Broadband Planning for Electric Utilities

December 17, 2015

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Agenda

- Broadband technologies & drivers
- Common myths vs. realities
- Financial analysis structure
- Consumer services & margins
- Common mistakes in financial analysis
- Consumer density impact to model
- Funding considerations
- Partnerships considerations
- Potential approach

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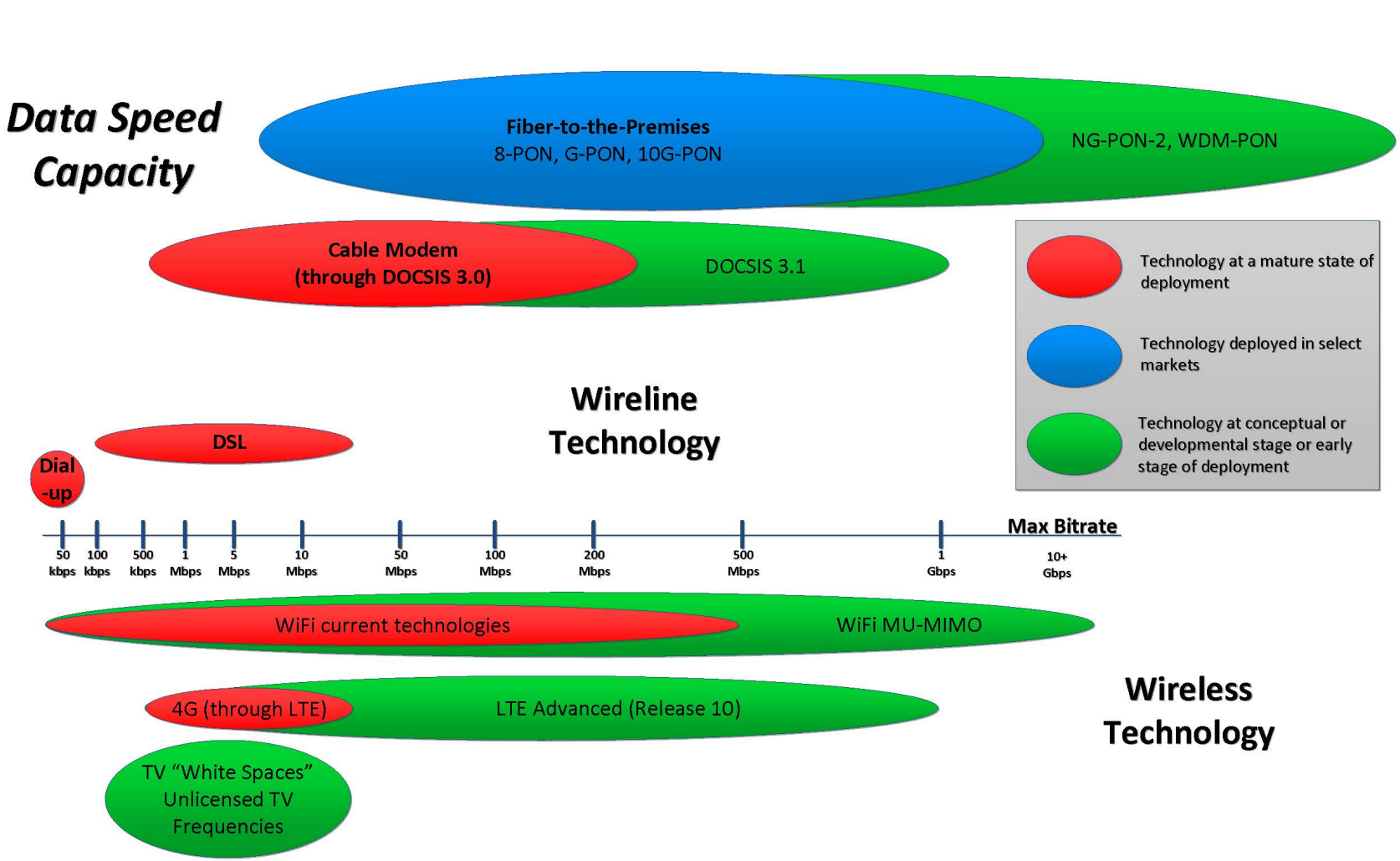
Broadband Technologies & Drivers


Data Speed Capacity
Fiber-to-the-Premises
8-PON, G-PON, 10G-PON
NG-PON-2, WDM-PON
Cable Modem
(through DOCSIS 3.0)
DOCSIS 3.1
Technology at a mature state of deployment
Technology deployed in select markets
Technology at conceptual or developmental stage or early stage of deployment
Wireline Technology
DSL
Dial -up
Max Bitrate
50 kbps
100 kbps
500 kbps
1 Mbps
5 Mbps
10 Mbps
50 Mbps
100 Mbps
200 Mbps
500 Mbps
1 Gbps
10+ Gbps
WiFi current technologies
WiFi MU-MIMO
4G (through LTE)
LTE Advanced (Release 10)
TV "White Spaces" Unlicensed TV Frequencies
Wireless Technology

Benefits to Pioneering Gig Communities

- Documented increase in home values and rental rates
- Only a handful of gig communities to date, all of which have had extensive press coverage and host international visitors
- Bond rating improvements? Fitch cited fiber as one reason for increasing rating of Kansas City, KS
- Documented impact in attracting and retaining businesses, workers, and graduating students (anecdotal thus far, given early stage)

Chattanooga, TN

Common Myths

Common Myths vs. the Reality

- Deployment of fiber is an economic development strategy
  - Fiber is a tool, part of the overall strategy which includes training, utilities, financing, taxes, and other tools
- A “large” pent up demand exists for broadband access
  - Marketing is critical. Must create demand by showing value it delivers to consumers.
  - Unlike electricity, consumers have an option of not purchasing broadband

Common Myths vs. the Reality

- Cable television service has substantial positive net margin
  - Often is a “break-even” in competitive markets needed to increase broadband penetration
  - Rural consumers not “hooked” on by bundling
- Advertising offers a modest revenue stream
  - Websites, search engines, Facebook, and others have eroded the opportunity
  - Opportunity varies market-by-market, need to find niche

Common Myths vs. the Reality

- Wireless will offer the long-term solution for broadband
  - Wireless will play a role, but requires fiber access
  - Wireless has a 5 to 7 year depreciation cost vs. 20-plus for fiber (need to compare total cost of ownership)
  - Wireless has limits on supported service speeds
- Advanced Metering Infrastructure (AMI) will pay for FTTP
  - AMI can be enhanced with fiber, but does not require it

Financial Analysis Structure

Financial Statements

- Income Statement
  - Revenues
  - Allocations
  - Expenses
  - Depreciation
  - Interest
  - Taxes
- Cash Flow Statement
  - Implementation capital
  - Allocations
  - Equipment replenishments
  - Sources and uses of funds
  - Debt service
- Balance Sheet

