

**G. Project Portfolio**

**G.1 Introduction**

During Phase 2, the consulting team worked with the CAT and community members to identify, plan, and prioritize projects to increase the resiliency of the community. The identified projects address vulnerabilities identified in the RVA. In addition to infrastructure actions, policy based, and nature-based solutions were considered. For each of the projects, the type of solution, cost, timeline, and priority rating were defined in the ranges shown in **Figure 18**.

**Figure 18: Project Portfolio Ranges**

<i>Type of Solution</i>	<i>Cost</i>	<i>Projected estimated timeline</i>	<i>Priority Rating</i>
Infrastructure	Low (\$0-\$50,000)	0-6 months	Low
Plans and policies	Medium (\$50,000-\$200,000)	6-12 months	Medium
Ordinances	High (\$200,000-\$500,000)	12-24 months	High
Non-regulatory programs	Very High (\$500,000+)	24+ months	

Additionally, funding opportunities were identified for each project. The following funding opportunities were reviewed. The funding program, acronym, and source are shown in **Figure 19**.

**Figure 19: Reviewed Funding Opportunities**

<i>Acronym</i>	<i>Funding Opportunity</i>	<i>Information</i>
HSGP	Homeland Security Grant Program	<a href="https://www.fema.gov/authorized-equipment-list-item/10ge-00-genr">https://www.fema.gov/authorized-equipment-list-item/10ge-00-genr</a>
HM	FEMA Hazard Mitigation	<a href="https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning">https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning</a>
AFG	FEMA Assistance to Firefighters Grant	<a href="https://www.fema.gov/grants/preparedness/firefighters">https://www.fema.gov/grants/preparedness/firefighters</a>
DOECEDS	Department of Energy Cybersecurity for Energy Delivery Systems	<a href="https://www.energy.gov/ceser/office-cybersecurity-energy-security-and-emergency-response">https://www.energy.gov/ceser/office-cybersecurity-energy-security-and-emergency-response</a>
EECBGP	Energy Efficiency and Conservation Block Grant Program	<a href="https://www.energy.gov/eere/wipo/energy-efficiency-and-conservation-block-grant-program">https://www.energy.gov/eere/wipo/energy-efficiency-and-conservation-block-grant-program</a>

<i>Acronym</i>	<i>Funding Opportunity</i>	<i>Information</i>
ECWAG	USDA Rural Development Community Water Assistance Grants	<a href="https://www.rd.usda.gov/programs-services/water-environmental-programs/emergency-community-water-assistance-grants">https://www.rd.usda.gov/programs-services/water-environmental-programs/emergency-community-water-assistance-grants</a>
NFWF	National Fish and Wildlife Federation Emergency Coastal Resilience Fund	<a href="https://www.nfwf.org/programs/emergency-coastal-resilience-fund">https://www.nfwf.org/programs/emergency-coastal-resilience-fund</a>
EHP	Environmental Planning and Historic Preservation	<a href="https://www.fema.gov/grants/mitigation/floods/when-you-apply">https://www.fema.gov/grants/mitigation/floods/when-you-apply</a>
BRIC	Building Resilient Infrastructure and Communities	<a href="https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities">https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities</a>
GL	Golden Leaf	<a href="https://www.goldenleaf.org/opengrants/">https://www.goldenleaf.org/opengrants/</a>
DWI ARPA	Division of Water Resources ARPA	<a href="https://deq.nc.gov/news/press-releases/2022/05/04/state-seeks-public-comment-proposed-plan-administer-american-rescue-plan-acts-funding-stormwater">https://deq.nc.gov/news/press-releases/2022/05/04/state-seeks-public-comment-proposed-plan-administer-american-rescue-plan-acts-funding-stormwater</a>
NCLWF	NC Land and Water Fund	<a href="https://nclwf.nc.gov/flood-risk-reduction-program-guidelines-and-rating-system">https://nclwf.nc.gov/flood-risk-reduction-program-guidelines-and-rating-system</a>



