



**TAYLOR**  
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FSBPA National Conference on Beach Preservation Technology  
February 4, 2026 | 2:10 PM

# From Risk to Resilience: Evaluating Coastal Management Strategies in Volusia County

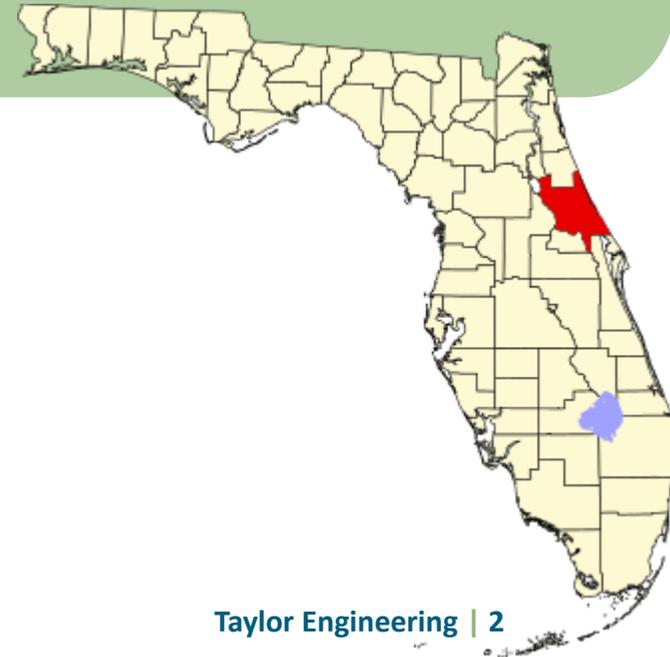
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# Study Purpose and Presentation Outline

- **Conduct countywide beach feasibility study** to analyze shorefront risk based on current conditions
- **Identify high-vulnerability areas** requiring immediate intervention and priority action
- **Develop actionable recommendations** for future coastal management strategies
- **Ensure long-term sustainability** of Volusia County's beach resources and infrastructure
- **Connect** with the community

## OUTLINE

1. Volusia County Beaches
2. Risk Assessment Methodology + Results
3. Shoreline Alternative Analysis
4. Community Outreach



# VOLUSIA COUNTY BEACHES

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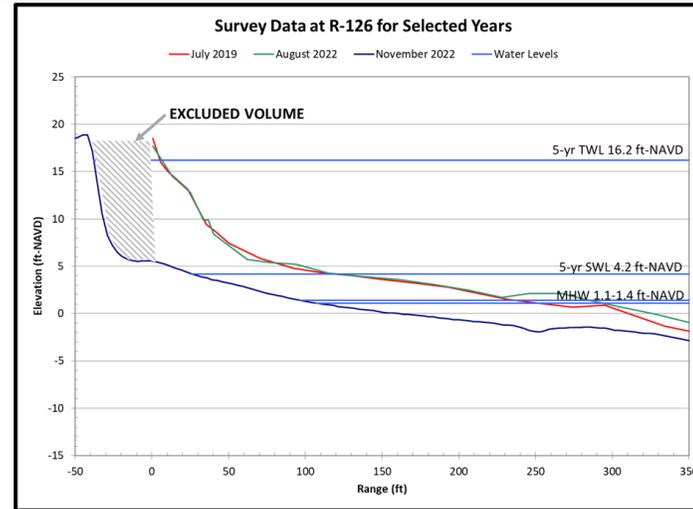
# Volusia County Beaches

- **47 total miles of beach** with 15 miles designated for beach driving and 27+ miles classified as critically eroded by FDEP
- **Key destinations** include Daytona Beach and New Smyrna Beach
- **Annual beach tourism generates \$4.3 billion** in regional economic impact
- Severely impacted by **Hurricanes Ian and Nicole** (2022)
  - Erosion of 6.4 Mcy (-34 cy/ft)
  - Sand starved environment



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# RISK ASSESSMENT

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# Risk Assessment – Methodology

