Building with BRICks
FEMA'S NEWEST GRANT PROGRAM

John Malueg, PE
Manager of Resilient Programs
What is BRIC?

FEMA’s NEWest Program!

2021: $1 Billion

BRIC: Building Resilient Infrastructure and Communities

Annual grant competition

Funds projects to advance community resilience
What does BRIC Fund?

Hazard mitigation plans
Building codes and enforcement
Partnerships
Infrastructure mitigation projects

Non-competitive funding
Competitive funding

90% of funding to competition
FEMA Lifelines

Safety and Security: Public Safety Building

Food, Water, Shelter: Water Treatment Plant

Health and Medical: Hospital, Stormwater Park, Nature-Based Solution

Energy: Microgrids, Renewables

Communications: Communication Updates

Transportation: Airport Flood Control, Road Elevation

Hazardous Material: DOT Landslide Mitigation, Fuel Farm Mitigation
BRIC Project Eligibility

$50M federal share cap on projects

25% Local Cost Share Commitment

25% Local Cost Share Commitment

Cost-effective (e.g., Benefit Cost Analysis)

Reduce or eliminate future hazard risk

Approved Hazard Mitigation Plan

Current Building Codes

Applicant is a state, local community, tribe, special district (or has sponsor)

Environmental and Historic Preservation Requirements Met

PROJECT

$50M project cap (project can be more)
BRIC
It’s a competition!

Technical Criteria

- **Infrastructure project**: 20 points
- **Mitigating risk to one or more lifelines**: 15 points
- **Incorporation of nature-based solutions**: 10 points
- **Application has mandatory building code adoption requirement (2015 or 2018 versions of International Building Code and International Residential Code)**: 20 points
- **Building Code Effectiveness Grading Schedule Rating of 1 to 5**: 15 points
- **Application generated from a previous FEMA Hazard Mitigation Assistance Advance award**: 10 points
- **Increased non-federal cost share**: 5 points
- **Designation as a small impoverished community**: 5 points
BRIC: It’s a competition!

Qualitative Criteria

- Risk Reduction/Resiliency Effectiveness: 35 points
- Future Conditions: 15 points
- Implementation Measures: 15 points
- Population Impacted: 15 points
- Outreach Activities: 5 points
- Leveraging Partners: 15 points

2021 Anticipated Criteria

- Climate change impacts
- Social equity
- Building codes
2020 BRIC Funding Results

Program results
- ~1,227 sub-applications
- ~ $4B in funding requested

Award results
- **Innovation**: Large scale, complex infrastructure projects
- 22 **mitigation** projects (competition ~$17.17M average)
- 18 of 22 projects included **Nature Based Solutions**
- **Capacity Building** – hazard plans, building codes assessments
  - ~ 80% selection rate
2020 BRIC Results by Project Type

TOP 5 PROJECT TYPES BY TOTAL COST

1. Flood Control = $550M
2. Utility/Infrastructure Protection = $91.3M
3. Wildfire Management = $49.3M
4. Relocation = $21.9M
5. Saferoom/shelters = $15.2M

Source: Building Resilient Infrastructure and Communities FY 2020 Subapplication Status | FEMA.gov
BRIC

- Phased Projects Are Eligible!
  - Detailed planning
  - Schematic design
  - Benefit-Cost Analysis
  - Prove Feasibility
  - Secure Lands
  - Secure Permits

- IF......
  - Selected

Benefit Cost Ratio > 1.0 is Critical
BRIC Case Study

Tottenville Shoreline Protection Project
Tottenville Shoreline Protection & Living Breakwaters
Hurricane Sandy: Why Attenuate Waves?

% Damage values based on the “most likely” depth-damage curves for two-story residences with no basement from the “Physical Depth Damage Function Summary Report” prepared by the US Army Corps of Engineers as part of the “North Atlantic Coastal Comprehensive Study: Resilient Adaptation to Increasing Risk,” January 2015.

