

Hillsborough County

Transportation Vulnerability Assessment and Adaptation Pilot

presented to

Local Mitigation Strategy Working Group

presented by

Cambridge Systematics, Inc.

Josh DeFlorio

December 10, 2013

Today's Agenda

- **Project Overview**
- **Illustrative Results of the Criticality Screening Process**
- **Preliminary Vulnerability Assessment**
- **Selection of Critical/Vulnerable Transportation Assets for Study**

PROJECT OVERVIEW

Project recap

- **Climate change vulnerability assessment and adaptation pilot, focused on the transportation sector.**
 - » *Sponsored by the Federal Highway Administration (competitive grant)*
- **Led by Hillsborough County MPO/Planning Commission, with:**
 - » *Tampa Bay Regional Planning Commission*
 - » *University of South Florida*
 - » *Hillsborough County Public Works*
- **Expected completion: Summer 2014**
 - » *Started in August 2013*

Scope/Assessment Process

- ***Phase 1: Collect data, identify potential extreme weather vulnerabilities [nearing completion]***
- ***Phase 2: Identify critical, vulnerable infrastructure (5-10 high-risk assets) for adaptation [starting today]***
- **Phase 3: Develop adaptation (risk mitigation) strategies for a selection of high-risk assets**
- **Phase 4: Document findings, recommendations, feedback to FHWA**

ILLUSTRATIVE RESULTS OF CRITICALITY SCREENING PROCESS

What do we mean by “criticality”

- **Facilitates the access of people and goods to significant origins and destinations in your region, community, State, or beyond**
- **Representative of a common category of transportation facilities in your region**

Recap of the Criticality Approach

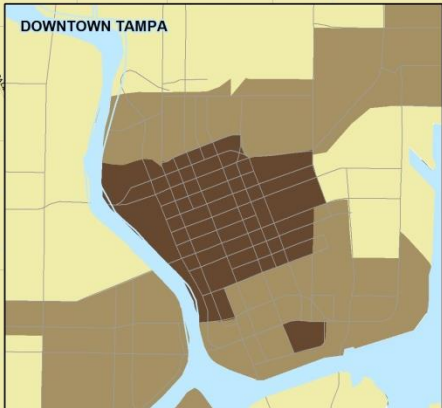
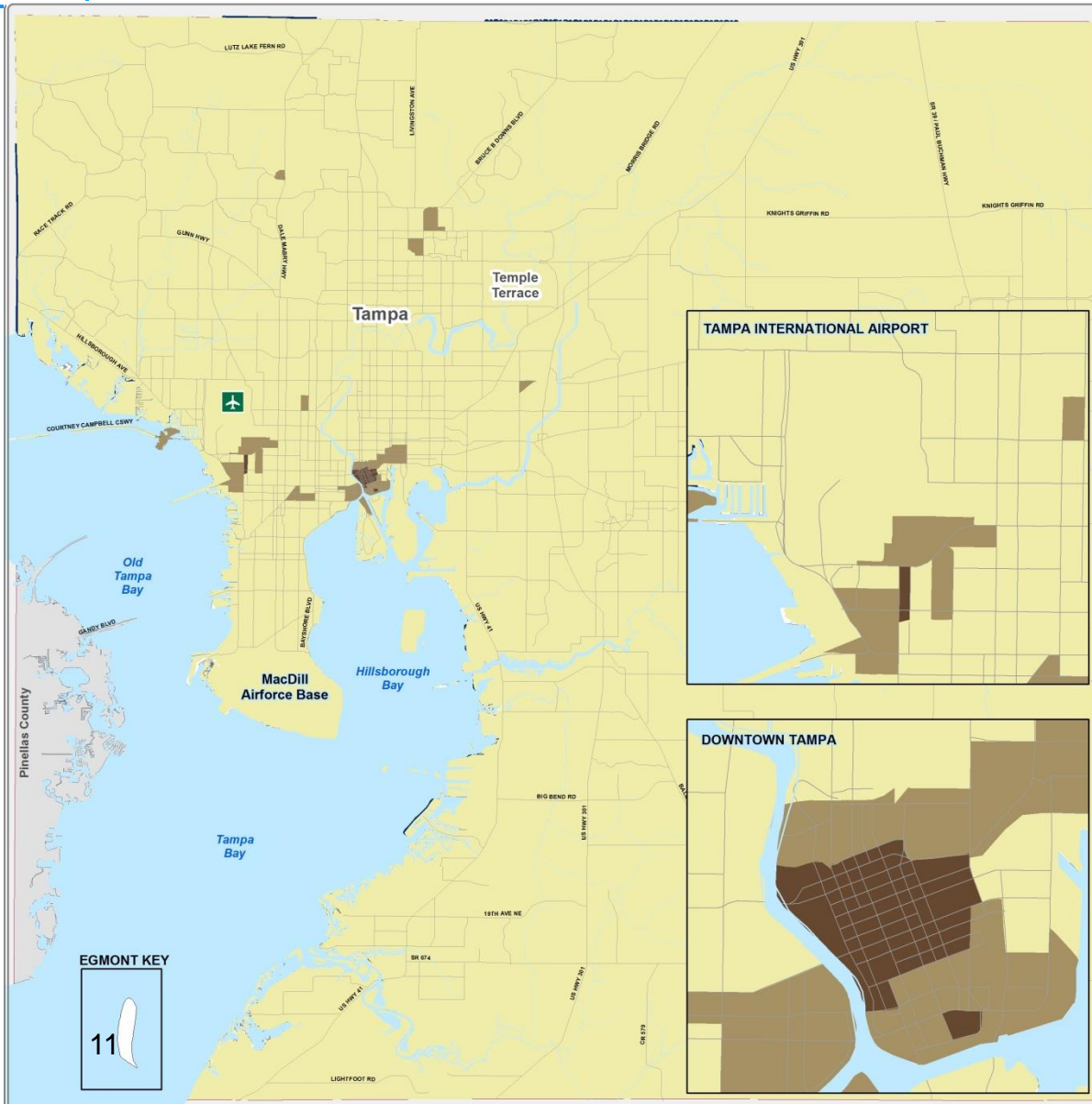
- **Step 1: Establish a data-driven foundation for stakeholder decision-making**
 - » *Especially useful for future scenarios*
- **Step 2: Using the products of Step 1, facilitate a dialogue among stakeholders (e.g., the LMS_WG) to select critical assets for assessment**
 - » *Using quantitative and qualitative information*

Step 1: Criticality Screening

- **A tool for making more informed decisions**
 - » *NOT a tool that makes decisions*
- **Employs the regional travel demand model to calculate the relative criticality of each link in the roadway network**
- **Based on the principle that the most important transportation assets connect the most important origins and destinations (O-Ds)**

CRITICALITY SCREENING

2040 Critical Facilities



Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY CRITICALITY ANALYSIS

HILLSBOROUGH COUNTY CRITICAL TAZs

Legend

2040 Critical TAZs

- Low-Medium
- High
- Very High

Location Diagram and Reference Information



DATA SOURCES: Hillsborough County MPO, Cambridge Systematics, Hillsborough County GIS and Florida Geographic Data Library

MAJOR ROADS: See Adopted MPO Long Range Transportation Plan for specific improvements.

