

What was your favorite thing  
about your holidays this year?

# SOS Education Forum

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**Engaging your community in climate resilience**



National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

January 11 , 2023





# Agenda

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SOS Team Updates

## **Engaging Your Community in Climate Resilience**

Carrie McDougall, co-lead for NOAA's Environmental Literacy Program (ELP) and for the Science On a Sphere Program



SOS Users Collaborative Network

December 14 , 2022





## Update from SOS Team in Boulder

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### SOS Transitioned:

All servers and technology have been moved to the cloud

**ACTION:** Please check your RT datasets, be sure they are up to date, especially if you have firewall issues at your site.

Contact [sos.support@noaa.gov](mailto:sos.support@noaa.gov) if you have any issues or questions

### Social Media posts:

Facebook & Instagram - @scienceonasphere

### SOS Ed Forum Topics:

We are always open to your ideas and suggestions for topics and presentations or needed trainings. Email [Hilary.Peddicord@noaa.gov](mailto:Hilary.Peddicord@noaa.gov)



# Engaging your community in climate resilience

Carrie McDougall, Ph.D., Senior Program Manager

NOAA Office of Education

NOAA SOS Ed Forum

**January 11, 2023**



# NOAA's Environmental Literacy Program

- Provides grants for projects that use education approaches to build community resilience to climate change and extreme weather.



- 41 projects supported with \$19M
- Grantees work together and with NOAA in a community of practice.
- Collectively we're creating new models for engaging audiences in climate change solutions.

# Community Resilience Education Projects

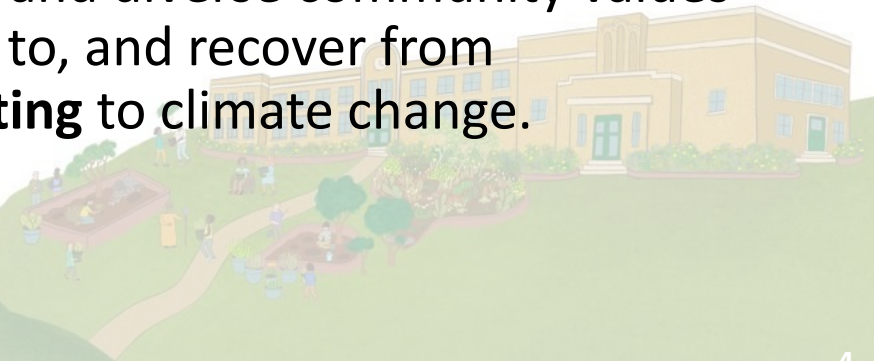
- Focus on the most pertinent current and future environmental hazards of a particular place (or places)
- Incorporate social, cultural, historical, and economic factors
- Support local and state government efforts to build resilience
- Use NOAA's resilience assets and other scientific tools
- Engage participants in active and social learning to explore the impacts of extreme weather and climate change, as well as the inherent trade-offs associated with the different ways for addressing those impacts



# Community Resilience Education Definition

Educational approaches that develop **community-level** environmental literacy to **understand threats** and **implement solutions** that build resilience to extreme weather, climate change, and other environmental hazards. Environmental literacy here includes the **knowledge, skills, and confidence** to:

- reason about the ways that human and natural systems interact globally and locally, including the acknowledgement of disproportionately distributed vulnerabilities;
- participate in civic processes; and
- incorporate scientific information, cultural knowledge, and diverse community values when **taking action** to anticipate, prepare for, respond to, and recover from environmental hazards, including **mitigating** and **adapting** to climate change.



# Resilience Education Community of Practice



Grantees of NOAA's  
Environmental  
Literacy Program &  
other resilience  
practitioners at NOAA

2019 Workshop  
attendees



# PATHWAY TO CHANGE

**PROBLEM  
STATEMENT**

**NOAA's  
INTERVENTIONS**

**ELP's INTERVENTIONS**

**MID-TERM  
OUTCOMES**

**LONG-TERM  
OUTCOMES**

**SHORT-TERM  
OUTCOMES**

**ELP OUTCOME  
= ELP GOAL**

**END GOAL**



# ELP Vision of Resilient Community



# ELP Vision of Resilient Community



## NOAA's Environmental Literacy Program Community Resilience Education Theory of Change

# PATHWAY TO CHANGE

### PROBLEM STATEMENT

- Climate change is an increasing threat and communities are not fully prepared;
- Some groups are more vulnerable than others;
- More policies and actions that promote preparation, adaptation, and greenhouse gas mitigation are needed; and
- Policies and actions need to be informed by, and reflect the values of, community members.

