AGENDA

COASTAL RESILIENCE MASTER PLAN
ALIGNING ECONOMIC DEVELOPMENT SUBCOMMITTEE
JUNE 28, 2021
2:30PM – 4PM
REGISTER HERE: HTTPS://GOVERNOR.VIRGINIA.GOV/I/IAYLL

I. OPEN THE MEETING

II. ROLL CALL

III. STAKEHOLDER SURVEY UPDATE – PRELIMINARY RESULTS

IV. PRESENTATION - ECONOMIC DEVELOPMENT ALIGNMENT CASE STUDIES

V. NEXT STEPS DISCUSSION

VI. PUBLIC COMMENTS

VII. ADJOURN

COASTAL RESILIENCE MASTER PLAN, ALIGNING ECONOMIC DEVELOPMENT SUBCOMMITTEE - BASELINE SURVEY

PRESENTATION TO SUBCOMMITTEE

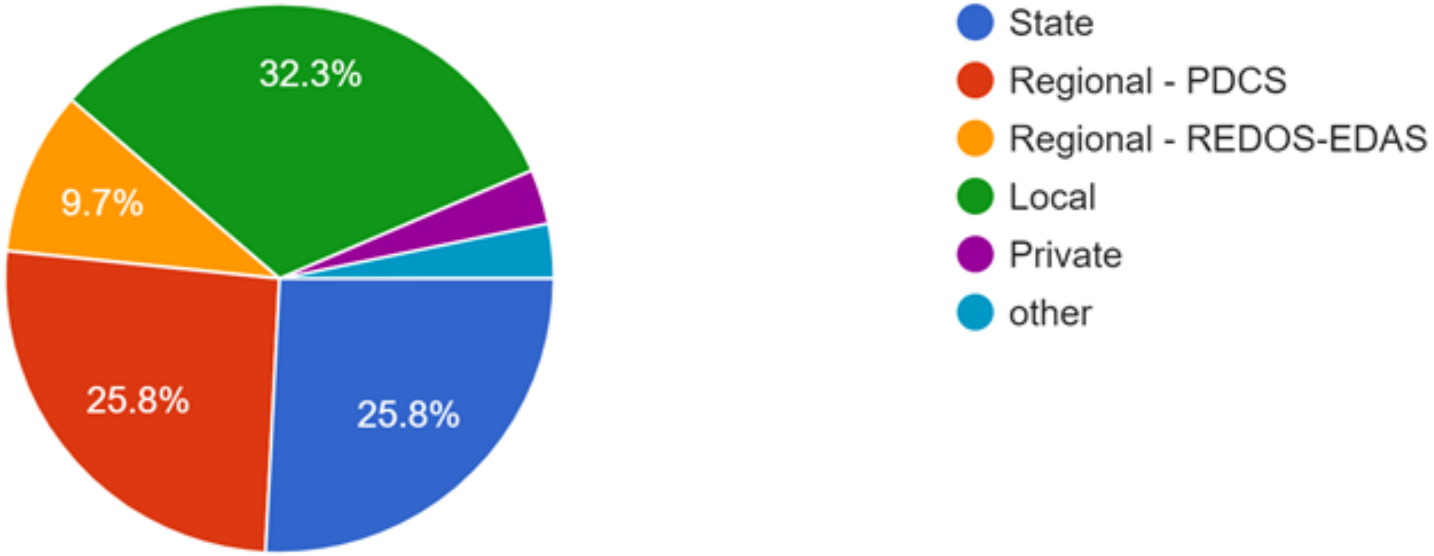
JUNE 28, 2021

GOAL

- DEVELOP A BASELINE UNDERSTANDING OF THE DEGREE TO WHICH STATE, REGIONAL, AND LOCAL ECONOMIC DEVELOPMENT EFFORTS WITHIN THE 8 COASTAL PLANNING DISTRICTS (MASTERPLAN STUDY AREA) ALIGN WITH THE PRINCIPLES AND GOALS OF THE VIRGINIA COASTAL RESILIENCE MASTER PLANNING FRAMEWORK. RESPONSES TO THE SURVEY SHOULD BE REFLECTIVE OF THE ORGANIZATION THAT YOU REPRESENT.

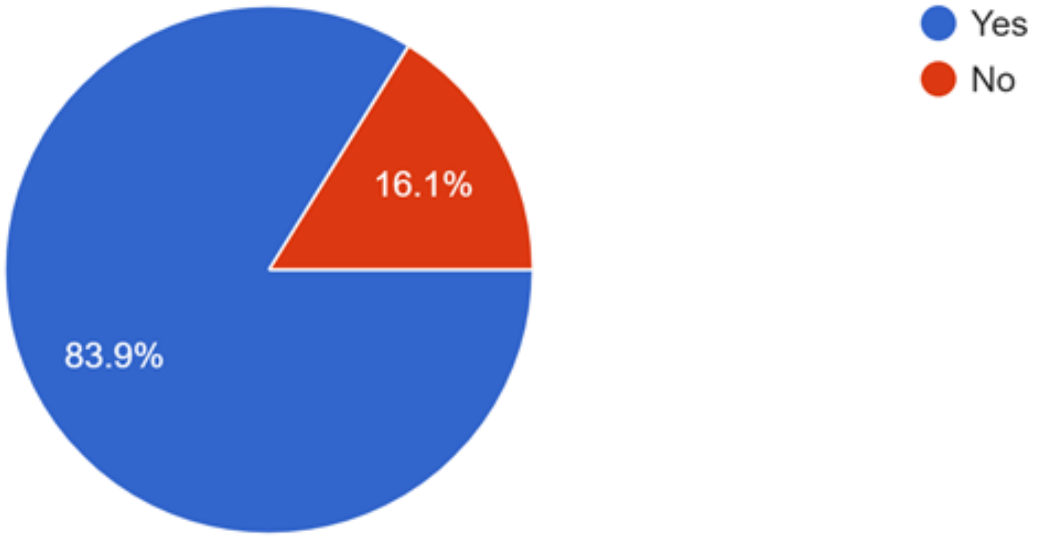
Organization Type

31 responses



Prior to this survey, was your organization aware that Virginia is in the process of developing a Coastal Resilience Master Plan?

31 responses



DOES FLOODING AFFECT YOUR ECONOMIC DEVELOPMENT EFFORTS? IF YES, HOW?

- FLOODING ADDS UNNECESSARY LIABILITY TO PROGRESS AND SLOWS DOWN ADVANCING ECONOMIC POTENTIAL.
- YES, IT HINDERS BUSINESS ATTRACTION.
- THE NNPDC WORKS WITH ITS LOCALITIES ON BUSINESS DISTRICT REVITALIZATION PROJECTS…STORMWATER MANAGEMENT AND FLOODING IS ALWAYS AN ISSUE AND A DETRIMENT TO IMPLEMENTING ECONOMIC RESTRUCTURING STRATEGIES
- YES, IT IMPAIRS FREIGHT MOVEMENT AND TAKES SOME BUSINESSES OFF-LINE.

