Coastside Communications…

What we've learned from recent storms, and what we can do about it…

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Chair, MCC
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C.R.I.S.P.* Priority Areas

*Coastside Resilient Infrastructure Strategic Plan

- Inadequate infrastructure in several dimensions:
  1. Water & Wastewater
  2. Stormwater
  3. Wildfire
  4. Schools
  5. Emergencies
  6. Telecommunications
  7. Power
  8. Healthcare
  9. Transportation
  10. Harbor & Shoreline

$427M funding deficit,
…and counting

Tonight's Discussion Focus

- We need:
  - **Assessment** of critical infrastructure requirements
  - Those requirements **priced**
  - Those requirements **funded**

MCC Communications Analysis

Work Group led by Leo Gomez

- MCC Work Group Report (40 pages - 29mb), Presentation (380mb)
- Surveyed all cell phone carriers in 29 locations from Montara to Moonridge
- Assessed redundancy and backup by carrier and location
- Measured internet availability by carrier and location
- Built Interactive Map of all communications hardware serving Coastside
- Simulated cell reception ‘as is’ & with new cell towers

MCC Communications Assessment

Work Group led by Leo Gomez

- **Inadequate** cell coverage and speed
- Low availability of modern internet (fiber)
- **Unreliable** transmission (redundancy, backup power)
- Amateur-dependent Emergency Radio Communications
- Dozens of recommendations in the Report
  - One Option: forming a Community Fiber Network*
- Welcome HMB reps on Work Group
  - Full report presentation upon request

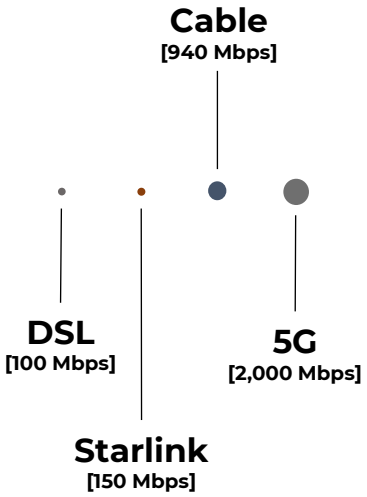
* Hundreds of communities nationwide: https://communitynets.org/content/community-network-map

What should be done?

1. Nothing - Live With It
2. Wait for the Oligopoly and/or Regulators to respond to pressure
3. Construct a community-owned Fiber-optic To The Premises network (FTTP)
4. Move somewhere else

Why Fiber? – Comparison by Medium

Current Maximum Download Speeds

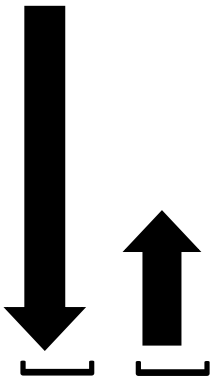


Fiber

25 Tbps

[25,000,000 Mbps]

Symmetrical Networks



DSL

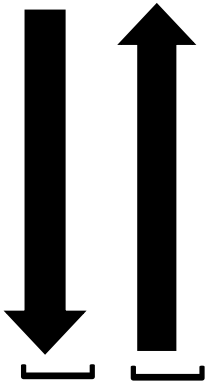
Non-Symmetrical

Cable

Non-Symmetrical

Fiber

(Throttled Networks)



Fiber

(**Symmetrical** Networks)

Quotes from County Case Study:

- “The [County] took no advantage of these opportunities, offered no strategy to the cities and towns of County, and provided no oversight of telecommunications services for County as a whole.
- Today’s digital highways are susceptible to monopoly control, there is no local influence over pricing, governance, or quality of infrastructure, and the interests of incumbents are misaligned with the interests of subscribers.
- No doubt the common theme is: there’s no competition…
- Major telecom opportunities were missed by existing agencies. Few applications were made for available federal and state funds to provide high quality broadband internet access to unserved and poorly served areas
- Inequities everywhere
- The COVID pandemic and other recent disruptive events underscore County’s need to end internet access inequities and bridge the digital divide - the economic, educational, and social inequalities between those who have computers and online access and those who do not have it. Students need reliable home connections for distance learning. Families need online access to information and support services. Our businesses and growing remote workforce demand more from internet providers to remain competitive. **High speed internet has become equal to water and electricity.”**

We Are Not Alone…

- Those quotes are from **MARIN County**, where a 2019 Grand Jury Report found the County badly lagging in internet services
- That County had a Telecommunications Agency, and others, NONE of which prevented the Digital Divide there.
- Nationally, there are HUNDREDS of locally-controlled community broadband networks to address privatized service deficiencies.
  - 82% of North Dakota and 53% of South Dakota landmass is served by fiber from cooperatives.
  - Colorado, Utah, and Vermont have dozens of communities so served.