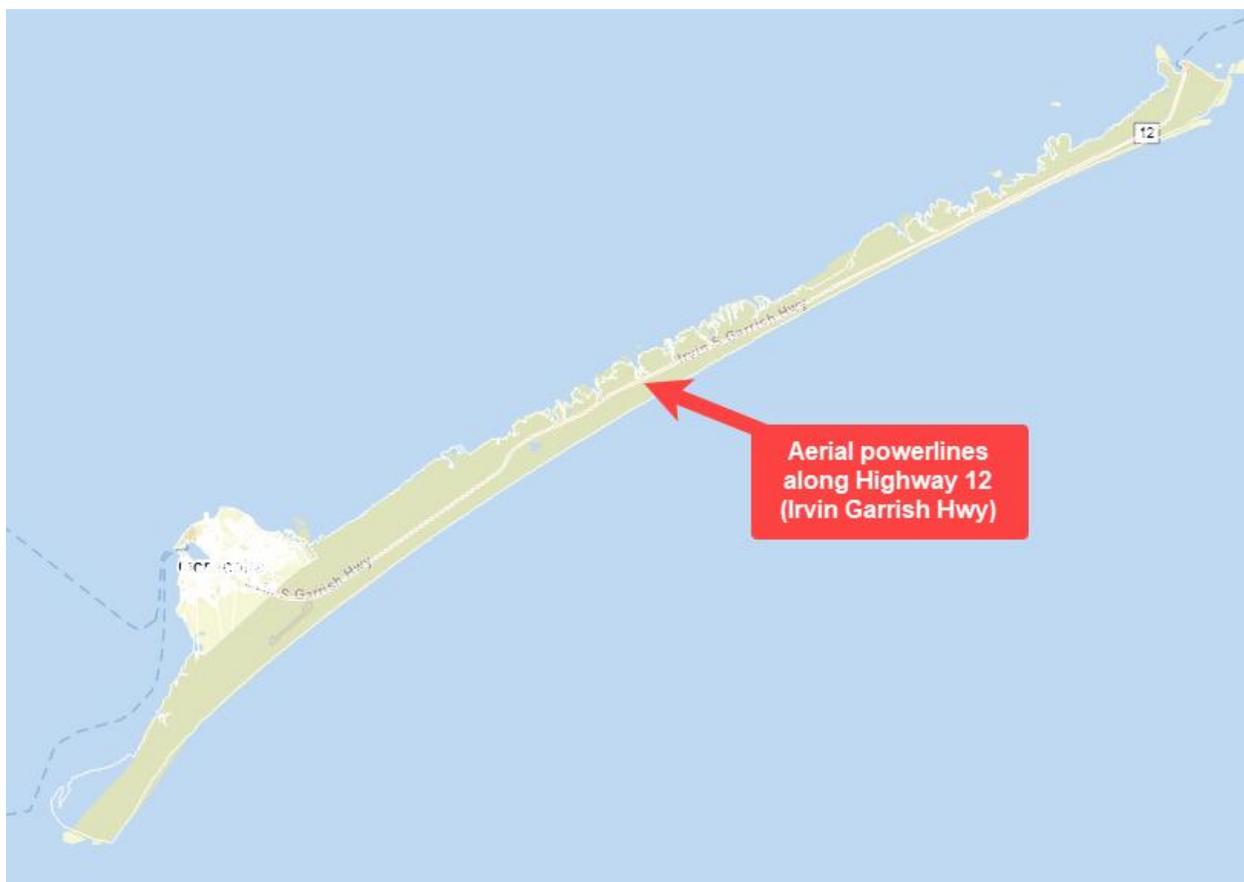
<i>Project Name</i>	<i>Culvert/Drainage Improvements</i>	
Project Description	Clean/maintain existing culverts and ditches. Conduct feasibility study for flooded areas and ability to add drainage and/or improve existing drainage. Feasibility study should consider elevation, pipe sizes, groundwater, tide gates, etc. Develop long term financial model and plan for inlet, pipe, culvert, and ditch maintenance.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Flooding (rainfall/tidal/riverine)	
Type of Solution	Infrastructure	Plans and policies
Project Estimated Cost	High (\$200,000-\$500,000)	High initial cost and ongoing cost for perpetual maintenance.
Potential Implementation Funding Sources	EHP, GL, DWI ARPA, NCLWF	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	See <b>Figure 20</b>	

<i>Project Name</i>	<i>Raise roads to target elevation</i>	
Project Description	Conduct elevation study to identify target minimum road elevation that would improve post-rainfall vehicular access. Implement program to begin raising roads.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Flooding (rainfall/tidal/riverine)	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	High (\$200,000-\$500,000)	Varies depending on amount to elevate.
Potential Implementation Funding Sources	BRIC, EHP, GL, DWI ARPA, NCLWF	
Projected Estimated Timeline	24+ months	
Priority Rating	Medium	
Project Map or Location	<b>Figure 21</b> shows green areas that are 0-1' above MHHW to identify low areas along roads. Widgeon Woods, Oneal, Elizabeth, Tom Neal, British Cemetery, Back, Sunset/Cabana/Trent, Pamlico Shore, Cutting Sage, Silver Lake.	



Figure 21: Ocracoke Village areas that are within 1' above Mean Higher High Water (MHHW)

<i>Project Name</i>	<i>Undergrounding of Electric</i>	
Project Description	Move electrical service lines from aerial to underground along Highway 12.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Wind	
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	
Potential Implementation Funding Sources	FEMA Hazard Mitigation	
Projected Estimated Timeline	24+ months	
Priority Rating	Medium	
Project Map or Location	Power lines located along Highway 12 starting at South Dock Ferry terminal to Ocracoke Village. Around 12 miles in length. See <b>Figure 22</b>	



**Figure 22: Location of aerial powerlines**

<i>Project Name</i>	<i>Portable Pumps</i>	
Project Description	Community owned/maintained trailer mounted pumps. Deployed after rain event to pump down areas with limited/no drainage pipes/channels. Significant permitting challenges. See <b>Figure 23</b>	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Flooding (rainfall)	Flooding (riverine)
Type of Solution	Infrastructure	
Project Estimated Cost	High (\$200,000-\$500,000)	Depends on size and number of pumps.
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	Varies across Ocracoke Village. Special permitting required for discharge directly into sound or ocean.	



