OFFICIAL OCTOBER 2013 UPDATE SUBMISSION TO THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION UNDER THE STATE BROADBAND INITIATIVE GRANT PROGRAM FOR THE STATE OF ILLINOIS



OCTOBER 2013

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COVER LETTER

October 2013

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:

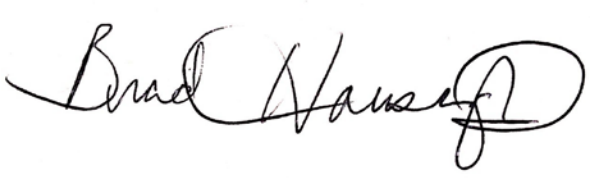
Please accept this submission from the Partnership for a Connected Illinois (PCI), the Designated Entity for Illinois.

These artifacts should be found to be compliant with the October 1, 2013, 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)-886-4552.

Respectfully submitted,



Brad Housewright
Interim Executive Director
Partnership for a Connected Illinois, Inc.

INTRODUCTION

The data submission cycle ending on October 1, 2013 marks the fifth 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 57 out of the 163 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. PCI also improved the contents of its Community Anchor Institution database - the focus in this submission cycle has been on (1) increasing the number of school and library records with CAIID number and (2) increasing the number of school records with broadband subscription speed data.

In the spirit of cooperation with the other 55 State Broadband Initiatives (SBIs), PCI was in contact with other states to help its outreach for this cycle. PCI used the National Broadband Map to find if other states had been able to contact and map providers that have never participated in Illinois. Specifically, PCI made contact with CostQuest Associates (AL, WI, ID, and WY), the SBI in Indiana and the SBI in Iowa. PCI also tried to help other states by working with them on providers that cross Illinois' boarder, posting on the SBDD wiki forum website, and participating in webinars held by the NTIA. PCI aspires to be a leader in the SBI world, and to make the National Broadband Map as accurate as possible.

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 refine 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 July 31, 2013, 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 8 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 8 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, 2013. PCI wanted to establish the NDAs by focusing on those providers with new data to submit.

UPDATES TO DATA

Of these 163 providers submitted as part of the data package in this round, edited data has been submitted for 57 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 12 new carriers:

No.	Carrier Name
1	ClearSKY Systems
2	CTI Fiber
3	HIHART
4	HyRail Communications
5	iTV-3
6	MachLink
7	MediaNet Wireless

8	MR Systems Wireless
9	Node1 Internet
10	Noize Communications LLC
11	PEG Bandwidth, LLC
12	theWISP.net ,INC

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 13, 2013 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.	45
New provider for this round	12
Total number of providers included in this submission	**163**

Total number of providers included in this submission	163
Identified Illinois providers that have never participated in mapping project	28
Total number of providers identified in the State of Illinois	**191**

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**
0018940627	4SIWI, LLC	4SIWI, LLC	X	X	Changed FTTH end user category to Business/Commercial, and Provider Type to Reseller. For the Fixed Wireless coverage, infrastructure was upgrade to offer higher speeds, 2 tower locations were added, and 1 tower location was removed
0018538462	Broadband Heaven Inc	AirLogic Internet Services	X		Acquired Cygnus Communications Corporation fixed wireless towers and equipment.
0016098626	Bspeedy Wireless Inc	Bspeedy Wireless Inc	X		Acquired Kazin Net.
0005257522	Cass Cable TV, Inc.	CASSCOMM	X		Added Licensed Fixed Wireless to Coverage
0003290673	Cellco Partnership and its Affiliated Entities	Verizon Wireless	X	X	4G LTE coverage was expanded. The provider name was corrected to "Cellco Partnership and its Affiliated Entities."
0018626853	CenturyTel, Inc.	CenturyLink	X		Slight increase in coverage area, provided full dataset with changes
0017179383	CHARTER COMMUNICATIONS INC.	CHARTER COMMUNICATIONS INC.	X		Little change, submitted updated road segments and census block shapefiles of their coverage.
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 Prairie, Inc.; Frontier Communications of the Carolinas, Inc; Frontier North, Inc.	Frontier Communications of Illinois	X	X	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. Corrected company names to correct name.
0016598831	ClearSKY Systems Inc	ClearSKY Systems		X	WISP Provider delivering data for the first time.
0017775628	Clearwire Corporation	Clearwire Corporation	X		Little change, submitted updated wireless shapefile

0004441663	Comcast Cable Communications, LLC.	Comcast	X		Little change, submitted updated road segments and census block shapefiles of their coverage.
0017141102	Computer Techniques, Inc.	CTI Fiber	X		FTTH Provider delivering data for the first time.
0003723525	Cornell & Ransom Telephone Co., El Paso Telephone Co., Odin Telephone Exchange, Inc.	FairPoint Communications	X	X	Increased DSL Speed in all Odin Telephone Exchanges. A correction occurred by removing Census Blocks to reflect higher quality data submitted in this round. Also, the Provider name was corrected to the proper name while leaving the dba as FairPoint Communications.
0007690258	Delta Communications	Clearwave Communications, LLC	X		Added infrastructure in Fairfield, Flora, and Albion, Illinois. No Changes to fixed wireless layer
0002817823	Egyptian Telephone Cooperative	Egyptian Telephone Cooperative	X		Egyptian has stopped reselling Frontier DSL, therefore Census Blocks were removed.
0008317661	Essex Telcom Inc	T6 Broadband)	X	X	Provided detailed information of tower location and equipment. Improved speed in many areas across the state.
0021921234	H.I. Cable LLC	HIHART		X	WISP and Cable (TT41) Provider delivering data for the first time.
0003734803	Harrisonville Telephone Company	Harrisonville Telephone Company	X	X	Added a couple RTs to their ADSL Coverage. Corrected SDSL and ADSL speeds to better reflect coverage as you move away from the CO/RT.
0004992053	Heartland Communications Internet Services	Heartland Communications Internet Services		X	FTTH is Business Only, added FTTH in Metropolis, IL.
0005041991	HTC Technologies Co.	HTC Technologies Co.	X		Increased speed with their Fixed Wireless Coverage.
0005652110	HughesNet	HughesNet	X		Little change, submitted updated wireless shapefile
9999	HyRail Communications	HyRail Communications		X	WISP Provider delivering data for the first time.

0002860856 0004979233 0004496774 0003764065	Illinois Bell Telephone Company, AT&T Mobility LLC, AT&T Corp, Inc.	AT&T Illinois, AT&T Mobility LLC, AT&T Corp, Inc.	X		Increase in 4G LTE, 4G, and 3G coverage, and provided a full dataset update of their DSL Coverage.
0004333712	Illinois Consolidated Telephone Company, Inc.	Consolidated Communications	X		Increased DSL Speed in the Effingham Exchange.
0008094427	iTV-3, Inc.	iTV-3		X	FTTH Provider delivering data for the first time.
0002860468	Jo-Carroll Energy, Inc. (NFP)	SandPrairie Wireless	X		Added 6 tower locations to fill in any holes in the coverage footprint.
0002963528	Leap Wireless International, Inc.	Cricket Communications, Inc.	X		Little change, submitted updated shapefile of their coverage. Slight expansion of coverage in St. Louis Metro Area
0003723822	Level 3 Communications, LLC	Level 3 Communications, LLC	X		Updated Middle Mile, provided an updated address list, PCI has selected the census blocks associated with the addresses.
0003723699	LR Communications	LR Communications		X	Acquired OgleComm
0020419446	Maxwire Inc.	Maxwire Inc.	X	X	Added one tower location, increased speeds over entire network for residential services, and added business service coverage.
0003721495	McNabb Telephone Company	McNabb Internet	X		Increased Speeds across entire coverage area
0003571619	Mediacom Illinois LLC	Mediacom	X		Upgraded Speed to Speed Tier 9 in Rock Island County
9999	MediaNet Computers, Inc.	MediaNet Wireless		X	WISP Provider delivering data for the first time.
0003753787	MegaPath Corporation	MegaPath Corporation	X		Little Change, submitted updated census block, road, and middle mile data. Corrected End User Category to show Business Only in the Census Block and Road layers
0021022215	MR Systems Wireless, LLC	MR Systems Wireless		X	WISP Provider delivering data for the first time.
0004301339	MTCO Communications	MTCO		X	Added DSL Coverage in Bartonville, IL and a small area north of East Peoria, IL
0004279154	Muscatine Power & Water	MachLink		X	WISP Provider delivering data for the first time.
0014239586	New Wave Net Corp	New Wave Net Corp	X		Expanded Coverage footprint between Peoria and Bloomington-Normal

