Hillsborough County Climate Adaptation and Preparedness
Hillsborough County MPO: Vulnerability Assessment & Adaptation Pilot Project

Environmental Protection Commission Climate Adaptation Stakeholder Meeting
January 28, 2015
Project background

- **FHWA Pilot**: Climate change vulnerability assessment and adaptation analysis, focused on the transportation sector.

- **LRTP update**: Reduce Crashes & Vulnerability investment program

Both led by HC MPO/Planning Commission, with partners

**Final Report – October 2014**


**Project cost = $123K FHWA grant + $123K in-kind match**
Surface Transportation Assets

- 800 Freeways & Toll Road Lane Miles
- 3,300 Arterial & Collector Lane Miles
- 3 Major Bridges Across Tampa Bay
- Tampa International Airport
- Container, Bulk Cargo & Cruise Ship Terminals
- 9 Transit Centers & 243 Vehicle Fleet
- Heritage Streetcar System
- Class I Rail Lines & Intermodal Yard
Evaluation Process

- Data Collection
  - SLR - USGS
  - Storm Surge - Slosh
  - Flooding (FEMA)

- Analysis
  - Econometric Modeling (REMI)
  - Mapping (ArcGIS)
  - Modeling (TBRPM)

- Seek feedback
  - LMS Group
  - Emergency Mgt.
  - FDOT
  - Port Tampa Bay
  - Aviation Authority

- Economic Analysis

- Economic Analysis
Risk Scenario

» Simulated Category 3 storm surge

- Same category, trajectory as 1921 Tarpon Springs
- High tide
- Addition of sea level rise (2040)
Assess Potential Disruption Impacts

» Simulation of phased recovery (post-storm surge)

» Simulate travel disruption using TBRPM
  • One “typical day”

» Derive daily change in
  • Hours of delay
  • Miles travelled
  • Trips (lost)

» Estimate range of potential disruption for each scenario
# Stormwater Infrastructure Programs Today

## Annual Averages

<table>
<thead>
<tr>
<th>Location</th>
<th>Budget</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillsborough County</td>
<td>$10.2 M</td>
<td>($3.6 from SW fees)</td>
</tr>
<tr>
<td>City of Tampa</td>
<td>$13.5 M</td>
<td>($6.1 from SW fees)</td>
</tr>
<tr>
<td>Temple Terrace</td>
<td>$0.8 M</td>
<td></td>
</tr>
<tr>
<td>Plant City</td>
<td>$6.9 M</td>
<td></td>
</tr>
<tr>
<td>FDOT District 7</td>
<td>$9.8 M</td>
<td></td>
</tr>
</tbody>
</table>

**Net Cost to Budgets**  

*Not including stormwater fees*  

Total: **$31.45 M**
Potential Cost-Feasible With New Funding

- Harden 78 lane miles of Interstates: $37 M
- Harden 178 lane miles of other arterials: $97 M

“Harden” means improve stormwater drainage systems, strengthen road base, raise road profile, and protect shorelines from waves using vegetation or structures.

Annualized over 20 years = $8 M per year +/-
## Vulnerability Reduction Investment
Assumed in 2040 Plan

<table>
<thead>
<tr>
<th>Investment Level</th>
<th>Benefits and Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 1</strong></td>
<td>$31 Million per year</td>
</tr>
<tr>
<td><strong>Current</strong></td>
<td>Continue today's stormwater drainage improvement programs</td>
</tr>
<tr>
<td></td>
<td>Category 3 storm impacts:</td>
</tr>
<tr>
<td></td>
<td>- 8 weeks major roads may be unusable</td>
</tr>
<tr>
<td></td>
<td>- $266 million economic loss</td>
</tr>
</tbody>
</table>

| **Scenario 8b** | $39 Million per year |
| **Adopted**     | Continue today's stormwater drainage, plus: |
|                 | raise road profiles, enhance base, protect shorelines from wave damage |
|                 | Category 3 storm impacts: |
|                 | - 3 weeks major roads may be unusable |
|                 | - $119 million economic loss (cut in half!) |