Key Inputs Beyond Revenue

- Depreciation & replenishments
  - Electronics (5 year, 7 year, and 10 year)
  - Fiber (20 plus years)
- Expenses (partial)
  - Staffing
  - Contracted services
  - Churn
  - Sales and marketing
  - Locates
  - Electronics (license and annual maintenance)
  - Network operations center (NOC)
  - Content (Internet access, programming, dial-tone)

Consumer Services

Consumer Services

- Data (Internet and transport)
- Telephone
- Cable television
- Advertising

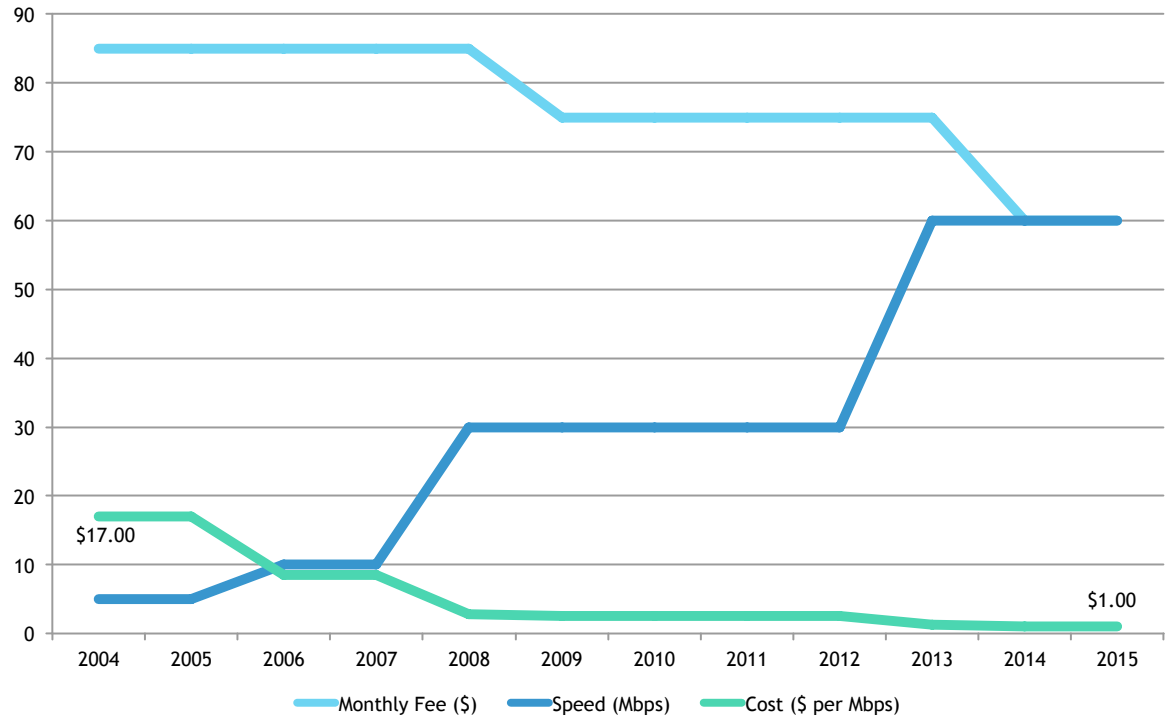
Which service has the greatest revenue potential?

Which service offers the greatest “net” revenue potential?

Which service has the lowest threat of substitute products?

Data

Trends in Broadband Speeds & Price



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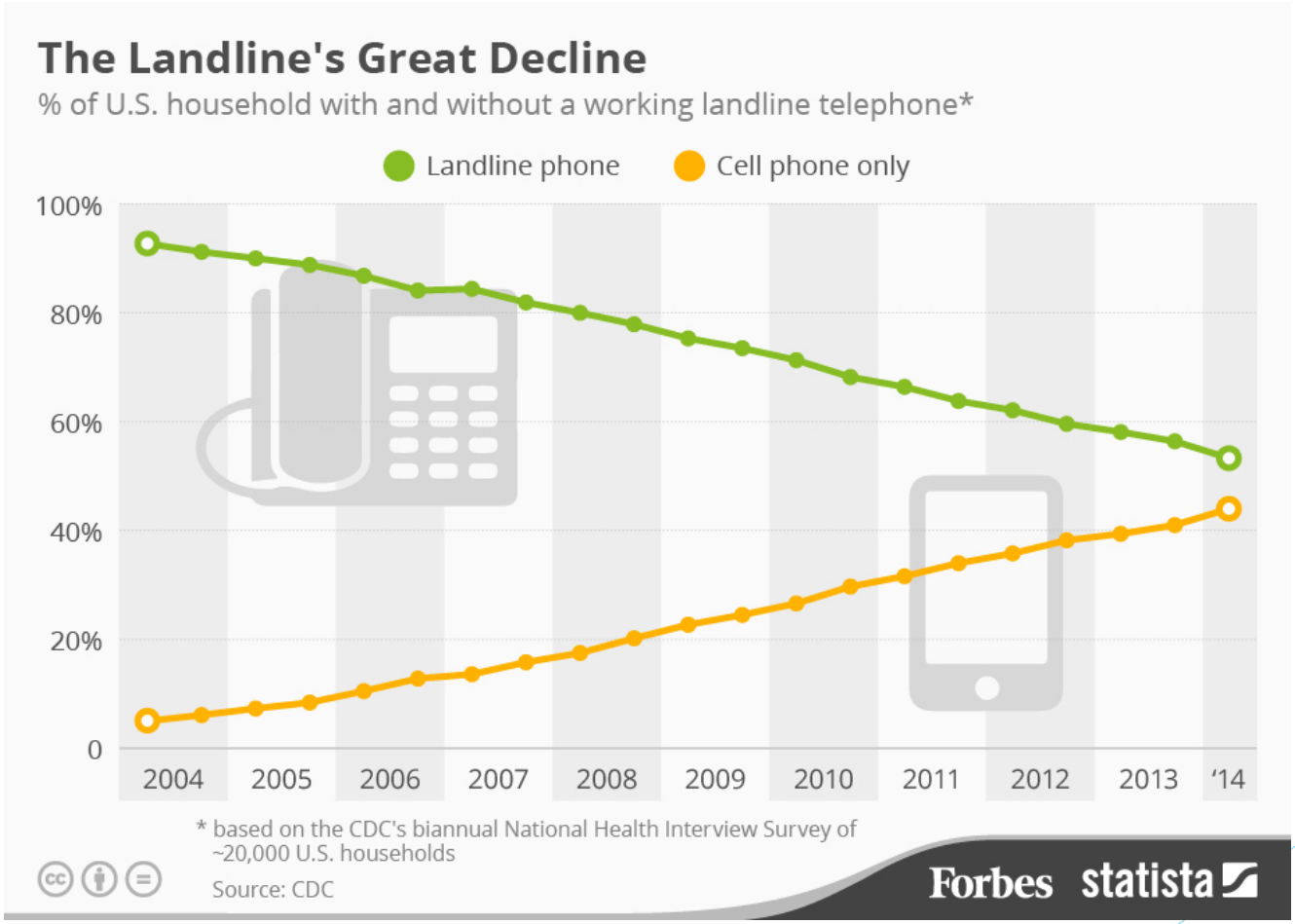
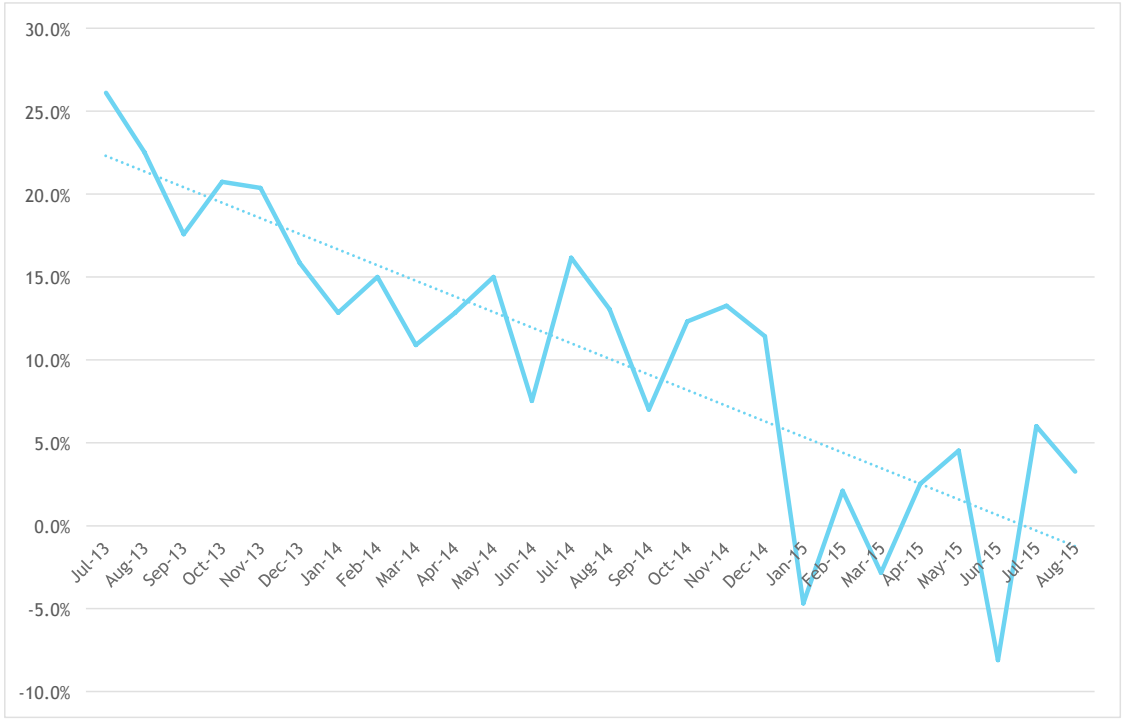


