Coastal Community Resilience Indicators and Rating Systems

Acknowledgments

This project was undertaken with the active participation and support of a number of individuals. The project team consisted of the National Oceanic and Atmospheric Administration's Office for Coastal Management, Eastern Research Group, Inc., and SeaPlan. NOAA Office for Coastal Management acknowledges the help of all of the resource developers highlighted throughout this report for their contribution in providing materials and reviewing content for their profile pages.

Eastern Research Group, Inc. and SeaPlan

This product was prepared by Eastern Research Group, Inc. and SeaPlan under contract to NOAA Office for Coastal Management.

NOAA's Office for Coastal Management

"Coastal management" is the term used by communities and organizations striving to keep the nation's coasts safe from storms, rich in natural resources, and economically strong. The national lead for these efforts is NOAA's Office for Coastal Management, an organization devoted to partnerships, science, and good policy. This agency, housed within the National Ocean Service, oversees major initiatives that include the National Coastal Zone Management Program, Coral Reef Conservation Program, Digital Coast, and National Estuarine Research Reserve System.

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About This Report

A wide range of indicators, metrics, and rating systems are available to local communities and organizations to assess resilience to coastal hazards (e.g., storms, precipitation, coastal flooding, and sea-level rise). Unfortunately, it can be very time-intensive for community planners to sort through all the possibilities and identify what makes the most sense for their community.

The National Oceanic and Atmospheric Administration (NOAA) wrote this report to help local planners sort through and find the resources for benchmarking resilience (setting a baseline) and tracking (monitoring) progress that are most appropriate for their community's needs. This report provides key information about tools and resources (e.g., guidance documents, approaches, frameworks) to help community planners easily digest the information and find those that are best suited for assessing their current level of resilience, thereby improving coastal resilience monitoring across the nation. The developer(s) for each tool or resource highlighted in this report reviewed their profile page for accuracy and provided the most up-to-date information.

Intended Audience of This Report

This report is intended for community planners, natural resource managers, or similar professionals who might be involved with development of community emergency plans for coastal hazards and structural development. This report is primarily intended for positions representing a city, a town, small groups of towns, or a county.

What "Resilience" Means in This Report

Resilience is a widely used term with a wide range of meanings. Faced with an unforeseen hazard, communities may define resilience as everything from maintaining business interests or supporting vulnerable populations to preserving historical landmarks. This report captures these interpretations and more by defining a community's level of "resilience" as how well it is prepared for and can respond to a natural disaster (focusing on coastal hazards).

"Community resilience refers to the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies."

- Presidential Policy Directive/PPD-8: National Preparedness

Figure 1, developed by NOAA, is one example of a resilience cycle and the steps involved in becoming more resilient.

This is presented as a cycle because once communities implement actions to improve resilience, they need to continually monitor and evaluate progress and ultimately re-assess needs and priorities. Thinking of resilience as a process is the key to promoting short- and long-term community sustainability. The terms below describe the steps in Figure 1.

Assess risk and vulnerability: This is the starting point for most communities. It may involve creating an inventory of community assets, identifying existing community plans, identifying current and future hazards and understanding their impacts, determining vulnerabilities, and engaging stakeholders. This is also a good time to decide on a resilience index or benchmarking system.

Plan and prioritize: Once a community has a better understanding of its vulnerabilities, it can then begin to prioritize strategies and potential actions to address those vulnerabilities.

Implement: Prioritized strategies and actions are realized through on-the-ground efforts.

Recovery actions: Communities respond to hazard events and conduct post-disaster assessments.

Monitor, evaluate, and adapt plans: Communities should continually monitor and re-assess their efforts to address chronic hazards and hazard events. As data and information are gathered, communities can then update plans accordingly. Many of the resources and tools included in this report fall into the "Assess risk and vulnerability" category, while a few address how a community responds to a disaster. In addition to providing quantitative and qualitative assessments, some resources offer recommendations or findings that may help a community advance to the "Plan and prioritize" and "Implement" steps.

Figure 1. The Resilience Cycle

Selection of Resources for This Report

NOAA performed a search for indices and indicators that measure community-level preparation for and/or recovery from natural disasters, with a focus on coastal hazards. This review focused more on community infrastructure than ecological resilience, recognizing the intrinsic relationship between ecological integrity and human infrastructure. From that search, the following types of resources and tools were selected for inclusion in this report:

- Metrics or indicators of community-level or organizational-level resilience. (Resources assessing a single house or select infrastructure were not included.)
- Resources that can be implemented by a city, town, small group of towns, or county. (Resources that might be implemented at the state or federal level were not included.)
- Resources or tools with support and direction available to help with implementation. (Neither academic papers nor municipal plans without direction for how another community could reproduce their approach were included.)
- Resources for which the developer granted permission to appear in this report.

Benefits of This Report

Save time by quickly finding the right resource for assessing your community's resilience

It can be overwhelming and time-consuming for a community to know how to start building resilience. This report helps communities start the process by providing a "navigation" table that highlights the key components of each resource and tool for assessing community resilience. After using the table to filter down the list of candidate resources, this report provides short profile pages that present information communities need to know before moving forward, including cost, level of effort, needed expertise, people to engage with to use the resource, and other key features.

Identify a resource that brings together local leaders and community stakeholders

Many of the resources included in this report involve setting up meetings with local leaders and community stakeholders. This report facilitates the *process* of setting up these meetings by highlighting the team members that need to be involved with each listed resource or tool.

Find a resource to begin participation or to earn additional points in the Federal Emergency Management Agency's Community Rating System

Many of the resources included in this report incorporate activities that can help a community get accepted into the Community Rating System (CRS) or earn additional credit points. Acceptance into the CRS means flood insurance premium reductions of up to 45 percent for community property owners. CRS-credited activities include actions such as assessing flood problems, mapping flood data, managing new development to minimize future damage, developing floodplain management plans, reducing flood losses to existing development, improving emergency preparedness and response, and implementing public information activities. This report makes it easy to find how each of the tools or resources highlighted is connected to the CRS.

Identify a resource to become a more resilient community

This report highlights tools and resources that help coastal communities benchmark and track their resilience. Resilience-building activities and information on topics such as updating action plans and knowing how to target infrastructure investments make communities better prepared for and more likely to recover effectively from coastal hazards. The *outcomes* that result from using the tools and resources highlighted in this report can lead to important community benefits, including increased public safety, reduced damages to property and public infrastructure, and avoided economic disruption. This report highlights how the resources may help you start to take the next step in terms of planning and prioritizing the implementation of resilience measures.

Organization of This Report

Use the navigation table to filter your options

Use the navigation table (in the next section) to scan through the resources highlighted in this report. This table is set up with brief descriptors in each category to help you filter down to a smaller list of resources that you would like to learn more about. You can then view the resource profile provided in this report for each of these resources or tools.

View the resource profile

Each resource has a profile page, which includes the benefits of using the tool, categories for determining whether it is a good fit for a given community, resources needed for implementation, pictures or tables from the resources, and a case study (when available).

Opportunities for Developer Support and Technical Assistance

A major obstacle to assessing community resilience can be the availability of technical assistance to help with using specific frameworks and indices. This report addresses this need by highlighting the technical assistance available for the resource or tool on each profile page. Available support ranges from email- and phone-based guidance to onsite facilitators hosting community focus groups.

Navigation Table

Use this navigation table to scan through the resources highlighted in this report. This table is set up with brief descriptors in each category to help you filter down to a smaller list of resources that you would like to learn more about. You can then view the profile provided in this report for each of these resources or tools.

NAVIGATION TOOL — Name of Metric or Indicator (URL to resource is embedded)	Purpose		Features						Metric		Community					Applicability			Cost		Level of Effort — Notes	Go to Page
	Internal (used to learn about community)	External (used to compare to other communities)	3rd Party Evaluation Available	CRS Point Guidance	Facilitation Included	Recommendations for Next Steps	Recognition for Participants	Examples or Case Studies Available	Qualitative	Quantitative	Local (city/town)	County	Region	Rural	Urban	Addresses Inland Hazards	Addresses Coastal Hazards	Tailored to Specific Geographies (but adaptable)	Free	Fee for Use		
Climate Change Readiness Index	X					X			X		X								X		A day or two of focus groups.	6
American Red Cross Ready Rating Self-Assessments	X	X					X		X		X								X		Several focus group sessions.	11
Maryland's *CoastSmart* Communities Scorecard	X			X		X		X	X		X						X	X	X		Single focus group.	16
Coastal Resilience Index: A Community Self-Assessment	X		X			X		X	X		X	X					X		X		A day or two of focus groups.	21
Community Resilience System	X		X		X	X		X	X		X	X	X	X	X	X	X		X		Around 25 hours of facilitated working groups.	27
Community Recovery Tool: Disaster Recovery Tracking Tool	X		X						X		X	X				X	X		X		Approximately 40 to 80 hours.	34
Getting to Resilience: A Costal Community Planning Evaluation Tool	X				X	X		X	X		X						X	X	X		A day or two of focus groups.	38
Resilience Alliance: Resilience Assessment Framework	X				X				X		X	X	X	X	X	X	X		X		2-5 days of workshops; 2-4 weeks of analysis.	44
Rural Disaster Resilience Planning	X					X			X		X	X	X	X		X	X		X		Varies with application. Roughly a few hours per hazard assessed.	49
STAR Community Rating System Profile	X	X	X			X	X		X		X	X			X	X	X		X	X	6-12 months to complete with verification (less without verification).	55

Resource Profiles

Each resource has a profile page, which includes the benefits of using the tool, categories for determining whether it is a good fit for a given community, and the level of effort and other resources needed for implementation. The profile also includes snapshots from the resource. These snapshots might be tables, pictures, or other information that give an impression of the resource or tool. When available, the profile also includes representative case studies from communities that have used the resource to improve their resilience.

Climate Change Readiness Index

The *Climate Change Readiness Index* was designed to provide community leaders with a simple and inexpensive method to review their community's potential vulnerabilities to climate change and begin the conversation of how and when to plan projects to address these vulnerabilities. The rating system contains a series of 60 qualitative questions and sub-questions organized into the following nine sections:

1. Critical infrastructure flooding readiness
2. Critical facilities
3. Built environment and infrastructure
4. Operations and maintenance
5. Water resources
6. Ecosystems and habitats
7. Tourism and recreation
8. Business plans and equipment
9. Community plans

Words from the developer:

"This assessment tool can be used as a first step toward becoming more resilient to climate change with the goal to reduce future impacts through the incorporation of climate adaptation into planning and projects.

The purpose of this tool is to provide community leaders, administrators, planners, engineers, public work directors, and natural resource professionals with a simple method to identify key areas of vulnerability and then identify relevant tools, resources and adaptation strategies to address specific vulnerabilities within the community."

Hilarie Sorensen, Minnesota Sea Grant

Purpose

☒ Learning about your community. **This index is used to identify key areas where communities are likely to be most at risk and start the process of determining where a more thorough review of vulnerability might be needed.**

☐ Comparing to other communities.

Resilience cycle

Overview and Benefits
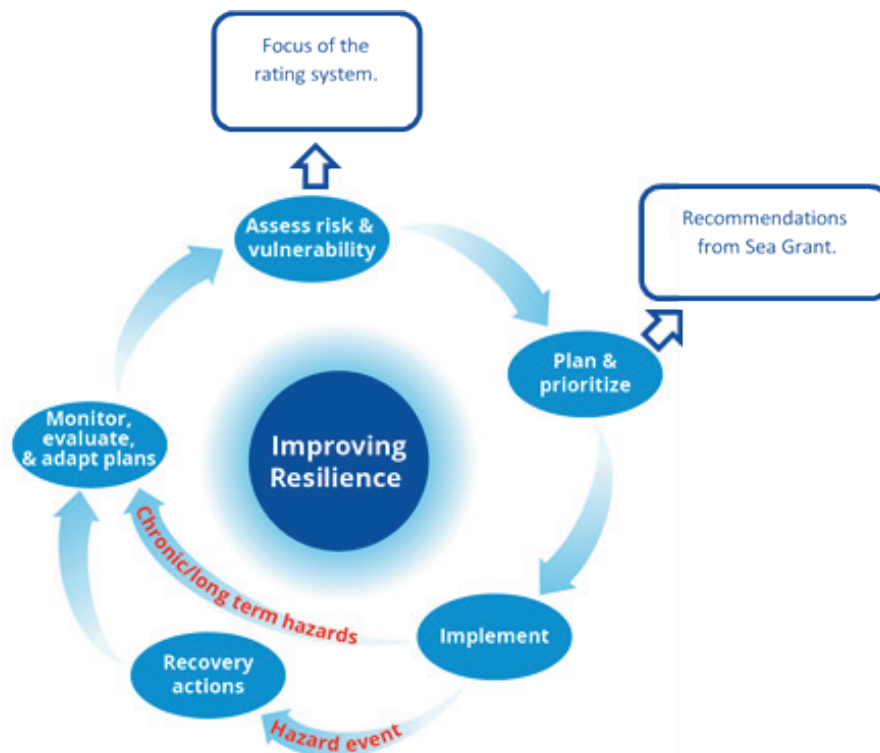
Climate Change Readiness Index

Overview and Benefits

Features

☐ Third-party evaluation available.

☐ Provides guidance on attaining CRS points.

☒ Facilitation included.

☒ Recommendations for next steps. **Send completed document(s) to Sea Grant program educator who will provide suggestions on educational materials and programs.**

☐ Recognition for participant communities.

☒ Examples available of other communities using tool. **See case studies below.**

☐ Related resources/tools available from the developer.

Outcomes from using resource

- Identify climate change adaptation education and planning opportunities.
- Better understand community readiness in relation to hypothetical flooding scenarios.
- Create an inventory of which community plans are available and track when they were last updated.
- Bring together community leaders, administrators, planners, engineers, public work directors, and/or natural resource managers.
- Assessing vulnerability of various city owned and managed resources and set-up the discussions for how to plan for long-term management of these resources.

Indicator or rating type

☒ Qualitative. **The tool comprises a series of yes/no questions with a total score index at the end to assess community readiness in a variety of categories.**

☐ Quantitative.

Link

http://www.seagrant.umn.edu/climate/

Applicability to Your Community

Community size

☒ Local (town/city).

☒ County.

☒ Region. **This tool would be beneficial for a regional planning body consisting of a few counties but has only been piloted at the local and county level so far.**

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☐ All communities (including non-coastal).

☐ Coastal communities only.

☒ Coastal communities in a specific area. **Developed for communities in the Great Lakes region. Could easily be used by coastal communities outside the Great Lakes region without revision.**

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **Although there is an emphasis on flooding readiness, the assessment covers a wide-range of potential vulnerabilities (extreme rainfall events, drought, intense heat waves, and more).**

☐ Specifically addresses coastal hazards only.

Climate Change Readiness Index

Resources Needed

Cost of resource or tool?
- ☒ Free.
- ☐ Cost.

Type of resource?
- ☒ Paper. **This checklist is best used a facilitated process in person to provide adequate feedback in all nine checklist categories.**
- ☒ Online/downloadable. **This checklist can be printed out from the website and brought to a facilitated discussion.**
- ☐ Interactive Web tool.

Level of effort for organizer?
- ☒ General preparation needed?
  - ☒ Form a team.
  - ☐ Engage public.
  - ☒ Engage municipal leaders.
- ☒ Specific preparation needed?
  - ☐ Technology.
  - ☒ Materials. **Print the questionnaire from the website or set up a room with appropriate audio-visual equipment to make the online survey visible to the entire group.**
  - ☒ Plans. **Ensure your work group has access to all community plans and resources listed in the "Community Plans" section.**
- ☒ Other responsibilities?
  - Coordinate with community leaders to organize the completion of the index.
  - Communicate with and provide results to state Sea Grant program educator.

Facilitation sessions?
- ☒ Not required. **It is helpful to have a facilitator help your community through the checklist, but it is not necessary. It is recommended that more than one department within the city or township complete the section(s) of the assessment that best fit their knowledge area. Another possibility is to have the various departments complete all sections to provide information on where staff may/may not agree on the various scenarios given.**
- ☐ Single session.
- ☐ Multiple sessions.

