



ECONOMIC RESILIENCY

Estimating the Economic Impact of Resiliency Adaptations

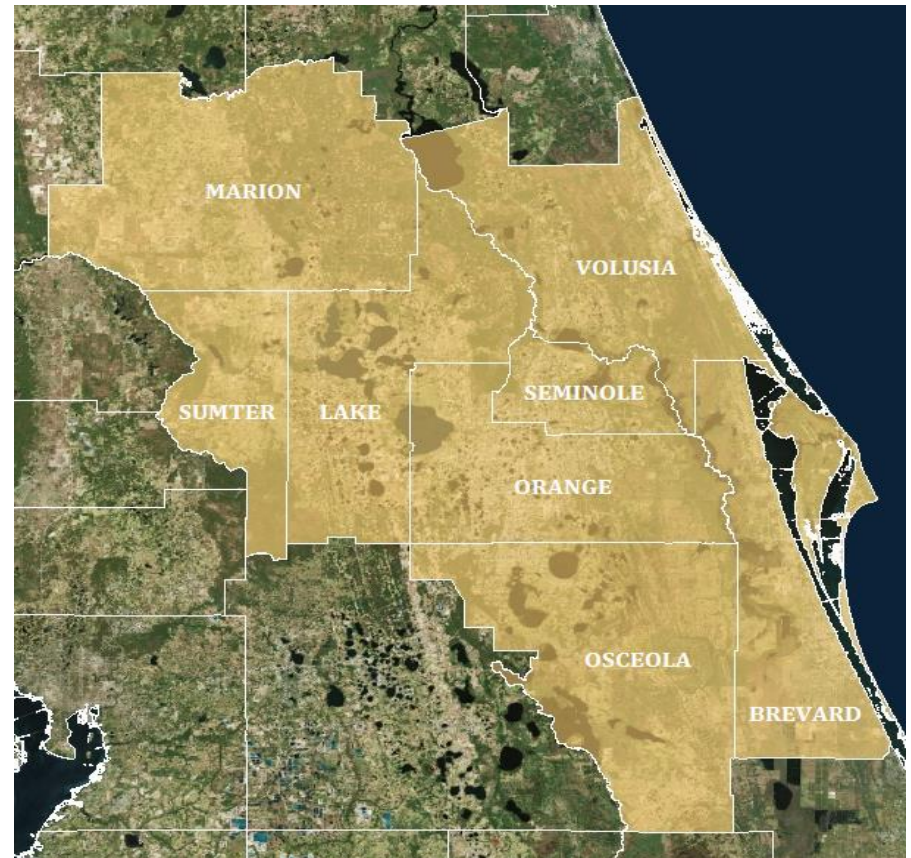
**Luis Nieves-Ruiz, AICP
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2019 REMI Users Conference**

ECONOMIC RESILIENCY



About ECFRPC

- One of 10 RPCs in Florida
- Provide Technical Assistance to Local Governments and Organizations in 8-county Region



RESILIENCY PROJECTS



FDEP Resiliency Grants

- Prepare Coastal Communities for Challenges of Flooding and Sea Level Rise
- Two Projects:
 - Resilient Cocoa
 - Resilient Cape Canaveral

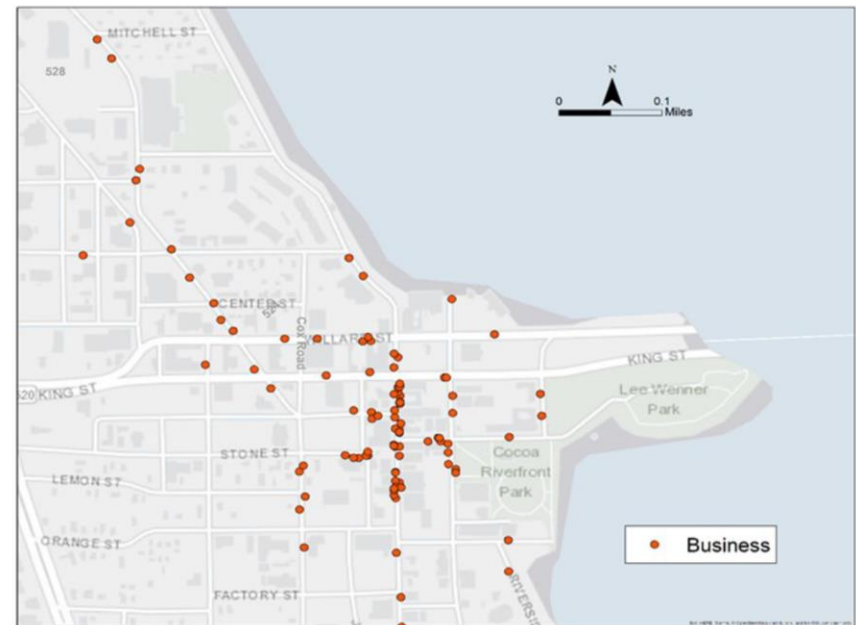


RESILIENT COCOA



Purpose of Economic Simulation

- Estimate the Economic Impact of Business Closures Because of Strong Precipitation Events
- Use City's Economic Hub as a Case Study