### Therefore...

- Communities need the collective skills, knowledge, and confidence (i.e., environmental literacy) to participate in decision making that informs policies and practices; and
- Different education approaches are needed to build environmental literacy and encourage civic engagement around resilience.

### END GOAL

Communities are resilient to current and future environmental hazards in that they have the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment. Environmental literacy—along with community health, civic engagement, social cohesion, and equity—enhance resilience. Stewardship of healthy ecosystems, a low-carbon economy, and climate-smart and inclusive decision making further reduce risks from current and future environmental hazards.

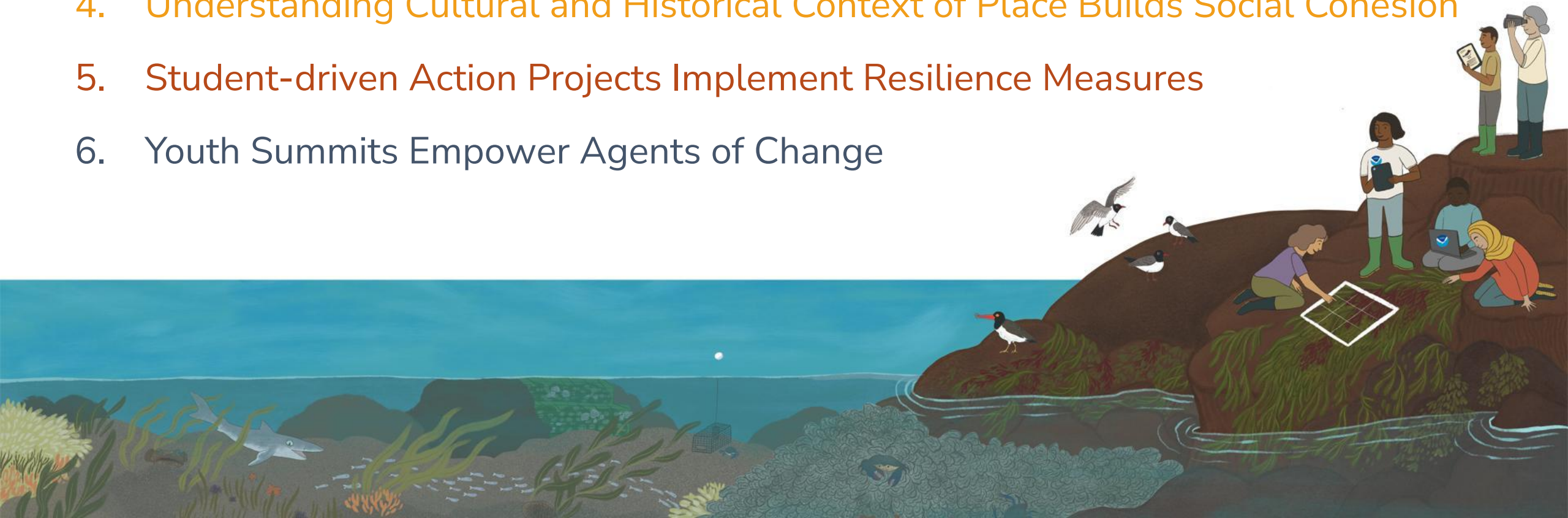
# Critical Concepts

- Collective environmental literacy is essential.
- Cohesive social networks in a community build resilience.
- Equity and inclusion must be central to community resilience education.
- Policies are more robust when they reflect the values of society.
- Taking action inspires hope and hope motivates taking action.



# Causal Pathways

1. ELP Community of Practice Advances Effective Approaches
2. Resilience Planning and Policies Integrate Education
3. Active Learning Enables Community Engagement in Civic Processes
4. Understanding Cultural and Historical Context of Place Builds Social Cohesion
5. Student-driven Action Projects Implement Resilience Measures
6. Youth Summits Empower Agents of Change