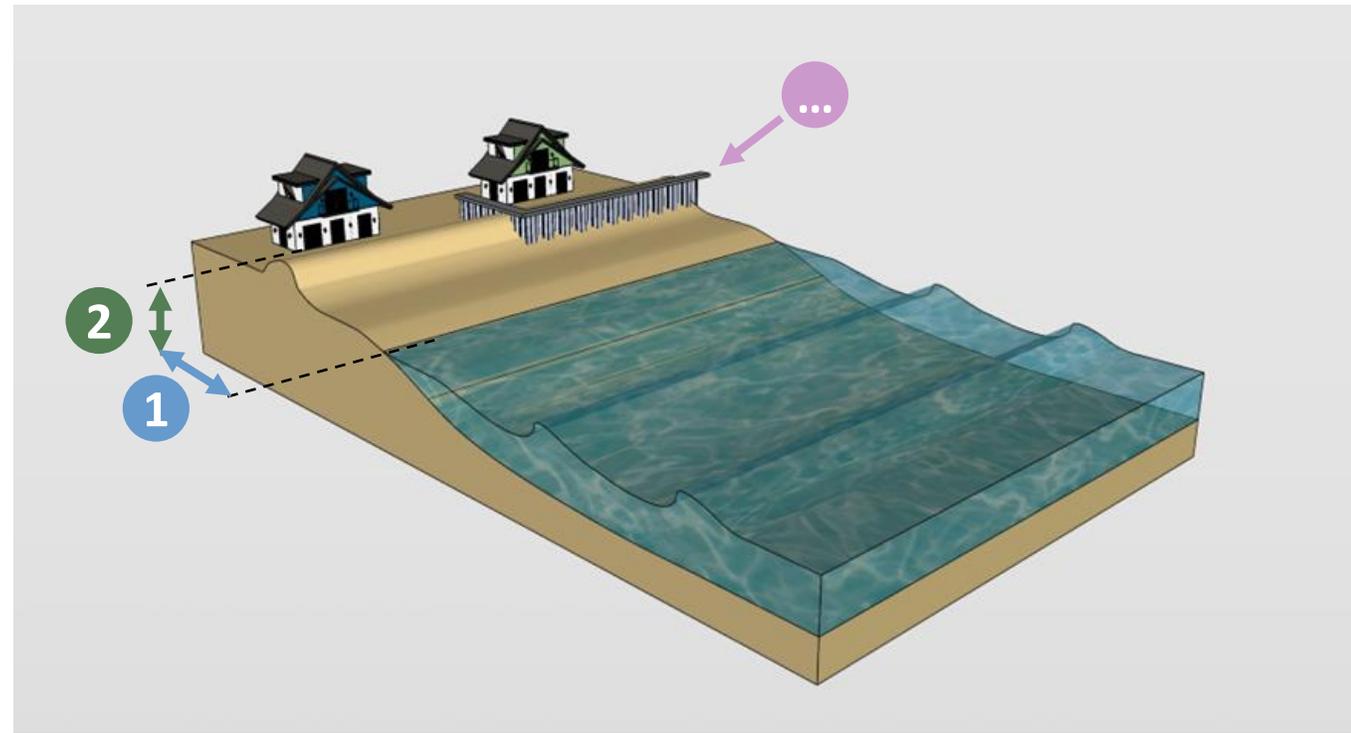
vulnerability parameters → community risk index

**1 SHORELINE ENCROACHMENT**  
the horizontal distance (or “buffer”) between the MHW shoreline position and infrastructure

**2 INFRASTRUCTURE EXPOSURE**  
or the “elevation buffer”; Percentage of parcels where infrastructure is within or below 1 ft of the USACE SACS 1% AEP SWEL

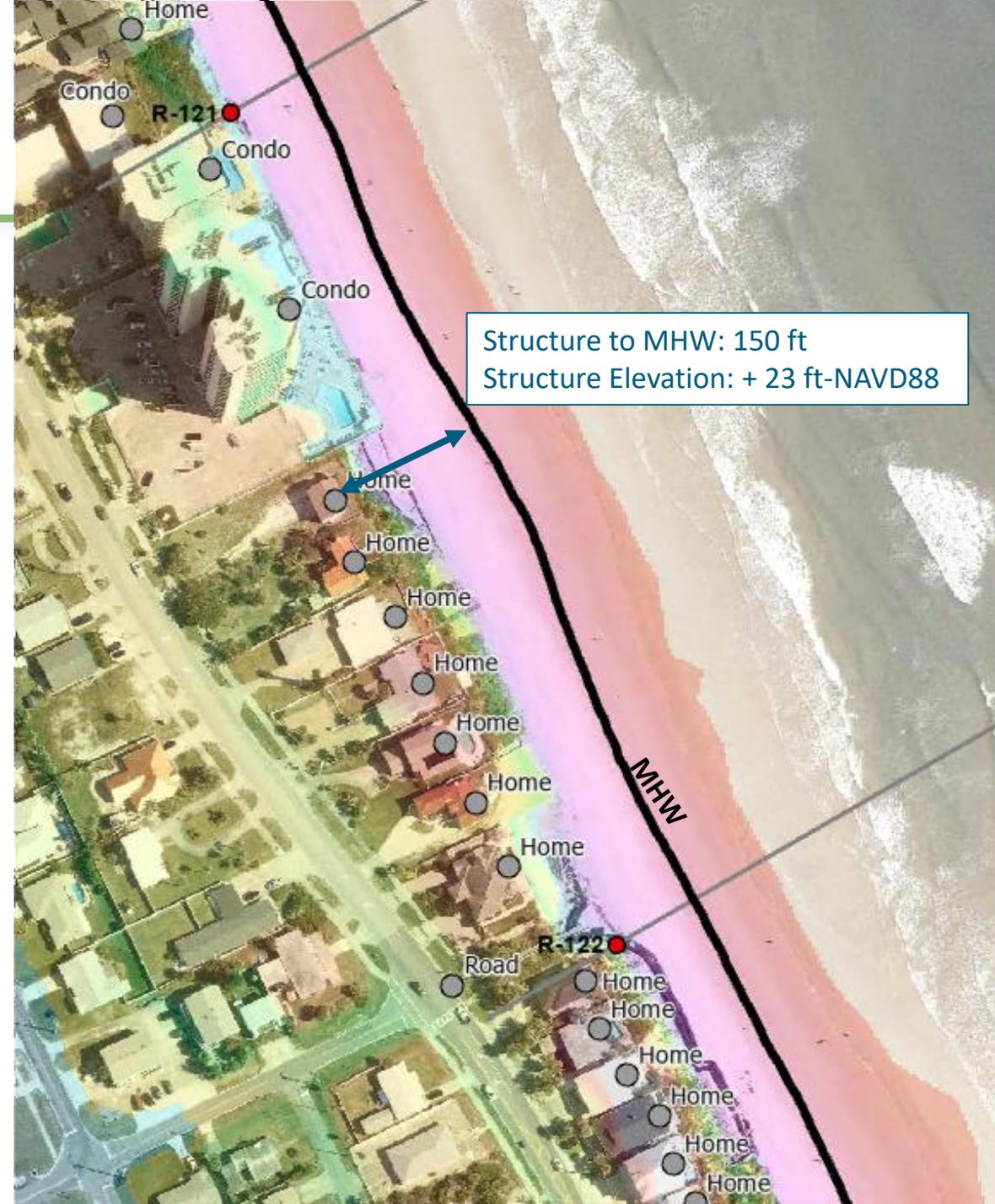
**3 HISTORICAL EROSION RATE**  
the average shoreline change rate since 2016 calculated via linear regression

