




BPL's Business Case Analyzed

Rahul Tongia
tongia@cmu.edu
Carnegie Mellon University



Remember Parmenides Fallacy

- (Incorrectly) Comparing the future to the present, instead of alternative futures
- Metrics for success
 - Penetration
 - Market Share can be? [within a geography]
 - Market
 - Total Size of the market
 - Profit
 - More important than market, esp. under competition

Rahul Tongia, CMU 2



Challenges for BPL

- Technical
 - It does work!
 - But, does it work well enough?
- Regulatory
 - Emissions/Interference
 - US rules are already 20+ dB more liberal
 - Theoretical losses for powerline copper only 0.5 dB/km (Olsen, 2005)
 - BUT, measured losses 10-40 dB/km!
 - Issue of topology – other devices/taps/branches/etc.
 - Also acts as a receiver = higher noise

Rahul Tongia, CMU

3



Possibly Biggest Challenge: Business Case

- Modifying the technology to “make it work” raises the costs
- Shared medium without enough bandwidth for shared video
- “Tyranny of Homes Passed”
 - Need a per sub cost low enough, instead
 - Earthlink study talks of \$20 per home passed

Rahul Tongia, CMU

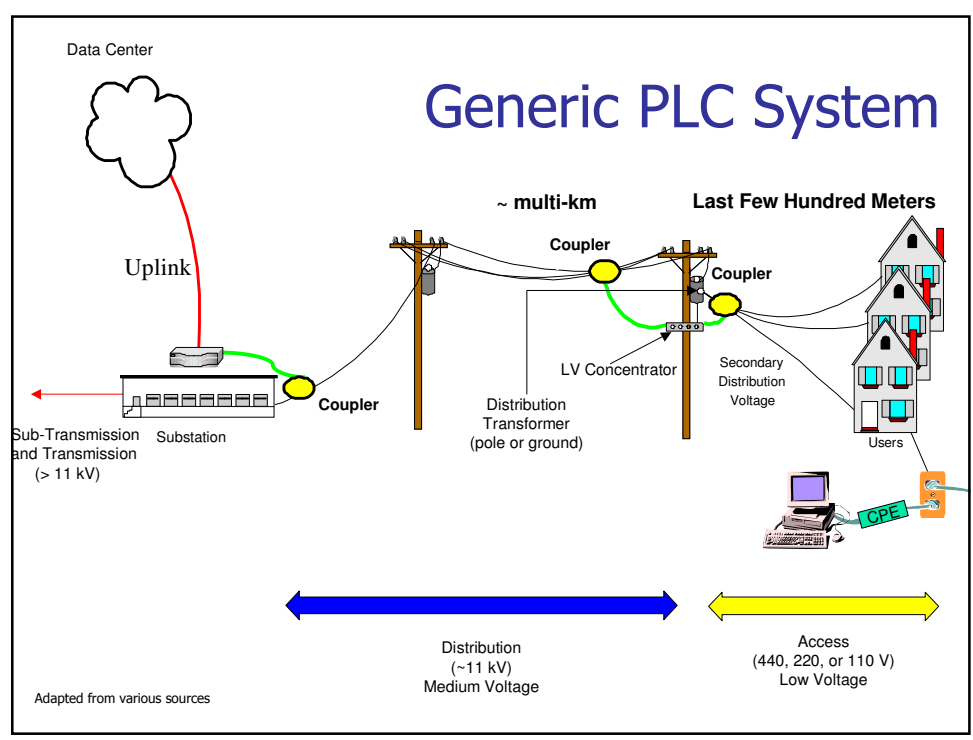
4

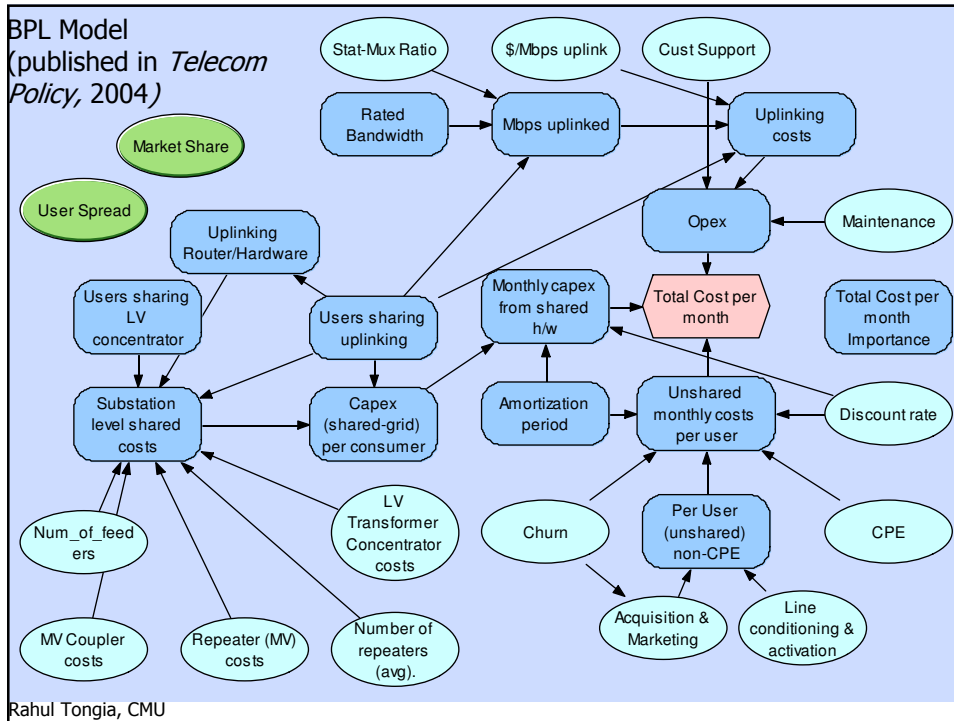
Different Models Exist

- Hard to pin down a number because of variances in
- Technologies
 - “Classic” – MV and LV BPL
 - Variants
 - Deeper penetration of uplinking
 - Wireless for last hop
- Business
 - Utility becomes ISP
 - Utility is wholesaler
 - Utility is wires company
 - Etc.

