BRIDGING THE DIGITAL DIVIDE:

INTERNET ACCESS FOR EVERYONE

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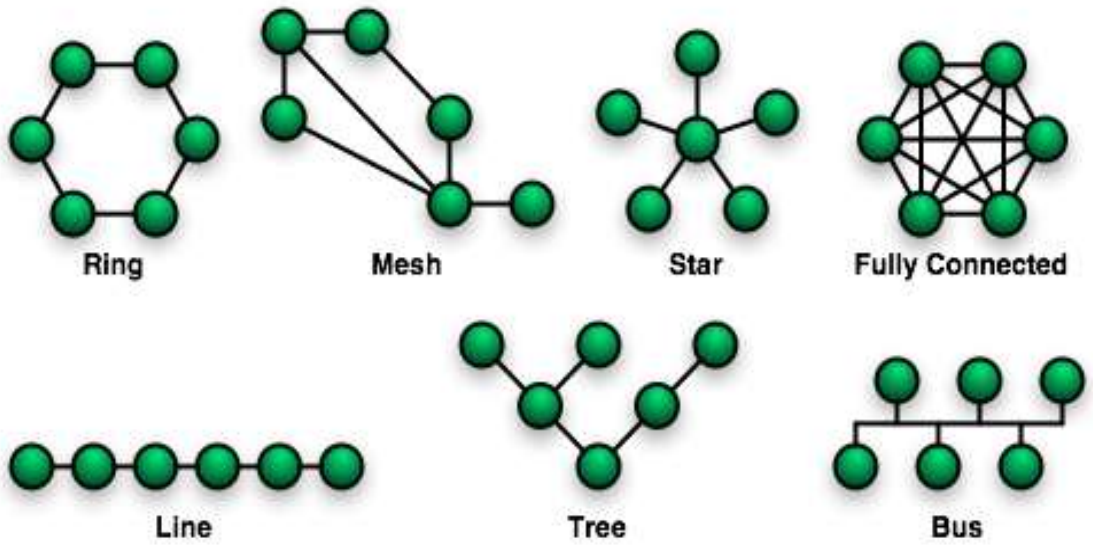
WHAT IS MESH



Mesh is just one of many types of networks. It has many pros and cons, but in essence, we find that the mesh is

1. Social – a people-owned network of open communication, inherently run by consensus, and maintained without profit.

2. Economic--by collectivizing internet access and buying in bulk, we can deliver a reliable product for communities that cannot afford broadband, provide public access across the city, and work with libraries and schools to bring access directly to them without the use of any fiber or coaxial cable.

3. Technical– by distributing the processing power and network topology, we build a network that is more resilient to attack/spam, maintained by consensus, and fully independent of the WWW while still allowing access to users.

REASONS FOR MESH

Self Configuring

Resilient – no single point of failure

Community-owned infrastructure

Neutral Network by design

Adding to network extends public wifi

Community building—localization of technology

Close the digital divide –mesh bandwidth is substantially cheaper

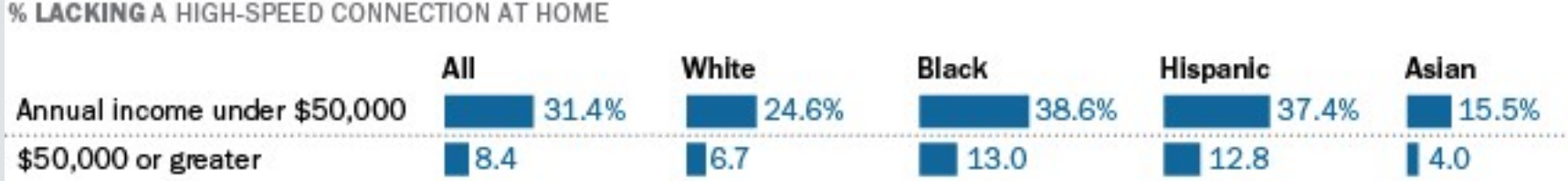
High **symmetrical** bandwidth

Infrastructure commons—built for people

Long-term self-sufficiency

Households With School-Age Children That Do Not Have Broadband Access

Among households with school-age children ...

