



New Hampshire Setting SAIL

Acting on the Coastal Risk and Hazards Commission

Science, Assessment, Implementation, and Legislation Recommendations

Dover • Durham • Exeter • Greenland • Madbury • Newfields • Newington • Newmarket • Rollinsford • Stratham

STRATEGIES TO ADDRESS COASTAL FLOODING

A Workshop for Great Bay Municipalities

Thursday, March 23, 2017

5:30 – 8:00PM

Newmarket Town Hall, 186 Main Street, Newmarket, NH



Workshop Agenda

- 5:30 Registration and Light Refreshments**
- 6:00 Welcome and Introductions**
- 6:10 Overview of CRHC Report and NH Setting SAIL**
- 6:30 Summary of Great Bay Vulnerability Assessments**
- 6:45 Projects to Inspire Action**
- 7:20 Technical Assistance Grant Roundtable**
 - Group 1 – Outreach & Education Projects
 - Group 2 – Planning Projects
 - Group 3 – Regulatory Projects
- 7:55 Concluding Remarks**
- 8:00 Adjourn**

CRHC Report

Nathalie Morison, NHDES Coastal Program

Coastal Risk and Hazards Commission



Clear & Focused Mission

Broad-based Membership

Sunset Date: December 1, 2016

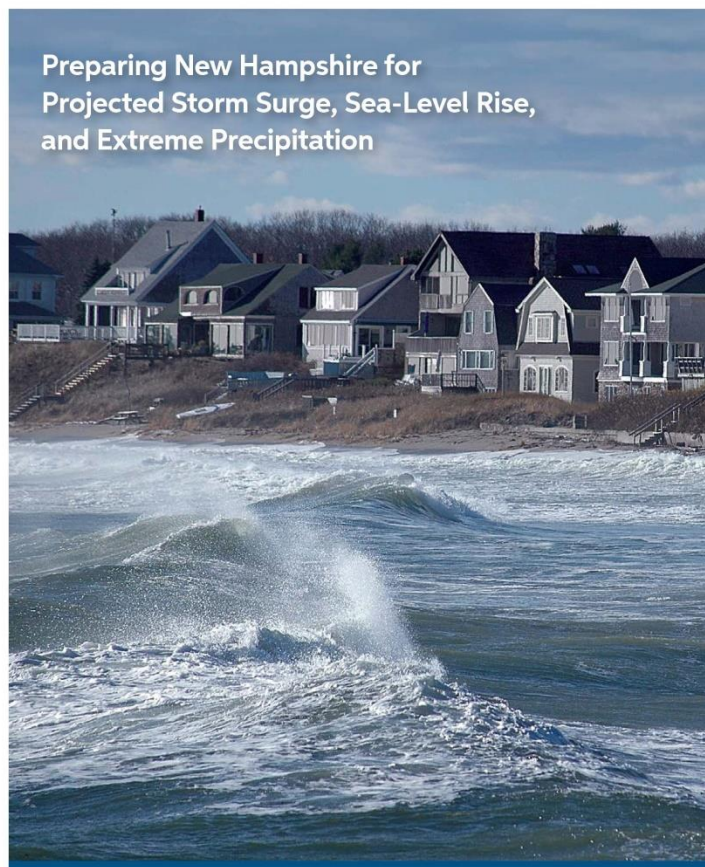
Photo credit: Maren Bhagat

Senate Bill 163 | 2013 | Chapter Law 188 (RSA 483-E)

CRHC Report

NEW HAMPSHIRE COASTAL RISK AND HAZARDS COMMISSION

www.nhcrhc.org



Final Report and Recommendations

November 2016



What We Are Facing

The science behind projected changes in storm surge, sea-level rise, and extreme precipitation.



Our Risks & Vulnerabilities

Potential impacts to Our Economy, Our Built Landscape, Our Natural Resources, and Our Heritage.



What We Need To Do

General guidance and planning principles for responding to coastal flood risk in New Hampshire.



Our Goals & Recommendations

Key Science, Assessment, Implementation, & Legislation (SAIL) recommendations for a resilient coast.