**Economic losses cut in half**
2040 Plan Capacity Projects & simulated CAT 3 storm surge

- Memorial Hwy
- Gandy Connector
- US 41 Overpass/Interchange at CSX/Causeway
- Streetcar Modernization & Extension
Memorial Highway Project

- Cost Feasibility based on FDOT Strategic Intermodal System (SIS) 2040 Plan:
  - Part of SR 60/I-275 interchange reconstruction
  - $193 M cost (in YOE)
- Vulnerable area: 0.6 – 1.1 mi. based on Cat 1-Cat 3 storm surge
- Replacement cost: $100 M +
- Protection cost: $ 4.2 M
- Potential to incorporate into SIS project
FHWA Order 5520: Transportation System Preparedness & Resilience to Climate Change & Extreme Weather Events

Signed December 15, 2014

Integrate considerations of climate and extreme weather risks into planning operations, polices and program
Organizing for Climate Adaptation

**Regional Efforts**
- Tampa Bay Climate Science Advisory Panel (CSAP)
- Tampa Bay Regional Planning Council ONE BAY Resilient Communities

**Local County Efforts**
- MPO Transportation Vulnerability Assessment
- EPC Climate Adaptation Workgroup
Tampa Bay Climate Science Advisory Panel (CSAP)

- Ad-hoc group of local scientists formed Spring 2014
- Led by Libby Carnahan, Florida Sea Grant agent, UF/IFAS Extension Office in Pinellas
- Help local governments better understand sea-level rise scenarios
- Assisted by Tampa Bay Regional Planning Council and ONE BAY Resilient Communities Initiative
SLR Projection Curves for Tampa Bay Region

(Source: Climate Science Advisory Panel, 2015)
Engaging County Government

- Environmental Protection Commission of Hillsborough County raised issue of Climate Adaptation for the first time in August 2014

- EPC presented to the Board along with local NOAA scientist, Dr. Charles Paxton

- EPC was given direction
  - to move forward on coordinating local efforts
  - to look at climate adaptation
EPC Climate Adaptation Workgroup

- September 2014, began meeting in “Sunshine”
- Includes all municipalities and others
- Drafted language for planning documents
- Draft policy currently under review
Local Comprehensive Plans

Proposed New Policy

“Develop strategies to identify and address issues related to climate adaptation in cooperation with the EPC, the Planning Commission and other agencies”
Climate Adaptation Stakeholder Meeting

January 29, 2015
Rising sea levels require unified effort

For a state surrounded by water, Florida should be among the nation in preparing to adapt to climate change. By contrast, Gov. Rick Scott, a self-proclaimed skeptic of man-made warming, has failed to engage key stakeholders and local communities when the impacts are looming from Miami to St. Augustine. State and local governments should increase their efforts before rising sea levels pose even greater damage to public safety, property and the ecosystem.

'Climate adaptation' on planners' radar

For the first time, the Hillsborough County Planning Commission sought input from local governments to consider the effects of climate change in its draft plan. The draft plan includes a focus on climate change adaptation and its impacts on the county's comprehensive plan since 2008.

Hillsborough governments building sea-level rise into development plans

POLITICS

89°

LOCAL NEWS | US & WORLD | THINGS TO DO | WEATHER | SPORTS | HEALTH & FITNESS | DEALS & SHOPPING

BY CHRIS PERKINS DONELLY

Tampa Tribune

Wednesday, Aug. 30, 2016

Published: March 08, 2015
Addressing Climate Issues Regionally

**Tampa Bay Climate Science Advisory Panel (CSAP)**
Unified Projection of Sea-Level Rise in Tampa Bay Region

**TBRPC ONE BAY Resilient Communities**

- Pinellas County Climate Team
- Hillsborough County EPC Workgroup
- Manatee County Green Team
- Pasco County

