Case Study:
Red Hook Initiative WiFi & Tidepools

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NEW AMERICA
FOUNDATION

OPEN TECHNOLOGY INSTITUTE


Welcome to...
RED HOOK WEST
HOUSES
NEW YORK CITY HOUSING AUTHORITY


STOP

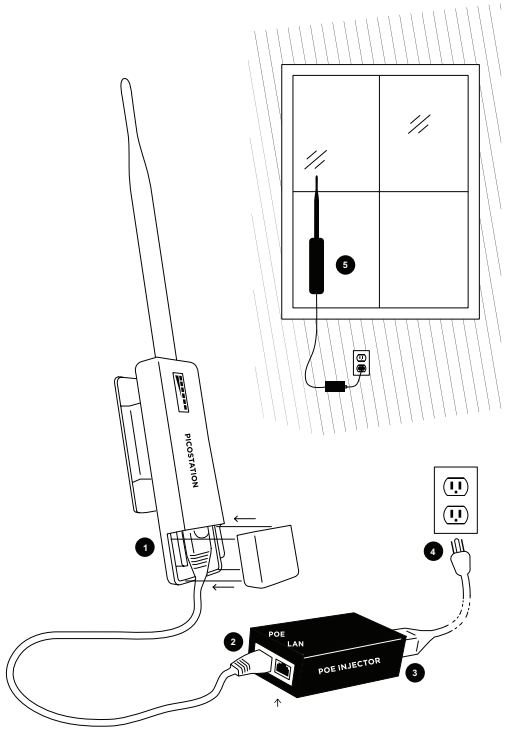
Key Aspects: Social & Technical Infrastructure

- Main network anchors are trusted community organizations.
- Solid relationship with technical support provider from outside of the community.
- Community-led design process emphasizes local needs and enhances engagement.
- Rapid prototyping of applications designed for the local area network.

Creating digital networks is mostly a social process.

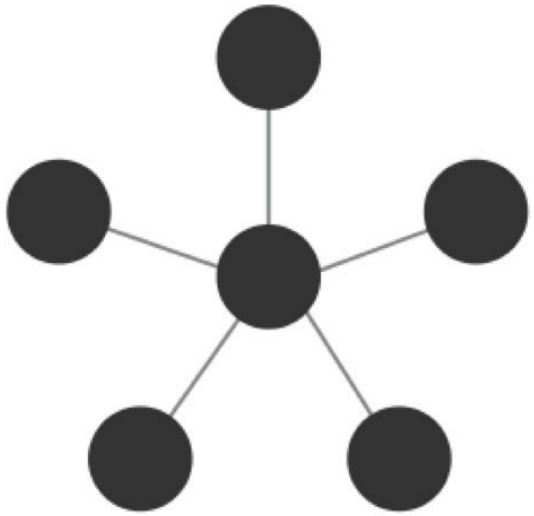
Technology in use

- Ubiquity Routers
  - Nanostation M
  - Nanostation Loco
- Commotion
  - Ad Hoc Network Platform
  - OpenWRT
  - OLSRd Routing Protocol

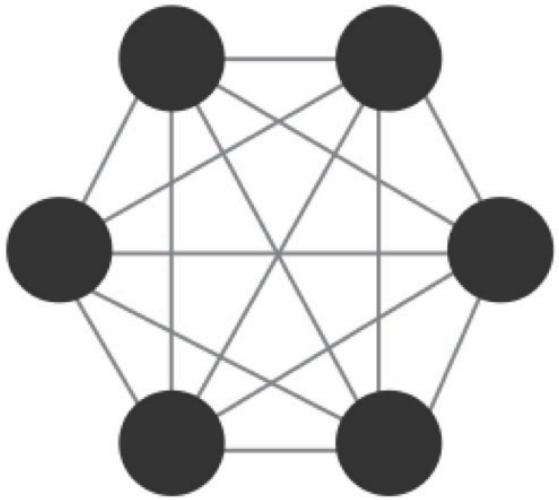


https://code.commotionwireless.net/projects/commotion/wiki/Newbie_How_It_Works

Mesh networks are distributed, non-centralized, and self-healing.

