year storm; and an additional 150 credits are available for storms more severe than a 100-year storm.
 - Sub-element 452.a.(3) "Low impact development" awards up to 25 credits for practices that reduce stormwater runoff for all new development activities.
- Element 452.b. "Watershed master plan" awards up to 315 credits for community implementation of stormwater regulations through an adopted watershed master plan. In order for a community to achieve CRS Class 4, it must receive credit for a watershed master plan based on a 10-year storm.
- Element 432.a. "Development limitations" credits up to 195 credits for regulations requiring new development to provide compensatory storage for depositing fill in the floodplain up to a ratio of 1.5:1.
- Element 432.b. "Freeboard" grants credit for community regulations requiring new construction above the base flood elevation. If communities require compensatory storage for any fill used to elevate structures above base flood elevation, those communities are eligible for more points than those allowing the use of fill without compensation. Depending on the freeboard requirement (measured in feet above base flood elevation) this point differential may be as great as 65 credits.

Land acquisition



A floodplain is land adjacent to a river or stream that floods at high water. Flooding is a natural process and keeping a floodplain free of development is a practical way to avoid damage to structures. Public acquisition of land is one way to ensure that private, insurable structures are not developed in the floodplain.

Communities can further address sea level rise through land acquisition by prioritizing land acquisition based on capacity to absorb floodwaters or support coastal ecosystem migration.

Creditable actions in the CRS Manual

- 420 Open Space Preservation
- 430CE Higher Regulatory Standards
- 410CE Additional Flood Data for Coastal Erosion Areas

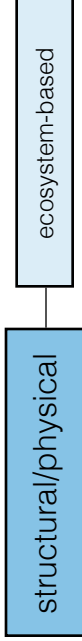
Points available

A total maximum of 1,970 credits are available under Activity 420. Up to 100 credits are available through 410CE. Up to 75 credits are available through 430CE.

Notes

- Activity 420 “Open Space Preservation” credits up to 1,970 credits for actions to keep floodplains free of development and to enhance natural functions of floodplains. Element 422.c. credits up to 350 credits for restoring developed properties to their undeveloped, natural state and for having areas worthy of acquisition for their natural functions in a natural floodplains protection plan.
- Within the *CRS Credit for Management of Coastal Erosion Hazards* supplemental manual:
 - 410CE “Additional Flood Data for Coastal Erosion Areas” awards up to 100 credits for adoption of regulations that prohibit new buildings, and restoration of existing buildings, in the 30-year erosion area.
 - 430CE “Higher Regulatory Standards” awards up to 75 credits for removing threatened structures prone to coastal erosion.

Living shoreline



Living shorelines are the use of plants, sand and rock to protect shoreline and maintain habitat.

Living shorelines are a soft hardening alternative to hardened structures—such as bulkheads, revetment, and seawalls. Hardened structures often increase the rate of erosion, remove the ability of the shoreline to carry out natural processes, and provide little habitat for estuarine species.

As an alternative, living shorelines maintain the connection between uplands and aquatic areas while providing long term shoreline protection in low energy coastal areas.

Creditable actions in the CRS Manual

- 322.g. Natural floodplain functions
- 422.g. Natural shoreline protection

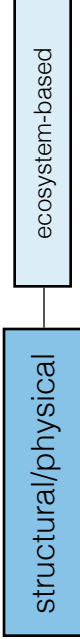
Points available

Element 322.g. awards up to 22 credits. Element 422.g. awards up to 120 credits.

Notes

- Element 322.g. “Natural floodplain functions” awards up to 22 credits for mapping areas that should be protected because of natural floodplain functions.
- Element 422.g. “Natural shoreline protection” awards up to 120 credits for actions that allow floodplains to flow their natural processes. This element credits natural shoreline protection in two ways. One, communities may receive credit for regulations requiring developers or public agencies to protect natural shorelines. Two, communities may receive credit for restoring altered shoreline to natural shoreline functions.
- Also, note that many portions of the manual discourage the use of hardened structures (see page 9, for discussion of why “Hard Stabilization” is discouraged).

Oyster reef restoration



Oyster reefs protect shorelines by reducing wave action that causes beach erosion. Oyster reefs also have the capacity to build vertically and migrate overtime, adapting to rising sea levels. Whereas, providing continued wave attenuation potential over an extended planning horizon.

Oysters reefs also filter nutrients, fine sediments and toxins from water. Oyster reefs support economically and ecologically valuable fisheries.

