OFFICIAL OCTOBER 2014 UPDATE SUBMISSION TO THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION UNDER THE STATE BROADBAND INITIATIVE GRANT PROGRAM FOR THE STATE OF ILLINOIS

OCTOBER 2014

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Cover Letter

October 2014

Ms. Anne W. Neville
SBDD Grant Program Director
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW Room 4716
Washington, DC 20230

Dear Ms. Neville:

Please accept this submission from the Partnership for a Connected Illinois (PCI), the Designated Entity for Illinois.

These artifacts should be found to be compliant with the October 1, 2014, deadline for the semi-annual data update and in accordance with the terms of the July 1, 2009, Notice of Funds Availability (NOFA) and all subsequent clarifications.

This cycle, PCI continued its data-collection activities from broadband providers in the State. This role allows the State to achieve goals with regard to improving broadband access and adoption – which are in turn central objectives of the Partnership for a Connected Illinois. All facets of this data-collection transition, and the activities that flowed from it, are included in the narrative that follows.

If you have any questions about this Data Narrative, please do not hesitate to contact me at (217)-886-4225.

Respectfully submitted,

J. Phillip Halstead, Ph.D.
Executive Director
Partnership for a Connected Illinois / Broadband Illinois

Introduction

The data submission cycle ending on October 1, 2014 marks the seventh round that PCI has held the full responsibility of data collection and publishing. In this round, PCI used creative new strategies in its outreach to the carriers. PCI continued to establish Non-Disclosure Agreements (NDAs) with broadband providers for confidential information. The data that accompanies this narrative contains edited data for 64 out of the 170 carriers included in the submission. This round PCI continued to refine its data verification process through the use of GeoPDF maps and third party data sources.

In this round, the Partnership for a Connected Illinois (PCI) took major steps in its three-fold mission to collect and publish broadband data, to ensure broadband access throughout the State, and to maximize broadband's impact. Assuming this data collection role is vital to achieve the State's goals with regard to improving broadband access and adoption. PCI appreciates the assistance provided by NTIA as PCI improved its collection, processing, and verification of broadband data for submission according to NTIA standards.

PCI has continued to maintain the Broadband Illinois web site. This consumer-friendly interface allows residents of the State to intuitively access the information collected by PCI – it is a portal to actual speed data, and a tool that consumers can use to verify the data provided by broadband providers. The Broadband Illinois website contains county-level GeoPDFs for each of Illinois's 102 counties, as well as pages for each broadband provider in the State of Illinois. These maps can be downloaded and edited using the TerraGo Technologies toolbar, which will be explained in great depth in various parts of this narrative.

This narrative will summarize the carrier outreach, the data production methods, carrier data verification, and the community anchor institution data. It will conclude with an examination of the Broadband Illinois website and the ways in which PCI is publishing carrier data in a user-friendly manner that allows for feedback from the consumer.

Carrier Outreach

From July 22 - through August 1, 2014, all providers currently in the PCI census block and wireless layers were sent GeoPDFs that displayed their coverage area in the State of Illinois. The GeoPDFs were fully editable by the provider using the TerraGo technologies' toolbar. As part of this e-mail, PCI requested that updated data be submitted to PCI for its Cycle 10 submission to the NTIA and for the update to the Illinois Broadband map. For those providers who had not previously established a Non-Disclosure Agreement with PCI, a copy of PCI's draft version accompanied these maps.

This entire outreach process was tracked on SalesForce, PCI's contact management tool. As maps were created, distributed, and verified, fields were populated in SalesForce to denote that a map that met the approval of the provider had been created. For those providers who did not respond to their initial map request, multiple follow-up e-mail and phone call attempts were made. PCI also tracked whether there would be an update to the data for this submission, what version number of the data PCI would be submitting, and the dates in which an NDA had been established.

This section will explain the way in which PCI conducted its outreach to the carriers and the different ways in which it received data. It will outline some of the major updates that were received in this round as well as describe both quantitatively and qualitatively the extent to which data was updated in this round.

NDA

PCI continues to offer and abide by the terms of our NDA. If providers did not establish an NDA in a previous round, they were given the opportunity to do so in this round. In other instances, NDA's were individually negotiated to address specific provider concerns.

When an NDA was established with a provider, the date that the NDA was established was recorded in SalesForce. A field in SalesForce was also populated as to whether or not the provider would be submitting new data for this Cycle 10 submission. If a provider responded with no change to the data, PCI removed priority from that provider and refocused attention on those providers who reported that there was a change to their data up to June 30, 2014. PCI wanted to establish the NDAs by focusing on those providers with new data to submit.

Updates to Data

Of these 170 providers submitted as part of the data package in this round, edited data has been submitted for 64 of them. This data comes in the form of new infrastructure, speed changes, and corrections from PCI's previously submitted data. In this round, the Partnership for a Connected Illinois added 7 new carriers:

No.	Carrier Name
1	Broad Tech, Inc.
2	Business Only Broadband, LLC
3	Cumberland Internet, Inc.
4	Midwest First, Inc.
5	Next Level Technology Partners
6	Prairie Wind LLC
7	Rocket Communications

Broadband service providers submitted coverage in terms of the areas that they served, either in edited GeoPDFs, direct geospatial formats, CAD files, Excel databases, Google Earth files, or as paper maps. The submitted polygons were overlaid on the census block polygons and those blocks touching were selected and used. The proper speed tier categories were assigned as necessary.

Throughout August and early September, the PCI data team formatted data as it was received. A cutoff date of September 15, 2014 was established for the acquisition of new data to include in this submission. However, PCI continued to accept data well after that date, and all providers who submitted updated coverage in this round are included in this submission.

The table below summarizes the status of data among providers.

No update to coverage area/ verified previous data/previous data submitted	106
Previous provider provided an update to coverage area that was included in this cycle.	57
New provider for this round	7
Total number of providers included in this submission	170

Total number of providers included in this submission	170
Identified Illinois providers that have never participated in mapping project	25
Total number of providers identified in the State of Illinois	195

Changes and Corrections

On August 19, 2011, PCI along with the other SBDD's designated entities submitted a changes and corrections document to the NTIA for the data that was submitted in Round 3. PCI felt this was a very useful document, and would like to incorporate it into this narrative to demonstrate the extent to which PCI updated its data in this round. While the last section quantitatively expressed how data was changed, this section qualitatively explains each of the updates that were made.

FRN	Provider Name	DBA Name	Change	Correction	Description
0021505896	Ag Prospects, LLC	Ag Prospects, LLC	X		Upgraded infrastructure in order to offer higher speeds, added a couple sites. Ag Prospects, LLC now reports 1 record in the Wireless feature class.
0013963582	Airbaud	Surf Air Wireless		X	Submitted a KML file of an updated RF propagation.
0003773454	Bergen Telephone Company	Bergen Telephone Company		X	Removed one census block where service was not available. Bergen Telephone now has 17 Census Blocks.

0018538462	Broadband Heaven Inc.	AirLogic Internet Services	X		Fixed wireless coverage and Middle Mile points removed after being acquired by Essex Telecom/T6 Broadband.
0022704654	BroadTech Inc.	BroadTech Inc.		X	WISP provider delivering data for the first time. BroadTech Inc. now report one record in the Wireless feature class.
0015212145	Business Only Broadband, LLC	Business Only Broadband		X	WISP provider delivering data for the first time. Business Only Broadband now reports two records in the Wireless feature class.
0005257522 0003795697 0006147946	Cass Cable TV, Inc. Cass Telephone Company Greene County Partners, Inc.	CASSCOMM	X		Sold cable systems in Brighton, Carrollton, Jerseyville, Manchester, Roodhouse, and White Hall. No other changes. CassComm now has 5,097 census blocks, and continues to have two records in the wireless service feature class.
0006117428	CCA-Online	CCA-Online		X	Removed BroadTech Inc.'s coverage (sister company). Upgraded infrastructure to offer higher speeds. CCA-Online now reports one record in the Wireless feature class.
0003290673	Cellco Partnership and its Affiliated Entities	Verizon Wireless	X		Submitted new shapefiles of coverage. A slight increase in coverage of 4G LTE coverage, as well as little to no change in 3G CDMA Coverage. Verizon Wireless now has four records in the Wireless Service feature class.

0012663282	Central Management Services, Illinois Department of	Illinois Century Network	X	X	Submitted updated KML of as built fiber route and POP/middle mile locations in Illinois. Now have 280 Middle Mile locations in Illinois.
0018626853	CenturyLink, Inc.	CenturyLink	X		Century Link submitted an updated road and census block shapefile. Updated Provider name from CenturyTel, Inc., and some areas now have a Maximum Advertised Download Speed Tier of 8. Century Link now reports 4,855 Census Blocks and375 Roads in Illinois.
0017179383	Charter Communications Inc.	Charter Communications Inc.		X	Charter Communications Inc. provided an updated list of service area coverage. They now report 23,320 Census Blocks and 402 Roads in Illinois.
0003934205 0002861979 0003764065 0003764107 0003764123 0003764206 0003765831 0003765450 0003765823 0018802660 0004350237	Citizens Telecom Company of Illinois Frontier Communications of DePue, Inc. Frontier Communications of Illinois, Inc. Frontier Communications of Lakeside, Inc. Frontier Communications of Midland, Inc. Frontier Communications of Mt. Pulaski, Inc. Frontier Communications of Mt. Schuyler, Inc. Frontier Communications of Orion, Inc. Frontier Communications of	Frontier Communications of Illinois	X	X	Submitted list of DSLAMs that have been upgraded. Frontier continues to roll out bonded ADSL 2 and VDSL in some offices. This has resulted with an increase of speed and a slight expansion of coverage. The Frontier family of companies now reports 106,132 Census Blocks in Illinois.

	Prairie, Inc. Frontier Communications of the Carolinas, Inc. Frontier North, Inc.				
0009955493	City of Rochelle	Rochelle Municipal Utilities		X	Fixed Wireless coverage was under the provider name Rochelle Municipal Utilities; that is being corrected to City of Rochelle. Fixed Wireless coverage also adds a FRN number. Rochelle Municipal Utilities submitted existing 111 FTTP census blocks.
0019066034	Cogent Communications	Cogent Communications		X	Corrected Middle Mile points by removing duplicate points, leaving 98 middle mile points. Cogent Communications submitted an excel list of addresses they serve. Converted address list into 95 Census Blocks.
0004441663	Comcast Cable Communications, LLC.	Comcast	X		Comcast reports changes in the service area coverage as well as an increase in upload speeds from speed tier 7 to speed tier 10. They serve 165,195 census blocks in IL; 579 road segments are reported.
0017141102	Computer Techniques, Inc.	CTI Fiber	X		Continue to Build Out Network in Taylorville, Illinois. CTI Fiber now up to 86 Census Blocks.

0003723467 0003723525 0002819191	Cornell & Ransom Telephone Co. El Paso Telephone Co. Odin Telephone Exchange	FairPoint Communications	X		Submitted new list of address currently served by FairPoint Communications. Removed 11 Census Blocks from the Odin, IL exchanges, added 2 Census Blocks to the El Paso, IL Exchange, and removed 34 Census blocks from the Cornell and Ransom Telephone exchanges. After updates, FairPoint has a total of 1,335 Census Blocks.
0018402123	Cricket License Company, LLC	Cricket Wireless	X		Little change geographically speaking. Provider Name, DBA Name, and FRN Change to reflect AT&T's acquisition of Leap Wireless.
0021307533	Cumberland Internet, Inc.	Cumberland Internet, Inc.		X	WISP provider delivering data for the first time. Cumberland Internet now report one record in the Wireless feature class.
0016095838	Cygnus Communications Corporation	Cygnus Communications Corporation		X	Cygnus Communications was acquired by AirLogic/Broadband Heaven, which in turn was acquired by Essex Telecom/T6 Broadband. T6 Broadband confirmed that this service is no longer being offered, and thus coverage is being removed in this round
0008317661	Essex Telecom, Inc.	T6 Broadband	X		Submitted a list of 50 tower sites that had upgraded equipment or was a brand new location. Merged Air

					Logic's coverage with T6 after acquisition.
0016101453	Express Dial Internet, Inc.	KWISP Wireless Internet Services	X		Expanded footprint with addition of 1 tower.
0016708109	Gargoyle Technologies, Inc.	Volo Broadband	X	X	Added FTTH in parts of Urbana, IL. Corrected by adding existing FTTH in Thomasboro, IL. Fixed wireless speed offers increased to speed tier 7. Volo Broadband now reports 567 Census Blocks and two records in the fixed wireless feature class.
0004332128	Glasford Telephone Company	Glasford Telephone Company		X	Increased Maximum Advertised Download speed to speed tier 7, and Maximum Advertised Upload speeds to tier 3. Glasford Telephone Company now reports 233 Census Blocks.
0003710597	Gridley Telephone Co.	Gridley Telephone Co.		X	Increased Maximum Advertised Download speed to speed tier 7, and Maximum Advertised Upload speeds to tier 4. Gridley Telephone Co. now reports 230 Census Blocks.