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Date: 12/9/2013

PRELIMINARY VULNERABILITY ASSESSMENT (EXPOSURE ANALYSIS)

2040 Sea Level Rise (Low, MHHW)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2040 SEA LEVEL RISE LOW (MHHW)

Legend

- Transit Transfer Ctrs
- TECO
- Bridges
- Intermodal Facilities
- ≡ SIS RAIL
- 2040 SLR Low (MHHW)
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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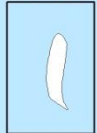
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EGMONT KEY



2040 Sea Level Rise (High, MHHW)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS

2040 SEA LEVEL RISE HIGH (MHHW)

Legend

- Transit Transfer Ctrs
- TECO
- Bridges
- Intermodal Facilities
- SIS RAIL
- 2040 SLR High (MHHW)
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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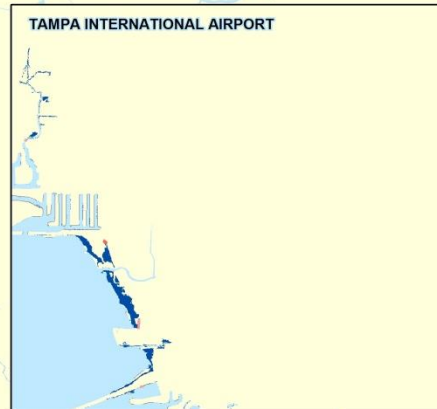
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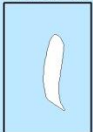
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EGMONT KEY



2040 Cat 1 Surge + SLR (Low, MHHW)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2040 SEA LEVEL RISE (LOW) WITH CATEGORY 1 STORM SURGE

Legend

- Transit Transfer Ctrs
- TECO
- Bridges
- Intermodal Facilities
- SIS RAIL
- SLR (Low) + Cat 1
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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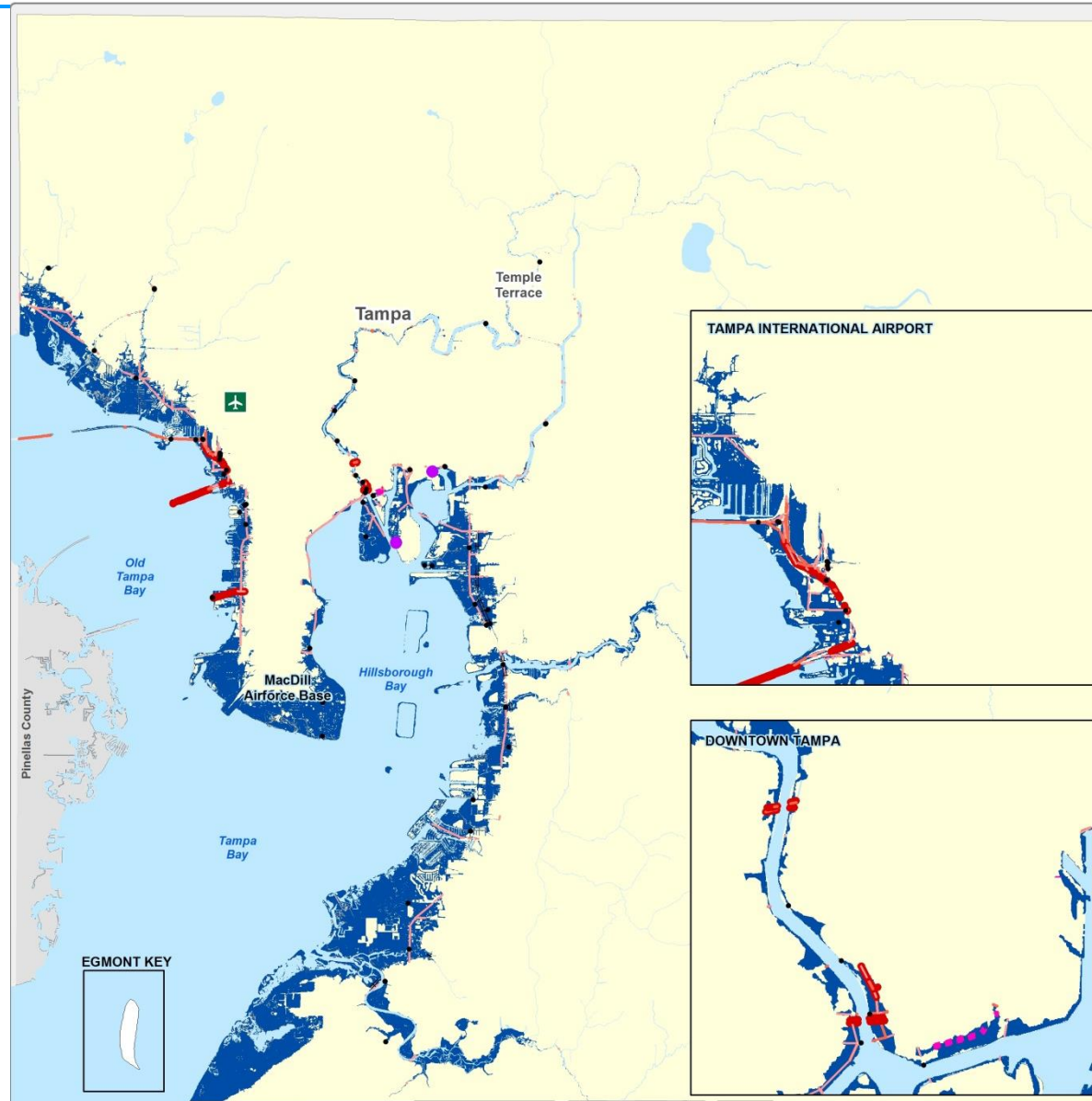
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2040 Cat 1 Surge + SLR (High, MHHW)

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HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2040 SEA LEVEL RISE (HIGH) WITH CATEGORY 1 STORM SURGE