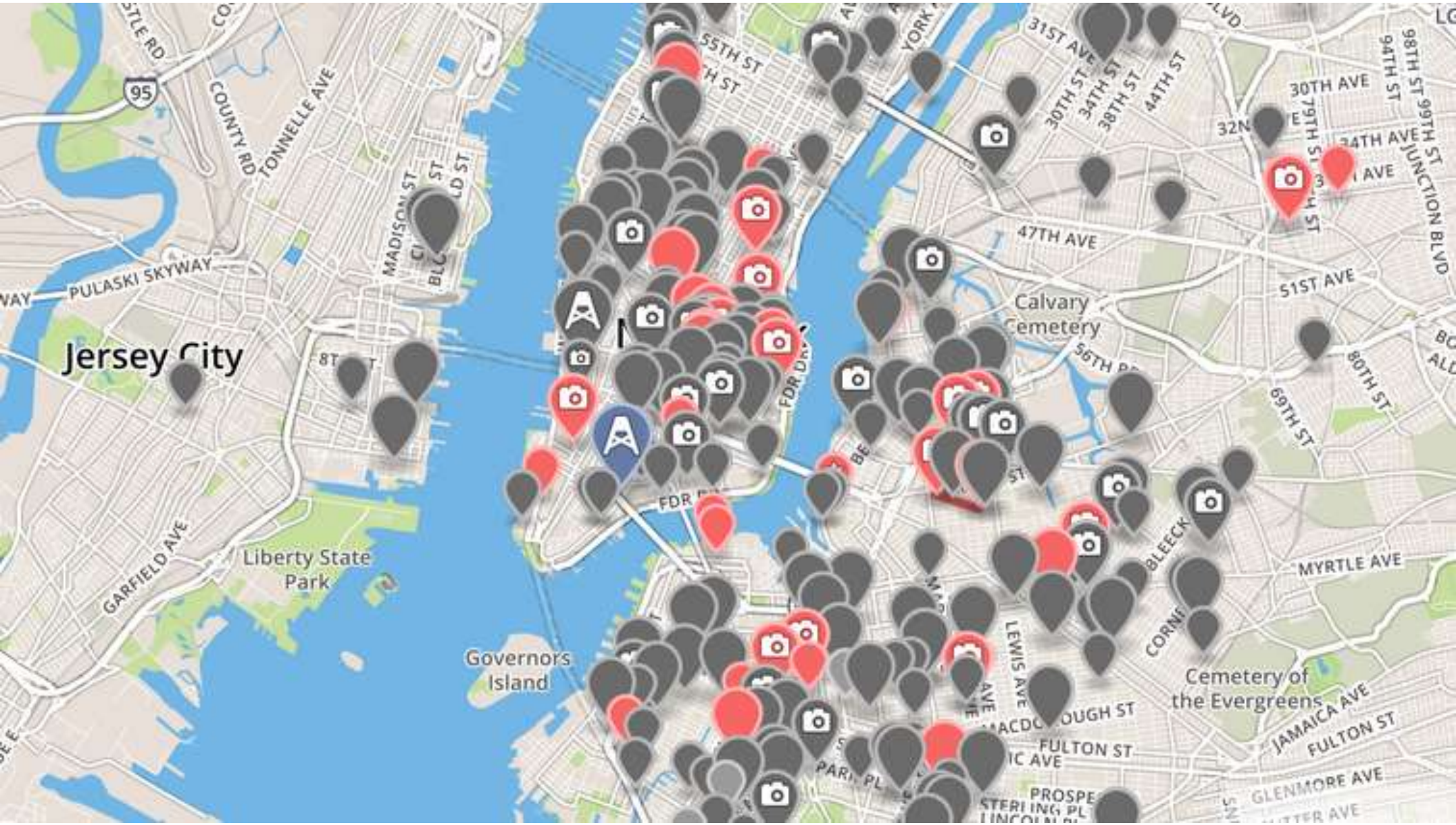


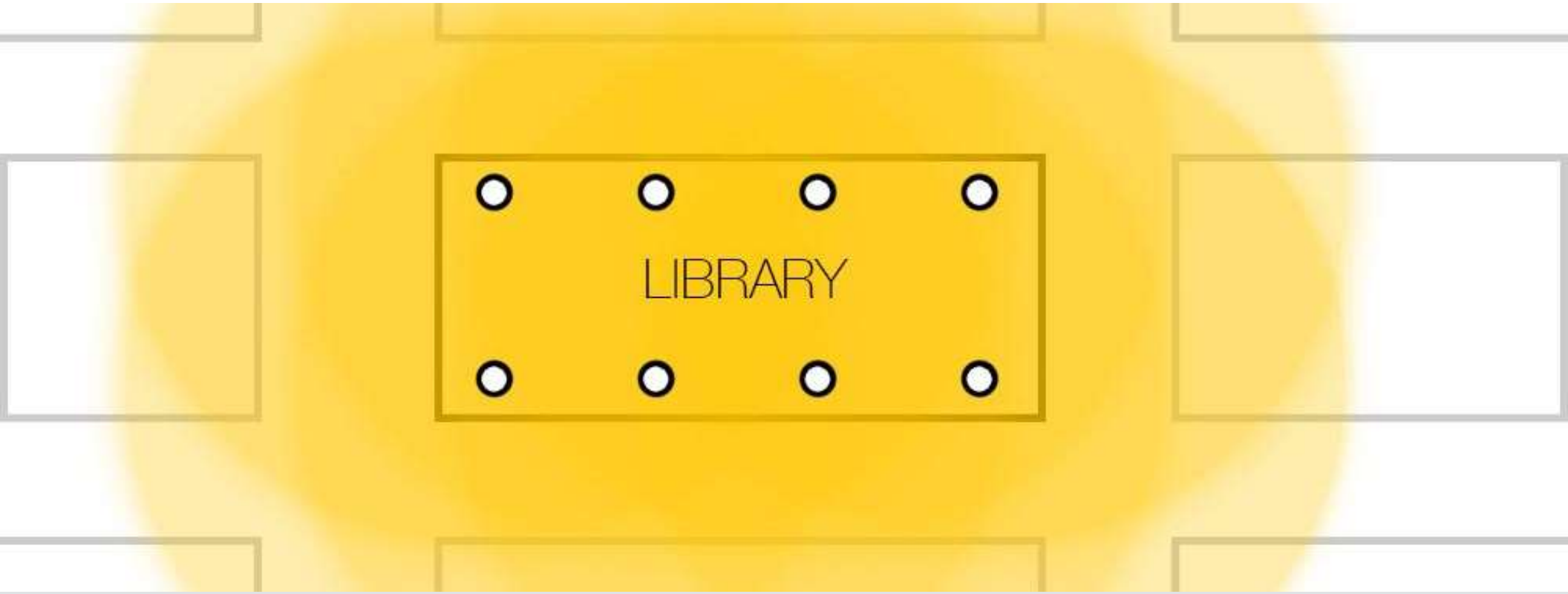
% **WITH** A HIGH-SPEED CONNECTION AT HOME

All households with school-age children	82.5%	88.0%	71.5%	72.2%	92.3%
Annual income under $25,000	60.3	67.9	53.6	54.8	79.0
$25,000-$49,999	75.7	80.6	71.2	69.2	88.6
$50,000-$99,999	88.2	90.5	84.1	82.1	94.0
$100,000-$149,999	94.3	95.1	91.7	90.6	96.5
$150,000+	96.7	97.0	93.5	93.9	97.9