Team members needed?
- ☐ Technical support.
- ☒ Advisory support. **Community leaders, administrators, planners, engineers, public work directors, and/or natural resource managers**
- ☐ Facilitation group members.
- ☐ Outside reviewers.

Assistance available?
- ☒ Contact information. **Hilarie Sorensen, Minnesota Sea Grant, soren360@d.umn.edu; 218-726-7677**
- ☐ Helpline.
- ☒ Technical guidance. **Communities in any coastal state can find contact information for the closest Sea Grant College Program at http://seagrant.noaa.gov/WhereWeWork/SeaGrantPrograms.aspx**

Snapshots of the Climate Change Readiness Index

"Yes" or "No" answers can be given to a number of questions in each category. For example, the number of "yes" answers in the checklist shown in Figure 1, above, can be entered into the index shown in Figure 2, below.

Figure 1. Yes/No Checklist Example—Category 5: Water Resources

Water Resources	Yes	No
Does the area have invasive species management issues in protected habitat areas?	X	
Do you have water resources that could be threatened or impacted from the result of a wildfire (i.e. increased erosion and sedimentation)?	X	
Are there beneficial uses[1] for designated waterbodies in the area that cannot always be met today due to water quality issues?		X
Does your community wastewater treatment plant discharge untreated sewage during rain events?	X	
Is shoreline erosion above and beyond natural occurrences currently being observed in your area?		X
Total Number of Yes and No answers	3	4

Completing the self-assessment allows communities to generate "Readiness Index" scores (form shown above) for each rating system focus area. This approach helps communities understand their needs and incorporate identified vulnerabilities into their planning strategies

Figure 2. Readiness Index Preview

Categories 3-8	Total Yes answers (shaded box of given table above)	Translate Total Answers from Column 1 of this table to a Readiness Index	Readiness Index	Comments
Category 3: Built Environment & Infrastructure	7	0 to 2 (HIGH) 3 to 5 (MEDIUM) 6 to 8 (LOW)	LOW	
Category 4: Operations and Maintenance	2	0 to 1 (HIGH) 2 to 4 (MEDIUM) 5 to 6 (LOW)	MEDIUM	
Category 5: Water Resources	3	0 to 2 (HIGH) 3 to 5 (MEDIUM) 6 to 7 (LOW)	MEDIUM	
Category 6: Ecosystems & Habitats	8	0 to 2 (HIGH) 3 to 6 (MEDIUM) 7 to 9 (LOW)	LOW	
Category 7: Tourism and Recreation	4	0 to 1 (HIGH) 2 (MEDIUM) 3 to 4 (LOW)	LOW	
Category 8: Business Plans & Equipment	1	4 (HIGH) 2 to 3 (MEDIUM) 0 to 1 (LOW)	LOW	
Category 9: Community Plans	2	6 to 8 (HIGH) 3 to 5 (MEDIUM) 1 to 2 (LOW)	LOW	

Case Study: Four Communities

The *Climate Change Readiness Index* was piloted in four communities in Minnesota and Wisconsin. Two of the communities—Carlton County, Minnesota, and the City of Ashland, Wisconsin—decided to use the index after experiencing major flooding in 2012. This flooding resulted in significant damage to stormwater systems, water resources, ecosystems, and roads. After the initial flood response, these communities wanted to better prepare for future storms by beginning the climate change adaptation process. Although Carlton County and the City of Ashland did not have a particular planning process in mind, they wanted to have a better idea of their vulnerabilities to be ready for future planning opportunities.

Carlton County, Minnesota
- Assessment revealed vulnerabilities in sewage treatment, drinking water availability, and chemical storage infrastructure as the associated facilities were located in a floodplain.
- The community decided to conduct a more in-depth vulnerability assessment focusing on water utilities and ecosystems.
- The community used the U.S. Environmental Protection Agency's Climate Resilience Evaluation and Awareness Tool (CREAT) as a recommended tool to help address their stormwater infrastructure vulnerabilities based on the assessment results.

City of Ashland, Wisconsin
- Assessment revealed low rankings on the Climate Readiness scale in critical infrastructure, built environment, and ecosystems.
- The community decided to conduct a more in-depth vulnerability assessment focusing on built environment and critical infrastructure.
- The community used NatureServe Vista to update its land-use plan.

The two other pilot communities—Duluth Township, Minnesota, and Oconto County, Wisconsin—used the *Climate Change Readiness Index* proactively. These communities were already in the process of updating their Emergency Preparedness Plan (Duluth Township) and Hazard Mitigation Plan (Oconto County), and they wanted to incorporate a climate change adaptation component.

Duluth Township, Minnesota
- The community focused its efforts on climate change impacts to forests, especially the increased risk of forest fires.
- The community also used the index to help evaluate emergency evacuation routes and identify secure lodging areas for residents displaced during flood events.

Oconto County, Wisconsin
- The community focused its efforts on fire hazards following extended periods of drought.
- The community also used the index to help develop strategies and goals to address future water systems stress.
- Oconto County used the Self-Assessment to incorporate climate adaptation vulnerability information and adaptation planning into their hazard mitigation planning process.

American Red Cross Ready Rating Self-Assessments

Overview and Benefits

The American Red Cross Ready Rating program is a free, self-guided program designed to help businesses, organizations, schools, and municipalities become better prepared for emergencies. The Ready Rating program gives it users the option to measure their preparedness level using one of two versions of a self-assessment:

- The ReadyGo is a short, 25-question assessment that allows organizations to obtain a quick, high-level snapshot of their preparedness in critical areas.
- The ReadyAdvance Assessment has 60 questions that go into a deeper level of detail.

Both assessments consist of five sections that score emergency preparedness efforts in terms of:

1. Program participation.
2. Emergency planning.
3. Facility and equipment.
4. Training and exercise.
5. Extended community.

Words from the developer:

"The Ready Rating program was developed to make getting prepared for disasters and other emergencies more simple and easy to understand. By using a self-assessment to measure an organization's current level of preparedness, the program can then provide customized recommendations on the steps needed to start improving readiness. Each recommendation also points to the tools and resource needed to achieve them.

Membership in the program is provided at no cost due to our generous sponsors."

Tom Heneghan, American Red Cross

Purpose

☒Learning about your community. **This rating system can be used as an internal guide to improve emergency preparedness.**

☒Comparing to other communities. **Participants can choose to have their results shared and included in "Peer Comparison Reports."**

Resilience cycle
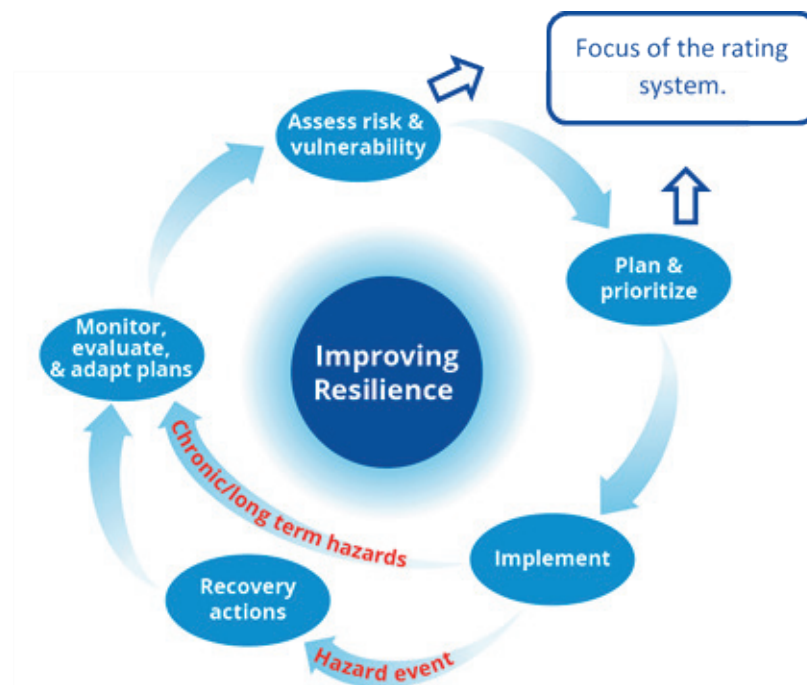
American Red Cross Ready Rating Self-Assessments

Overview and Benefits

Features

☐ Third-party evaluation available.

☐ Provides guidance on attaining CRS points.

☐ Facilitation included.

☐ Recommendations for next steps.

☒ Recognition for participant communities. **Participants can display the Ready Rating member seal for recognition and/or choose to be listed on the Ready Rating Current Member Listing website.**

☐ Examples available of other communities using tool.

☒ Related resources/tools available from the developer. **Participants have access to the Ready Rating Toolbox, which includes resources for encouraging businesses, organizations, and schools to raise emergency planning awareness, develop emergency plans, and create exercises and activities to help with plan implementation.**

Outcomes from using resource

- Develop or refine hazard vulnerability assessments and emergency response plans based on Ready Rating parameters.
- Identify strategies for implementing emergency response plans.
- Better integrate hazard vulnerability awareness and training into regular activities.

Indicator or rating type

☒ Qualitative. **Each section of the self-assessment is broken down into a series of yes/no questions (with an occasional third option to indicate an ongoing process or an issue that has not been addressed recently). Each response has an associated point value allowing communities to evaluate whether there is a "significant opportunity to improve," "opportunity to improve," or "strong preparedness foundation" for each subsection of the index. These subsection totals are then summed in the "score card summary" for an overall preparedness rating.**

☐ Quantitative.

Link

http://www.readyrating.org/

Applicability to Your Community

Community size

☒ Local (city/town).

☒ County.

☐ Region.

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☒ All communities (including non-coastal). **Can be used across the United States in both coastal and non-coastal communities.**

☐ Coastal communities only.

☐ Coastal communities in a specific area.

American Red Cross Ready Rating Self-Assessments

Resources Needed

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **The rating system does not specifically target coastal resilience; however, a number of the readiness objectives have ties to coastal resilience (e.g., hazard-specific vulnerability identification, floodplain awareness, warning and communication procedures, sheltering-in-place protocols).**

☐ Specifically addresses coastal hazards only.

Cost of resource or tool?

☒ Free.

☐ Cost.

Type of resource?

☐ Paper.

☒ Online/downloadable. **This checklist can be printed out from the website and used offline.**

☒ Interactive Web tool. **The checklist can be completed online through an interactive interface.**

Level of effort for organizer?

☒ General preparation needed?

    ☒ Form a team.

    ☐ Engage public.

    ☒ Engage municipal leaders.

☒ Specific preparation needed?

    ☐ Technology.

    ☒ Materials. **Print the questionnaire from the website or set up a room with appropriate audio-visual equipment to make the online survey visible to the entire group.**

    ☒ Plans. **For participating businesses and organizations, materials needed include all previously completed business continuity plans and hazard vulnerability analyses, as well as employee training records. For communities, risk and vulnerability assessments, public engagement protocols, and emergency response and recovery system outlines.**

☒ Other responsibilities?

- Serve as coordinator between Red Cross and the participating community.
- Sign up online and create a profile to access the rating system and preparedness resources. Users will need to log in using this profile each time they want to access the "Ready Rating Toolbox," work on the questionnaire, or access archived ratings.

Facilitation sessions?

☐ Not required.

☐ Single session.

☒ Multiple sessions. **Typically involves several meetings of an emergency management team (businesses and organizations) or town planners and local officials (municipalities).**

American Red Cross Ready Rating Self-Assessments

Resources Needed

Team members needed?
☐ Technical support.
☒ Advisory support. **Participants with a working knowledge of municipal and business-level hazard mitigation and implementation processes (including knowledge of recordkeeping protocols and emergency employee/community-member outreach systems).**
☐ Facilitation group members.
☐ Outside reviewers.

Assistance available?
☐ Contact information.
☒ Helpline. **For questions about how the Ready Rating program works or other programmatic questions (9 a.m. to 5 p.m. EST, M–F): readyrating@redcross.org or 877-715-0123.**
☒ Technical guidance. **For technical questions related to the Ready Rating website (24/7): 866-487-3356.**

Snapshots of the American Red Cross Ready Rating Self-Assessments

This excerpt illustrates the basic format of the Ready Rating self-assessment. Sections (in this case, "Section 4: Implement Your Emergency Response Plan") are broken down into subsections (in this case, "4.4: Drills and Exercises"), which consist of a series of questions with designated point values.

Figure 1. Excerpt from the Ready Rating Self-Assessment

4.4 Drills and Exercises. (Continued)	Total Points Available
F. Conduct a medical emergency response exercise at least once a year. ☐ We have never conducted a medical emergency response exercise, OR we conducted at least one medical emergency response drill, but it was more than 25 months ago. ☐ We conducted a medical emergency response exercise between 13 and 24 months ago. ☐ Yes, we have conducted a medical emergency response exercise within the past 12 months.	2
G. Complete after-action reports and evaluations. ☐ No (0 pts.) ☐ We have completed some after-action reports and evaluations. (1 pt.) ☐ Yes (2 pts.)	2
H. The after-action report, along with resulting recommendations and any concerns identified about plan compliance are forwarded to the planning committee and senior management for review and appropriate corrective action. ☐ No (0 pts.) ☐ We sometimes forward the after action report, along with resulting recommendations and any concerns identified about plan compliance to the planning committee and senior management for review and appropriate corrective action. (1 pt.) ☐ Yes (2 pts.)	2

Your Total = _____

0 - 4	5 - 15	16	Maximum Score = 16

Snapshots of the American Red Cross Ready Rating Self-Assessments

The American Red Cross compiled a series of tools to benefit rating system participants at http://www.readyrating.org/reports.aspx. Some tools provide metadata on program participation; others, such as the "Peer Comparison Report," allow users to contextualize their emergency preparedness. These tools focus on comparing the results of participating businesses and organizations.

Figure 2. Peer Comparison and Progress Report Generator

Member Reporting Dashboard

Please select your report and report options:

Assessment / ERP Counter Report

Peer Comparison Report

Progress Report

Hardest / Easiest Question Report

ERP Section Count

Incomplete ERP Sections

Overall Member Growth Report

Incomplete Assessments

Number of Assessments Taken

How Did They Hear about Ready Rating?

Maryland's *CoastSmart* Communities Scorecard

The *CoastSmart* Communities Scorecard aims to help local governments determine how well they are currently positioned to plan for coastal-hazard impacts through a series of yes/no questions organized into the following five sections:

1. Risk and vulnerability (36 questions and sub-questions total).
2. People and property (55).
3. Infrastructure and critical facilities (30).
4. Natural resources (17).
5. Economy and society (10).

Words from the developer:

"The *CoastSmart* Scorecard offers a simple method for assessing the risk and vulnerability of a local community to coastal hazards. The Scorecard uses a discussion and place-based approach to facilitate an exchange of knowledge among local departments. The goal of this exercise is to help participants gain more thorough, holistic understanding of the hazards a community is at risk to, existing preparedness strategies, and to identify opportunities to increase resiliency efforts."

Kate Skaggs, Maryland Department of Natural Resources

Purpose

☒ Learning about your community. **The Scorecard is for internal use and not meant to serve as a means for comparison to other communities.**

☐ Comparing to other communities.

