RMLUI – DU

East Central Vermont Community Fiber to the Home
A Case Study
Disruptive Technology / Innovation

Bandwidth: Nielson’s Law

Processing: Moore’s Law

Economic – Production, Direct Jobs, Indirect Jobs, higher labor income

National Policy - Out of Date (driven by Telecom and Cable), CO is unique

Social Changes - Increase of better paying jobs (skilled labor), decrease unemployment (job searching), online careers, increase Quality of Life
Digital Convergence through Applications

Entertainment
Education
Government – Smart City
Utilities
Healthcare / EMS
Real Estate
Energy
Transportation

Network Infrastructure

Application

Wireless – PCS
5G
Telecom - xDSL
Cable – Docsis3
Satellite – GEO
12 GHz
### Project Market
(Unserved/Underserved)

<table>
<thead>
<tr>
<th>Town</th>
<th>2010 Pop</th>
<th>2010 Premises</th>
<th>Road Miles</th>
<th>Premises Per Mile</th>
<th>Median Household Income</th>
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</thead>
<tbody>
<tr>
<td>Barnard</td>
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<td>746</td>
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</table>

**Totals all Towns**

| Towns | 51,486 | 30,624 | 1,680 | 18.2 | $57,366 |

**Vermont average**

|          | 54,166 |

*Source: U.S. Census Bureau and the Vermont Agency of Transportation.*

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**ECFiber Towns and Cities**

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*State of Vermont*
Why?

• Rural Areas ignored by Incumbents

• Incompetent “Regulators” – especially Federal
  – Regulatory Capture from incumbents
  – Define Broadband Downward
  – Example: in 2009, Fairpoint (incumbent) received $66MM for 10/1 Mbps!
Project Metrics

Basics:
- Long-Term Business Model (began in 2008)
- In 2016, State legislature allowed Towns to form “TUDs” – (Telecommunications Union Districts) - (Title 30, Public Service (VSA 3051))
- 499 miles of fiber built to date, total build out in 2023 of 1,430 miles
- Scalable: 1 G/home to 10 G/home with little CAPEX miles of fiber.
- Debt is paid ONLY from revenues. ECF is the ONLY system in the Country funded this way.
- Additional 13 Towns are voting to form an adjacent TUD this week.

Costs:
- Total Project build out Cost: ~$40,000,000
- Cost per connection: ~$5,000
- 5 connections per mile with a current market penetration at 32% during construction, pre-subscriber interest levels determine deployment markets.
- Lion share of CAPEX goes to physical plant
Project Metrics (cont.)

Funding:
- Grants / Local contribution
- $7,000,000 through Crowd Funding and local investors (Tax-exempt investments. High Yield @ 11%)
- Zero Coupons / Capital Appreciation Notes (20 years)
- Trustee Structure:
  - Maintenance Reserve Accounts
  - Contingency Accounts
  - Debt/Service Coverages
- Limit Debt to Cash Flow Analysis – Coverage Ratios
- Build out markets depending on pre-sales via website.
Fundraising History (000s)

• 2008-10 - $500 (Valley Net)
• 2010 - $900 Crowd Finance
• 2011 - $400 “
• 2012 - $1,700 “
• 2013 - $1,700 “
• 2014 - $1,500 “
• 2015 - $850 “
• 2016 - $9,000 MCM (institutional)
• 2017 - $14,500 MCM (institutional)
Use of Cash Surplus

• When revenues exceeded expenses, the “excess revenues” can be used for:
  • First extending the network to other locations, and only then* distributing back to the Towns

*Governing Board is committed to using **ALL excess revenues for network expansion** until every citizen within market has service.
Result

- Customers in rural Vermont are receiving Fiber to their Home
  - *(better than Denver or other technology hubs across the United States)*
- Schools / Community Services pay same as residential customers.
- Lower Interest Rates and Cheaper cost of capital versus Incumbents
- High Operating Margins
- Churn on Network - **13%**
  - 3 customers dropped service in 2017 (2 were home sales that flipped to new customers)
- At 1/3 build out (10,000 customers) project will generate $3,400,000 in additional annual cash flow after OPEX and Debt.
- Achieve an investment grade rating via Moody’s and/or S&P using a combination of a Utility Fee and Revenue based methodology.
Can this work in other markets?

Financial Model does work in underserved/unserved but need to be run like a business...
  - i.e. paying back investors is as important as social goals

Requirements:
  - Lead/Local Investors – no town risk
  - Angry and Determined Communities
  - State – Regulatory/Grants/ (Dark Fiber Availability)
  - Need a willing Service Provider (Valley Net) and Operations Company
  - Dedicated Volunteers
    - Governance, Marketing/Sales/PR, Vendors
  - PATIENCE
Thanks!

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