What We Are Facing

2014 Science and Technical Advisory Panel (STAP) Report

SEA-LEVEL RISE

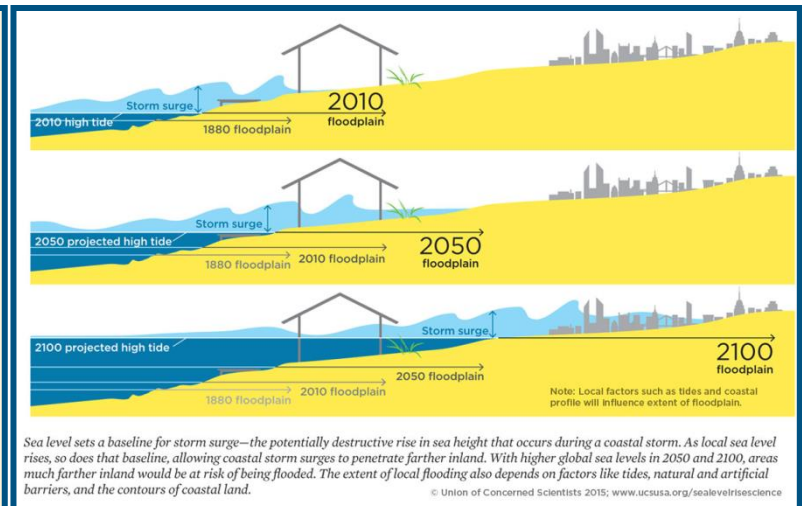
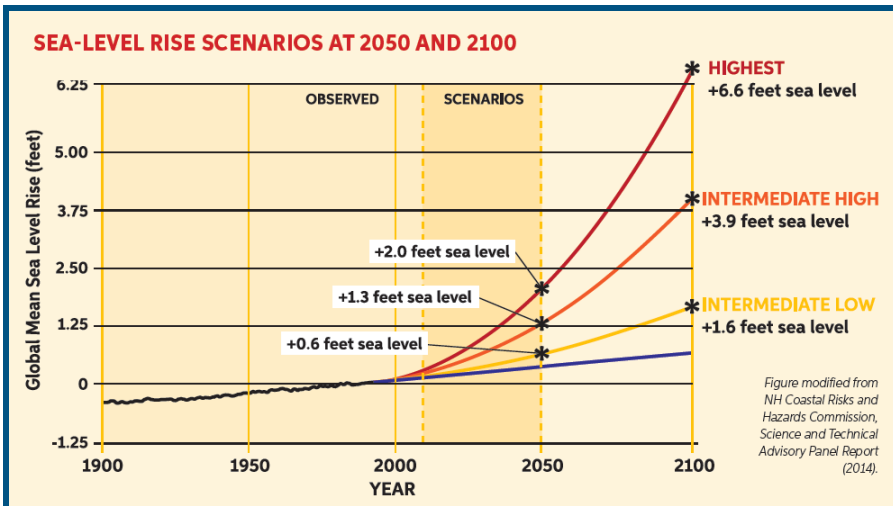
- ↑ 0.6 – 2.0 ft. by 2050
- ↑ 1.6 – 6.6 ft. by 2100

STORM SURGE

- ↑ Inundation extent
- ↑ Frequency
- ↑ Flood duration

EXTREME PRECIPITATION

- ↑ Frequency
- ↑ Amount



Our Risks and Vulnerabilities



OUR ECONOMY is the systematic and productive exchange and flow of goods, services and transactions that must be intact, functioning, and resilient to coastal risk and hazards in order to create and sustain jobs and a high quality of life in coastal New Hampshire.



OUR BUILT LANDSCAPE is the network of structures and facilities owned by state and municipal governments and private entities in coastal New Hampshire. Our built landscape must be prepared to adapt and respond to coastal risk and hazards.



OUR NATURAL RESOURCES are the natural systems that support important species and biodiversity in coastal New Hampshire and provide critical and important services to coastal New Hampshire like food, flood protection, fresh water, raw materials, and recreation opportunities.



OUR HERITAGE encompasses the abundance of recreational, cultural, and historic resources, including economic assets and elements of the built landscape, in coastal New Hampshire that our state and municipalities wish to protect from coastal risk and hazards.