DOES FLOODING AFFECT YOUR ECONOMIC DEVELOPMENT EFFORTS? IF YES, HOW?

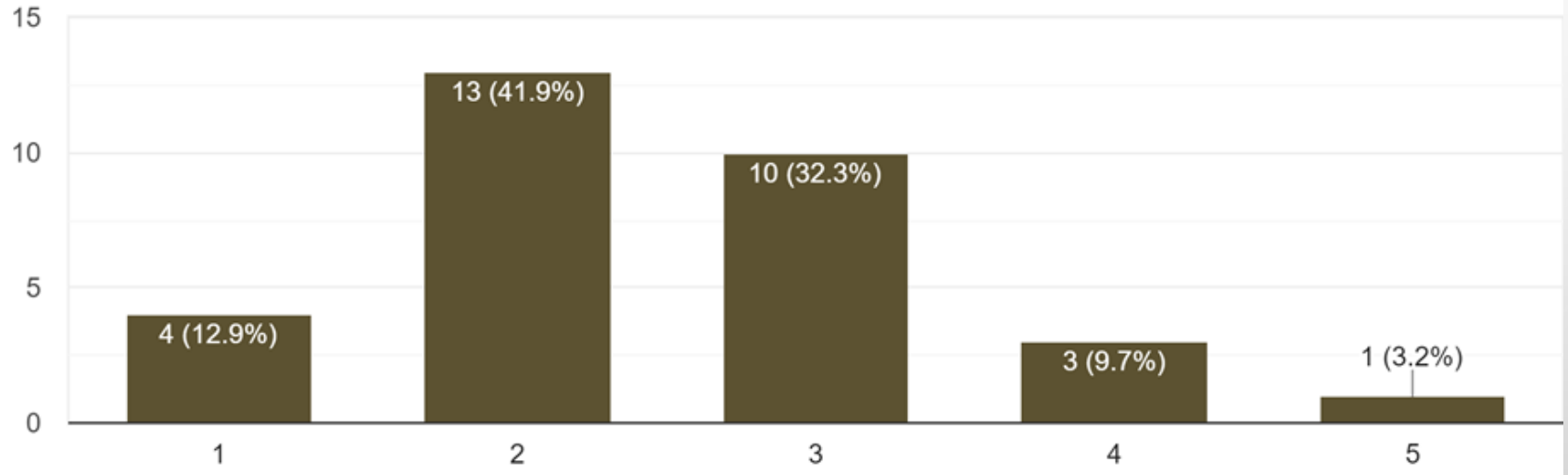
- ECONOMIES ARE EMERGING IN RESPONSE TO THE RISKS POSED BY FLOODING AND RAIN INUNDATION; THESE REQUIRE POLICIES AND FUNDING MECHANISMS TO FLOURISH AND DRIVE DOWN COSTS.
- YES, FLOODING WAS ONCE VIEWED AS A LIABILITY, BUT THROUGH HARD WORK AND NEW PROGRAM DEVELOPMENT FLOODING PRESENTS AN ECONOMIC DEVELOPMENT OPPORTUNITY
- IT CREATES OPPORTUNITY FOR ECONOMIC DEVELOPMENT

DOES FLOODING AFFECT YOUR ECONOMIC DEVELOPMENT EFFORTS? IF YES, HOW?

- I REPRESENT THE EDA (ECONOMIC DEVELOPMENT AUTHORITY) IN THIS SURVEY AND MY ANSWERS ARE INDICATING HERE THAT WE ARE CURRENTLY NOT TAKING COASTAL FLOODING OR CLIMATE CHANGE INTO CONSIDERATION AT ALL IN OUR PLANNING OR EXECUTIONS.

PRINCIPLES 1/6 - Our economic development efforts acknowledge climate change and its consequences.