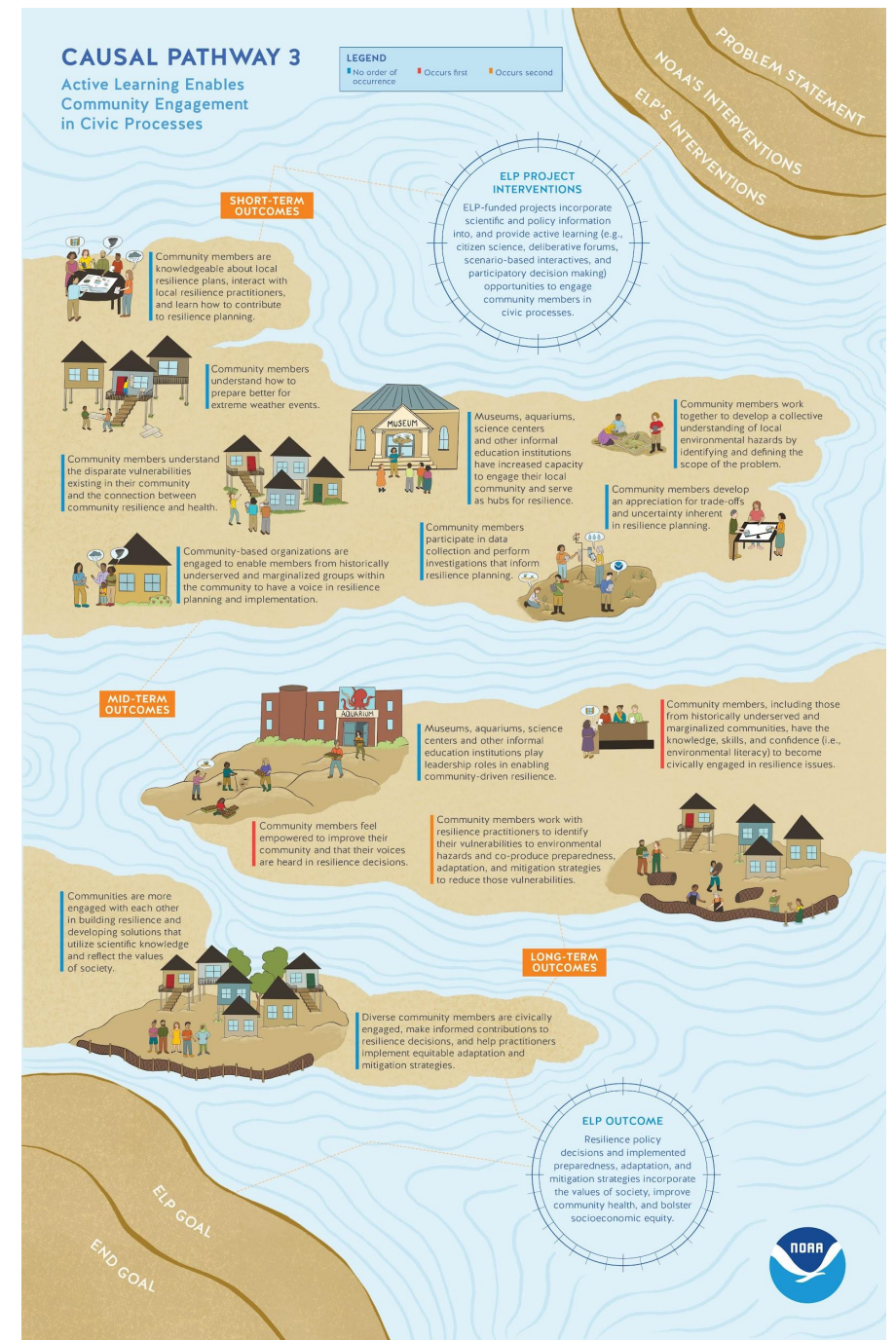
# Causal Pathway 3: Active Learning Enables Community Engagement in Civic Processes

## Outcome:

Resilience policy decisions and implemented preparedness, adaptation, and mitigation strategies incorporate the values of society, improve community health, and bolster socioeconomic equity.

## Examples:

- Climate Hazard Resilience Forums
- Community Science Initiatives
  - <https://scistarter.org/noaa>
  - <https://www.heat.gov/pages/mapping-campaigns>
- ISEs serving as community resilience hubs
- SOS presentations on climate change and resilience



# Causal Pathway 4: Understanding Cultural and Historical Context of Place Builds Social Cohesion

## Outcome:

Communities are more socially cohesive and implement resilience plans and practices that are more culturally relevant and represent diverse community values.