What We Need to Do

Six Tips to Guide Action



- **Act Early**
- **Respond Incrementally**
- **Revisit and Revise**
- **Collaborate and Coordinate**
- **Incorporate 'Risk Tolerance' in Design**
- **Make 'No Regrets' Decisions**

Our Goals and Recommendations

Specific Actions Municipalities Can Take To Prepare

Get Funding & Provide Incentives

- Utilize existing grant programs
- Create repetitive loss buyout fund
- Establish stormwater / flood mitigation utilities to fund retrofits
- Establish tax credits, revolving loan funds that discourage development in high-risk areas
- Participate in NFIP Community Rating System

Reach Out

- Contact NH Coastal Adaptation Workgroup for assistance
- Improve consumer protection disclosure of vulnerable properties
- Encourage eligible homeowners to voluntarily purchase Preferred Risk NFIP premiums

Assess Vulnerabilities

- Conduct site-specific vulnerability assessments for priority public assets
- Assess vulnerability of economic assets (e.g., tax base, jobs, property values, recreational facilities)
- Evaluate deficiencies and barriers in municipal regulations, plans, and policies
- Assess vulnerability of regional emergency services, evacuation routes, and communications systems

Our Goals and Recommendations

Specific Actions Municipalities Can Take To Prepare

Plan Ahead

- Incorporate vulnerability assessment information into municipal plans
- Identify and reduce inconsistencies between municipal and state plans
- Consider projected changes in hydrology in watershed-based and water resources management plans
- Develop plans to protect or relocate cultural and historic resources
- Develop municipal inventories of land available for conservation

Regulate

- Establish local flood hazard overlay districts that require higher development standards
- Adopt higher freeboard requirements
- Prohibit development or implement transfer of development rights programs in high-risk areas
- Adopt buffers and setbacks that better account for vulnerability and maintain ecosystem services
- Implement stormwater best management practices and low impact development

Invest & Implement

- Remove or modify structures (e.g., tidal crossings) that create barriers to tidal flow and habitat migration
- Elevate or acquire at risk properties
- Minimize shoreline hardening and promote nature-based shoreline protection strategies
- Restore coastal dune systems
- Protect salt marsh migration areas

NH Setting SAIL

Nathalie Morison, NHDES Coastal Program



New Hampshire Setting SAIL

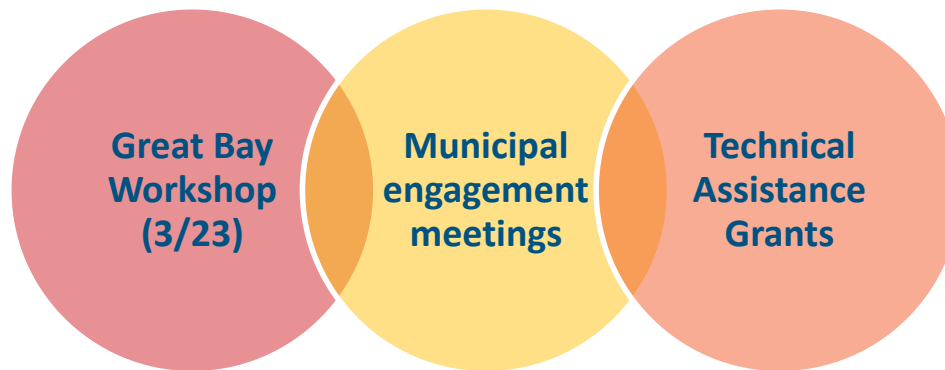
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**Goal: support state & municipal implementation of CRHC report
through outreach and technical assistance**

What's in it for Great Bay Municipalities?





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Great Bay Technical Assistance Grants

Funding Availability

- Approx. \$6,000 per community

Eligible Projects:

- Zoning Ordinance / Building Code Amendments
- Site Plan / Subdivision Amendments
- Master Plan Coastal Hazards Chapters
- Natural Resource / Land Conservation Planning
- Municipal Policies / Practices
- Community Outreach
- Grant Writing

Grant Period:

- May 2017 – February 2018

APPLICATION DEADLINE:

Friday, April 28, 2017

nathalie.morison@des.nh.gov

Contact:

RPC: Julie LaBranche
(jlabranche@rpc-nh.org /
(603) 778-0885)

SRPC: Kyle Pimental
(kpimental@strafford.org /
(603) 994-3500)

Summary of Great Bay Vulnerability Assessments (C-RiSe)