31 responses

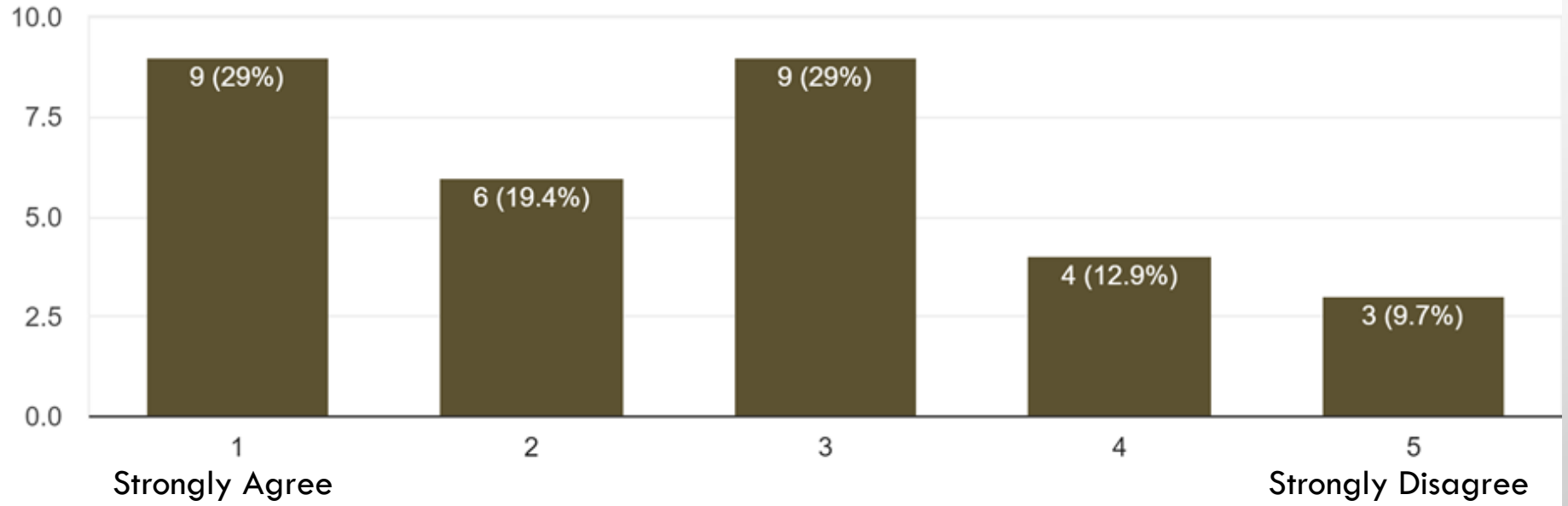


Strongly Agree

Strongly Disagree

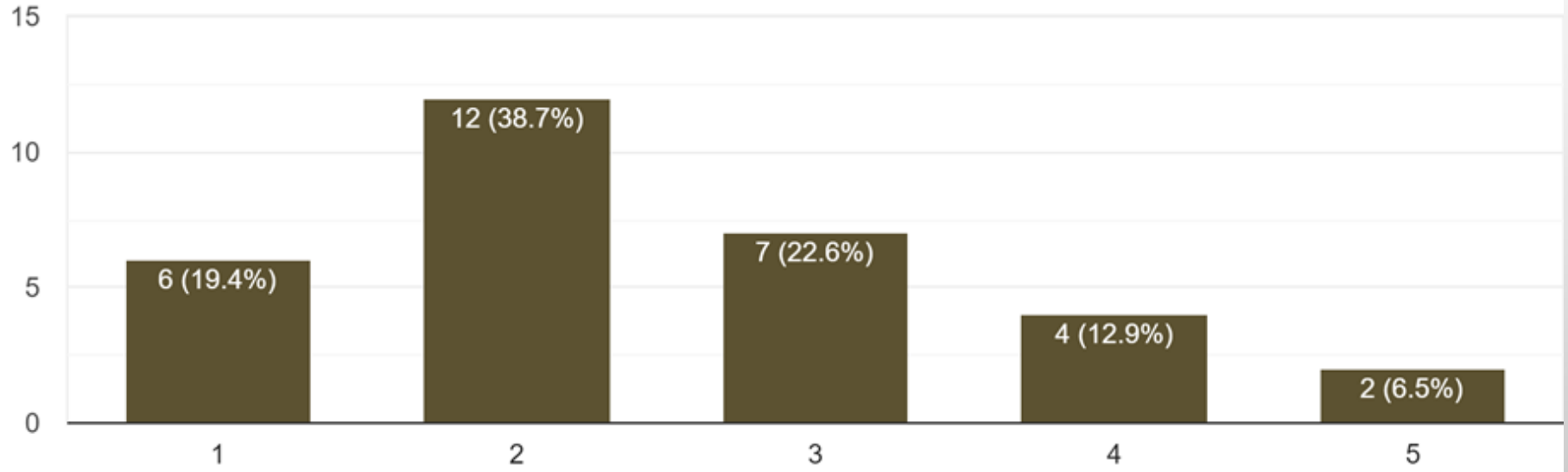
PRINCIPLES 2/6 - Our economic development efforts are informed by the best available science, engineering, and design.

31 responses



PRINCIPLES 3/6 - Our economic development efforts identify and address socioeconomic inequities and work to enhance equity.

31 responses

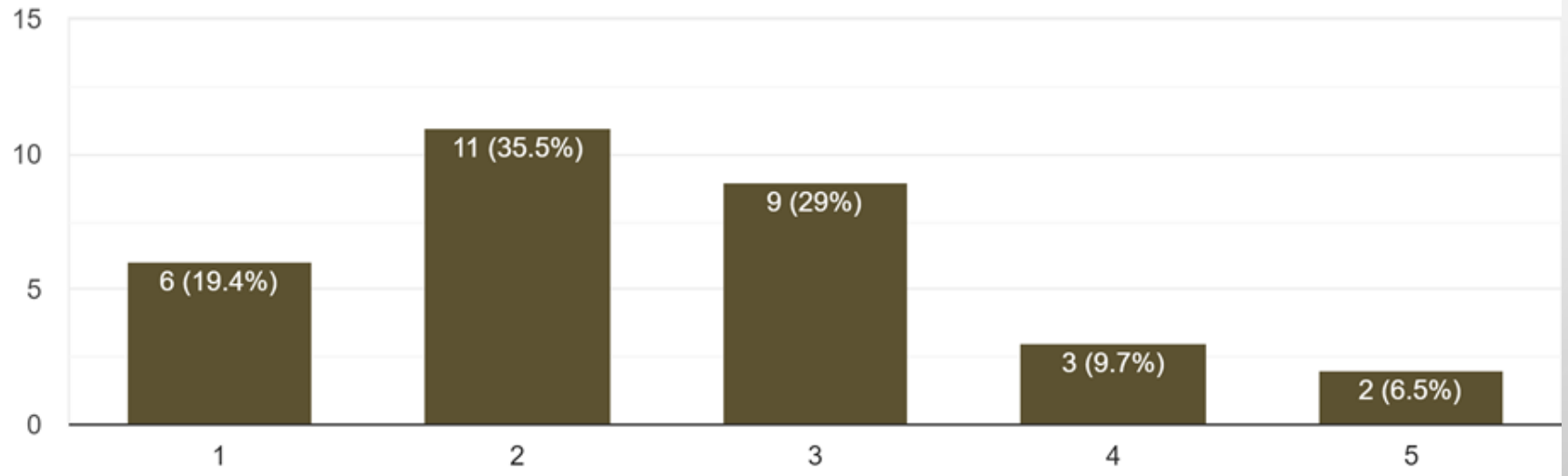


Strongly Agree

Strongly Disagree

PRINCIPLES 4/6 - Our economic development efforts recognize the importance of protecting and enhancing green infrastructure by prioritizing natural and nature-based solutions.

