

Fiber Extensions By Alaska Power & Telephone

- The Lynn Canal Fiber project laid fiber to connect Haines and Skagway to Juneau.
- AP&T can use 40 wavelengths in a single fiber. There are 36 fibers in AP&T's new cable. If AP&T's existing service to Haines and Skagway is a two-lane road, a single wavelength is a 20-lane road. A single fiber is an 800-lane road. The cable as a whole is a road with 28,800 lanes.
- AP&T followed the fiber project with a FTTH effort in Haines and Skagway.
- AP&T's new broadband tiers range in speeds and usage from 5Mb/1Mb with 150GB of usage for \$49.95 per mo to 25Mb/1Mb with 600GB of usage for \$229.95 per mo where fiber is available.

Exhibit 6

The Silver Arrow feeds the last segment of AP&T's fiber optic cable, near Skagway, Alaska.



Arctic Slope Telephone Cooperative Association's Fiber Project

- ASTAC completed a fiber backbone project in Utqiagvik. ASTAC completed FTTH projects in Nuiqsut, Point Hope, and Wainwright. ASTAC plans additional FTTP projects planned over next few years.



ASTAC Cellular Upgrade

- ASTAC completed wireless upgrades to HSPA+ (4G) in all 9 ASTAC markets with LTE overlay in Deadhorse and Kuparuk. Additional sites planned for 2018.
- Vastly improved Wireless performance.



Bristol Bay Telephone Cooperative

- Bristol Bay Telephone Cooperative invested in a LTE upgrade for the King Salmon, Naknek and South Naknek region. Construction and installation has been ongoing since August.
- BBTC expects to start beta testing in December with a commercial date of 15 April.

Bush-Tell's FTTH Project

- Bush-Tell is constructing FTTH in six villages/communities over the next 10 years to improve quality of and access to broadband.
- Aniak is the first community to be constructed. Customers will start transitioning to fiber in December 2017.
- Pricing and capacity remain limited by the cost of middle mile.

Copper Valley Telephone Cooperative *Middle Mile Project*

Exhibit 6

- Copper Valley Telephone recently invested in a middle mile fiber build from Glenn Rich to Delta Junction.
- Project extends the network and improves ability to offer high speed broadband to more communities.



Copper Valley Telephone Cooperative *FTTH Project*

Exhibit 6

- Between May and October 2017, CVTC installed fiber optic broadband in 575 homes in Valdez to provide faster internet service.



Cordova Telephone Broadband, Cellular and Microwave projects

- Cordova Telephone Cooperative runs fiber to the node and recently invested in technology to bring VDSL service (32/5) to roughly 70% of it's members.
- Cordova recently upgraded its cellular network 4G/ LTE capabilities and added two cell/microwave sites in the past 2 years.
- Cordova is in the process of completing its microwave network upgrade which supports its wireless network and provides redundancy for its undersea fiber cable to Valdez.

Exhibit 6

Cordova Telephone Cellular and Microwave Site on Pigot Point



KPU's Middle Mile Expansion and FTTP Project

Exhibit 6

- KPU completed a multi-year project: construction, turn-up, and expansion of digital Microwave system between Ketchikan and Prince Rupert, BC, Canada. Provides significant broadband middle-mile transport circuits between Southeast Alaska and Seattle.
- KPU investment in high-capacity middle-mile infrastructure necessary for Alaskans' to access affordable high quality broadband services today and in the future.

KPU Microwave Tower



MTA's Expanding Fiber Network

- MTA deployed 98 miles of fiber-optic cable in the last year.
 - Connecting new subdivisions
 - Pushing fiber further into neighborhoods
 - Building fiber connection to Fairbanks
- Taking advantage of Borough construction projects to upgrade plant.
 - MSB upgraded roads in the Finger Lake Subdivision. MTA could move copper or install new fiber. MTA chose the latter.
- MTA upgraded broadband services to 6,300 structures this year.

MTA Fiber Installation



Nushagak Telephone Cooperative Upgraded Microwave Capability

- Nushagak upgraded its microwave network between Dillingham, Clark's Point and Manakotak.
- Nushagak continues to invest in microwave capacity to create and expand its network. Nushagak also invested in fiber connectivity within Dillingham and to Aleknagik.
- Investments in middle mile microwave and fiber infrastructure improve the quality and availability of broadband.

OTZ Upgrades Cellular Network

- OTZ upgraded cellular network infrastructure in Kotzebue in 2016.
- OTZ sought and received an FCC waiver to construct cellular infrastructure in Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, and Noorvik.
- After approval of the Alaska Plan, OTZ constructed all of these sites, except Ambler.
- Ambler will be completed in 2018.

TelAlaska Expands Network

- TelAlaska extended fiber-optic capability from Moose Pass to Seward.



- TelAlaska installed fiber to the Iliamna airport to boost public safety.