Some Community Fiber Deployments:

ATHERTON FIBER

Colorado Community Fiber

UTOPIA FIBER

Los Altos Hills COMMUNITY FIBER

Comparative Metrics

- Santa Cruz:
  - 60,000 population, 20,000 parcels, 24,000 housing units
  - $50 Million community fiber project
  - Fee: $75/mo residential, higher for Dedicated & Enterprise
- Woodstock, VT *(pop: 3,000):*
  - Part of 24 town consortium; expect 20,000 premises
  - $42M revenue bonds initial, now $60M debt, profitable.
  - Fees:
    - ✓ Basic: $72/mo residential at 75Mbps
    - ✓ Standard: $104/mo at 300 Mbps
    - ✓ Wicked: $134/mo at 1,000 Mbps (1 Gig)

Parallels with the Past, and Present…

* https://www.ecfiber.net/mission/

- **Why are these small Vermont towns building a state-of-the-art network along their back roads?** Full-speed Internet service has become essential to education and to participate in today's economy. Commercial providers compete for customers in town centers, but they ignore the outskirts as inadequately profitable to satisfy their stockholders. The resulting digital divide leaves out all too many creative, productive Vermonters who don't live in the town centers.
- **Rural America faced a similar problem in the 1930's.** Electricity and the telephone had become essential to participation in the economy of the time. Farmers living on the back roads, however, were being left out. The **Rural Electrification Administration** was established in recognition of those farmers' basic right to participate in the modern economy. The Vermont towns that voted to form ECFiber in the spring of 2008 recognized high-speed Internet as the equivalent necessity for full participation in the 21st-century economy.
- **And why are we building a fiber-optic network?** Actually, it's a matter of Vermont thrift: if we're going to pay crews to hang any kind of cables on poles, we'd rather just do it right the first time. Once in place, **fiber-optic cables will last for a hundred years**; and as higher data rates are needed, we can simply replace the small electronic devices at the end of each fiber. Fiber technology also lets us offer symmetrical speeds, (equal upload and download data rates,) which are especially important for serious educational or business use.
- **What does "community-owned" mean?** That's easy: we have no far-away stockholders. When our revenues exceed our expenses, any excess not needed for further network construction will be returned to our member towns, not to stockholders.