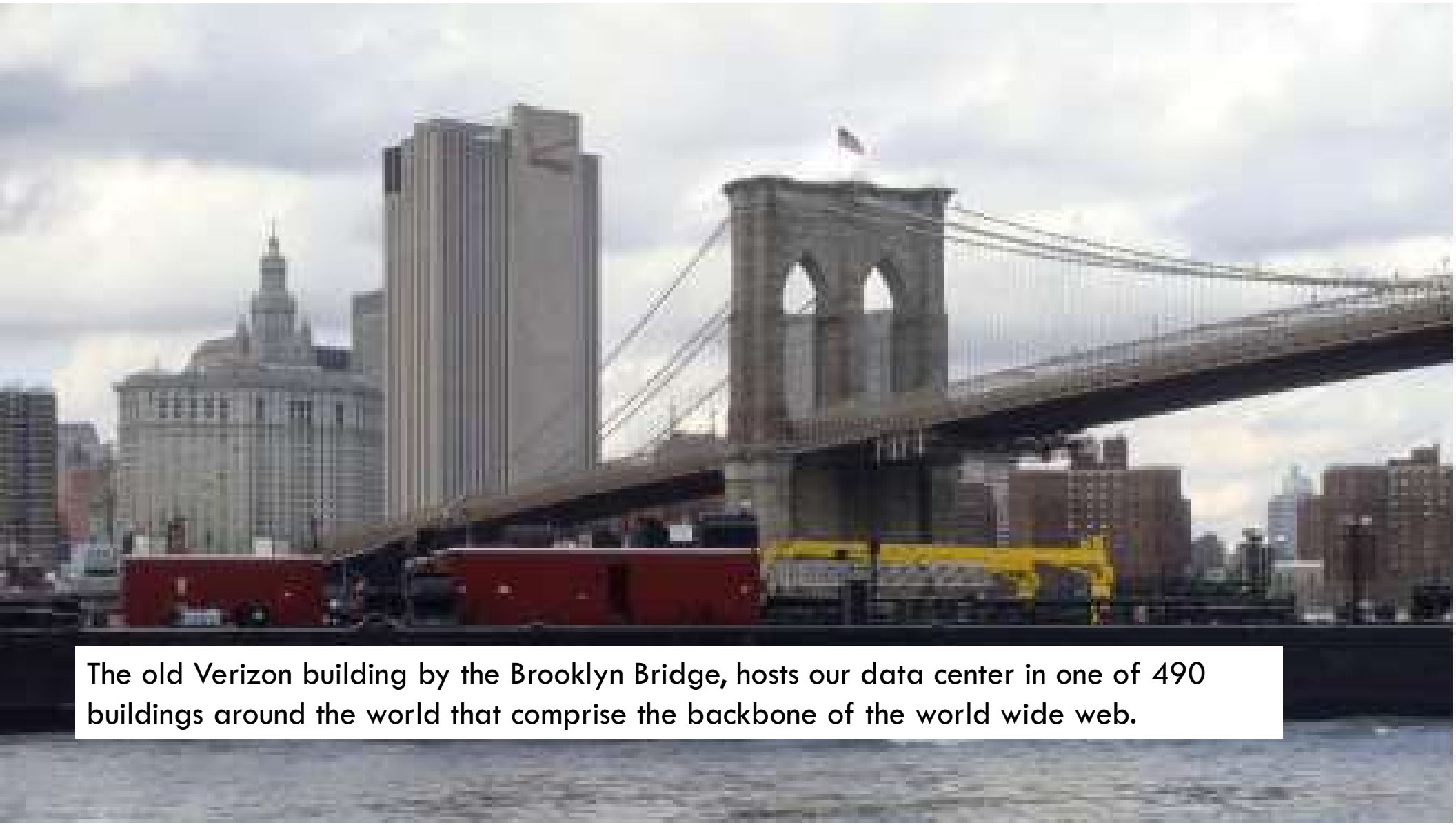
Source: Pew Research Center analysis of 2013 American Community Survey (IPUMS).