**OTHER FACTORS**  
armoring presence and exposure; SBEACH storm response; community demographics; etc.



# Geospatial Analysis

- Parcel-by-parcel → community average
  - Categorized and marked upland infrastructure for each parcel
    - Non-essential, accessory components of a property not included
    - Coastal armoring features
- Calculated the elevation at each infrastructure/armoring point using the 2024 post-Milton LiDAR
  - Distance between significant feature-infrastructure, armoring, MHW



# Risk Assessment – Results

Community	Shoreline Encroachment	Infrastructure Exposure	Armoring Exposure	Historical Shoreline Change Rate	SBEACH Storm Response	Risk Score	Rank
North Peninsula (R-0 to R-16)	Medium (2)	Low (1)	Low (1)	Low (1)	Medium (2)	26	7
Ormond-by-the-Sea (R-16 to R-47)	Medium (2)	Low (1)	Low (1)	Low (1)	Medium (2)	26	7
Ormond Beach (R-47 to T-67)	Low (1)	Medium (2)	Medium (2)	Medium (2)	Medium (2)	33	6
Daytona Beach and Daytona Beach Shores (T-67 to R-122)	Medium (2)	Medium (2)	High (3)	High (3)	High (3)	47	3
Wilbur-by-the-Sea (R-122 to R-128)	High (3)	Low (1)	High (3)	High (3)	High (3)	47	3
Ponce Inlet (R-128 to R-148)	Low (1)	Medium (2)	Medium (2)	High (3)	Low (1)	36	5
New Smyrna Beach North (R-149 to R-160)	Low (1)	Medium (2)	Medium (2)	Low (1)	Low (1)	26	7
New Smyrna Beach South (R-160 to R-185)	Low (1)	Medium (2)	High (3)	High (3)	Low (1)	36	5
Silver Sands and Bethune Beach (R-185 to T-208)	High (3)	High (3)	Medium (2)	Low (1)	High (3)	45	3
<b>Weight</b>	5	5	2	5	2	-	-

POINTS

High (3)
Medium (2)
Low (1)