**City of Clearwater DOE Pilot Project**
Engaging Local Staff

Recommendation for a Unified Projection of Sea-Level Rise in the Tampa Bay Region
Contact Information

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Environmental Protection Commission
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Rush@epchc.org
Regional Activity

Tampa Bay Climate Science Advisory Panel

Local scientists recommendation for a unified sea level rise projection for the region

Tampa Bay Regional Planning Council (TBRPC)

One Bay Resilient Communities
## Simulated Storm Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simpson-Saffir Hurricane Category</td>
<td>3 (111-129 mph winds, up to 21 foot surge depths)</td>
</tr>
<tr>
<td>Trajectory</td>
<td>Tarpon Springs Hurricane (1921), observed track</td>
</tr>
<tr>
<td>Sea Level Rise</td>
<td>High, 2040 (current Mean Sea Level + 14”)</td>
</tr>
<tr>
<td>Tidal Datum</td>
<td>Mean Higher High Water (projected MSL + 16”)</td>
</tr>
</tbody>
</table>
Lessons Learned – so far…

Bayshore Boulevard – Tropical Storm Debby

- Tampa dubbed “most vulnerable & overdue” city for a direct hurricane hit. – 2013 Weather Channel Meteorologist Survey
- No direct hit in over 90 Years
- Recent Flooding – 2012 Tropical Storm Debby (20”)
- Corresponds with the 2040 Long Range Transportation Plan Update
- Opportunity to incorporate work into LRTP, Countywide Post Disaster Redevelopment Plan, and Local Mitigation Strategy
Assets Studied

- Memorial Highway (Segment)
- South 20th/22nd (Segment)
- Selmon Expressway (Ramps)
- Gandy Boulevard (Segment)
- Courtney Campbell Causeway (Segment)
- I-75 over Alafia River (Bridge)*

* Not vulnerable under any studied flooding scenario
Memorial Highway

<table>
<thead>
<tr>
<th>Current Condition</th>
<th>Multi-modal corridor between Pinellas and Hillsborough Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Age (Lifespan)</td>
<td>1964, 2005, 2010</td>
</tr>
<tr>
<td>Use / Ridership</td>
<td>158,000 AADT</td>
</tr>
<tr>
<td>Estimated Replacement Cost</td>
<td>Approx. $164M*</td>
</tr>
</tbody>
</table>

*Estimated cost is based on 2010 project, which was larger in scope than the 1.76 miles studied here.
Inundation Profile

Memorial Highway

Note: Profile shown is that of the Florida Digital Elevation Model. Elevations of bridges and other manmade structures may not be accurately reflected.
Project Partners
Phase I

» Data

- FDOT Road/Transit GIS Layers
- County Flood Plain Information
- Data collected by the MPO and shared on project FTP site
- SLOSH & REMI – storm surge & economic analysis tools
- GeoPlan – SLR viewer tool & NOAA - Port Resilience Tool

» Project partners meet on a monthly basis via teleconferencing and share data via FTP.

» Established stakeholders group – local government agencies, social service organizations, & citizens who review hazard mitigation projects in HC
Phase II
Critical Linkages
Verification

DATA COLLECTION
- Critical Important Transportation Links
- Vulnerable To Sea Level Rise and Storm Surge

MODELING
Result: Maps
Showing all areas that may experience inundation with sea level rise and Category 3 hurricane storm surge

LOCAL MITIGATION STRATEGIES WORKING GROUP INPUT
Result: Inventory
List of transportation facilities that are critical, vulnerable, and/or deemed important by local experts.

Screen
Categorize inventory list with the following criteria:
- Facility should be on high capacity evacuation route
- Should provide regional and statewide traffic movement
- Should be in areas most vulnerable to inundation

SORT INTO PRIORITY TIERS
First Tier
- Most vulnerable
- Facilitate statewide evacuations
- Carry most traffic
- State managed

Second Tier
- Very vulnerable
- Facilitate regional/subregional evacuations
- On transit route
- No network redundancy

Third Tier
- Less vulnerable
- Facilitate local evacuations
- No network redundancy
- Locally managed
More Cost-Feasibility Assumptions ....