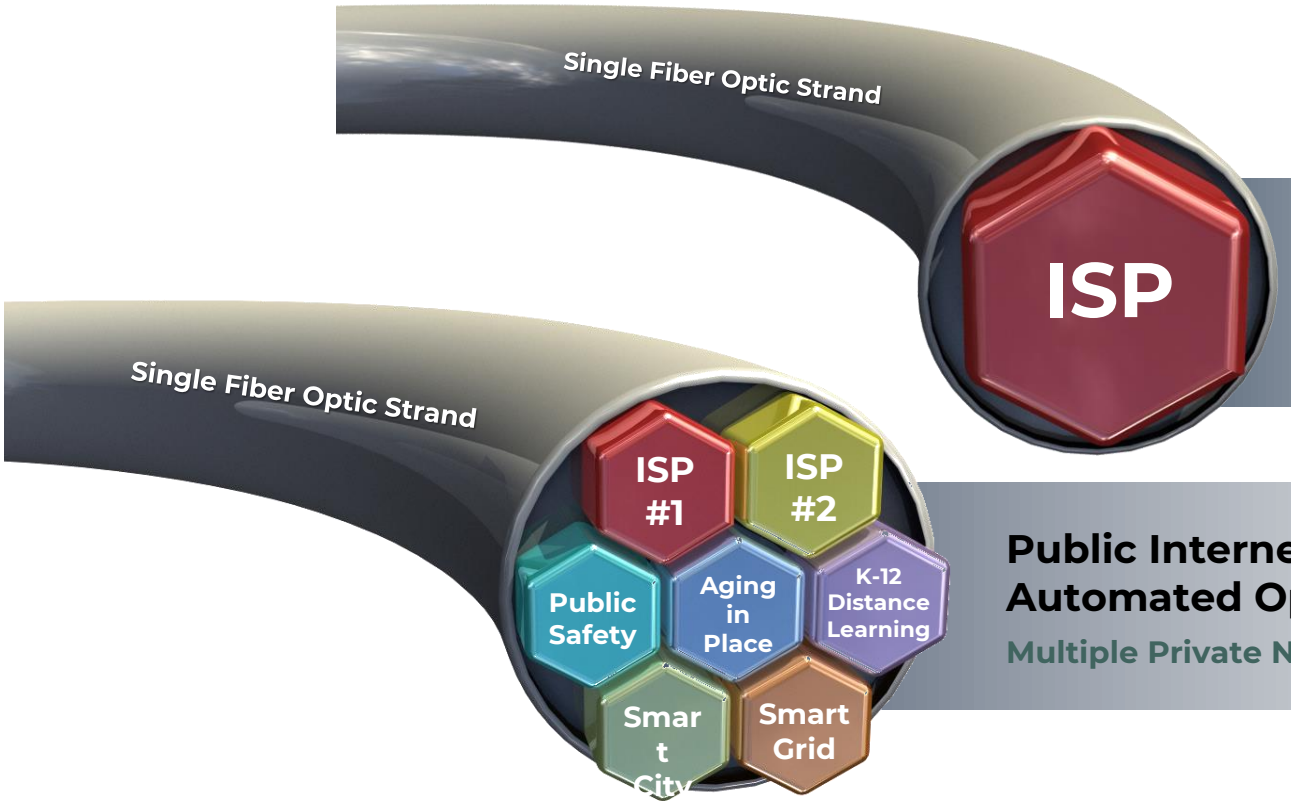
There are Local Precedents…

- In Montara, residents raised a $20M bond in 2003 to replace a commercial vendor's failing water service.
  - No money is wasted on "profits"
  - No money is sent to Corporate HQ for services
  - All Jobs are kept Local
  - Our voices govern the District
- Cruz.io (coastside.net) created community fiber in Santa Cruz
  - Pop. 60,000, cost $50M
  - Speeds 10x ours, costs similar

How Community Fiber Can Help:

- Health and Safety
  - Improved emergency communications
  - Modern Telehealth
- Educational improvements
- Business development
- Reduced commutes - pollution / Employment Mobility
- Increased property values
- Capacity for a Digital Future
- Oh, and *WAY faster* performance…