Julie LaBranche, Rockingham Planning Commission

C-RiSe Findings

Summary of flood impacts from sea-level rise and storm surge scenarios at 2100 for the ten Great Bay municipalities

Sea Level Rise (SLR) Scenarios	SLR 1.7ft	SLR 4.0ft	SLR 6.3ft	SLR 1.7ft + storm surge	SLR 4.0ft + storm surge	SLR 6.3ft + storm surge
Upland (above MHHW)	289.6	775.8	1,484.7	1,100.3	1,747.4	2,429.5
State, Municipal and Private Assets						
Infrastructure (# of sites)	4	23	115	69	167	304
Critical Facilities	0	0	1	0	1	4
Water/Sewer/Transmission lines (miles)	0.4	1.6	4.9	3.0	6.6	10.3
Roadway-Local (miles)	0	1	3	2	4	5
Roadway-State (miles)	0	0	1	1	2	4
Transportation Assets (# sites)	46	46	49	47	52	57
Assessed Value - Parcels Impacted	\$559,200	\$6,806,739	\$41,175,460	\$24,798,028	\$85,337,887	\$137,832,858
Residential Structures (# of homes)	na	na	79	na	na	291
100-year Floodplain (acres)	739	1,234	1,355	1,316	1,396	1,461

Notes:

Storm surge is the area flooded by the 100-year/1% chance storm event

“na” = not assessed

MHHW = Mean Higher High Water

C-RiSe Findings

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Natural Resource Assets						
Freshwater Wetlands (acres)	59	182	259	222	306	413
Tidal Wetlands (acres)	754	834	851	845	855	860
Aquifers (acres) +	47	142	340	244	430	595
Wellhead Protection Areas (acres) ++	313	511	785	623	878	1,153
Conserved and Public Lands (acres)	304	610	928	758	1,026	1,277
Coastal Conservation Plan-Focus Areas	625	1,040	1,474	1,244	1,610	1,978
Wildlife Action Plan (acres)	721	1,204	1,723	1,447	1,895	2,357

Notes:

Storm surge is the area flooded by the 100-year/1% chance storm event

“na” = not assessed

MHHW = Mean Higher High Water

+ Dover has 85% of impacts reported to Aquifers

++ Stratham has 69-74% of impacts reported to wellhead protection areas

C-RiSe Findings

Highest Risk Assets & Resources

- Salt marsh and freshwater wetlands
- Conservation lands and areas of ecological significance
- Wellhead protection areas (public water supply wells)
- Water/sewer/transmission lines
- Residential properties bordering Great Bay and tributaries
- Urban downtown areas: Exeter, Dover, Newmarket
- Evacuation Routes (Route 108, 4, 16)

Lower Risk Assets & Resources

- State and local roads
- Critical facilities

Other

- Select culverts overtopped under certain storm events
- Private wells and septic systems may be at risk
- Projected sea-level rise inundation falls within existing FEMA floodplain

C-RiSe Recommendations

Regulatory

- Zoning: floodplain development standards (freeboard); natural resource buffers, special flood hazard overlay districts
- Site Plan/Subdivision Regulations: site design, stormwater management, flood control, open space/coastal buffers

Non-Regulatory

- Outreach and stewardship programs
- Land conservation
- Living shorelines and landscaping
- FEMA High Water Mark Initiative

Planning

- Master Plan Coastal Hazards Chapter
- Open Space Plans
- Hazard Mitigation Plan
- Capital Improvement Plan
- Emergency Preparedness/Evacuation Plan

Projects to Inspire

Amanda Stone, UNH Cooperative Extension

Kyle Pimental, Strafford Regional Planning Commission

Julie LaBranche, Rockingham Planning Commission

Preparing for Climate Change (Newfields)

Issues Addressed

- Stormwater management
- Emergency preparedness

Assistance Provided

- Local research
- Monthly meetings

Value Added

- Stormwater management regs.
- Generator program
- Community support



Land Conservation Planning (Dover/Rollinsford)