RESILIENT COCOA



Methodology and Data Sources

- Infogroup's Reference USA
- City's Business Tax Receipts
- Business Survey
- Literature Review



RESILIENT COCOA



Economic Impact of Urban Flooding

- Increasing Frequency and Intensity of Rain Events
- Abundance of Impervious Surfaces Makes Urban Areas Susceptible to Flooding
- Flooding Has a Devastating Effect on Small Businesses

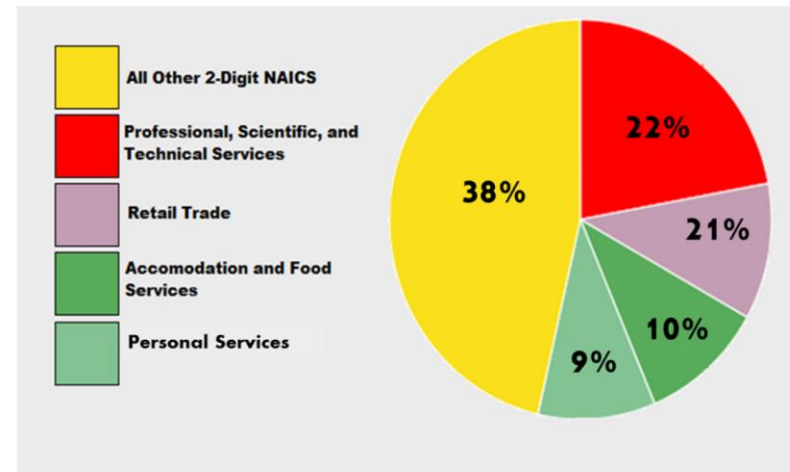


RESILIENT COCOA



Cocoa Village

- 181 Establishments
- \$139.5 Million in Annual Sales
- 2-5 Days Business Closures after Hurricane Irma



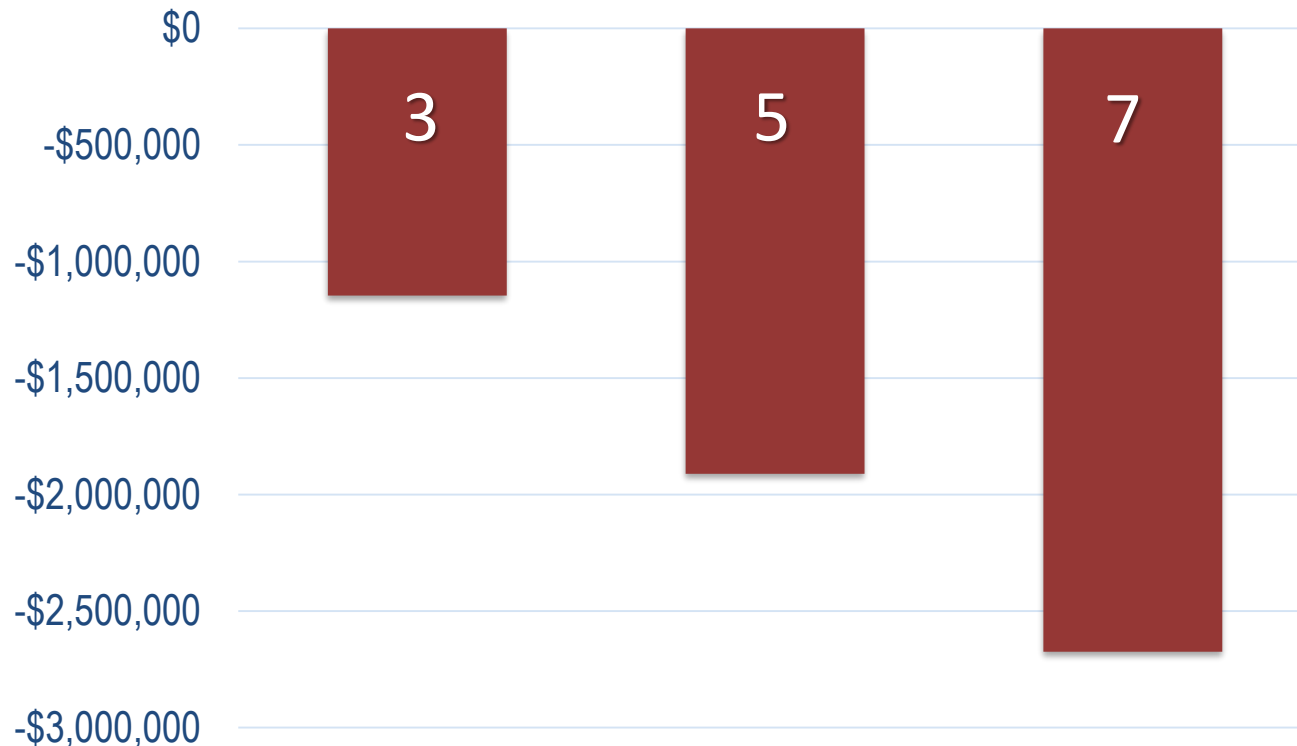
Industry	Annual Sales	Daily Sales
Retail Trade	\$22,445,185	\$61,494
Wholesale Trade	\$18,012,974	\$49,351
Full Service Restaurants	\$15,208,075	\$41,666
Legal Services	\$11,708,000	\$32,077
Real Estate	\$11,698,868	\$32,052
All Other Industries	\$60,429,933	\$165,561
Total	\$139,503,035	\$382,200