Restoring oyster reefs is a valuable activity for communities seeking to accomplish any of these goals.

Creditable actions in the CRS Manual

- 430CE prohibition of hardened structure
- 322.g. Natural floodplain functions

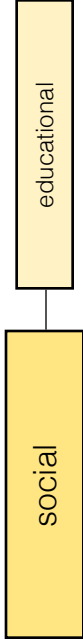
Points available

430CE awards up to 50 credits. Section 322.g. awards up to 20 credits.

Notes

- The CRS Coordinator’s Manual provides no credit specifically for oyster reef restoration. However, some related activities are creditable.
- The 430CE worksheet on page AW-CE-4 of *CRS Credit for Management of Coastal Erosion Hazards* awards up to 50 credits for prohibiting hardened structures.
- Section 322.g. awards up to 20 credits for mapping areas that should be protected because of natural floodplain functions.

Knowledge sharing and learning platforms



A knowledge-sharing platform is an established forum for communicating information about flood risk to persons seeking information about a community.

Communities can create new knowledge sharing platforms or modify existing knowledge sharing platforms to address sea level rise. Integrating sea level rise in this way will create awareness of the risks amongst community members. Greater awareness, in turn will lead to better informed decision making and responsiveness to the risks of sea level rise.

Creditable actions in the CRS Manual

- 322.e. Special flood-related hazards
- 361.a. Activity Description
- 362.b. Protection advice provided after a site visit

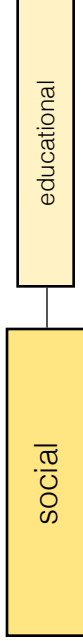
Points available

A maximum of 110 credits are available for Activity 360. Section 322.e. provides up to 20 credits.

Notes

- Section 361.a. “Activity Description” provides credit for providing information to property owners on protecting their own properties from flood. Alongside the other property retrofits . . . , interested inquirers could also be informed of the importance of maintaining wetlands and mangroves nearby the property, if applicable. It could also encourage inquirers to exceed minimum requirements by promoting “design for disassembly,” such that structures can be easily dismantled and re-assembled further landward as the mean high tide line encroaches on the property.
- Section 362.b. “Protection advice provided after a site visit” awards up to 45 credits for site visits to review flooding, drainage and sewer problems. All protection advice given during site visits can use sea level rise inundation and associated flood hazard vulnerabilities as talking points. To ensure that adaptation is discussed during site visits and credited under a community’s Program for Public Information (PPI), a prompt to discuss sea level rise can be added to the community’s protection advice checklist.
- Section 322.e. “Special flood-related hazards” provides up to 20 credits for sharing information about special flood-related hazards and precautions that should be taken during property development or improvement. This activity could relate to sea level rise through information and precautions about long-term trends in coastal inundation, coastal erosion and coastal wave heights. Communities could also use results from sea level rise vulnerability analyses to recommend resilient building construction practices (e.g., building higher, increased setbacks, piling/stilt versus slab-on-grade foundations, avoidance or enhancement of natural flood protection features) to address potential future flood-related risk. It is also important to note that if an inquirer wants to know more about the information provided, the community should have resources available to answer those questions (Section 327). The best way to provide this information is through one or more maps of these special flood-related hazards (e.g. a sea level rise inundation map).

Outreach projects



Outreach projects raise awareness of the hazards of floods by communicating those risks in ways such as providing brochures in public places, holding meetings or publishing newspaper articles.

Planning for and protecting from sea level rise can be a key message in outreach projects.

For example, outreach could focus on considering long-term flood hazards during building projects. Specifically, if a property owner is investing in an appliance or construction that has a long useful life, that owner could keep sea level rise in mind. Also, homebuyers purchasing a property should consider effects of sea level rise at the end of a 30-year mortgage.

Outreach can also target specific groups. For example, identifying properties vulnerable to sea level rise may lead to neighborhood groups which would benefit from a targeted presentation at a meeting.

Also, targeted outreach to specific industries, such as insurance professionals, is an effective way to communicate sea level rise risks.

Creditable actions in the CRS Manual

- 331.a. Activity Description
- 332.c. Program for Public Information
- 332.b. Flood Response Preparations
- 332.d. Stakeholder delivery

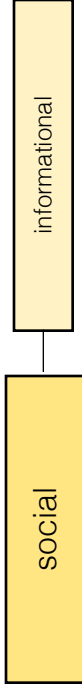
Points available

A maximum of 350 credits are available for Activity 330.