↑ points = ↑ risk

PRIMARY

PRIMARY

SECONDARY

PRIMARY

SECONDARY

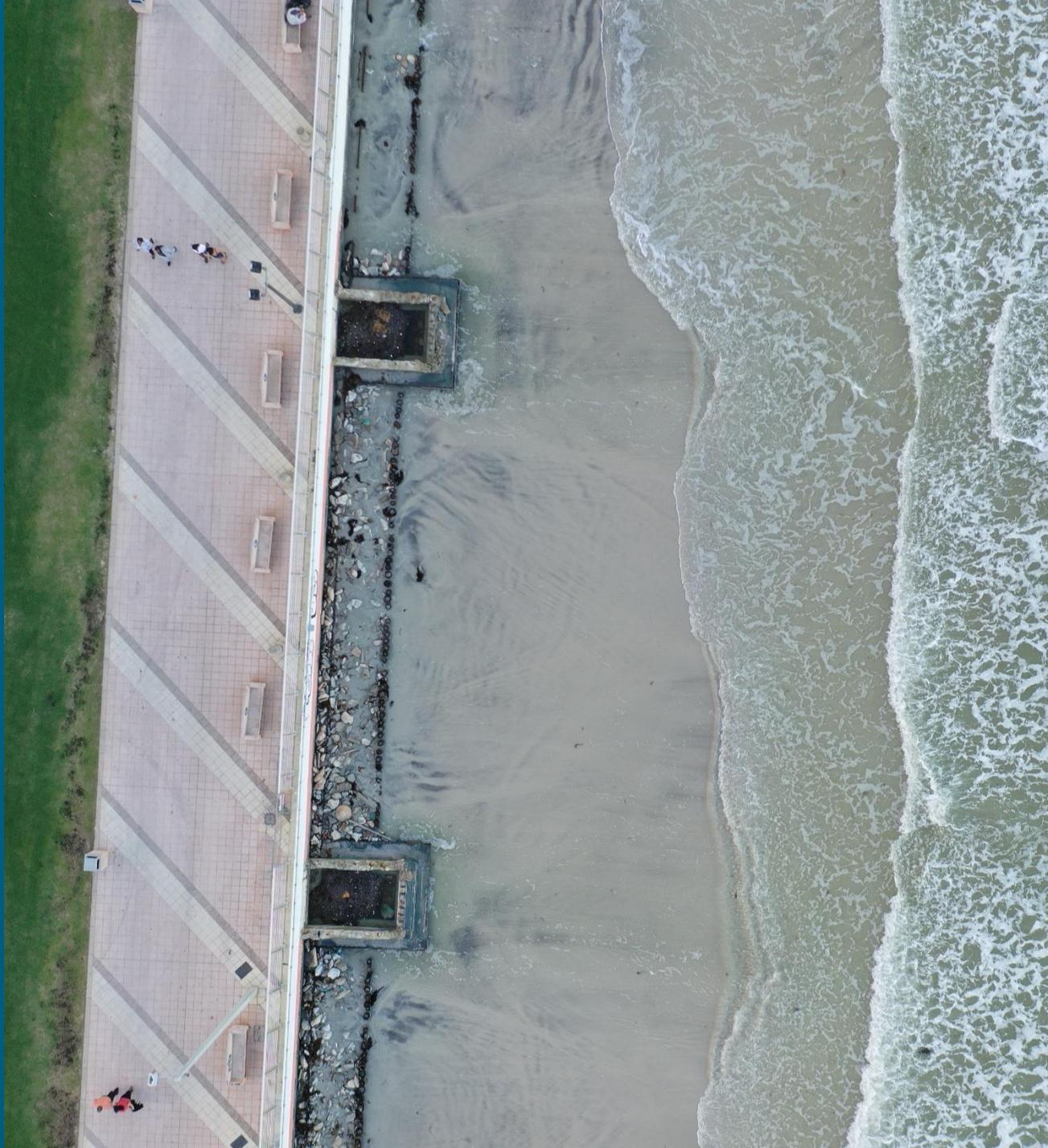
# Risk Assessment – Results

Statewide VA  
 2020 Census and the Climate and Economic Justice Screening Tool (CEJST)

Community	Parcel Count	Shoreline Encroachment	Infrastructure Exposure	Armoring Exposure	Historical Shoreline Change Rate	SBEACH Storm Response	Average Infrastructure Elevation (ft-NAVD88)	Armoring Coverage	Land Uses (Residential/ Commercial/ Public)	Public Beach Accesses	Critical Assets	Disadvantaged Communities	Risk Score	Rank
North Peninsula (R-0 to R-16)	14	Medium (2)	Low (1)	Low (1)	Low (1)	Medium (2)	17.2	0 (0%)	0%/0%/100%	1 (0.4 per mile)	1	-	26	7
Ormond-by-the-Sea (R-16 to R-47)	192	Medium (2)	Low (1)	Low (1)	Low (1)	Medium (2)	16.6	40 (21%)	68%/9%/23%	29 (5.3 per mile)	1	1 Disadvantaged and Persistent Poverty Census Tract	26	7
Ormond Beach (R-47 to T-67)	152	Low (1)	Medium (2)	Medium (2)	Medium (2)	Medium (2)	18.9	88 (58%)	64%/29%/7%	16 (4.4 per mile)	1	1 Persistent Poverty Census Tract	33	6
Daytona Beach and Daytona Beach Shores (T-67 to R-122)	339	Medium (2)	Medium (2)	High (3)	High (3)	High (3)	18.0	258 (76%)	48%/45%/7%	70 (7.1 per mile)	1	1 Disadvantaged Census Tract; 1 Disadvantaged and Persistent Poverty Census Tract	47	1
Wilbur-by-the-Sea (R-122 to R-128)	89	High (3)	Low (1)	High (3)	High (3)	High (3)	23.0	61 (69%)	95%/0%/5%	6 (5.5 per mile)	0	-	47	1
Ponce Inlet (R-128 to R-148)	146	Low (1)	Medium (2)	Medium (2)	High (3)	Low (1)	17.7	80 (55%)	82%/1%/18%	14 (3.9 per mile)	0	-	36	5
New Smyrna Beach North (R-149 to R-160)	86	Low (1)	Medium (2)	Medium (2)	Low (1)	Low (1)	17.3	14 (16%)	62%/0%/38%	16 (8.4 per mile)	0	-	26	7
New Smyrna Beach South (R-160 to R-185)	247	Low (1)	Medium (2)	High (3)	High (3)	Low (1)	16.6	141 (57%)	75%/10%/15%	46 (10.2 per mile)	1	-	38	4
Silver Sands and Bethune Beach (R-185 to T-208)	294	High (3)	High (3)	Medium (2)	Low (1)	High (3)	13.0	53 (18%)	93%/0%/7%	14 (3.4 per mile)	0	1 Persistent Poverty Census Tract	45	3
<b>Weight</b>	-	5	5	2	5	2	-	-	-	-	-	-	-	-

# ALTERNATIVES ANALYSIS

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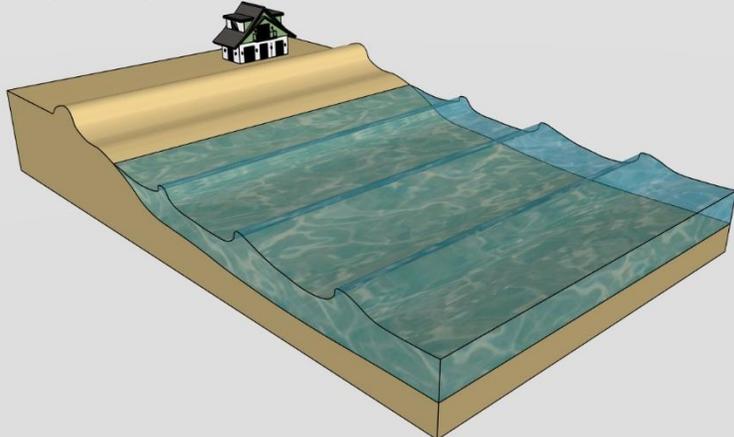
# Shoreline Alternatives Analysis

- Investigate beach management alternatives and their applicability to the County's shoreline reaches