0003734803 0005041991	Harrisonville Telephone Company HTC Technologies Co.	Harrisonville Telephone Company HTC Technologies Co.	X	X	Increased maximum advertised upload speeds in the buffer zones used to select eligible census blocks. Ten Remote Terminals were added in this update cycle resulting in increased download and upload speeds, and increased footprint. No changes in Fixed Wireless or FTTH Coverage. Harrisonville Telephone Company now reports 4,178 Census Blocks (TT 10 = 2,181 , TT 20 = 1,875, TT 50 = 122) and one layer in the Wireless Feature Class
0002789865	Highland Communication Services-HCS	Highland Communication Services-HCS		X	Expanded Coverage, corrected coverage. Highland Communications Services now reports 280 Census Blocks.
0002860856 0004496774 0004979233	Illinois Bell Telephone Company AT&T Corp, Inc. AT&T Mobility LLC	AT&T Illinois AT&T Corp, Inc. AT&T Mobility LLC	X		Submitted updated list of census blocks that AT&T services with FTTH and DSL, as well as an updated list of middle mile points. AT&T also submitted updated shapefiles for Terrestrial Mobile Wireless coverage. Seen continued expansion of 4G LTE coverage, and little to no change in DSL or FTTH coverage, and on changes in Middle Mile. AT&T now has 173,165 Census Blocks (172,325 DSL & 840 FTTH), 669 Road Segments (668 DSL, 1 FTTH), and 10 polygons

					in wireless coverage.
0004333712	Illinois Consolidated Telephone Company, Inc.	Consolidated Communications		X	No expansion or changes. Corrected speeds with a couple of blocks, and removed a couple of Census Blocks where service was unavailable. Consolidated Communications now reports 10,762 Census Blocks (ADSL = 10,752, FTTH = 10)
9999	IndianValley.com LLC	IndianValley.com LLC		X	No change in footprint. Increase Maximum Advertised Download speed to speed tier 7.
0008094427	iTV-3, Inc.	iTV-3	X		iTV-3 submitted PCI a new shapefile showing their current coverage. Little to no change occurred in their Peoria markets, but they have expanded to Champaign-Urbana and are partnering with UC2B. In total, iTV-3 services 6,844 Census Blocks.

0002860468	Jo-Carroll Energy, Inc. (NFP)	SandPrairie Wireless	X		Submitted updated list of tower/radio locations. Minor changes in footprint, no changes in speeds offered. Jo-Carroll Energy now reports one record in the Wireless feature class.
0004980611	LaHarpe Telephone Co., Inc.	La Harpe Video & Data Services Company, Inc.	X	X	Increased speeds in both DSL and FTTH Coverage. FTTH build out continues, as three new runs have been added. Corrected some DSL Census Blocks that were outside exchange boundaries and added some that should have been included in the past. Also corrected DBA name. LaHarpe now has a total of 359 Census Blocks (212 DSL, 147 FTTH)
0004329785	Leonore Mutual Telephone Company	Leonore Mutual Telephone Company		X	Corrected Maximum Advertised Download speed to tier 5. Leonore Mutual Telephone Company serves 47 Census Blocks in Illinois.
0003723822	Level 3 Communications, LLC	Level 3 Communications, LLC	X		Submitted updated customer address list and middle mile location. Little noticeable change in coverage. Level 3 now has 703 Census Blocks in Illinois as well as 83 Middle Mile locations.
0003723699 0003723699	LR Communications Leaf River Telephone Company	LR Communications Leaf River Telephone Company	X		Added a couple towers on the east side of existing network. Increased speed offerings in both DSL and Fixed Wireless Coverage. Leaf River now has 209 Census Blocks, and one

					record in the Wireless feature class
0003741857 0003741733	Madison Communications Company, Inc. Madison Telephone Company, Inc.	Madison Communications Company, Inc. Madison Telephone Company, Inc.		X	Removed ADSL Census Blocks outside FCC Study Area Boundary (Exchange Boundaries) for Madison Telephone Company. Added Cable coverage for the town of Wilsonville, IL. Madison now reports 2,758 Census Blocks (TT 10 = 949, TT 40 = 1,809)
0003571619	Mediacom Illinois LLC	Mediacom	X	X	Submitted update list of last mile address and cable shapefile in Illinois. Removed old coverage, and selected all census blocks within 50 feet of the cable shapefile. Assigned speeds based off of last mile spreadsheets. Mediacom now has service in 44,751 Census Blocks in Illinois.
0003753787	MegaPath Corporation	MegaPath Corporation		X	MegaPath Corporation provided an updated list of service area coverage. They now report 328,239 Census Blocks, 111 Roads and six Middle Mile locations in Illinois.
0020203519	Midwest First, Inc.	Midwest First, Inc.		X	WISP provider delivering data for the first time.

0004301339	MTCO Communications	MTCO	X	X	MTCO submitted an updated KML showing existing and new deployment (DSL & FTTH). Corrected existing coverage and added new coverage (both DSL and FTTH). MTCO has 6,956 Census Blocks (6,598 for DSL, 358 for FTTH).
0005067152 0011411097	New Windsor Telephone Company New Windsor Cable TV, Inc.	New Windsor Telephone Company New Windsor Cable TV, Inc.		X	Provider submitted detailed and geo marked GeoPDF map of coverage. Added Census Blocks in North East and Southern areas of footprint, and removed 3 Census Blocks near the town of Alpha. New Windsor now represents 148 records in the Census Block feature layer.
0022658561	Next-Level Technology Partners	Next-Level Technology Partners		X	WISP provider delivering data for the first time.
0022012884	Noize Communications LLC	Noize Communications LLC	X	X	Added two sites, and corrected the FRN. Noize Communications now reports one record in the Wireless feature class.
0022699748	Norcom 2000, Inc	Norcom 2000	X		Upgraded infrastructure in order to offer higher speeds, added three sites. Norcom 2000 now reports one record in the Wireless feature class.
0004962023	Nova Cablevision Inc.	Nova Cablevision Inc.		X	Corrected Maximum Advertised Download speed to tier 6, and Maximum Advertised Upload Speed to tier 3 for the town of Trivoli. No change in footprint. Corrected FRN number to 0004962023. Nova Cable serves 476 Census Blocks

					in Illinois.
0018429746	Open Air Wireless	Open Air Wireless		X	Corrected Maximum Advertised Download and Upload Speeds to tier 7. Instructed PCI to use coverage file on website. Open Air Wireless continues to report 1 record in the Wireless feature class.
0021500764	Prairie Wind LLC	Prairie Wind LLC	X	X	WISP provider delivering data for the first time. Acquired Empowering Technologies (Empowering Technologies has not provided data previously.)
0003735784	RCN Telecom Services of Illinois, Inc.	RCN and RCN Business Solutions	X		Submitted updated customer address list and middle mile locations for all technologies (Trans Tech 40, 41, and 50). RCN now has 44,896 census blocks in Illinois (TT 40 = 14,984, TT 41 = 14,984, TT 50 = 14,928).
0003762796 0010746295	Reynolds Telephone Company Reynolds Cable, Inc.	Reynolds Telephone Company Reynolds Cable, Inc.	X	X	Corrected the addition of FTTH within the city limits of Reynolds, IL. Existing ADSL and Fixed Wireless did not change. Reynolds Telephone Company now reports 172 Census Blocks (TT 10 = 144, TT 50 = 28), and one record in the

					Wireless feature class.
0020218293	Rocket Communications	Rocket Communications		X	WISP provider delivering data for the first time.
0003742954	Shawnee Telephone Company	Shawnee Telephone Company	X	X	Information collected via website. Expanded FTTH within ILEC territory in Hardin County, Illinois. Shawnee Telephone now serves a total of 1,236 Census Blocks in Illinois (TT 10 = 302, TT 50 = 934)
0022117618	Sprint Corporation	Sprint	X		Sprint corporation has reported changes in service area coverage and service speeds. They have four records in the Wireless feature class.
0009232554	Telecommunications Management, LLC	Newwave Communications	X		Acquired Jerseyville, Brighton, Carrollton, Roodhouse, White Hall, Manchester franchises from CassCom. Upgraded Blue Mound, Moweaqua, Macon, Dalton City, Bethany cable systems to DOCSIS 3.0, and increase cable speeds in the Argenta and Oreana cable systems.

0003783255	Tel-Star Cablevision, Inc.	Tel-Star Cablevision, Inc.	X	X	Corrected Maximum Advertised Download Speeds to tier 9, and Maximum Advertised Upload speeds to tier 4, and upgraded the transmission technology to DOCSIS 3.0 in all areas except for Woodland Heights, IL. Woodland Heights Maximum Advertised Download Speed was corrected to tier 7, and maximum advertised upload speed to tier 4. Tel-Star Cablevision now reports 494 blocks in Illinois (TT 40 = 479, TT 41 = 15).
0007556251	Time Warner Cable Inc.	Time Warner Cable Inc.	X		Little change, submitted updated road segments and census blocks shapefile. Time Warner now has a total of 305 Census Blocks, and 44 Road Segments.
0006945950	T-Mobile USA, Inc.	T-Mobile	X		Submitted updated shapefiles of cellular data coverage in Illinois. Resulted in 10 layers added to the submission to represent the different spectrums being used. Coverage of LTE expanded slightly. T-Mobile also included an updated list of Middle Mile points.
0003740446	Tonica Telephone Company	Tonica Telephone Company		X	Increased Maximum Advertised Download speed to speed tier 6. Tonica Telephone Company now reports 139 Census Blocks.

0007738446	US Signal Company, LLC	P&V Capital Holdings, LLC	X		US Signal Company, LLC is reporting two additional Middle Mile locations.
0000053124	US SONET LLC	US SONET	X	X	Expanded Coverage to town of Iuka, IL. Increased Maximum advertised download and upload speeds to 30 mbps. US SONET now serves 552 Census Blocks in Illinois
0004976932 0010753986	Viola Home Telephone Co. Viola Communications, Inc.	Viola Home Telephone Co. Viola Communications, Inc.		X	Increased Maximum advertised download speed to speed tier 7 and maximum advertised upload speed to speed tier 5 for existing ADSL coverage. No change in fixed wireless coverage.
0004327219	Wabash Telephone Cooperative, Inc.	Wabash Independent Networks, Inc.	X	X	Wabash continues to build out FTTH in their ILEC areas. They have recently completed the Geff exchange. They have boosted DSL speeds to speed tier 6, increased the Flora cable to speed tier 7.Wabash now has 3,066 Census Blocks (1,885 blocks for DSL, 411 for cable, and 770 for FTTH).

0004337481	WideOpenWest	WideOpenWest		X	Discovered that WideOpenWest submitted 2000 Census Block information in a previous round. Converted Census 2000 blocks to Census 2010 blocks in order to correct previous geocoded footprint. Also corrected speeds to show maximum advertised download speed tier equaling 9, and maximum advertised upload speed tier equaling 5. Technology was also corrected to Cable-Docsis 3.0. Wide Open West now reports 25,079 Census Blocks in Illinois.
0016278970	Wisper ISP, Inc.	Wisper ISP, Inc.	X		Added a couple of towers to fill holes and expand footprint slightly. Installed upgraded equipment on several towers to offer higher speeds. Wisper ISP now reports seven records in the Wireless feature class.
0021350962	WOWaccess, Inc	WOWaccess, Inc	X	X	Submitted an updated list of Radios/ Tower locations, FTTH streets and Middle Mile locations. Upgraded Fixed Wireless infrastructure in order to offer higher speeds, and added a couple sites. WOWaccess, Inc. now reports one record in the Wireless feature class, 58 Census Blocks, and 13

					Middle Mile locations.
0020111225	Zito Midwest, LLC	Zito Media	X		Corrected Maximum Advertised Download Speeds to tier 9, and Maximum Advertised Upload speeds to tier 5, and upgraded the Transmission technology to DOCSIS 3.0. Zito Media now reports 438 blocks in Illinois.

SBDD Data Transfer Model Methodology

The submission of the broadband dataset for October 1, 2014 is contained within the SBDD Data Transfer Model. PCI has reviewed all literature that relates to the release and use of this data transfer model and recognizes that it does not replace or dictate how data is stored, processed, or displayed for the State, as it is meant primarily as a means to transfer the broadband data from all states and territories and populate the National Broadband Map in a seamless fashion.

In addition to the narratives and methodologies contained herein, as well as the DataPackage.xls containing contact information, the data dictionary, and a provider summary table, the following feature classes are submitted within the SBDD Data Transfer Model for the state of Illinois.

Inventory of Deliverables, Partnership for a Connected Illinois: October 1, 2014:

NOFA Requirement	Data Transfer Model	Data Description
AppendixA: 1(a)	BB_Service_Address	List of addresses at which broadband service is available to end users in the provider's service area.
Appendix A: 1(a)(i)	BB_Service_CensusBlock	Broadband Service Availability of Facilities-Based Providers in Census blocks of No Greater Than Two Square Miles in Area
Appendix A: 1(a)(ii)	BB_Service_RoadSegment	Broadband Service Availability of Facilities-Based Providers by Road Segment in Census blocks Larger in Area Than Two Square Miles
Appendix A: 1(b)	BB_Service_Wireless	Broadband Service Availability of Wireless Services Not Provided to a Specific Address
Appendix A: 3(b)	BB_ConnectionPoint_MiddleMile	Broadband Service Infrastructure Middle-Mile and Backbone Interconnection Points
Appendix A: 4	BB_Service_CAInstitutions	Community Anchor Institutions-Listing.

The provider data collected by PCI on behalf of the State of Illinois have been formatted per the given specifications and uploaded into the appropriate feature classes of the SBDD Data Transfer Model. Wireline availability is contained within census blocks and road segments. Wireless availability is contained as polygons of coverage areas. Middle-mile connections and community anchor institutions are contained as point data. The subscriber weighted nominal speed (if available) is contained within the overview feature class. All speed data is contained at the census block, road segment, or wireless polygon level of availability. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information as possible.

In this round, we are again including the state boundary. Commenting on previous round of data submission, NTIA cited issues with data gaps near the borders of the state and recommended using the U.S. Census Bureau state boundary data. Thus, in this round of data submission, we are including the U.S. Census Bureau 2010 Census Illinois state boundary in GCS_WGS_1984 coordinate system.