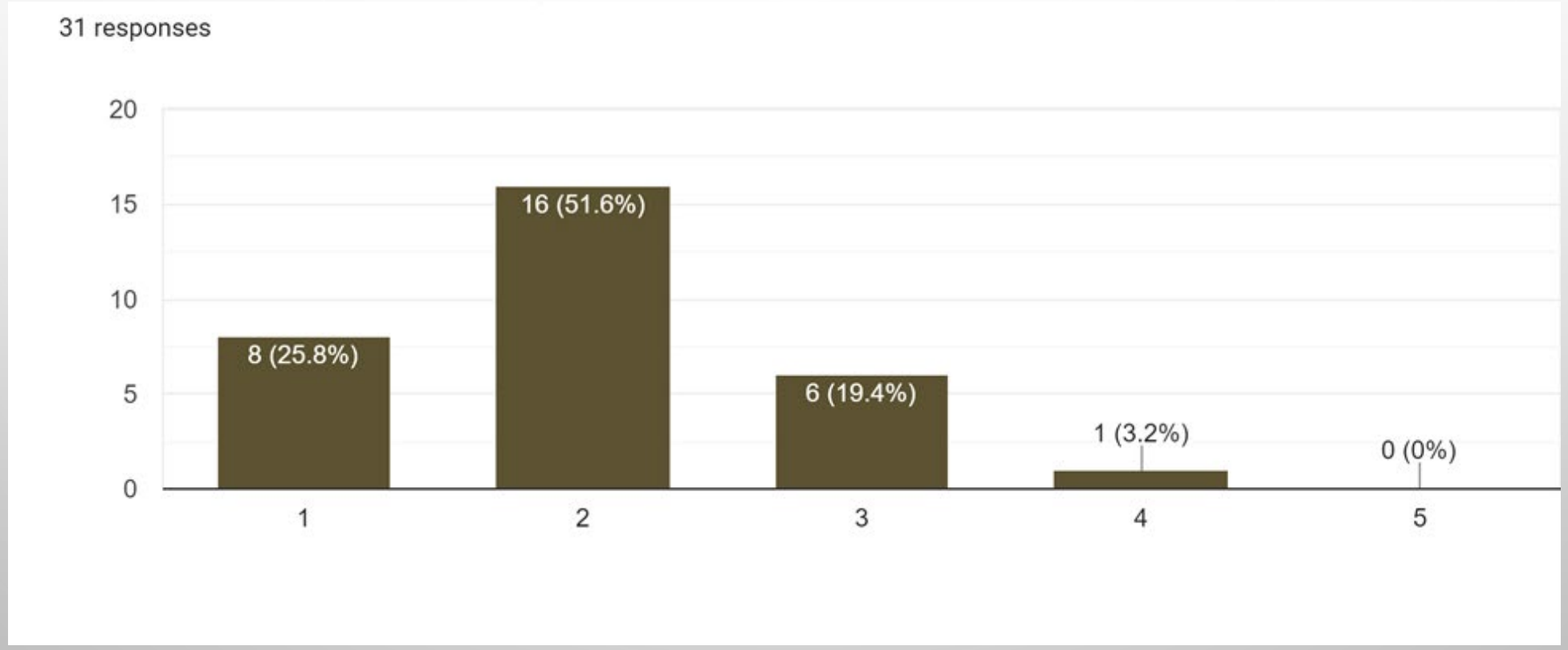
31 responses



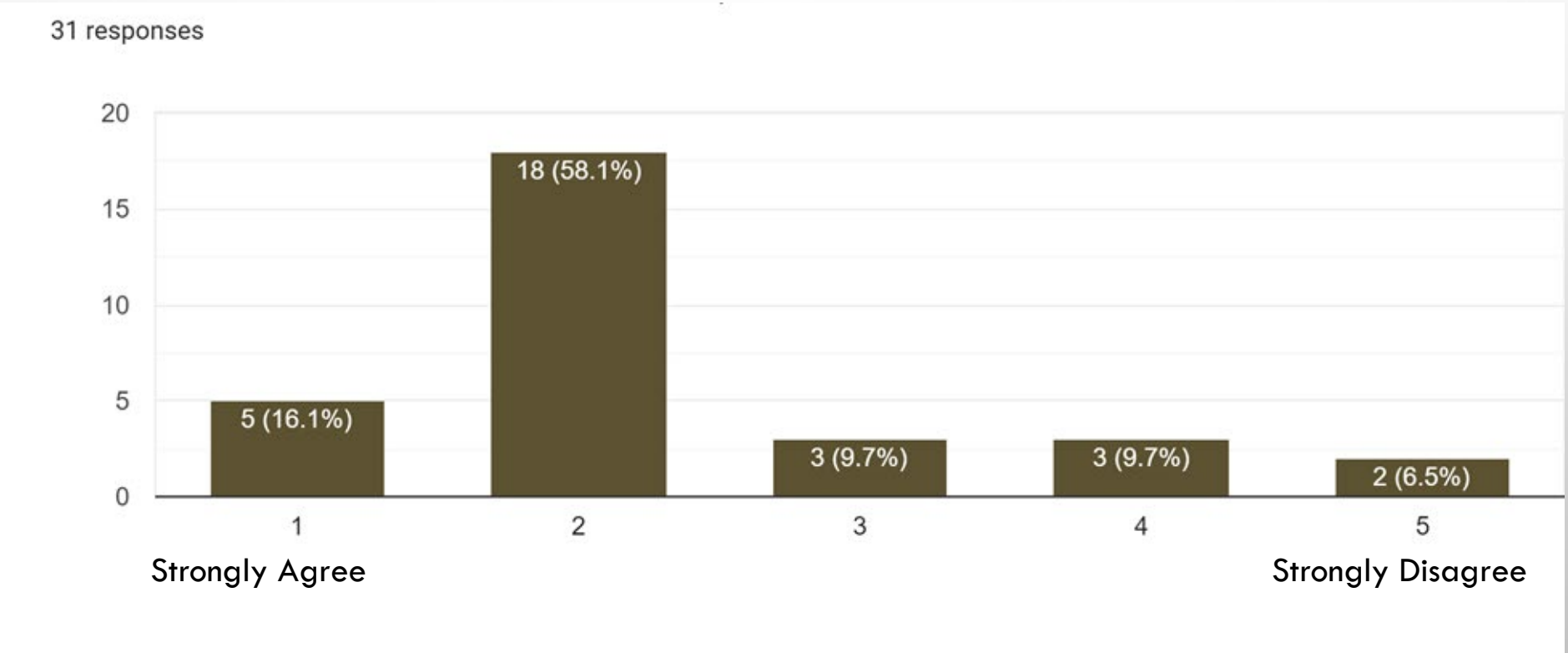
Strongly Agree

Strongly Disagree

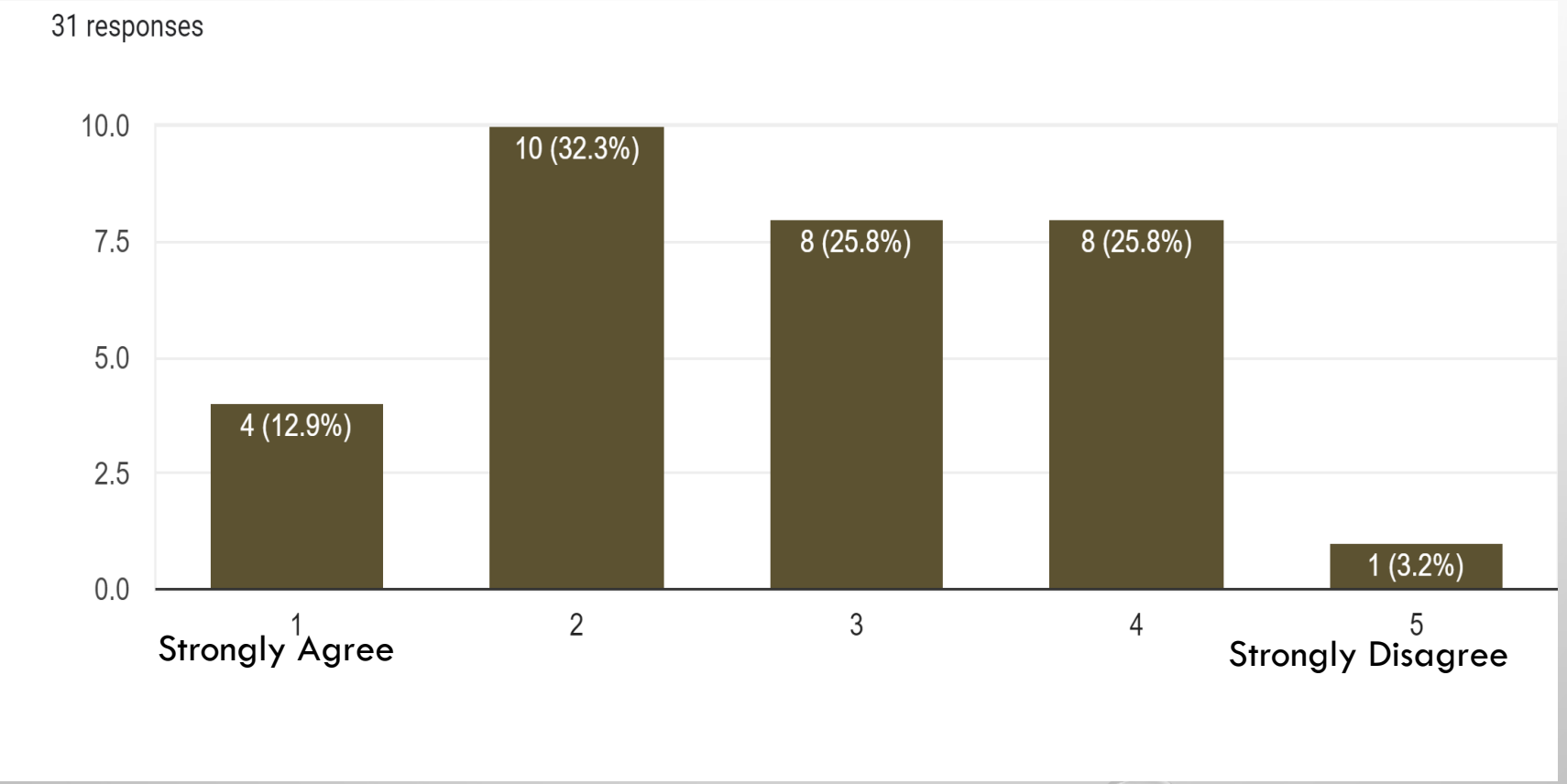
PRINCIPLES 5/6 - OUR ECONOMIC DEVELOPMENT EFFORTS UTILIZE COMMUNITY (POLITICAL SUB-DIVISION, TOWN, LOCALITY, CITY, COUNTY) AND REGIONAL (PDC, MP) SCALE PLANNING TO THE MAXIMUM EXTENT POSSIBLE, SEEKING REGION-SPECIFIC APPROACHES TAILORED TO THE NEEDS OF INDIVIDUAL COMMUNITIES.