http://www.forbes.com/sites/niallmccarthy/2015/02/27/the-great-decline-of-the-landline-infographic/

Cable Television Contribution Margin as a Percent of Revenue



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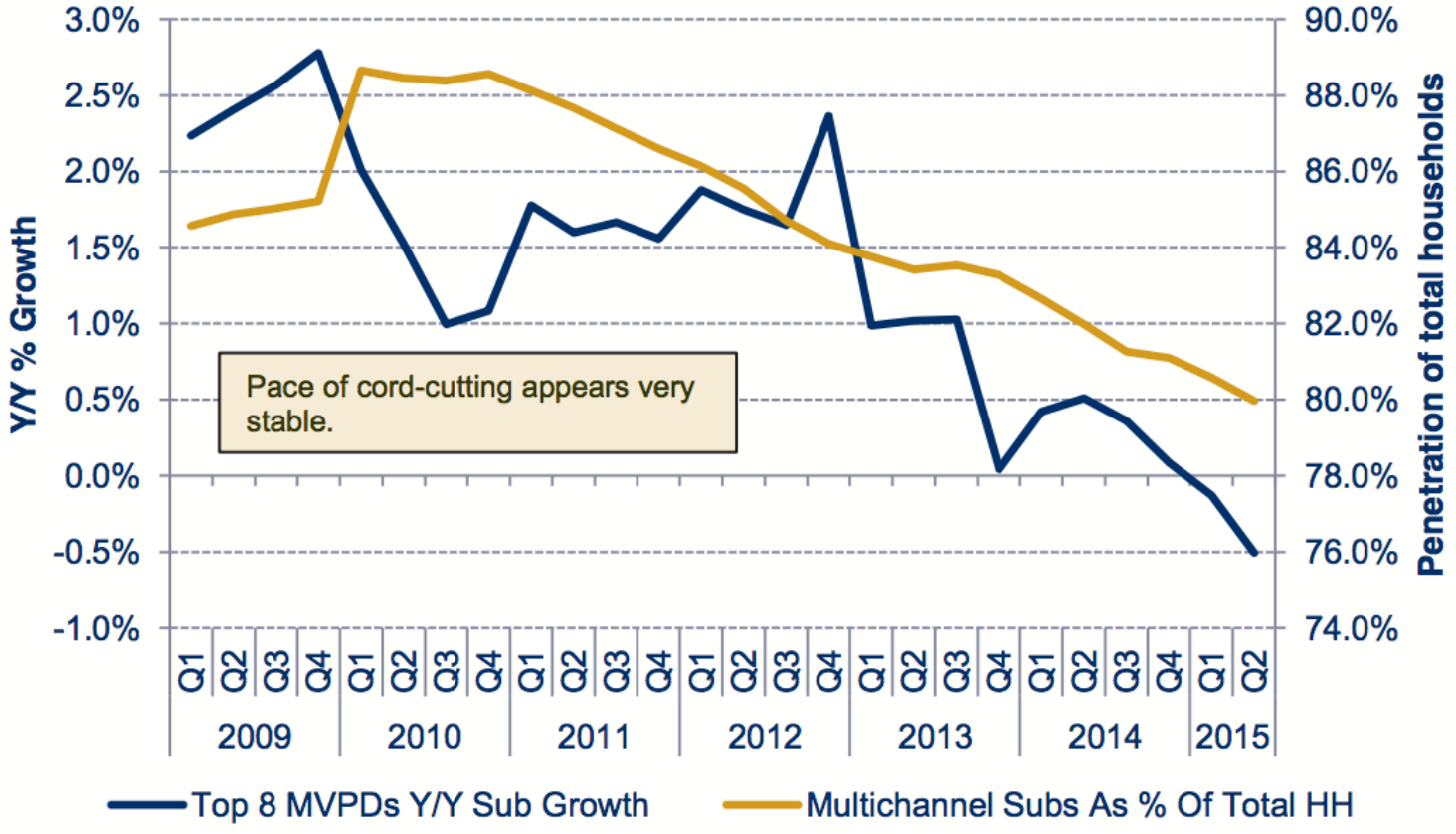
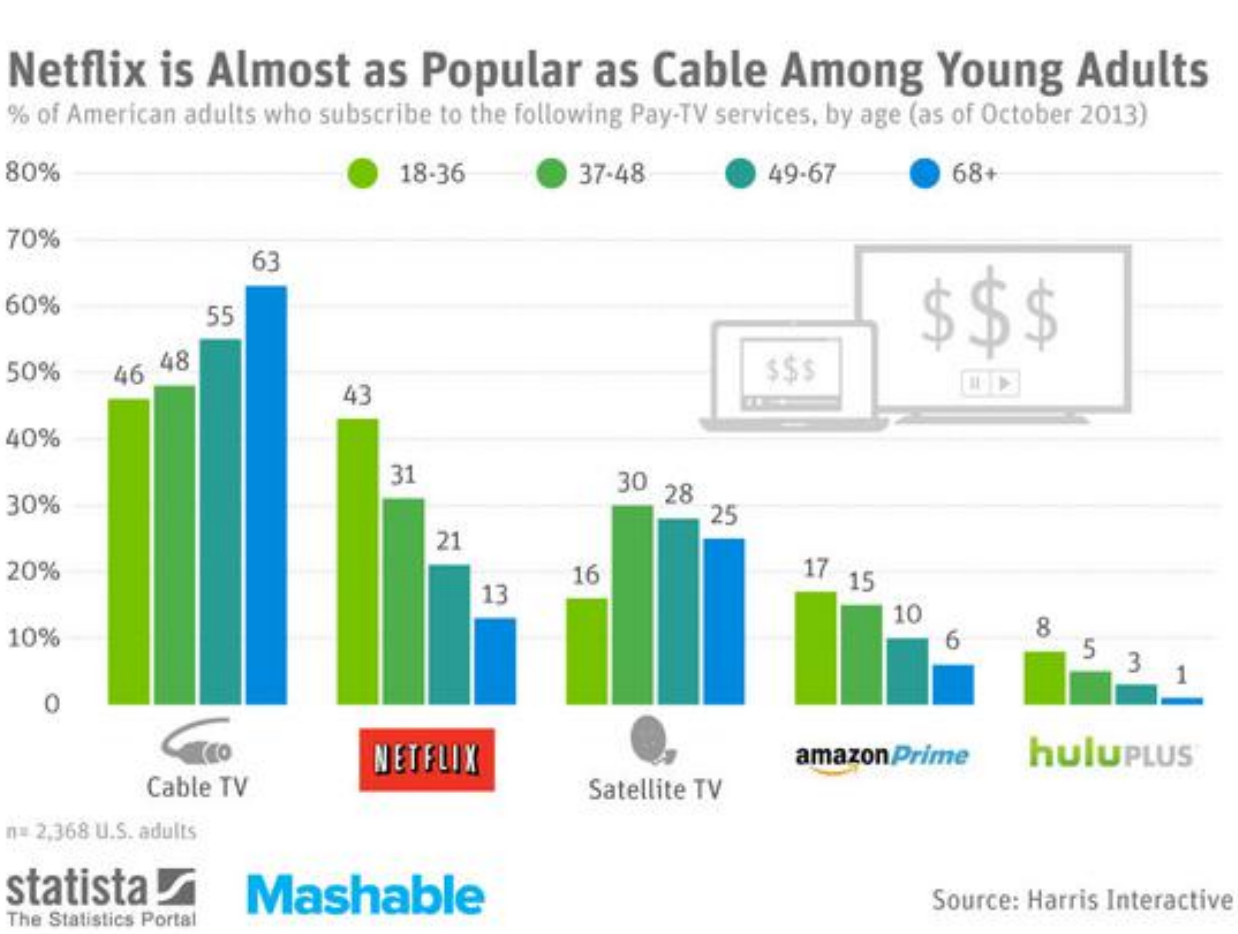
Top 8 MVPDs Total Subs Y/Y % Change and Penetration Of Total Households



http://www.businessinsider.com/cable-tv-subscribers-plunging-2015-8



http://www.fool.com/investing/general/2014/07/28/2-factors-leading-to-the-demise-of-cable-tv.aspx

Streaming Video

ZAP 2 it — WHAT TO WATCH. WHERE TO WATCH IT.

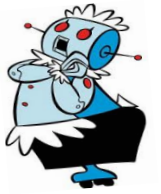
huluPLUS Instantly Watch Hit TV Shows

SHARETV®

BEST BUY CinemaNow NETFLIX

amazon instant video — $15 credit toward purchase of Five Sony Pictures Titles with select Sony Blu-ray Players with super Wi-Fi — Learn more

Internet of Things



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Streaming Music & Audio

LIVE 365

WDAY 6 NEWS HD — abc — News Talk Sports WDAY AM 970

InternetAppliance™

jango

Google play

StreamingRadioGuide.com

IP Telephone

Skype

nextiva — SIMPLIFYING BUSINESS COMMUNICATION

BasicTalk

8x8, Inc.