House Destroyed on Yetman Street, Tottenville  Photo
Credit: C. Warga, NY Daily News
Proposed Solution: Layers of Resilience

Building Codes

Green Infrastructure

Blue Infrastructure
Tottenville: Living Breakwaters Project
Tottenville: Shoreline Protection Project

Earthen Berm
Dune System
Eco-Revetment
Raised Pathway
Tottenville: Shoreline Protection Project

- Top of Raised Pathway at +8’
- Green Infrastructure
- ADA Pathway and Maintenance Access
- Shoreline Stabilization
- Earthen Berm at +12.5’
- Wetland Restoration
- Continuous Trails and Park Access
- Ecological Planting and Restoration
- Reinforced Dune Stone Core +12.5'
- Reinforced Dune Sand +14.5'
- Beach Grass Planting
- Continuous Trails and Park Access
- Top of Eco-Revetment at +12.5’
- Green Infrastructure
- ADA Access Points and Gathering Spaces
- Incorporate ENVISION rating system
- Community buy-in state supported house raising program
Tottenville Benefit-Cost Analysis (BCA)

- Iterative
- Achieve at least .85 cost effective (out of 1.0 goal)
- Triggered additional resource
- Ultimately achieved BCA >1.0
## Tottenville Benefit-Cost Analysis:

### Triple Bottom-Line Analysis

- Operation and Maintenance
- Social
- Economic
- Environmental

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Cost/Benefit</th>
<th>Expected Value</th>
<th>95% Confidence Interval</th>
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<tbody>
<tr>
<td>Financial</td>
<td>Capital Expenditures</td>
<td>-$37,390,000</td>
<td>to -$37,390,000</td>
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<td>Financial</td>
<td>Operations and Maintenance</td>
<td>-$13,756,000</td>
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<td>Replacement Costs</td>
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<td>Residual Value of Assets</td>
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<td>Social</td>
<td>Subsidence Road Impact</td>
<td>$14,439,000</td>
<td>to $79,102,000</td>
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<td>Social</td>
<td>Subsidence Property Impact</td>
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<td>Public Health (Exercise)</td>
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<td>Social</td>
<td>Public Health (CVD)</td>
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<td>Social</td>
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<td>Stormwater Treatment</td>
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<td>Social</td>
<td>Heat Island Effect</td>
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<td>Carbon Emission Sequestration</td>
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<td>Environmental</td>
<td>Air Pollution Sequestration</td>
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<td>Environmental</td>
<td>Value of Additional Trees</td>
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<td>Water Quality</td>
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### Financial Summary

- **Financial**: -$60,428,000
- **Social**: $153,148,000
- **Environmental**: $2,468,000

**Triple Bottom Line NPV**: $27,580,600
Tottenville Benefit-Cost Analysis (BCA)

All project elements are not equal
Key BRIC Program Takeaways
(Do your homework)

1. Competitive? Scorecard
2. Cost-Effective? BCA
3. Innovative?
4. Broad Benefits? Triple bottom-line
5. Future Conditions? 2100
6. Vulnerable Populations?
7. Social Equity?

<table>
<thead>
<tr>
<th>Technical Criteria</th>
<th>Tottenville Estimated Points</th>
<th>Possible Points</th>
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<tr>
<td>Risk Reduction</td>
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<td>Future Conditions</td>
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<td>Implementation</td>
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<td>Population impacted</td>
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<td>Outreach</td>
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<td>Partnerships</td>
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<td>TOTAL</td>
<td>70</td>
<td>100</td>
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<table>
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<tr>
<th>Qualitative Criteria</th>
<th>Estimated Points</th>
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<td>Infrastructure</td>
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<td>Lifelines</td>
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<td>Impoverished</td>
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<td>TOTAL</td>
<td>85</td>
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Tottenville’s Solution: BRIC Award

$1 BILLION
2021 BRIC funding

Funding Support for Community Resilience

Tottenville 2020 BRIC Award: $19,822,053
# Tottenville Final Numbers

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<tr>
<th>Key Details</th>
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<td>Total Project Costs</td>
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<td>Project Benefits</td>
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<td>Grant Request</td>
<td>$25,623,900</td>
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<td>BRIC Grant Request (Federal share)</td>
<td>$19,822,053</td>
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<td>Community Cost Share</td>
<td>$26%</td>
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What’s next?

BRIC

Notice of funding and application timeline
Timeline

Notice of Funding Opportunity (NOFO)
Late summer 2021

Applications due
January 2022
State deadlines are more aggressive

Awards
Summer 2022
The National Institute of Building Sciences claims that for every $1 spent on hazard mitigation, the US can save $6 in future disaster recovery costs.

Questions?

Mitigation is the solution.