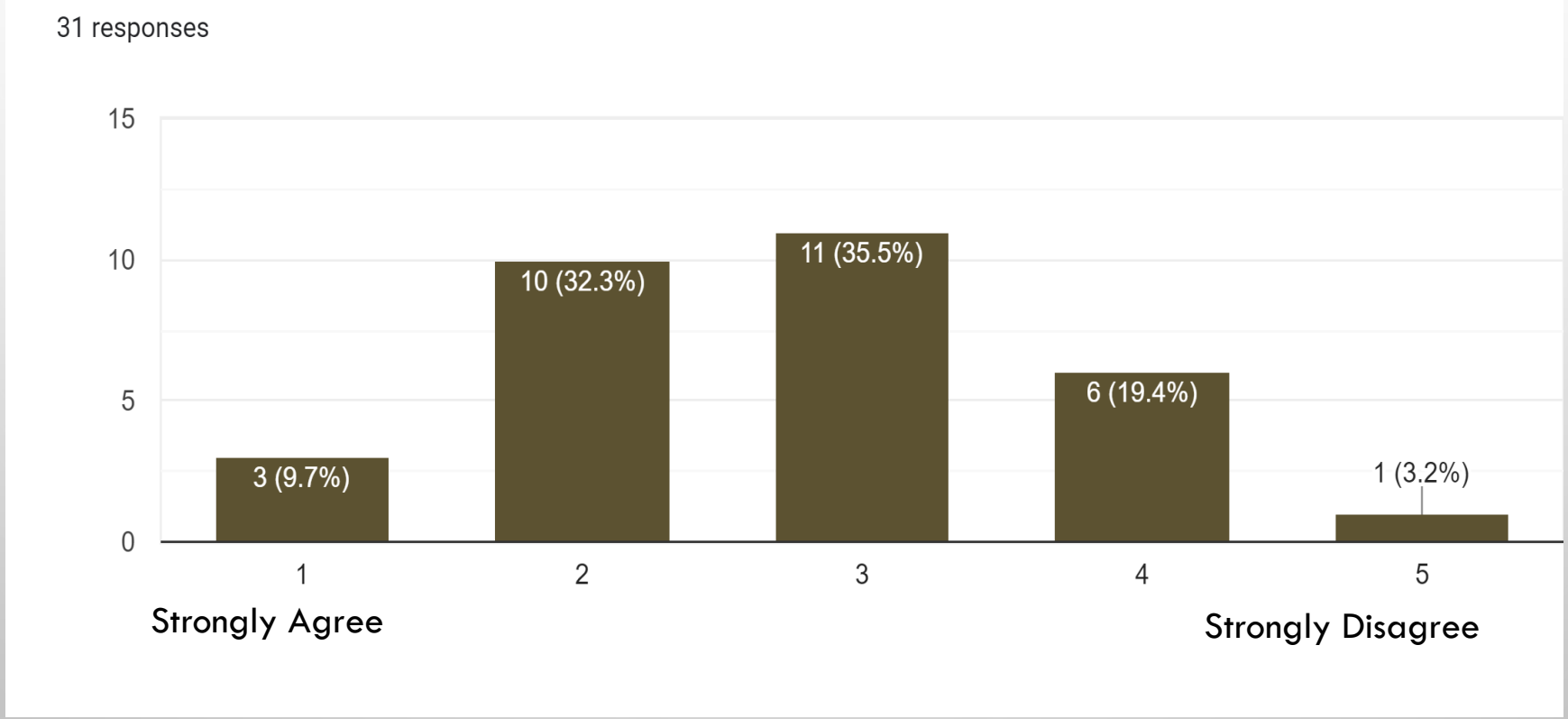
PRINCIPLES 6/6 - OUR ECONOMIC DEVELOPMENT EFFORTS UNDERSTAND EFFECTIVE FINANCIAL SOLUTIONS AND FOCUS ON THE MOST COST-EFFECTIVE SOLUTIONS FOR PROTECTION AND ADAPTATION OF OUR COMMUNITIES, BUSINESSES, AND CRITICAL INFRASTRUCTURE.



GOALS 1/4 - OUR ECONOMIC DEVELOPMENT EFFORTS ALSO PRIORITIZE PROJECTS TO INCREASE THE RESILIENCE OF COASTAL COMMUNITIES, INCLUDING BOTH BUILT AND NATURAL ASSETS AT RISK DUE TO SEA LEVEL RISE AND FLOODING.

