Integrating Local and Regional Infrastructure Resilience through Market-Based Strategies

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Regional Resilience Fundamentals

- Large geographic area
- Major resilience change
- Expensive (Initial Cost and O&M)
- Systems approach
- Large environmental effect
- Long-term focus
- Multiple jurisdictions
- Differential benefits
Local Resilience Fundamentals

• Small geographic area
• Minor resilience change
• Relatively inexpensive (Initial Cost and O&M)
• Limited environmental effect
• Short term implementation
• One or few jurisdictions
• Defined community benefits
Challenges:

• Urgency to recover immediately
• Absence of plans
• Need to implement resilience for the long-term
• Resistance to planning (Planning Fatigue)
• Lack of funding
• Result: Sustained uncertainty (insurance)
Approach: “Resiliency Engine”

- Resiliency as Opportunity Builder
- Concurrent tracks of short term recovery projects and conceptual long-term plan
- Use short-term projects as **building blocks** of long-term plan
- Build new economic investment opportunity into short-term projects and long-term plan (investment-grade)
- Private sector investment and “skin in the game”
Approach: Market-Based Funding

- Direct Investment opportunities in resilient infrastructure
- Indirect investment opportunities in resilient infrastructure – associated/enabled uses
- Integrate resiliency infrastructure with other functions/uses:
  - Increase investment opportunities
  - Revenue for O&M and Adaptation
  - Add locally beneficial uses (local support)
Examples: (Regional) Transportation and Community Resilience

- City of Hoboken Strategic Green Infrastructure Plan (New Jersey) – Transit Resiliency
- Hempstead, New York
- Staten Island Resiliency Network - Microgrids (New York City)
Hoboken: Regional Context
Hoboken: Regional Transit Node
Hoboken: Sandy Flooding
Hoboken: Making Regional Transit Locally Resilient
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Critical Transit infrastructure is concentrated at the borders of H1, H2, H4, H5, and H7

9th Street HBLR Station

2nd Street Station

9th Street Station

Hoboken Terminal

WWTP
Hoboken: Making Regional Transit Locally Resilient

Transit runs along the “blue zone,” which presents opportunities for protecting transit while furthering stormwater management goals.
Hoboken: Making Regional Transit Locally Resilient

Opportunities – Short Term

- Significant stormwater Retention/Treatment
- Ripe for immediate action
- Reduced public investment
- Incremental development
- Integrated Green Infrastructure
Hoboken: Making Regional Transit Locally Resilient through market forces

Opportunities – Market-Based

• Private Redevelopment – with Mixed use
• Creating new blue-green waterfront and new economic value and engine
• Combine with new TOD and Technology Campus
• Privately funded resiliency through market forces
• Sustained Tax Revenue
• New Hudson River waterfront
• Increased Local and Regional Transit Connectivity and Ridership
Hoboken: Making Regional Transit Locally Resilient through market forces + local planning
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- **Retention**
  - Constructed Wetlands
  - Subsurface Storage
- **Connecting the Dots**
  - BASF Site
  - PINO Site
- **Infiltration**
  - Block 12 Site
- **Detention**
  - Green Roofs
  - Rainwater Harvesting

Blue zone can support all major BMPs:
- Bioswales
- Stormwater Planters
Staten Island – Networked Resilience

- Heavily hit by Sandy, especially east and south shores
- Island prone to isolation both externally and internally
- Relatively poor infrastructure (transportation and power)
- Post-disaster recovery complicated due to vulnerable infrastructure
Staten Island – Networked Resilience

- New York Rising Community Reconstruction Planning Areas on Staten Island: east and south shores
- Networked approach to resilience consisting of resilient infrastructure network and resilient nodes (safe havens)
- Networked Microgrids with resilient transportation infrastructure and Critical Assets hospitals, schools, fire stations as nodes)
Staten Island – Networked Resilience
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INTEGRATING LOCAL AND REGIONAL INFRASTRUCTURE RESILIENCE


Staten Island – Networked Resilience

[Map showing networked infrastructure with microgrid nodes, SIR stations, and vulnerable population areas.]
Conclusion: Resilience Engine

- Local and shorter-term projects can fit within regional longer-term projects
- Investment community is interested in investing in concrete projects with defined revenue source
- Multifunctional projects present greater investment opportunity and flexibility
- Sustainability and Resiliency initiatives (federal and local) can reinforce each other and create new value
- U.S can lead the way with market orientation
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