## Examples:

- Students collect stories from community members/elders about past experiences with hazards
- Artist collaborations:  
<https://nurturenaturecenter.org/create-resilience/>





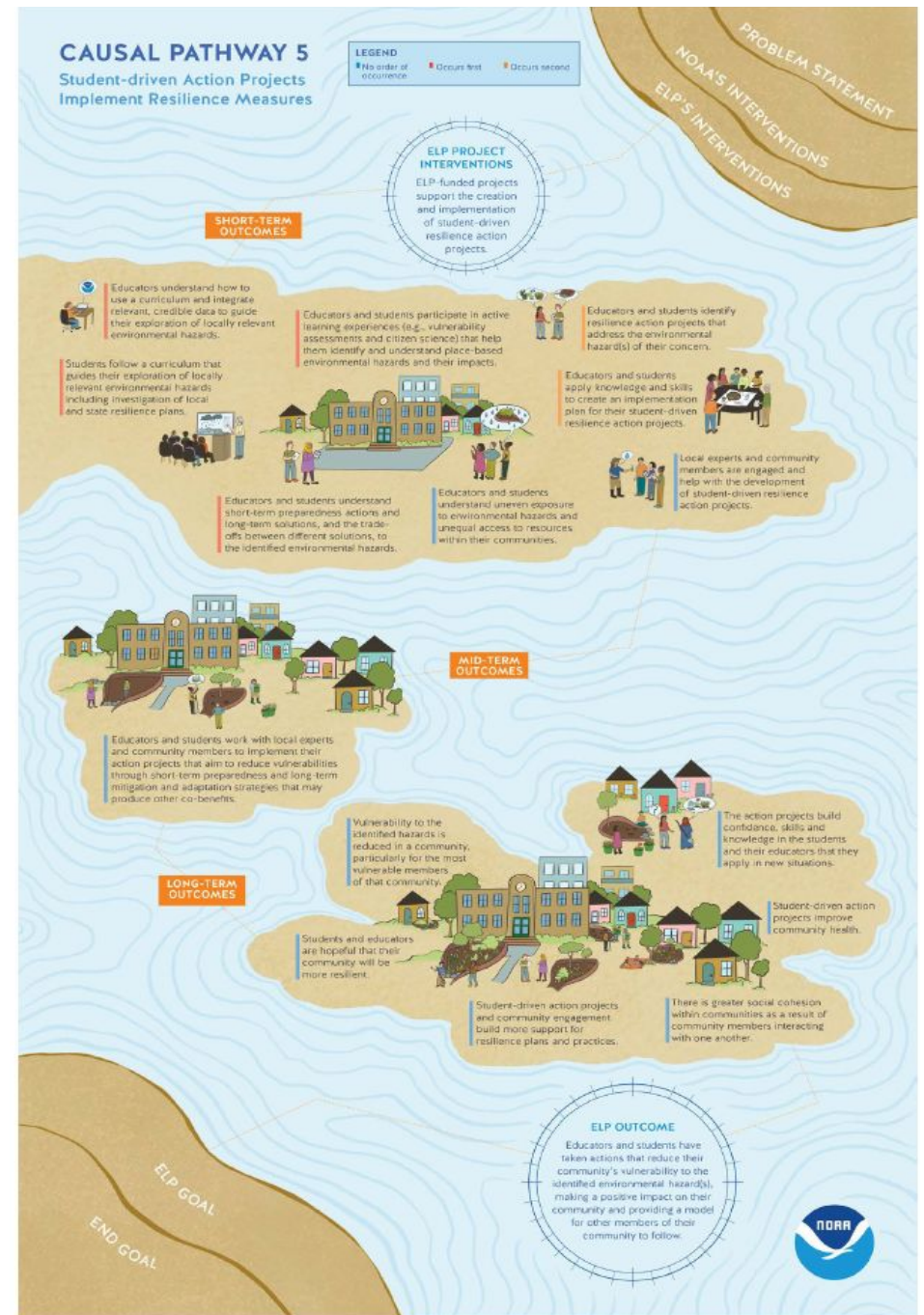
# Causal Pathway 5: Student-driven Action Projects Implement Resilience Measures

## Outcome:

Educators and students have taken actions that reduce their community's vulnerability to the identified environmental hazard(s), making positive impact on their community and providing a model for members of their community to follow.