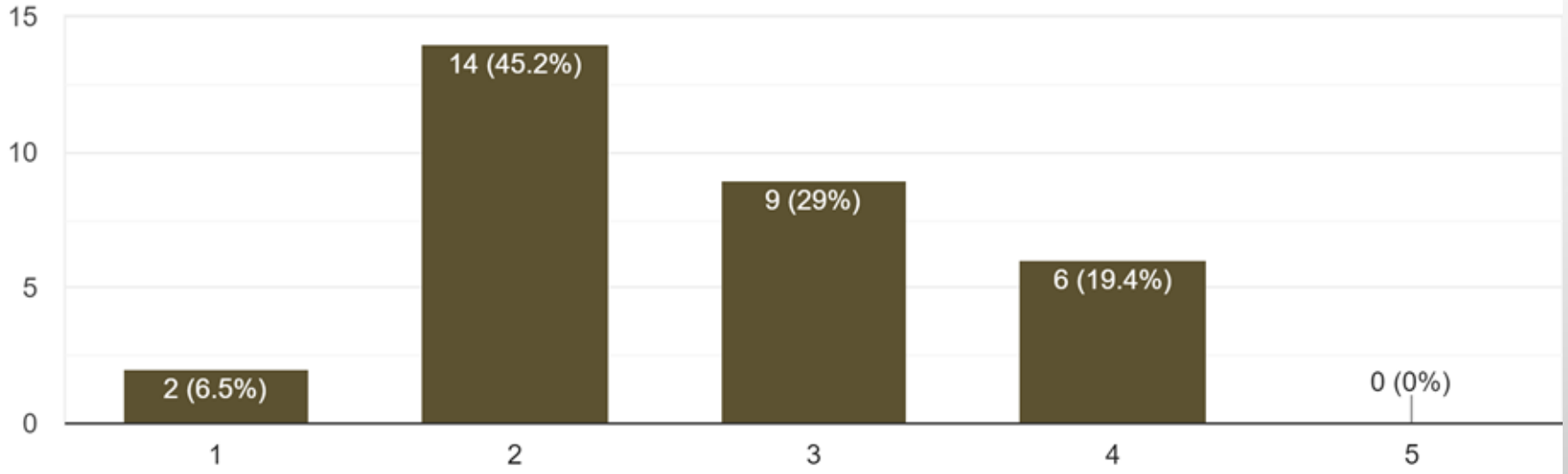


GOALS 2/4 - OUR ECONOMIC DEVELOPMENT EFFORTS ESTABLISH FINANCING STRATEGIES, INFORMED BY REGIONAL DIFFERENCES AND EQUITY CONSIDERATIONS, THAT CAN SUPPORT EXECUTION OF THE COASTAL RESILIENCE MASTER PLAN.



GOALS 3/4 - Our economic development efforts incorporate climate change and sea level rise risks during land use and site development planning.

31 responses

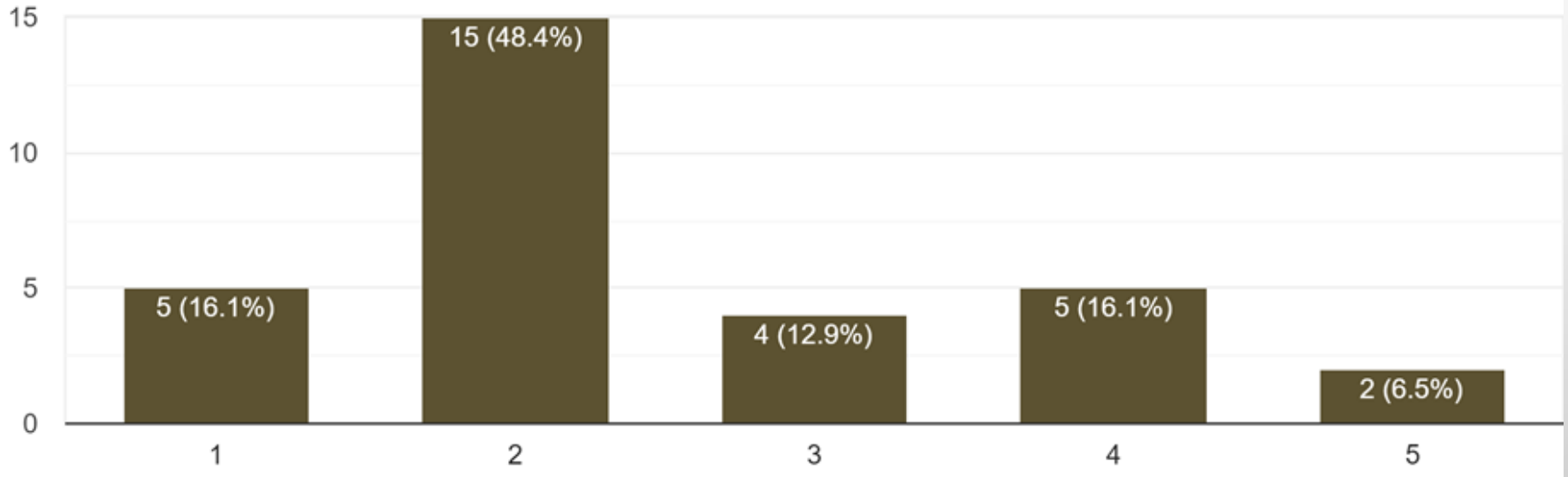


Strongly Agree

Strongly Disagree

GOALS 4/4 - Our economic development efforts seek to coordinate with federal, state, regional, and local coastal adaptation and protection efforts.

31 responses



Strongly Agree

Strongly Disagree

WHAT DO YOU WANT INCLUDED IN THE COASTAL RESILIENCE MASTER PLAN TO SUPPORT YOUR ECONOMIC DEVELOPMENT EFFORTS?

- A CLEAR MESSAGE TO BUSINESS LEADERS AND ELECTED OFFICIALS ABOUT THE ECONOMIC IMPACTS OF INCREASED FLOODING ON THE COASTAL ZONE AND THE COMMONWEALTH AS A WHOLE AND THE STRATEGIES TO ADDRESS THESE IMPACTS AND THE URGENCY TO CONTINUE PLANNING AND IMPLEMENTATION.
- IMPROVE CRITICAL TRANSPORTATION ROUTES
- ASSISTANCE FOR BUSINESSES IMPACTED BY FLOODING
- FINANCIAL AND REGULATORY SUPPORT TO GROW A WATER MANAGEMENT ECONOMY IN RURAL COASTAL AREAS
- AN ACKNOWLEDGEMENT OF AND SUPPORT FOR INDUSTRIES THAT DEVELOP AROUND RESILIENCE AND ADAPTATION. (E.G. SHORELINE MANAGEMENT BUSINESSES)
- SUPPORT FOR CAPACITY BUILDING AT LOCAL AND REGIONAL GOVERNMENTS TO UNDERSTAND, EVALUATE, AND IMPLEMENT STRATEGIES TOWARD GREATER RESILIENCE.

IF YOU HAVE ENCOUNTERED BARRIERS TO ALIGNMENT OF ECONOMIC DEVELOPMENT EFFORTS WITH THE PRINCIPLES AND GOALS OF THE FRAMEWORK, PLEASES SHARE EXAMPLES OR CONCERNS.