Doing More With The Fiber Connection



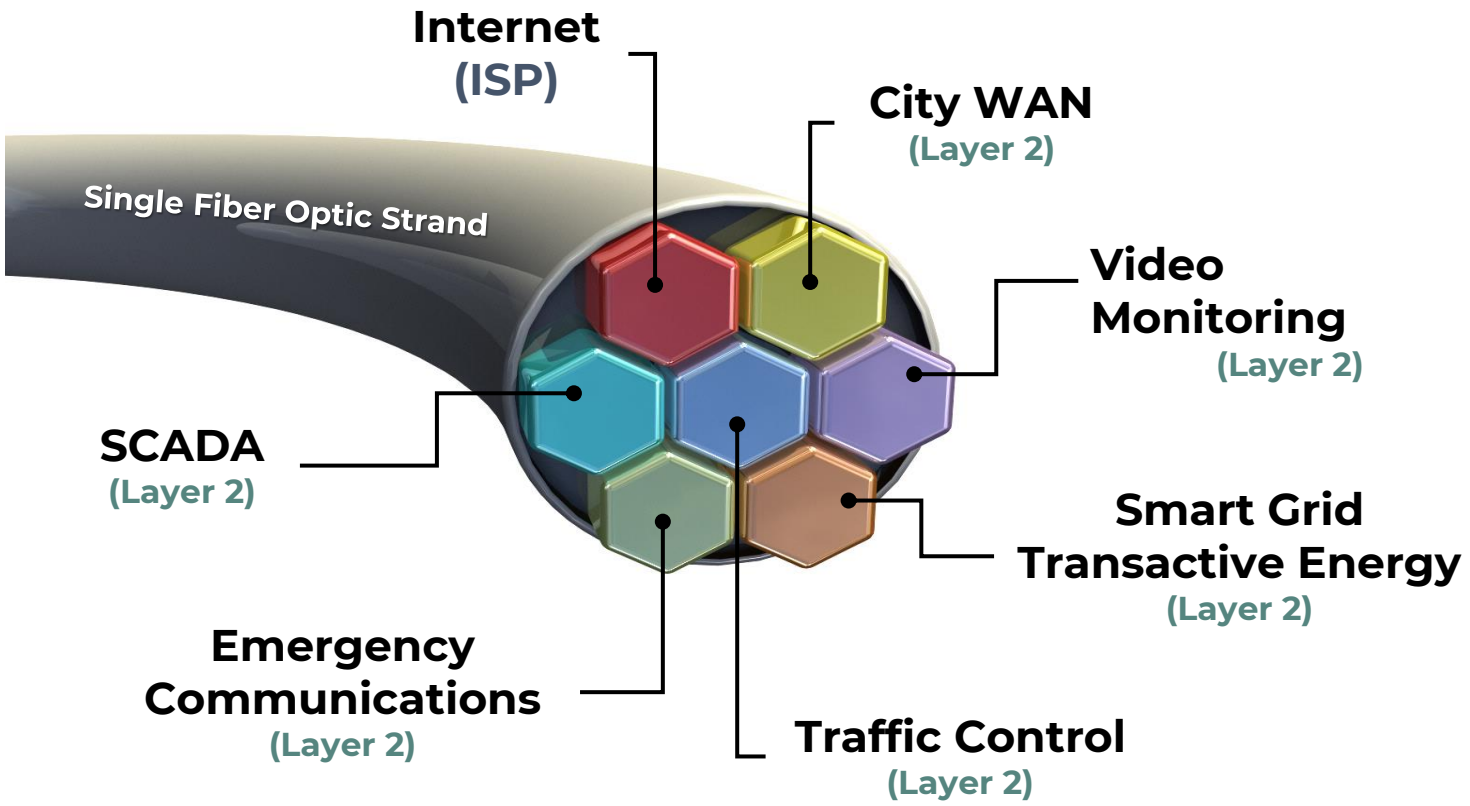
Public Internet Over Traditional Broadband Network