Legend

- Transit Transfer Ctrs
- ◆ TECO
- Bridges
- Intermodal Facilities
- ≡ SIS RAIL
- SLR (High) + Cat 1
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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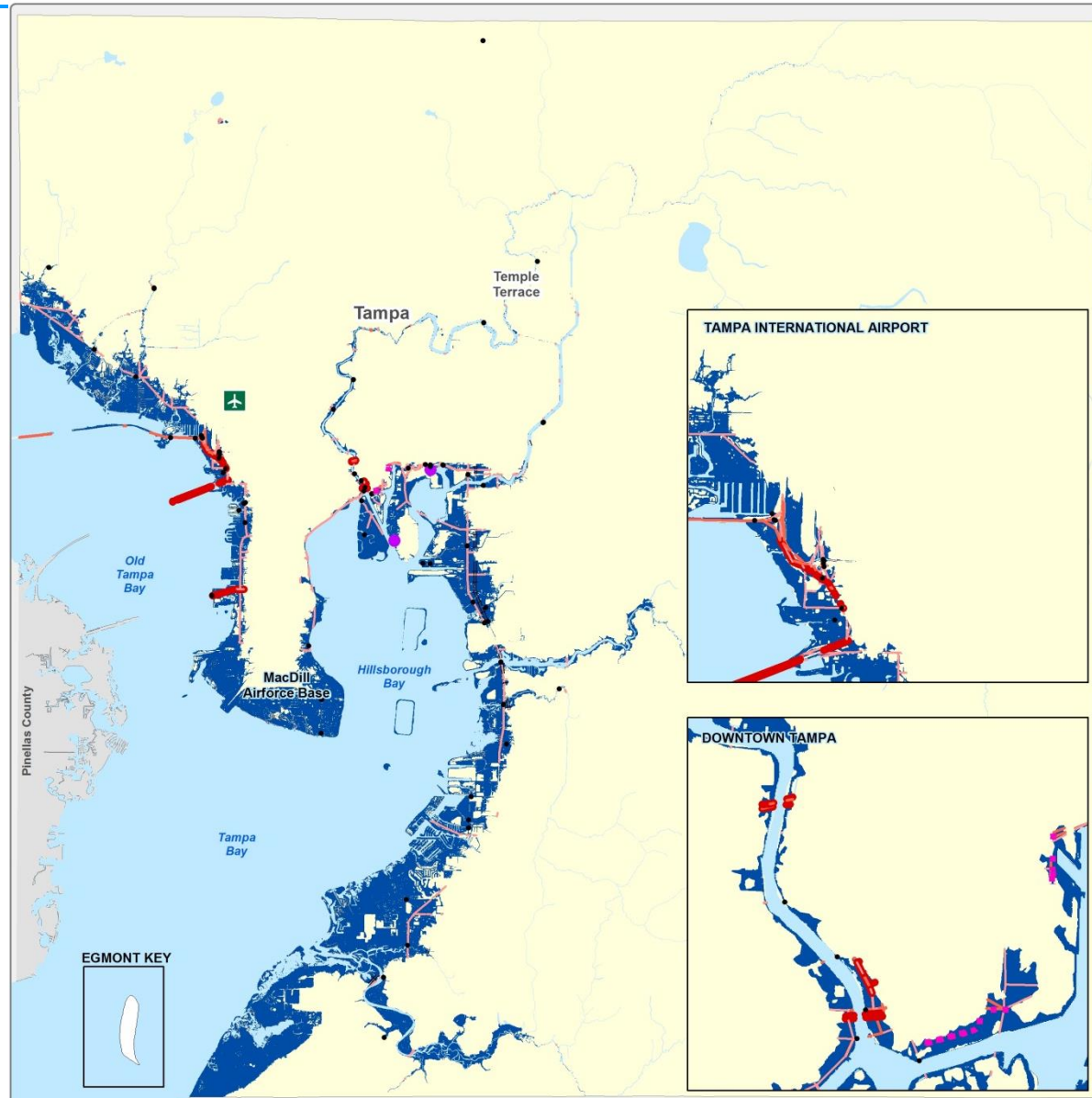
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2060 Cat 1 Surge + SLR (High, MHHW)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2060 SEA LEVEL RISE (HIGH) WITH CATEGORY 1 STORM SURGE

Legend

- Transit Transfer Ctrs
- TECO
- Bridges
- Intermodal Facilities
- ≡ SIS RAIL
- 2060 SLR (High) + Cat 1
- 2060 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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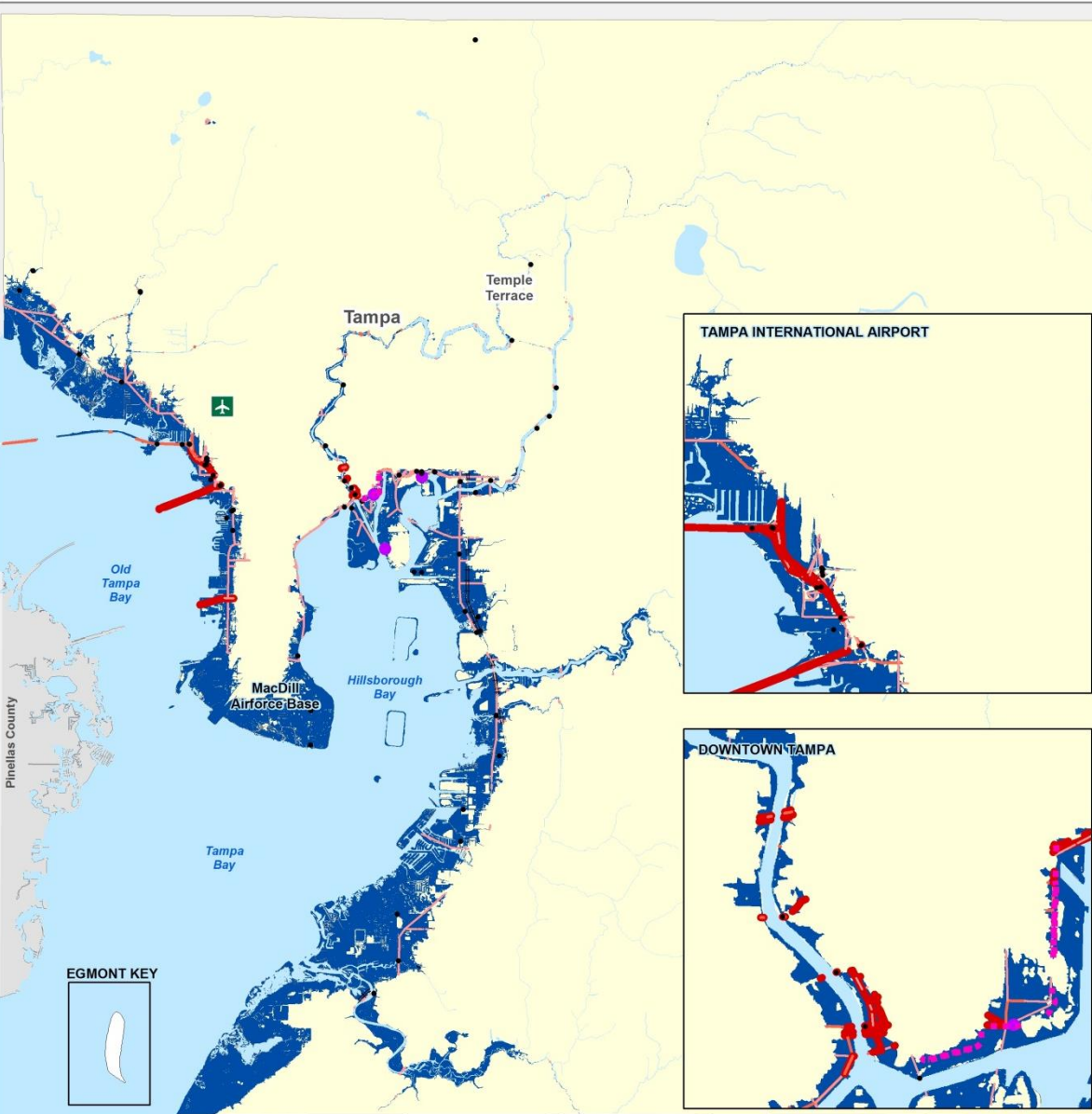
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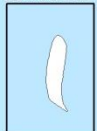
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EGMONT KEY



2040 Cat 3 Surge + SLR (Low, MHHW)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2040 SEA LEVEL RISE (LOW) WITH CATEGORY 3 STORM SURGE