0005067152 0011411097	New Windsor Telephone Company New Windsor Cable TV, Inc.	New Windsor Telephone Company New Windsor Cable TV, Inc.	X	X	Increased DSL and FTTH across entire coverage area. FTTH is only available in the Swedona Exchange, and has been corrected by removing coverage from other exchanges. The FTTH provider name is corrected to New Windsor Cable TV, Inc.
0018536631	Node1 Technology	Node1 Internet		X	WISP Provider delivering data for the first time.
9999	Noize Communications LLC	Noize Communications LLC		X	WISP Provider delivering data for the first time.
0013562020	One-Eleven Internet Services, Inc.	One-Eleven Internet Services, Inc.	X		Upgraded infrastructure at one tower in Moultrie County
0003795754	Oneida Telephone Exchange	Oneida Telephone Exchange	X		Increased FTTH speeds to 50 mbps down/10 mbps up
0020169025	PEG Bandwidth, LLC	PEG Bandwidth, LLC		X	Middle Mile Provider delivering data for the first time.
0003735784	RCN Telecom Services of Illinois, Inc.	RCN and RCN Business Solutions	X		RCN provided an updated Census Block and Middle Mile data.
0002821221	Shelby Electric Cooperative	Pwr-Net		X	Upgraded infrastructure at three tower, resulting in a speed tier increase
0006254403	Sidera Networks, LLC	Sidera Networks, LLC	X		Updated Middle Mile, provided an address list, PCI has selected the census blocks associated with the addresses.
0003774593	Sprint Nextel Corporation	Sprint	X	X	Little change, submitted updated wireless shapefile and middle mile data. Corrected Middle Mile data Provider Name and DBA Name.
0009232554	Telecommunications Management, LLC	Newwave Communications	X		Upgraded to Docsis 3.0 in Union, Randolph, St. Clair, Hamilton, White, Wayne, and Edwards Counties.
0017953753	theWISP.net ,INC	theWISP.net ,INC		X	WISP Provider delivering data for the first time.
0007556251	Time Warner Cable Inc.	Time Warner Cable Inc.	X		Little change, submitted updated road segments and census blocks shapefile.
0006945950	T-Mobile USA, Inc.	T-Mobile	X		Upgraded Chicago Region to LTE Network, Expanded HSPA Network in various regions across the state, added U1900 PCS network, and added a middle mile point.

0004352308	TW Telecom of Illinois	TW Telecom Inc.	X	X	Little Change, Submitted updated Census Block and Middle Mile Data. Corrected End User Category to show Business Only in the Census Block layer.
0004372322	United States Cellular Corporation	U.S. Cellular	X		Sold 3G Infrastructure to Sprint in Central Illinois, St. Louis, and Chicago markets.
0007738446	US Signal Company, LLC	P&V Capital Holdings, LLC	X		Added 2 Middle Mile Points
0004327219	Wabash Telephone Cooperative, Inc.	Wabash Independent Networks, Inc.	X	X	Added FTTH Coverage in Louisville and Bible Grove Exchanges, Increased DSL Speeds in Louisville and Bible Grove, and Corrected Cable Modem Download Speed in Noble.
0016278970	Wisper ISP, Inc.	Wisper ISP, Inc.	X		Acquired Mount Vernon Net, and upgraded infrastructure at several towers to increase speeds

SBDD DATA TRANSFER MODEL METHODOLOGY

The submission of the broadband dataset for October 1, 2013 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, 2013:

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

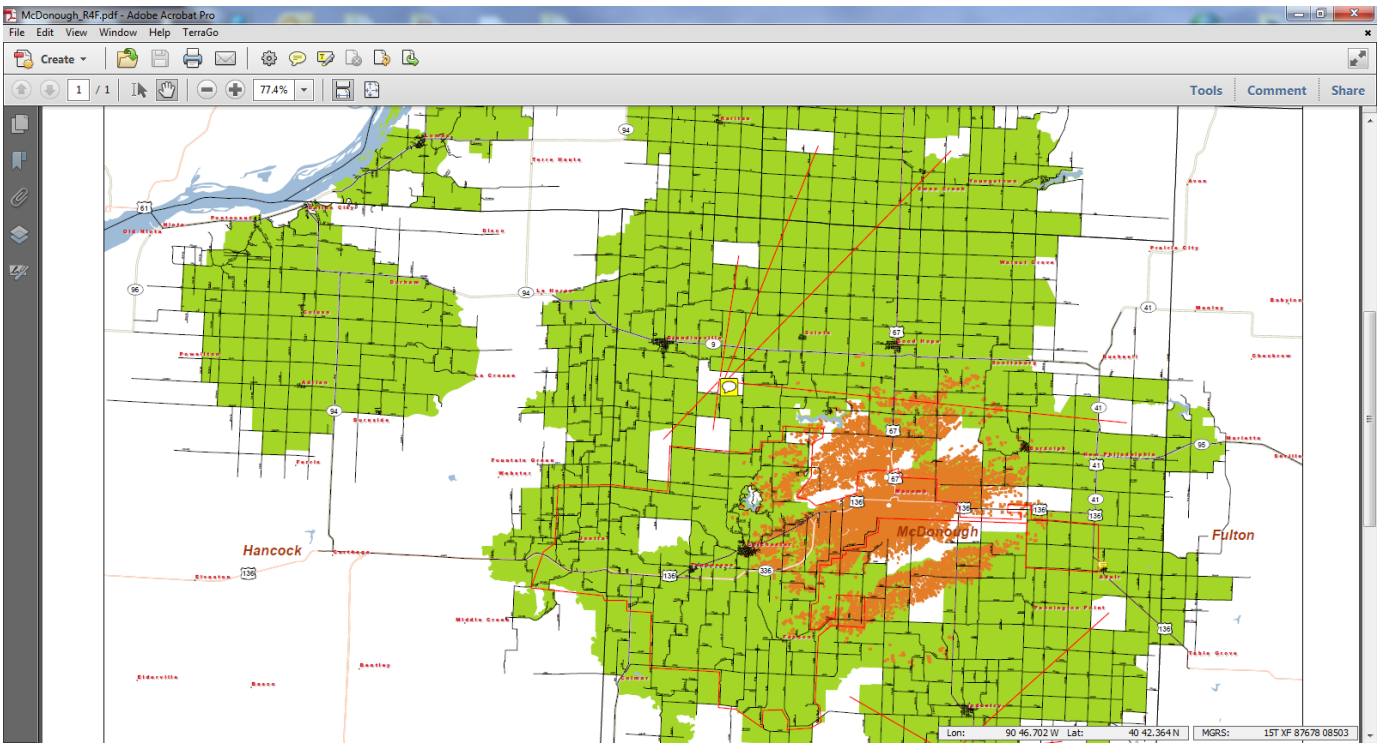
As mentioned, data was received in a number of formats that required processing in order to prepare the data for submission in accordance with NTIA requirements. This section discusses how PCI processed provider data, as well as how PCI assisted the provider in making the update process as easy as possible.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