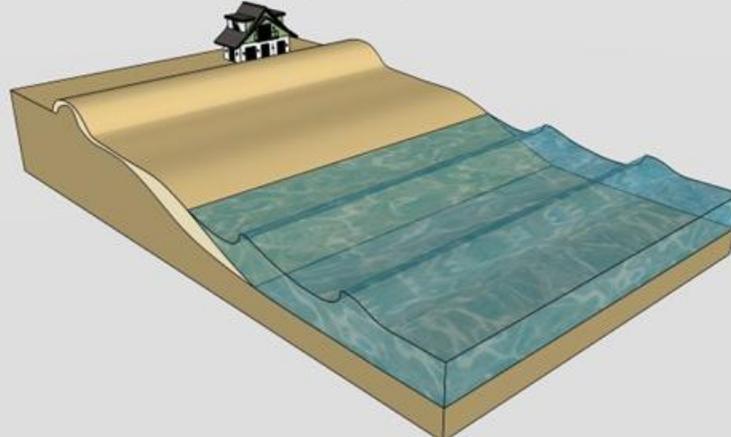
- Alternatives include

1. No Action
2. Structural Relocation
3. Flood Proofing and Structural Elevation
4. Seawalls
5. Revetments
6. Beach Nourishment
7. Groins
8. Nearshore Sand Placement
9. Breakwaters
10. Nearshore Artificial Reefs

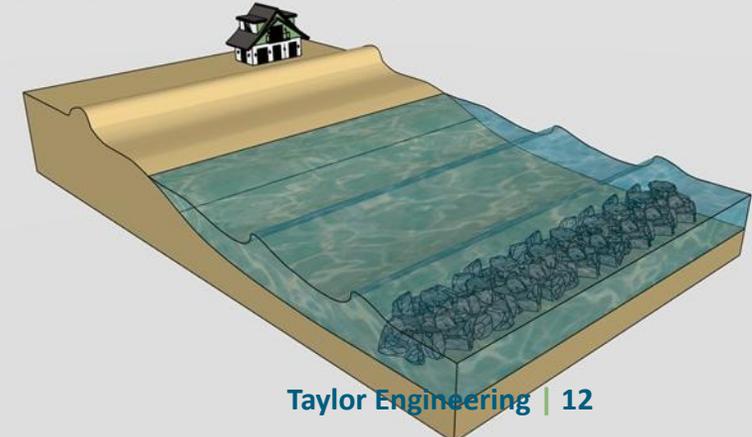
**NO ACTION**



**BEACH NOURISHMENT**



**BREAKWATERS**



# Shoreline Alternatives Analysis – Methodology

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## 1 COMPILE BACKGROUND INFORMATION

- What is each alternative's function? What are its' benefits and drawbacks? What are the risk and uncertainties associated with this solution? Does it have any social considerations? Is it feasible at a larger scale?
- Design and maintenance needs
- Permitting
- Cost

## 2 DEFINE OBJECTIVES

# Shoreline Alternatives Analysis – Methodology

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## 1 COMPILE BACKGROUND INFORMATION

## 2 DEFINE OBJECTIVES

-  Reduce coastal storm damages to structures, critical infrastructure, and cultural resources
-  Reduce risk of natural resource loss
-  Reduce risk to life safety
-  Avoid impact to recreation
-  Minimize impacts to threatened and endangered species and their habitats
-  Comply with federal, state, and local policies and regulations