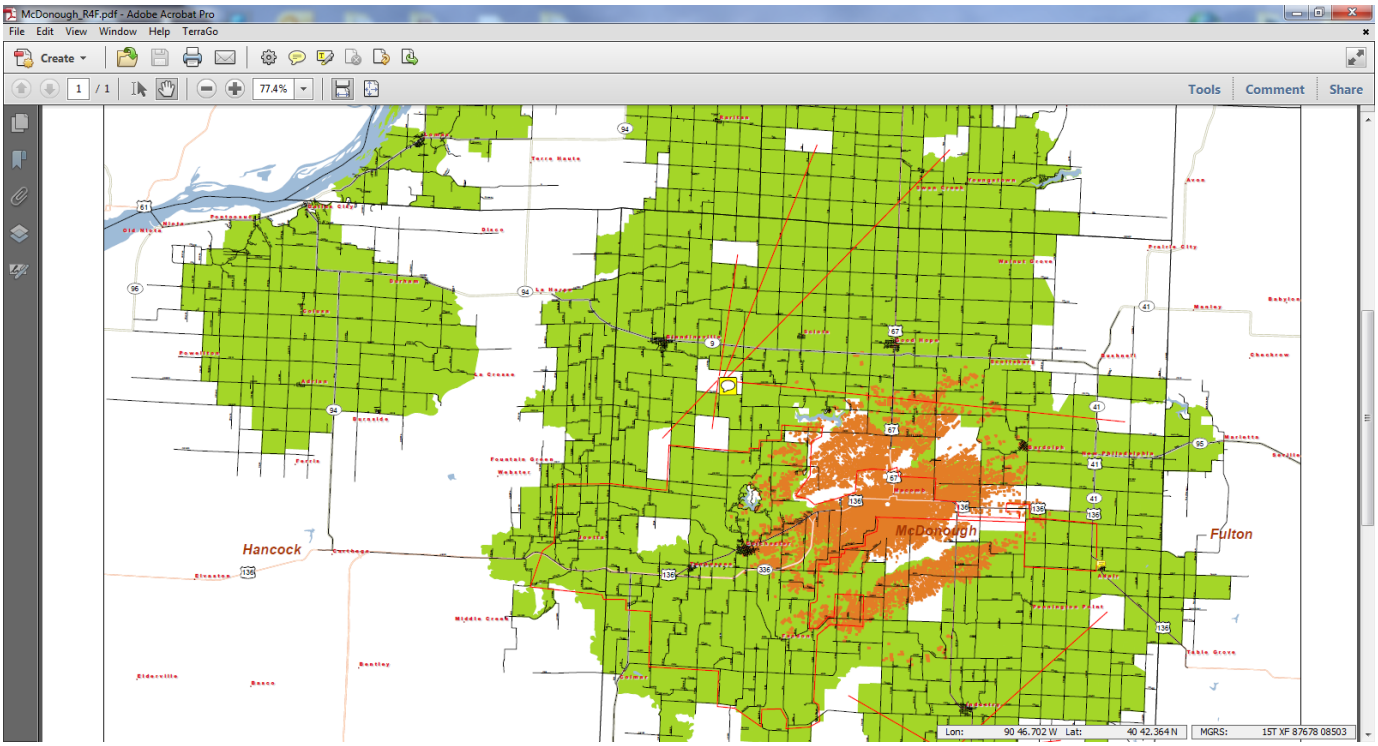
Data Production Methods

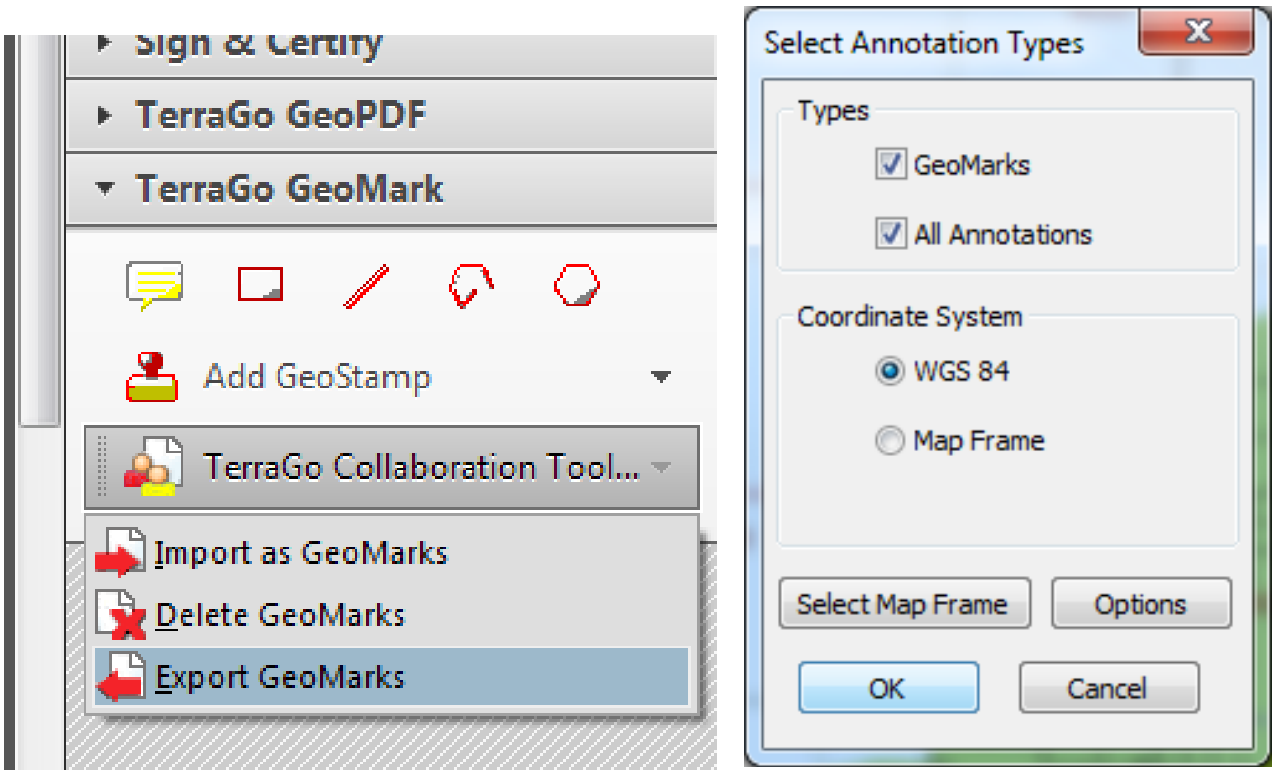
As mentioned, data was received in a number of formats that required processing in order to prepare the data for submission in accordance with NTIA requirements. This section discusses how PCI processed provider data, as well as how PCI assisted the provider in making the update process as easy as possible. It examines each layer and the steps PCI took in making the updates.

GeoPDF and TerraGo Technologies Toolbar (DSL & FTTH)

In the initial outreach made to the providers from July 22 - through August 1, 2014, they received a map of their existing coverage area. These maps are in the TerraGo Technologies GeoPDF format. This allows the provider to mark up the map with corrections and allows PCI to bring those corrections into ArcGIS. Instructions on how to install and use TerraGo GeoPDF were made available here: http://broadbandillinois.org/maps/Carrier-Maps/About-GeoPDF-Maps.html .
This toolbar created several opportunities for the provider to really zoom in and edit their coverage area. When it comes to verifying carrier level data, PCI felt the GeoPDF and the virtual meetings where PCI and the provider started carving up the data were extremely useful. The images on the next several pages demonstrate how DSL and FTTH providers were able to use the toolbar to carve up coverage areas to update their data.

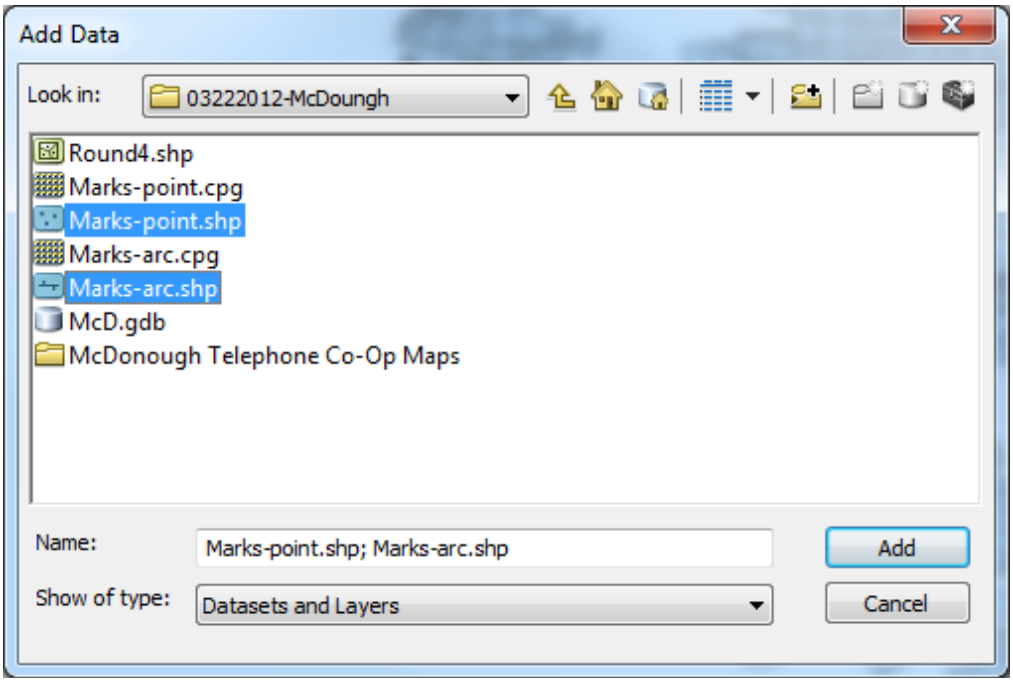
The provider, upon opening the map was instructed to use the  icon to turn layers on and off, and follow the instructions to mark up the map. The image below is a marked up GeoPDF of McDonough Telephone Cooperative in which they indicate where they have had FTTH deployment since their previous submission.

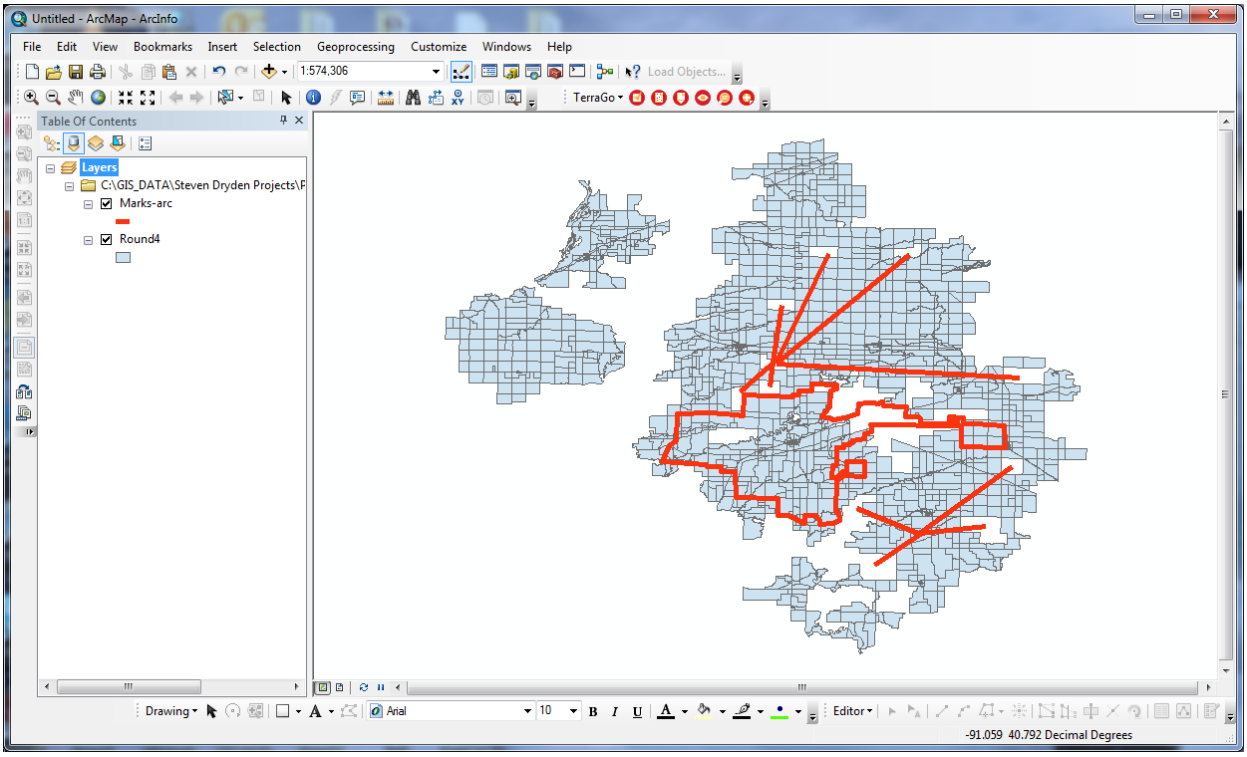




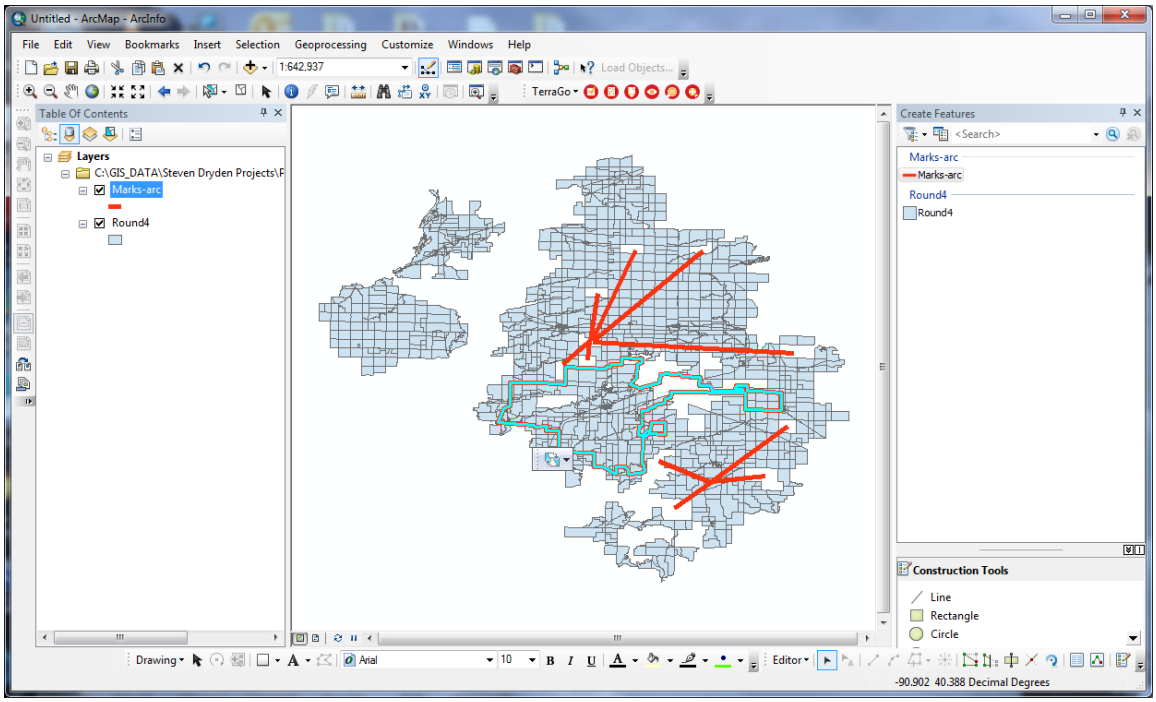
With this tool, providers can draw lines, comments, polygons, and points as indicated in the image to the top-left. From here we can export comments and geomarks as an ESRI Shapefile as demonstrated by the images above.