PEW RESEARCH CENTER

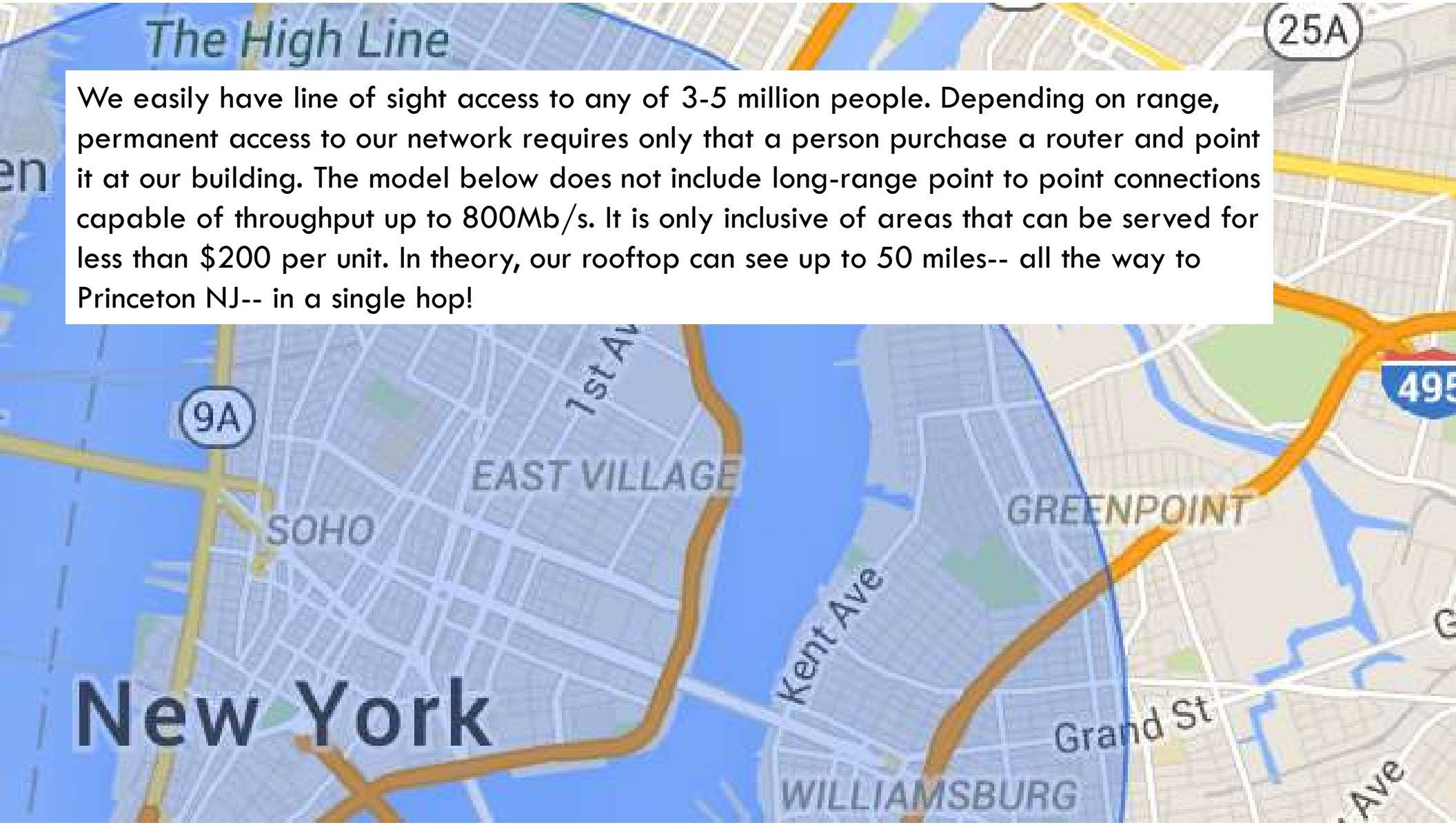

Jersey City
Liberty State Park
Governors Island
Calvary Cemetery
Cemetery of the Evergreens
PULASKI SKYWAY
COUNTY RD
TONNELLE AVE
GARFIELD AVE
FDR
47TH AVE
51ST AVE
MYRTLE AVE
FULTON ST
JAMAICA AVE
GLENMORE AVE
69TH ST
80TH ST
30TH AVE
31ST AVE
44TH ST
98TH ST
99TH ST
JUNCTION BLVD
LEWIS AVE
BLEECK



Assuming the library is the shortest building around, it's coverage area is this.



The old Verizon building by the Brooklyn Bridge, hosts our data center in one of 490 buildings around the world that comprise the backbone of the world wide web.