### rank objectives

fully meets objective

partially meets objective

does not meet objective

# Shoreline Alternatives Analysis – Results

fully meets objective

partially meets objective

does not meet objective

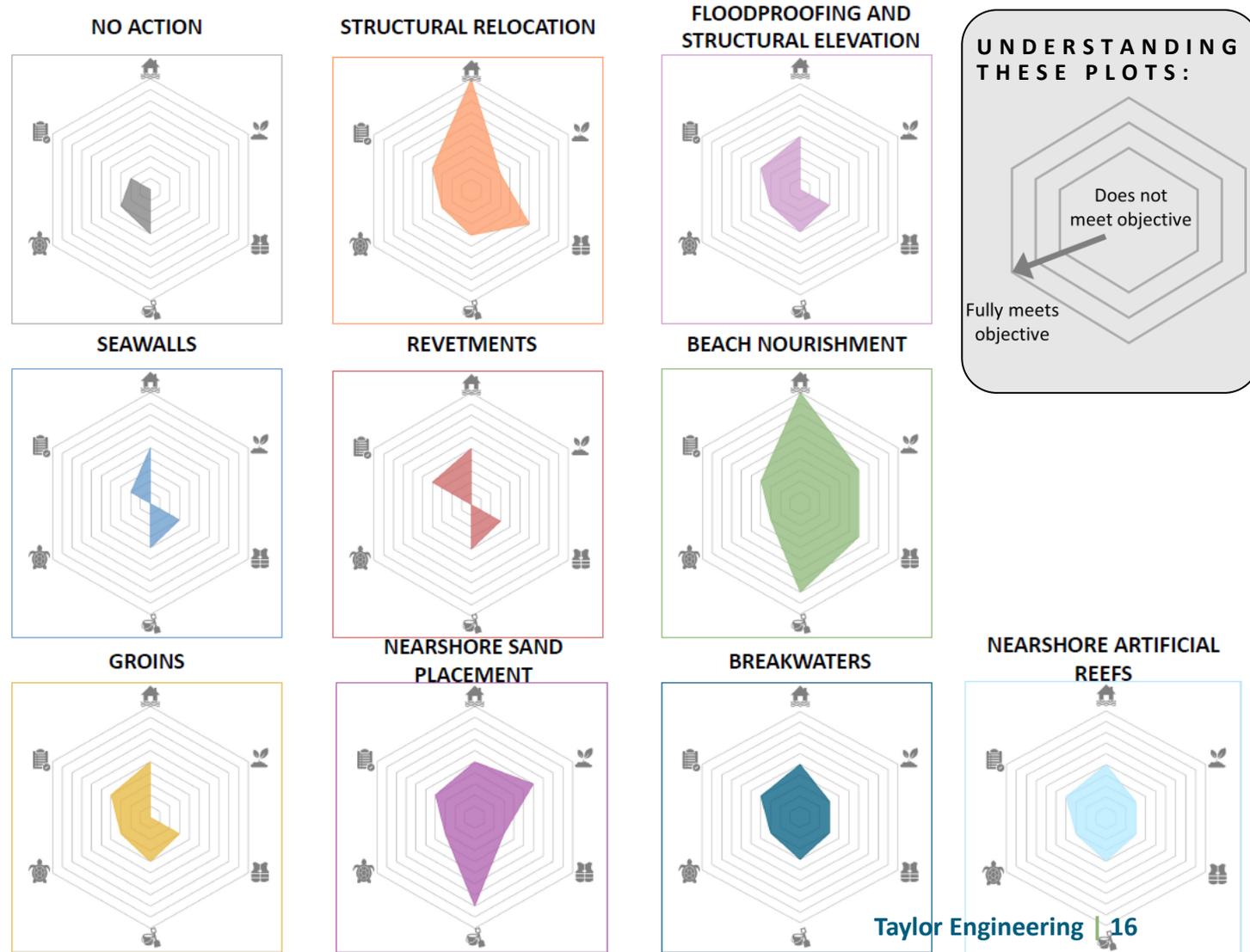
Beach Management Alternatives	Reduce coastal storm damages to structures, critical infrastructure, and cultural resources 	Reduce risk of natural resource loss 	Reduce risk to life safety 	Avoid impact to recreation 	Minimize impacts to threatened and endangered species and their habitats 	Comply with federal, state, and local policies and regulations 	Multiple-Criteria Decision Analysis*
Weighting	25%	15%	15%	20%	15%	10%	Total
No Action	Does not meet (0)	Does not meet (0)	Does not meet (0)	Partially meets (1)	Partially meets (1)	Partially meets (1)	0.45
<b>Structural Relocation</b>	Fully meets (2)	Partially meets (1)	Fully meets (2)	Partially meets (1)	Partially meets (1)	Fully meets (2)	1.50
Floodproofing and Structural Elevation	Partially meets (1)	Does not meet (0)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Fully meets (2)	0.95
Seawalls	Partially meets (1)	Does not meet (0)	Partially meets (1)	Partially meets (1)	Does not meet (0)	Partially meets (1)	0.70
Revetments	Partially meets (1)	Does not meet (0)	Partially meets (1)	Partially meets (1)	Does not meet (0)	Fully meets (2)	0.80
<b>Beach Nourishment</b>	Fully meets (2)	Fully meets (2)	Fully meets (2)	Fully meets (2)	Partially meets (1)	Fully meets (2)	1.85
Groins	Partially meets (1)	Does not meet (0)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Fully meets (2)	0.95
<b>Nearshore Sand Placement</b>	Partially meets (1)	Fully meets (2)	Partially meets (1)	Fully meets (2)	Partially meets (1)	Fully meets (2)	1.45
<b>Breakwaters</b>	Partially meets (1)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Fully meets (2)	1.10
<b>Nearshore Artificial Reefs</b>	Partially meets (1)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Partially meets (1)	Fully meets (2)	1.10

# Shoreline Alternatives Analysis

Reduce coastal storm damages to structures, critical infrastructure, and cultural resources 	Reduce risk of natural resource loss 	Reduce risk to life safety 	Avoid impact to recreation 	Minimize impacts to threatened and endangered species and their habitats 	Comply with federal, state, and local policies and regulations 
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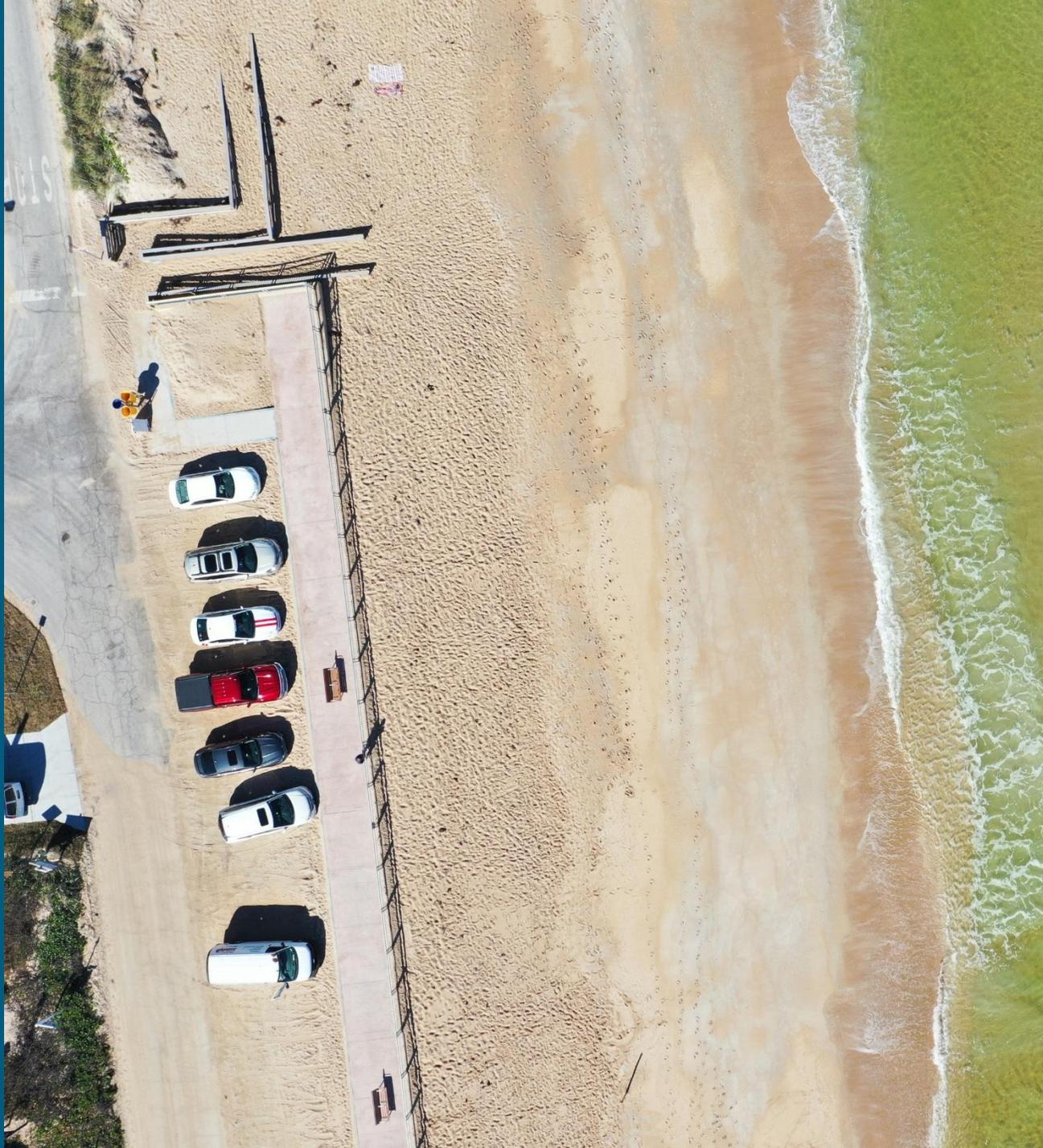
## CONTRIBUTION TO OBJECTIVE RANKING