**Capacity Projects** on the 2040 Plan cost-feasible list:

Can vulnerability reduction treatments be incorporated?

What funding source was assumed for these projects?
Hillsborough County, Florida

• 158 miles of coastline
• 3rd Largest Population in Florida (1.2 Million)
• 22% of the population lives in a flood prone area
• Economic Hub of Tampa Bay Metropolitan Region
• Largest seaport in Florida
• Home to US Central Command & Special Operations Command Center
• Tampa General – Regional Burn Center
Pilot Scope/Assessment Process

- Collect data, identify potential extreme weather vulnerabilities (sea level rise, storm surge, and flooding)

- Identify critical, vulnerable infrastructure (5-10 high-risk assets) for adaptation

- Develop adaptation (risk mitigation) strategies for a selection of high-risk assets

- Assess economic impact of disruption & avoided lost w/ mitigation

- Document findings, recommendations, feedback to FHWA
**LRTP Scope/Assessment Process**

- Develop risk scenario (storm surge)
- Assess potential disruption impacts
- Develop adaptation (risk mitigation) scenarios
# 2040 & 2060 SLR Scenarios

<table>
<thead>
<tr>
<th>2040 Sea Level Rise</th>
<th>2060 Sea Level Rise</th>
</tr>
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<tbody>
<tr>
<td>Scenarios</td>
<td>Depth (in)</td>
</tr>
<tr>
<td>MHHW</td>
<td>30</td>
</tr>
<tr>
<td>MLW</td>
<td>2</td>
</tr>
</tbody>
</table>
Step 2: Assess Potential Disruption Impacts

» Simulation of phased recovery (post-storm surge)

» Simulate travel disruption using TBRPM

» Derive daily change in
  • Hours of delay
  • Miles travelled
  • Trips (lost)

» Estimate range of potential disruption
Step 2: Assess Potential Disruption Costs

- Model economic costs of disruption
  - Using REMI econometric model

- Impacts are measured in terms of WEEKLY:
  - Work hours
  - Income
  - Gross Regional Product

- Results of full disruption (one week)
  - $109 million lost GRP
  - $66 million lost income
  - 2+ million lost work hours
## Step 3: Risk Mitigation Investment Scenarios

<table>
<thead>
<tr>
<th>Illustrative Mitigation Measures</th>
<th>Baseline</th>
<th>Tier 1 (Interstates)</th>
<th>Tier 2 (Interstates &amp; Arterials)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy Type</strong></td>
<td><strong>Baseline</strong></td>
<td><strong>Tier 1 (Interstates)</strong></td>
<td><strong>Tier 2 (Interstates &amp; Arterials)</strong></td>
</tr>
<tr>
<td><strong>Limit Exposure</strong></td>
<td>Maintain/manage as usual</td>
<td>Raise roadway profile</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elevate profile, enhance crown</td>
<td></td>
</tr>
<tr>
<td><strong>Mitigate Sensitivity</strong></td>
<td>Shoreline protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Wave attenuating devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhance roadway base</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enhance Adaptive Capacity (recovery)</strong></td>
<td>Increase drainage capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Upgrade to flanking inlets, increase conveyance capacity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sample Strategy
Wave Attenuating Devices (WADs)
Estimated Risk Mitigation Benefits

