Tool #3
Rural FTTx
Financial Analyzer

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Background

• Designed for quick feasibility modeling.
• Great for showing to consultants as well as bankers, investors and other potential sources of capital
• Capital flows are based on Tool#1, originally conceived by Fred Cornwall of Municipal Capital Markets, www.municapital.com
• Special calculations for rural situations (high take rate; possibility of constructing drops to all premises passed).
More Tools!

• See MSO, ILEC or muni financial calculator, Tool #1

• See MDU/PCO calculator, Tool #2

www.FTTHAnalyzer.com

• Coming: Monthly cash flow models; quick calculators for blending promotional and full rates, *and more!*
Rural FTTH is practical!

• Rural take rates are higher (typically 50-60%) due to less competition, more needs for remotely provided services.
• Cost of long fiber runs is partially offset by lower costs for construction labor, real estate.
• Marketing costs are typically cheaper.
• Churn is low.
• Classic satellite dish cannot deliver all the modern services available.
• “Safe zone” seems to be 4-5 homes per road mile, but with USF help and legacy advantages, even 1-2 homes/mile systems have thrived.
NBP added to confusion

• The National Broadband Plan calculates rural builds as vastly more expensive than deployments in suburban or urban settings. But that’s in large part because the NBP model assumes that all drops AND customer premises equipment will be built/installed during initial deployment, and that the initial take rate will be 30% or less.

• But RVA data suggests that rural take rates are far higher than the national average – and that the national average for non-RBOC FTTH take rate is 50%!

• Tool #3 also disaggregates the CPE and drop costs to help you decide how much effort you will put into readying each premises passed, to become a paying customer.
New and unconventional funding

- USF being partially repurposed for data from voice-only. FCC now says 6 Mbps is minimum service target.
- Possibility of sweat equity for trenching, basic brick-and-stick construction.
- Possibility of revenue sharing for smart grid initiatives.
- Don’t forget libraries, public safety, colleges and hospitals as anchor tenants.
ARPU potential is high

• Low churn makes triple play more profitable due to higher average customer payments; fewer promotional rates
• Distance learning for life skills (music, etc) as well as academic topics
• Remote security feeds
• Premium “first run theater” video on demand
Poll: How are you involved in rural builds? (Check all that apply)

- PCO (private cable operator)
- CLEC
- ILEC/RBOC
- MSO (either cable or telephone technology)
- MDU or MTU building owner or manager
- Hospitality industry
- Dormitory owner or manager
- Municipal official
- Other level of government
- Activist/citizen
- Design or construction firm, or equipment vendor
- Consultant
- Other
### Analysis Sheet at a Glance

- **Basics**
- **Analysis**
- **Cash Flow**
- **Investment Considerations**

You fill in green boxes; sheet calculates the rest.

#### Example: 20% Equity/80% Debt

<table>
<thead>
<tr>
<th></th>
<th>START ON THIS SHEET</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total homes and businesses passed</td>
<td>3,000</td>
<td>4,000</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>Total subscribers at year end</td>
<td>750</td>
<td>1,500</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Average subscribers for year</td>
<td>375</td>
<td>1,125</td>
<td>1,750</td>
<td></td>
</tr>
<tr>
<td>Cost per drop (will vary widely depending on various factors; see tutorial)</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Cost for each in-home hookup, network, other customer premises equipment</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Total system construction cost</td>
<td>6,562,000</td>
<td>8,125,000</td>
<td>9,000,000</td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>1,075,000</td>
<td>1,075,000</td>
<td>1,075,000</td>
<td></td>
</tr>
<tr>
<td>Debt, principal not including financing fees (see row 33)</td>
<td>7,500,000</td>
<td>7,500,000</td>
<td>7,500,000</td>
<td></td>
</tr>
</tbody>
</table>