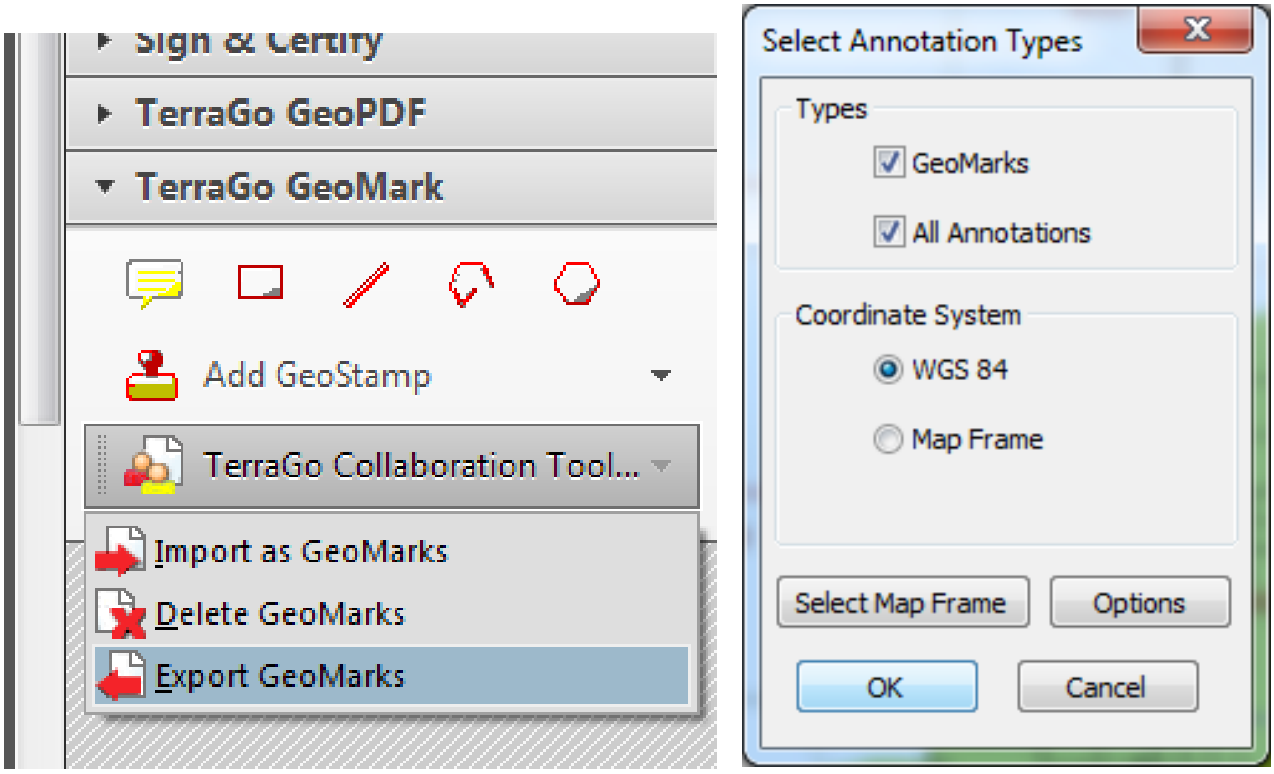
GEOPDF AND TERRAGO TECHNOLOGIES TOOLBAR (DSL & FTTH)

In the initial outreach made to the providers from July 22 through July 31, 2013, 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.

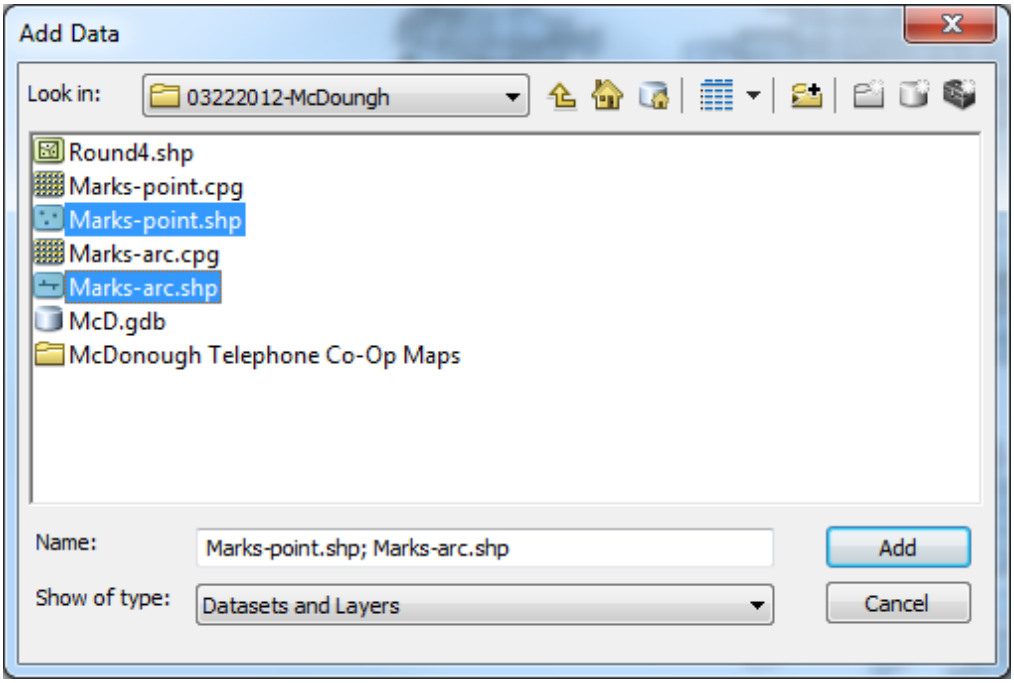
The provider, upon opening the map was instructed to use the  icon to turn layers on and off, and follow the instructions to mark up the map. The image below is a marked up GeoPDF of McDonough Telephone Cooperative in which they indicate where they have had FTTH deployment since their previous submission.