After exporting the geomarks from the GeoPDF, we can now import them into ArcGIS. This provider has drawn lines to show where they have added FTTH and where they want us to fill in holes in their other census block coverage. The geomarks are indicated by the red lines on the bottom image.

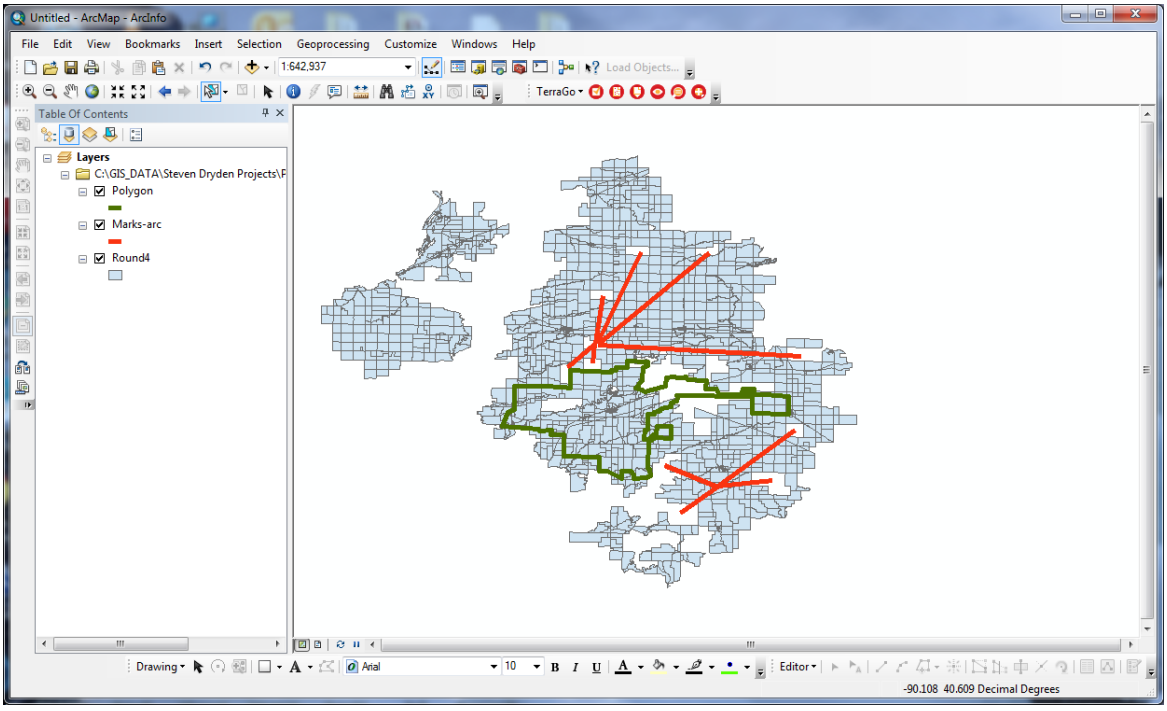




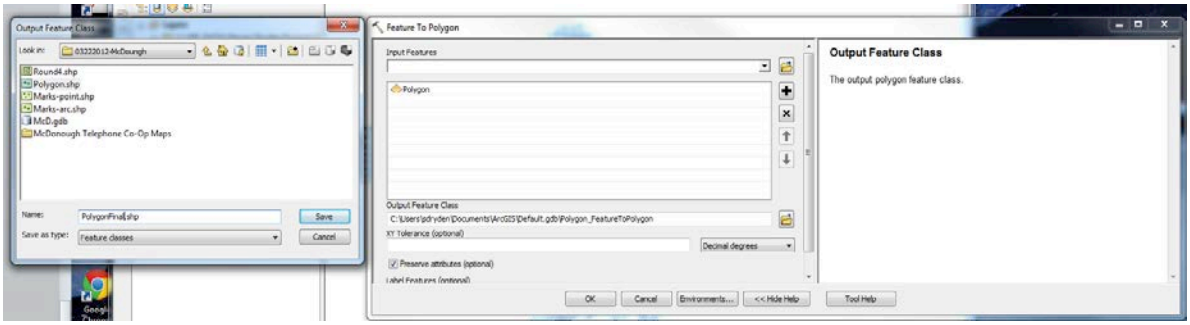
From here, we add Census Blocks as needed. For lines that represent an area, we can convert to a polygon so we can easily select Census Blocks. First we select the lines that need to be converted into a polygon (highlighted in Blue), we will export the selected.



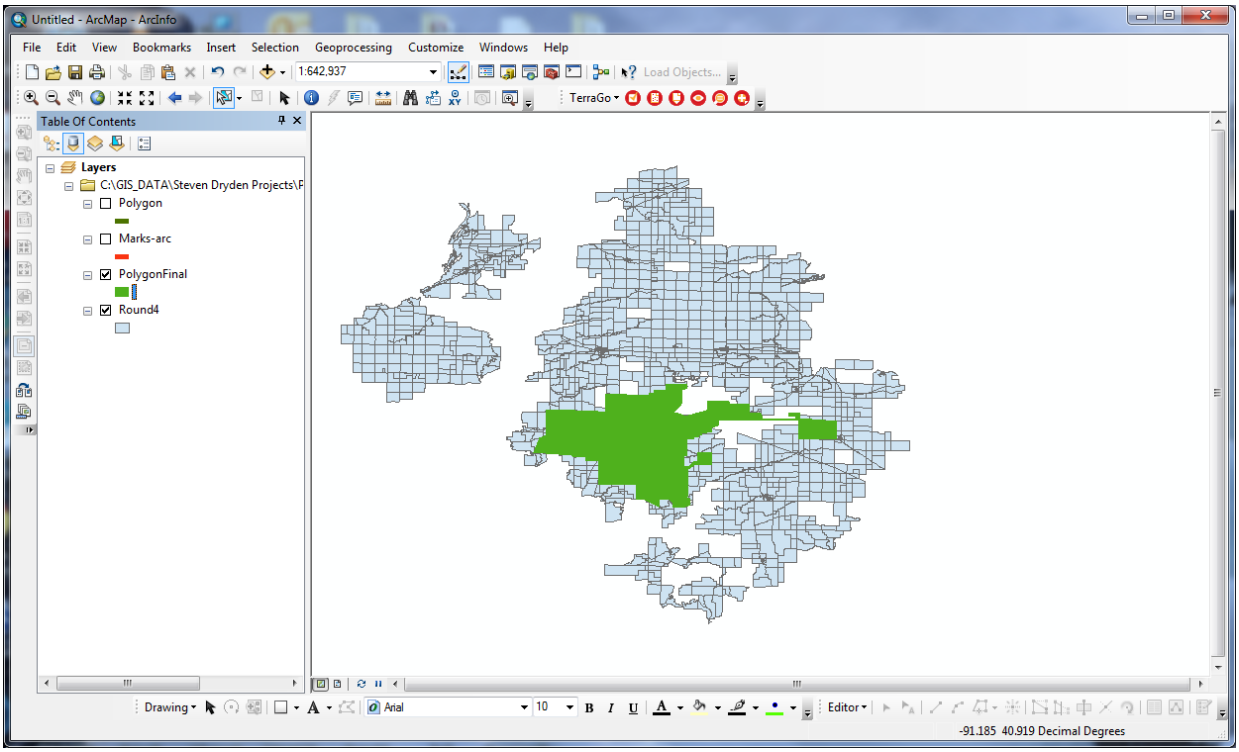
Here you can see we now have separated the polygon line we need. Now we can convert this to a true polygon.



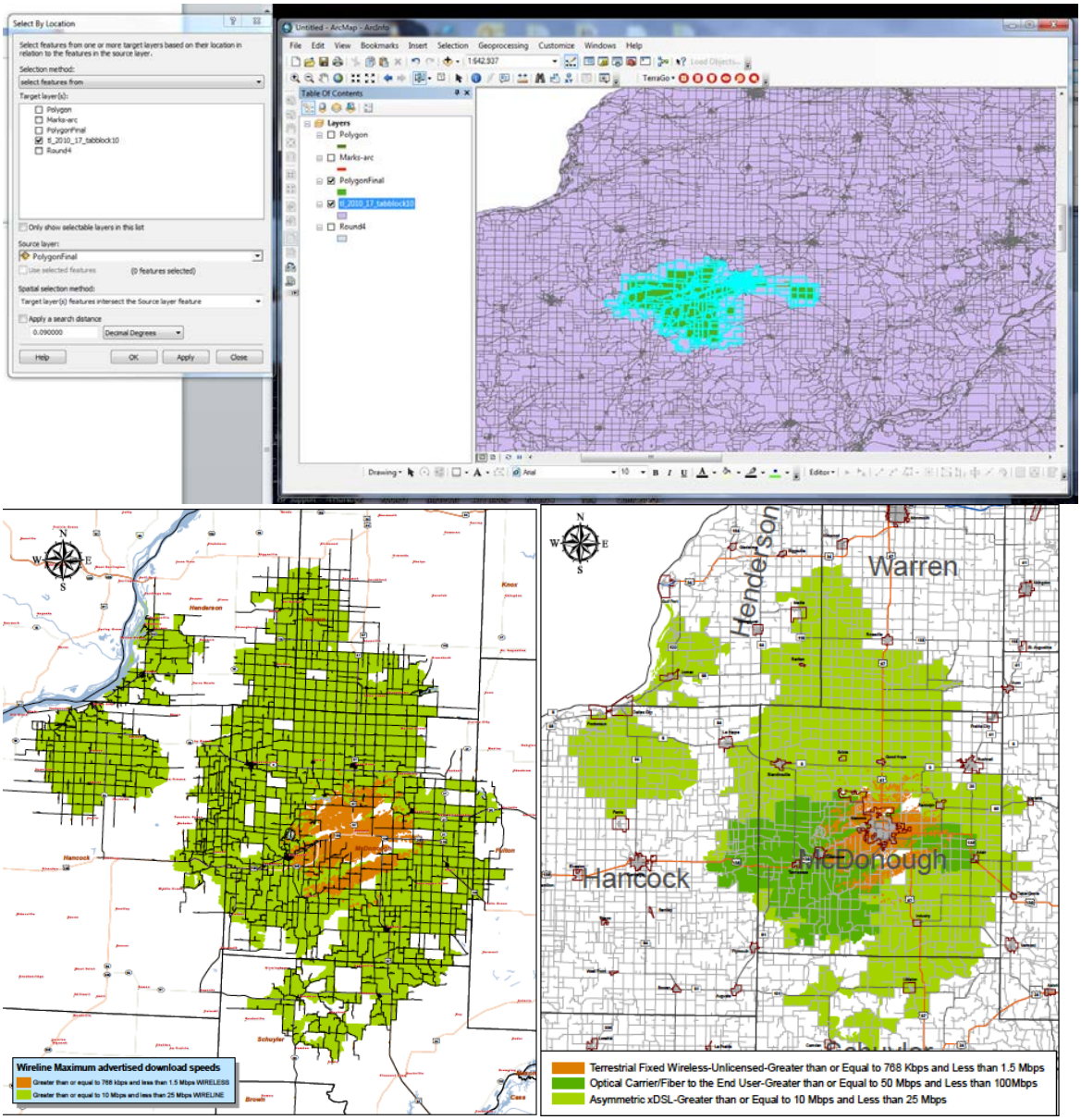
To convert a line to a Polygon, we used the Feature To Polygon tool in ArcGIS



The end result is a polygon that will be used to select census blocks that are inside or touch the boundary of the polygon.

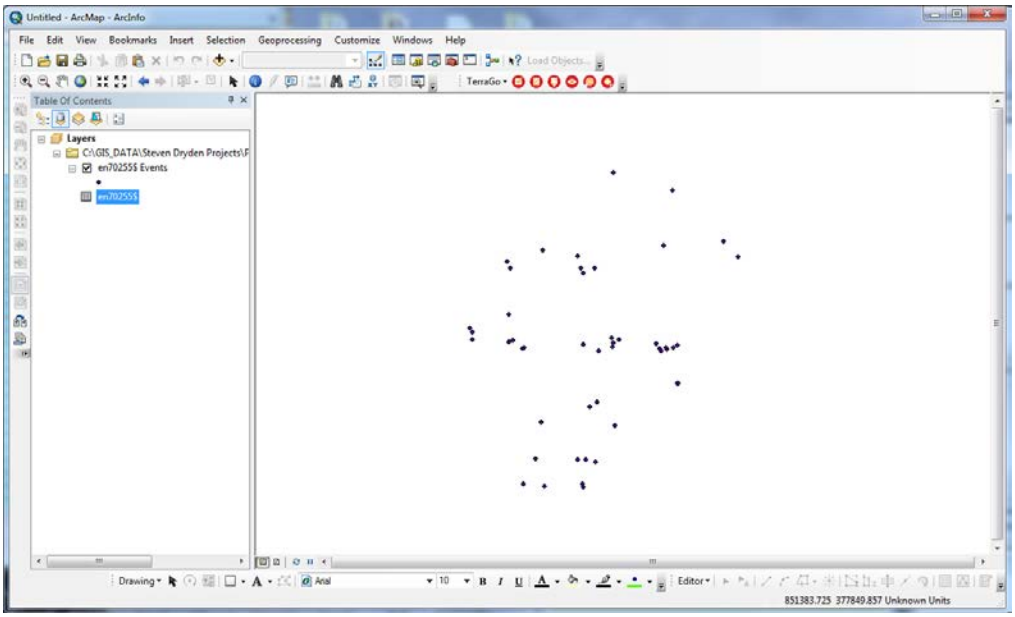


To obtain the Census Blocks needed, we used Select By Location process. As you can see, the census blocks are now selected. All that is needed now is to export the specified census blocks out, and provide the data with attributes as indicated by the provider. The maps below show the initial data and the data after the updates are made through the GeoPDF software.