Cumulative cost to purchase and install customer premises equipment, using year-end customer total | 562,500 | 1,125,000 | 1,500,000 |
Cumulative cost to purchase and install central office equipment, outside plant and fiber cable, excluding CPE | 6,000,000 | 7,000,000 | 7,500,000 |
Direct costs per subscriber | 750 | 750 | 750 |
Cash on hand at year-end, exclusive of investment return and customer revenue | 2,260,750 | 1,441,250 | 672,500 |
Investment return on cash on hand | 0% | 1% | 1% |
Total cash on hand at year-end, exclusive of customer revenue | 2,260,750 | 1,455,063 | 679,225 |

#### Analysis

**Construction Costs:**
- Cost to pass one home or business: 2,188
- Cost to connect one home or business: 750

**Systemwide Take Rate, Year End, at least one service taken:**
- 25.00% (Year 1)
- 37.50% (Year 2)
- 44.44% (Year 3)

**Systemwide Take Rate, Midyear Average:**
- 12.50% (Year 1)
- 28.13% (Year 2)
- 38.89% (Year 3)

**Debt or Capital Cost - 100% Financing:**
- Term of loan, in years: 15
- Interest rate (capital cost): 12.00%

**Capital Cost Calculations:**
- Capital costs per subscriber, using year-end totals: 9,500
- Capital cost to be financed (60%): 5,700
- Cost of issuing debt: 8.00%
- Debt per subscriber: 8,000
- Debt service per subscriber per year: 8,000
- Debt service per subscriber per month: 108.43

**Cash Flow Statement:**

**Income per Subscriber:**
- Triple play: 150.00
- Voice plus data: 150.00
- Security: 150.00
- VOD (triple play required): 20.00
- Gaming: 20.00
- Wireless backhaul: 20.00
- Security monthly income, including pro-rata subsidization from business services, fixed IP, wireless backhaul: 20.00
- Total monthly income per subscriber: 150.00

**Expenses per Subscriber:**
- Cost of content (example calculated for video package in triple play): 70.00
- Payroll: 19.81
- Management: 6.86
- Debt service: 100.43
- Total monthly expenses: 197.10
- Monthly cash flow per subscriber: -47.10
- Annual cash flow per subscriber: -675.17
- Annual cash flow for system: -432,680
- Annual EBIDTA: 476,120

**Investment Considerations:**
- Annual EBIDTA as percent of debt: 8.55%
- Annual EBIDTA as percent of capital cost: 7.26%
- Debt service coverage ratio: 9.08

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In this part of the model, we lay out the size of the proposed network and anticipated number of subscribers added each year. But for cash flow, we need to estimate the AVERAGE number of subscribers in a given period. After year 1, for instance, the numbers entered here project a 40% take rate, about the average for the country but below average for rural builds.

Key issues: Accounting for “cost of capital” (fees paid to brokers, lawyers, etc), and timing of capital inflows (see two slides ahead). Note that “cash on hand” at end of each year is not cumulative.
Drop to all homes passed?

Most numbers you insert into cells with green background, on the opening sheet, automatically transfer to the second sheet (all except drop and CPE). On second sheet, insert new numbers for those.

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Capital costs

• In this illustration, the network deployer provides $1,875,000 equity (20% of network cost) and goes to the bank for a (typically secured) loan for the balance – another $7.5 million.
  • Typical for rural builds
  • Bootstrapping is expected

• Cost of the loan, 8% in legal and brokerage fees, is calculated further down in spreadsheet. This cost could be counted separately (as in this example) or be charged against money raised, or against initial equity. Typically, it is subtracted from the loan proceeds.

• Equipment suppliers are also helping with financing, but that blurs the equity amount, and requires bank understanding. Example does not include depreciation.
Note that the model handles almost all of the analysis. The following slide explains the formulas behind those calculations. The calculations in this section are the same for both sheets on the tool. Both sheets, by the way, have a 4-year projection. Only three are shown here.

Users need only to enter loan or lease terms (interest rate or imputed interest, term of the lease or loan, and the cost of getting the funds into the door in the first place.)
Drop or no drop?

• Doing drops as homes are passed cuts cost-per-drop drastically – more than in half, typically. But tradeoff is higher initial costs for build.

• CPE is added only after customer signs up. Typically this includes ONT, gateway, set-top box, network.