Legend

- Transit Transfer Ctrs
- TECO
- Bridges
- Intermodal Facilities
- SIS RAIL
- SLR (Low) + Cat 3
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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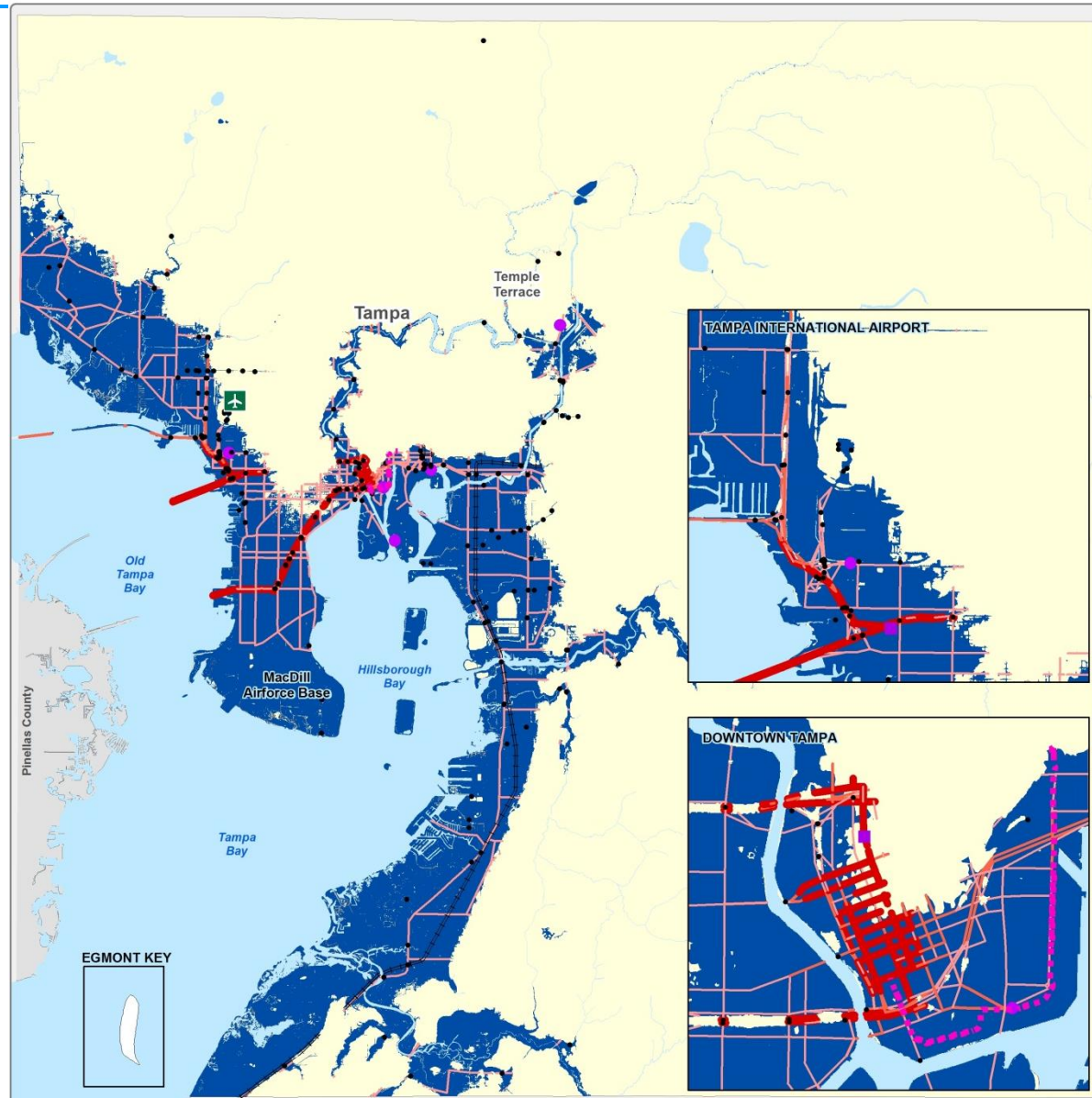
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2040 Cat 3 Surge + SLR (High, MHHW)

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HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2040 SEA LEVEL RISE (HIGH) WITH CATEGORY 3 STORM SURGE

Legend

- Transit Transfer Ctrs
- ◆ TECO
- Bridges
- Intermodal Facilities
- ≡≡≡ SIS RAIL
- SLR (High) + Cat 3
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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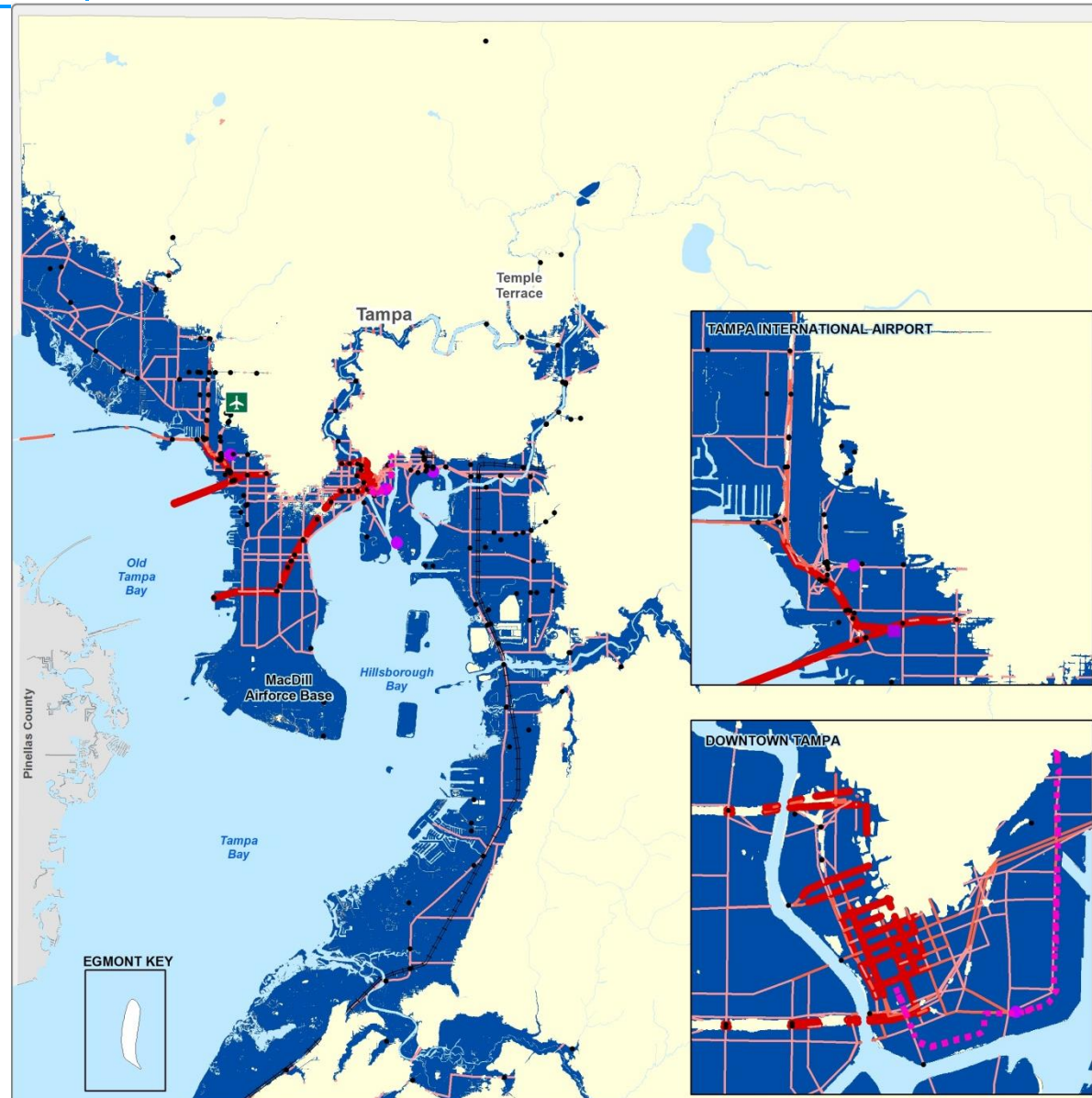
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2060 Cat 3 surge + SLR (High, MHHW)