Resilience cycle

Overview and Benefits
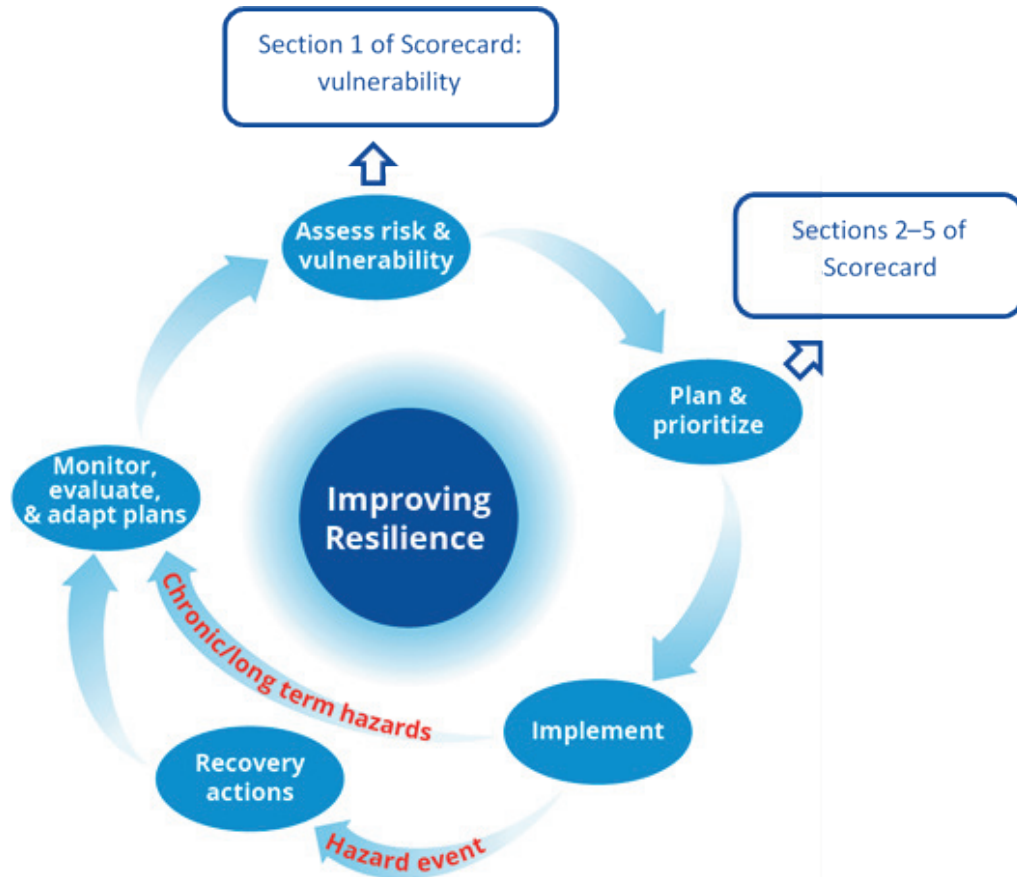
Maryland's *CoastSmart* Communities Scorecard

Overview and Benefits

Features
- ☐ Third-party evaluation available.
- ☒ Provides guidance on attaining CRS points.
- ☒ Facilitation included. **Free facilitation for Maryland communities.**
- ☐ Recommendations for next steps.
- ☐ Recognition for participant communities.
- ☒ Examples available of other communities using tool. **See case studies below.**
- ☒ Related resources/tools available from the developer. **Other CoastSmart resources, including tools, reports, videos, and training, are available through the *CoastSmart* Resource Center.**

Outcomes from using resource
- Identify specific, realistic ways to prepare for coastal hazard impacts.
- Better understand ways of integrating coastal hazards into existing planning, management, and regulatory programs.
- Identify links between local activities and CRS points.
- Bring together planners, natural resource managers, emergency management professionals, and other local officials.

Indicator or rating type
- ☒ Qualitative. **The tool uses a series of yes/no questions to determine if a community is "Getting Started," "On the Right Track," or "*CoastSmart*."**
- ☐ Quantitative.

Link
   http://dnrweb.dnr.state.md.us/CoastSmart/pdfs/scorecard.pdf

Applicability to Your Community

Community size
- ☒ Local (city/town).
- ☒ County.
- ☒ Region.

Level of development
- ☒ Rural.
- ☒ Urban.

Geographic relevance
- ☐ All communities (including non-coastal).
- ☐ Coastal communities only.
- ☒ Coastal communities in a specific area. **Developed for Maryland coastal communities in a NOAA-designated coastal zone. Could easily be used for coastal communities outside of Maryland by slightly revising a few of the Maryland-specific questions, guidance, and resources.**

Application to coastal resilience
- ☐ Broadly addresses resilience, including resilience to coastal hazards.
- ☐ Specifically addresses coastal hazards only. **The assessment focuses on coastal erosion, shoreline change, sea-level rise, coastal flooding, and storm surge within a context of increasing storm activity and severity.**

Maryland's *CoastSmart* Communities Scorecard

Resources Needed

Cost of resource or tool?
- ☒ Free.
- ☐ Cost.

Type of resource?
- ☐ Paper.
- ☒ Online/downloadable. **This checklist is a PDF that can be printed out from the website and brought to a facilitated discussion.**
- ☒ Interactive Web tool. **The checklist can be completed online through an interactive interface.**

Level of effort for organizer?
- ☒ General preparation needed?
  - ☒ Form a team.
  - ☐ Engage public.
  - ☒ Engage municipal leaders. **Recommended but not necessary.**
- ☒ Specific preparation needed?
  - ☐ Technology.
  - ☒ Materials. **Print the questionnaire from the website or set up a room with appropriate audio-visual equipment to make the online survey visible to the entire group.**
  - ☒ Plans. **Ensure your work group has access to all community plans and resources listed in the "Where to start" bubble at the beginning of each Scorecard section.**
- ☒ Other responsibilities?
  - Coordinate with *CoastSmart* Communities Program to organize a facilitated discussion.

Facilitation sessions?
- ☐ Not required.
- ☒ Single session. **The Scorecard is meant to be conducted in a single session as a face-to-face exercise minimally facilitated by the CoastSmart planner.**
- ☐ Multiple sessions.

Team members needed?
- ☐ Technical support. **It is helpful but not necessary to have some geographic-information-system expertise at the facilitation session.**
- ☐ Advisory support.
- ☒ Facilitation group members. **Local officials, planners, natural resource managers, and emergency management professionals.**
- ☐ Outside reviewers.

Assistance available?
- ☒ Contact information. **Kate Skaggs, CoastSmart Communities Planner, Maryland Department of Natural Resources, Kate.Skaggs@maryland.gov; 410-260-8743.**
- ☐ Helpline.
- ☒ Technical guidance. **Tools, videos, reports, trainings, and useful links available at the CoastSmart website (see Resource Center URL in the "Features" section above).**

Snapshots of the *CoastSmart* Communities Scorecard

"CRS points" boxes in each section provide examples of the creditable activities and point values that correspond with Scorecard elements. The activity number and title correspond directly to those found in the 2013 CRS Coordinator's Manual (www.crsresources.org/manual).

Figure 1. Scorecard Preview

Case Study: Four Maryland Communities

Maryland's *CoastSmart* Communities Scorecard is one of five elements that make up the *CoastSmart* Communities Program. In addition to the Scorecard, the Maryland Department of Natural Resources has also developed a *CoastSmart* Online Resource Center, Coastal Atlas, informational fact sheets, and a series of *CoastSmart* trainings. The list below shows how four Maryland communities have engaged with the comprehensive *CoastSmart* Communities Program to develop action items that increase their resilience. A detailed testimonial was provided by Calvert County, and overviews are available for the three other communities.

Talbot County: Creating Flood Resilience in Talbot County (Started 9/10/2010)
- Update and adopt new floodplain regulations and adopted new Federal Emergency Management Agency (FEMA) floodplain maps.
- Conduct public outreach to pursue adoption of county hazard mitigation plan.
- Apply to FEMA's CRS Program.

Queen Anne's County: Queen Anne's Coastal Resources and Floodplain Management (Started 10/1/2012)
- Develop and adopt a new Chapter 14:3 Floodplain Ordinance.
- Identify repetitive-loss properties and create mitigation strategies to reduce the exposure of coastal infrastructure in high-hazard areas.
- Establish a community dialogue via public meeting(s).

Baltimore City: Creating a Ready and Resilient Baltimore City (Started 11/15/2012)
- Develop and implement the integrated All-Hazards Mitigation Plan (AHMP), floodplain mapping, and an adaptation plan program.
- Complete a Climate Adaption Plan to be adopted by the Planning Commission as an official appendix to the AHMP.

Calvert County: Enhancing Coastal Protection in Calvert County (testimonial from the community; project started 1/1/2013)
- "Calvert County participated in the *CoastSmart* Scorecard. The exercise brought together the Departments of Community Planning and Building, Public Works, General Services, and Emergency Services. The Scorecard exercise assisted the County in determining to what extent and capacity the different departments participate in adaptation planning and highlighted the opportunities to augment each department's efforts. For example, due to the Scorecard exercise and through the process of the County developing a series of small area flood mitigation plans, the Department of Public Works and the Department of Public Safety, Emergency Management Division, now work closely with the Department of Community Planning and Building in the early development of small area flood mitigation plans. The early participation of these two departments has greatly improved our ability to address issues associated with disaster preparedness and infrastructure (i.e., roads and stormwater management). The participation of these two departments at our community meetings has been received favorably by the citizens and has led to early engagement of these other departments with the citizens and their concerns."

Coastal Resilience Index: A Community Self-Assessment

Overview and Benefits

The Coastal Resilience Index (CRI) is a self-assessment tool designed to give local planners a simple and inexpensive diagnostic of their community's adaptability in the face of coastal hazards. The self-assessment generates an overall Resilience Index score, as well as sub-scores for the following six critical service areas:

1. Critical infrastructure and facilities (12 questions; up to four checkmarks per question).
2. Transportation issues (seven yes/no questions).
3. Community plans and agreements (16 yes/no questions, including sub-questions).
4. Mitigation measures (12 yes/no questions).
5. Business plans (five yes/no questions).
6. Social systems (five yes/no questions).

Words from the developer:

"The Coastal Community Resilience Index was created in response to local community needs for baseline data after Hurricane Katrina so they could assess their progress towards becoming more resilient. The tool has been used in 49 communities to date in the five Gulf of Mexico states and the Spanish version has been pilot-tested in one community in Mexico. Various versions of the tool have been modified for other regions. Communities have used the tool as a way to prepare for the hazard mitigation planning process, as a way to inform new staff of community resilience priorities, to communicate the need for certain mitigation projects to elected officials, and as a way to conduct blue skies planning before future storms. The process of completing the Index in person as a roundtable discussion is the most valuable contribution of the tool as it initiates discussion between representatives of all community sectors at the table at the same time."

Tracie Sempier, Mississippi-Alabama Sea Grant Consortium

Purpose

☒ Learning about your community. **Each community's unique Resilience Index is an internal evaluation tool and should not be used to form comparisons between communities.**

☐ Comparing to other communities.
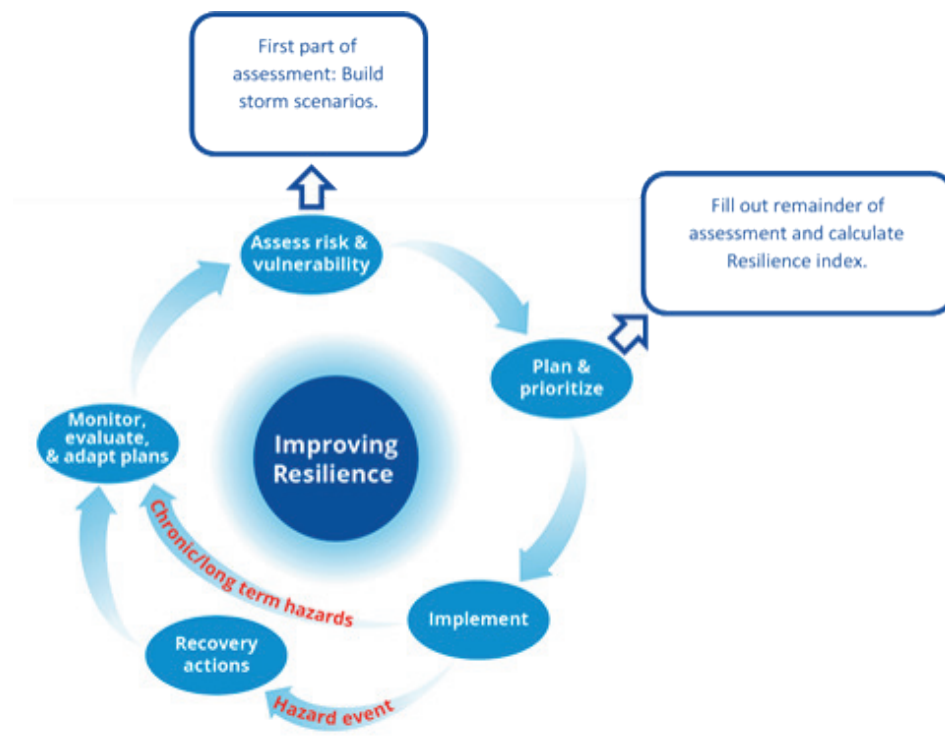
Resilience cycle

Coastal Resilience Index: A Community Self-Assessment

Overview and Benefits

Features

☒ Third-party evaluation available. **The *Evaluation of the Community Resilience Index* is available underlined here.**

☒ Provides guidance on attaining CRS points. **"Did You Know?" textboxes throughout the index suggest links to CRS-credited activities.**

☒ Facilitation included. **Communities in Texas, Louisiana, Mississippi, Alabama, and Florida can request a facilitator here.**

☒ Recommendations for next steps. **The organization of Resilience Index results (low, medium, high rankings for key community systems) facilitates the development of actionable next steps.**

☐ Recognition for participant communities.

☒ Examples available of other communities using tool. **See case studies below.**

☒ Related resources/tools available from the developer. **Other materials, including reports, tools, links to ongoing projects, and more are available through the Coastal Storms Program website.**

Outcomes from using resource

- Develop "bad storm" (benchmark) and "future storm" (greater intensity) scenarios to guide the self-assessment and for future reference.
- Identify areas in which your community may become more resilient.
- Have a better understanding of how long it may take your community to provide basic services and reoccupy homes and businesses after a disaster.
- Bring together local planners, engineers, floodplain managers, and other local officials.

Indicator or rating type

☒ Qualitative. **The tool includes a series of checklists, most of which contain yes/no questions. Easily understandable "low," "medium," or "high" indices are generated for each section of the assessment.**

☐ Quantitative.

Link

http://masgc.org/assets/uploads/publications/662/coastal_community_resilience_index.pdf

Applicability to Your Community

Community size

☒ Local (city/town).

☐ County.

☐ Region.

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☐ All communities (including non-coastal).

☒ Coastal communities only. **First developed in the Gulf Coast region (pilot-tested in 17 communities across Texas, Louisiana, Alabama, and Florida), but is intended for coastal communities anywhere.**

☐ Coastal communities in a specific area.

Coastal Resilience Index: A Community Self-Assessment

Resources Needed

Application to coastal resilience

☐ Broadly addresses resilience, including resilience to coastal hazards.

☒ Specifically addresses coastal hazards only. **The index was specifically developed for coastal resilience (e.g., sea-level rise, flooding, storm surge, precipitation, wind damage, infrastructure damage and destruction, basic service disruptions). Future versions of the index may include support for a wider range of disasters (e.g., fire).**

Cost of resource or tool?

☒ Free.

☐ Cost.

Type of resource?

☐ Paper.

☒ Online/downloadable. **This checklist can be printed out from the website and brought to a facilitated discussion.**

☐ Interactive Web tool.

Level of effort for organizer?

☒ General preparation needed?

   ☒ Form a team.

   ☐ Engage public.

   ☐ Engage municipal leaders.

☒ Specific preparation needed?

   ☐ Technology.

   ☒ Materials. **Print the questionnaire from the website or set up room with appropriate audio-visual equipment to make group interaction smoother.**

   ☒ Plans. **Basic research to have some information more readily available during the focus groups.**

☒ Other responsibilities?

- The facilitator should have general knowledge of the local community's character and governmental structure; however, in order to avoid biased responses, the facilitator should not be one of the questionnaire's target users.

Facilitation sessions?

☐ Not required.

☐ Single session.

☒ Multiple sessions. **The CRI questionnaire is designed to be easily completed in a few hours, but it may be more effective if undertaken over several facilitated working sessions. The questionnaire is broken down into six sections, and each section may be completed in as little as 15 minutes or as long as several hours, depending upon the generated group dialogue. The pilot-testing found that completing the CRI as a facilitated exercise among a diverse group of local decision-makers over the course of one to two focus groups was more beneficial and important than the resulting scores.**

Coastal Resilience Index: A Community Self-Assessment

Resources Needed

Team members needed?