Ring Central

Vonage

magicJack

ooma

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Common Mistakes

Common Mistakes

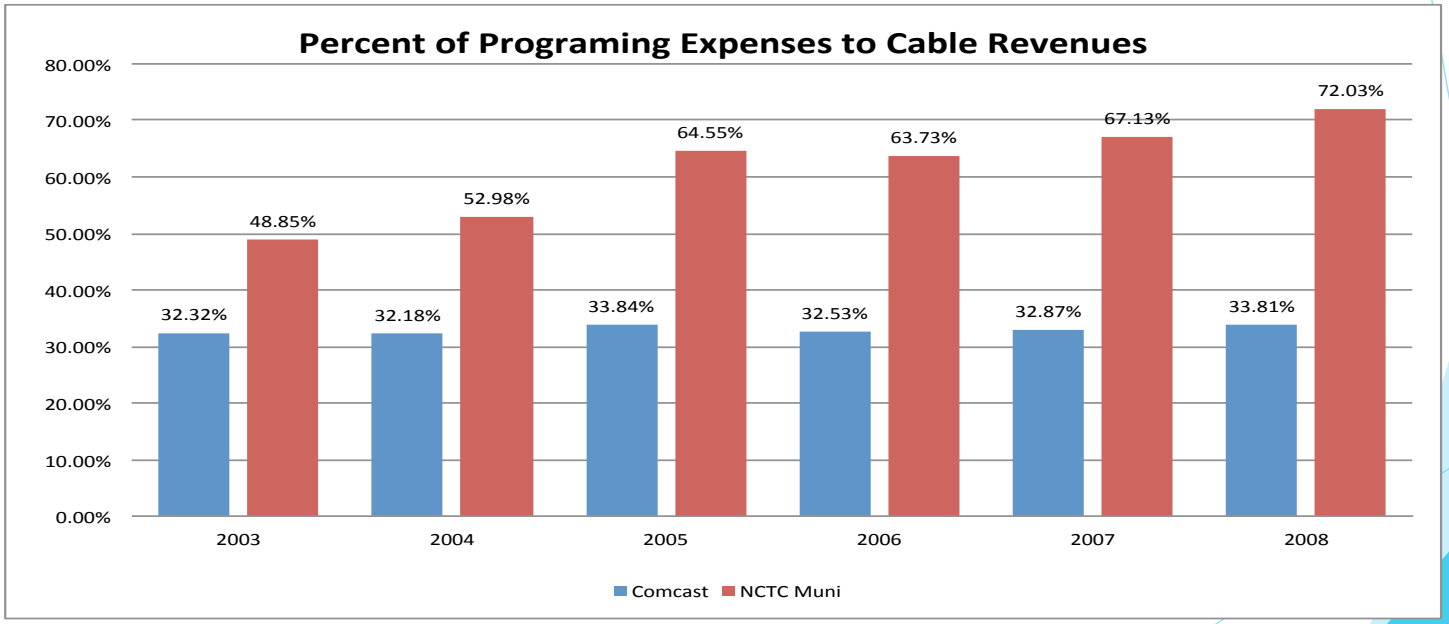
- To account for “inflation”, add a multiplier for expenses and revenues
  - This approach will greatly overstate margins in the out-years (uses “inflation” to increase net margins)
  - A flat model is more appropriate
    - Do not inflate any revenues or expenses except maybe salaries and cable programing

Common Mistakes

- Add churn – with a consumer payment for connection fee greater than the cost of acquiring a new customer
  - This approach makes churn a contributor of revenue, rather than a loss
  - Churn needs to be included, but as a net cost
- Using the same depreciation & replenishment period for fiber and electronics
  - This approach overstates cash flow projections in out-years since electronics need replenishment every 5 to 7 years

Common Mistakes

- Underestimate the “value” of buying power



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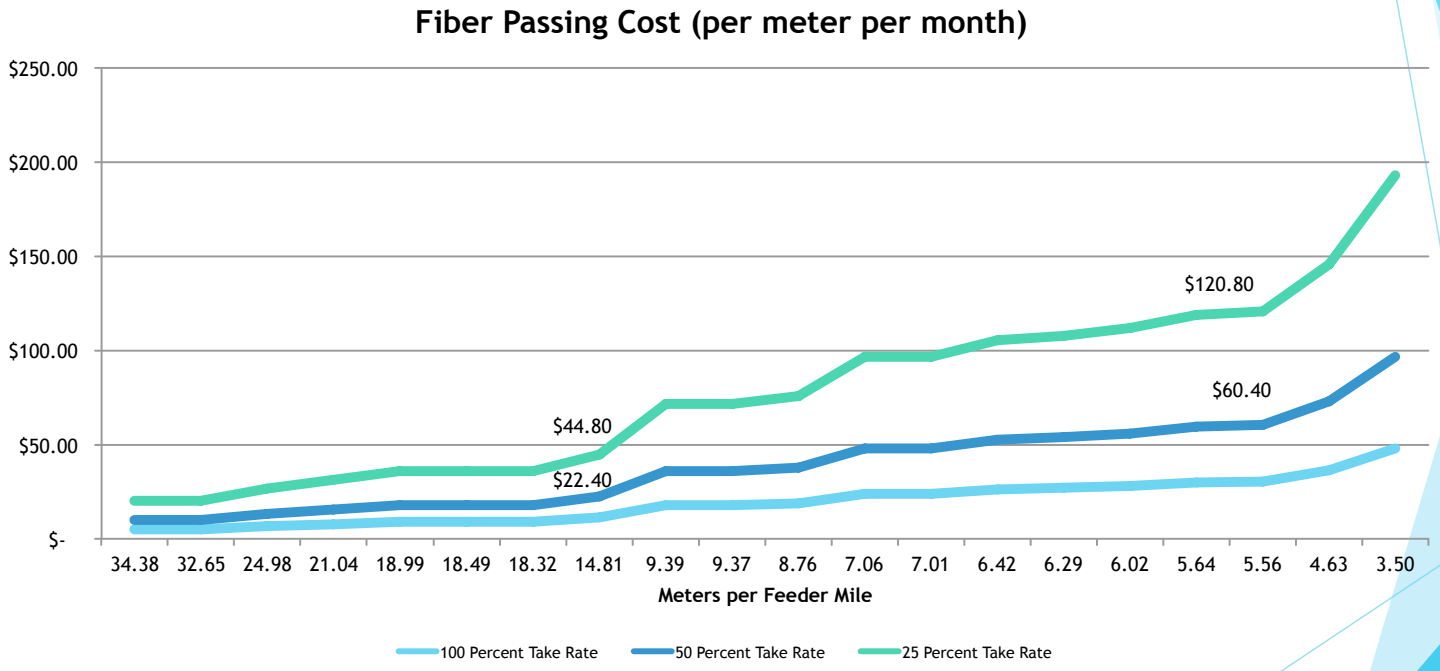
Impact of Consumer Density

Capital Cost Recovery



Example only – actual results will vary from market to market. Based on a 20 year fiber life and 3 percent annual interest rate. Cost does not include network equipment, consumer electronics. Cost also assumed 100 percent overhead with no make-ready costs.

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Funding Areas

Funding Sources

- Subscriber revenues
- Federal programs
  - Health connect
  - E-rate
- Grants
  - Capital
  - Ongoing O&M
- Bonding
- Internal loans
- Consumer payments
- Electric utility allocations
  - Capital
  - Ongoing O&M

Partnership Considerations

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Framework for Understanding Options

Balance risk, benefit, and control

- Municipal broadband
- Incumbent upgrade
- Partnerships
  - Model 1: Private risk & investment
  - Model 2: Public risk & private execution
  - Model 3: Shared risk, investment

Framework for Understanding Options

Balance risk, benefit, and control

- **Municipal & Cooperative broadband**
- Incumbent upgrade
- Partnerships
  - Model 1: Private risk & investment
  - Model 2: Public risk & private execution
  - Model 3: Shared risk, investment

Municipal & Cooperative Model

- Risk, reward, and control all at maximum
- Established strategies
- Electric utility confers huge benefits
- Example case studies
  - Ninestar, IN
  - Chattanooga, TN
  - Longmont, CO