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HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS 2060 SEA LEVEL RISE (HIGH) WITH CATEGORY 3 STORM SURGE

Legend

- Transit Transfer Ctrs
- ◆ TECO
- Bridges
- Intermodal Facilities
- ≡≡≡ SIS RAIL
- 2060 Critical Links**
- Low-Medium
- High
- Very High
- 2060 SLR (High) + Cat 3

Location Diagram and Reference Information



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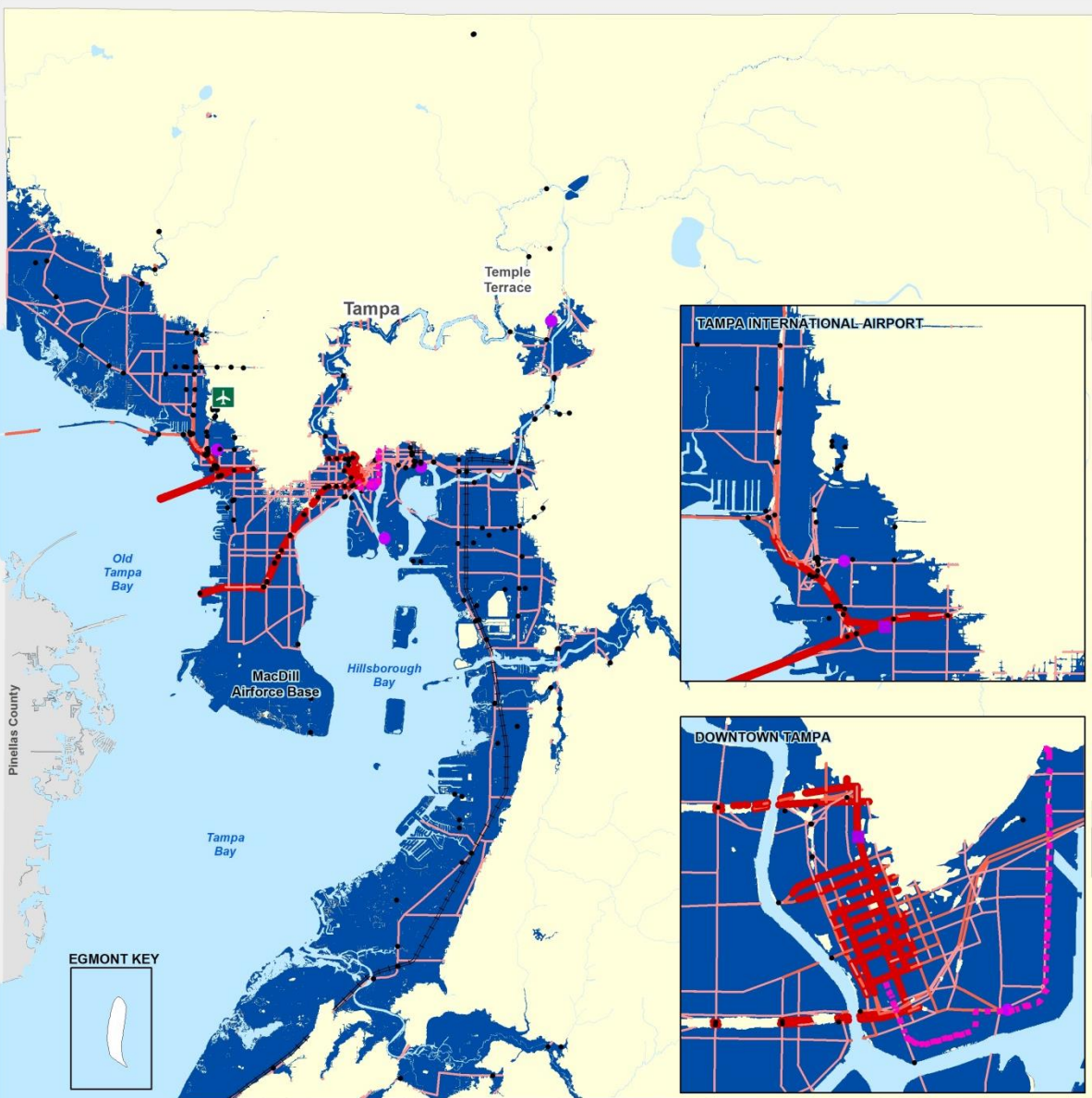
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Flood Hazard Zones (FHZs)

Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY VULNERABILITY ANALYSIS FLOOD HAZARD ZONES

Legend

- Flooding Hot Spots
- Updated Flood Plains
- DFIRM Flood Plains
- 2040 Critical Links**
- Low-Medium
- High
- Very High

Location Diagram and Reference Information



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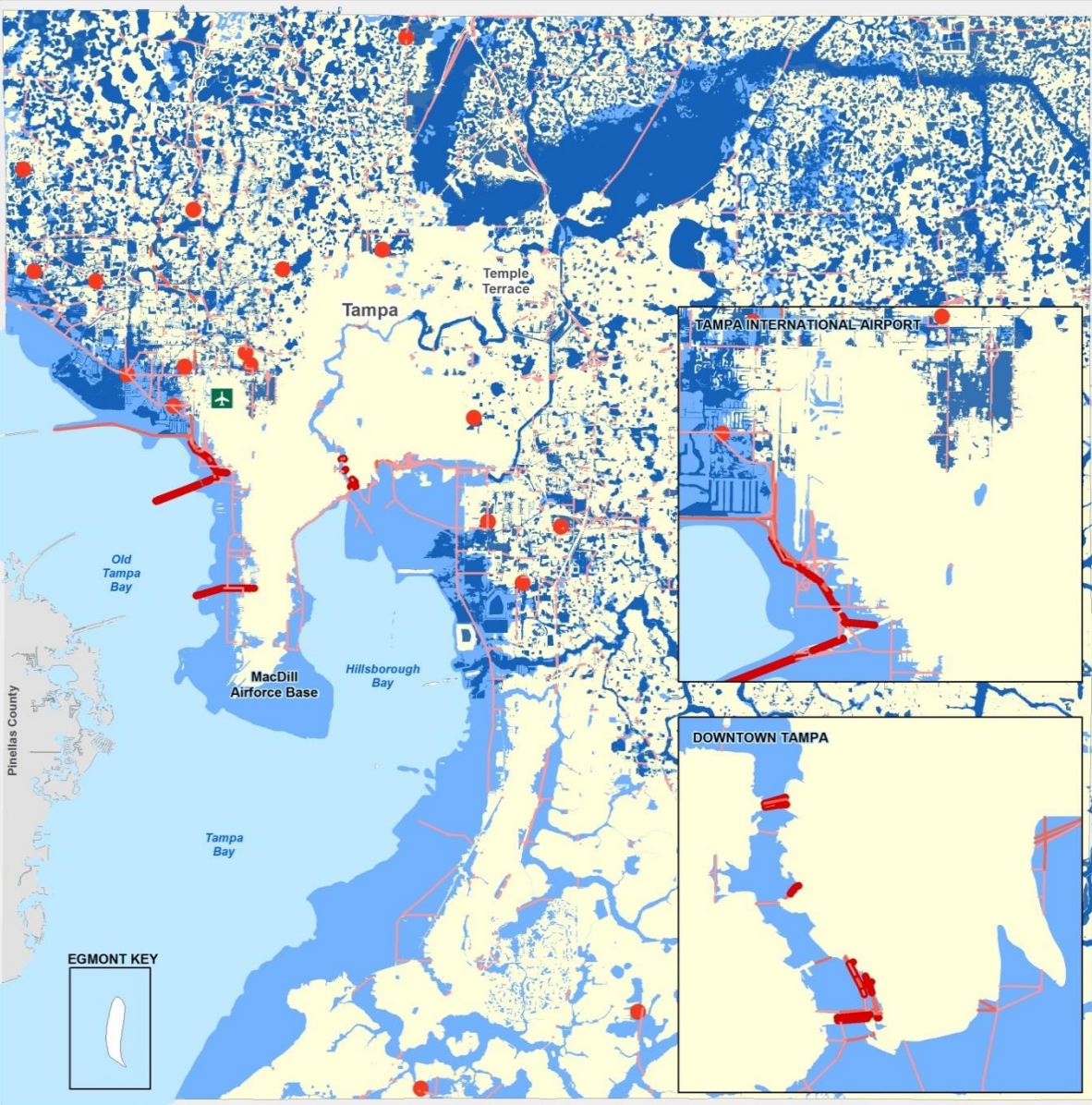
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2040: Cat 1, Low SLR, FHZs