Rahul Tongia, CMU

5

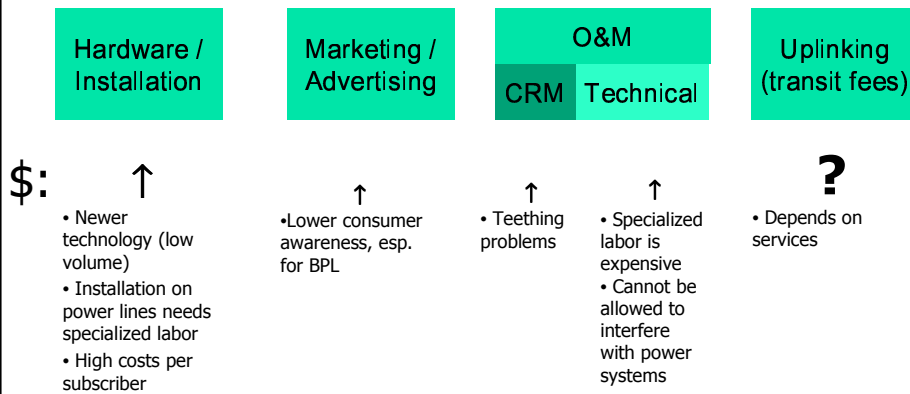




BPL's competitiveness is not inherently a given

- Model results (published in *Telecom Policy*, 2004)
 - Monthly costs won't be lower than cable/DSL
 - Distribution of end-users is a key issue for economic viability (given the shared nature of the technology)
 - Of course, cost of capital and amortization lifetime matter – which is linked to competition

Segmented Cost Comparisons to DSL/Cable



Rahul Tongia, CMU

9

BPL has serious competition

- Entrenched
 - With additional revenue streams = lower churn
 - Cable (~19M in 2004, USA)
 - Can add capacity, and symmetry if desired
 - Has DOCSIS standard for QoS and other features
 - DSL (~12M in 2004, USA)
 - Increasing in speeds
 - Very low capital costs
 - Moving towards switched video
 - Can be done in rural areas with “hardened repeaters”

Rahul Tongia, CMU

10



BPL has Future Competition

- Upcoming technologies
 - Wireless
 - The revolution is not nearly done
 - Mesh networking, Smart array antennae, cognitive/software defined radios, etc.
 - WiMax is only one potential technology
 - Proprietary solutions or enhancements are esp. impressive for rural (low-density) regions
 - Fiber
 - Incumbents (telcos) pushing this (esp. Verizon and SBC)
 - Already makes sense for greenfield
 - Costs are coming down, esp. for termination
 - Rural areas – aerial runs on existing utility poles
 - BPL can be a good last hop, perhaps (?)

Rahul Tongia, CMU

11



The Business Case for BPL (?)

- Underserved markets
 - Some areas where Cable/DSL (or both) don't exist?
 - Developing Countries – better topology as well
- Bundled and additional (value-added) services
 - Could reduce churn
 - Hard to compete on price (is dangerous)
- Rural
 - Long runs hurts economics
 - Often, just one home per LV transformer
- Utility Operations
 - Do they need broadband?
 - They DO need special connectivity
 - Secure
 - On demand (possibly real-time)

Rahul Tongia, CMU

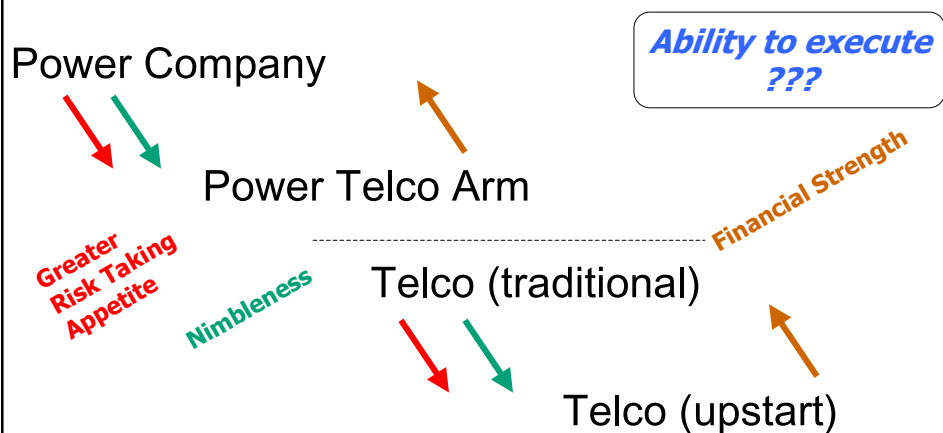
12

Speculation on BPL

- Are there any USPs?
 - In home access, any outlet
 - Easy and fast install *once blanket deployed*
 - High upper bandwidth limits on links (shared)
- Non-technical regulatory issues
 - Likely to be finessed or given the green light (“BPL is a nascent technology to be nurtured”)
 - Handling affiliate transactions
 - RoW issues – BPL shouldn’t be unduly burdened, IMHO
 - Telecom vs. Information Services

Speculations on PLC Success

- Who offers the services?





The 10 Second Answer

- Is there a business case for Broadband over PLC?

IT DEPENDS!