☐ Technical support.

☐ Advisory support.

☒ Facilitation group members. **Strongly recommended: land use planners, hazard mitigation planners, floodplain managers, emergency managers, stormwater managers, natural resource planners, municipal engineers, town administrators/clerks. Optional: municipal leaders, zoning and permitting officials, public works officials, conservation organizations.**

☐ Outside reviewers.

Assistance available?

☒ Contact information.

- **Tracie Sempier, Ph.D., Coastal Storms Outreach Coordinator, Mississippi-Alabama Sea Grant Consortium,** tracie.sempier@usm.edu**; 228-818-8829.**
- **Jody Thompson, Environmental Extension Associate, Mississippi-Alabama Sea Grant Consortium,** jody.thompson@auburn.edu**; 251-438-5690.**

☐ Helpline.

☐ Technical guidance.

Snapshots of the Coastal Resilience Index

The "Community Plans and Agreements" checklist is the second of six parts to the CRI self-assessment.

Figure 1. Community Plans and Agreements

Does your community:	Yes	No
Example: Have a certified floodplain manager?		√
Participate in the FEMA Community Rating System? (Rating of 8 or lower)		
Use an early flood warning system?		
Have a certified floodplain manager?		
Have planning commissioner(s) with formal training in planning?		
Have a planning staff with credentials from the American Institute of Certified Planners (AICP)?		
Have a FEMA-approved and state EMS-approved mitigation plan?		
If you have an approved mitigation plan, has it been revised in the past two years?		
Have Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) with neighboring communities to help each other during times of disaster?		
Have a comprehensive plan or strategic plan that addresses natural disasters?		
Have a floodplain manager or planner who participates in the following organizations: Association of State Floodplain Managers or State Floodplain Management Association?		
American Planning Association (APA) or state APA chapter?		
American Society of Civil Engineers (ASCE) or state or local section of ASCE?		
American Public Works Association?		
Have first-hand experience with disaster recovery within the last 10 years?		
Have a communication system to use before, during and after a disaster?		
Total number of Yes answers and No answers:		

This summary chart translates the users' self-assessment into a multifaceted Resilience Index.

Figure 2. CRI Scoring Chart

Sections 2-6	Number of Yes answers	Translate number of Yes answers to Resilience Index	Resilience Index	Comments
(Example) Section 2: Transportation issues	*1*	*2 or fewer (LOW)* *3 to 4 (MEDIUM)* *5 or more (HIGH)*	*LOW*	*A road construction project will create an additional evacuation route within a year. Also, we are in talks with the local public transportation provider about a program to assist evacuation.*
Section 2: Transportation Issues		2 or fewer (LOW) 3 to 5 (MEDIUM) 6 or more (HIGH)		
Section 3: Community Plans and Agreements		4 or fewer (LOW) 5 to 8 (MEDIUM) 9 or more (HIGH)		
Section 4: Mitigation Measures		4 or fewer (LOW) 5 to 8 (MEDIUM) 9 or more		
Section 5: Business Plans		1 or fewer (LOW) 2 to 3 (MEDIUM) 4 or more (HIGH)		
Section 6: Social Systems		1 or fewer (LOW) 2 to 3 (MEDIUM) 4 or more (HIGH)		

Case Study: Gulf of Mexico Region Pilot Program

As part of a CRI evaluation, the Mississippi-Alabama Sea Grant Consortium piloted the self-assessment and CRI in 17 communities in the Gulf Coast region, including communities in Texas, Louisiana, Alabama, Mississippi, and Florida. Pilot communities were chosen to represent both small and large municipalities, as well as a range of distances to the coastline and prior experiences with local disasters. Researchers evaluating the pilot program synthesized the results of the self-assessment and the CRI, including recommendations for how the CRI could best be implemented in different types of communities, common problems that hampered implementation (e.g., staff turnover), and recommendations for how to expand the program to cover different types of natural disasters (e.g., drought and fire). Program implementation was also evaluated through a series of surveys taken by community representatives who had participated in the pilot program's self-assessments. A final report that includes many of these survey results, as well as additional information about how the CRI was implemented, is available at **http://masgc.org/assets/uploads/publications/872/cri_evaluation.pdf**.

Surveys of the pilot communities' program staff and participants led the evaluation team to several final conclusions and recommendations:

- The CRI is, in and of itself, an effective tool for improving community resilience; however, the dialogue and discussions resulting from a series of facilitator-led focus groups were far more helpful than simply filling out the questionnaire.
- Participants recommend that the self-assessment can (and should) be retaken biannually, and that it works best if followed by technical assistance and/or funding opportunities.
- The evaluation highlights that the CRI is an excellent tool for a first entry in coastal adaptation and resilience planning; it efficiently generates discussion and energy toward making communities more resilient.
- Program staff added the caveat that the CRI should only be used as an internal tool (not as a tool to compare communities) and cautioned that it should encourage communities to seek further consultation, not replace a more detailed study.

Community Resilience System

The Community Resilience System is a Web-assisted process communities can use to enhance their resilience. It is action-oriented—communities become more resilient by taking positive steps to strengthen themselves—and has six stages:

1. Engagement.
2. Assessment.
3. Visioning.
4. Planning.
5. Implementing.
6. Monitoring and maintaining.

At each step of each stage, the Web-based software that supports the process provides helpful tips, relevant case studies, and links to Federal Emergency Management Agency (FEMA) and other templates and tools.

Words from the developer:

"Resilience is a manifestation of strength; thus, becoming more resilient requires that a community take action to build on its strengths and to shore up its weaknesses. The assessment stage of the [Community Resilience System] process is unique because it results in a list of potential steps a community can take to strengthen itself. Through use of the [Community Resilience System] process, communities produce not only an action plan but also take meaningful steps to become more resilient. The supporting software provides communities with literally hundreds of resources to assist them every step of the way. Resources include templates, checklists, success stories, and links to FEMA and other federal and state resources."

Dr. John Plodinec, Community and Regional Resilience Institute

Purpose

☒ Learning about your community. **The Community Resilience System was created to provide community leaders with a systematic process to organize themselves and take action to become more resilient to all types of potential shocks.**

☒ Comparing to other communities. **The System's "Community Snapshot" quantitatively compares a community to state and national norms relating to economic, social, and environmental aspects of resilience.**

Resilience cycle

Overview and Benefits
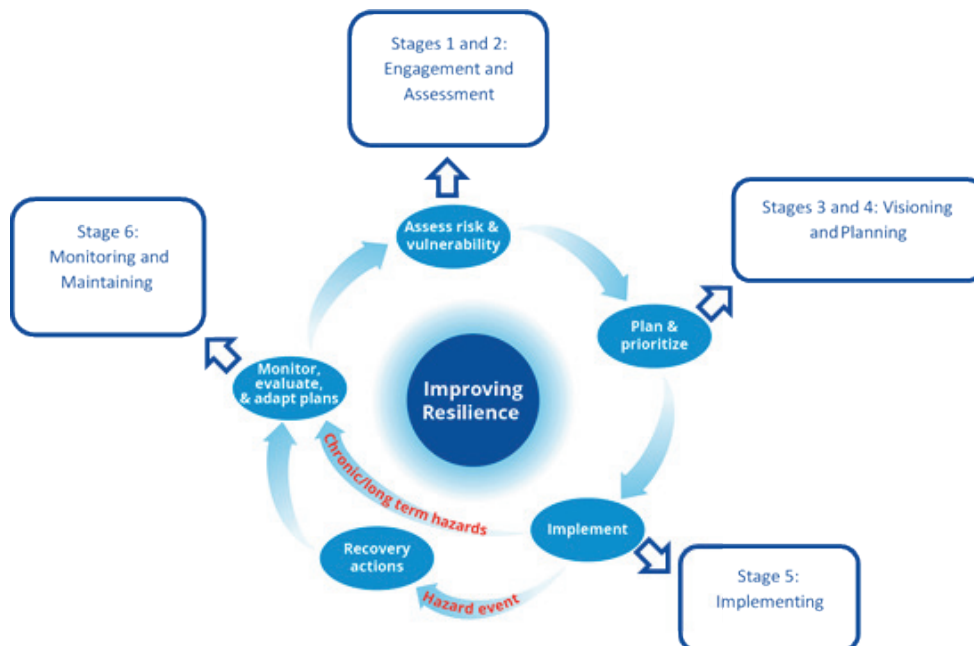
Community Resilience System

Overview and Benefits

Features

☐ Third-party evaluation available.

☐ Provides guidance on attaining CRS points.

☐ Facilitation included.

☒ Recommendations for next steps. **Final product is an implemented resilience action plan covering the "Whole Community."**

☐ Recognition for participant communities.

☒ Examples available of other communities using tool.

☒ Related resources/tools available from the developer. **The Community Resilience System includes more than 200 resources to support communities, as well as training videos, a glossary, and more.**

Outcomes from using resource

- Each stage leads to a concrete outcome. (For example, Stage 1—"Engagement"—involves communities identifying and organizing a coherent resilience leadership team and developing community support for resilience-building activities.)
- In aggregate, the six stages form a comprehensive resilience program that encompasses organizing the community, planning, monitoring, and maintaining an implemented program.

Indicator or rating type

☒ Qualitative. **The community completes a "Community Identity" worksheet that provides subjective indicators of its resilience. At the assessment stage, the community answers questions aimed at identifying strengths and weaknesses of each part of the community.**

☒ Quantitative. **The System's "Community Snapshot" presents quantitative metrics of community-level economic, social, and environmental resilience.**

Link

http://www.resilientus.org/recent-work/community-resilience-system/

Applicability to Your Community

Community size

☒ Local (city/town).

☒ County.

☒ Region. **This can be done on a multi-county or multi-community basis.**

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☒ All communities (including non-coastal). **Can be used across the United States in both coastal and non-coastal communities.**

☐ Coastal communities only.

☐ Coastal communities in a specific area.

Community Resilience System

Applicability to Your Community

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **The Community Resilience System helps a community identify the types of threats it faces (natural or human-induced disasters, pandemics, economic disruptions). The community then ranks each disaster in terms of frequency of occurrence and consequences. In the assessment stage, the resilience of each part of the community (e.g., healthcare, individuals and families, the economy) is evaluated in terms of the threats the community has identified and actions suggested for each in terms of its risk profile. However, the assessment stage does not address the CRS process.**

☐ Specifically addresses coastal hazards only.

Resources Needed

Cost of resource or tool?

☒ Free.

☐ Cost.

Type of resource?

☐ Paper.

☐ Online/downloadable.

☒ Interactive Web tool. **The Web-based software tool is used to help carry out the Community Resilience System process.**

Level of effort for organizer?

☒ General preparation needed?

    ☒ Form a team. **Organize a core team that will champion the effort and ensure continuity.**

    ☐ Engage public.

    ☒ Engage municipal leaders. **Local government and private sector participation is essential.**

☒ Specific preparation needed?

    ☐ Technology.

    ☒ Materials. **Computer with Internet access. If the Resilience Leadership Team includes more than one person, ensure the online survey is visible to the entire group.**

    ☒ Plans. **Access to community plans, risk and vulnerability assessments, public engagement protocols, emergency response and recovery systems, and hazard mitigation processes.**

☒ Other responsibilities?

- Create an online account.
- Organize both the Resilience Leadership Team (one or more participants) and the "assessors."

Community Resilience System

Resources Needed

Facilitation sessions?

☒Required. **The library of resources makes it possible for a single person with limited technical background to complete the "Resilience Leadership Team" sections of the questionnaire, although many of these activities would be easier if completed by a small, dedicated team. Experience has shown that facilitated sessions are needed for both assessment and planning purposes.**

☒Single session.

☒Multiple sessions. **One of the smaller pilot communities (population <350,000), assisted by Community and Regional Resilience Institute (CARRI) facilitators, was able to complete the survey in five four-hour working sessions over the course of three days. A larger community, however, might take longer to complete the survey.**

Team members needed?

☒Technical support. **Some of the concepts in the assessment may be difficult to understand, but the library of resources can help non-experts understand and work through any complex issues.**

☒Advisory support. **Parts of the Community Resilience System are intended for "assessors" (community-based subject matter or discipline experts).**

☒Facilitation group members.

☐Outside reviewers.

Assistance available?

☒Contact information.

- **Warren Edwards, Executive Director, CARRI, warren@resilientus.org.**
- **Robin White, Deputy Director, CARRI, robin@resilientus.org.**
- **Dr. John Plodinec, Program Developer, CARRI, john.plodinec@resilientus.org; 803-257-1760.**

☐Helpline.

☐Technical guidance.

Snapshots of the Community Resilience System

The main dashboard of the Community Resilience System online tool showcases a resources menu on the left, an organized navigation guide in the central panel, and an accordion-style "map" of the tool that highlights the user's location within it.

Figure 1. The Community Resilience System Online Dashboard
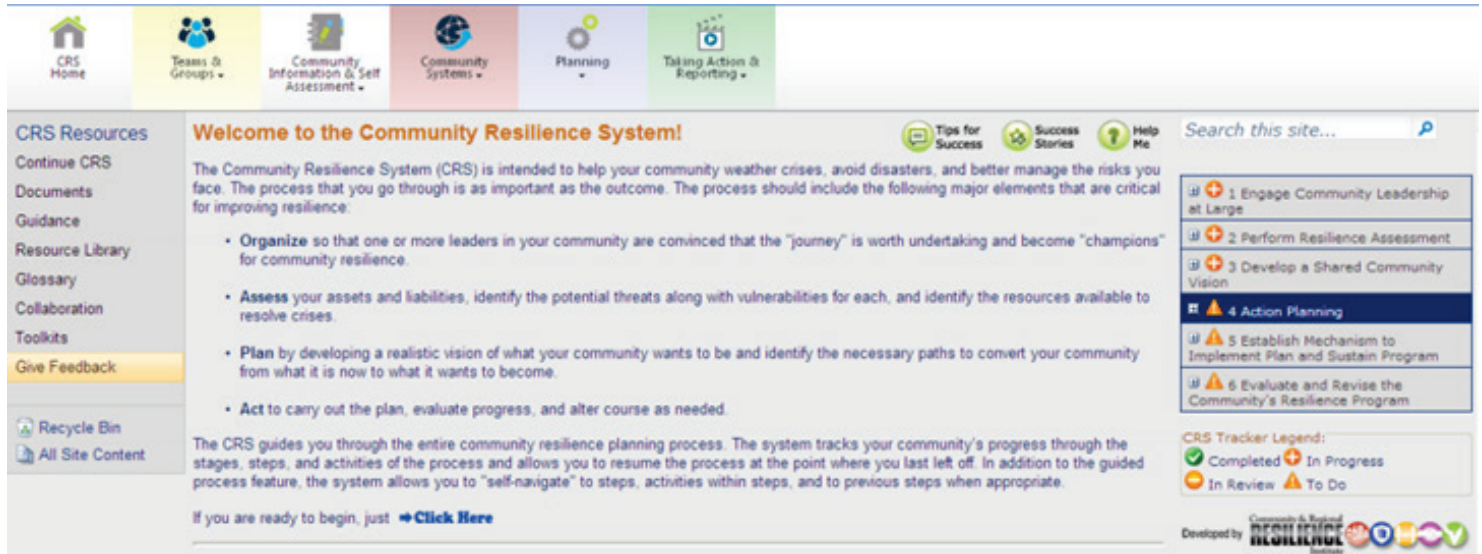
Overview of the stages and steps within the CRS. The guided navigation walks the user through each stage, step, and activity.