Notes

- Section 331.a. “Outreach Projects” provides six priority topics to address in outreach projects and encourages communities to identify additional priority topics. Sea level rise can be incorporated into messages for these six topics and can stand on its own as an additional topic.
- Section 331.a.(c) “Targeted Outreach Projects” awards up to 6 credits per topic for outreach projects that are targeted to a specific group. Sea level rise is an eligible topic.
- Section 332.b. “Flood Response Preparations” awards up to 50 credits when a community develops a flood response package to outreach during and after a flood. This outreach is an appropriate time to discuss protection from or accommodation to future sea level rise when repairing damaged buildings.
- Section 332.c “Program for Public Information” (PPI) is a 40% multiplier to Sections 331.a(c) and 332.b, worth up to 80 credits. A program for public information requires the community to perform seven activities and sea level rise can be addressed in each. For example, when a community establishes a PPI committee, it may recruit an expert on coastal science who has experience discussing and planning for coastal hazards, including the potentially exacerbated impacts of sea level rise. Also, when formulating messages, a community might consider different areas of a community and their hydrologic and physical connection to potential sea level rise.
- Section 332.d. “Stakeholder delivery” is a 30% multiplier to Section 331.a. worth up to 50 credits. By recruiting stakeholder groups to include sea level rise messages in transmission efforts, the community can take advantage of this multiplier.

Elevation certificates



Unavailability of accurate data on a building's vertical elevation is an obstacle to acquiring affordable flood insurance. Practically, this is a substantial problem for property owners. Actuarially, building elevation data is essential to accurately estimate risk.

When local governments consistently and accurately complete flood elevation certificates, reliable information is available to help calculate flood risk.

Creditable actions in the CRS Manual

- 310 Elevation Certificates
- 311.a. Elevation Certificates for all construction prone to future flooding

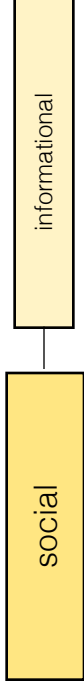
Points available

A maximum of 116 credits are available for Activity 310.

Notes

- Participation in Activity 310 “Elevation Certificates” is a prerequisite for initial application to the CRS and continued CRS rating.
- Section 311.a. “Elevation Certificates for all construction prone to future flooding” encourages communities to require or complete FEMA Elevation Certificates for all new construction in flood prone areas outside the SFHA yet still regulated by the community. A sea level rise risk vulnerability analysis can determine areas that may be prone to flooding in the future. To limit property owner expenses related to obtaining an elevation certificate, a local official can use as-built building plans to complete a finished construction elevation certificate for new construction that fits into this category. By having an elevation certificate on file for most structures in the community, if later mapped into a regulatory floodplain, individual elevation certificates for newly designated SFHA structures may allow a community to enhance or maintain activity credits for maintaining elevation certificates for post-FIRM buildings.

Hazard and vulnerability mapping



Maps that identify floodplains are essential to regulating floodplain development. FEMA provides Flood Insurance Rate Maps to most communities in the NFIP.

By creating regulatory maps with higher standards than those provided by FEMA, communities can protect more structures from flood damage.

Such a proactive approach to mapping floodplain addresses sea level rise because sea level rise may increase the extent of areas prone to inundation.

Creditable actions in the CRS Manual

- 322.c. Other flood problems not shown on the FIRM
 - 411.a. Activity Description
 - 412 Elements
- 370 Flood Insurance Promotion
 - 412.b. Leverage
- 403.c. Making an Impact Adjustment Map
 - 412.d. Higher Study Standards

Points available

A maximum of 20 credits are available through Section 322.c. A maximum of 110 credits are available through Activity 370. A maximum of 160 credits are available through Section 412.d.

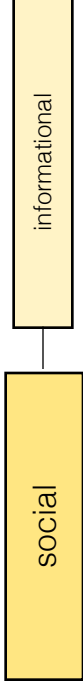
Notes

- Section 322.c. “Other flood problems not shown on the FIRM” provides up to 20 credits for providing information to inquirers about flood problems other than those shown on the Flood Insurance Rate Map. This information can include: a) “[a]reas predicted to be flooded [or inundated] in the future because of ... sea level rise”; and, b) areas that are or are likely to experience experiencing local drainage problems due to rising sea levels.
- Activity 370 “Flood Insurance Promotion” provides up to 110 credits when a community delineates different target areas based on different flooding conditions. Communities could use a sea level rise model to identify properties that may be subject to sea level rise at a later date, including those properties currently not mapped into an SFHA, and delineate these properties as a “target area, subject to various flooding conditions, including sea level rise.” As part of the community’s Coverage improvement plan implementation (see Section 372.c.) for these “target areas,” the community can recommend that property owners have at least the minimum available coverage, and make a connection between future sea levels and the potential for extreme flood events. To maximize points, communities can link activities conducted under this Activity to the community’s Outreach Projects and Program for Public Information (PPI).