Issues Addressed

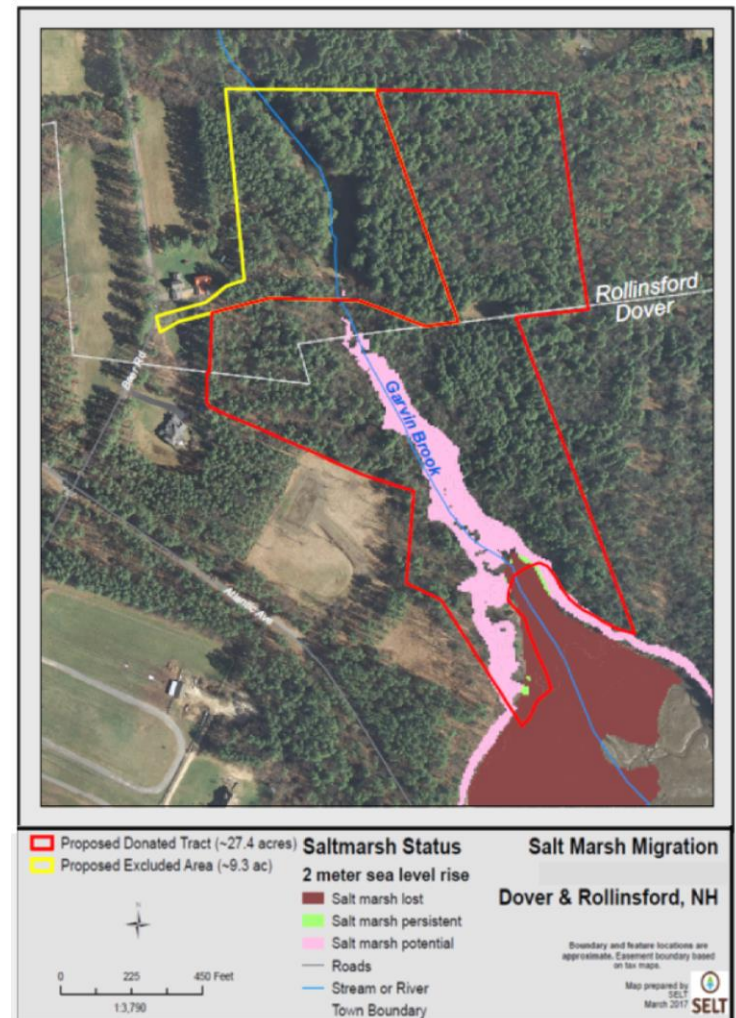
- Salt marsh loss
- Coastal flooding

Assistance Provided

- SLAMM modeling
- Southeast Land Trust

Value Added

- Land conservation for salt marsh migration
- Flood storage



Climate Adaptation Chapter – Hazard Mitigation Plan (Durham)

Issues Addressed

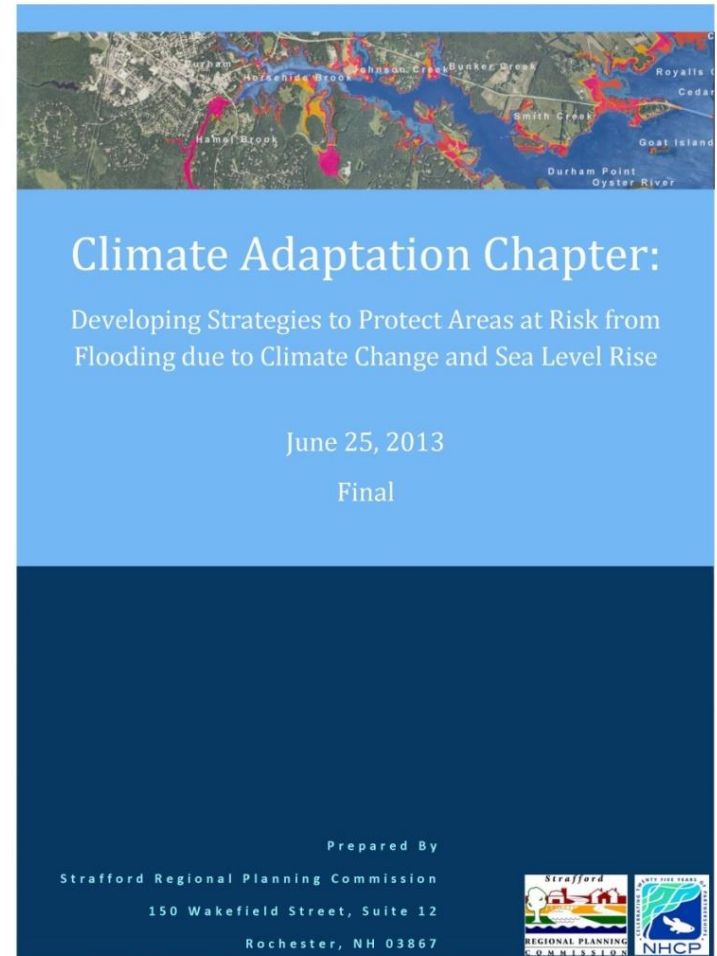
- Vulnerabilities under projected SLR scenarios