Figure 2. Integrated Community Resilience System Process Chart
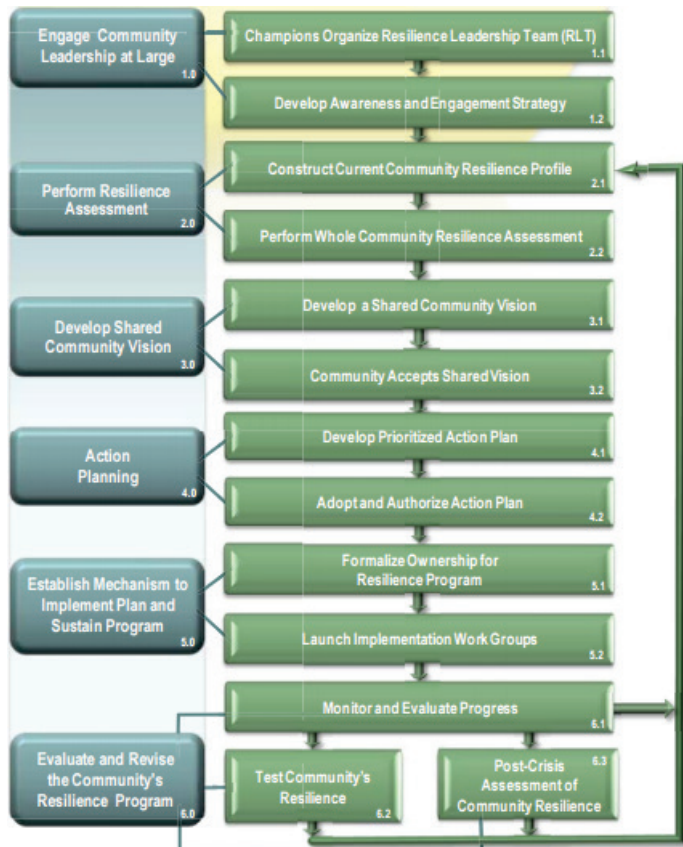
Case Study: Eight Pilot Communities

In summer 2011, FEMA tasked CARRI to launch a Community Resilience System pilot program with these objectives:

- Test the System as a means of implementing the "Whole Community" philosophy and improving community resilience in at least five U.S. communities.
- Understand community acceptance of the "Whole Community" philosophy and insights into what is required to implement that philosophy in U.S. communities.
- Identify programs, processes, and tools that best support the community leaders in adopting the "Whole Community" approach and improving resilience.
- Understand how the System can be amplified into a nationwide effort to support FEMA's implementation of the "Whole Community" approach.

CARRI subsequently identified eight communities as Community Resilience System pilot communities: Annapolis/Anne Arundel County, Maryland; Anaheim, California; Charleston Tri-Counties Region, South Carolina; Gadsden, Alabama; Greenwich, Connecticut; Gulfport, Mississippi; Mt. Juliet, Tennessee, and St. Louis/St. Louis County, Missouri. These represented a mix of large and small communities, urban and rural communities, communities well versed in resilience thinking, and those just gaining an understanding of the power of resilience, spanning the entire United States. Key elements of the pilot program included:

- Community-driven, CARRI-monitored usage of the Community Resilience System process, tools, and resources.
- Community-specific calls or in-person meetings to discuss progress, address challenges, and gain feedback.
- Quarterly "Community Roundtable Webinars" to share lessons learned, discuss upcoming Community Resilience System activities, and provide feedback on Community Resilience System and FEMA "Whole Community" approaches.

Each of these communities approached the Community Resilience System in a different way and with a different focus during the approximately eight months of the pilot program.

The general conclusions drawn from the pilots were:

- The Community Resilience System process (supported by the software package) successfully helped communities identify weaknesses and take action to become more resilient.
- The process and tools bring order and knowledge to a very messy problem. CARRI's systems-based approach is both understandable and usable. In practice, the approach seemed to provide a natural way to look at a community.
- Leadership is a key—perhaps *the* key—element for the success of a community resilience initiative.
- The structured assessment tools:
  i) Provide significant resilience insights and suggest meaningful actions, even when used without the remaining Community Resilience System resources.
  ii) Reveal significant dependencies and interdependencies that are crucial to rapid and effective recovery of community functions and rhythms.
  iii) Help build productive community networks and relationships when carried out collaboratively and conscientiously. This points to the need to carry out the process in a somewhat facilitated mode.
- The process works more productively as a "partially facilitated" model where some supportive expertise helps communities apply aspects of resilience to, and embed them within, their community circumstances and processes.
- The absence of robust and tangible incentives to engage in a resilience-strengthening process inhibits the use of the Community Resilience System by communities that are already overwhelmed by day-to-day demands.

Based on these conclusions, CARRI changed the process to a more facilitated, "active listening" model. This proved to be much more efficient than the standalone approach used in the pilots. To assist the facilitators and organizers assessing each part of the community (parts of the community are called "service areas" in the Community Resilience System process), "system maps" were provided for each service area. At the direction of the U.S. Department of Homeland Security, a version of the Community Resilience System specific to institutions of higher education was also developed.

Case Studies of Facilitated Model

In 2014, a city in the western United States (anonymous by request) asked that CARRI help it use the Community Resilience System to become more resilient to a disruption of its largely tourism-based economy. A CARRI representative led a series of "active listening" meetings with a leadership team consisting of the local government's city manager and senior staff and the local Chamber of Commerce's leadership. The community identified and implemented several actions. By going through the process, the community also discovered that the economic disruption of greatest concern had the potential to impact its access to the community's water supply source. In a note back to CARRI, the city manager said:

"I can't even tell you how much I appreciate both your willingness to come out here so quickly and also the process you took us through. Just this evening I was talking to a couple of Council members and I listed off some of the specifics that we are moving forward on that were identified in our meetings with you—and that I don't think we would have identified on our own."

In September 2013, as part of the initial testing of the campus version of the Community Resilience System, CARRI worked with Navajo Technical University (NTU). The day after CARRI left, the campus was inundated by the same flooding that caused so much devastation in Colorado. Because of its inherent resilience, and suggestions made by CARRI, the campus was able to quickly recover and eventually return to normal operations. The NTU Dean who worked closely with CARRI reported:

"NTU experienced massive flooding causing extensive damages, which had a profound emotional impact on the campus and surrounding communities. [CARRI's] advice and support in the recovery aspects of the crisis and emergency management proved invaluable. Our recovery involvement with FEMA required much additional learning and [CARRI's] recovery directions and guidance proved both helpful and beneficial to our campus."

Community Recovery Tool: Disaster Recovery Tracking Tool

Overview and Benefits

The Disaster Recovery Tracking Tool is an index of 79 metrics that assess pre- and post-disaster conditions. The tool allows community officials to evaluate their communities and develop a baseline assessment, then track conditions against that baseline after a disaster to assess whether they are improving disaster resilience and rebuilding more efficiently. Updating the tool with new data—either after a disaster or simply as a regular "check-up"—allows planners and responders to compare trends, evaluate damage, and prioritize recovery activities. The index is organized into the following 10 focus areas:

1. Business recovery and economic stabilization
2. Improved disaster & recovery management
3. Mobilization of recovery funding
4. Healthy communities & social services
5. Household recovery
6. Population characteristics
7. Public sector recovery
8. Public buildings & infrastructure
9. Restoration of cultural sites & resources
10. Restoration of natural resources

Words from the developer:

"Recovery from disasters is a key capability for federal, state, and local governments. To support this capability, practitioners at all levels need useful and validated metrics to measure how well a community is recovering from a disaster over time.
The recovery metrics in the Disaster Recovery Tracking Tool were developed and validated through literature review, case studies, recovery plan review, key informant interviews, focus groups, and pilot tests in communities impacted by Hurricane Sandy.

In addition to tracking recovery, the Tool can also be used to 'get people thinking' about community elements that need to be addressed to both prepare for future disasters as well as foster a successful recovery."

Jennifer Horney, UNC Gillings School of Global Public Health

Purpose

☒ Learning about your community. **This tool is intended to both help communities evaluate recovery outcomes and to provide a basis for informed resilience building and investment.**

☐ Comparing to other communities.
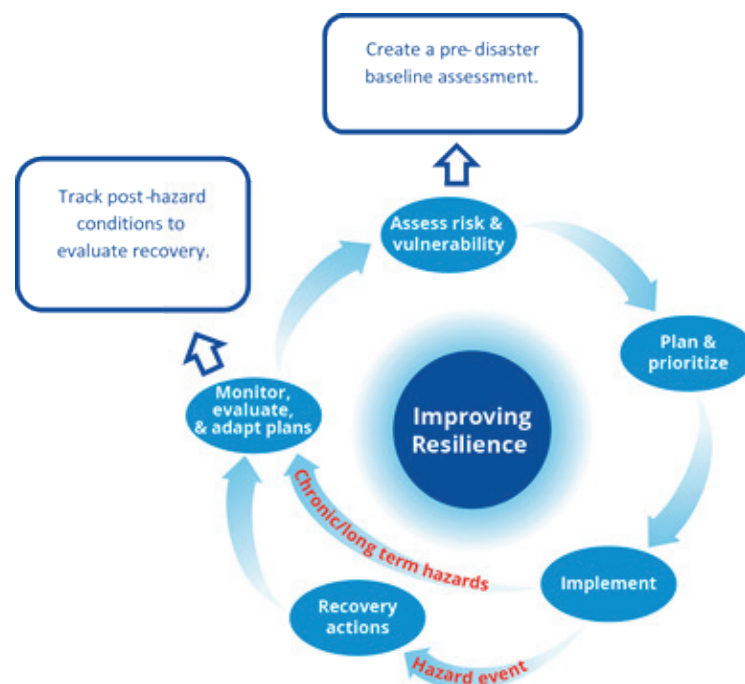
Resilience cycle

Community Recovery Tool: Disaster Recovery Tracking Tool

Overview and Benefits

Features

☒ Third-party evaluation available. **Dwyer, C., and J.A. Horney. (2014). Validating Indicators of Disaster Recovery with Qualitative Research.** *PLoS Currents Disasters*: **Edition 1. doi: 10.1371/currents.dis.ec60859ff436919e096d51ef7d50736f.**

☐ Provides guidance on attaining CRS points.

☐ Facilitation included.

☐ Recommendations for next steps.

☐ Recognition for participant communities.

☐ Examples available of other communities using tool.

☐ Related resources/tools available from the developer.

Outcomes from using resource

- Develops a detailed community fact-base critical to the creation of a high-quality recovery plan.
- Supports and builds the capacity of local practitioners by providing the basis for informed decision-making during recovery.
- Provides useful benchmarking and tracking information to a community as it moves through the continuum of recovery.

Indicator or rating type

☒ Qualitative. **A number of metrics are inherently qualitative, requiring the user to provide a narrative account for the baseline status and any additional data collection points required.**

☒ Quantitative. **Freely available data (i.e., U.S. Census demographics) are pre-populated for certain metrics based on county or zip code; other metrics demand more place-specific details.**

Link

http://communityrecoverytool.com/

Applicability to Your Community

Community size

☒ Local (city/town).

☒ County.

☐ Region.

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☐ All communities (including non-coastal).

☒ Coastal communities only. **Developed from previously created recovery plans and case studies on the Northeastern and Southeastern U.S. coasts, but intended for coastal communities anywhere.**

☐ Coastal communities in a specific area.

Application to coastal resilience

☐ Broadly addresses resilience, including resilience to coastal hazards.

☒ Specifically addresses coastal hazards only. **This index was initially developed for coastal resilience to major storms and disasters (e.g., sea-level rise, flooding, storm surge, precipitation, wind damage, infrastructure damage and destruction, basic service disruptions).**

Community Recovery Tool: Disaster Recovery Tracking Tool

Resources Needed

Cost of resource or tool?
☒ Free.
☐ Cost.

Type of resource?
☐ Paper.
☐ Online/downloadable.
☒ Interactive Web tool. **The recovery tool is accessible online through an interactive interface.**

Level of effort for organizer?
☒ General preparation needed? **This total process may take approximately 40 to 80 hours depending on data availability.**
    ☒ Form a team.
    ☐ Engage public.
    ☐ Engage municipal leaders.
☒ Specific preparation needed?
    ☐ Technology.
    ☒ Materials. **Register online and create a community profile; have other participants register and give them access to the community profile.**
    ☒ Plans. **Access to community data, some of which is publicly available and some of which may be harder to retrieve.**
☒ Other responsibilities?
- A single community official—working with municipal administrators to retrieve appropriate data—can complete and maintain the tool. The tool, however, allows multiple users to access the same community's tracking portfolio, enabling work to be delegated to multiple community representatives.
- The tool is intended to be updated with new data at regular intervals, particularly following disaster events.

Facilitation sessions?
☒ Not required.
☐ Single session.
☐ Multiple sessions.

Team members needed?
☐ Technical support.
☒ Advisory support. **Community experts may be needed as resources for appropriate data.**
☐ Facilitation group members.
☐ Outside reviewers.

Assistance available?
☐ Contact information.
☒ Helpline. **Questions can be sent to CommunityRecovery@unc.edu.**
☒ Technical guidance. **There are detailed instructions available through the tool's user guide.**

Snapshots of the Disaster Recovery Tracking Tool

The Disaster Recovery Tracking tool allows users to browse hierarchically from theme to focus area to the specific metric.

Figure 1. Data Entry Interface

This summary chart shows how the tool tracks changes in metrics before and after events, or at regular intervals.

Figure 2. Quantitative Output
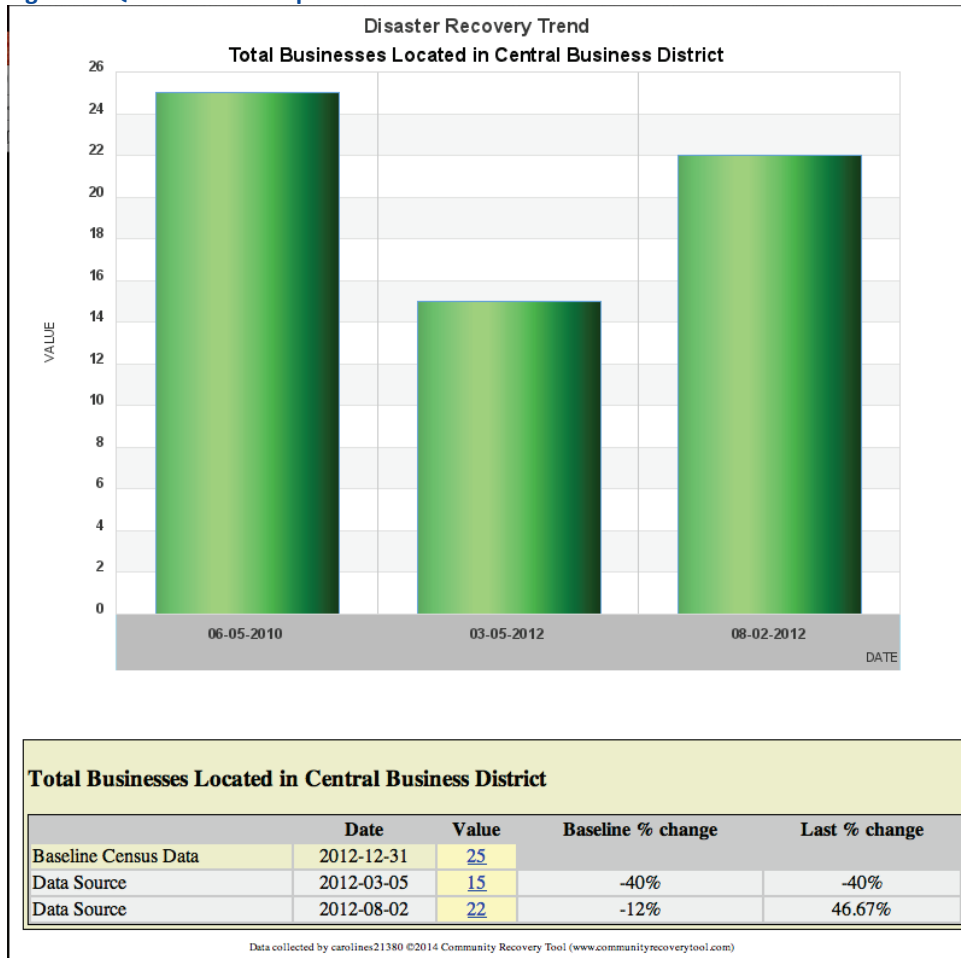
Getting to Resilience: A Coastal Community Planning Evaluation Tool

Getting to Resilience is a free yes/no questionnaire that municipal planners and staff can use to identify areas of risk and vulnerabilities and how best to address them. Based on users' answers, the resource provides links to other programs, including explicit guidance on attaining CRS points.