Hazard and vulnerability mapping *continued*

- Section 403.c. “Making an Impact Adjustment Map” instructs communities on creating impact adjustment maps to create impact adjustment ratios for certain CRS activities. Communities can include sea level rise impacts on an impact adjustment map in order to show areas effected for which CRS credit is requested. One recommended approach is to assemble sea level rise impacts in a Geographic Information System (GIS) spatial data layer and overlay these data layers on the community’s existing impact adjustment map. The Florida Department of Transportation (FDOT), in collaboration with the University of Florida GeoPlan Center, have developed the Sketch Planning tool, which contains sea level rise inundation data for all Florida communities and which is available for download at <http://sls.geoplan.ufl.edu/download-data/>.
- Section 411.a “Activity Description” notes “[a]ll higher-standard mapping receives credit...” A community is likely to receive credit if the public is involved in the sea level rise hazard mapping process and adopts the maps in the community’s regulatory program. If communities utilize data developed or reviewed by a stage agency (see Section 412.c), communities are likely to receive additional credit.
- Section 412 “Elements” notes “[t]he points depend upon how the map was prepared and the community’s level of participation in the map preparation.” During the sea level rise hazard mapping process, community residents have several opportunities to participate. The first opportunity involves choosing a planning horizon. For CRS credits the planning horizon must be 2100 or later (Section 412.d). A second opportunity involves choosing the rate of sea level rise which, for CRS credits, must be the mean estimate or higher (Section 412.d). The sea level rise inundation data from Florida Department of Transportation’s (FDOT) Sketch Planning tool website (<http://sls.geoplan.ufl.edu/download-data/>) contains all of the data alternatives necessary to complete both of these community participation processes.
- Section 412.b “Leverage” provides an impact adjustment determined by identifying the community’s cost share or level of participation in the flood study. Communities can utilize sea level rise data and methodology that have already been completed by the state, regional agency of the U.S. Army Corps of Engineers, or any other organization other than FEMA. Florida Department of Transportation’s (FDOT) Sketch Planning tool utilizes the U.S. Army Corps of Engineers (USACE) sea level change projection methodology, as outlined in the latest published USACE Engineering Circular ‘EC 1165-2-212’ (U.S. Army Corps of Engineers, 2012). Since this data has already been developed state-wide and is essentially free for communities to use, any community cost (e.g., public outreach and participation) may also be considered the total cost of the study, so the ratio should equal 1.0 (e.g., \$100 / \$100 = 1.0).
- Section 412.d “Higher Study Standards” awards up to 160 credits when a community uses future-conditions hydrology (including sea level rise) at the time of the study. To receive credit for coastal studies, communities must use an estimate of the sea level rise anticipated by the year 2100 or later. For rate of sea level rise, communities must also use mean estimates or higher.

Infrastructure inventory



An infrastructure inventory is an assessment of the built and natural environment for sea level rise vulnerabilities.

For example, based on projected rates of sea level rise, a community might inventory all existing shoreline stabilization structures and determine their capacity to maintain functionality throughout the sea level rise planning horizon.

Also, a community might inventory all public buildings and infrastructure that are vulnerable to sea level rise within the sea level rise planning horizon and determine whether such buildings and structures should be protected through shoreline stabilization.

Finally, a community might assess the ecological services provided, or not provided, by natural and altered shorelines to determine the need to preserve or provide more open space, natural floodplain or living shorelines.

Creditable actions in the CRS Manual

- 302.a. Counting Buildings
- 322.g. Providing Information about Natural Floodplain Functions

Points available

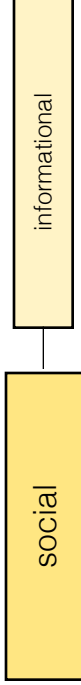
No credits are available under Section 302.a. However, counting buildings is a prerequisite to developing adjustments based on the number of buildings in the community that are impacted by a flood hazard. A maximum of 20 credits are available for Element 322.g.