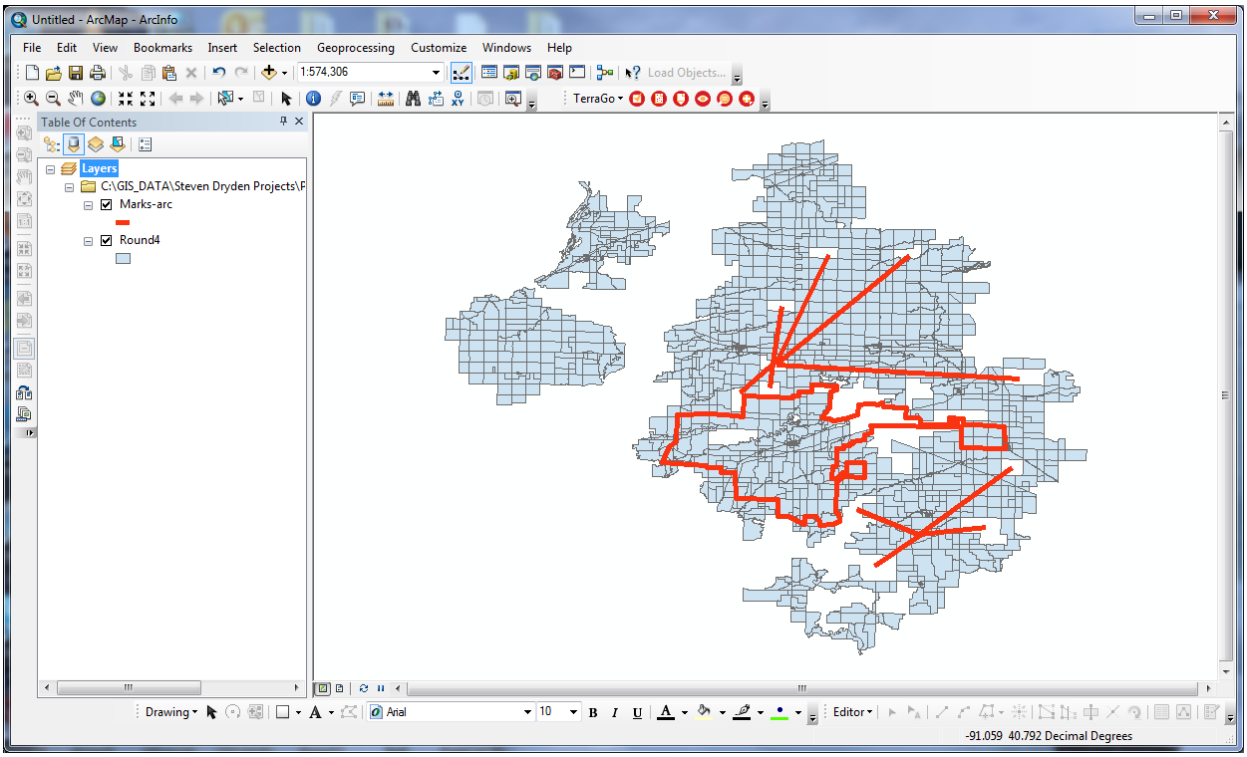




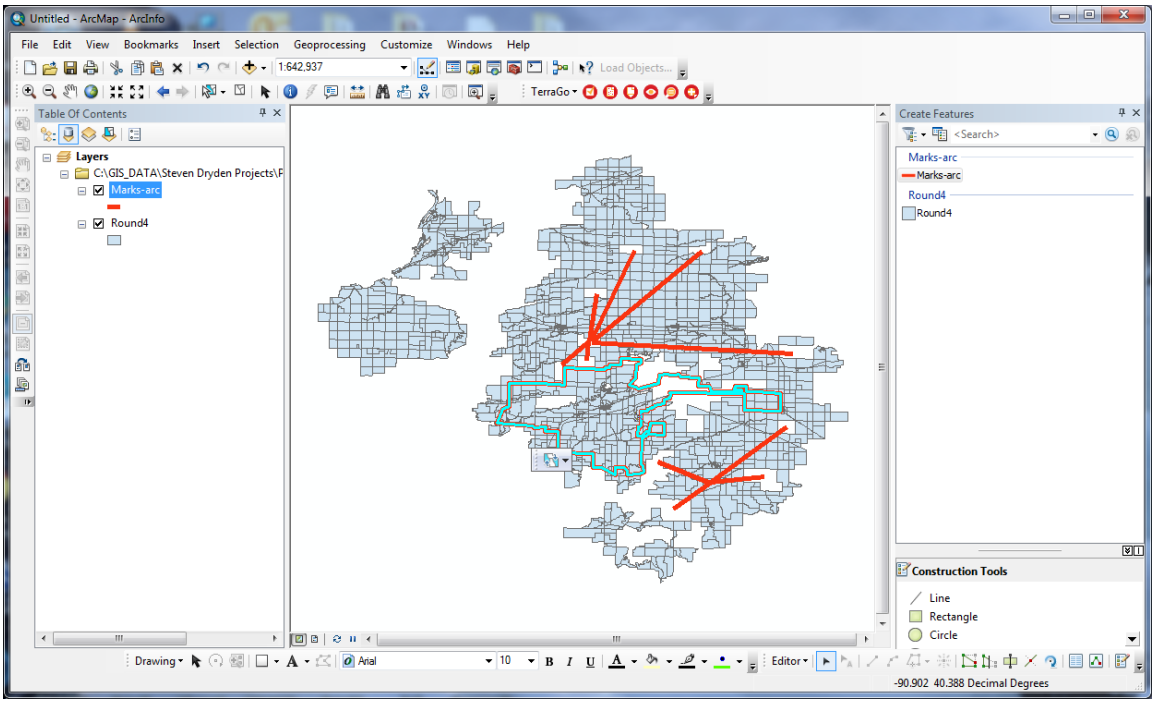
With this tool, providers can draw lines, comments, polygons, and points as indicated in the image to the top-left. From here we can export comments and geomarks as an ESRI Shapefile as demonstrated by the images above.

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.

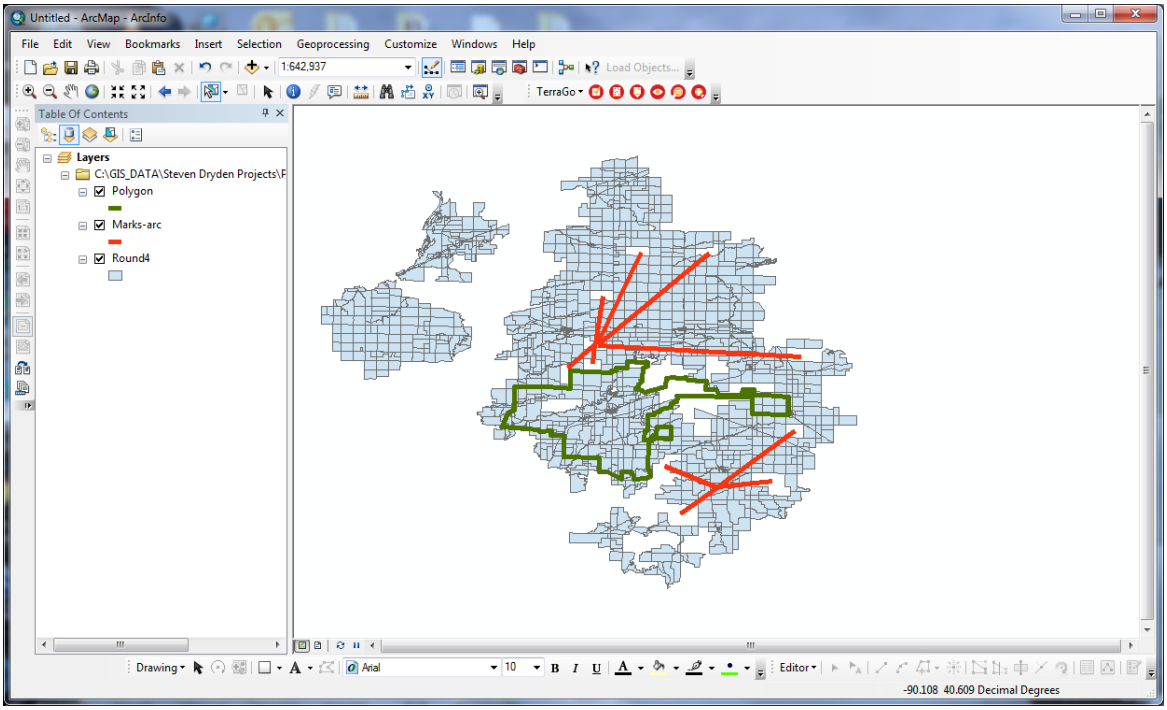




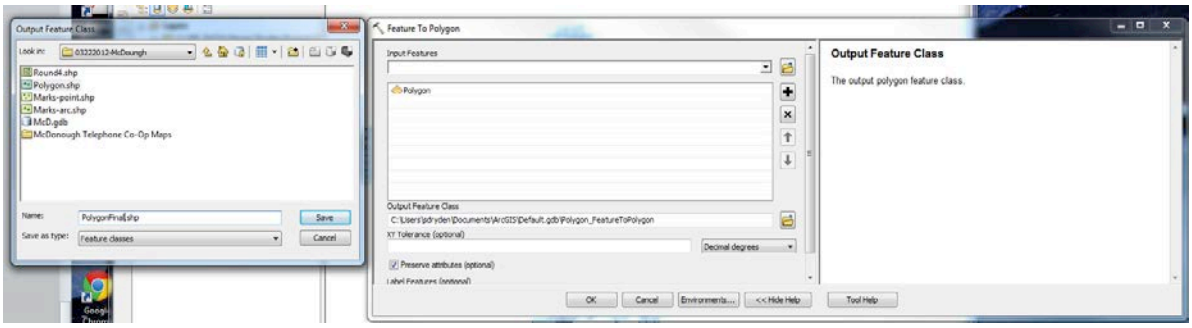
From here, we add Census Blocks as needed. For lines that represent an area, we can convert to a polygon so we can easily select Census Blocks. First we select the lines that need to be converted into a polygon (highlighted in Blue), we will export the selected.