Words from the developer:

"The Getting to Resilience tool was developed prior to Hurricane Sandy, but has become an essential part of municipal resilience planning post-Sandy. A major benefit of using the tool is that it provides a platform for a diversity of municipal staff and elected officials to discuss their risks and vulnerabilities and subsequent integrated municipal planning and project implementation. Additionally, the tool outputs a series of municipal-specific Community Rating System suggestions and hazard mitigation planning actions. The tool is easy to use, FREE, and the municipalities that have participated in the Getting to Resilience process have seen real success in enhancing resilience in long and short-term municipal planning."

Lisa Auermuller, Jacques Cousteau National Estuarine Research Reserve

Overview and Benefits

Purpose

☒ Learning about your community. **This tool is for internal use and not meant to serve as a means for comparison to other communities.**

☐ Comparing to other communities.

Resilience cycle
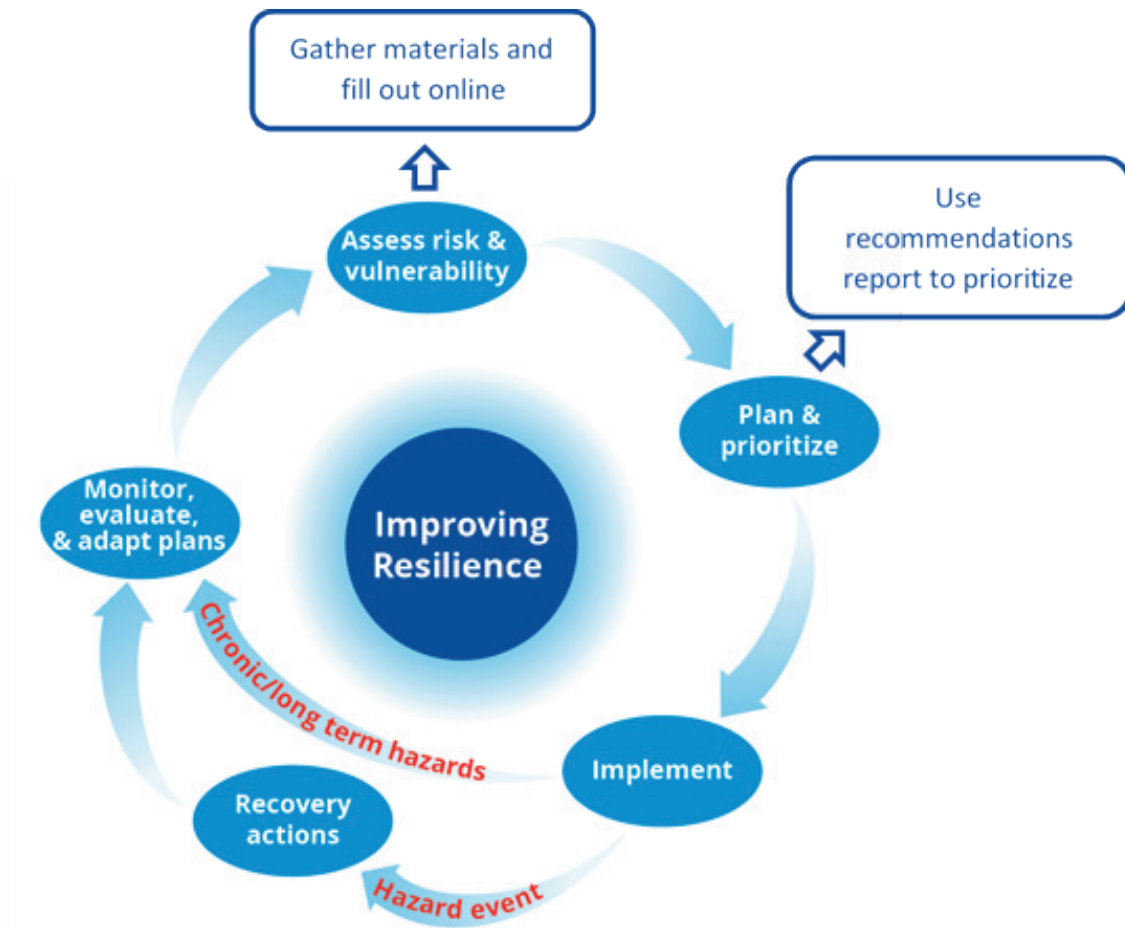
Snapshots of the Disaster Recovery Tracking Tool

Overview and Benefits

Features

☐ Third-party evaluation available.

☒ Provides guidance on attaining CRS points.

☒ Facilitation included. **Free facilitation for New Jersey communities.**

☒ Recommendations for next steps. **Recommendations report can be developed to help communities prioritize next steps.**

☐ Recognition for participant communities.

☒ Examples available of other communities using tool. **See case studies below and on the questionnaire's website (see URL under "Link" below).**

☒ Related resources/tools available from the developer. **Other Getting to Resilience resources, including mapping tools and flood profiler, are available on the questionnaire's website (see URL below).**

Outcomes from using resource

- Coordinate local plans, ordinances, and building codes with hazard assessments and response/recovery protocols.
- Initiate dialogue among local decision-makers.
- Identify links between local activities and CRS points.
- Strengthen local/county all-hazards mitigation and emergency operations plans.

Indicator or rating type

☒ Qualitative. **The tool includes a series of yes/no/other/not applicable checklists.**

☐ Quantitative

Link

www.PrepareYourCommunityNJ.org

Applicability to Your Community

Community size

☒ Local (city/town).

☐ County.

☐ Region.

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☐ All communities (including non-coastal).

☐ Coastal communities only.

☒ Coastal communities in a specific area. **Developed for New Jersey coastal communities, but can be used for inland communities too. Could easily be used for coastal communities outside of New Jersey by slightly revising a few of the New Jersey-specific questions and guidance.**

Application to coastal resilience

☐ Broadly addresses resilience, including resilience to coastal hazards.

☒ Specifically addresses coastal hazards only. **Impacts to vulnerable populations, businesses, infrastructure, and natural resources in coastal communities from coastal storms, flooding, erosion and/or shoreline change, and sea-level rise.**

Snapshots of the Disaster Recovery Tracking Tool

Resources Needed

Cost of resource or tool?
☒ Free.
☐ Cost.

Type of resource?
☐ Paper.
☒ Online/downloadable. **This checklist can be viewed online or printed out from the website and brought to a facilitated municipal discussion.**
☒ Interactive Web tool. **Online tool provides outputs related to the CRS and hazard mitigation.**

Level of effort for organizer?
☒ General preparation needed?
　☒ Form a team.
　☐ Engage public.
　☒ Engage municipal leaders.
☒ Specific preparation needed?
　☒ Technology. **Create a username and password to access online materials (for free).**
　☒ Materials. **Print the questionnaire from the website or set up a room with appropriate audio-visual equipment to make the online survey visible to the entire group.**
　☒ Plans. **Ensure access to all community plans listed in Figure 1 (below) for your focus group.**
☒ Other responsibilities?
- Organizer should have general knowledge of the local community's character and governmental structure; however, organizer should not be one of the questionnaire's target users in order to avoid biased responses.
- Share Getting to Resilience questionnaire with participants before the meeting to expedite completion.
- Begin and moderate the focus group meeting(s).
- Provide participants with a brief summary of their responses after each section and identify positive local actions and opportunities to improve resilience.

Facilitation sessions?
☐ Not required.
☐ Single session.
☒ Multiple sessions. **Involves one or two facilitated meetings for a total of approximately three to five hours. The questionnaire is designed to be completed as a facilitated exercise among a diverse group of local decision-makers over the course of one to two focus groups. The questionnaire is broken down into five sections, and each section may be completed in as little as 15 minutes or as long as two hours, depending on the generated group dialogue.**

Snapshots of the Disaster Recovery Tracking Tool

Resources Needed

Team members needed?
- ☐ Technical support.
- ☐ Advisory support.
- ☒ Facilitation group members. **Land use planners, hazard mitigation planners, floodplain managers, emergency managers, stormwater managers, natural resource planners, municipal engineers, town administrators/clerks, zoning and permitting officials, public works officials, municipal finance officers, community organizations (optional), and local conversation groups (optional).**
- ☐ Outside reviewers.

Assistance available?
- ☒ Contact information. **Lisa Auermuller, Watershed Coordinator, Jacques Cousteau National Estuarine Research Reserve, auermull@marine.rutgers.edu; 609-812-0649 ext. 204.**
- ☐ Helpline.
- ☒ Technical guidance. **Tutorials and FAQs available at the questionnaire's website (see "Link" URL above).**

Snapshots of the Getting to Resilience Planning Evaluation Tool

The "Community Plan Checklist" includes a list of municipal and county documents that may aid questionnaire completion. Because communities vary in size and capacity, the target community may not have all the listed documents.

Figure 1. Community Plan Checklist

Plans, Ordinances, and Codes	Yes	No	Adoption Year	Update Frequency
Municipal Master Plan				
All-Hazards Mitigation Plan				
Floodplain Management Plan				
Evacuation Plan				
Emergency Response Plan				
Continuity of Operations Plan				
Disaster Recovery Plan				
Post-Disaster Redevelopment Plan				
Capital Improvements Plan				
Economic Development Plan/Strategy				
Coastal Plan or Element				
Shoreline Restoration Plan				
Open Space Plan				
Stormwater Management Plan				
Historic Preservation Plan				
Zoning Ordinance				
Flood Damage Prevention Ordinance				
Subdivision Ordinance				
Building Code				
Other:				
Other:				

Key municipal officials and staff should include:
- Land Use Planners
- Hazard Mitigation Planners
- Floodplain Managers
- Emergency Managers
- Stormwater Managers
- Natural Resource Planners
- Municipal Engineers
- Municipal Leaders
- Zoning and Permitting Officials
- Public Works Officials.

Snapshots of the Getting to Resilience Planning Evaluation Tool

The Getting to Resilience evaluation helps communities link their answers to existing programs such as the CRS.

**Figure 2. Integrated Links with Other Programs**

Case Study: City of Somers Point, New Jersey

In the wake of Hurricane Sandy, the Somers Point community won several grants to begin recovery efforts, including developing a strategy to build resilience. As part of this post-Sandy recovery, Somers Point went through the Getting to Resilience questionnaire. Jacques Cousteau National Estuarine Research Reserve [JC NERR] staff also helped the community look at sea-level rise and storm surge maps, and the JC NERR provided contacts for additional maps at the city's request.

The City of Somers Point began the Getting to Resilience process on May 13th, 2014, when JC NERR met with five Somers Point representatives. The meeting began with a discussion of the city's resilience strengths and weaknesses. This conversation led into a presentation and discussion of sea-level rise and storm surge maps overlaid with the community's critical facilities (Figure 3). The meeting ended after three sections of the questionnaire were completed. After the initial meeting, the municipality completed the remaining sections of the questionnaire on its own.

Figure 3. Somers Point Sea-Level Rise Map and Critical Facilities
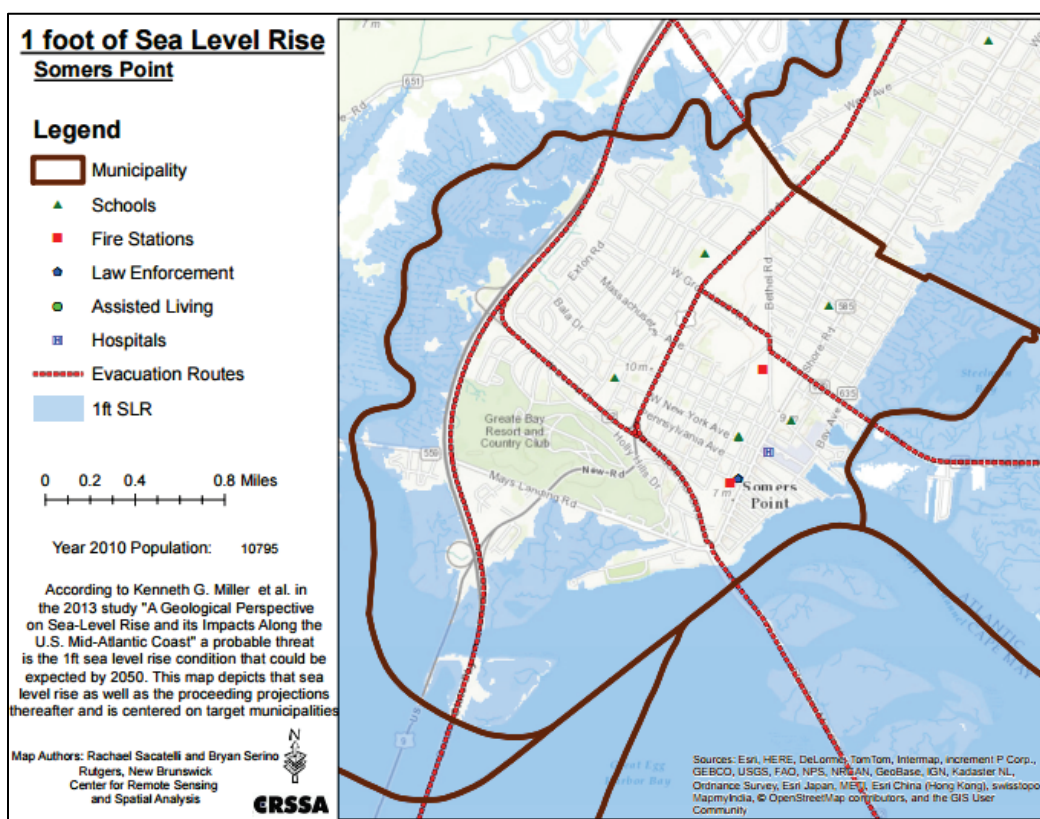
After the City of Somers Point completed the Getting to Resilience questionnaire, JC NERR staff analyzed the answers; linkages to the CRS provided by the Getting to Resilience website; notes taken during the discussion of questions; various municipal plans and ordinances; and mapping of risks, hazards, and vulnerabilities provided by Rutgers University and the NJ Flood Mapper website. After reviewing all of this information, JC NERR provided the city with a recommendations report, which included (where relevant) connections to the CRS program (Figure 4). Some of the short-term resiliency planning recommendations included:

- Ensure that all outreach programs are quantified and catalogued according to CRS standards.
- Investigate the potential for creating a multi-jurisdictional Program for Public Information that can work with the Coastal Coalition to organize public meetings and disseminate information.
- Somers Point should identify sea-level rise as a hazard in city plans and consider disclosing hazard risks to potential buyers and real estate agents.

Additional case studies are available at http://www.prepareyourcommunitynj.org/case-studies/.

Resilience Alliance: Resilience Assessment Framework

The Resilience Assessment Framework—following a different approach than the other resources included in this guide—is a five-step method that helps users build a conceptual model of a social-ecological system. This conceptual model represents the interactions among a particular community's resources and stakeholders. The model is constructed through a series of questions and activities that build upon each other and ultimately interconnect to form the assessment framework. The activities are separated into five main stages:

1. Describing the system.
2. System dynamics.
3. Interactions.
4. System governance.
5. Acting on the assessment.

Words from the developer:

"The Resilience Assessment workbook for practitioners was designed to assist in resolving specific resource issues and developing and implementing management goals without compromising the resilience and integrity of the system as a whole. A resilience assessment takes into account social and ecological influences at multiple scales, accepts change as a feature of dynamic systems, and acknowledges a level of uncertainty to better understand the capacity of a system to adapt. The process is iterative and can be used to inform monitoring programs and to develop management plans."

Allyson Quinlan, Resilience Alliance

Overview and Benefits

Purpose
☒ Learning about your community. **The assessment allows users to see which parts of their communities are most resilient—or vulnerable—to potential changes or hazards; it is not intended for external comparisons. Many communities have used it to inform the development of planning documents and/or to deepen understanding of an issue or set of issues through the lens of complex adaptive systems.**
☐ Comparing to other communities.