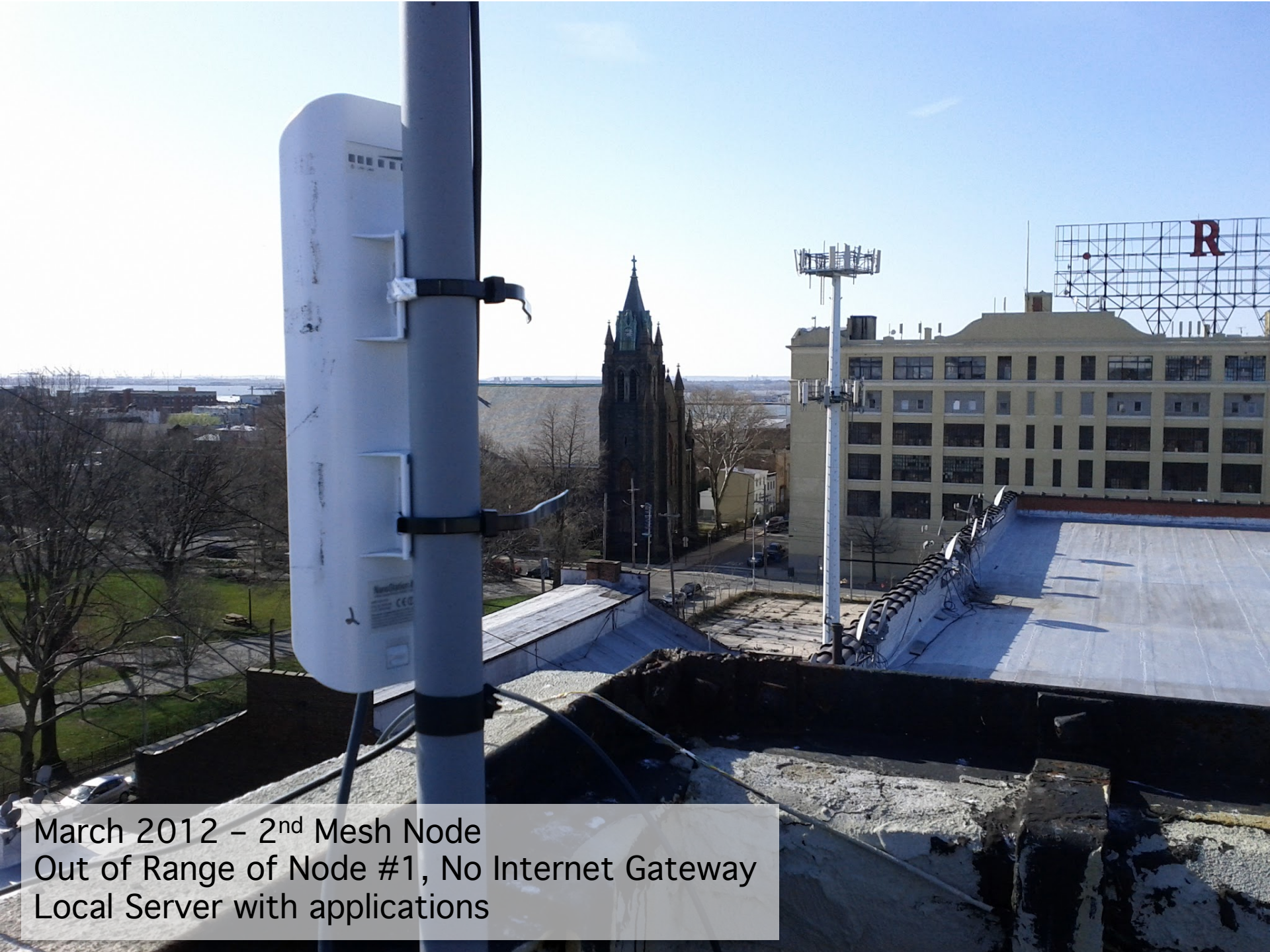


Hub and Spoke Network



Mesh Network

February 2012 – 1st Mesh Node
WAP + Internet Gateway

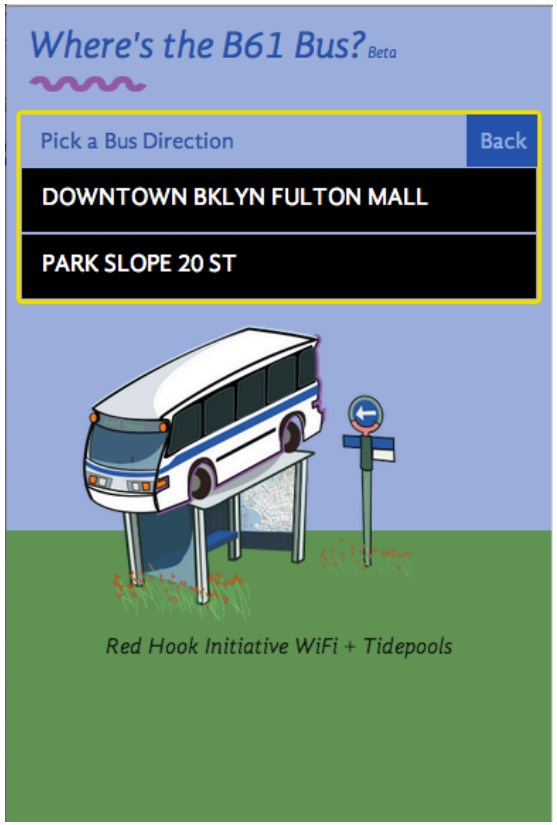


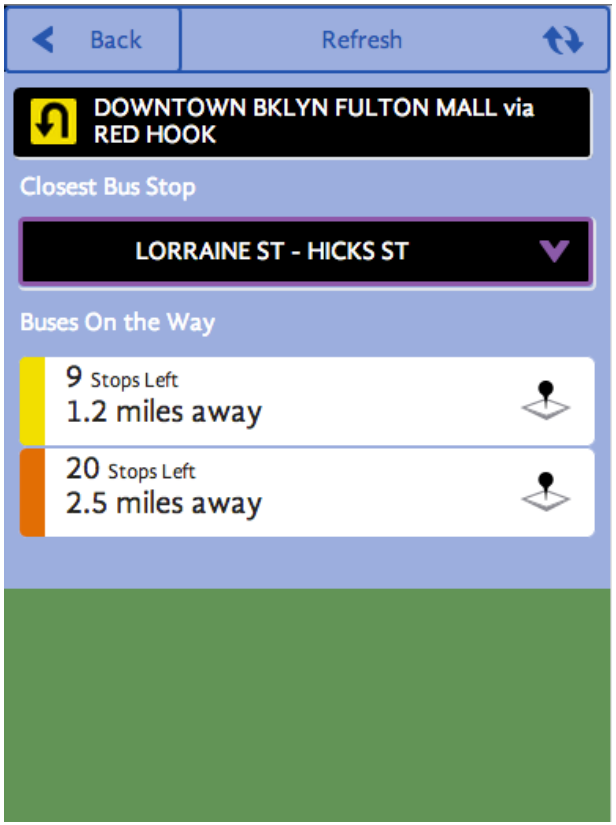
March 2012 – 2nd Mesh Node
Out of Range of Node #1, No Internet Gateway
Local Server with applications

Community Collaborative Design Workshops, Photo: Becky Kazansky

A resident working with Tidepools, a local Mapping Application, Photo: Becky Kazansky

