

Broadband Solution for Block Island

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About Tilson

- 200-employee team of broadband planners, engineers, and project managers
- Design, engineer and build fiber and wireless networks
- Passionate about building infrastructure for the sectors that drive the economy for a more connected world
- HQ in Portland ME; 8 other offices nationwide
- 50% veterans
- Not an internet service provider



Understanding Broadband and Broadband Technologies



Defining Broadband

- Broadband is a general term that refers to any communications technology that carries data at speeds in excess of a statutory threshold
 - Speeds are measured in megabits or kilobits per second (Mbps or kbps)
- The FCC defines this threshold as 25 Mbps download and 3 Mbps upload
- The ConnectME Authority defines broadband as 10 Mbps down and 10 Mbps up.

Types of Broadband Delivery

Wireless – Satellite



Typical maximum speeds
K_a Band: 15/2 Mbps

- Available anywhere in the continental USA with a clear view of the southern sky
- New K_a band allows faster speeds but is subject to weather-related disruption
- Satellite connections have very high latency, and so are generally unsuitable for real-time communications or gaming
- Main providers in the US are HughesNet and Exede

Slow speeds and high latency make satellite unsuitable for real-time communications or anything more demanding than email and basic web surfing.

Types of Broadband Delivery

Wireless – LTE



Typical maximum speeds
LTE: 30/5 Mbps

- LTE can be delivered as either fixed or mobile wireless
 - Fixed example: RedZone
 - Mobile examples: AT&T, Verizon, etc.
- Mobile providers especially often impose caps on data transfer

Limited on Block Island to the existing cellular providers, each with its own limited connection to the mainland. Spotty coverage on the island as well.

Types of Broadband Delivery

Cable



Typical maximum speeds

DOCSIS 3.0: 300/25 Mbps

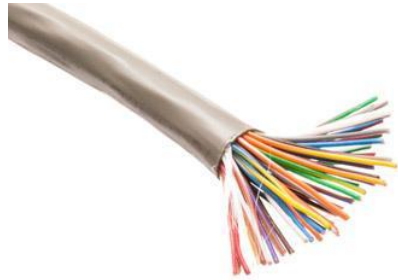
DOCSIS 3.1: 1000/100 Mbps

- The most common broadband format in the US
- Provides the most commonly available, highest speeds via the DOCSIS standards
- Rapid technological improvements have resulted in available cable speeds growing the fastest of any technology in the last several years
- Advent of new DOCSIS version 3.1 will result in further increased speeds

No cable operator or infrastructure is present on Block Island.

Types of Broadband Delivery

DSL



Typical maximum speeds

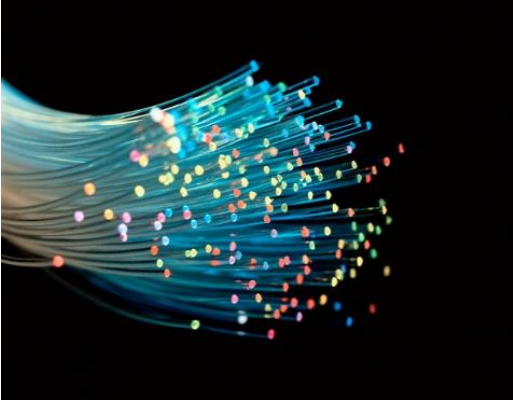
ADSL2+: 24/3 Mbps

VDSL2: 100/100 Mbps

- Second most common format in the US
- Two main types of DSL
 - Asynchronous DSL (ADSL) is most common
 - Very High Bit Rate DSL (VDSL) also present
- Users need to be within a relatively short distance from the remote terminal to get service
 - Within just a few hundred feet for highest speeds
 - Within 3 miles for usable service

Currently, the only existing broadband on the island, subject to severe limitations in connection to the mainland.

Fiber Optics



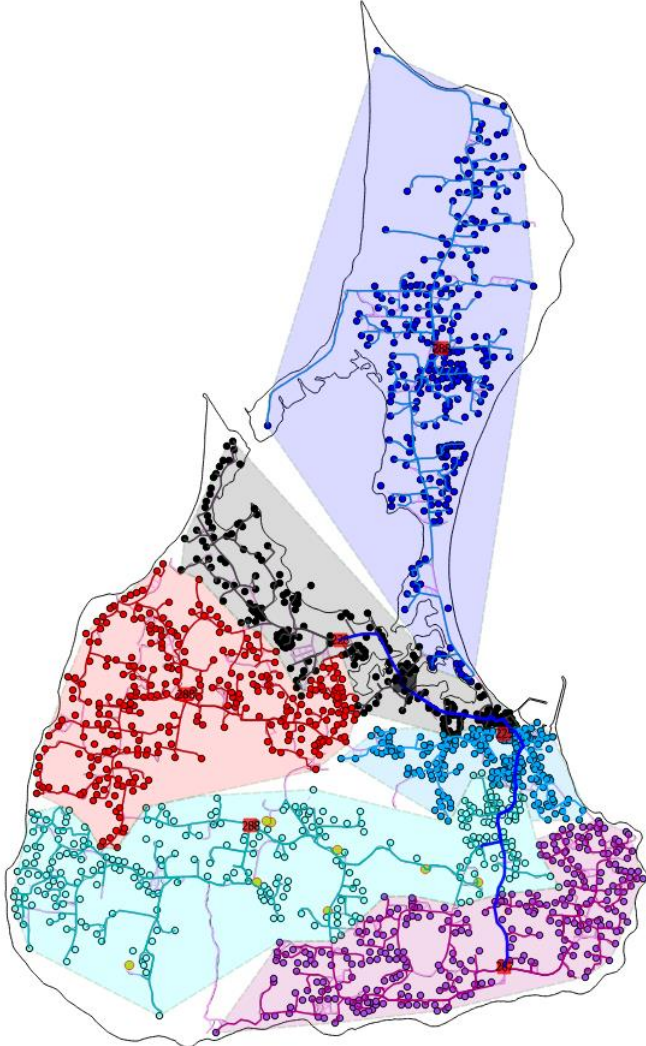
Typical maximum speeds
Fiber: 1000/1000 Mbps

