MIPSYCON 2020

To Broadband or not to Broadband

Forward-Thinking Professionals
Helping Clients and Colleagues ACHIEVE Their Goals.

www.powersystem.org

Tom Asp
November 2020
About PSE

Forward-Thinking SOLUTIONS

Serving utilities, private industry, government entities, and associations across North America

- Established in 1974
- Employee-Owned
- Independent

Service Areas Include:

- Broadband Planning
- Communications Infrastructure
- Energy Resources
- Industrial Facilities
- Utility and Data Analytics
- Rates and Finance
- Transmission and Distribution
- Utility Automation
Regardless of where you are on the spectrum of investigating and deploying broadband, it can be helpful to understand lessons others have learned.

**On Radar**
Hearing member, board & industry talk and wondering if it’s right for you.

**Planning**
Running financial analysis and looking at costs, take-rates, assumptions, and plans.

**Initial Deployment**
Deploying fiber in test areas to see if the plans were appropriate and learn lessons.

**Up & Running**
Running fiber business for several years and analyzing profit/loss.
Discussion Overview

• Many electric cooperatives and municipal electrics are intrigued by the idea of offering broadband services to their members and constituents.

• Some are jumping into decisions that may not be fully vetted.

• Decisions can have substantial impact on the viability of the electric utility or jurisdiction in the long-term.

• Entering the broadband market might be the correct choice for your utility and consumers.
  
  o Or, it may be a high-risk venture that is best left to other entities.
Example Broadband Efforts

• Norwood Light Department (Norwood, MA)
• Tacoma Power (Tacoma, WA)
• Huntsville Utilities (Huntsville, AL)
• Tipmont REMC (Linden, IN)
10 Key Considerations

1. Understand Consumers have Choices
2. Ensure Electric Operations Preparedness
3. Do a Thorough Feasibility Study
4. Own the Details
5. Facilitate Team Learning
6. Invest Time with Your Board
7. Start Slow - Don’t Bet the Bank
8. Consider Facilitation of Partnerships
9. Learn from Others
10. Understand its More Than a Spreadsheet
1. Understand Consumers Have Choices

• No competitors?
  – Not acquiring a service is a choice.

• Broadband has become an essential service, but it is not a utility.
  – Utilities are regulated and have monopoly service area.
  – Acting as a utility without associated regulations could be a financial disaster.

• Ensure that you are culturally ready to operate in a competitive business.
  – Sales & marketing is foreign to most electric utilities
  – Customer service requires different skill sets.
  – Service pricing is different than rate setting.
2. Ensure Electric Operations Preparedness

- Define and understand your mission.
  - Are you in the electric utility business, or are you an essential service provider?
- Make sure your core electric operation is humming along
  - Financial and operational health.
- Review all your policies - think defense.
  - You’re about to get more attention than you may have had in decades.
- Have a strategic planning and performance management system in place.
  - Have all your instruments working before you start.
- Set your cash flow objectives and goals.
  - In the mid-term, at best, this is a break-even operation.
  - Cover early losses.
3. Do a Thorough Feasibility Study – Thoroughness Matters

• Be cautious of shortcuts.
  – You are about to make a multi-million-dollar decision.
  – Generalized assumptions give you generalized results.

• Questions to ask your consultant:
  – In how many of your studies did you find the venture to not be feasible?
    • If they can’t identify one, don’t hire them.
  – Will you benefit financially if we enter into the broadband business?
    • If they do, can they give unbiased independent advice?
3. Do a Thorough Feasibility Study – Thoroughness Matters

• Outputs from your feasibility analysis should be tailored to your utility.
  – Use utility-specific data
  – Not boilerplate estimates based on national or regional averages:

• Capital construction cost estimates – do not overlook.
  • Make-ready.
  • Easement perfection.