- LACK OF INFORMATION
- LACK OF LOCAL AWARENESS, PRIORITIZATION AND BELIEF THAT COASTAL FLOODING RESILIENCE IS NEEDED AND THAT THERE REALLY IS A PROBLEM WITH TRUE ECONOMIC IMPACT
- THOSE THAT HAVE RESOURCES OR SET POLICY AS A GENERAL RULE STRUGGLE WITH UNDERSTANDING RURAL COASTAL ISSUES, INCLUDING BASIC LAND USE PRINCIPLES, LAND USE LAW, REAL PROPERTY LAW, ZONING, LOW INCOME AREA DESIGNATIONS, INSURANCE, FINANCE, WORKFORCE, AS WELL AS THE HUMAN DIMENSION AND CULTURAL TIES TO THE WATERFRONT
- SOME OF THE REGULATIONS RELATED TO COASTAL AREAS (CBPO, WETLANDS) MAKE IT DIFFICULT OR TOO COSTLY FOR WORKING WATERFRONTS AND RECREATIONAL USES TO ESTABLISH OR EXPAND IN COASTAL AREAS.

IF YOUR ECONOMIC DEVELOPMENT EFFORTS ALIGN WITH THE PRINCIPLES AND GOALS OF THE FRAMEWORK, PLEASE SHARE ANY RESOURCES, LINKS, OR EXAMPLES.

- PLANNING AND STUDIES
- MIDDLE PENINSULA FIGHT THE FLOOD
- VIRGINIA SEA GRANT GO VIRGINIA
- VIRGINIA INSTITUTE OF MARINE SCIENCE
- VIRGINIA MAIN STREET – ENVIRONMENTAL SUSTAINABILITY
- VIRGINIA BUILDING CODE DEVELOPMENT – RESILIENCY SUB-WORKGROUP

ALIGNMENT TO PRINCIPLES

Principle	Alignment
Acknowledge climate change and its consequences.	Strong
Informed by the best available science, engineering, and design.	Weak
Identify and address socioeconomic inequities and work to enhance equity.	Weak
Recognize the importance of protecting and enhancing green infrastructure by prioritizing natural and nature-based solutions.	Strong
Utilize community (political sub-division, town, locality, city, county) and regional (PDC, MP) scale planning to the maximum extent possible	Strong
Understand effective financial solutions and focus on the most cost-effective solutions for protection and adaptation	Strong

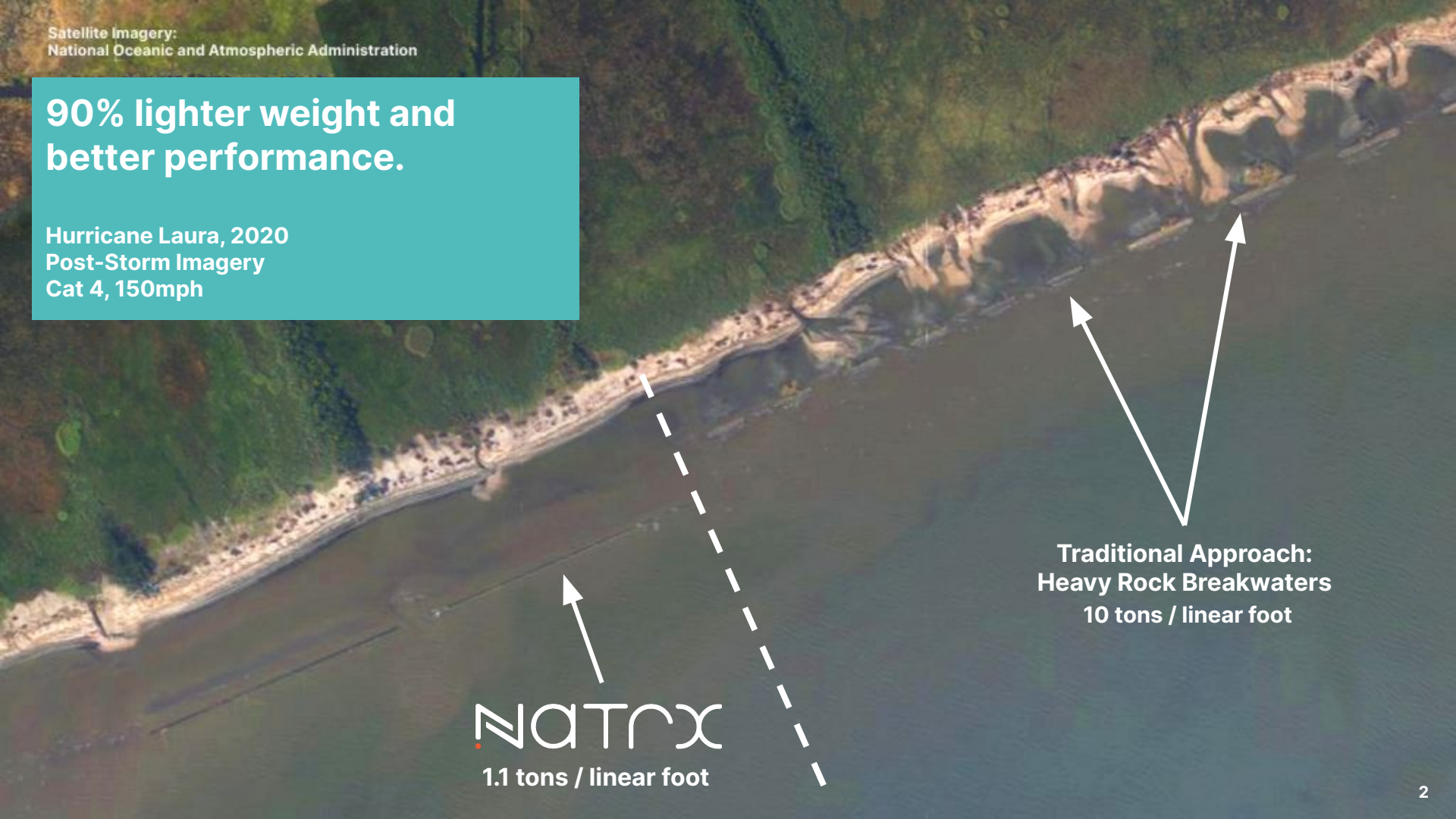
ALIGNMENT TO GOALS

Goals	Alignment
Our economic development efforts also prioritize projects to increase the resilience of coastal communities	Weak
Our economic development efforts establish financing strategies, informed by regional differences and equity considerations, that can support execution of the Coastal Resilience Master Plan.	Weak
Our economic development efforts incorporate climate change and sea level rise risks during land use and site development planning.	Strong
Our economic development efforts seek to coordinate with federal, state, regional, and local coastal adaptation and protection efforts.	Strong

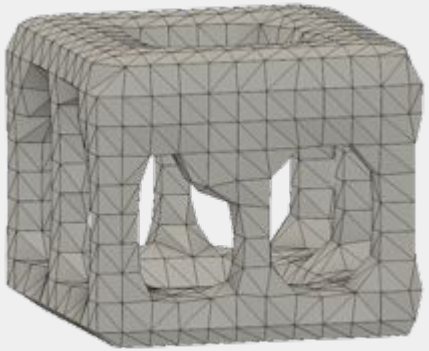
IV. PRESENTATION - ECONOMIC DEVELOPMENT ALIGNMENT CASE STUDIES

- LEONARD NELSON, CEO NATRX, INC
- LEWIE LAWRENCE, EXECUTIVE DIRECTOR, MIDDLE PENINSULA PLANNING DISTRICT COMMISSION

Natrx revitalizes infrastructure through innovative nature-based solutions.