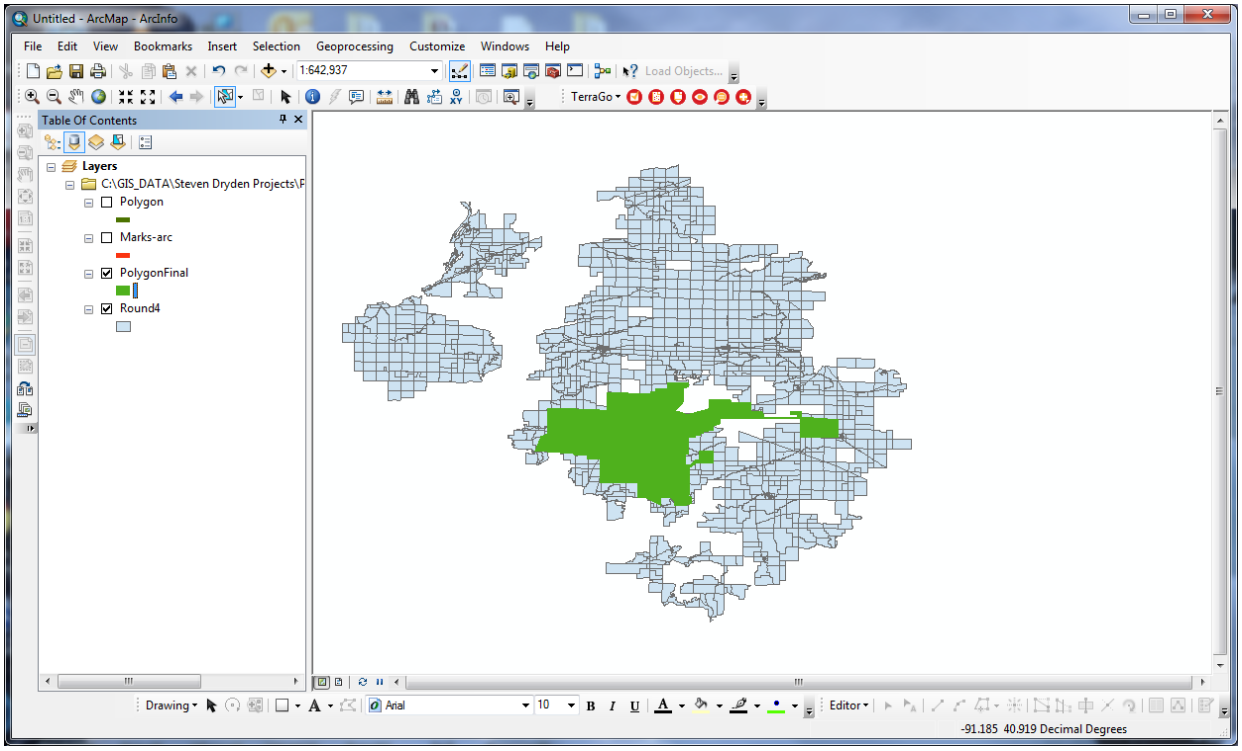
Here you can see we now have separated the polygon line we need. Now we can convert this to a true polygon.



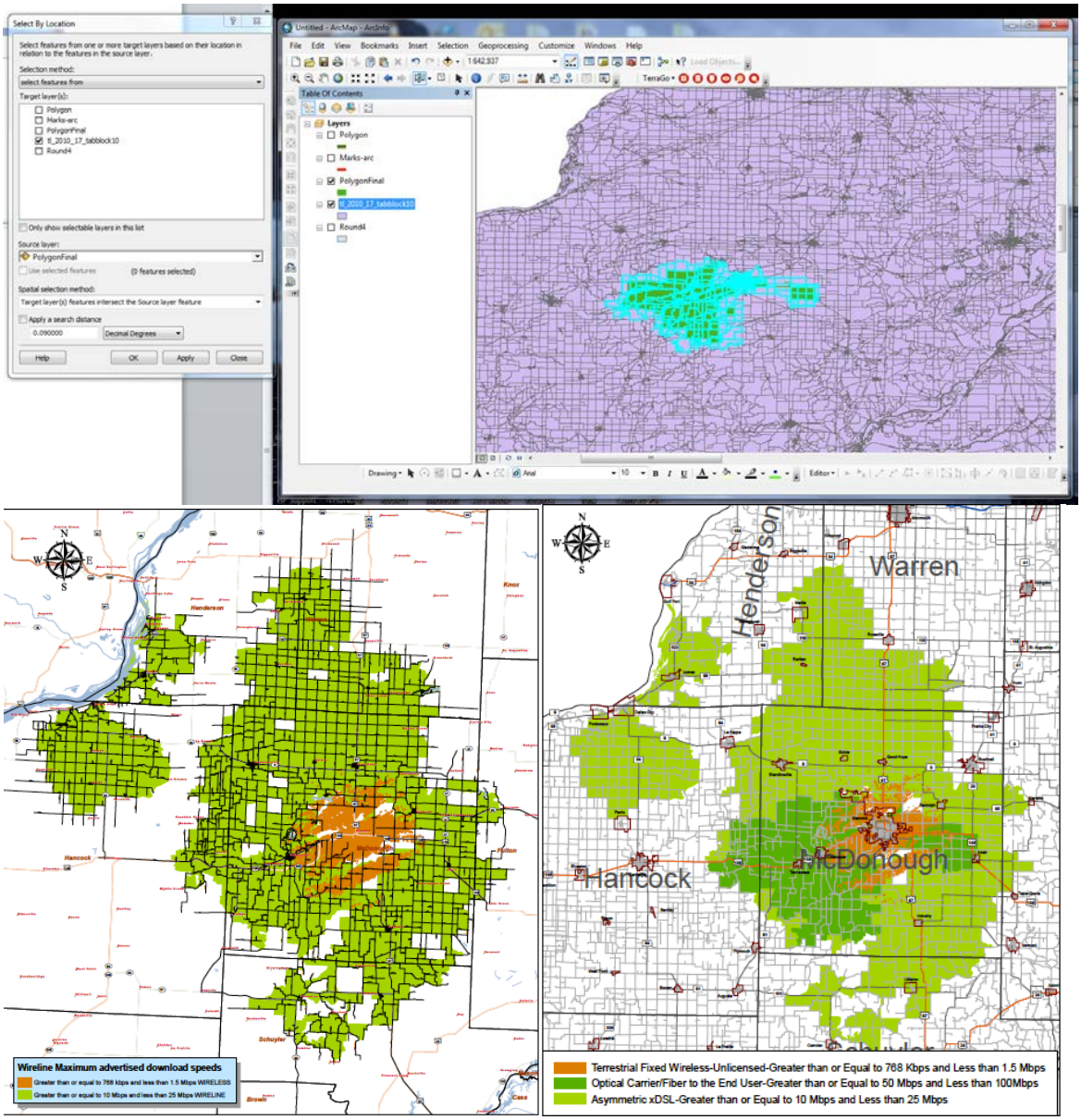
To convert a line to a Polygon, we used the Feature To Polygon tool in ArcGIS