Everything Runs Over the Internet

Public Internet and Private Networks Over Automated Open Access Platform

Multiple Private Networks using Virtualization

Smart City Applications – Virtualized Fiber

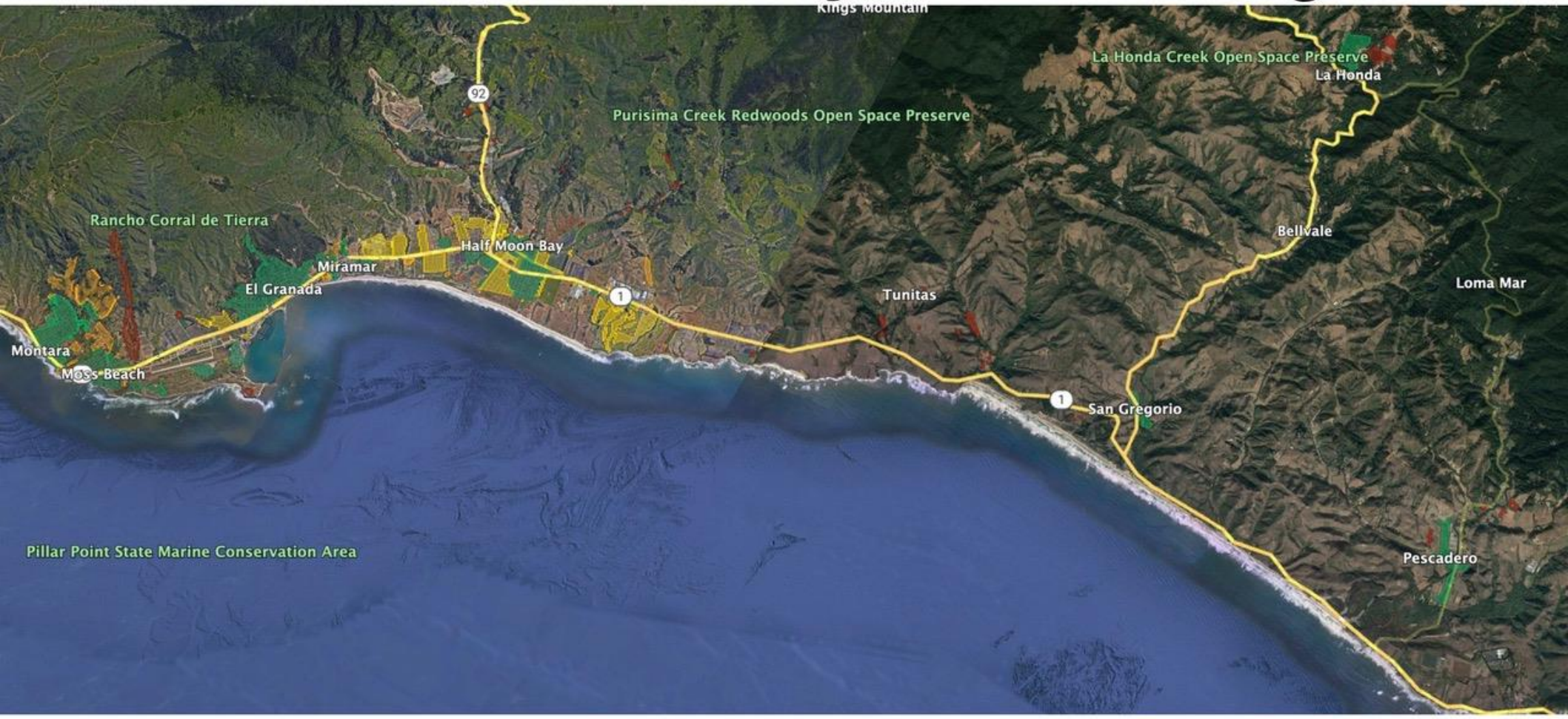


Guiding Vision?*

*https://communitynets.org/content/our-vision

- **Competition and choice wherever possible:**
  - "The optimal solution is not one great network, but rather a series of overlapping networks, much like the Internet itself. Such a solution provides resiliency as well as incentives for innovation and investment.
  - We are enthusiastic about **open access networks**, where multiple independent Internet service providers share a single high-quality physical network to compete for subscribers.
  - We believe communities should embrace solutions that fit with local culture rather than simply trying to import a model that worked well elsewhere.
- **Local Control:**
  - More than 100 years of regulatory games in electricity have demonstrated the superiority of local solutions to state or federal regulators, which suffer from well-known revolving door and capture problems. We have concerns about locating too much power in state capitals or DC — we believe the best solutions distribute power as locally as possible."

Possible Community Fiber Coverage



What do we need? … To “Roll Our Own”?

- Community concurrence on the priority & policies
- A partner who’s done this before
- Technical consulting
- Funding
- A dedicated work group with time to actually work

Initial Steps

… to A Community Fiber Future

- Community Dialog =>Vision
- Organizational Decision
- Technical Design & Cost Commitments
- Funding / Anchor Accounts
- Accountability Provisions
  - Service Level Agreement (speed/uptime/costs)

Organization Type

- Public
  - County
  - City
  - Special Agency
- Public/Private Partnership
- Private

How Decide?
Based upon who steps to the plate with:
Talent, Time and Treasure..

How Others Grew

- Incrementally
- Start with a backbone (e.g. Hwy 1)
- Leverage existing networks available:
  - Traffic signals
  - Street lights
  - Existing conduits
- Create policies to include fiber in all public works efforts
- Find “Anchor Clients” with immediate needs
- Grow the network neighborhood by neighborhood

We Face Unique:

- **Challenges**
  - Hilly terrain; distributed population
  - Wildfire, earthquake, tsunami hazards
  - The Empire Will Strike Back
  - California Costs and Regulations *(and lacking enforcement thereof)*
- **Opportunities**
  - AT&T's fiber backbone is way underutilized (27%)
  - Caltrans plans fiber under the highway (?!)
  - Potential partner in Cruz.io
  - National & California state funding initiatives
  - Content Competition!
  - Private, secure network options

Half Moon Bay's Decisions:

- Given the proven unreliability and inadequate performance of Coastside Communications,
- Does HMB want to explore the feasibility of a Community fiber network as an alternative to the incumbent networks?
- Will HMB partner with local agencies and neighborhoods to do so?

Questions and Comments?

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Thank You for your time and consideration.