Resilience cycle
The Resilience Assessment does not follow the steps of the resilience cycle. There are key concepts to the Resilience Assessment's approach (such as cross-scale dynamics and integrated social-ecological systems) that distinguish it from traditional community assessments.

Features
☐ Third-party evaluation available.
☐ Provides guidance on attaining CRS points.
☐ Facilitation included.
☐ Recommendations for next steps.
☐ Recognition for participant communities.
☒ Examples available of other communities using tool. **See case studies below.**
☒ Related resources/tools available from the developer. **Other Resilience Alliance documents, examples, and guidance available** on **the Resilience Alliance website.**

Outcomes from using resource
- Very flexible tool with a wide variety of potential outcomes depending on application.
- Allows you to better understand how your community and the surrounding ecosystem respond to change.
- Framework complexity provides an opportunity to bring together municipal planners, local academic institutions, and research facilities.

Indicator or rating type
☒ Qualitative. **The tool comprises a series of open-answer worksheets followed by discussion sessions.**
☐ Quantitative.

Resilience Alliance: Resilience Assessment Framework

Link

http://www.resalliance.org/index.php/resilience_assessment

Applicability to Your Community

Community size

☒ Local (city/town).

☒ County.

☒ Region. **The user can select roughly any boundary that incorporates the ecological systems and communities that should be included in the assessment.**

Level of development

☒ Rural.

☒ Urban.

Geographic relevance

☒ All communities (including non-coastal). **Intended for communities anywhere.**

☐ Coastal communities only.

☐ Coastal communities in a specific area.

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **This resilience assessment represents the interconnected systems of a community and can be constructed to respond—and assess the community's resilience—to any number of coastal hazards (e.g., sea-level rise and other impacts of climate change, flooding from a variety of causes, storm surge, precipitation, wind damage, infrastructure damage and destruction, basic service disruptions, tsunamis).**

☐ Specifically addresses coastal hazards only.

Resources Needed

Cost of resource or tool?

☒ Free.

☐ Cost.

Type of resource?

☐ Paper.

☒ Online/downloadable. **The framework is accessible online, but does not lend itself to use in hard copy.**

☐ Interactive Web tool. **The framework is accessible through an interactive workbook.**

Resilience Alliance: Resilience Assessment Framework

Resources Needed

Level of effort for organizer?

☒General preparation needed?
- ☒Form a team.
- ☐Engage public.
- ☐Engage municipal leaders.

☒Specific preparation needed?
- ☐Technology.
- ☒Materials. **Audio-visual equipment to ensure the online workbook is visible to the entire group.**
- ☒Plans. **The tool requires at least one team member to have a working knowledge of existing community plans, risk and vulnerability assessments, public engagement protocols, emergency response and recovery systems, and hazard mitigation processes.**

☒Other responsibilities?
- Register online to access the Resilience Assessment workbook for practitioners (available read-only without registration), workbook for scientists, and inventory workbook.
- Compile community data and information, some of which is publicly available and some of which may be harder to retrieve.

Facilitation sessions?

☐Not required.

☐Single session.

☒Multiple sessions. **The tool is a complex process spanning several sessions of meetings and discussion. The approach can be scaled to different objectives and time requirements, but each stage will most likely take a minimum of four hours. Ideally, each stage would be held as a separate working session. Since the stages are highly interconnected, the same participants should be present at all five focus groups. The assessment has been used in two-to-five-day workshops, with analysis taking two to four weeks. More comprehensive assessments can take months to complete.**

Team members needed?

☒Technical support. **Some concepts in the framework are difficult to understand. Having an expert on social-ecological systems to help introduce topics and facilitate discussions may be helpful.**

☐Advisory support.

☒Facilitation group members. **A single person could complete many of the activities, but each comes with essential discussion and iteration sessions, which must be completed by a small, dedicated team. Participants should be extremely familiar with the community, including its resources, stakeholders, infrastructure, known issues, hazards, and existing hazard mitigation plans.**

☐Outside reviewers.

Assistance available?

☒Contact information. **Questions and inquiries are directed to editor@resalliance.org.**

☐Helpline.

☒Technical guidance. **Reports, guidance, and useful links are available at the framework's website (see URL in the "Features" section above).**

Snapshots of the Resilience Assessment Framework

An activity, which includes a worksheet, discussion, and reflection/integration sections. Each of the five stages contains two to four activities with a similar process of information cataloguing, discussion, and reflection.

Figure 1. Worksheet 1.3 Summary of Focal System Disturbances and Their Attributes

Worksheet 1.3 Summary of focal system disturbances and their attributes.

Disturbance (past or present)	Pulse or Press	Frequency of occurrence	Time for recovery between occurrences	Components most affected (e.g., soil, markets)	Magnitude of impact (minor to severe)	Any change in past years or decades? (none, less frequent, more intense, etc.)
Future disturbances						

Discuss

Have any of the disturbances that you have identified in the past fundamentally altered the nature of your system or caused it to change in a fundamental way?

Which disturbances pose the greatest threat to the valued attributes of your focal system?
If you indicated any changes in disturbances over time (e.g., changes in magnitude or frequency), do you know what might be driving these changes?

Did you identify any "press" disturbances in your system? If not, give some thought as to whether or not "press" disturbances might have been overlooked in your system model (e.g., press disturbances might be tied to economic incentives or a change in values).

Reflect & connect

Have your discussions about disturbances in your focal system altered in any way the main issues of concern that you identified in Section 1.1? If necessary, revisit the issues as you originally described them and revise them as needed.

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Case Study: South Sulawesi, Indonesia

The principles of the Resilience Assessment Framework were put into use in South Sulawesi, Indonesia, as part of a larger project to improve security for target households and communities and to effectively manage and restore coastal ecosystems. In the face of coastal erosion and climate change, the assessment helped to protect and restore mangrove forests, as well as the livelihoods of local households. The project team engaged the government and local stakeholders to craft policy initiatives that empowered local communities to develop sustainable industries, improving both household incomes and protected natural resources.

The full report for this case study can be found **here**.

Rural Disaster Resilience Planning

The Rural Disaster Resilience Planning (RDRP) approach is a four-step process comprising 16 activities and three tools: the Rural Resilience Index (RRI), Hazard Resilience Index (HRI), and Hazard Risk Analysis (HRA). After evaluating a community's risk factors, strengths, and resilience improvement targets, the process begins to build a resilience plan—a roadmap—for how to achieve the goals laid out in the assessment. Finally, the RDRP approach provides resources for implementing that plan and tracking progress.

The four steps laid out in the approach include:

1. Getting started (four activities).
2. Resilience assessment (five activities).
3. Building a resilience plan (four activities).
4. Plan implementation (three activities).

Words from the developer:

"Rural, remote, and coastal (RRC) communities face triple jeopardy: fewer professional and financial resources; less emergency measures infrastructure; and unique challenges created by geography, isolation, and demographics. The RDRP's community-based participatory approach was designed to engage, elicit, and integrate citizens' expertise and insights in the development of resilience planning tools and processes. The initial phase developed prototype versions of an online Planning Guide, and a set of accessible, Web-assisted, user-friendly tools with which to build capacity in rural and remote communities. The RDRP project provides RRC communities with an accessible and user-friendly set of tools and processes to support disaster risk and resilience planning. This ongoing project demonstrates the value of community-based, emergent research in developing effective and efficient processes that meet the unique needs of RRC communities."

Dr. Greg Anderson, Justice Institute of British Columbia

Purpose

☒ Learning about your community. **These tools allow communities to evaluate resilience factors, better understand available resources, identify threat assessments for specific events, and more.**

☐ Comparing to other communities.

Resilience cycle

Overview and Benefits
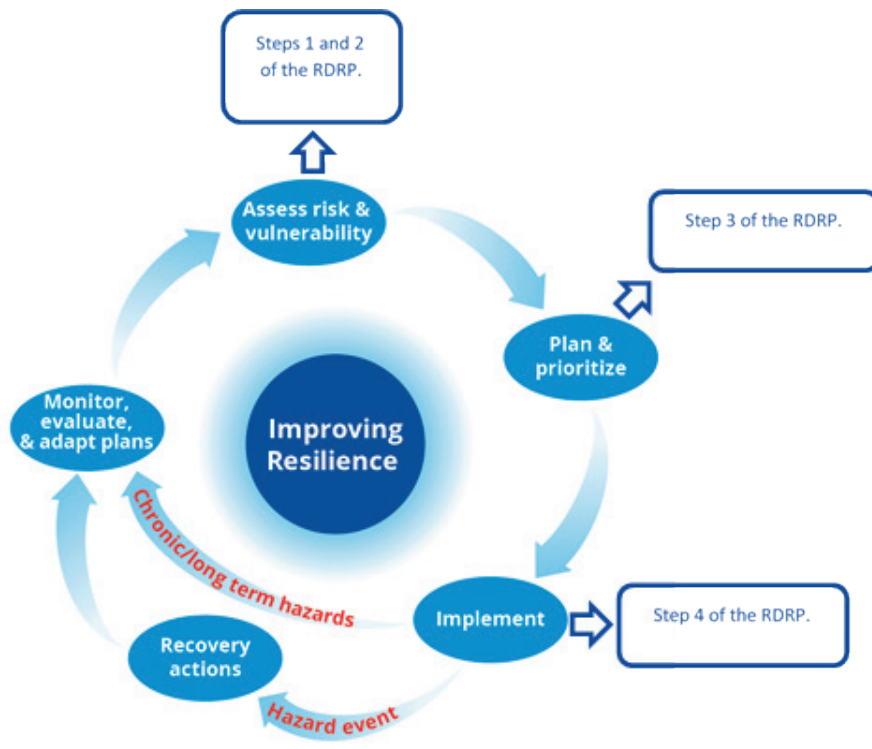
Rural Disaster Resilience Planning

Overview and Benefits

Features

☒ Third-party evaluation available.

☐ Provides guidance on attaining CRS points.

☐ Facilitation included.

☒ Recommendations for next steps. **Step 4 of the approach consists of developing an action plan.**

☐ Recognition for participant communities.

☒ Examples available of other communities using tool. **See case studies below.**

☒ Related resources/tools available from the developer. **A compilation of resources central to the RDRP approach is available** here.

Outcomes from using resource

- Establish a community planning team and develop strategies for promoting community support for resilience-building activities.
- Create a disaster resilience profile—a picture of the community as it currently stands in terms of resilience.
- Develop a disaster resilience plan.
- Implement the disaster resilience plan, establish protocols for evaluating progress, and continue planning for future events.

Indicator or rating type

☒ Qualitative. **The tool comprises a series of activities, most of which are qualitative assessments; however, some activities focus on finding and recording data.**

☐ Quantitative.

Link

http://wp-rdrp-dev.jibc.ca/

Applicability to Your Community

Community size

☒ Local (city/town).

☒ County.

☐ Region.

Level of development

☒ Rural.

☐ Urban.

Geographic relevance

☒ All communities (including non-coastal). **Developed in Canada but suitable for U.S. communities with minimal modification.**

☐ Coastal communities only.

☐ Coastal communities in a specific area.

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **This resilience index approach was developed for a diverse range of hazards, including many coastal-specific issues (e.g., sea-level rise and other impacts of climate change, flooding from a variety of causes, storm surge, precipitation, wind damage, infrastructure damage and destruction, basic service disruptions, tsunamis), as well as some hazards applicable—though not specific—to coastal communities (e.g., dam failure, accidents, terrorist attacks, geological and hydrological events).**

☒ Specifically addresses coastal hazards only.

Rural Disaster Resilience Planning

Resources Needed

Cost of resource or tool?
- ☒ Free.
- ☐ Cost.

Type of resource?
- ☐ Paper.
- ☐ Online/downloadable.
- ☒ Interactive Web tool. **The three RDRP tools can be completed online through an interactive interface.**

Level of effort for organizer?
- ☒ General preparation needed?
  - ☒ Form a team.
  - ☒ Engage public. **Several activities may include holding public meetings and enlisting local sponsors.**
  - ☒ Engage municipal leaders. **It may be helpful to have a public official stand behind the effort who will "champion" during the project's research and outreach phases.**
- ☒ Specific preparation needed?
  - ☐ Technology.
  - ☒ Materials. **Set up a room with appropriate audio-visual equipment to make the online tools visible to the entire group.**
  - ☒ Plans. **Gather existing community plans, risk and vulnerability assessments, public engagement protocols, emergency response and recovery systems, and hazard mitigation and implementation processes.**
- ☒ Other responsibilities?
  - Create an account online.
  - Gain access to community data, some of which is publicly available and some of which may be harder to retrieve.

Facilitation sessions?
- ☒ Not required.
- ☐ Single session.
- ☐ Multiple sessions. **The level of effort can vary greatly depending on the number of hazards assessed, but each of the indices takes a few hours per hazard.**
  - The RRI takes approximately 10 hours to complete (and is part of the entire RDRP approach).
  - The HRI takes approximately six to 60 hours to complete (and is part of the entire RDRP approach).
  - The HRA takes approximately six to 60 hours to complete (and is part of the entire RDRP approach).

Rural Disaster Resilience Planning

Resources Needed

Team members needed?

☐ Technical support.

☐ Advisory support.

☒ Facilitation group members. **The tool recommends developing a community planning team, comprising three to four individuals, including long-time residents of the community, first responders, small-business owners, and a relative newcomer to the community. Team members should have reasonable interviewing, research, and writing skills.**

☐ Outside reviewers.

Assistance available?

☐ Contact information.

☐ Helpline.

☒ Technical guidance. **There are detailed step-by-step instructions and a library of resources online (see the URL above).**

Snapshots of the Rural Disaster Resilience Planning Approach

Figure 1 shows the first part of the "Community Resources" section of the questionnaire developed to give team members a baseline Community Profile.

Figure 1. Community Profile Questionnaire

Section 1: Community Resources

Our community is close knit and involved

Dimension Rating	High Resilience	☐	Low Resilience	☐	Need More Info	☐	Not Applicable	☐

Yes	No	Need More Info	Not Applicable	CHARACTERISTICS	This is important to my community
☐	☐	☐	☐	There is generally a strong sense of belonging	☐
☐	☐	☐	☐	Residents generally trust and value each other	☐
☐	☐	☐	☐	Residents are proud of their community	☐
☐	☐	☐	☐	Residents work together to accomplish shared goals	☐
☐	☐	☐	☐	Many residents turn out at community events (parades, fairs, meetings)	☐
☐	☐	☐	☐	Inter-generational ties within and between families are strong	☐
☐	☐	☐	☐	The community offers a wide-range of recreational and cultural activities	☐
☐	☐	☐	☐	Many residents participate in community groups, clubs, churches, and other shared activities	☐
☐	☐	☐	☐	Many residents get involved in addressing community problems and issues	☐
☐	☐	☐	☐	There is a variety of indoor & outdoor spaces for cultural, social and recreational activities	☐
☐	☐	☐	☐	Faith-based, cultural and ethnic groups have spaces to gather	☐

Case Study: The Four-Step RDRP Approach

Case Study for Step 1

Drawing from the resources "Working Together" and "Community Mapping" [part of the RDRP toolkit], Waskada, [Manitoba], was able to organize a diverse community-based team (representing local industry, emergency management, fire, and municipal affairs) and undertake community mapping in creative ways. For example, Rural Disaster Resilience resources provided the community-based team with innovative ideas for gathering information about their community, including asset and hazard mapping conducted by car: "The Waskada Team liked the idea of physically going through the entire area and learning or refreshing their understanding of the area in which they live, work and play." The team also took advantage of pictures taken during the drive. The photos were then matched to local maps for the purpose of documenting local hazards, assets, zones and community infrastructure.
*Case study is from the "Step 1: Getting Started" page of the RDRP **website**.*

Case Study for Step 2

West Branch, [Nova Scotia], augmented resources with the "Contingency Plan Template for On-Farm Planning" produced by the Environmental Farm Program (2007). While mapping local assets and resources the community-based team decided to interview staff from the Canadian Red Cross. For the interviews the team "used basic categories and some of the questions" from a variety of project tools. The Hazard Resilience Index was creatively used in a number of ways to meet local needs: "to prepare specific questions in some interviews," "to better understand the meaning of resilience to hazards," and "to assess hazard resilience based on the information gathered."
*Case study is from the "Step 2: Resilience Assessment" page of the RDRP **website**.*

Case Study for Step 3

In Lion's Head, [Ontario], the Rural Disaster Resilience resources fostered a pro-active response to storm surges and associated winter road conditions, later outlined in the community's Rural Disaster Resilience Enhancement Plan. Drawing from the outcome of the assessment process, Lion's Head identified both short and long term goals for realizing a collective vision of community disaster resilience. This vision included: raising awareness of hazards and disaster risks, promoting an understanding of local hazards and vulnerabilities, and improving the community's ability to address vulnerabilities.
*Case study is from the "Step 3: Building a Resilience Plan" page of the RDRP **website**.*

Case Study for Step 4

After completing an analysis of local capabilities and vulnerabilities, West Branch, [Nova Scotia], began to clarify specific actions to develop community disaster resilience. The majority of this work focused on enhancing the ability of the West Branch Community Hall to serve as a Comfort Centre during crisis, while securing additional personnel and resources for the River John Fire Department. Lobbying efforts regarding environmental concerns and educational initiatives tackling local hazards, First Response and disaster resiliency were also highlighted as critical elements of effective disaster resilience enhancement.
*Case study is from the "Step 4: Plan Implementation" page of the RDRP **website**.*

STAR Community Rating System

The STAR Community Rating System is an indicator-based framework and self-assessment tool that provides a clear, data-driven approach to assessing community sustainability efforts (including resilience efforts). It integrates economic, environmental, and social aspects of sustainability and includes quantitative and qualitative evaluation measures. Local governments use this framework to credibly track their progress toward overall sustainability objectives and compare progress with each other.