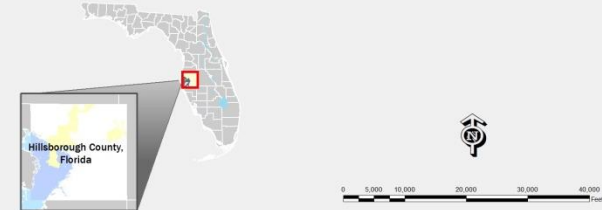
Jurisdiction (Unincorporated Hillsborough County, Tampa, Plant City, Temple Terrace)

HILLSBOROUGH COUNTY CRITICALITY ANALYSIS HILLSBOROUGH COUNTY CRITICAL FACILITIES (3)

Legend

- | | |
|----------------------------|---------------------------|
| Medical Centers | SIS RAIL |
| Power Plants | TPA |
| Educational Facilities | MacDill Airforce Base |
| Intermodal Facilities | Seaports |
| 2040 Critical Links | 2040 Critical TAZs |
| Low-Medium | Low-Medium |
| High | High |
| Very High | Very High |

Location Diagram and Reference Information



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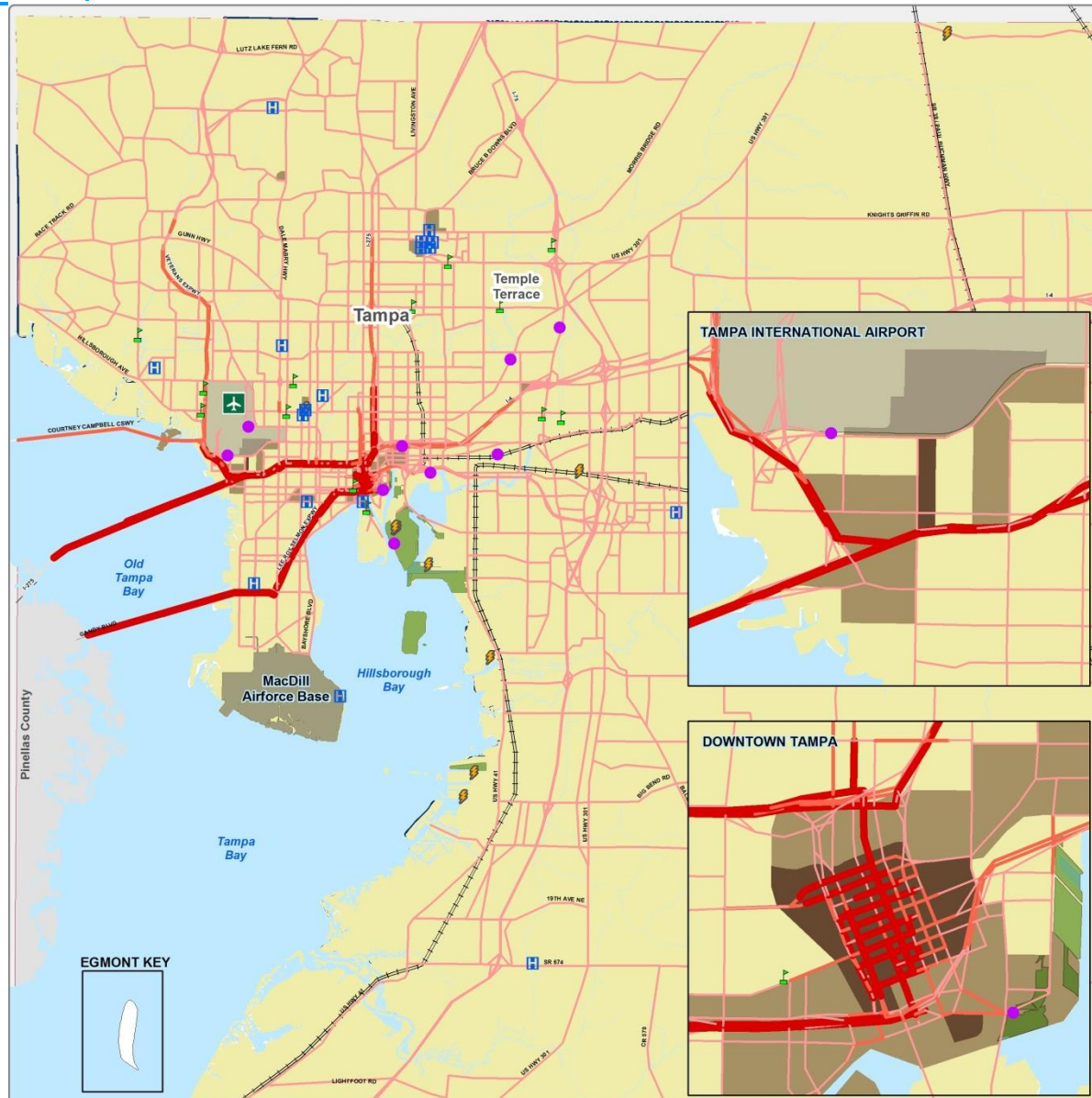
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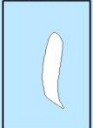
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2040: Cat 1, High SLR, FHZs