Satellite Imagery:
National Oceanic and Atmospheric Administration
90% lighter weight and better performance.
Hurricane Laura, 2020
Post-Storm Imagery
Cat 4, 150mph
Traditional Approach:
Heavy Rock Breakwaters
10 tons / linear foot
NATRX
1.1 tons / linear foot

“3D Printing” for Resilience



A naturalistic approach to infrastructure.

Lower in-place cost than rock or cast concrete

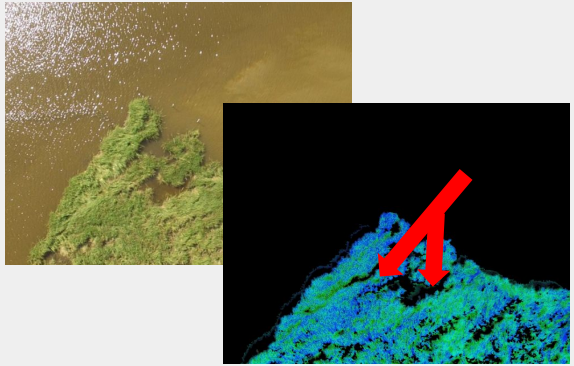
Rapid digital production

Habitat friendly & low CO_2

Resilient to impact

Beautiful

Resilience: Vertically Integrated Business Model



Full-Service Design

AI-assisted problem identification and solution engineering.

Production

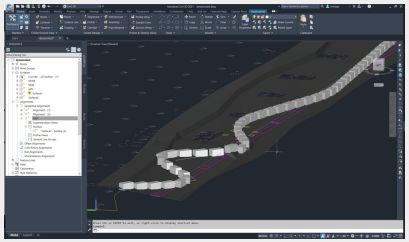
“3D Printing” at capacity of 20,000 tons per year. US Patent# US9962855B2.

Natural Performance

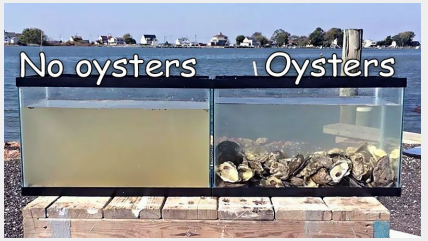
Structures promote sediment deposition and biological growth.

RISE Mobile Production Unit: Chesapeake

Local design partners



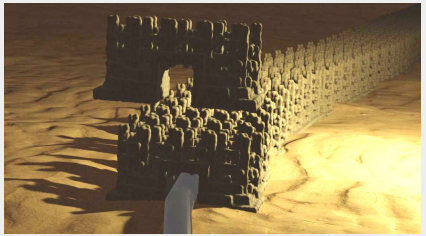
550B gallons/yr clean water



Each mobile unit can generate $22M revenue and $60M primary economic impact.

Local labor

Local use cases



Digital Planning

What Has Worked

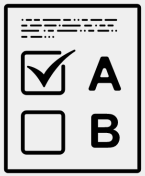
$350K Non-Dilutive Financing → $5M in Private Capital

Local Skill & Industrial Base → Resilience Economy

Public Sector Procurement Innovation → Better Value for Taxpayers

Challenges

Chicken & the Egg → “You Haven’t Protected Anything Yet”



Testing Opportunities at Early Stages → Permit Exemption?

Risk management for service providers → Investment Protection

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Matt Campbell
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Tad Schwendler
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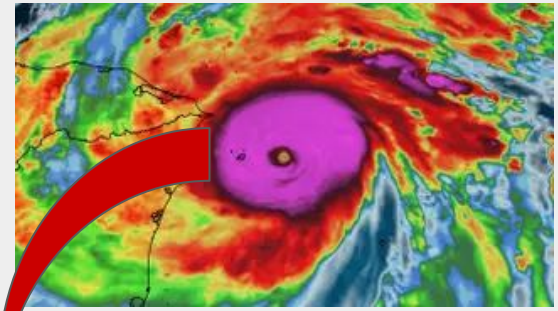
Hurricane Zeta Direct Hit



No damage to eXomodules

Virginia Estimated Economic Impact

Primary Economic Benefits	Year 1	Year 2	Year 3	Year 4	Year 5
Utilization - DPU	10.0%	25.0%	40.0%	60.0%	70.0%
Direct Rev	1,478,400	3,696,000	5,913,600	8,870,400	11,088,000
Full Time Local Employees DPU	4	5	7	7	7
Additional Local Contractor Revenue	$2,217,600	$5,544,000	$8,870,400	$13,305,600	$16,632,000
Local Eng. & Env. Services Revenue	$554,400	$1,386,000	$2,217,600	$3,326,400	$4,158,000
Total Primary Local Jobs Estimate*	18	41	64	92	114
Private Investment**	$2,225,456	$563,640	$901,824	$1,352,736	$1,690,920
Total Primary Impact	**6,475,856**	**11,189,640**	**17,903,424**	**26,855,136**	**33,568,920**

*Assumes 30% of revenue in employment costs and $46.8K/yr. mean wages construction, 91.7K eng., 2019 US BLS Virginia State Occupational Employment and Wage Estimates
Virginia (https://www.bls.gov/oes/current/oes_va.htm)
*Based on direct non-governmental CAPEX contributions from Natrx, and ongoing CAPEX from construction services & production using 2.8% of topline revenue re-invested (NYU Stern, tinyurl.com/836lmtp)

Virginia Ecological Services Value

Ecological Services	Year 1	Year 2	Year 3	Year 4	Year 5
Benthic Habitat (cy)	2,688	6,720	10,752	16,128	20,160
Benthic Habitat (sqft)	161280	403200	645120	967680	1209600
Bivalve Viability Curve*	0.15	0.175	0.2	0.225	0.25
Estimated Bivalve Count (Millions)	1.0	3.8	9.0	17.7	29.8
Water Filtration (Bil Gallons Annually)	18	69	163	322	543
Acres of Reef Habitat	2.08	6.07	11.11	18.74	26.03
Ecological Services Value **	$83,306	$242,975	$444,298	$749,752	$1,041,322

*Based on surface area and bivalve viability literature, adjusted for pollution & storm damage in Chesapeake Bay region.
**Estimated at $40k /acre (Grabowski et al., 2012)

V. NEXT STEPS DISCUSSION
VI. PUBLIC COMMENTS
VII. ADJOURN

- JULY MEETING – DATE AND VENUE
- DEVELOPING THE ALIGNMENT FRAMEWORK RECOMMENDATIONS