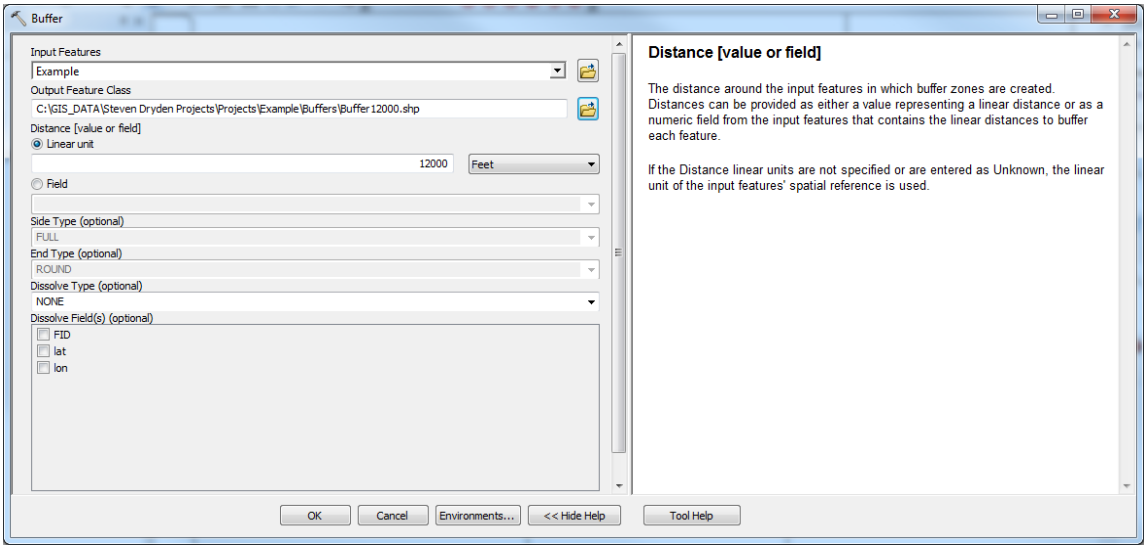


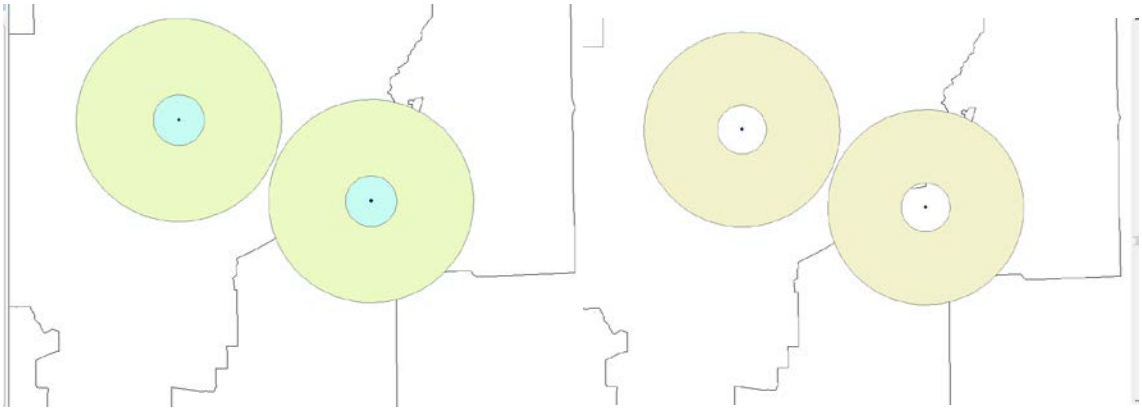
Wire Center Boundary Clipping

Some DSL providers sent an Excel table that displays latitude and longitude for central office and remote terminal locations. This creates a special challenge for us because DSL service extends 12,000 feet from the center, but is not allowed to cross the wire center boundaries. Also, we must factor in that at 3000 feet from the wire center, speed decreases from speed tier 5 to speed tier 4. First, we load the Excel table into ESRI ArcGIS. In ArcGIS, we can use latitude and longitude information to display data on a map using the Display XY Data function. We use this here to get a working shapefile.



With a working shapefile, we next buffer around each point for speed and coverage. We use two buffers of 3000ft and 12000ft.

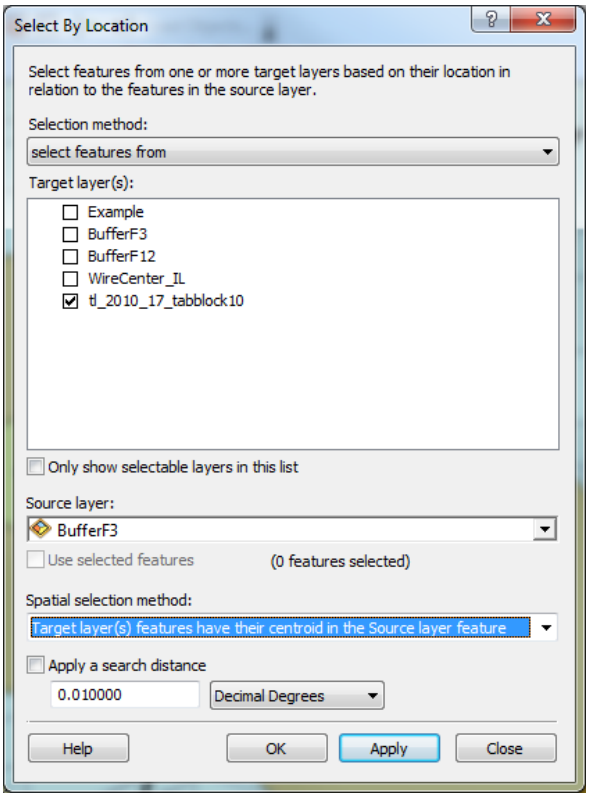


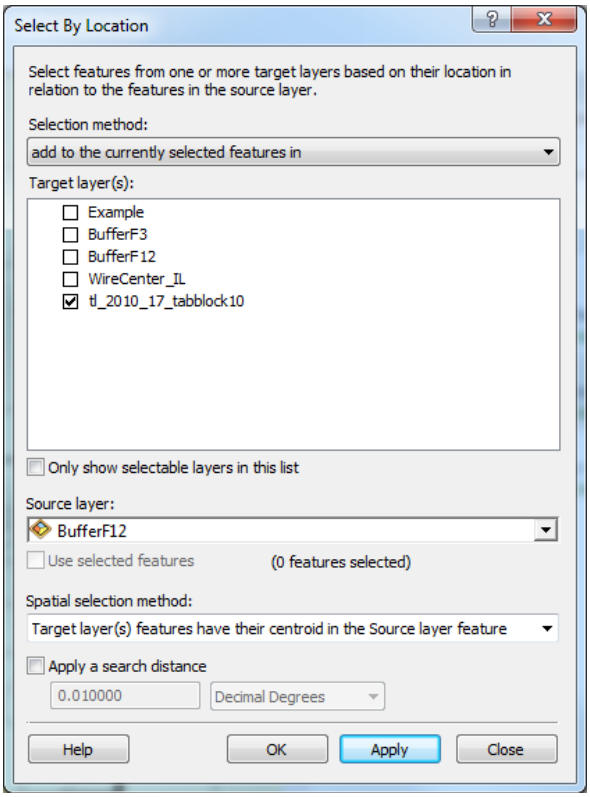


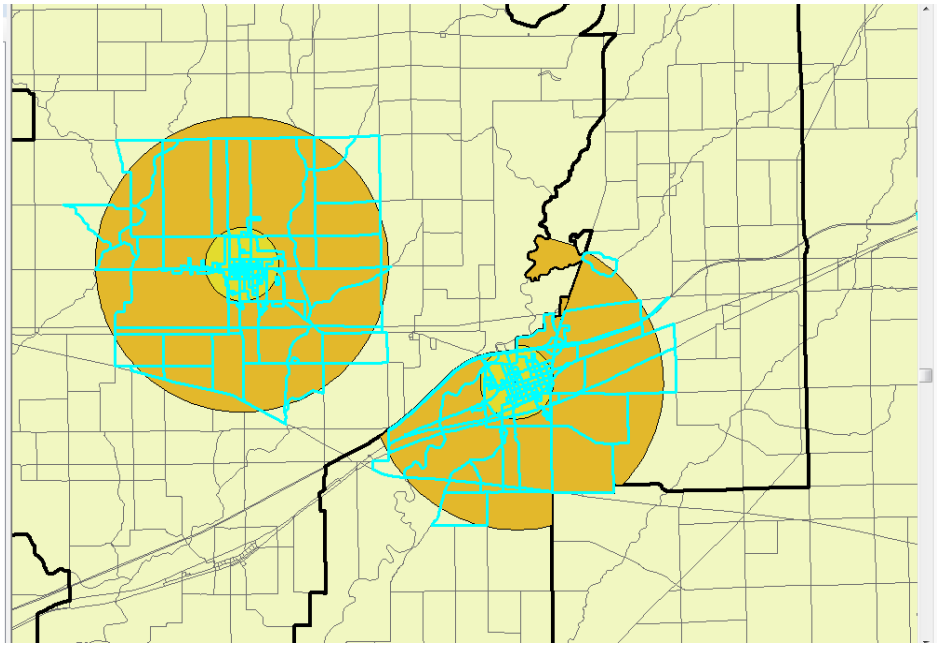
The resulting buffers are found in the above image to the left. We next clip the innermost 3000 feet from the 12,000 foot buffer. In the image on the right, we have turned off the 3000ft Buffer to show that there is nothing under them now. Coverage for wire centers cannot cross wire center boundaries, so we now need to trim the buffers so that they remain inside the boundary where they are located. We next use the Intersect tool to break apart the coverages based on the wire center boundaries.

As you can see, the polygon is now broken apart by the wire center lines. From here, we next start an editing session and delete those areas that fall outside the wire centers boundary. Select the area outside the boundary and press "delete" to remove those census blocks.

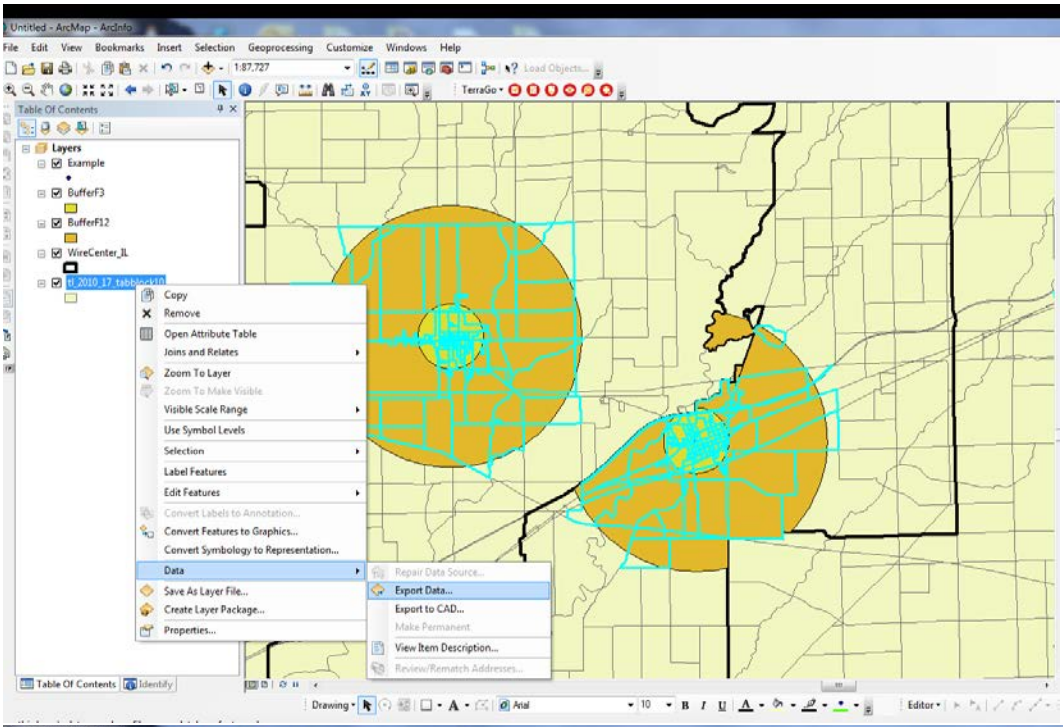
We do this for all wire centers, and then save our edits. After we are through with this, we next use these buffers to select census blocks by location. In this case we specify that a census block centroid be within either the 3000ft buffer or the 12000ft buffer in order to count.