Notes

- Section 302.a. “Counting Buildings” is required for impact adjustments based on the number of buildings in the community that are impacted by a flood hazard. A recommended approach for counting buildings is to use a Geographic Information System (GIS) to overlay building footprints to determine whether each individual building footprint intersects or crosses over a flood hazard layer in the GIS. The creation of and maintenance of a building footprints layer in a GIS will also allow the community to complete and revise community-wide sea level rise risk vulnerability analyses. Results from this analysis can be used to provide information about: other flood problems (potential sea level rise impacts) not shown on the Flood Insurance Rate Map (see Activity 322.c.); or, sea level rise as a special flood-related hazard (see Activity 322.e.). These findings and results from these vulnerability analyses are important for other CRS Activities, including Outreach Projects (see Activity 332.a.), Other Disclosure Requirements (see Activity 341.b), and Property Protection Advice (see Activity 362.a).

- Section 322.g. “Providing information about Natural Floodplain Functions” grants credit to local governments that provide information about natural floodplain functions that justify protecting an area. In addition to providing information provided about any natural floodplain functions in the area, a local government may address sea level rise through this activity by providing information about areas credited under Open Space (Activity 420) or the community’s Natural Floodplain Functions plan (Activity 510) indicating: a) natural wave breaking capabilities for rising sea levels; b) a landward migration buffer for coastal, wetland or riparian habitats; and, c) shoreline stabilization in areas potentially impacted by rising sea levels. If an inquirer wants to know more about the information provided, the community should have resources available to answer those questions (see Section 327).

Public information campaign



A public information campaign is a local program to raise awareness of the hazards of sea level rise by communicating those risks.

A person's familiarity with a message increases with repetition. To be effective, public information campaigns should deliver information multiple times in varied formats.

Informational materials, such as leaflets and brochures, can be provided at public buildings such as a building and zoning office or a public library. Electronic versions of informational materials may also be shared through websites.

A public information campaign differs from an outreach project in that outreach projects can find people who do not seek out informational materials. Examples of outreach projects are newspaper articles or presentations to identified groups.

Creditable actions in the CRS Manual

- 352.b. Locally Pertinent Documents
- 352.c. Flood protection website

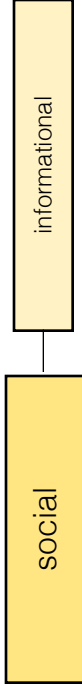
Points available

Section 352.b. awards up to 10 credits. Section 352.c. awards up to 76 credits.

Notes

- Section 352.b. "Locally Pertinent Documents" awards up to 10 credits for supplementing the basic FEMA documents at the local library with additional documentation of other information about local flood hazards. This could include coastal flooding resources that provide information about sea level rise, where applicable. If studies, plans, or assessments of community and property risk due to sea level rise have been conducted, the print versions could be kept at the library for credit under this activity.
- Section 352.c. "Flood protection website" awards up to 76 credits to communities who maintain an easily located website that is a part of or is linked from the local government home page. If the website is part of a Program for Public Information initiative (see Activity 332.c), up to 29 additional activity credits will be available. Sea-level rise vulnerability assessments such as FDOT's Sketch Planning Tool or Climate Central's Surging Seas visualizer include data for the entire state of Florida and could be used to present sea level rise effects to community stakeholders. If a community has already conducted studies specific to its location, made plans, or made assessments of sea level rise, then that community could make those documents or visualizers available in order to receive credit. Credit can be awarded for sea level rise information related to (1) WEB1, per the Program for Public Information, 332.c, a topic on sea level rise threats may be included, and (2) WEB3, a local tidal gauge station which measures sea level can be reported and should include sea level information in relation to local landmarks (e.g., roads, public beach structures, etc.).
- Note that under Section 322.e., the website must inform visitors of services the community provides which are related to sea level rise information. Therefore, if a program exists to help building owners retrofit their homes to accommodate sea level rise flooding, it must be mentioned on the website. Also, if the community has mapped potential sea level rise that is detailed through Section 322.c., then this must also be reflected on the website.

Real estate disclosures



Real estate disclosures are information made available by a seller of real estate to a buyer at a time of sale.

The purpose of a required real estate disclosure is ensuring that buyers are able to assess risks associated with owning a property and thereby better determine the value of that property.

Requiring disclosure of sea level rise risk—such as a property’s location on projected inundation maps—may have several outcomes.