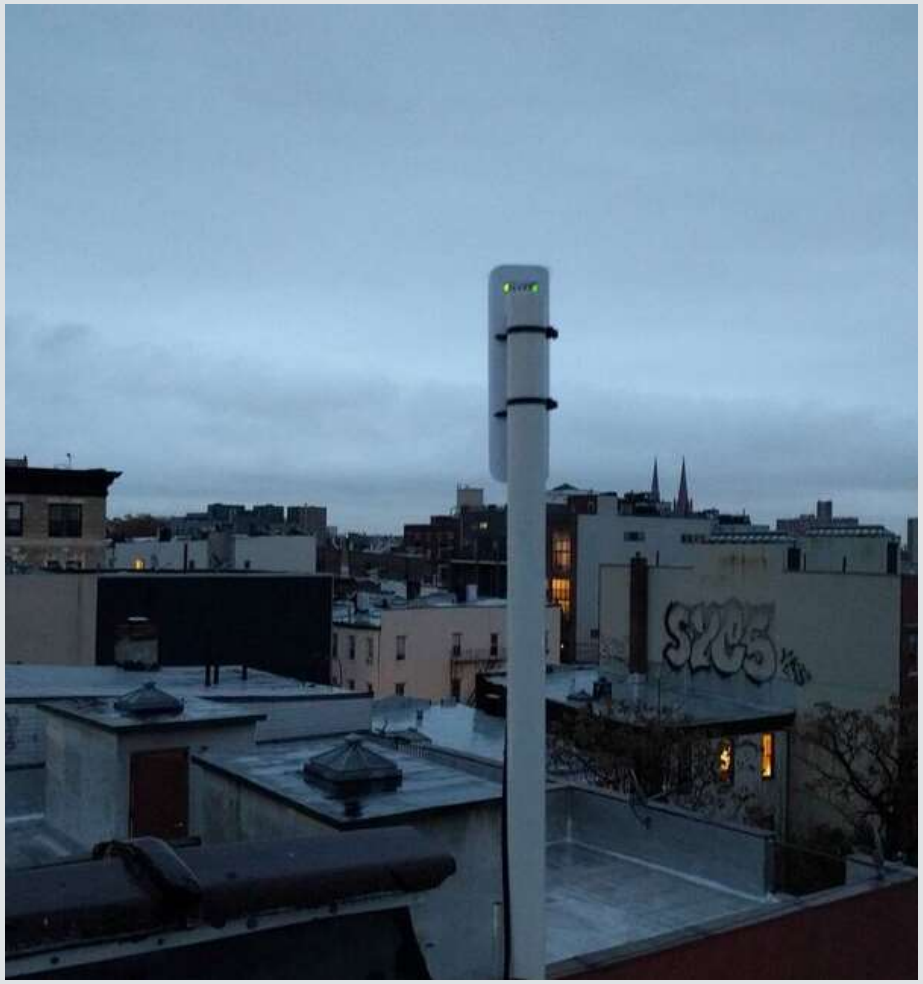
We easily have line of sight access to any of 3-5 million people. Depending on range, permanent access to our network requires only that a person purchase a router and point it at our building. The model below does not include long-range point to point connections capable of throughput up to 800Mb/s. It is only inclusive of areas that can be served for less than $200 per unit. In theory, our rooftop can see up to 50 miles-- all the way to Princeton NJ-- in a single hop!