RESILIENT COCOA



Scenario 1: Do Nothing

More Flooding Days = More Sales Losses



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Scenario 1 Results

- 1,370
Jobs

- \$111 Million
Output/Sales

- \$128 Million
Personal Income

- \$56 Million
GRP



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Scenario 2: Green Infrastructure

- Program will Reduce Flooding Days by One
- Identify Locations to Incorporate New Features and Calculate Square Footage
- Determine Installation and Maintenance Costs



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Scenario 2 Results

- 23
Jobs

- \$2.87 Million
Output/Sales

- \$3.86 Million
Personal Income

- \$1.64 Million
Gross Regional
Product



RESILIENT CAPE CANAVERAL



Purpose of Economic Simulation

- Estimate the Economic Impact of Sea Level Rise
- Develop Complete/Green Street Project as an Adaptation Strategy



RESILIENT COCOA



Methodology and Data Sources

- Infogroup's Reference USA
- Brevard County Property Appraiser
- City's Planning Department
- Literature Review

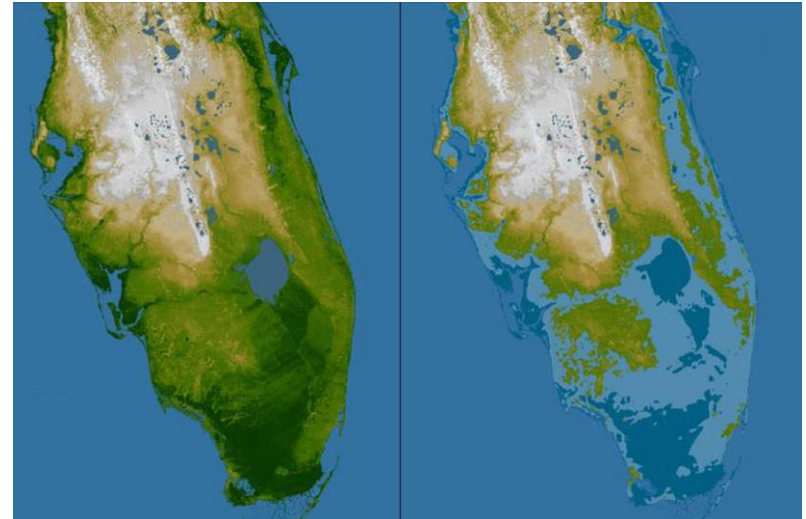


RESILIENT CAPE CANAVERAL



Economic Impact of Sea Level Rise

- Sea Levels Expected to Rise over Next 70 Years
- Affect Major Population and Economic Centers
- Effects will Occur Gradually Over Time