Assistance Provided

- Monthly meetings with Leadership Team

Value Added

- Adaptation strategies for areas at risk of flooding



Floodplain Management Standards (Dover/Madbury/Hampton)

Issues Addressed

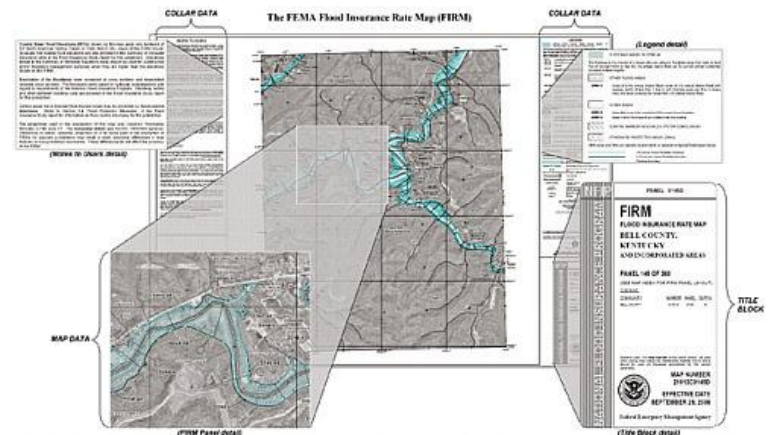
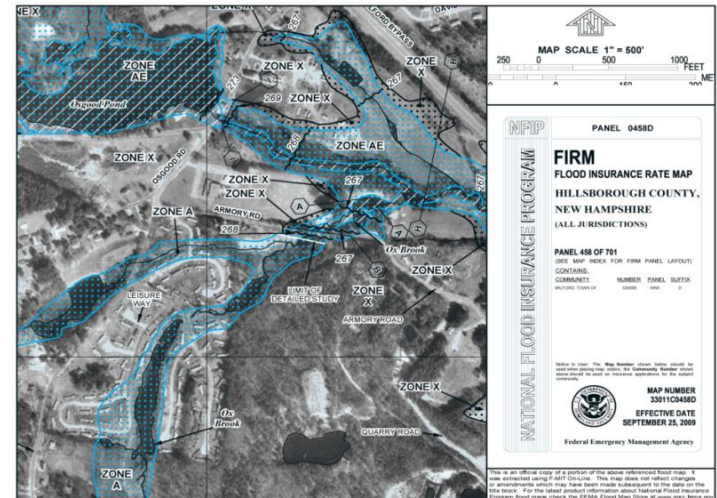
- Protecting future development from coastal flooding

Assistance Provided

- Professional planning services
- Engaged Planning Board; Board of Selectmen / City Council

Value Added

- More stringent regulations for new construction of residential and non-residential structures



Coastal Hazards and Climate Adaptation Master Plan Chapters (Seabrook/Rye)

Issues Addressed

- Current and future coastal hazards

Assistance Provided

- Professional planning services
- Engaged Planning Board; Master Plan Subcommittee; Dept. Heads
- Public input workshops

Value Added

- **Seabrook:** 2-5 year action plan
- **Rye:** integrates adaptation strategies in Transportation, Land Use, and Natural Resource master plan chapters
- Enables municipal action and investment

Technical Assistance Roundtable

Moderator: Nathalie Morison

Grant Application Walk-Through

1. Briefly describe your proposed project
2. Describe specific technical support requested
3. Provide a task-based work plan and schedule of completion
4. Provide an estimated project budget and, if applicable, a description of non-federal cash / in-kind match
5. List other project ideas that your municipality considered in response to this request for proposals

Next Steps

1. Who do you need to get in touch with in your community to further develop this idea?



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Questions?

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