Words from the developer:

"The STAR Community Rating System is the first national framework and certification program built by and for local governments and the communities they serve. This comprehensive rating system was developed between 2008 and 2012 using an open, consensus-based process involving hundreds of local government leaders and key subject experts.

As of the summer of 2015, approximately 40 communities will have achieved their STAR certification. Communities range in size from mega-cities, like Houston, Texas, to smaller towns like Park Forest, Illinois, and Northampton, Massachusetts.

Although the application involves a self-assessment, communities who certify receive a rigorous two-phase verification that ensures that the intent of each measure is met and offers valuable and objective feedback to local policymakers."

Kristi Wamstad-Evans, STAR Community Rating System

Overview and Benefits

Purpose

☒ Learning about your community. **Going through the rating system will help you assess where you are and where you can improve.**

☒ Comparing to other communities. **This rating system allows communities who certify to compare to other cities nationwide. Through the evaluation process, communities will also learn more about their resilience.**

Resilience cycle

STAR Community Rating System

Overview and Benefits

Features

☐ Third-party evaluation available.

☐ Provides guidance on attaining CRS points.

☐ Facilitation included.

☐ Recommendations for next steps.

☒ Recognition for participant communities. **Communities can apply for STAR certification and recognition.**

☒ Examples available of other communities using tool. **See case studies below and in the "Newsroom" section of the STAR website.**

☐ Related resources/tools available from the developer.

Outcomes from using resource

- Recognition as a STAR-certified community.
- Assessment of areas of relative strength and weakness across all areas of sustainability.
- Comparison with other communities using the tool.

Indicator or rating type

☒ Qualitative. **Some action items or progress indicators (e.g., strategies to improve resource efficiency).**

☒ Quantitative. **Some outcome indicators (e.g., demonstrating incremental progress towards an 80 percent reduction in energy use by public infrastructure).**

Link

www.starcommunities.org

Applicability to your Community

Community size

☒ Local (city/town).

☒ County.

☐ Region.

Level of development

☒ Rural. **Some indicators are better suited to suburban or rural areas (e.g., public spaces, green infrastructure, and working lands).**

☒ Urban. **Some indicators are more accessible to communities with denser population centers (e.g., infill and redevelopment and public transportation).**

Geographic relevance

☒ All communities (including non-coastal).

☐ Coastal communities only.

☐ Coastal communities in a specific area.

Application to coastal resilience

☒ Broadly addresses resilience, including resilience to coastal hazards. **Includes some objectives related to coastal resilience: community water systems, transportation choices, climate adaptation, greening the energy supply, emergency prevention and response, natural and human hazards, and water in the environment.**

☐ Specifically addresses coastal hazards only.

STAR Community Rating System

Resources Needed

Cost of resource or tool?

☒ Free. **The STAR Community Rating System is available to download for free at http://www.STARcommunities.org.**

☒ Cost. **Annual membership subscriptions start at $500 per year and include various levels of technical assistance and reporting tool access. For certification, applicants must be a reporting community and pay a verification fee ($1,500). The STAR Technical Guide includes specific methodologies, data sources, community best practices, additional resources, and the point system appendix. It is included with all levels of STAR membership or is available alone for $200.**

Type of resource?

☒ Paper.

☒ Online/Downloadable. **This checklist can be viewed online or printed out from the website and brought to a facilitated municipal discussion.**

☒ Interactive Web tool. **The STAR Community Reporting Tool is a Web-based application for submitting information and documenting progress. Member communities not pursuing certification may use the STAR Reporting Tool as a checklist for identifying areas of strength and calculating a preliminary score, but cannot enter data for certification.**

Level of effort for organizer?

☒ General preparation needed? **Overall timeline may be about six to eight months.**

☐ Form a team.

☒ Engage public. **Encouraged to engage community nonprofits, foundations, health departments, and universities or colleges to collect data that may not be housed within the local government.**

☒ Engage municipal leaders. **Support from senior leadership, including mayors, city/county managers, and department directors, is critical for a successful application.**

☒ Specific preparation needed?

☒ Technology. **Sign up online and create profile to request the rating system, technical guidance, or other support.**

☐ Materials.

☒ Plans. **Plans commonly referenced in STAR include a current comprehensive plan, the municipal code, and a greenhouse gas inventory, as well as topic-specific plans, such as a Climate Action Plan, Emergency Operations Plan, Multi-Hazard Jurisdictional Plan, and Climate Vulnerability Assessments.**

☒ Other responsibilities?

- Organizer is typically a community planner, sustainability coordinator, or similar position.
- May need to spend several hours a week for about six to eight months.
- Coordinate data gathering and review.
- Fill out online verification tool.

Facilitation sessions?

☒ Not required. **For $2,500, optional custom, in-person workshops can be designed for a community on a variety of topics.**

☐ Single session.

☐ Multiple sessions.

STAR Community Rating System

Resources Needed

Team members needed?

☒ Technical support. **Geographic-information-system expertise may be needed for certain outcomes.**

☒ Advisory support. **Support from contacts working in stormwater, emergency response, health, finance, planning, education, and conservation may be needed to collect data for certain objectives.**

☐ Facilitation group members.

☒ Outside reviewers. **Reviewers will vary by objective and may include town or city contacts working in stormwater, emergency response, health, finance, planning, education, and conservation.**

Assistance available?

☐ Contact information.

☒ Helpline. **STAR Communities, 777 North Capitol Street, NE, Suite 500, Washington, DC 20002, info@starcommunities.org; 855-890-7827.**

☒ Technical guidance. **Up to one hour per month of phone or email technical support from an assigned STAR staff member is available through the STAR Member Community + Reporting Tools annual subscription ($1,500 per year). Enhanced technical support and in-person training is available through the Leadership STAR Community Program. This program has a one-time fee of $7,500 and includes in-person training, extensive technical support, verification, and certification.**

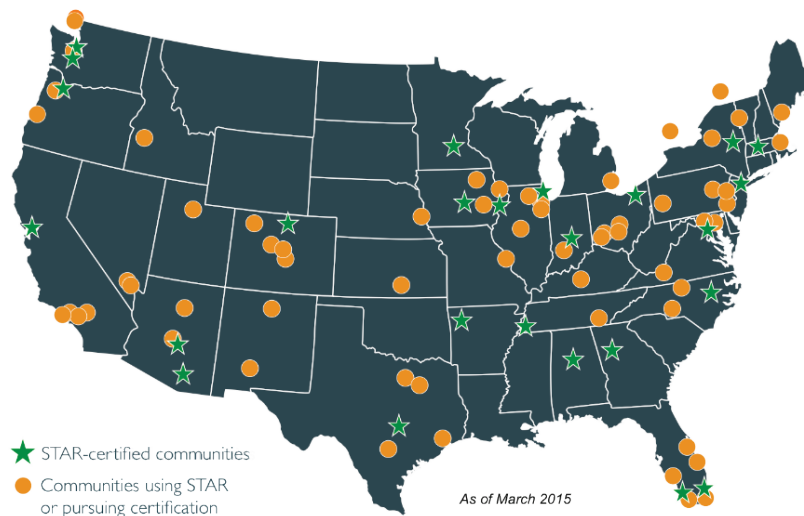# Snapshots of the STAR Community Rating System

Goal areas (large dots) and objectives (small dots). A community could choose to assess any or all of these areas.

Figure 1. STAR Goals and Objectives

STAR Goals & Objectives

Created with NodeXL by Maureen Smith
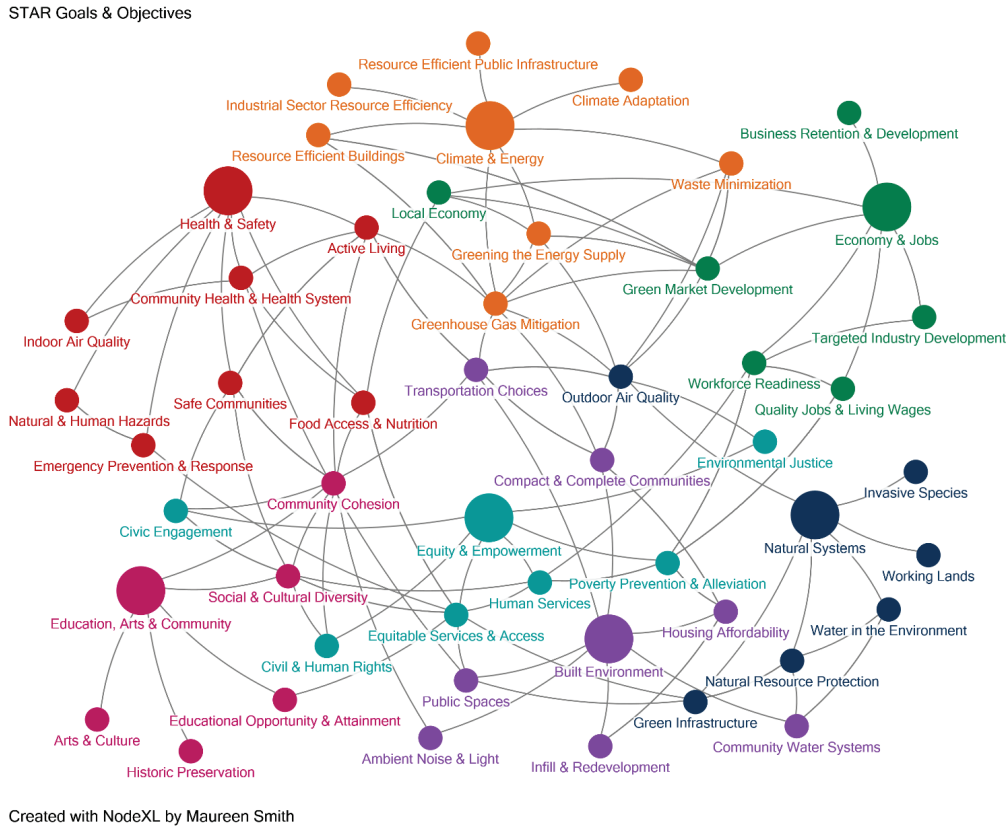
Map of communities who have taken part in the STAR Community Rating System (interactive version available at https://reporting.starcommunities.org/).

Figure 2. Participating STAR Communities

As of March 2015

★ STAR-certified communities
● Communities using STAR or pursuing certification

Case Study: Tacoma, Washington

The City of Tacoma's Office of Environmental Policy and Sustainability spearheaded the effort to make Tacoma the first U.S. city certified under the STAR program. Tacoma received a 4-STAR rating in fall 2013. The city performed particularly well under "Built Environment"; "Education, Arts, and Community"; and "Natural Systems," leaving more room for improvement in the "Climate and Energy," "Economy and Jobs," "Equity and Empowerment," and "Health and Safety" categories (see Figure 3).
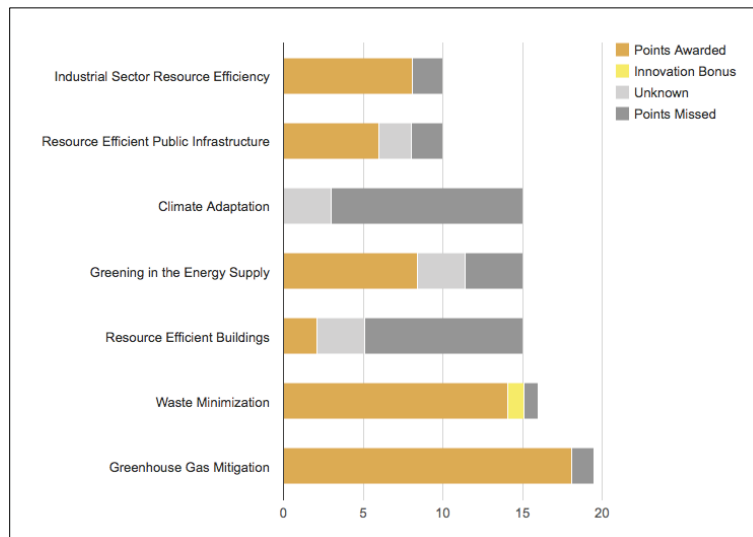
Tacoma used STAR to create a community baseline

Figure 3. Tacoma's STAR Results
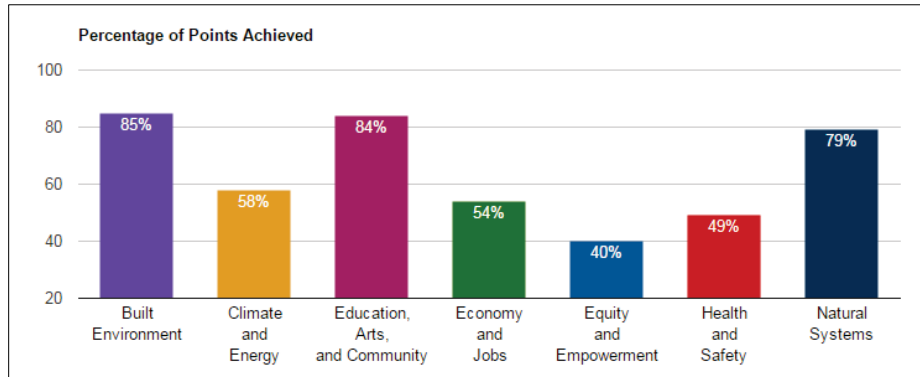
High-level results for each of the seven main goal areas.

Figure 4. Tacoma's STAR Results for the "Climate and Energy" Category

A detailed view of how the "Climate and Energy" score was attained.

Tacoma used the results of their baseline study to establish an action plan

Recognizing the particularly low rating for the "Climate Adaptation" objective, the City of Tacoma made improvement in this area a high priority. The city set plans and goals in motion to "assess and plan to understand climate change vulnerabilities leading to adopting climate building/zoning codes to address future threats, campaigns/incentives to encourage resident/business behavior shift or improving facilities to deal with future impacts."

Case Study: Baltimore, Maryland, and Tucson, Arizona

STAR has recently compiled two case studies showing how Baltimore, Maryland, and Tucson, Arizona, have proactively tackled climate change to become more resilient. These case studies can be found at **http://www.starcommunities.org/case-study/case-study-climate-resilience-in-the-star-community-rating-system/**.

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NOAA Office for Coastal Management

2015