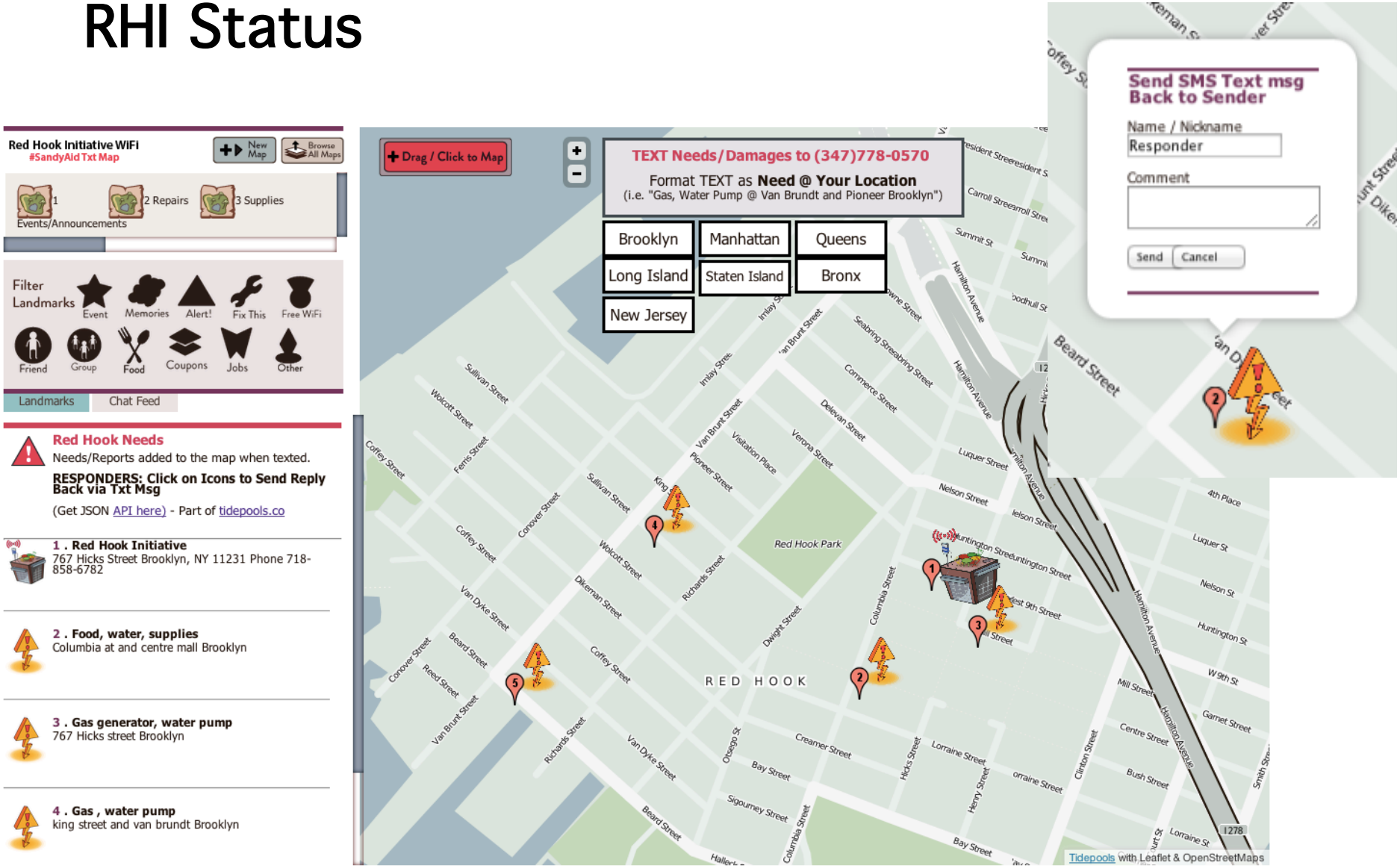
Local Application Development

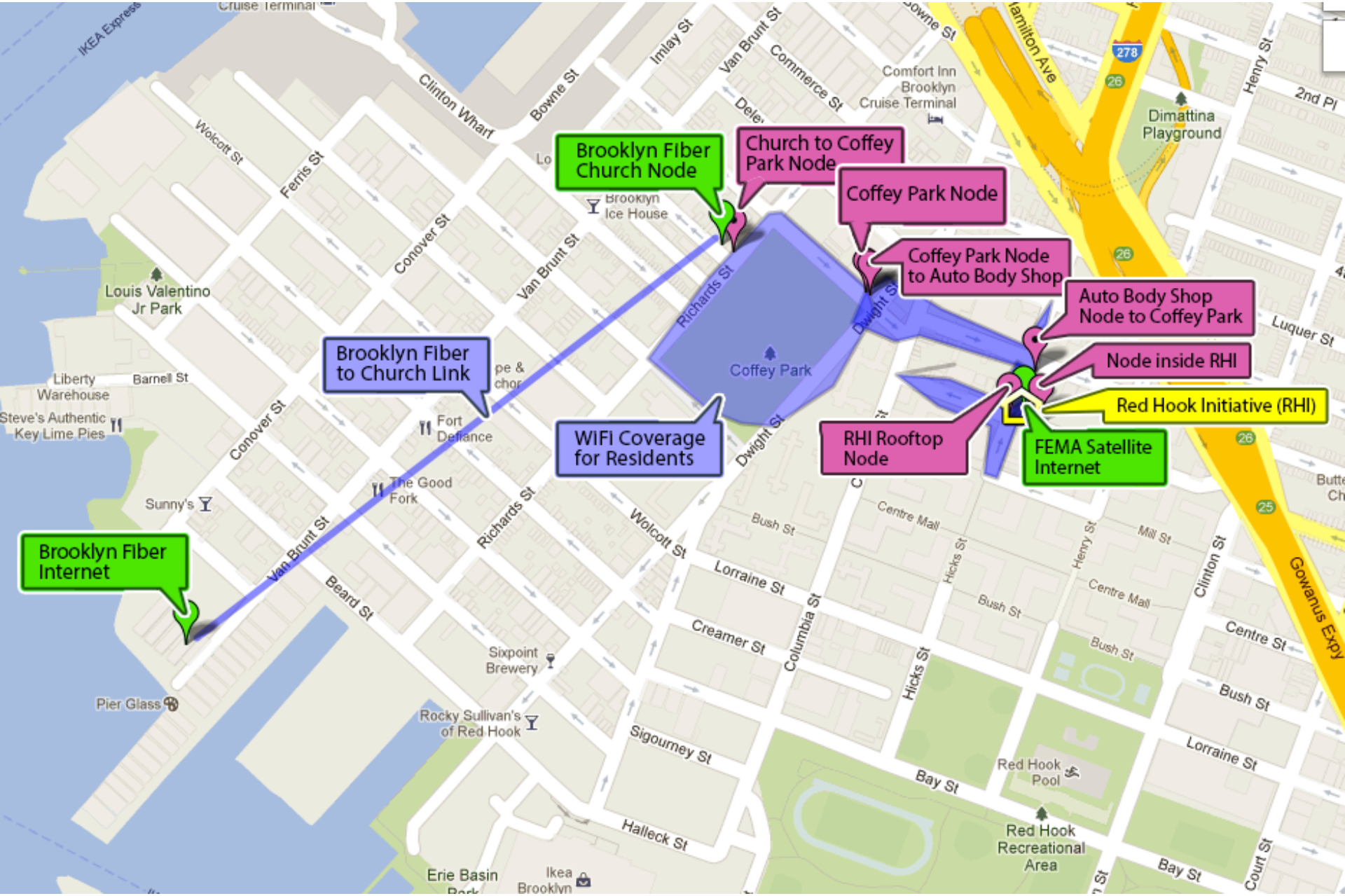


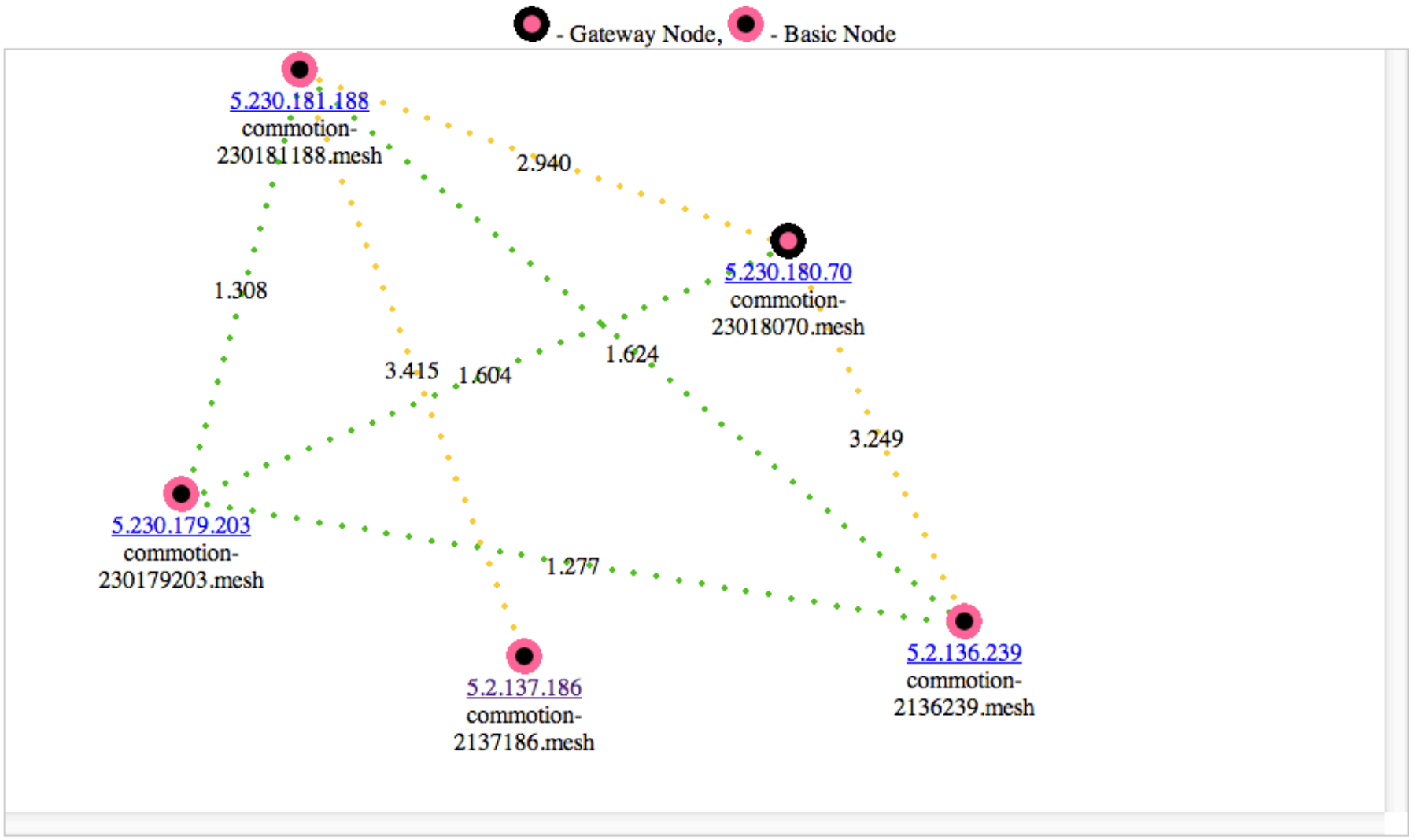


Red Hook Initiative:
Recovery & Communication Hub

RHI Status


Red Hook Initiative WiFi
#SandyAid Txt Map
New Map
Browse All Maps
1 Events/Announcements
2 Repairs
3 Supplies
Filter Landmarks
Event
Memories
Alert!
Fix This
Free WiFi
Friend
Group
Food
Coupons
Jobs
Other
Landmarks
Chat Feed
Red Hook Needs
Needs/Reports added to the map when texted.
RESPONDERS: Click on Icons to Send Reply Back via Txt Msg
(Get JSON API here) - Part of tidepools.co
1 . Red Hook Initiative
767 Hicks Street Brooklyn, NY 11231 Phone 718-858-6782
2 . Food, water, supplies
Columbia at and centre mall Brooklyn
3 . Gas generator, water pump
767 Hicks street Brooklyn
4 . Gas , water pump