## Examples:

- HEART Force
- Resilient Schools Consortium (RiSC)
- Watershed Management Group



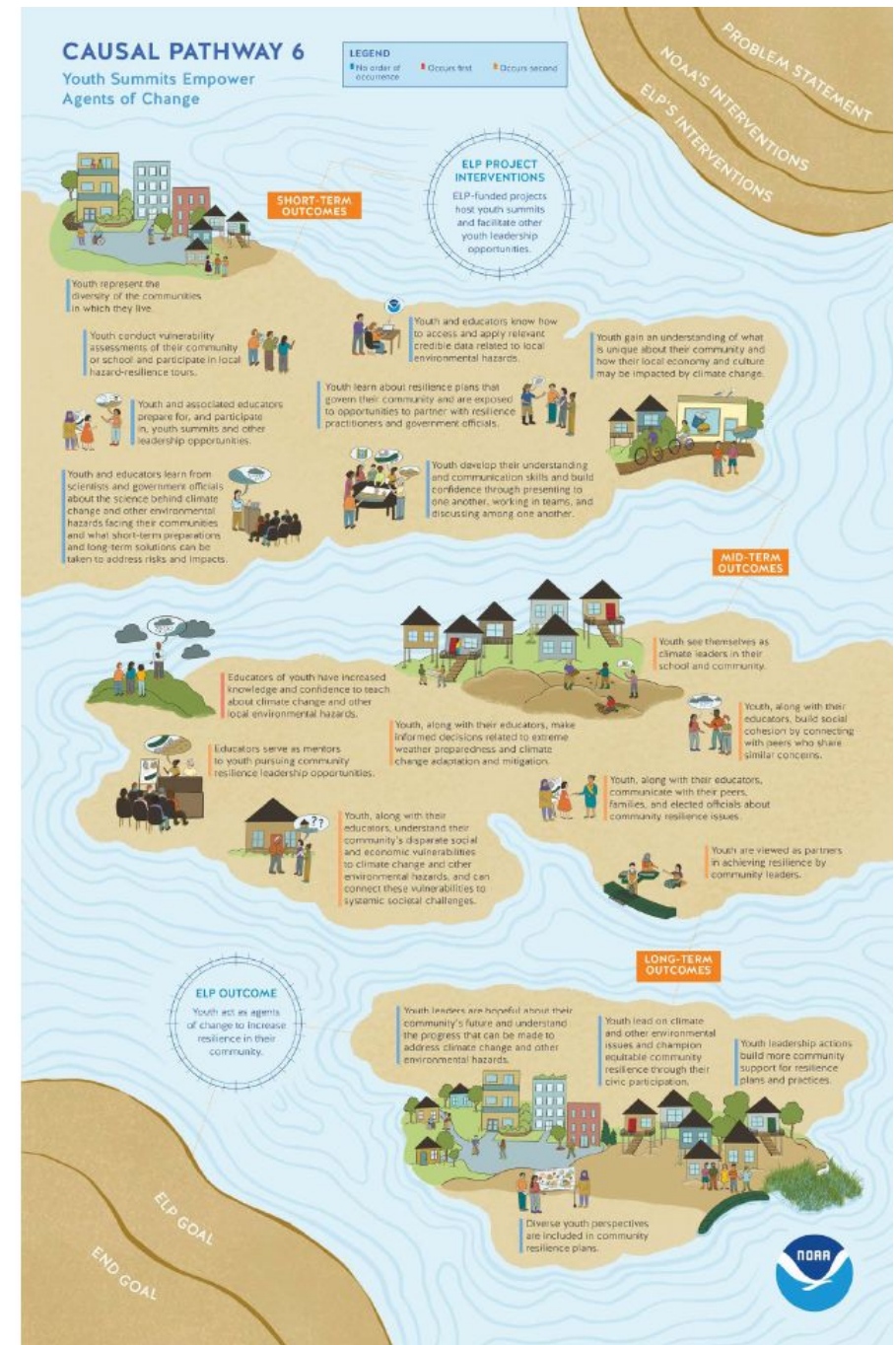
# Causal Pathway 6: Youth Summits Empower Agents of Change

## Outcome:

Youth act as agents of change to increase resilience in their communities.

## Examples:

- Wild Center youth program
- FAU Pine Jog Climate READY Ambassadors
- Nurture Nature youth ambassadors



# What can you do?

- Learn about the hazards facing your community and what your local government plans to do and/or has done to address these hazards.
  - Talk about how your community is working toward resilience and adapting to climate change, give specific examples of solutions that have been implemented.
- Develop a custom SOS story on local resilience issues.
- Promote participation in community science initiatives.
- Host a deliberative forum and connect it to a local climate issue.
  - Invite a representative from your local government to talk about what they're doing to prepare.
- Create opportunities for youth to be involved and show leadership in making their community more resilient and climate ready.
- Education resources developed by NOAA's community resilience education grantees:
  - <https://www.noaa.gov/office-education/elp/resilience-hub/grantee-resources>