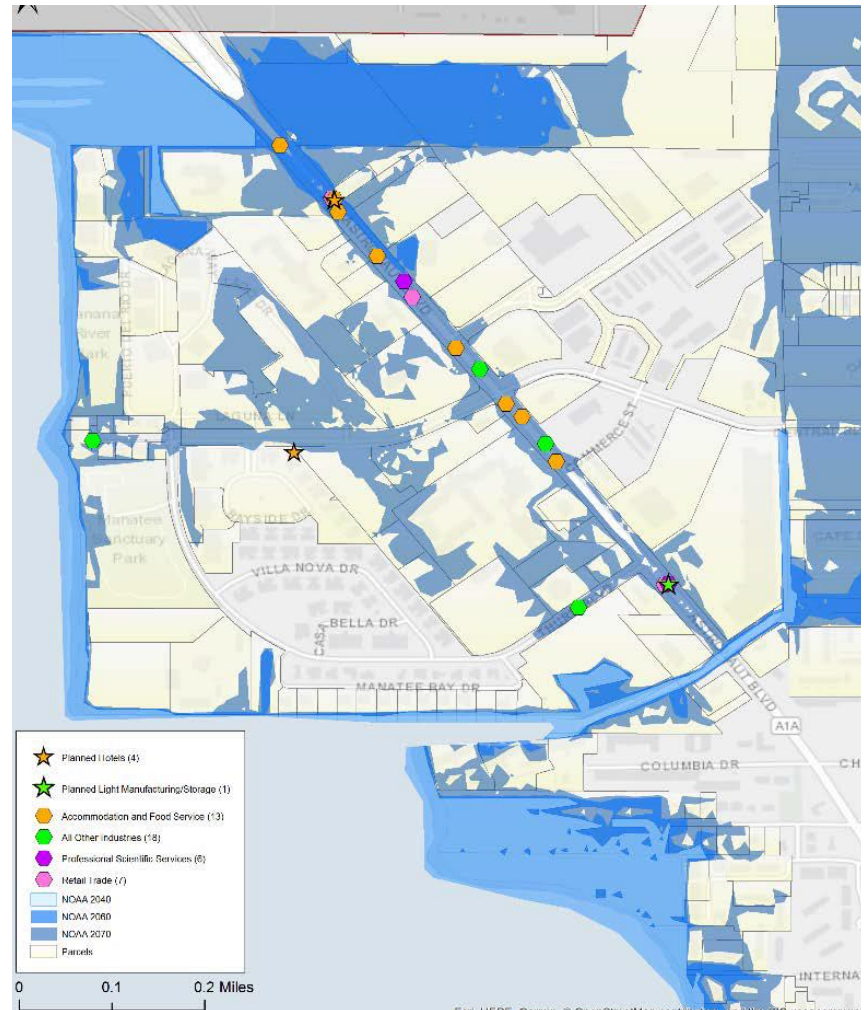


RESILIENT CAPE CANAVERAL



SR A1A (Astronaut Boulevard)

- City's Main Economic Corridor
- 44 Establishments
- \$124.3 M Annual Sales
- New Planned Projects
- Property Value Losses

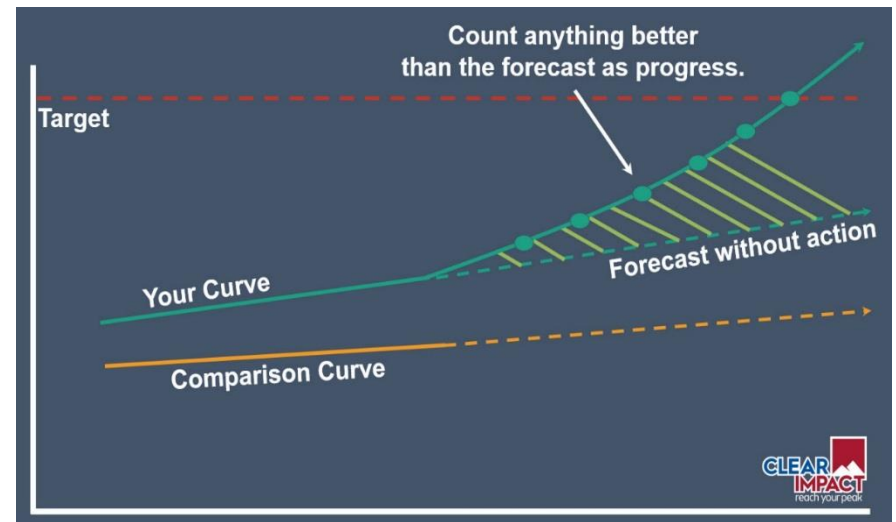


RESILIENT CAPE CANAVERAL



Scenario 1: Baseline Forecast Change

- REMI Does not Consider Rising Sea Levels
- Ends in 2060
- Adjust Forecast Based on Business Sales and Property Tax Revenue Losses (2030-2060)



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New Forecast Results

- 656
Jobs

- \$179.5 Million
Output/Sales

- \$94.9 Million
Personal Income

- \$97 Million
Gross Regional
Product



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Scenario 2: Complete/Green Street

- Turn A1A into a Complete/Green Street to Mitigate Effects of Creeping Inundation Levels
- Add Corridor Improvement and Maintenance Costs
- Decrease Business Costs 1-3%



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Scenario 2 Results

1,574
Jobs

\$512.8 Million
Output/Sales

\$569.7 Million
Personal Income

\$315 Million
Gross Regional
Product



RESILIENCY



Challenges of Modeling Resiliency

- REMI Forecast Extends Until 2060
- Not Enough Literature About the Cost/Benefit Ratio of the Different Resiliency Adaptation Measures
- Difficult to Make Technical Recommendations



Questions/Comments

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