- 1 Beach Nourishment
- 2 Structural Relocation
- 3 Nearshore Sand Placement
- 4 Breakwaters
- 4 Nearshore Artificial Reefs
- 6 Groins
- 6 Flood Proofing and Structural Elevation
- 8 Revetments
- 9 Seawalls
- 10 No action



# CONNECTING WITH THE COMMUNITY

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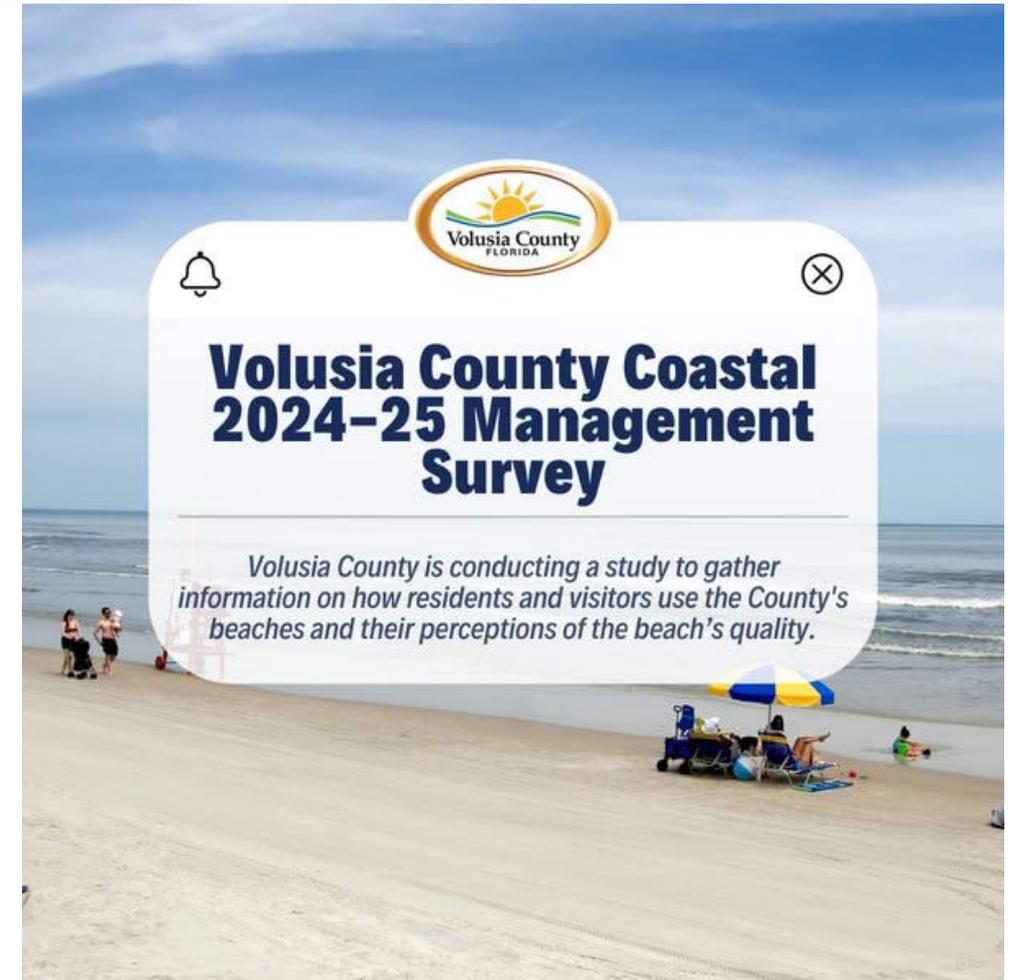
# Outreach Meetings