Figure 23: Trailer mounted pump

<i>Project Name</i>	<i>Development Ordinance Changes</i>	
Project Description	Revise ordinances to improve resiliency: lot elevating, impervious surface, easements for drainage, low impact development.	
Natural/Nature-Based?	Yes - LID/GSI related ordinance revisions	
Hazard(s) addressed by project	Flooding (rainfall)	Flooding (riverine)
Type of Solution	Infrastructure	Ordinances
Project Estimated Cost	Medium (\$50,000-\$200,000)	
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	12-24 months	
Priority Rating	High	
Project Map or Location	Not applicable	

<i>Project Name</i>	<i>Elevate buildings to 9' EL or higher</i>	
Project Description	Elevate critical assets to elevation 9' per latest applicable codes for Ocracoke Island.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Flooding (rainfall/tidal/riverine)	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	Cost varies depending on number of buildings and amount of elevation.
Potential Implementation Funding Sources	None identified at this time for commercial/governmental facilities.	
Projected Estimated Timeline	24+ months	
Priority Rating	Medium	
Project Map or Location	Various critical assets across the island. Select based on local priority and risk/vulnerability score.	

<i>Project Name</i>	<i>Large Scale Beach Nourishment</i>	
Project Description	Import approximately 2 million cubic yards of sand to increase distance between HW12 and shoreline. Approximately 4.65 miles	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Storm Surge	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	\$32.2M according to NCDOT "NC 12 Ocracoke Island Hot Spot" document
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	See <b>Figure 24</b>	



	NC 12 IMPROVEMENTS PROJECT FEASIBILITY STUDY	Hyde County NCDOT Div. 1	<b>5-Year Alternative:</b> <b>Option 1 – Large Scale Beach Nourishment</b>	Figure 4

Figure 24: Highway 12 Task Force Large Scale Beach Nourishment Map

<i>Project Name</i>	<i>Dune Nourishment</i>	
Project Description	Increase dune protection along HW 12 by importing 140,000 cubic yards of dredged sand. Approximately 3.65 miles in length.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Storm Surge	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	\$6.4M according to NCDOT "NC 12 Ocracoke Island Hot Spot" document
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	See <b>Figure 25</b>	



	<b>NC 12 IMPROVEMENTS PROJECT FEASIBILITY STUDY</b>	Hyde County NCDOT Div. 1	<b>5-Year Alternative: Option 2 – Dune Nourishment</b>	Figure 5

**Figure 25: Highway 12 Task Force Dune Nourishment Map**

<i>Project Name</i>	<i>Roadway Relocation and Dune Nourishment</i>	
Project Description	Import approximately 265,000 cubic yards of sand to increase distance between HW12 and shoreline and to increase dune protection.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Storm Surge	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	\$22.5M according to NCDOT "NC 12 Ocracoke Island Hot Spot" document
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	See <b>Figure 26</b>	



<p>NC 12 IMPROVEMENTS PROJECT FEASIBILITY STUDY</p>	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH</p>	<p>Hyde County NCDOT Div. 1</p>	<p><b>5-Year Alternative: Option 3 – Roadway Relocation and Dune Nourishment</b></p>	<p>Figure 6</p>

Figure 26: Highway 12 Task Force Roadway Relocation and Dune Nourishment Map

<i>Project Name</i>	<i>Bridge over Hot Spot and Road Relocation</i>	
Project Description	Elevate HW12 along most of hot spot. Relocate in some locations. Eliminate need for dune construction/nourishment along some stretches. Approximately 66,000 cubic yards of sand import.	
Natural/Nature-Based?	No	
Hazard(s) addressed by project	Storm Surge	Sea level rise
Type of Solution	Infrastructure	
Project Estimated Cost	Very High (\$500,000+)	\$62.6M according to NCDOT "NC 12 Ocracoke Island Hot Spot" document
Potential Implementation Funding Sources	None identified	
Projected Estimated Timeline	24+ months	
Priority Rating	High	
Project Map or Location	See <b>Figure 27</b>	



<p>NC 12 IMPROVEMENTS PROJECT FEASIBILITY STUDY</p> <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH</p>	Hyde County NCDOT Div. 1	<p><b>5-Year Alternative:</b> <b>Option 4 – Bridge Over Hot Spot</b></p>	<p>Figure 7</p>

Figure 27: Highway 12 Task Force Bridge Over Hot Spot Map