**Illustrative result:**
$35 - $82 million net benefit

<table>
<thead>
<tr>
<th>Moderate Scenario</th>
<th>Base/Low Investment Level</th>
<th>Medium Investment Level</th>
<th>High Investment Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Loss</td>
<td>$266,094,000</td>
<td>$153,141,000</td>
<td>$119,203,200</td>
</tr>
<tr>
<td>Avoided Loss</td>
<td>$</td>
<td>$112,953,000</td>
<td>$146,890,800</td>
</tr>
<tr>
<td>Strategy Cost</td>
<td>$</td>
<td>$31,000,866</td>
<td>$111,932,281</td>
</tr>
<tr>
<td>Net</td>
<td>$</td>
<td>$81,952,123</td>
<td>$34,958,508</td>
</tr>
</tbody>
</table>

Not NPV
Critical Assets for Pilot Assessment
Inundation with Cat 1 Surge

0.562 miles potentially inundated
Inundation with Cat 3 Surge
Inundation with FEMA 1% Chance Flood
# Estimated Impacts of Disruption

**Memorial Highway (Segment)**

<table>
<thead>
<tr>
<th>Trip Type</th>
<th>Attribute</th>
<th>Daily Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leisure Travel Data</strong></td>
<td>Auto - VMT</td>
<td>68,409</td>
</tr>
<tr>
<td></td>
<td>Auto - VHT</td>
<td>274,029</td>
</tr>
<tr>
<td></td>
<td>Auto - Delay</td>
<td>266,660</td>
</tr>
<tr>
<td></td>
<td>Auto - Lost Trips</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Auto - VMT</td>
<td>51,313</td>
</tr>
<tr>
<td></td>
<td>Auto - VHT</td>
<td>104,898</td>
</tr>
<tr>
<td></td>
<td>Auto - Delay</td>
<td>99,977</td>
</tr>
<tr>
<td></td>
<td>Auto - Lost Trips</td>
<td>0</td>
</tr>
<tr>
<td><strong>Commuter Auto Travel Data</strong></td>
<td>Auto - VMT</td>
<td>100,049</td>
</tr>
<tr>
<td></td>
<td>Auto - VHT</td>
<td>111,230</td>
</tr>
<tr>
<td></td>
<td>Auto - Delay</td>
<td>106,929</td>
</tr>
<tr>
<td></td>
<td>Auto - Lost Trips</td>
<td>0</td>
</tr>
<tr>
<td><strong>Business/On-the-clock</strong></td>
<td>Auto - VMT</td>
<td>7,495</td>
</tr>
<tr>
<td></td>
<td>Truck - VMT</td>
<td>38,641</td>
</tr>
<tr>
<td></td>
<td>Truck - Delay/Idling</td>
<td>37,626</td>
</tr>
<tr>
<td></td>
<td>Truck - Lost Trips</td>
<td>0</td>
</tr>
</tbody>
</table>

**Estimated weekly losses**

- **Gross Regional Product:** $15.8 MM
- **Income:** $8.0 MM
- **Work Hours:** 223,000
## Potential Impacts and Mitigation Strategies

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Extent (miles)</th>
<th>Potential Impacts</th>
<th>Potential Mitigation Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLR</td>
<td>0.0</td>
<td>• n/a (unlikely)</td>
<td>• n/a</td>
</tr>
<tr>
<td>Cat 1</td>
<td>0.58</td>
<td>• Disruption (overtopping, ponding) • Washouts, erosion</td>
<td>• Drainage improvements • Raise profile/crown • Force attenuation (WADs) • Existing condition: established shoreline vegetation (stabilizing/attenuating)</td>
</tr>
<tr>
<td>Cat 3</td>
<td>1.09</td>
<td>• Disruption (overtopping, ponding) • Washouts, erosion</td>
<td>$4.2 MM (marginal illustrative cost)</td>
</tr>
<tr>
<td>DFIRM (A /AE)</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DFIRM (V /VE)</td>
<td>0.0</td>
<td>• n/a (unlikely)</td>
<td>• n/a</td>
</tr>
</tbody>
</table>
Memorial Highway Preliminary Results
Estimated Avoided Net Losses

Category 1: $2.1 – $8.4 MM
Category 3: $11.6 – $21.0 MM
Tipping Point: 1.3 days avoided disruption*