king street and van brundt Brooklyn
Drag / Click to Map
TEXT Needs/Damages to (347)778-0570
Format TEXT as Need @ Your Location
(i.e. "Gas, Water Pump @ Van Brundt and Pioneer Brooklyn")
Brooklyn
Manhattan
Queens
Long Island
Staten Island
Bronx
New Jersey
Send SMS Text msg Back to Sender
Name / Nickname
Responder
Comment
Send
Cancel
Red Hook Park
RED HOOK
Beard Street
Tidepools with Leaflet & OpenStreetMaps


Brooklyn Fiber Church Node
Church to Coffey Park Node
Coffey Park Node
Coffey Park Node to Auto Body Shop
Auto Body Shop Node to Coffey Park
Node inside RHI
Red Hook Initiative (RHI)
FEMA Satellite Internet
RHI Rooftop Node
WIFI Coverage for Residents
Brooklyn Fiber to Church Link
Brooklyn Fiber Internet
Coffey Park
Richards St
Dwight St
Van Brunt St
Conover St
Wolcott St
Beard St
Lorraine St
Bay St
Halleck St
Sigourney St
Creamer St
Columbia St
Hicks St
Bush St
Centre St
Mill St
Luquer St
Clinton St
Henry St
Court St
Gowanus Expy
Clinton Wharf
Commerce St
Imlay St
Bowne St
Ferris St
Wolcott St
Louis Valentino Jr Park
Liberty Warehouse
Barnell St
Steve's Authentic Key Lime Pies
Sunny's
Fort Defiance
The Good Fork
Sixpoint Brewery
Pier Glass
Rocky Sullivan's of Red Hook
Brooklyn Ice House
Comfort Inn Brooklyn Cruise Terminal
Dimattina Playground
Red Hook Pool
Red Hook Recreational Area
Erie Basin
Ikea Brooklyn
IKEA Express
Cruise Terminal
Hamilton Ave
2nd Pl
278
26
25



Zoom + − 2 | **Max-Hops** + − 3 | **Auto-Spacer** ☐ | **Host Names** ☑ | Save Settings | Reset

Lessons Learned

- Having relationships and anchor wireless nodes in place prior to a disaster facilitates rapid network deployment through:
  - Already-established relationships with key community stakeholders.
  - A heightened level of technological literacy in the community.
  - Pre-positioned wireless network equipment in the neighborhood.
- The most challenging investment is in the initial organizing and design phase before any value is realized.
- Community-designed applications add value to a local network, even at a small scale.

Additional Materials

Cost of the Network

- Donated labor from local residents and technologist.
- Institutional support from RHI and OTI.
- Hardware (~$50 to ~$85 each router).
- Installation (3-5 work hours for two people per site).
- Bandwidth (donated by RHI, Brooklyn Fiber, and FEMA).
- Training program for local residents to maintain and expand network as part of a municipal employment program.

More Information

http://oti.newamerica.net
http://commotionwireless.net
http://tidepools.co