WE'RE NOT ALONE

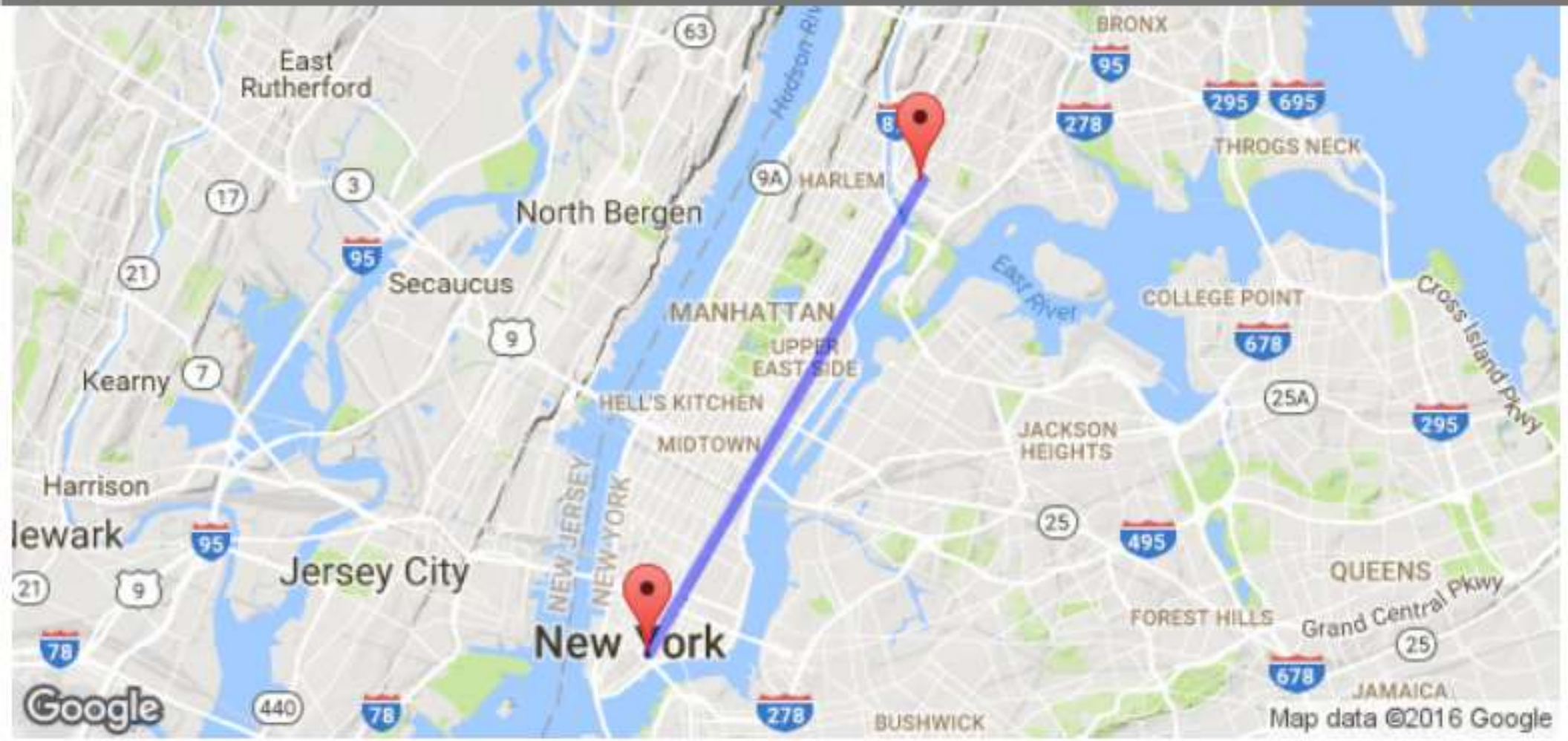
Related Projects

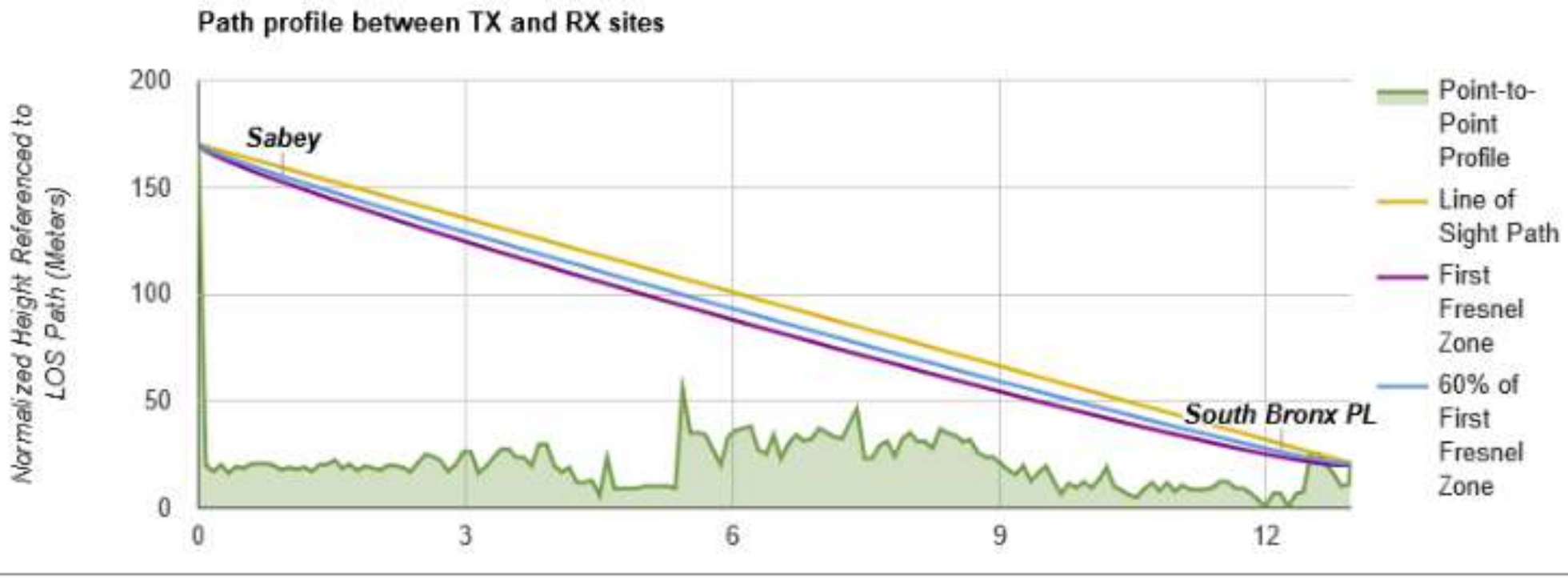
- Outernet—Global
- Guifi—Spain
- Freifunk-Germany
- Tomesh--Toronto, Canada
- Pymesh--Pudicherry, India
- Sudo Mesh--Oakland
- Portland Mesh
- Seattle Mesh
- Athens Wireless Metropolitan Network
- Pittmesh—Pittsburgh
- Reseau Libre—Montreal
- WLAN Slovenia