First, disclosures could lead to less development in areas threatened by sea level rise. This may protect vulnerable areas such as coastal property.

Second, disclosures could lead buyers to retrofit or otherwise adapt purchased structures to sea level rise.

Finally, disclosures could have some undesired consequences for communities. For example, disclosing hazards might reduce the value of threatened properties.

Creditable actions in the CRS Manual

- 342.b. Other Disclosure requirements
- 342.d. Disclosure of other hazards

Points available

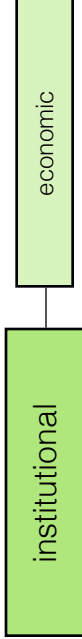
A maximum of 25 credits are available under Section 342.b. and a maximum of 8 credits are available under Section 342.d.

Notes

- Section 342.b. “Other disclosure requirements” provides five credits per regulation to communities which can cite up to five ordinances or state laws requiring disclosure of a property’s exposure to flooding. Examples of requirements that integrate future sea level rise include: requiring final recorded subdivision plats to show sea level rise intrusion at year 2100; requiring signs posted in subdivisions to advise visitors of projected sea levels at year 2100; requiring all property sellers to disclose where the property will be subject to coastal flooding caused by sea levels at year 2100; and requiring real estate agents to notify potential purchasers of the potential for sea level rise encroachment at year 2100. This list is not exhaustive. Any other ordinances in which the community can integrate sea level rise notification could be eligible.

- Section 342.d. “Disclosure of Other Hazards” provides up to eight credits to communities which furnish information to potential property purchasers of other hazards at a specific site. The manual explicitly mentions “[a]reas subject to increased flooding due to climate change and sea level rise.” This activity could go above and beyond labeling the sea level rise exposure area, and provide parcel information about: drainage problems that may occur due to sea level rise-induced hydraulic blockage; increased salinity of groundwater due to sea level rise-induced saltwater seepage into underground freshwater sources; septic drainage field issues that may arise due to sea level rise; vulnerability to coastal wave hazards that may be amplified by sea level rise; or changing ecosystems (such as wetland conversion) on and abutting the property due to potential sea level rise.

Adaptation financing



Adaptation financing is providing funding for property owners to retrofit structures to make them resistant to flood hazards or sea level rise.

Elevating a structure above base flood elevation is an example of an adaptation strategy which could benefit from adaptation financing.

Example financing programs are: property assessed financing—similar to a Property Assessed Clean Energy (PACE) financing program, impact fees, sales tax increases, tax increment finance districts, private/public partnerships, stormwater utility fees or charges, or community development districts created pursuant to Florida Statutes Chapter 190.

Creditable actions in the CRS Manual

- 362.c. Financial assistance advice
- 365 Related Activities

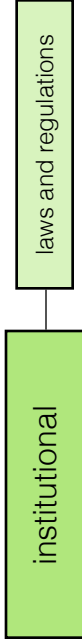
Points available

The maximum credit for Element 362.c. is 15 credits. Financial assistance advice may earn 10 credits. If the financial assistance advice is part of a Program for Public Information (PPI) credited under Activity 330, an additional 5 credits are available.

Notes

- Section 362.c. “Financial assistance advice” is an informational package on financial assistance available through local government or private financial assistance that may be available for sea level rise mitigation projects. This informational package may be part of a community’s sea level rise “Adaptation Action Area” described by Florida Statutes §§ 163.3164(1) and 163.3177(6)(g)(10), or other similar adaptation overlay area.
- Section 365 “Related Activities under the Community Rating System” provides that, when residents take advantage of sea level rise adaptation/protection advice provided by a community under Section 362, the community may receive credit under Section 530. Similarly, if residents use adaptation advice during acquisition and relocation processes, the community may receive credit under Section 520. For this purpose, if the community is implementing or plans to undertake any adaptation activities (e.g., acquiring properties and creating open space), linking public outreach to the actions taken by residents will be important.

Extended planning horizon



Planning horizons which are too short will likely not consider changes due to long-term sea level rise. For example, the standard time period for comprehensive planning in Florida, ten years, might not show dramatic changes in flood risk due to sea level rise.

Using an extended planning horizon improve community awareness of the risks of sea level rise.

Creditable actions in the CRS Manual

- 412.d. Higher study standards

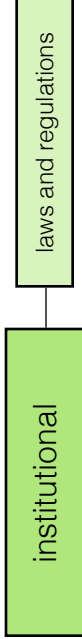
Points available

Section 412.d. awards up to 160 credits.