- February 2025– Study kickoff
  - Introduced the study and reviewed current beach conditions
- October 2025– Results & preliminary recommendations
  - Shared risk assessment findings
  - Discussed shoreline management alternatives & presented top ranked alternatives
- Three locations, three consecutive evenings
- Brief presentations to introduce topics followed by poster sessions



# Beach User Survey – Results

- First survey—December 2024 – January 2025
  - Focused on beach usage and quality
  - Received over 12,000 responses!
- Second survey—December 2025 – *February/March 2026?*
  - Focuses on the future management of Volusia County’s beaches
  - Received over 2,000 responses as of early January; primarily residents



# Beach User Survey Comparison

## VOLUSIA COUNTY BEACH USER SURVEY DEMONSTRATED

MAJORITY OF USERS ACCESS THE BEACH THROUGH PUBLIC INFRASTRUCTURE (VEHICULAR RAMPS OR WALKOVERS)

53%

VISIT THE BEACH WEEKLY

23%

VISIT MONTHLY

91%

OF RESPONDENTS AGREE THAT THE CONDITION AND QUALITY OF VOLUSIA COUNTY'S BEACHES SIGNIFICANTLY IMPACTS TOURISM AND THE LOCAL ECONOMY

## DAYTONA BEACH AREA TOURISM SURVEYS DEMONSTRATED

BEACH TOURISM IS THE DRIVING FORCE BEHIND VOLUSIA COUNTY TOURISM

79%

OF TOURISTS FROM 2021-2023 SAID THAT THEY WERE VACATIONING IN THE COUNTY BECAUSE OF THE BEACHES

97%

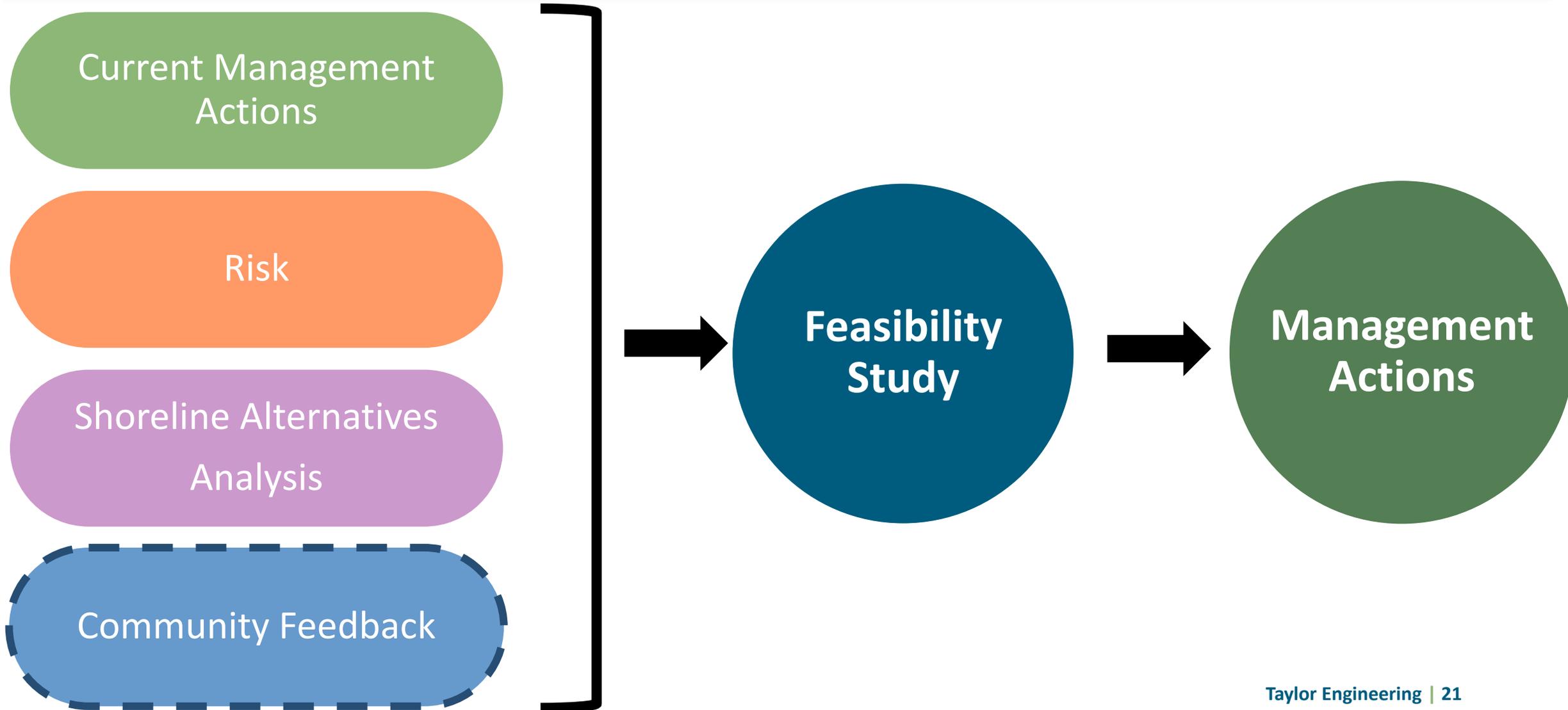
OF ALL TOURISTS (2021-2023) SAID THEY VISITED VOLUSIA COUNTY BEACHES REGARDLESS OF THEIR PRINCIPAL PURPOSES FOR VACATIONING IN THE COUNTY

**VOLUSIA COUNTY BEACHES ARE IMPORTANT TO BOTH RESIDENTS AND VISITORS**

SOURCE- DAYTONA BEACH AREA CVB, 2024

## Next steps

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# THANK YOU QUESTIONS?

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