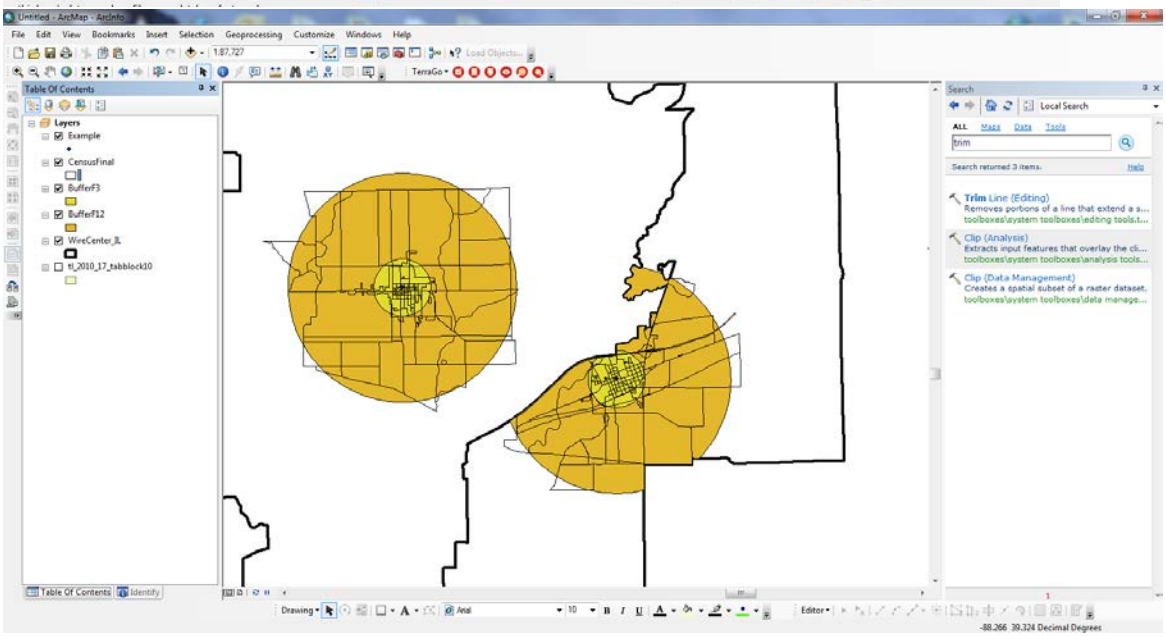






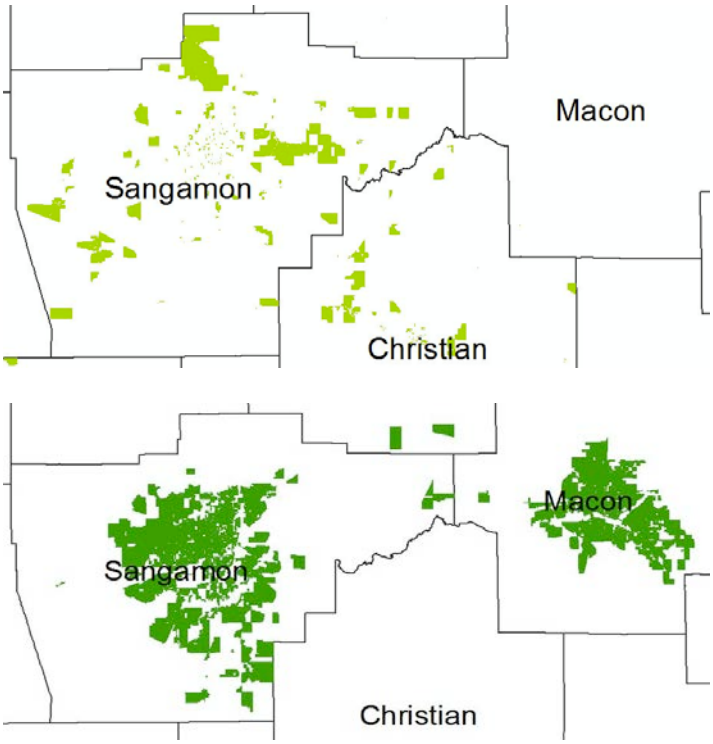
At this point we are ready to export the selected Census blocks, and assign speeds based on which buffer the census blocks fall within.





After we provide the census blocks with attribute information, we next send a GeoPDF to the carrier for approval, and then load it into the master geodatabase.

Cable Coverage



Some cable carriers submitted their service area coverage data in the form of a spreadsheet citing customer addresses. These addresses were converted to a point layer via a geocoding process. These points were then superimposed on top of a 2010 census block layer, and all of the census blocks that had one or more address-derived points associated with them were selected. The selected blocks were then converted into a polygon layer which was attributed with appropriate broadband provider information such as provider name, technology of transmission, maximum advertised downstream speed and so on. A portion of the Mediacom map above indicates an example of this in the above map.

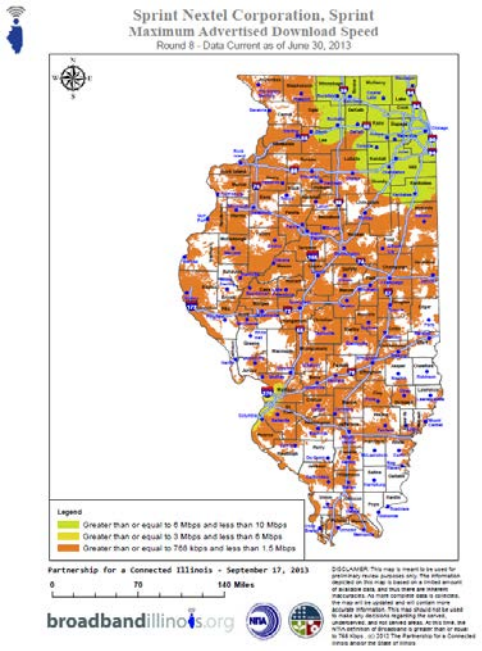
Other cable carriers including Comcast submitted a series of spreadsheet records which were matched with the corresponding Illinois 2010 census blocks polygon layer. The matching polygons were then superimposed on the Census CBSA layer which was joined with the provided maximum advertised (MAXAD) speeds spreadsheet. This way each individual census block was attributed with the corresponding MAXADDOWN and MAXADUP value.

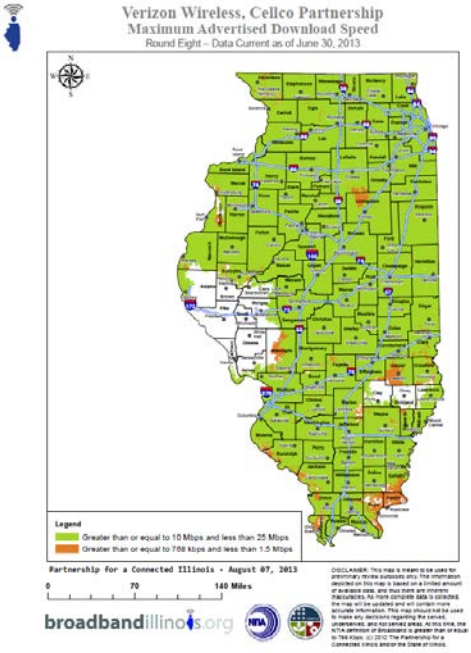
Street segment spreadsheet data records were geocoded based on mid-point value of the reported street segment address range. A point layer thus derived was next overlaid with the 2010 census street layer. Census street layer segments that were associated with the geocoded points were then examined, one-at-a-time, to make sure that they matched the reported street, city and census block information. Some of the reported records had to be discarded as they could not be located via the above process.

A GeoPDF map depicting both, census block and road segment data, was reviewed by Comcast and a number of census block records were deleted as a result of Comcast feedback.

Mobile Wireless Coverage

PCI has collected mobile wireless coverage from most providers in the State. These shapefiles were imported into the database and assigned attributes. An example of this data is below.

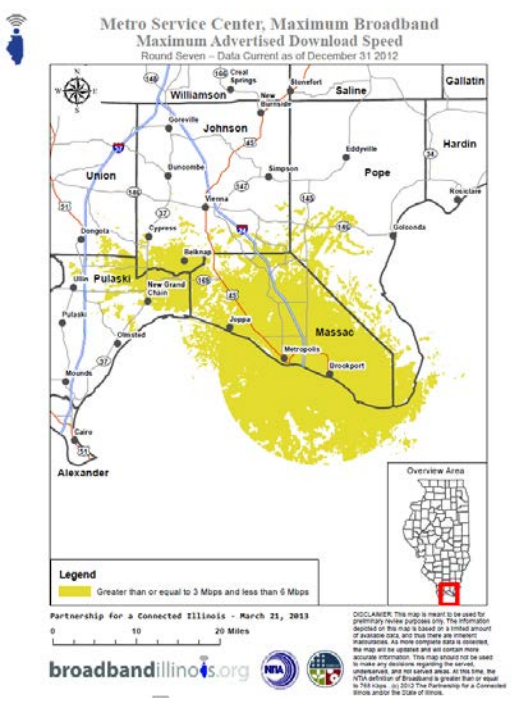


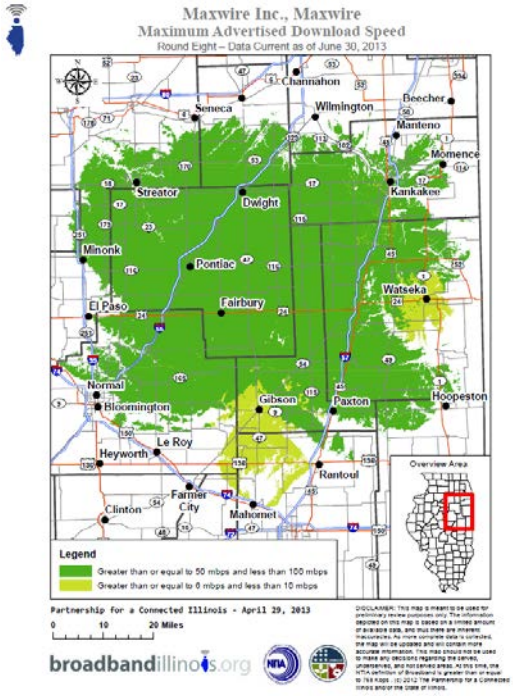


Wireless Methodology

Once again, almost every fixed wireless provider allowed us to use their tower locations, antenna heights, equipment selection and direction/spread of coverage to derive coverage areas. With the provided tower information, professionally prepared radio frequency coverage studies were conducted and converted to shape file format. These studies have proven to be very accurate and represent service areas where the maximum advertised speeds can be delivered. These studies take into account full consideration for terrain and tree clutter data. For any carriers who could not provide their own RF propagation coverage polygon, RF propagation studies were done in house. The Longley-Rice propagation model was used. Studies were conducted using 10 meter resolution terrain data. Tree and vegetation clutter data resolution is 30 meters. All propagation results had a minimum of a 10 dB signal fade margin built into the results in addition to losses calculated for clutter. Signal level minimum thresholds were set on the study maps to a level that each carrier deems reliable and serviceable at those speed tiers, not just the minimum to establish a connection. These maps are not based on the manufacturers best case scenario radio capabilities in a lab environment. These coverage polygons represent what can be delivered in the face of interference in the shared spectrum used for those with transtech codes of 70 and spectrum code 6.

There appears to be some variation on how the NOFA coverage definition is met. In other words, there seems to be a disparity on the necessary strength (e.g. -80 dB, -98 dB, -120 dB, etc.) to provide the appropriate quality of service for data services and still be able to deliver the maximum advertised speeds. While we took these issues into account for our internally generated RF propagation studies, we do not have specific details for carrier provided polygons such as cellular mobile data and 4G service footprints.





Satellite

All satellite providers serving Illinois communicated that their service area encompasses the full extent of the state of Illinois.

Middle Mile

Middle-Mile (MM) data is acquired via either a direct carrier submission in the form of a spreadsheet or a text document citing specific MM hub coordinate pair values, or by obtaining the general MM hub location from the carrier's web site.

In the case where specific coordinate pair values are available, a point layer is generated using ArcGIS software. This process entails bringing tabular XY coordinate pair values into ArcGIS, and creating an "event theme". The "event theme" is then exported into a stand-alone point layer which is then attributed with the necessary information.

General, web-derived locations are converted to a point layer by citing towns where the MM hub presence is identified by the carrier. Town point locations are next attributed with relevant data.

Address Layer Data

Providers still continue to provide us updates by sending us last mile address. However, PCI has determined that the best way to protect the interests of providers and to accurately submit coverage data to the NTIA is to no longer supply an address feature layer, and geocode the addresses supplied by providers to census blocks.

Metadata

Metadata, which literally means data about data, represent PCI's attempt to document procedures, coding, and overall methodology used in managing broadband supply data. Both short and long terms goals of developing PCI's metadata are to improve communication on Geographic Information Systems (GIS) data management issues for both internal and external partners. PCI's metadata is organized and structured around Federal Geographic Data Committee (FGDC) standards associated with key information impacting the following issues:

What GIS data layers are managed by an organization?
How is data coded or classified in assisting outside partners or organization use of the GIS data developed?
When was the data developed and how often is it updated?
Who developed the data layers and who should be contacted if anyone has questions?

The net result of developing PCI's metadata connects to the idea of communication and standards. When applied correctly over time PCI's metadata will assist in educating other users on essential questions needed when applying GIS data. In addition, it will assist PCI internally as metadata will help the organization identify and document critical developing issues shaping data development. Any new employee or organization will be pointed to metadata files when asking questions relating to methodology, attribute codes, dates of data edits or updates, and follow-up contact information within PCI's data team.