• ONT is “plugged into” case that is installed with the drop.
Cash flow issues

• Tool #3 handles cash flow roughly, by averaging new customers over the year. First-year calculations may require more fine-grained approach. We’re working on a monthly cash flow model.

• Tool #3 underestimates benefit of doing drop as homes are passed, thus it is conservative.

• With today’s high interest rates, effect of vendor invoicing, logistics, etc. has big effect.
## Analysis: The calculations

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Total system construction cost/total homes passed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Cost to pass one home</td>
<td>Picked up from &quot;direct cost per subscriber&quot;</td>
</tr>
<tr>
<td>Cost to connect one home</td>
<td></td>
</tr>
<tr>
<td><strong>Systemwide Take Rate, Year End, at least one service taken</strong></td>
<td>Year-end subscribers/total doors passed</td>
</tr>
<tr>
<td><strong>Systemwide Take Rate, Midyear Average</strong></td>
<td>Midyear average subscribers/total doors passed</td>
</tr>
<tr>
<td><strong>Debt or Capital Cost - 100% Financing</strong></td>
<td></td>
</tr>
<tr>
<td>Term of loan, in years</td>
<td></td>
</tr>
<tr>
<td>Interest rate (capital cost)</td>
<td></td>
</tr>
<tr>
<td><strong>Capital Cost Calculations</strong></td>
<td></td>
</tr>
<tr>
<td>Cost per subscriber, using year-end totals</td>
<td>Construction and marketing cost/subscribers</td>
</tr>
<tr>
<td>Capital cost per subscriber to be financed (50%)</td>
<td>50% of line above if 50% financed</td>
</tr>
<tr>
<td>Cost of issuing debt</td>
<td></td>
</tr>
<tr>
<td>Debt per subscriber</td>
<td>Capital cost being financed, including bank fees</td>
</tr>
<tr>
<td>Debt service per subscriber per year</td>
<td>What it costs using PMT function</td>
</tr>
<tr>
<td>Debt service per subscriber per month</td>
<td>Previous line divided by 12</td>
</tr>
</tbody>
</table>

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Use this section as a checklist of all the possible revenue sources for your network; the list here is hardly exhaustive. The sheet assumes content costs in Year 1 will grow by 5% annually. Calculations for monthly cash flow, etc, are on next slide.
EBITDA – earnings before interest, taxes, depreciation and amortization – is a comforting number for bankers, but not system operators. Here, it is calculated by “backing out” the interest cost. Obviously, happiness is positive cash flow, and that is what system operators crave. In the final section of the sheet (next slide), you see why EBITDA is included in the first place.
Investment considerations

The second sheet, which models the effect of constructing drops to all premises passed, includes an extra line on debt coverage, for comparison with the first sheet’s calculations – based on constructing drops only when a customer signs up. If the projections are even close, doing the drops makes sense – having drops in place allows quicker revenue to be realized from new customers. And it adds to customer satisfaction.
Calculating coverage for capital repayment

<table>
<thead>
<tr>
<th>Investment Considerations:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual EBITDA as percent of debt</td>
<td>-32.65%</td>
<td>16.89%</td>
<td>47.92%</td>
<td>42.36%</td>
</tr>
<tr>
<td>Annual EBITDA as percent of equity</td>
<td>-16.33%</td>
<td>16.89%</td>
<td>47.92%</td>
<td>42.36%</td>
</tr>
<tr>
<td>Annual EBITDA as percent of capital cost</td>
<td>-12.56%</td>
<td>12.06%</td>
<td>33.05%</td>
<td>29.21%</td>
</tr>
<tr>
<td>Debt service coverage ratio</td>
<td>(0.86)</td>
<td>0.88</td>
<td>3.78</td>
<td>3.35</td>
</tr>
</tbody>
</table>

EBITDA divided by debt (the $100,000 in our example)

EBITDA divided by equity (also $100,000 in our example)

EBITDA divided by cost of building the system

EBITDA divided by debt service per subscriber, times number of subscribers
Q&A

And stay tuned for new tools (monthly cash flows and specialized calculators to help with your financial analysis)

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