• Demand-side market analysis, possibly detailed market survey of residents.
  • Vocal minority is a minority.
  • Maybe deferred to the business planning or other stage (to avoid raising expectations too early).
  • Demand-side market analysis requires segmentation.
## Understand the Full Range of Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty</th>
<th>Unit Price</th>
<th>Unit</th>
<th>Total Price</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Aerial Water Crossing</td>
<td>4</td>
<td>$6,180</td>
<td>each</td>
<td>$24,720</td>
<td>0.30%</td>
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<tr>
<td>End Point Cabinet</td>
<td>23</td>
<td>$3,500</td>
<td>each</td>
<td>$80,500</td>
<td>0.99%</td>
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<tr>
<td>Handhold</td>
<td>120</td>
<td>$1,425</td>
<td>each</td>
<td>$171,000</td>
<td>2.10%</td>
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<tr>
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<td>16</td>
<td>$34,860</td>
<td>each</td>
<td>$557,760</td>
<td>6.85%</td>
</tr>
<tr>
<td>Splice</td>
<td>34</td>
<td>$970</td>
<td>each (block of 144)</td>
<td>$32,980</td>
<td>0.40%</td>
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<tr>
<td>Transition</td>
<td>21</td>
<td>$2,500</td>
<td>each</td>
<td>$52,500</td>
<td>0.64%</td>
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<tr>
<td>Miles - overhead</td>
<td>148.20</td>
<td>$37,224</td>
<td>mile</td>
<td>$5,516,600</td>
<td>67.71%</td>
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<tr>
<td>Miles - underground</td>
<td>1.46</td>
<td>$91,872</td>
<td>mile</td>
<td>$134,240</td>
<td>1.65%</td>
</tr>
<tr>
<td>Preliminary Design (per mile)</td>
<td>149.66</td>
<td>$980</td>
<td>mile</td>
<td>$146,670</td>
<td>1.80%</td>
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<tr>
<td>Permitting &amp; Documentation (per mile)</td>
<td>1.46</td>
<td>$5,440</td>
<td>mile</td>
<td>$7,950</td>
<td>0.10%</td>
</tr>
<tr>
<td>Quality Control &amp; Assurance</td>
<td>149.66</td>
<td>$2,400</td>
<td>mile</td>
<td>$359,190</td>
<td>4.41%</td>
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<tr>
<td>Pole Analysis</td>
<td>3,269.00</td>
<td>$200</td>
<td>each (pole)</td>
<td>$653,800</td>
<td>8.02%</td>
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<tr>
<td>Make Ready</td>
<td>164.00</td>
<td>$2,500</td>
<td>each (pole, based on % replacement)</td>
<td>$410,000</td>
<td>5.03%</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$8,147,910</strong></td>
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</tr>
</tbody>
</table>

The average cost per mile is **$54,442**.
Cost of FTTP is Highly Dependent on Density

Cost per Passing (Fiber OSP)

- Midwest - County: $7,610
- Midwest - Rural: $4,060
- East Coast - Rural: $3,960
- West Coast - Urban: $1,620
- West Coast - Suburban: $1,310
- West Coast - Urban & Suburban Mix: $1,180
- Midwest - Rural City: $1,110
- East Coast - Suburban: $1,040
- East Coast - Medium City: $870
- Midwest - Medium City: $860

Cost per Passing (Fiber OSP)
Cost of FTTP is Highly Dependent on Density
Understand Business Diversity

Substantial differences in use of and demand for broadband based on:

- Number of employees
- Type of business
- Ownership structure
- Activities performed at a specific location
- Others

<table>
<thead>
<tr>
<th>Norwich, CT</th>
<th>Employees</th>
<th>Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 4</td>
<td>614</td>
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<tr>
<td>5 to 9</td>
<td>258</td>
<td></td>
</tr>
<tr>
<td>10 to 19</td>
<td>175</td>
<td></td>
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<tr>
<td>20 to 49</td>
<td>81</td>
<td></td>
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<tr>
<td>50 to 99</td>
<td>27</td>
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<tr>
<td>100 to 249</td>
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<td>250 to 499</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,178</td>
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</table>
## Understand Business Diversity
### Norwich CT Business Segmentation Example – Telecom Spending

<table>
<thead>
<tr>
<th>Employees</th>
<th>Total Businesses (Based Upon Percentage of Responses)</th>
<th>Annual Telecommunications (telephone, cell phones, internet, data) Spending</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Less than $2,000</td>
<td>$2,000 to $5,000</td>
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<tr>
<td>1 to 4</td>
<td>363</td>
<td>158</td>
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<td>5 to 9</td>
<td>54</td>
<td>45</td>
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<tr>
<td>10 to 19</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>20 to 49</td>
<td>17</td>
<td>51</td>
</tr>
<tr>
<td>50 to 99</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>100 to 249</td>
<td>1</td>
<td>-</td>
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<tr>
<td>250 to 499</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>463</td>
<td>320</td>
</tr>
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</table>