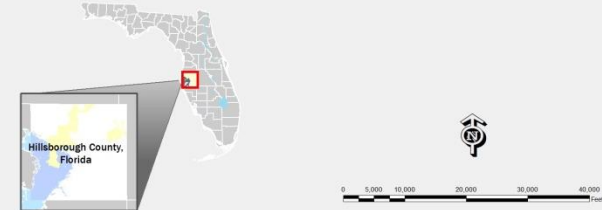
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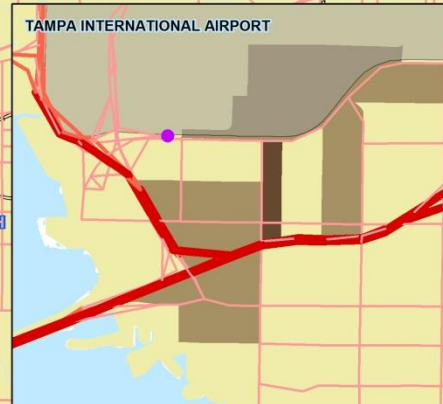
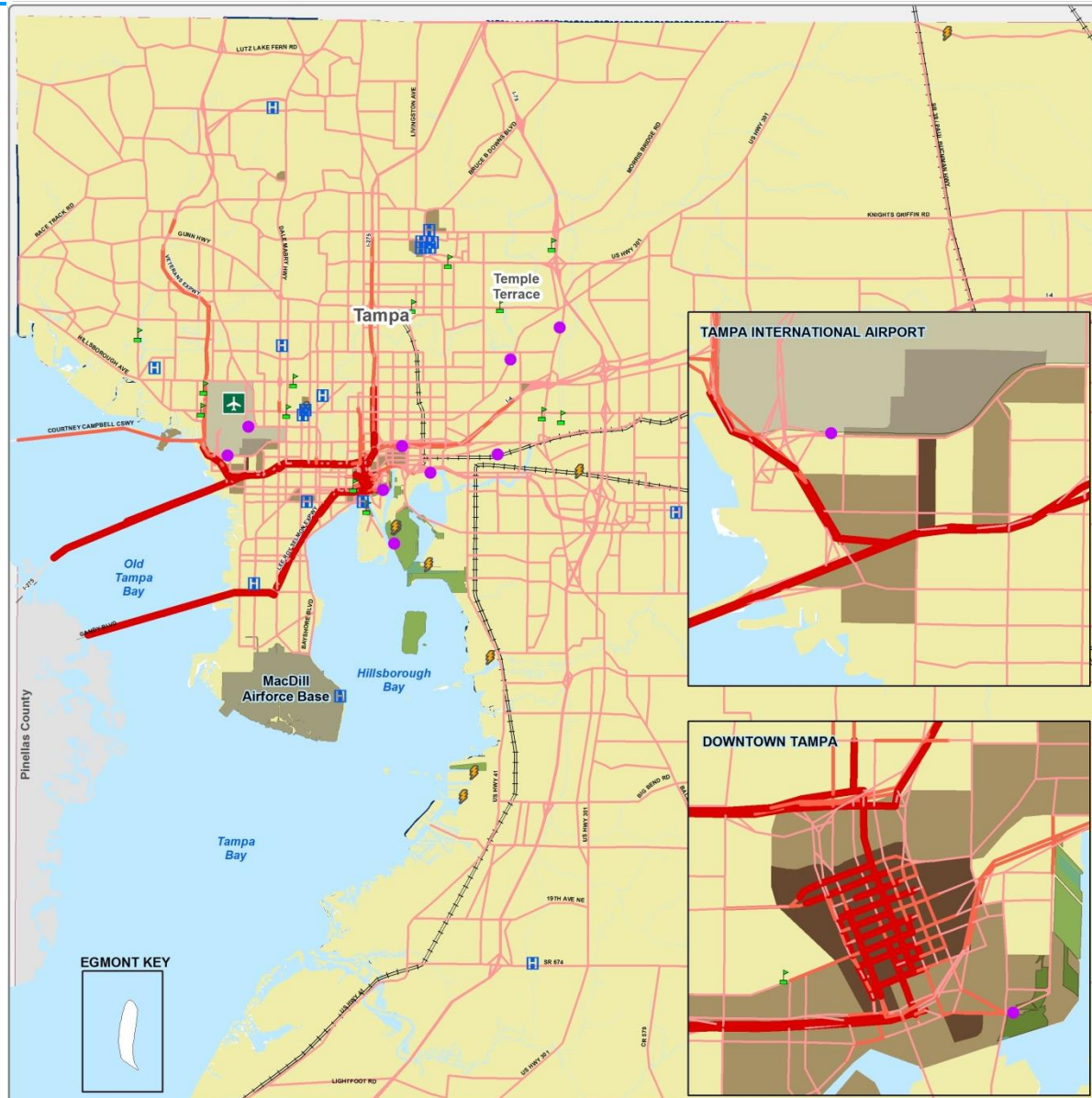
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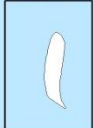
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EGMONT KEY



2040: Cat 3, Low SLR, FHZs

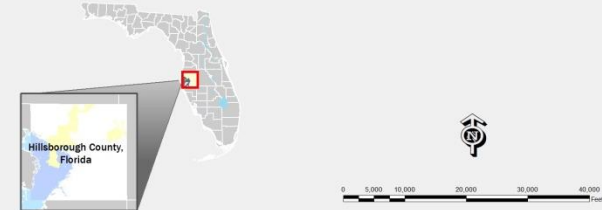
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HILLSBOROUGH COUNTY CRITICALITY ANALYSIS HILLSBOROUGH COUNTY CRITICAL FACILITIES (3)