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

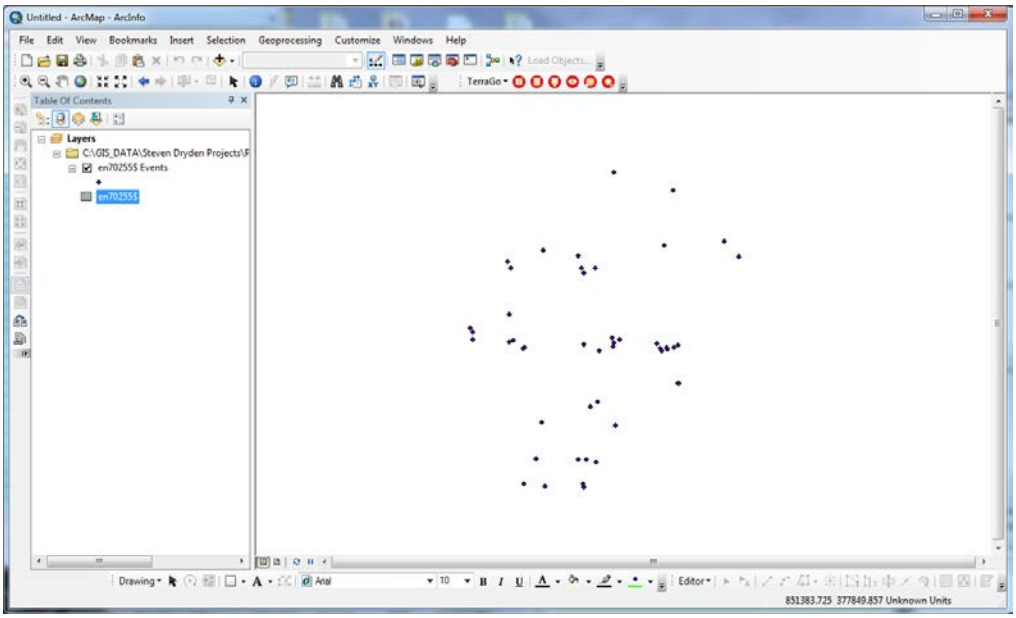


To obtain the Census Blocks needed, we used Select By Location process. As you can see, the census blocks are now selected. All that is needed now is to export the specified census blocks out, and provide the data with attributes as indicated by the provider. The maps below show the initial data and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

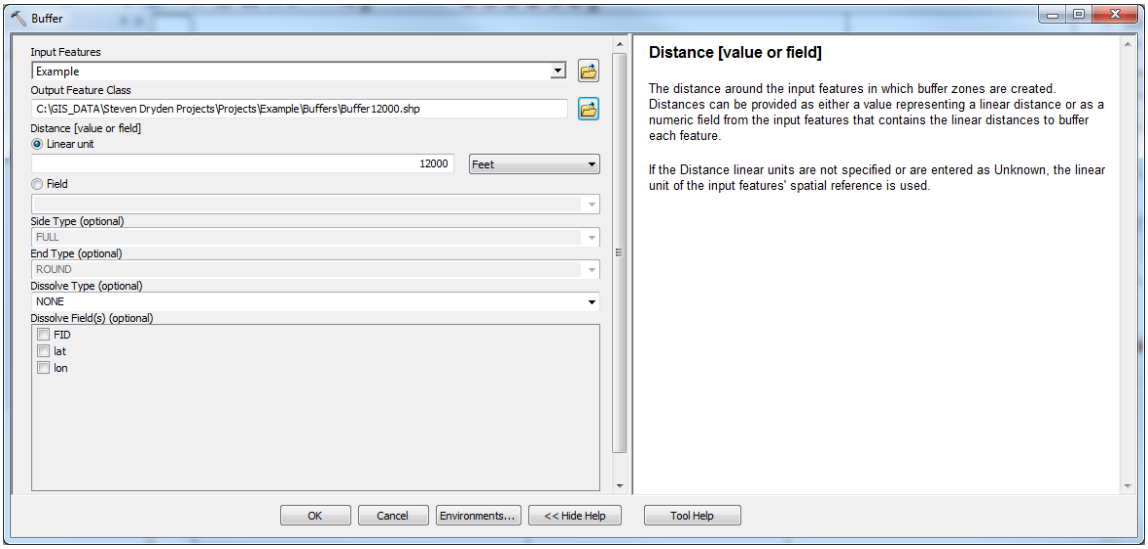


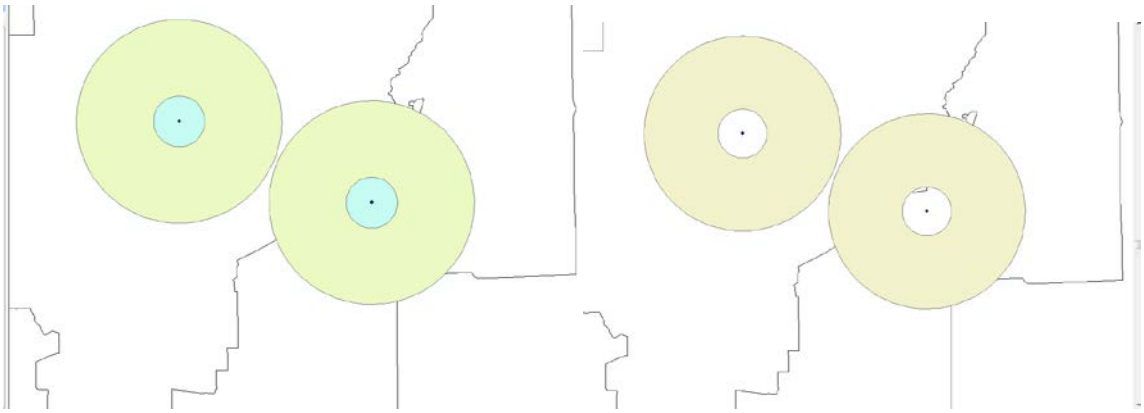
WIRE CENTER BOUNDARY CLIPPING

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.



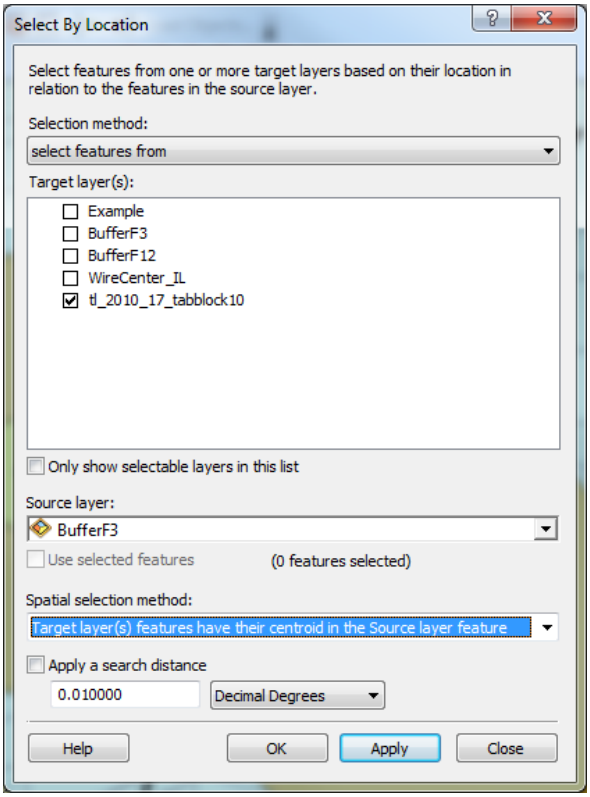


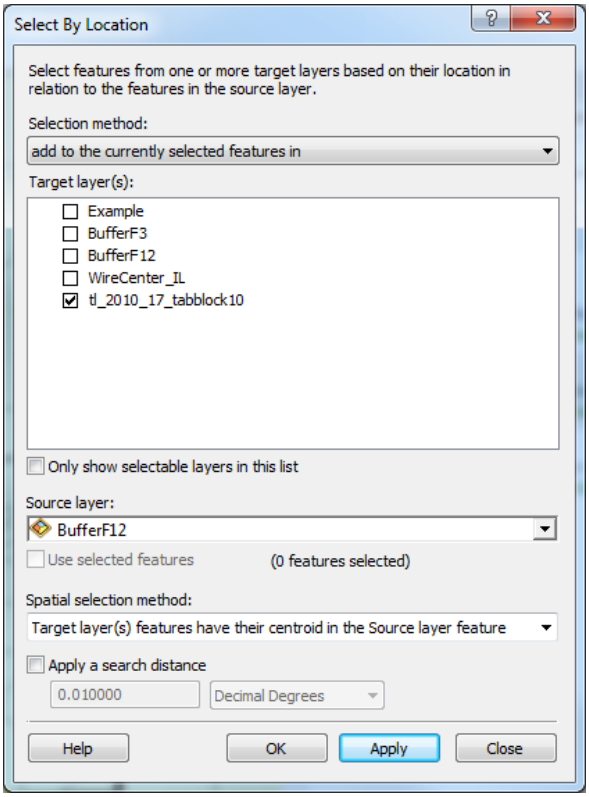
The resulting buffers are found in the above image to the left. We next clip the innermost 3000 feet from the 12,000 foot buffer. In the image on the right, we have turned off the 3000ft Buffer to show that there is nothing under them now. Coverage for wire centers can not cross wire center boundaries, 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.