# SOS Ready! Vision of a resilient community



# Paper cut-out globe: Vision of a resilient community



# Resilient Community Coloring Page

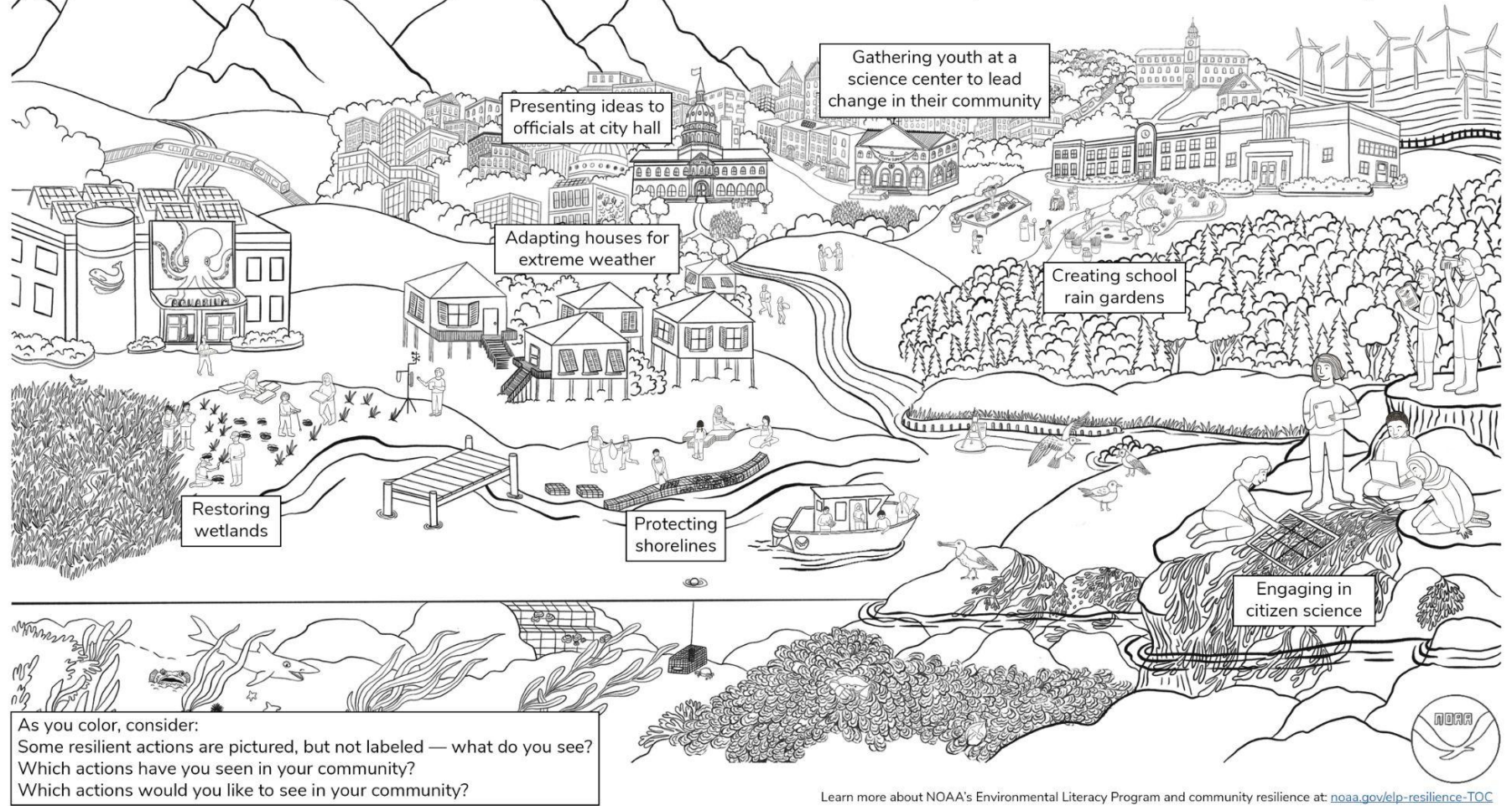


Go to *Theory of Change, Report and other resources to find the coloring page.*



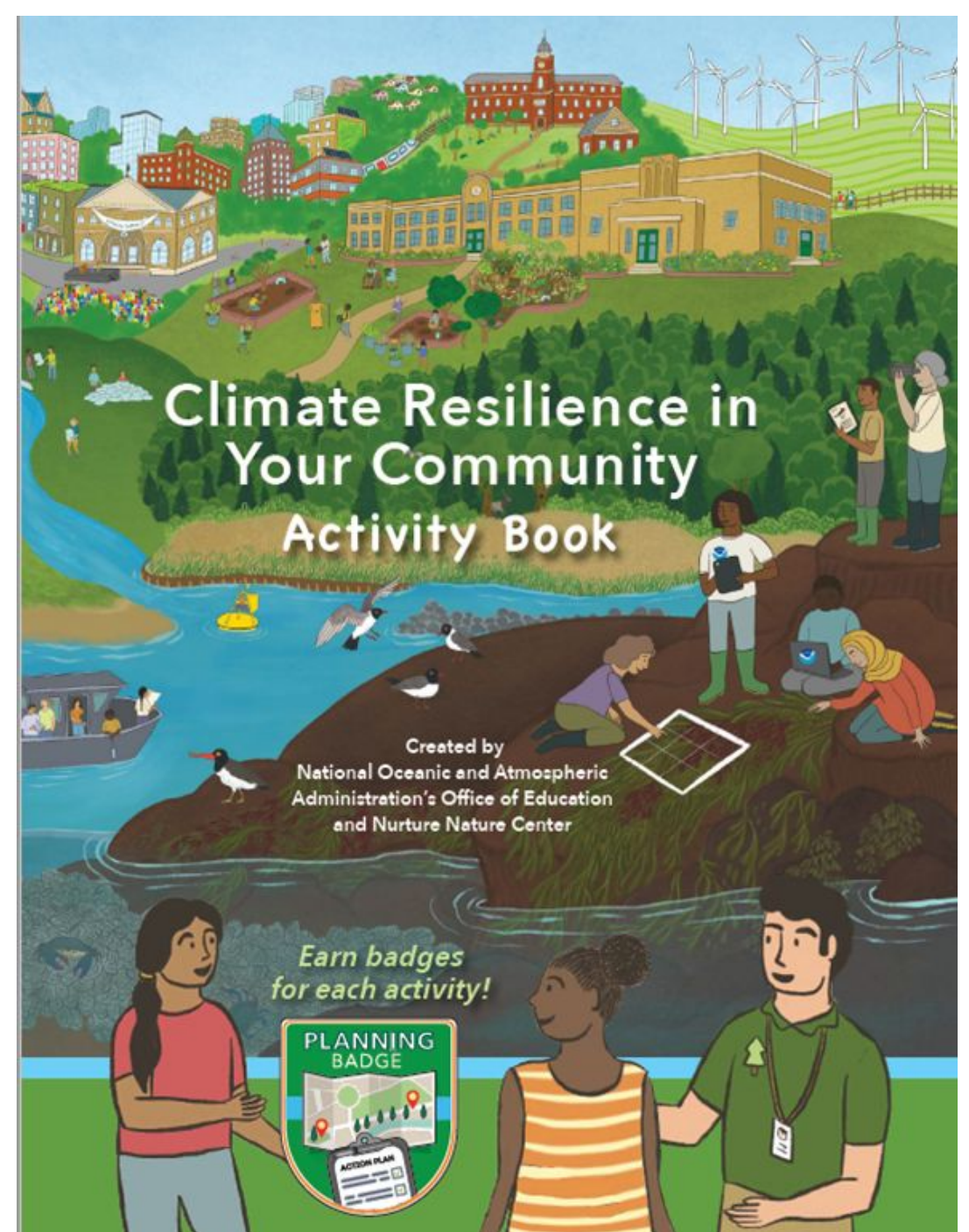
## What could a resilient community look like?

NOAA's vision of an equitable, just, and resilient community involves children, youth, and adults learning together and engaging in activities that improve the resilience of their community.



# Activity Book

- Each section focuses on a different target area of the Theory of Change
- Target age range is grades 3-8
- All of the materials are 508 compliant
- Worked with an excellent designer from The Nurture Nature Center, Keri Maxfield
- Used art by Jessica Bartram, who created images to go along with the Theory of Change, and Tom Maxfield from The Nurture Nature Center



# Additional Resources

- Resilience hub:
  - Theory of change
  - Education resources
  - Coloring page
  - Activity Book
- List of resilience assets
  - U.S. Climate Resilience Toolkit
  - Climate Mapping for Resilience and Adaptation
  - Climate.gov
  - Digital Coast



A screenshot of the NOAA Environmental Literacy Program (ELP) Resilience hub webpage. The page features a blue header with the NOAA logo and navigation links. A main navigation bar includes 'Office of Education home', 'Environmental Literacy Program home', 'Grants', 'Impacts', 'Partnerships', and 'Resources for community resilience education'. The 'Resilience hub' section is highlighted, with a dropdown menu showing 'Theory of Change', 'Climate Resilience in Your Community Activity Book', and 'Resilience hub'. The main content area contains introductory text about the ELP's competitive grants and a photo of a group of people in a meeting.