- Generally considered the ideal standard in terms of performance and future-proofing
- Fiber is the most expensive solution to build, but relatively inexpensive to operate
- No theoretical maximum bandwidth
- All broadband networks incorporate fiber elements

Block Island Broadband Project



State of the Art, Expandable Broadband Solution



- Island-wide, state of the art fiber to the premises network will reach every occupied premise on the island
- Broadband internet @ up to 1Gbps and phone service
- Infinitely expandable to meet future needs

Phase 1 – Est. Complete End of July 2017

- Service to the school, public safety building, and medical center
- Fast, public WiFi downtown

Phase 2 – Complete End 2017

- Fully built out fiber to every occupied primary premise on the island
- Easily expand network as needed in the future

Project Schedule

Tasks	Start	End	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Phase 1 Pole Survey	COMPLETE														
Issue Tilson PO	Jan	Jan													
Finalize ISP agreement/Preferred Operating Model	Feb	Feb													
Phase 2 Premise Survey	Feb	Jun													
Detailed Engineering	Mar	Jun													
Pole Applications	Feb	Mar													
Make-Ready Management	Mar	Jul													
Order Shelter/Equipment	Feb	Feb													
Phase 1-Issue RFP Shelter/Town Network Const	Mar	Apr													
Award Phase 1 Construction	May	May													
Phase 1-Shelter/Town Network Construction	May	Jun													
Set Shelter	Jul	Jul													
CAI Testing/Turn-Up	Jul	Jul													
Phase 2- Issue RFP Island FTTP Construction	Jun	Jul													
Award Phase 2 Construction	Jul	Jul													
End User Premise ROW Permissions	May	Dec													
Presubscription/User Outreach	May	Dec													
Phase 2-Island FTTP Construction	Aug	Dec													
Testing/Close Out	Nov	Jan													
Town Vote Presentation Support	TBD--Town's Schedule														

Items in red above are critical path.

The aggressive schedule requires an immediate start to provide service to the school, public safety buildings, and medical center in July, and to complete work by the end of 2017/early 2018.



Network Cost Breakdown

Full Two Phase Approach

- Phase 1:
Start + 6 Months
- School
 - Public Safety
 - Medical Center
 - Public WiFi

Phase 1 Scope of Work	Estimated Budget
Network Engineering & Design	\$444,500
Pole Licensing and Make Ready Construction	\$415,000
Easements, Procurement Support, and Project Management	\$252,000
Construction Labor, Materials, & Equipment	\$2,000,000
Total Phase 1 Without Contingency	\$3,111,500

- Phase 2:
Start + 12 Months
- Rest of Island

Phase 2 Scope of Work	Estimated Budget
Procurement Support and Project Management	\$352,000
Labor & Materials	\$2,926,186
Total Project Remainder Without Contingency	\$3,278,186

Prevailing wage labor rates and island logistics are greatest source of uncertainty in project cost. A contingency of \$2MM is planned on and is set aside to mitigate cost overruns.

Risks to Project Schedule & Budget

Network completion by the end of 2017/early 2018 is aggressive but possible, provided no delay with:

- Verizon agreeing to allow the Town to attach cable on poles it owns on Block Island
- Cox building the connection between the subsea cable and its mainland network
- Town approval of ordering and payment for long-lead time items
- Town signing contract with Crocker, the Internet Service Provider
- Block Island Power Co expediting make ready, especially new pole replacements needed to serve the school, medical center and public safety building.

Potential budget challenges:

- Prevailing wage labor rates could make construction costs higher than anticipated. Contingency budget is set aside to mitigate this risk.
- Island logistics are always challenging, especially for a large capital construction project.

Progress to Date

- Selection of Internet Service Provider & operating model
- Mid-level network design
- Pole surveys
- Financial and business modeling

Selection of Internet Service Provider

- Town conducted an RFI in late 2015 and selected Crocker Communications of Greenfield, MA
- Crocker has experience running municipal-scale fiber networks and has been in the ISP business 20+ years
- Draft contract under review

Operating Model

- Town will build and own the network
- Town will determine available service tiers and pricing
 - Currently-contemplated internet service is a single tier of 1 Gbps
 - Currently-contemplated phone service is a single tier of unlimited North American calling
- Crocker will provide service on the network
- Customers will remit payment to Crocker, who will deduct its service fee and pass the remainder to the Town
- Network will pay for its own operation

Questions?