* Point after which strategy “pays for itself” (not time-value adjusted)
Sample Menu of Risk Management Strategies

<table>
<thead>
<tr>
<th>Storm Surge Vulnerability</th>
<th>INVESTMENT LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Exposure: Reduce exposure to storm surge</td>
<td>-</td>
</tr>
<tr>
<td>Elevate</td>
<td>-</td>
</tr>
<tr>
<td>Protect</td>
<td>-</td>
</tr>
<tr>
<td>Shield</td>
<td>-</td>
</tr>
<tr>
<td>Sensitivity: Reduce the impacts of storm surge</td>
<td>-</td>
</tr>
<tr>
<td>Maintain</td>
<td>DRAINAGE (culverts, grates, catch basins)</td>
</tr>
<tr>
<td></td>
<td>ROADWAY (base, shoulder, pavements)</td>
</tr>
<tr>
<td>Strengthen</td>
<td>ROADWAY BASE (upon reconstruction)</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Attenuate</td>
<td>FENCING (low lying interstates/major arterials)</td>
</tr>
<tr>
<td></td>
<td>RIP RAP</td>
</tr>
<tr>
<td></td>
<td>SALT RESISTANT VEGETATION</td>
</tr>
<tr>
<td>Adaptive Capacity: Increase the capacity of the network to recover functionality</td>
<td>-</td>
</tr>
<tr>
<td>Recover</td>
<td>PLAN (increase post disaster response planning/response budgets)</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>PERMIT (blanket debris permits)</td>
</tr>
<tr>
<td>Reroute</td>
<td>ESTABLISH EMERGENCY DETOURS</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
# Preliminary Results (detail)

## Memorial Highway

### Cat 1 Estimated Effectiveness

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Base (No Adapt)</th>
<th>Lower</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruption (weeks)</td>
<td>1</td>
<td>0.6</td>
<td>0.2</td>
</tr>
<tr>
<td>Economic Loss</td>
<td>$15,781,000</td>
<td>$9,468,600</td>
<td>$3,156,200</td>
</tr>
<tr>
<td>Avoided Loss</td>
<td>$ -</td>
<td>$6,312,400</td>
<td>$12,624,800</td>
</tr>
<tr>
<td>Strategy Cost</td>
<td>$4,219,594</td>
<td>$4,219,594</td>
<td>$4,219,594</td>
</tr>
<tr>
<td>Net</td>
<td>$ -</td>
<td>$2,092,806</td>
<td>$8,405,206</td>
</tr>
</tbody>
</table>

### Cat 3 Estimated Effectiveness

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Base (No Adapt)</th>
<th>Less</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruption (weeks)</td>
<td>2</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Economic Loss</td>
<td>$31,562,000</td>
<td>$15,781,000</td>
<td>$6,312,400</td>
</tr>
<tr>
<td>Avoided Loss</td>
<td>$ -</td>
<td>$15,781,000</td>
<td>$25,249,600</td>
</tr>
<tr>
<td>Strategy Cost</td>
<td>$4,219,594</td>
<td>$4,219,594</td>
<td>$4,219,594</td>
</tr>
<tr>
<td>Net</td>
<td>$ -</td>
<td>$11,561,406</td>
<td>$21,030,006</td>
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</table>

### Tipping Point Mitigation Range

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Weeks</th>
<th>Days</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruption (weeks)</td>
<td>0.27</td>
<td>1.34</td>
<td>32.09</td>
</tr>
<tr>
<td>Economic Loss</td>
<td>$15,781,000</td>
<td>$15,781,000</td>
<td></td>
</tr>
<tr>
<td>Avoided Loss</td>
<td>$ -</td>
<td>$15,781,000</td>
<td></td>
</tr>
<tr>
<td>Strategy Cost</td>
<td>$4,219,594</td>
<td>$4,219,594</td>
<td></td>
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