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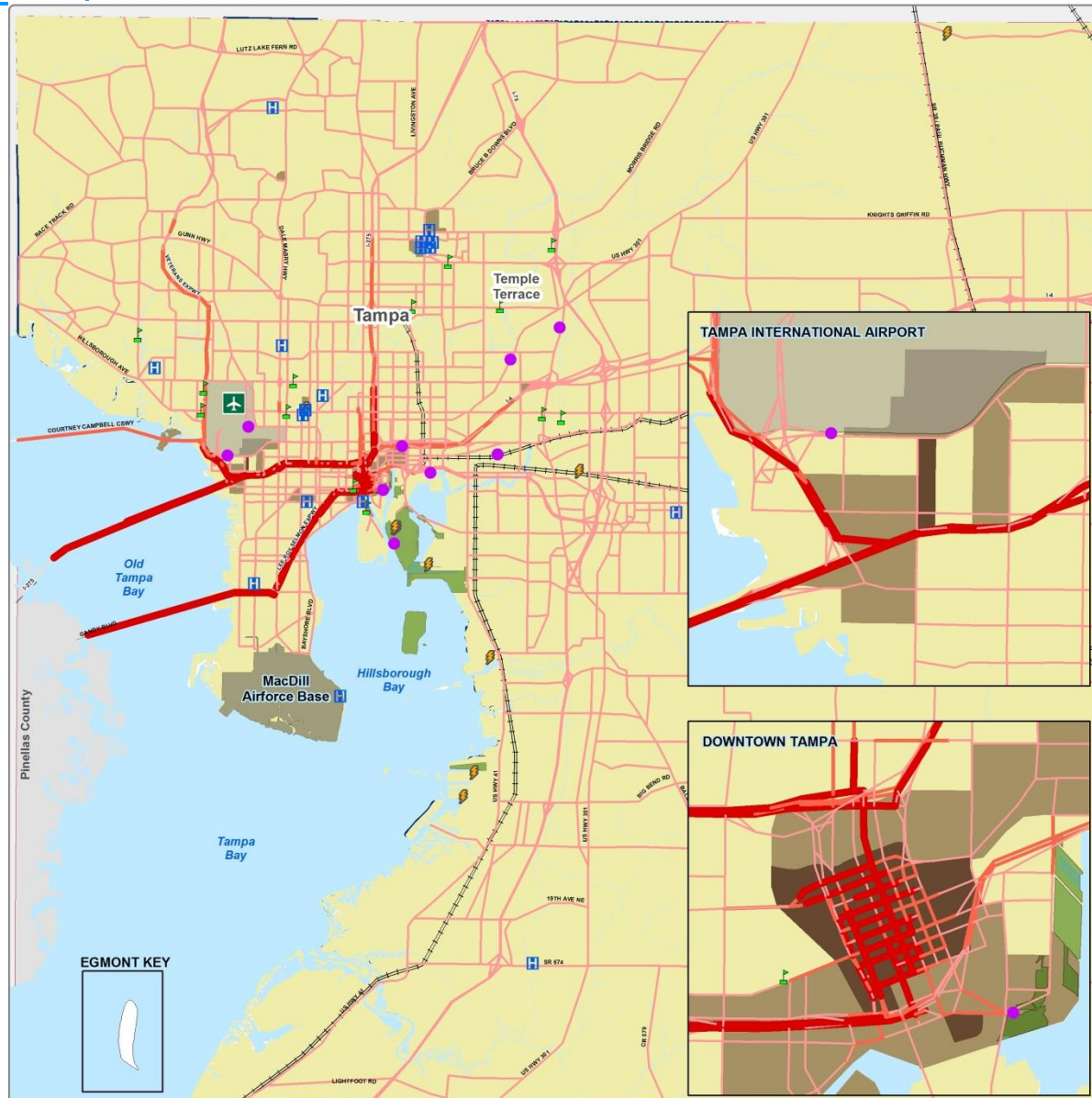
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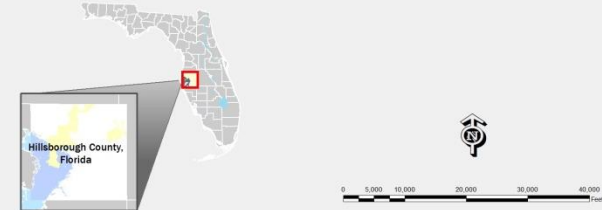
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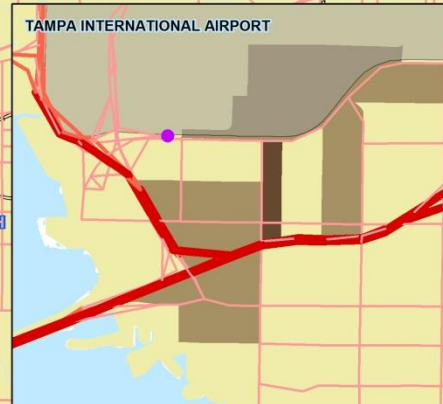
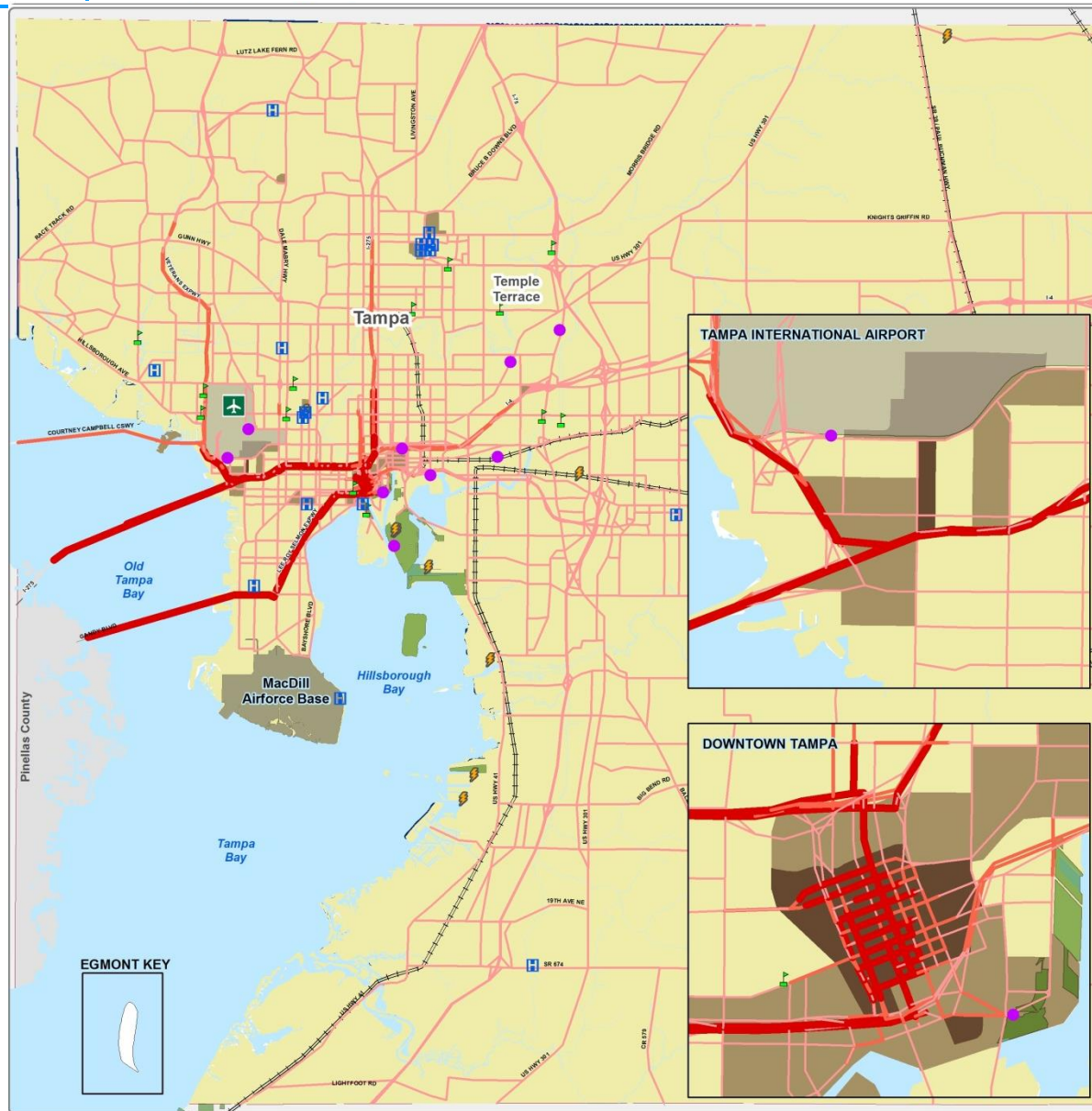
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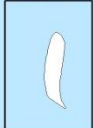
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EGMONT KEY



**SELECTION OF
CRITICAL/VULNERABLE ASSETS
TO STUDY**

Vote!

- **4 Posters (corresponding to previous slides)**
 - 1. 2040: Cat 1, Low SLR, FHZs**
 - 2. 2040: Cat 1, High SLR, FHZs**
 - 3. 2040: Cat 3, Low SLR, FHZs**
 - 4. 2040: Cat 3, High SLR, FHZs**

NEXT STEPS

Next Steps

- **Technical report for Phase 1**
- **Detailed assessment of critical/vulnerable transportation assets**
- **Development of risk management strategies (adaptation)**

Thank you!

- Questions