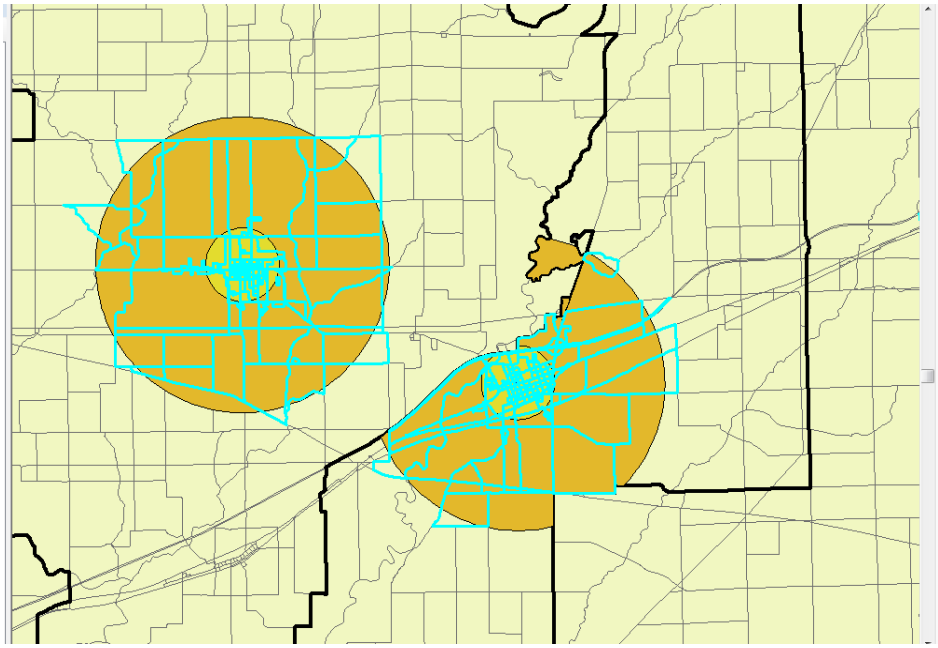


As you can see, the polygon is now broken apart by the wire center lines. From here, we next start an editing session and delete those areas that fall outside the wire centers boundary. Select the area outside the boundary and press "delete" to remove those census blocks.

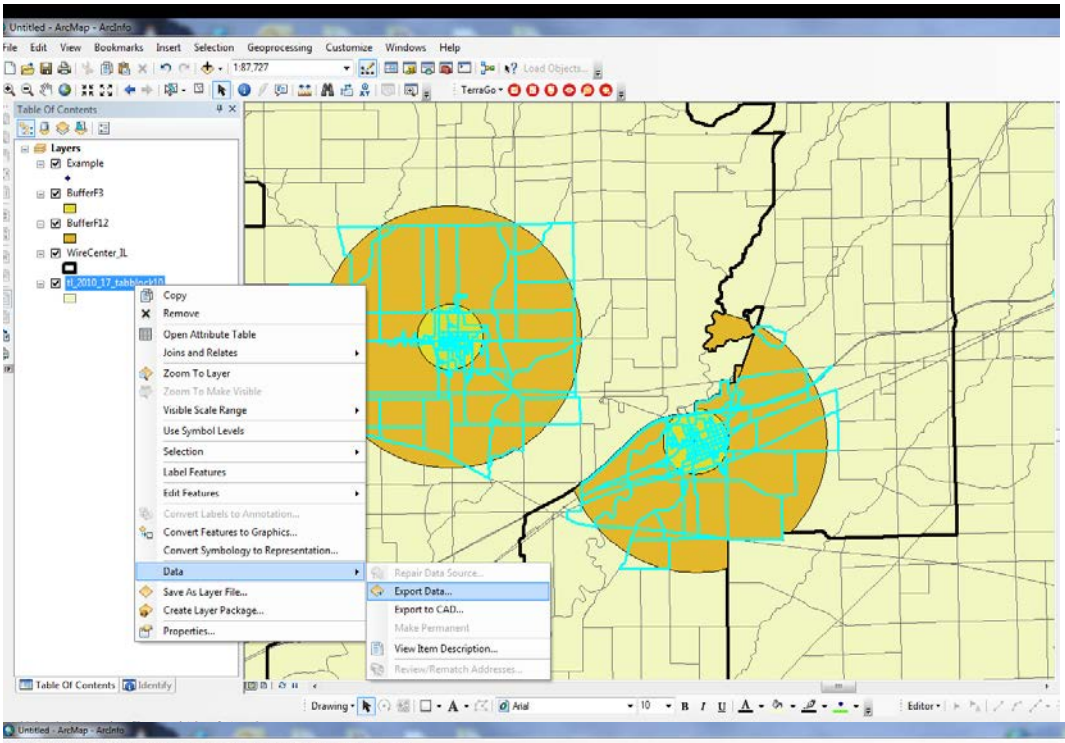
We do this for all wire centers, and then save our edits. After we are through with this, we next use these buffers to select census blocks by location. In this case we specify that a census block centroid be within either the 3000ft buffer or the 12000ft buffer in order to count.