"Libraries and schools could add to this growing network of free broadband. Perhaps we should project Wi-Fi from every public building, with boosters to create a minimal level of home access as a public utility for all—and those who can afford a premium pay for one"
~Anthony Marx, NYPL President, New York Times, 8/13/16



Map


East Rutherford
North Bergen
Secaucus
Kearny
Harrison
Jersey City
New York
MANHATTAN
HARLEM
UPPER EAST SIDE
HELL'S KITCHEN
MIDTOWN
BRONX
THROGS NECK
COLLEGE POINT
JACKSON HEIGHTS
QUEENS
FOREST HILLS
JAMAICA
BUSHWICK
East River
Hudson River
NEW JERSEY
NEW YORK
Cross Island Pkwy
Grand Central Pkwy
Google
Map data ©2016 Google


Path profile between TX and RX sites
Normalized Height Referenced to LOS Path (Meters)
200
150
100
50
0
0
3
6
9
12
Sabey
South Bronx PL
Point-to-Point Profile
Line of Sight Path
First Fresnel Zone
60% of First Fresnel Zone

RED HOOK WIFI

- Started during Hurricane Sandy Relief
- Built/maintained and grown by network coordinators, trained at the Red Hook Initiative
- Provides access to NYCHA residences, Coffey Park, and the Waterfront

THE NUMBERS ($150,000 USD)

- 93 Locations
  - Start with 50< less than 1 install/ week
- $2,200 per library
- 50*2200 = 110,000
- Asking for $40 thousand more
  - $15k for a year of access
  - $5k for legal fees/insurance
  - $5,000 outreach/educational materials
  - $15k to stipends/grants for volunteers
    - Maybe ask for more
    - 90% ROI for non-profit is unheard of

That 2200 is an overestimate, but includes

- 8 Rooftop access points that share wifi publicly
  - $100 each
- 1 back-haul link, that connects to our datacenter in lower Manhattan, reducing concerns of DOITT and having access to your network
  - $1k
- 4 X Omnidirectional antennas, placed inside or outside to provide access in the tradition of the library, but with more power and flexibility

WHAT YOU GET

We will hold a workshop when we do the installs, inviting members of the community to learn and get involved

We will maintain the network in perpetuity—no IT fees, no cost for data, and no mining of user data for any reason

Each library will have access capable of serving 1,000 users, the ability to share the same network with residences on the block, and anyone who can see the library.

We will train members of the community to expand access to the network

WHAT WE NEED

- Partners logo on our web page
- Rooftops libraries, offices, gov't buildings
- Meeting Spaces
- A connection and reference to Department of IT, so we can get started on that bureaucratic process

THANKS

NYCmesh.net

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