Framework for Understanding Options

Balance risk, benefit, and control

- Municipal & Cooperative broadband
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Incumbent Upgrade

- Largely catalyzed by prospect of competition (100% overlap with Google Fiber builds)
- Easy upgrade path for some cable operators—will deliver solid speed and good competition for FTTP
- Telco upgrade path typically more challenging, requires significant investment

Framework for Understanding Options

Balance risk, benefit, and control

- Municipal & Cooperative broadband
- Incumbent upgrade
- **Partnerships**
  - **Model 1: Private risk & investment**
  - Model 2: Public risk & private execution
  - Model 3: Shared risk, investment

Model 1: Private risk, public facilitation

- City facilitates private investment
  - Leading private entity is Google Fiber
  - Strong interest by smaller companies
- Reduced risk, no control, potential benefit
- Facilitation can expand to tax benefits, other economic development incentives
- Beware entities seeking benefits without offering investment

Framework for Understanding Options

Balance risk, benefit, and control

- Municipal & Cooperative broadband
- Incumbent upgrade
- **Partnerships**
  - Model 1: Private risk & investment
  - **Model 2: Public risk & private execution**
  - Model 3: Shared risk, investment

Model 2: Public risk with private execution

- Variation on traditional municipal ownership
  - All risk, benefit, and full control
- Emerging innovation makes use of the traditional P3 structure used in Europe and increasingly in US
  - Leverages private sector strengths
- First time applied to broadband in US
- Guaranteed revenue stream to private partner
  - Financial risk
  - Political risk

Model 2 Case Study: Utopia

- Macquarie Capital team—very viable partner team
- Midst of complex process with range of Utopia member communities
- Turn-key private financing, deployment, operations, and revenue-sharing
- Guaranteed public funding in the form of a utility fee to all residents
  - In some communities, will not be a politically viable model (this has been true with some in Utah)
  - In others, can be strong model for buildout

Framework for Understanding Options

Balance risk, benefit, and control

- Municipal & Cooperative broadband
- Incumbent upgrade
- **Partnerships**
  - Model 1: Private risk & investment
  - Model 2: Public risk & private execution
  - **Model 3: Shared risk, investment**

Model 3: Shared Risk

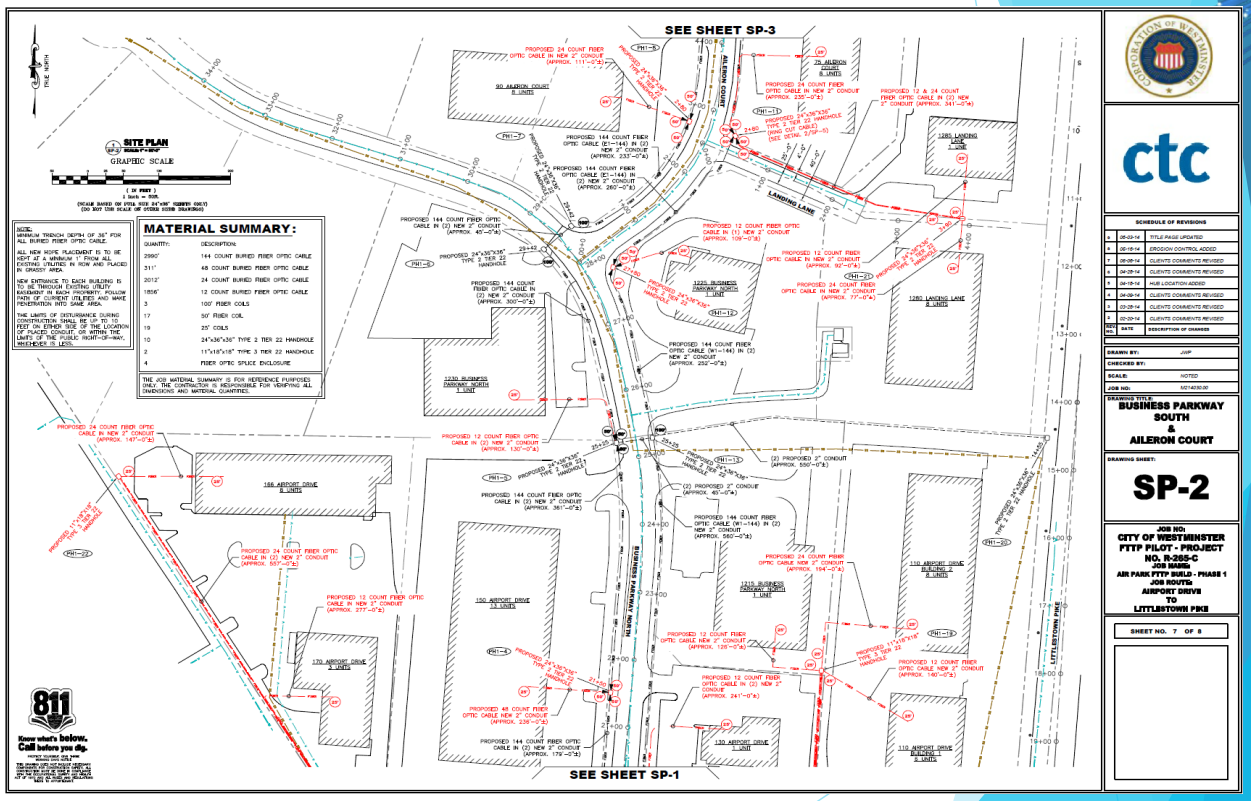
- Extraordinary opportunity for innovation
- Plays to strengths of both parties
- From the standpoint of a locality, risk is shared but 100% of public benefit realized
  - Public benefit does not show up on financial statements
  - Private partner gets financial benefit

Model 3 case study: Westminster MD

City near DC, Baltimore

City will own fiber only; lease to partner to operate on open access basis

Ting Internet selected as partner



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Partnership Summary

- Collaboration can enable scale
  - Buying coops analogous to the G&T
- Partner with your counterparts and peers
  - Other cooperatives, including telephone
  - Municipals

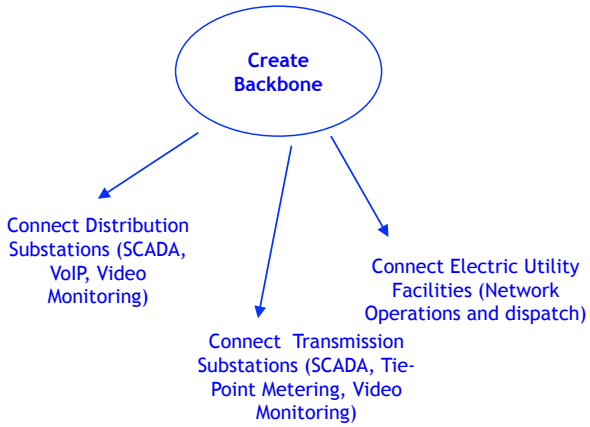
A Few Cautions

- Be skeptical of rosy projections
- Be sure that risk as well as revenue are shared
- Be aware of dependencies and control
- Avoid snake oil (remember BPL?)