**Service Level**

<table>
<thead>
<tr>
<th>Service Level</th>
<th>Tier 4</th>
<th>Tier 3</th>
<th>Tier 2</th>
<th>Tier 1</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>Service Level Total</td>
<td>621</td>
<td>509</td>
<td>36</td>
<td>12</td>
<td>1,178</td>
</tr>
</tbody>
</table>
3. Do a Thorough Feasibility Study –Thoroughness Matters

• A feasibility study is NOT a business plan.
  – Feasibility study gives you a senses of risks and opportunity
  – Business plan gives you direction on execution
  – Staff needs to direct both

• Your competition has better economies of scale.
  – Offer competitive prices- but don’t initiate a price war.
  – Your competitors can bury you in a price war.

• Don’t turn over core operations to a management firm
4. Own the Details - Know and Understand Every Assumption

• Crucial step of the evaluation process.
• Understand the bases for the assumption.
• Understand how the model works.
  – Get a working copy of the model.
• Challenge the consultant’s assumptions.
  – Understand how the assumption is used and the impact to the model.
4. Own the Details - Know and Understand Every Assumption

• Understand any projected cost allocations to the electric utility
  – Are they reasonable?
  – Are they defendable?
  – Are they affordable?
  – Are they legal?

• The model does not correct, modify, or shape assumptions made.

• Assumptions drive the projections.
5. Facilitate Team Learning

• Give staff the time to learn.

• Your staff is going to run the new business day-to-day.

• Your staff needs to “own” every assumption used in the model.

• Find a place where everyone on your senior staff can participate.
6. Invest Time with Your Board

• The board must ultimately make the decision.

• Work to create as many learning/sharing opportunities as possible.
  – It’s their collective value system that will ultimately define your direction.

• Make sure that you, your governing body, and your staff are comfortable.
  – You will own all decisions and strategies after the vendors and consultants have moved on.
7. Start Slow - Don’t Bet the Bank

• Consider phases.
  – Build, sell, work to positive cash flow, and then build again.

• Go after market where there is demand, limited choices, and a “reasonable” build cost.
  – Many utilities choose to built all at once to everybody – a politically-driven decision, but a disastrous business decision.

• You may be enamored with broadband – but not all households are.
  – Many are happy with a 10Mbps or less data connection.
  – Many just use a smartphone for their data connection (about 20 percent nationwide today).
  – Some will choose not to acquire any service.
8. Consider Potential for Partnerships

• Partnerships can help to avoid risks and reduce capital costs.

• Beware of the sharks that offer one-sided offers.
  – Take the initiative to define the rules yourself.

• Partnerships can bring you scale and expertise that is hard to develop on your own.
9. Learn from Others

Common mistakes:
- Under-estimated build costs
- Overlooking make ready.
- Overestimated take rates.
- Under-estimated cost of sales and marketing.
- Underestimated staffing - maintenance to customer service.
- Tried to be all to all.
- Forgot about equipment replenishments, replacements, and vendor maintenance contracts.
- Bad debt is real – need to cut off bad payers.
- Don’t let your governance board make operating decisions.
- Added same inflation factor to revenues and expenses - makes a bad model look good.
Use Caution with Inflation Assumptions

- Applying inflation can create substantial net revenues in out years.
  - The top table uses the same inflation percentage on expenses and revenues.
  - The bottom table uses different inflation percentages on revenues and expenses, which results in nearly flat net revenues.
  - All other assumptions are the same.

- Net revenues historically with broadband have remained relatively flat.

<table>
<thead>
<tr>
<th>Income Statement</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenues</td>
<td>$380,000</td>
<td>$1,288,550</td>
<td>$12,939,710</td>
<td>$14,867,670</td>
<td>$17,277,620</td>
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<tr>
<td>Total Cash Expenses</td>
<td>(1,841,520)</td>
<td>(6,294,620)</td>
<td>(7,056,460)</td>
<td>(8,015,620)</td>
<td>(9,132,690)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>(781,910)</td>
<td>(2,710,440)</td>
<td>(2,524,660)</td>
<td>(2,449,700)</td>
<td>(2,449,700)</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>(552,000)</td>
<td>(1,599,810)</td>
<td>(1,232,700)</td>
<td>(794,600)</td>
<td>(251,900)</td>
</tr>
<tr>
<td>City Fees</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net Income</td>
<td>(2,795,430)</td>
<td>$683,680</td>
<td>$2,125,870</td>
<td>$3,607,750</td>
<td>$5,443,330</td>
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</table>

