



Contact:

Kevin Schoen

CEO

ACD.net

517-999-3250 office

517-231-7715 cell-text only

schoen.kevin@acd.net

Broadband in Michigan



State of Broadband in Michigan

- Private providers:
 - Building fiber optic infrastructure in urban areas (ACD)
 - CableCo's increasing speeds on coax networks
 - Telecom copper networks loops are being shortened with fiber augments (i.e. AT&T)
 - Cellular carriers, increasingly competitive for broadband deployment-4g/5g
- Rural markets:
 - Always economic challenges to getting extremely rural customers
 - Minimize government challenges (i.e. road commissions)
 - Consider finance authority deal with long term financing/investment challenges
 - FCC CAF II?

Costs Challenges and Problems

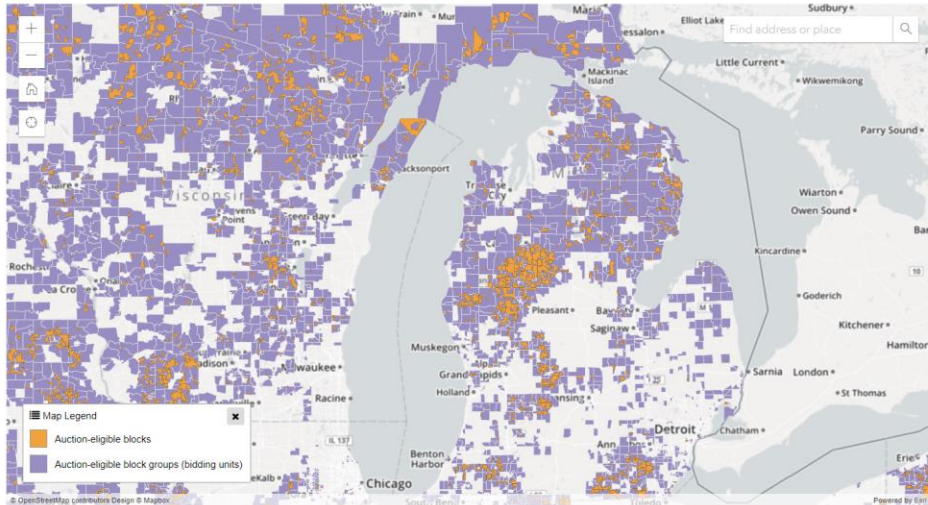
- Municipalities seeking to provide broadband deployment:
 - Principally small towns
 - Economic development arguments
 - Extremely rural markets do not have reliable broadband providers or any
 - Even municipalities do not tackle this well.....
- Private Sector Difficulty with municipalities.
 - Unclear specifications for installing infrastructure in the public rights of way
 - Problems with Road Commissions
 - Not following the law
 - Not defining costs on their websites
 - Submit again mentality

FCC Connect America Fund

- <https://www.fcc.gov/reports-research/maps/caf2-auction-final-areas/>
- Reverse Auction for direct monthly subsidies
- Now open to non-price cap carriers
- Letter of indication due in March
- Submissions by July

Connect America Fund \$2.0b

Connect America Phase II Auction: Final Eligible Areas



This map identifies in purple the census block groups eligible for the Connect America Phase II auction (Auction 903), which will use competitive bidding to allocate up to \$1.98 billion of support over 10 years in high-cost areas served by larger telephone providers (called price cap carriers). Census blocks with eligible locations within eligible census block groups are indicated in orange. Clicking on a census block group displays additional information for that census block group, including the total number of supported locations and the total annual reserve price rounded to the nearest dollar (as proposed by the Commission, the sum of the annual support amounts calculated for all locations within each eligible census block in the census block group, subject to a \$146.10 per-location-per-month cap).

The Commission made eligible for Auction 903 high-cost census blocks in states where the price cap carriers declined an earlier offer of model-based support and other unserved areas nationwide (excluding Alaska, New York, Puerto Rico and the U.S. Virgin Islands) that are not served by the incumbent price cap carrier or an unsubsidized service provider with voice and broadband at speeds of 10/1 Mbps or higher. The Commission has proposed that census block groups will be the minimum geographic unit for bidding. Thus, parties will be required to bid on all of the locations within the eligible census blocks of each census block group, if ultimately adopted by the Commission as the minimum geographic unit.