Notes

- Section 412.d. “Higher study standards” awards up to 160 credits to local governments using higher standards in floodplain mapping than required by the FEMA. Future conditions hydrology is one such higher standard and communities are eligible for additional points when estimates for sea level rise anticipated by the years 2100 or later are used.

Freeboard (elevation above base flood elevation)



A freeboard regulation is a requirement that new buildings be elevated to higher than the base flood elevation. For example, a one foot freeboard requirement would require buildings to be built one foot above base flood elevation.

Freeboard regulations address sea level rise by requiring construction today be adequate for higher than existing base flood elevations, in anticipation of future flooding.

Creditable actions in the CRS Manual

- 432.b Freeboard

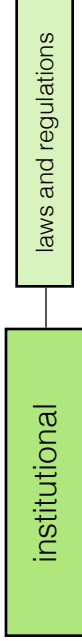
Points available

A maximum of 500 credits are available for Activity 432.b.

Notes

- Participation in Activity 310 “Elevation Certificates” is a prerequisite for initial application to the CRS and continued CRS rating.
- Section 432.b. “Freeboard” grants communities credits for requiring that buildings be constructed higher than base flood elevation.
- Construction methods affect credit eligibility of freeboard regulations. Full credit is only available to communities which prohibit using fill to raise the elevation of a structure. Stem wall construction, in which a foundation wall is built above grade, is then filled and is finally capped with a concrete slab, is eligible for Freeboard credit, but at a reduced rate than construction under a rule that prohibits fill.
- A freeboard requirement of one foot above base flood elevation when fill is prohibited is eligible for 120 points. A freeboard requirement of two feet above base flood elevation when fill is prohibited is eligible for 280 points. A freeboard requirement of three feet above base flood elevation when fill is prohibited is eligible for 500 points.
- Freeboard credits are subject to an impact adjustment based on the portion of the floodplain that is subject to the freeboard regulation.

Low impact development standards



Low impact development is a stormwater management approach that attempts to mimic natural drainage and recharge functions. Rather than using substantial built infrastructure to move water to retention and detention facilities, low impact development strives to recreate natural landscapes to manage stormwater as close to the source as practical.

Examples of low impact development techniques are swales, rain gardens, green roofs, dispersed bioretention areas, rain barrels and pervious pavements.

Low impact development techniques can aid communities in addressing sea level rise in many ways such as by retrofitting developed areas to handle more stormwater in existing spaces or by reducing the costs of handling increased demand for managing stormwater.

Creditable actions in the CRS Manual

- 432.i. Local drainage protection
- 452.a.(3) Low-impact development

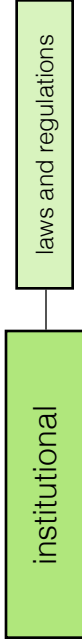
Points available

Section 432.i. awards up to 20 points specifically for retaining runoff from 100-year storm events on-site. Section 452.a.(3) awards up to 25 points.

Notes

- Section 432.i. “Local drainage protection” awards credits for local government regulations that ensure every new building is protected from flooding caused by local drainage issues. Twenty (20) points are available specifically for rules, such as low impact development requirements, that require development to retain runoff from 100-year storm events on site.
- Section 452.a.(3) “Low-impact development” awards up to 25 points if regulations require developers to give preference to the use of low impact development techniques to control runoff in new developments

Low intensity zoning



Restrictions of development intensity can reduce flood risk to structures by limiting the number of structures built in flood prone areas.

Low intensity zoning can further address sea level rise by using clustered development or transferable development rights to locate development away from areas that will be subject to future inundation due to sea level rise.

Creditable actions in the CRS Manual

- 422.e. Open space incentives

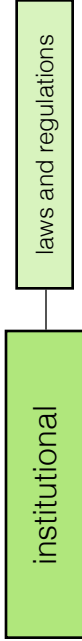
Points available

Section 422.e. awards up to 250 credits.

Notes

- Section 422.e. “open space incentives” awards up to 250 credits to communities that use innovative land use regulations to limit the impact of (but still allow) development in the floodplain. Examples of such approaches include cluster developments, transferable development rights and density transfers. Maximum credit is available for communities with regulations that require the set aside of all the regulatory floodplain in a subdivision as open space.

Riparian/Littoral buffers



Requiring a development setbacks from riparian/littoral areas can prepare a community for flood by locating buildings away from areas of flooding risk, on less vulnerable portions of developable property.