Data Verification

Verification has become an evolving and ongoing process at PCI. The continued evolution of the Broadband Illinois website, along with the use of the GeoPDF process has created a feedback loop between provider and consumer and PCI that allows PCI to verify the carrier level data that it submits semi-annually to the NTIA.
PCI continues to cultivate eTeams throughout the state that are able to take county and provider level maps and visualize the data and begin indicating areas where the data may not be accurate. PCI has also published a Supply Side Inventory in which PCI developed a system to rank Illinois's counties by broadband connectivity and looked at two major sets of third-party data to verify the data it had collected. The following sections go in to greater detail on the verification process but the outline below shows the basis for the verification process:

- Provider verification through extensive mapping GeoPDF process
- User verification through online web tools
- Trusted user verification through eTeam groups
- Third Party verification using third party data sets (ex. Gadberry, FCC Speed Test)

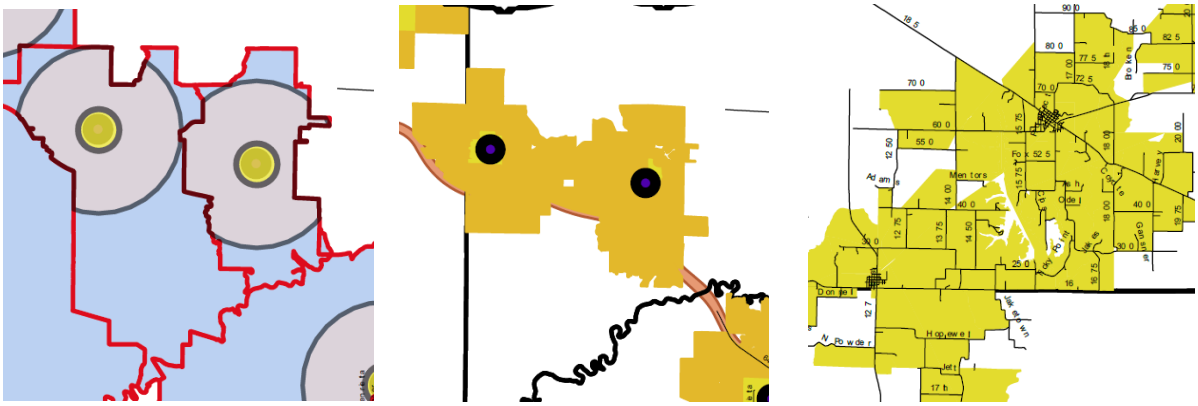
Provider

In this Round, PCI worked very closely with the provider sending back versions of the GeoPDF until the data was represented according to the provider. PCI considers this process to be the first of five forms of verification PCI has and will continue to carry out to ensure the data that is submitted to the National Broadband Map is as accurate as possible.

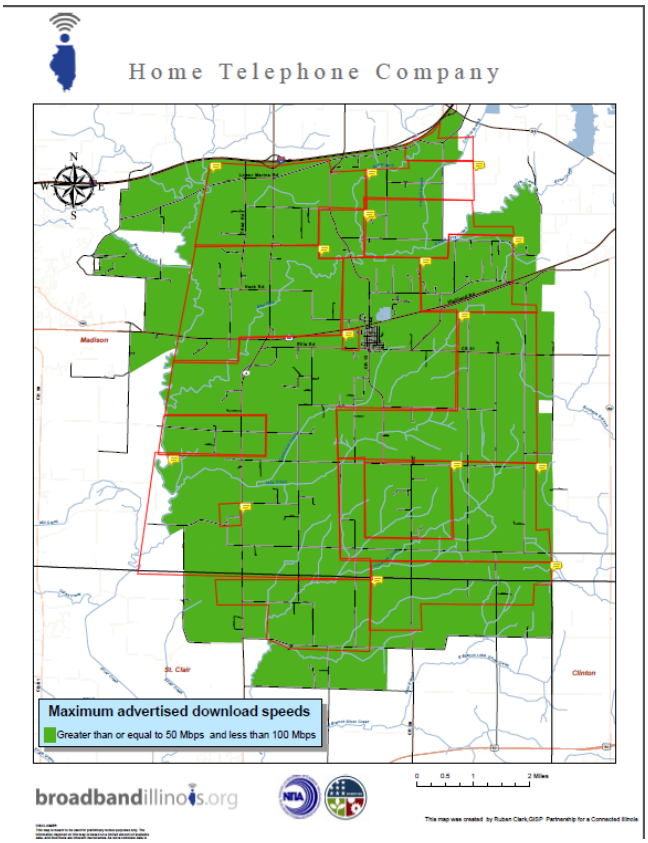
Previously, PCI purchased a set of wire center boundaries, which PCI used to map out DSL coverage for a couple of providers. Knowing that a DSL provider's Central Office or Remote Terminal that fell in a certain wire boundary could not extend service outside that boundary allowed PCI to map out these locations and create buffers around these

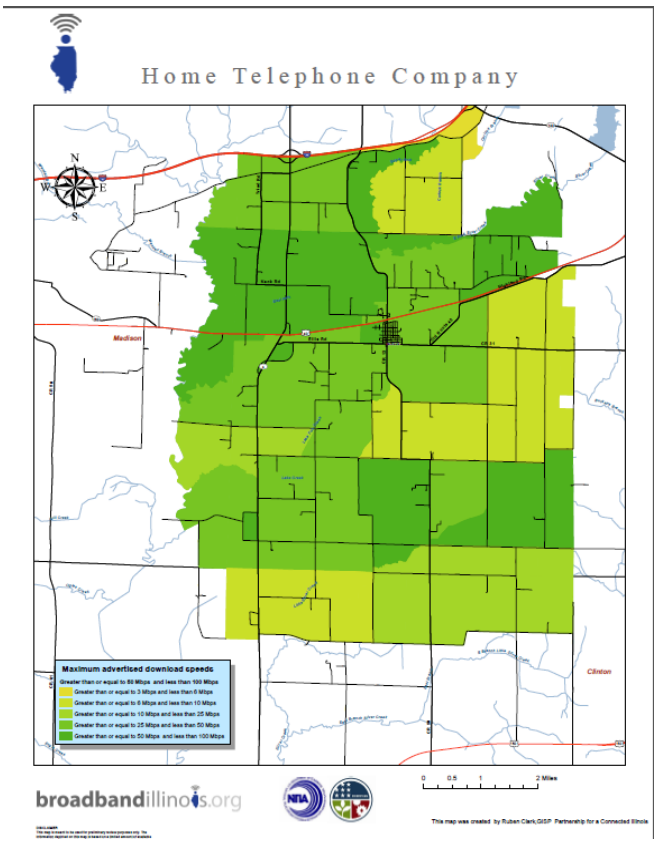
locations based upon the speed. PCI recognized that locations 7500 feet from a DSL C.O. or R.T. would not receive the same speeds as locations only 1000 feet from that location. These buffers allowed PCI to make these changes. Due to confidentiality of these locations, maps that contain these locations with these buffers and boundaries are protected under the NDAs that have been established.

However, the images below provide an example of how PCI would use a C.O. or R.T. location to map out the coverage that a provider is able to provide in that wire center boundary. The image on the left shows two wire center boundaries that contain a C.O. The buffers are indicating that the areas closest to the C.O. receive speeds that are in Tier 5 while areas outside that initial ring receive download speeds in Tier 4. The second image shows how the data beneath these buffers looks when the wire boundaries and buffers are removed. The third image shows how the previous mapping contractor would have submitted this data in a previous round. As you can see, the same flat speed is dispersed across the entire region surrounding C.O. and R.T. locations. This is undoubtedly a form of verification.



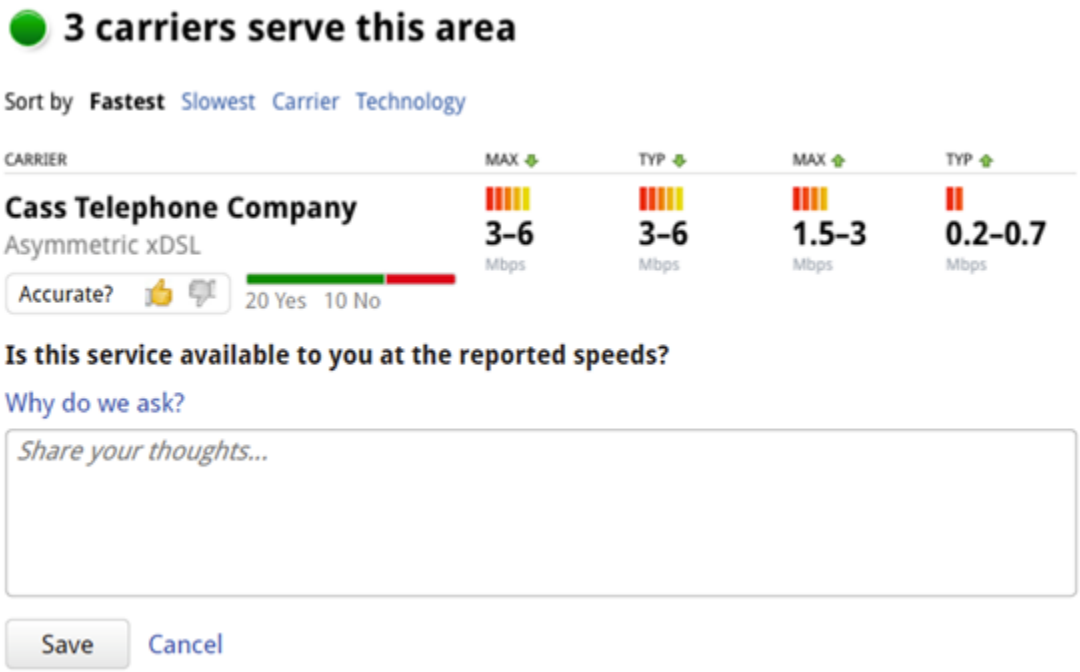
PCI has worked through this process for one of the two largest DSL providers in Illinois as well as a handful of small telephone companies throughout the State. In some instances, small telephone companies admittingly provided this data without sharing the locations and the GeoPDFs made this possible. The images of Home Telephone Company on the next page demonstrate how they used the TerraGo toolbar to reel back the previous data that was incorrectly submitted as DSL data with speeds across the region in Tier 9.





User

PCI views the user as the second form of verification and has developed a tool to allow feedback on the data that is on the Illinois Broadband Map and in the semi-annual submission to the NTIA. When a consumer clicks on Broadband Illinois's search map they see the carriers that service that census block. The widget below allows the consumer to give PCI feedback on the providers that service that location.



Trusted User

The third form of verification comes from the Trusted User. PCI has created GeoPDFs of all 102 of Illinois's counties that are available on the Broadband Illinois website. In this round, the Partnership for a Connected Illinois made great progress with its regional outreach strategy. PCI now has ten functional eTeam groups in ten regions throughout the State. The purpose of the groups are to aggregate demand for broadband, work with providers to fill gaps in access, find creative applications for the maps and data, and to educate consumers and businesses on the benefits of a high speed Internet connection. Over the last year, each regional eTeam has hosted at least one, in some cases as many as four regional meetings where area broadband providers and economic developers are invited to come and talk about using broadband as an economic development tool and work together on broadband related opportunities. While some eTeam groups are certainly further along than others, projects exist in each region to help utilize broadband to bring the region to the next level. Among these projects are working with providers on eRate in underserved regions, hosting an agriculture technology summit to talk to local farmers about the benefits of a broadband connection, and bringing together healthcare professionals to talk about needs with Health Information Exchanges.

Since the last round of data collection, the www.broadbandillinois.org has uploaded a multitude of new features and content with several other structural changes planned for this upcoming round. PCI has made available several of the maps they have created through analysis of the data. Among these maps are broadband competition maps and regional, educational, and county ranking maps. Also at http://www.broadbandillinois.org/maps/Carrier-Maps.html, there are individual pages for each carrier in the State of Illinois. Contact information, mapping data, and any news stories that have been published about that provider are available on these pages. These provider pages are also geotagged so that they are available as providers are referenced throughout the rest of the website. As per the previous two rounds, geotagged county map pages also exist at http://www.broadbandillinois.org/maps/County-Data-Maps.html. The raw data that PCI provides to the NTIA semi-annually has also been made available.

The website also has an events section, where regional eTeam meetings, other broadband interest events, and computer training opportunities have been made available to website visitors. In this round, PCI has also developed a newsletter that serves as regular communication to upwards of 1,500 stakeholders in Illinois. These newsletters and other special interest news stories are available in the news section of the website. Finally, in the eTeams section, eTeam groups are able to have a repository for mapping data, events, and news most relevant to their region.

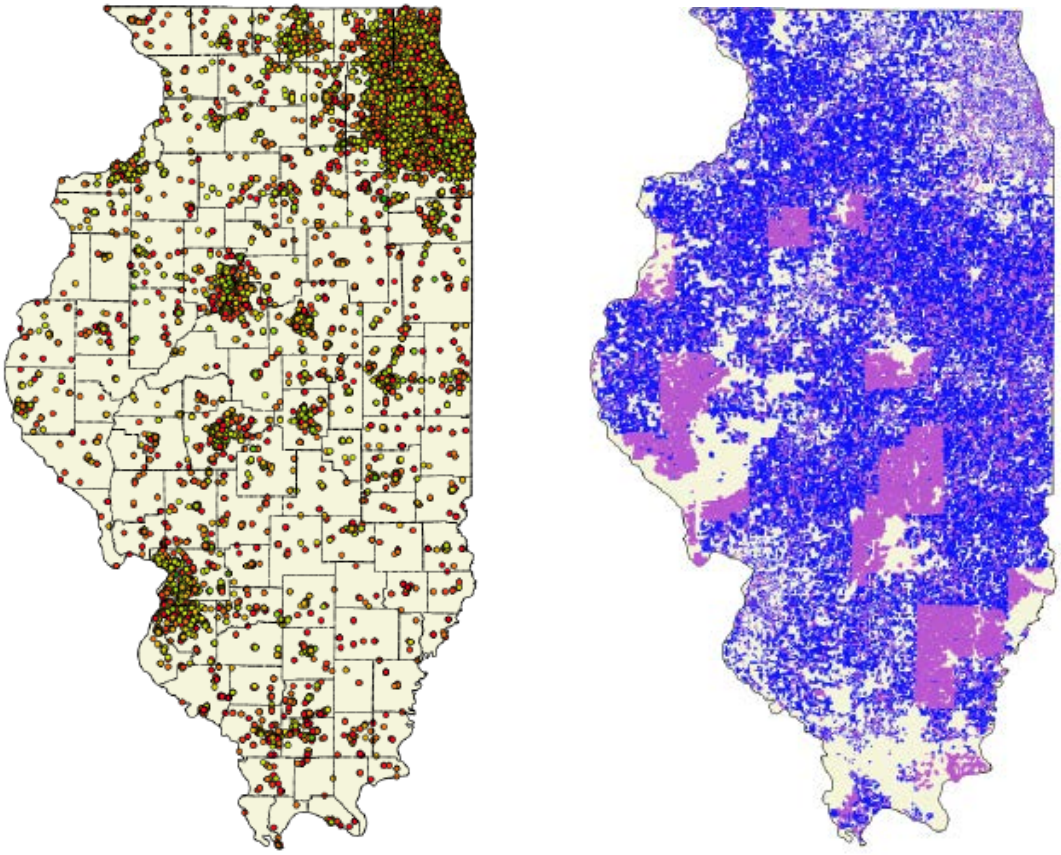
Third Party Data Sources

PCI published Supply Baseline Study, "Broadband Access in Illinois: A Baseline Snapshot", that summarized the state of broadband supply in Illinois. The report, a product of data analysis by the PCI data team, aims to quantify what is known about broadband data in Illinois and publish it along with an analysis of Third-Party data sources. An update of this report is under way.