As directed by the Commission, the Bureau is publishing the final list of eligible census blocks, based on the most recent publicly available FCC Form 477 data (as of December 31, 2016), at least three months prior to the deadline for submission of short-form applications for the Phase II auction.

The final list of the eligible census block groups, along with their reserve prices and location counts is available here: <https://www.fcc.gov/files/caf2auctionpublishcbgcsv>

The final list of the eligible census blocks is available here: <https://www.fcc.gov/files/caf2auctionpublishblockcsv>

A shapefile of the eligible areas is available here: <https://www.fcc.gov/files/blockpublishgeomshpzip>

The public notice announcing the release of the final list is available here: https://apps.fcc.gov/edocs_public/attachmatch/DA-17-1219A1.docx

Ubiquitous “Broadband” Coverage

- Nearly all areas of the state have access to 3g/4g coverage.
- While NOT desirable, this is a reasonable broadband for basic necessities. {no streaming}.
- It is unlikely that ANY wireless technology can fully address these issues of “unlimited” use at fixed rates.
- Only Landline coverage can typically provide the final solution.

Wireless / Whitespace

- Nevertheless, wireless can provide another option until fiber and better landline access gets to the customer.
- What wireless:
 - 4g/5g
 - Unlicensed (i.e. WIFI) to the customer premise
 - Whitespace – likely a weak solution at best due to substantial capacity issues in the low frequency band
 - Good for remote data collection. Limited use except in the very most rural of locations.
 - Still have to get fiber to the tower/aggregation hubs
 - Realistic bandwidth even with channel bonding is 1-6mb/s
 - Nevertheless technology should be adopted and used, even though it is not going to work very well.

What about Whitespace?

- Good for remote data collection - limited use except in the very most rural of locations
- Still have to get fiber to the tower/aggregation hubs
- Realistic bandwidth even with channel bonding is 1-6mb/s
- Nevertheless technology should be adopted and used, even though it is not going to work very well.

Public Sector Investment In Fiber Backbone networks and Fiber to the Home

Mentality understanding that building and maintaining broadband infrastructure is overly simplistic, and unrealistic.

Governments generally have challenges budgeting to maintaining infrastructure over the long run.

Financial planning is affected by politics, and ability to appropriately allocate user fees and taxes, adequate density of engineering resources.

Examples and Recommendation

Examples:

- Roads Maintenance
- Underground infrastructure upgrades - Water pipes
- Pensions
- Etc.

Recommendation:

Make sure that existing infrastructure is fully addressed prior to diverting scarce resources to competitive sectors, where private sector entities operate.

- Must account for private sector competition. The reality is that they are successful for a reason.
- Minimize risk that maintenance to Subject to future finances of the governmental entities.

Partnering on Network Builds and Maintenance

Deployed networks needed some repairs, and were underutilized.
Smaller municipal examples:

- Eaton Rapids
- Dowagiac
- Delhi Township
- Hillsdale
- A number of others.....

We have strong working relationships with the local communities.

Public Sector Planning Horizon

- Nothing lasts forever
- Public sector plans typically misjudge maintenance and repair costs, and network equipment investment cycle
- In financial models misjudge likely customer base quantity
- If built correctly (big giant if), maintenance should be low at the beginning of fiber networks. However:
 - At 7-10 years a continuous cycle of investment is required to rebuild and repair fiber optic cable.
 - At 3-5 years after purchase of equipment, new investment cycles need to occur both software and hardware.

Engineering and Design Flaws

- Incorrect depths of conduit
- Flawed engineering related to aerial placement of cable on utility poles
- Submitting entities are the liable party - not your engineering firm
- Poor equipment choices due lack of experience and technical knowledge
- Do you have embedded long term technical expertise to operate these networks
- How much of the revenue has been allocated for repairs

Code/Safety Code

- Fundamentally unsafe design and engineering has occurred with educational and government entities, which are direct violation of safety code, endangering utility workers and the public
- Routine audits of infrastructure are generally poor
- Do not understand evolving regulations or pay attention to them
- Regulations are enforced via contract
- Educational and governmental entities are not currently subject to MPSC regulation related to safety code
- Must do thorough research to understand the law and the safety code prior to getting into infrastructure deployment
- The lawyers are waiting.