Innovating and emerging approaches to regulating development adjacent to shoreline include erosion based shoreline protection setbacks.

Erosion based setbacks use historical data on shoreline location to determine setbacks rather than arbitrary and standardized numbers based on a property's depth.

Future projections of shoreline location due to sea level rise can be included in setback regulation to accommodate rising seas.

Creditable actions in the CRS Manual

- 322.g. "Natural floodplain functions"
- 422.a. "open space preservation"
- 410CE Additional Flood Data for Coastal Erosion Areas
- 430CE "Higher Regulatory Standards"

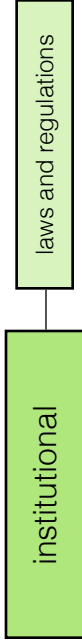
Points available

Section 322.g. awards up to 22 credits. Activity 420 awards up to 1,450 credits. Section 410CE awards up to 125 credits. Section 430CE awards up to 25 credits.

Notes

- Section 322.g. "Natural floodplain functions" awards up to 22 credits for mapping areas that should be protected because of natural floodplain functions.
- Section 422.a. "open space preservation" awards up to 1,450 credits for preventing development in the floodplain. Coastal construction setback regulations suffice to make land eligible for credit.
- Section 410CE "Additional Flood Data for Coastal Erosion Areas" awards up to 125 credits to communities that adopt regulatory maps that show areas expected to be affected by erosion over next 30 to 100 years and prohibit buildings and substantial improvements in these areas.
- Section 430CE "Higher Regulatory Standards" awards up to 25 credits to communities that adopt setback regulations for accreting and rocky shorelines.

Rolling conservation easement



A voluntary rolling easement restricts a property owner's ability to harden property against sea level rise. Rather, property improvements must give way to rising sea levels.

Like a conventional conservation easement, a rolling easement is a tool by which a property owner extinguishes development rights to a property. The distinguishing characteristic of rolling easements is that the portion of the property on which development is not permitted changes over time as seas rise.

Essentially, a rolling easement requires property owners respond to sea level rise with retreat.

Creditable actions in the CRS Manual

- 430CE Higher Regulatory Standards

Points available

Up to 75 credits are available through removal of threatened structures. Up to 20 credits are available through protection of large buildings. And up to 25 credits are available through setback regulations for accreting and rocky shorelines.

Notes

- These credits are awarded through the 430CE worksheet on page AW-CE-4 of the NFIP's Community Rating System's *CRS Credit for Management of Coastal Erosion Hazards*.

“Adaptation Action Area”

institutional

government policy/program

An “Adaptation Action Area” is an optional comprehensive plan designation recommended for consideration by Florida Statutes § 163.3177(6)(g)10 for areas that are vulnerable to sea level rise.

State law provides:

At the option of the local government, develop an adaptation action area designation for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area may consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise.

An Adaptation Action Area can facilitate a local government in prioritizing funding for infrastructure and adaptation planning as well as consolidate data and plans related to a community’s response to sea level rise.

Creditable actions in the CRS Manual

- 510. Floodplain Management Planning
- 345. Related Activities under the Community Rating System

Points available

A total maximum of 622 credits are available for Activity 510.

Notes

- Activity 510. “Floodplain Management Planning” has three elements presented below.
 - Element 512.a. “Floodplain management planning” awards up to 382 credits for creating a community-wide floodplain management plan. The manual presents a ten-step process communities must follow for their plans to be eligible for credit under this element. Credits are available for identifying “areas likely to be flooded and flood problems that are likely to get worse in the future as a result of ... climate change or sea level rise.”
 - Element 512.b. “Repetitive loss area analysis” awards up to 140 credits for creating a mitigation plan for a repetitive loss area.
 - Element 512.c. “Natural floodplains functions plan” awards up to 100 credits for developing a plan to protect natural functions in a community’s floodplain such as a green infrastructure plan or a habitat conservation plan.
- Section 345 “Related Activities under the Community Rating System” advises that “[h]aving an objective source of [flood hazard] information can help overcome some agencies’ reluctance to disclose the flood hazard and can help the community receive credit.” As it relates to sea level rise, the community could seek to connect to an objective source for sea level rise projections and analyses. One such example is the Southeast Florida Regional Climate Change Compact, a partnership between Miami-Dade, Broward, Monroe, and Palm Beach counties. The joint sea level rise projection informs all four municipalities’ codes.