<table>
<thead>
<tr>
<th>Cash Flow Statement</th>
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<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
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<tbody>
<tr>
<td>Unrestricted Cash Balance</td>
<td>$146,380</td>
<td>$1,410,650</td>
<td>$7,717,030</td>
<td>$19,720,920</td>
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<tr>
<td>Depreciation Reserve</td>
<td>-</td>
<td>2,668,840</td>
<td>3,151,320</td>
<td>353,120</td>
<td>832,120</td>
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<tr>
<td>Debt Service Reserve</td>
<td>690,000</td>
<td>2,167,500</td>
<td>2,167,500</td>
<td>2,167,500</td>
<td>2,167,500</td>
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<tr>
<td>Total Cash Balance</td>
<td>$836,380</td>
<td>$6,246,990</td>
<td>$13,035,850</td>
<td>$22,241,540</td>
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<table>
<thead>
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<th>Income Statement</th>
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<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenues</td>
<td>$380,000</td>
<td>$10,743,250</td>
<td>$11,449,250</td>
<td>$12,341,930</td>
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<td>Total Cash Expenses</td>
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<td>(9,595,680)</td>
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<td>Depreciation</td>
<td>(781,910)</td>
<td>(2,710,440)</td>
<td>(2,524,660)</td>
<td>(2,449,700)</td>
<td>(2,449,700)</td>
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<td>(552,000)</td>
<td>(1,599,810)</td>
<td>(1,232,700)</td>
<td>(794,600)</td>
<td>(251,900)</td>
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<td>City Fees</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Net Income</td>
<td>(2,795,430)</td>
<td>$82,260</td>
<td>$488,240</td>
<td>$802,950</td>
<td>$1,019,460</td>
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<table>
<thead>
<tr>
<th>Cash Flow Statement</th>
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<th>5</th>
<th>10</th>
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<th>20</th>
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<tr>
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<td>$646,400</td>
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<td>$16,400</td>
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<tr>
<td>Depreciation Reserve</td>
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<td>2,668,840</td>
<td>3,151,320</td>
<td>353,120</td>
<td>832,120</td>
</tr>
<tr>
<td>Debt Service Reserve</td>
<td>690,000</td>
<td>2,167,500</td>
<td>2,167,500</td>
<td>2,167,500</td>
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<tr>
<td>Total Cash Balance</td>
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<td>$4,996,110</td>
<td>$5,965,220</td>
<td>$3,505,740</td>
<td>$3,016,110</td>
</tr>
</tbody>
</table>
10. Understand its More Than a Spreadsheet

• Projections are only as good as the assumptions.

• Be cautious of adding “inflation” on revenues and expenses (earlier example).
  – Over a 20-year analysis, adding same inflation factor on revenues and expenses can make a bad business look good.
    • With broadband, you will be lucky to have revenue increases tracking $ for $ with expenses.
  – Many advisors will claim that the industry pricing is rising fast – then cite cable television increases.
    • Yes, cable television revenues are increasing (on a per subscriber basis), but expenses (content fees) are rising quicker- resulting in eroding net margins.
      – There are small to negative margins in cable
    • Internet service revenues (on a per-sub basis) are declining.
10. Understand its More Than a Spreadsheet

• Make sure projections include a year-by-year income statement, cash flow statement, balance sheet, and capital addition summary.

• Look at cash flow. Not just a Net Present Value (NPV) or Internal Rate of Return (IRR) calculation.
  – A projection can show a high 20-year IRR and have negative cash flows for the first 10 years – especially if inflation factors are misstated or misused.

• Clearly understand any allocations to electric utility capital or operations.

• A spreadsheet does not correct, modify, or shape assumptions made. The assumptions drive the projections.
Summary

• Take a methodical and cautious approach.
• Broadband is a for-choice business.
• Staff, management, and board must be ready to operate competitively – strong emphasis on sales, marketing, and customer service.
• Perform an independent and thorough feasibility study tailored to your situation.
• Be cautious of advisors or consultants who promote no-risk deals or offers.
• Common mistakes include underestimating build costs, overlooking make-ready costs, overestimating take rates, and underestimating staffing levels for maintenance and customer service.
• It’s not only about the numbers. The decision is also driven by your mission and community drivers.
Thank You

We look forward to helping you achieve your goals.

Power System Engineering, Inc.

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Cell: 847-922-3978

www.powersystem.org