The first method of third-party verification used in this examination was user speed test data through the broadbad.gov website. Through this website, the NTIA and the FCC solicited street address information with each speed test. They provided PCI with speed test data gathered over a 12 month period. This has been mapped and some limited studies have been conducted. These speed tests were accompanied by mini surveys which allowed for some analysis. The users were asked to input their street address and the type of internet connection they were using.

The second set of third-party data used for verification in this study was gathered by the Gadberry Company. The Gadberry data is a combination of various user/crowd sourced data sets. They indicate if there is broadband activity at the street address level and they then incorporate that information at the census block level. We have compared blocks showing coverage as stated by the carriers against the user reported information. There are some areas of the state where there are low or no user reported information.

The maps below show these third party data sources projected on a map of Illinois. The map on the left shows the location and results of the FCC speed tests, while the image on the right shows census blocks where the Gadberry dataset did not provide enough results for a significant analysis. On the Gadberry map, census blocks in blue indicate where there is a low sample rate, and census blocks in pink show where no samples were obtained. For more information on these third party data analyses, the Supply Side Baseline report is available on the following PCI website: http://www.broadbandillinois.org/Research/Infrastructure.html



Illinois Community Anchor Institutions

PCI has established an ongoing procedure for gathering data on the physical location and broadband connectivity of Community Anchor Institutions (CAIs) in accordance with the data requirements of the SBDD NOFA Technical Appendix.

In the past, the non-governmental anchor institution category included only workforce development centers and other computer training centers. The anchor institutions that are now in category 7 include economic development centers, park districts, farm bureaus, and other community hubs.

Previous Rounds

Outreach in Round 1 focused on collecting the point and address data while subsequent submissions in Rounds 2 & 3 focused heavily on survey development, web site database research and teleconferences. Together with the Illinois Department of Commerce and Economic Opportunity (DCEO), PCI engaged in a process of working with CAIs on an organized basis. Other state agencies and organizations have included the Illinois Commerce Commission, Illinois Board of Education, and the Illinois State Police.

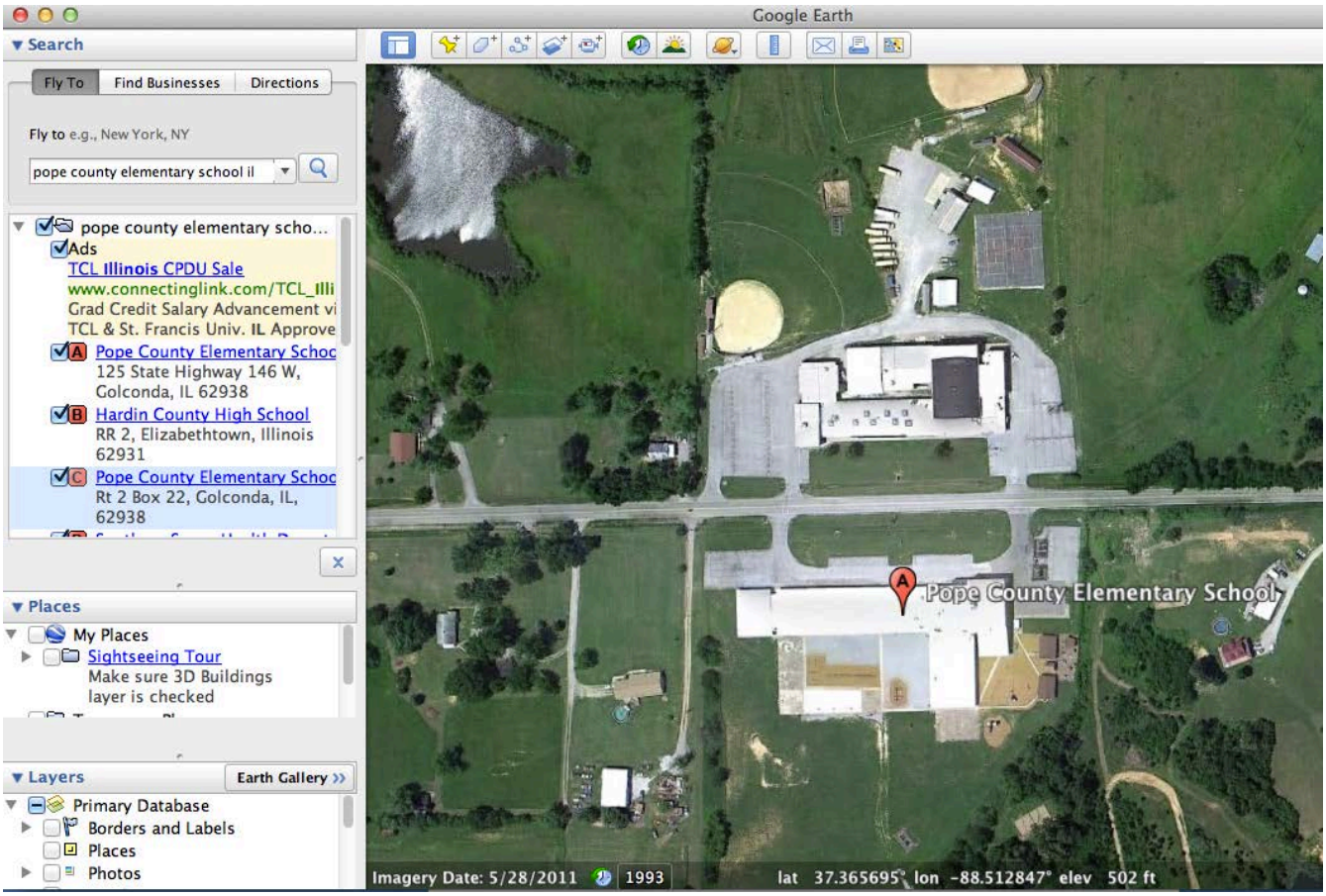
PCI created a survey using Survey Monkey and both carrier and price information were requested, and the speed test became a required item for completion of the survey. The speed test(s) that was administered was the one on the Federal Communications Commission web site.
PCI worked with a number of organizations in gathering data for these submissions. We are encouraged that the relationships with these organizations have continued to develop and facilitate other facets of our organization. These organizations are listed below:

K-12	Illinois Association of Regional School Superintendents, Illinois State Board of Education
Libraries	Illinois Library Association
Healthcare	Illinois Critical Access Hospital Network, Illinois Rural HealthNet, Illinois Healthcare Association
Public Safety	Existing Database
Colleges & Universities	Illinois Community Colleges Board
Other Government	Existing Database
Other Non-Government	Illinois Workforce Development

In Round 4, as opposed to previous rounds where PCI submitted secondary CAI's that did not fit perfectly into NTIA parameters, PCI decided to submit only those CAI's that clearly fell into the seven categories laid forth by the NTIA. This led to a significant decrease in the total number of CAI's submitted, but a significant increase in the quality of the data that was submitted.

For example, of the 26,599 locations submitted in April 2011, there were 14,000 Category 3 Healthcare locations which were geocoded, yet had no connectivity data. Many of these were for actual practitioners as opposed to clinics, or what might be considered institutions. PCI elected to remove this larger number for the October filing. PCI also removed duplicates where they existed in the other categories. For instance, the previous mapping contractor included a record for each individual college and university in both the K-12 and Higher Education categories. PCI felt it made sense to include only one record of this category in only the Category 5 Higher Education category.

Also, in Round 4, PCI enhanced the quality of the data in the K-12 category through the use of an eRate database that showed what schools had applied for the eRate and what providers were servicing their location. This allowed PCI to populate the BBService and TransTech fields for those CAI's.
In Round 5, a total of 787 anchor institutions geocoded to the center of the city due to rural route addresses, PO Box addresses, slight misspellings, and/or incomplete addresses. All 787 of the anchor institutions were individually mapped using Google Earth software. The mage below shows a county elementary school with a rural route address. In previous rounds, the anchor institution geocoded to a location within the county but 15 miles away from the actual anchor institution. In round 5, the latitude and longitude that was indicated in Google Earth was captured.



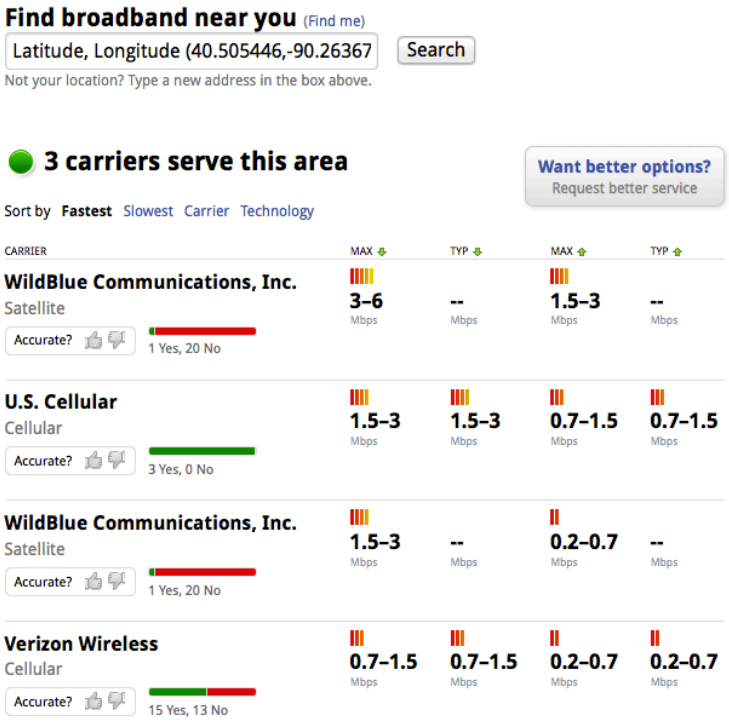
Since this process resulted in moving the geometry of the issue CAI points, the associated attribute table XY coordinate pair values were recalculated to accurately reflect the new point locations. Corresponding census block code (FULLFIPSID column) values were likewise recalculated via a spatial join between the CAI points and the 2010 census block layer.
In Round 8, all of the schools were tagged with a CAIID.
In Round 9, Improvements included better connectivity data and further refinements in the schools dataset.

Broadband Illinois Website

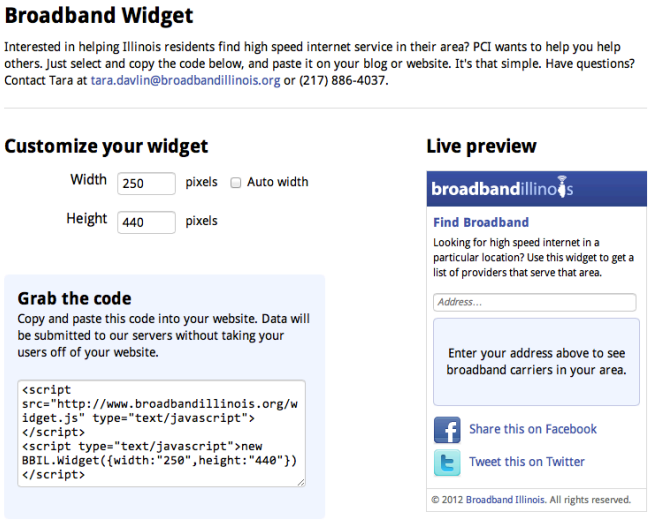
Current content

The Partnership for a Connected Illinois is constantly expanding and improving our website. Since October of 2012, our additions and improvements include:

- Coverage crowd sourcing – When a user searches for available broadband on broadbandillinois.org, carrier information is displayed. Users can now vote with a “thumbs up” or “thumbs down” on the validity of the carrier reported speeds and availability.



- Embeddable Widget - The addition of an embeddable widget to be placed on any website or blog, and allows anyone to find broadband by entering an address



- Newsletter Pages: PCI has a weekly newsletter that is sent to a group of broadband enthusiasts and stakeholders. We have devoted a section of our website to these newsletters so that they may be accessible anytime.
- County Pages: We have created a page for each and every county in Illinois. These pages contain the latest coverage maps, as well as a link to each carrier page available in that county.
- Carrier Pages: We have created a page for each carrier in Illinois. Each carrier page contains the latest coverage maps as well as contact information for each carrier.

- Maps: We continue to make more and more of our maps available online. We have added all previous rounds' raw data files and shape files, as well as broadband competition maps, and area ranking maps.
- Events Page: Our "Events" page technology has been upgraded to allow for easier downloads through iCal and Google Calendar. Users can also subscribe to specific categories through our RSS feeds.
- Videos: We have added multiple videos to our site to allow this additional medium to relay our messages regarding grant opportunities, broadband adoption, and carrier relationships.

Conclusion

PCI is confident many of the issues that were found in previous PCI submittals have been resolved thanks in large part to the experience of previous rounds. PCI has taken major steps in its three-fold mission to collect and publish broadband data, to ensure broadband access throughout the State, and to maximize broadband's impact, and the data has helped drive each of these steps.