Seeking Understanding of Priorities & Goals

- Balance reward, risk, and control
- Potential priorities include:
  - *Ubiquity*
  - *Consumer choice/competition*
  - *Community competitiveness*
  - *Control over infrastructure*
  - *Control over pricing*
  - *Residential sector*
  - *Small business sector*
  - *High tech sector*

Fiber Deployment – Potential Phases



Create Foundation for Electric Distribution Operations

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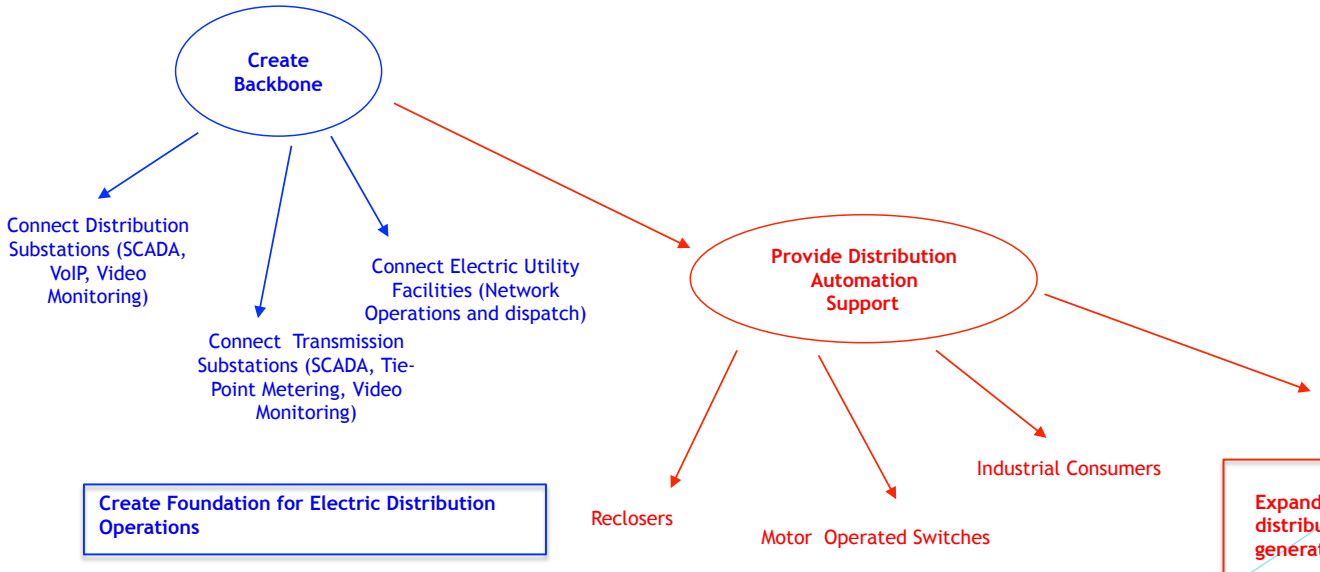
Fiber Deployment – Potential Phases



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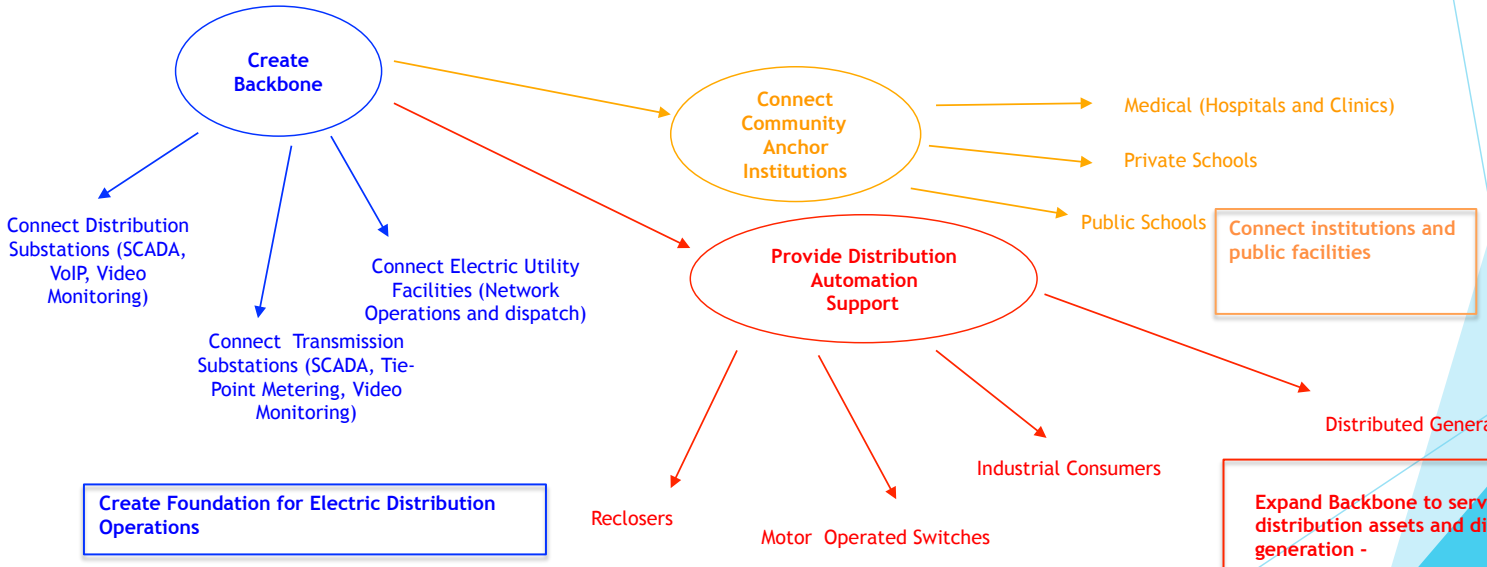

