


Build or Buy? Diverse Solutions

When designing and building a statewide middle-mile fiber-based network, one particularly important decision is whether to build a brand new long-distance fiber-optic cable route in areas where none exist, or use strands within an already installed cable via a pre-paid, discounted long-term lease called an IRU.

California presents great diversity in terms of its population centers, with densely populated urban areas as well as remote and sparsely populated. The state also presents geographic challenges like diverse terrain, weather, and natural hazards. And as you can see below, these factors influence the presence or absence of existing fiber-based middle-mile infrastructure – ample in urban areas and little to none in less populated, rugged, or remote ones.



1 2 3 4 5
NETWORK BUILD
 REGIONS 1-5


EXISTING FIBER

Diverse Fiber Solutions for a Diverse State

Among other factors, this diversity in the presence or absence of existing fiber-based middle-mile infrastructure across the state comes into play when choosing from among a spectrum of “Build versus Buy” solutions. The ideal solution in one area may be very different from that implemented in another. The basic differences between building and buying are as follows:

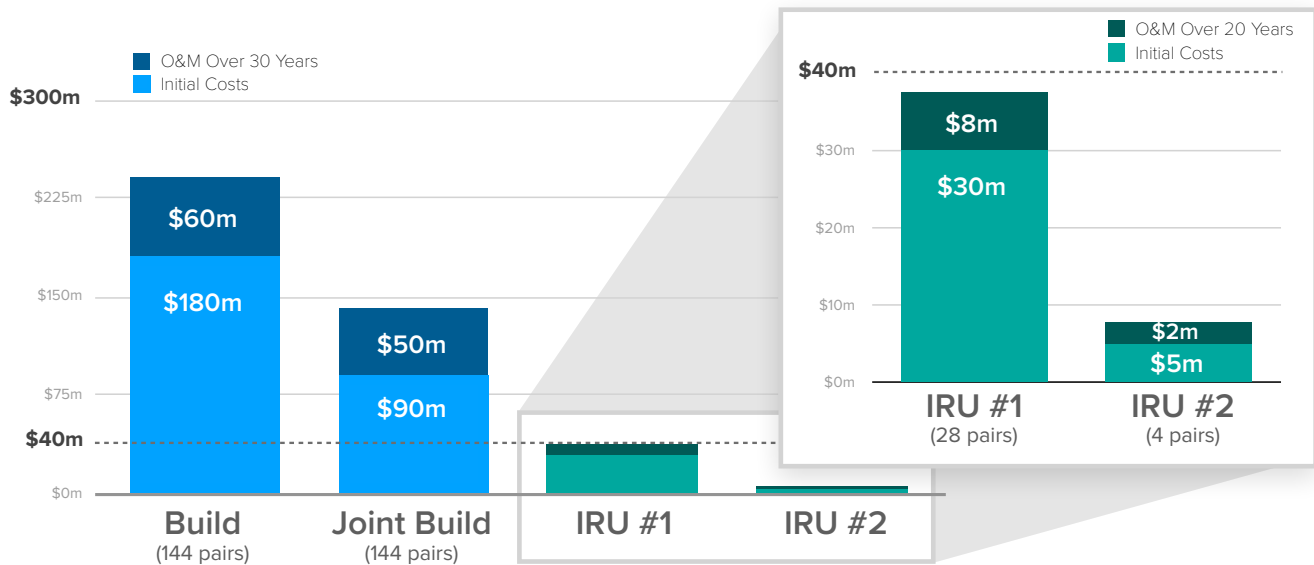
Where to Build

- Usually necessary in rural or remote areas without fiber or Internet service of any kind.
- Can involve installing hundreds or thousands of miles of new cable and significant construction work.
- Can take months or more and involve higher operations and maintenance (O&M) costs.
- Places responsibility of leasing newly installed fibers – i.e. offering our own IRUs – on middle-mile operator.
- Can include more frequent “interconnects” or locations where local last-mile providers can “tap into” the network – usually every half mile.

Where to Buy (IRU)

- Often an ideal option in dense urban areas where plentiful fiber has already been installed.
- Supports common “Dig Once” policies that seek to minimize construction cost and disruption.
- Offers a rapid “turn-up” of service, ample capacity for even densely populated areas, and lower O&M costs.
- Thanks to fixed-time lease, allows for periodic “refreshes” of fiber and equipment – and vastly increased capacity as technology improves.
- Less frequent interconnect points not an issue as last-mile providers typically connect to through established metro networks.

Comparison of Costs of Various Fiber Solutions



Estimated build/buy costs and O&M average costs to equip, run, and maintain taken from a representative California metro network design

There are multiple approaches to building and buying, including joint builds done with partners, leasing space within an underground conduit through which a new fiber cable can be pulled, leasing capacity on any number of existing fibers, from just two pairs – already more than adequate to serve even a large community – to an entire installed cable of 288 or more fibers.

Building a fiber-based middle-mile network requires careful and customized decision-making for a state as diverse as California. The ideal solution for one area may not be the same as in other areas. However, a middle-mile network has a wide range of tools at its disposal from completely new fiber builds to leasing capacity on already installed fiber that can provide ample, equitable, future-facing capacity for any community’s needs across the state.