[noaa.gov/office-education/elp/resilience-hub](https://noaa.gov/office-education/elp/resilience-hub)



# Thank you!

## For more info...

Learn more: [noaa.gov/elp-resilience-TOC](https://noaa.gov/elp-resilience-TOC)

Also, visit NOAA's Resilience Hub at [noaa.gov/office-education/elp/grants/resilience](https://noaa.gov/office-education/elp/grants/resilience)

Contact me at:

[carrie.mcdougall@noaa.gov](mailto:carrie.mcdougall@noaa.gov)

## Special Thanks to:

Genie Bey - 2019 Knauss Marine Policy Fellow in NOAA's Office of Education, lead author & researcher of the Theory of Change report.

[linkedin.com/in/geniebey](https://www.linkedin.com/in/geniebey)

Illustrations by Jessica B. Bartram:

<https://jessicabartram.ca/>



# Back-up Slides



Rachel Wellman

Climate Ready Ambassadors: <http://www.pinejog.fau.edu/student-programs/climate-ready.php>

Leon

3-day teacher workshop for Building Climate Change Resilience (in Hawaii):

<https://www.fisheries.noaa.gov/event/e-ku-ana-ka-paia-teacher-workshop-building-climate-change-resilience>

Kate Create Resilience: <https://nurturenaturecenter.org/create-resilience/>

Wild Ctr

Youth Climate Summits: <https://www.wildcenter.org/our-work/youth-climate-program/>

Jeremy

<https://smv.org/explore/things-to-do/science-on-a-sphere-climate-resiliency/>

HeartForce

Deliberative Forums

Cit Scie: <https://scistarter.org/noaa>

Mapping Urban Heat Islands

# What is a theory of change & why did we develop one?

1. Provides the **philosophy/rationale** that guides the program.
2. Allows **ELP grantees to see how their local efforts contribute** to a broader, national effort.
3. Enables us to **aggregate effective approaches and outcomes** identified by grantees.
4. **Articulates the value of education** in community, city, state, and national efforts to **build community resilience** to extreme weather, climate change, and other environmental hazards.
5. Serves as **a model for how environmental literacy contributes** to resilience that others working in the field of community resilience might use.



# Literature Review - Section II

## Thematic clusters:

1. Resilience to Extreme Weather, Climate Change, & Other Environmental Hazards
2. STEM Education, EE, Social Studies Education, & Related Literacies
3. Connecting Environmental Literacy & Social-Ecological Resilience
4. Active Learning, Social Learning, & Co-Production of Knowledge
5. Equitable Resilience & Climate Justice
6. Empowering Agents of Change



# Other Potential Funding Sources

- NOAA B-WET
- State-based Sea Grant programs
- NSF Coastlines and People Hubs for Research and Broadening Participation (CoPe)
- NFWF National Coastal Resilience Fund
- NOAA Regional Integrated Sciences and Assessments (RISA) Program



# Theory of Change: Problem Statement

- Climate change is an increasing threat and communities are not fully prepared;
- Some groups are more vulnerable than others;
- More policies and actions that promote preparation, adaptation, and greenhouse gas mitigation are needed; and
- Policies and actions need to be informed by, and reflect the values of, community members.

Therefore...

- Communities need the collective skills, knowledge, and confidence (i.e., **environmental literacy**) to participate in decision making that informs policies and practices; and
- Different education approaches are needed to build environmental literacy and encourage civic engagement around resilience.

# Theory of Change: Goals

## ELP Goal:

- Communities have sufficient collective environmental literacy to take actions that build resilience to extreme weather, climate change, and other environmental hazards in ways that contribute to community health, social cohesion, and socio-economic equity. These communities are composed of individuals who participate in formal and informal education experiences that develop their knowledge, skills, and confidence to:
- reason about the ways that human and natural systems interact globally and locally, including the acknowledgement of disproportionately distributed vulnerabilities;
- participate in civic processes; and
- incorporate scientific information, cultural knowledge, and diverse community values in decision making.

## End Goal:

- Communities are resilient to current and future environmental hazards in that they have the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment. Environmental literacy—along with community health, civic engagement, social cohesion, and equity—enhance resilience. Stewardship of healthy ecosystems, a low-carbon economy, and climate-smart and inclusive decision making further reduce risks from current and future environmental hazards.



# Definitions of Resilience

From U.S. Global Change Research Program (USGCRP):

“a capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.”

- This definition aligns best to the goal of the ELP but...
- Like many other definitions, it is limited to a concept of "bouncing back" to a previous state that may be fundamentally unstable and unjust.
- We have attempted to address this limitation by articulating an end goal that encompasses “bouncing forward”, i.e., transforming to a more equitable and sustainable future state.