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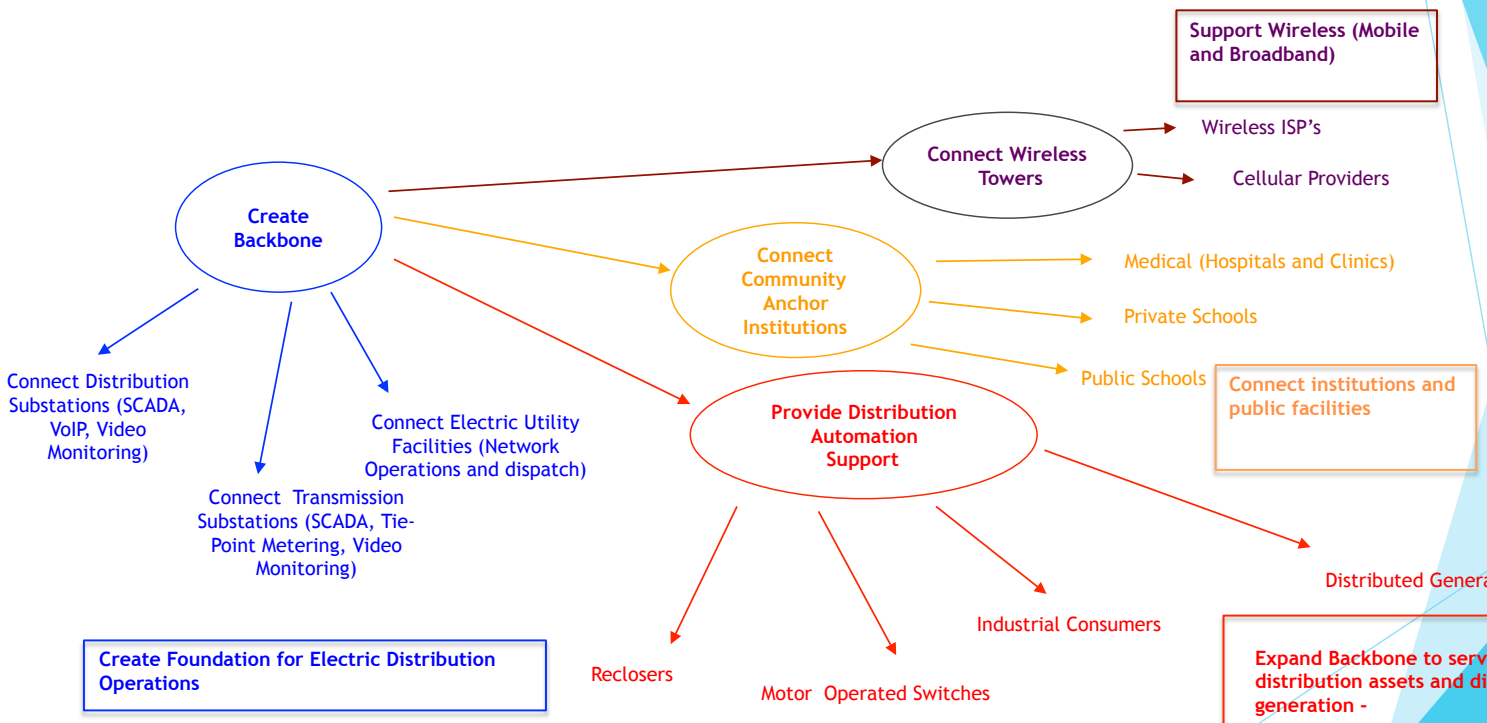
Fiber Deployment – Potential Phases



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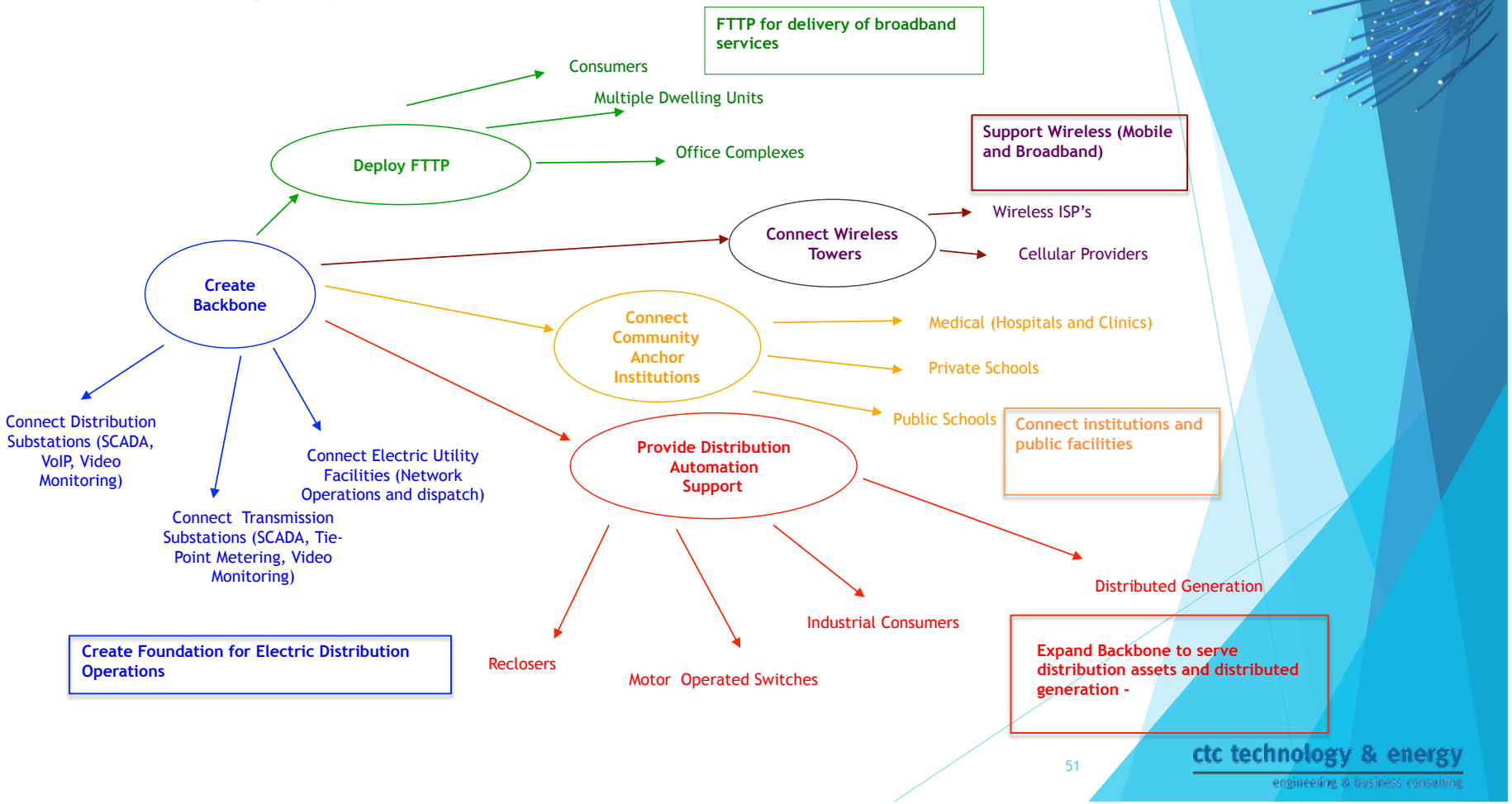
Fiber Deployment – Potential Phases



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Thank you!

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