Cherry Picking

- Government / Educational / Non-profit (but funded by government dollars) owned networks
- Don't pay taxes. Don't pay Metro fees to help cover costs of ROW maintenance
- If they have no obligation to serve the lower value customers (i.e. residential) they are cherry picking the market with zero obligation to invest in the more challenging customers to hook-up
- Pick the high value customers in a market - Wonder why no one wants to build infrastructure in a market to pickup the hardest customers to get

Considerations for Rural / Small town / Urban Fiber Financing

- Local communities have been voting to bond broadband investment in certain areas
- Consider partnering and being a finance authority.
- Agreement crafted to jointly take risk, based upon quantity of customers brought aboard
- Reserve funding for future capital investment
- Staged, intelligent, learn before you go plan
- Avoid getting provider involved in local politics
- The model of where: Government dictates, private sector pays for the cost idea never works, ex. San Francisco

Considerations for Partnering with Private Sector

- Get a consultant who has history of successful interactions with private sector.
- Have a primary point person from you municipality that has a good financial and legal understanding.
- Avoid involving the provider in local politics and presentations to elected officials.
 - Any of the people doing this excessively are charlatans.
 - Been there done that.
- Do not submit requests for information to the private sector. Best to obtain data informally.
- When an RFP occurs, be transparent and straightforward.

Michigan Broadband Development Authority

What happened?

- Created in 1999. Loaned money to numerous entities for broadband deployment.
- Under general management of the MSHDA
- Shutdown and loans were closed out.... Generally MSHDA was not highly interested in being in the broadband lending business
- Too many chiefs and not enough Indians.
- Got better at it as time went on
- Had some great successes.

How ACD decides where to invest in infrastructure

How ACD decides is often based upon interactions with the communities when we need to build existing infrastructure:

1. Community (permitting entities) are easy to work with...

- Speed is everything
- Transparent
- Return phone calls, arrange meetings quickly
- Publish specifications
- Flexible
- Not changing the rules partway through
- Apolitical mentality
- Single point of contact, knows how to get things done, work through bureaucracy
- Fees are reasonable and transparent.

Investing in Infrastructure

2. Where we have substantial concentrations of anchor entities (schools, governments, hospitals, industrial/commercial companies) to facilitate anchor investment, where we can then efficiently expand to apartments, residential, and other more economically challenging areas efficiently
3. Where it is obvious that a community is already investing in its own infrastructure - roads, sidewalks, public infrastructure - and making progress in improving existing infrastructure - Why would a private sector entity invest in an area that appears to not be investing in itself?
4. Where we don't face taxpayer-funded competition
5. Where mentality is "private sector bad, public sector good"

Recommendations for Michigan – 1 of 3

- Standardize permit requirements across the state for county road commissions and MDOT for fiber and small cells - Counties should fall under MPSC / Metro Act authority.
- Consider reopening Michigan Broadband Development Authority to loan capital to entities for broadband deployment, where private sector investment is likely not going to meet financial models.
- Alternatively, Consider a standardized local financing authority model to work with private sector companies.

Recommendations for Michigan – 2 of 3

- Keep your interactions responsive, positive, quick with private sector providers.
- All entities (public and private) must be subject to same safety and reliability requirements.
 - MPSC regulation should be extended to public sector network owners.
 - MPSC regulation should be extended to all public / coop power/pole owners.
- If you are a municipality and considering fiber deployment, make sure that you are building infrastructure that fully meets code.
 - Know the safety regulations and code associate with this that the private sector has to adhere to, and likely you do as well.
 - Be prepared for continuous cycle of investment.
 - If you are a municipality and considering fiber deployment, make sure you properly allocate costs for equipment replacement 3-5 years and repair aggressively and rebuilding of the infrastructure as soon as 7-10 years.

Recommendations for Michigan – 3 of 3

- If you are a municipality and considering fiber deployment, make sure that you are building infrastructure that fully meets code.
 - Know the safety regulations and code associate with this that the private sector has to adhere to, and likely you do as well.
 - Be prepared for continuous cycle of investment.
 - If you are a municipality and considering fiber deployment, make sure you properly allocate costs for equipment replacement 3-5 years and repair aggressively and rebuilding of the infrastructure as soon as 7-10 years.



Contact:

Kevin Schoen

CEO

ACD.net

517-999-3250 office

517-231-7715 cell-text only

schoen.kevin@acd.net

Broadband in Michigan