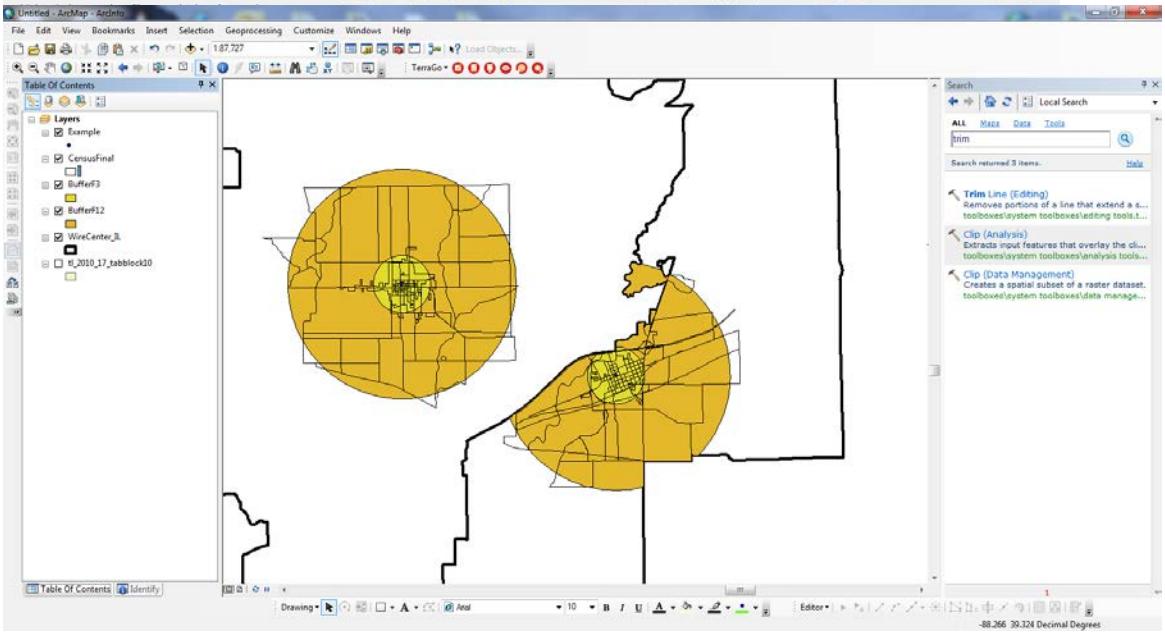






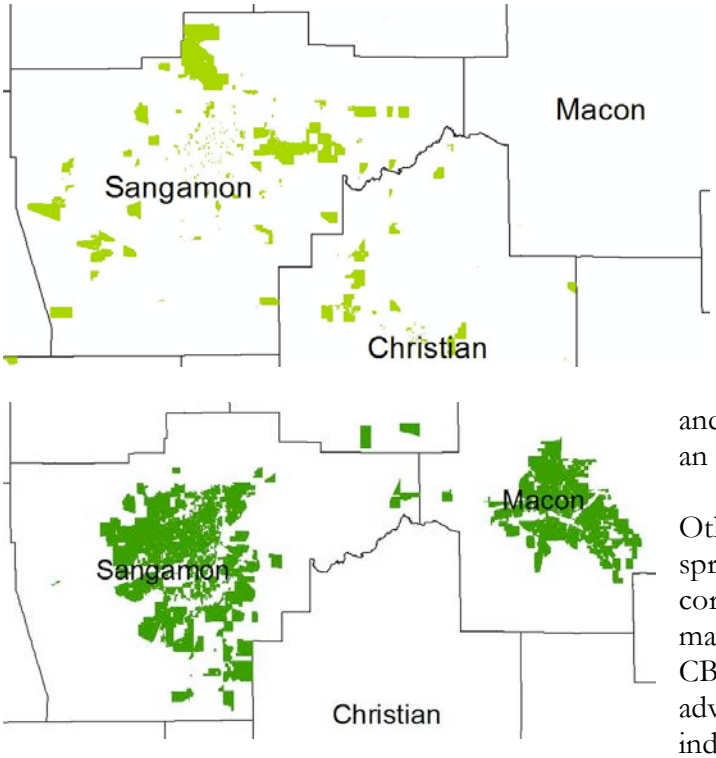
At this point we are ready to export the selected Census blocks, and assign speeds based on which buffer the census blocks fall within.





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.

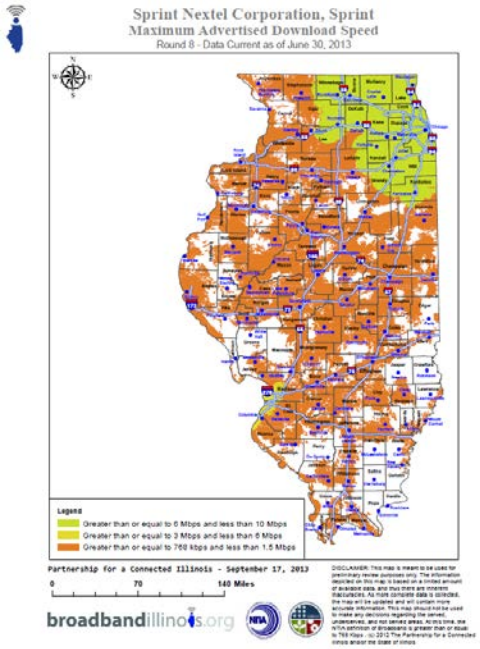
Other cable carriers including Comcast submitted a series of spreadsheet records which were matched with the corresponding Illinois 2010 census blocks polygon layer. The matching polygons were then superimposed on the Census CBSA layer which was joined with the provided maximum advertised (MAXAD) speeds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

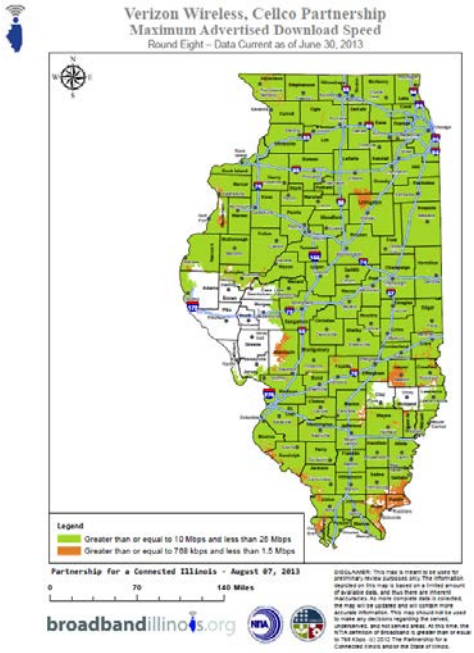
Street segment spreadsheet data records were geocoded based on mid-point value of the reported street segment address range. A point layer thus derived was next overlaid with the 2010 census street layer. Census street layer segments that were associated with the geocoded points were then examined, one-at-a-time, 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.

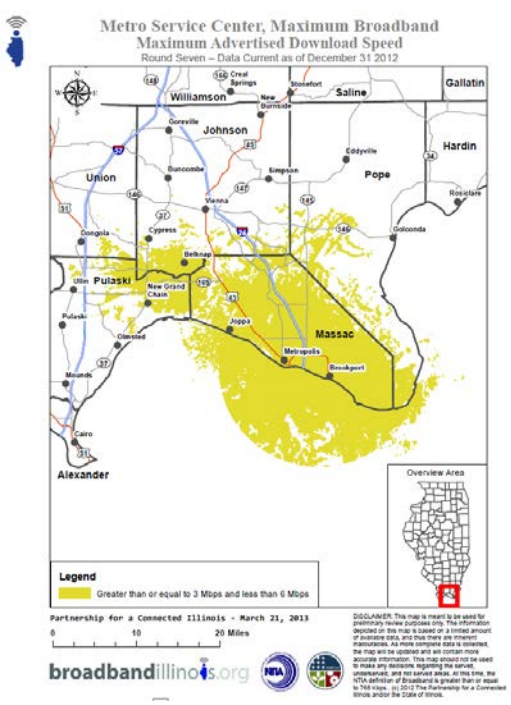


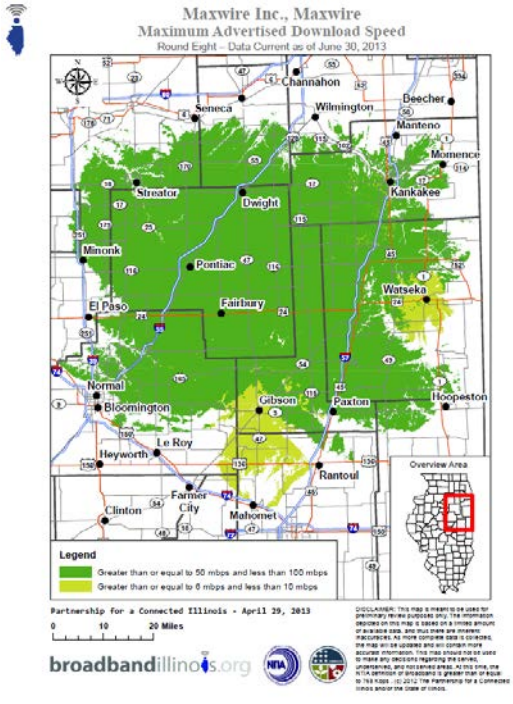


WIRELESS METHODOLOGY

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

This round of data updates includes one broadband satellite service provider –HughesNet. This provider communicated that their service area encompasses the full extent of the state of Illinois.

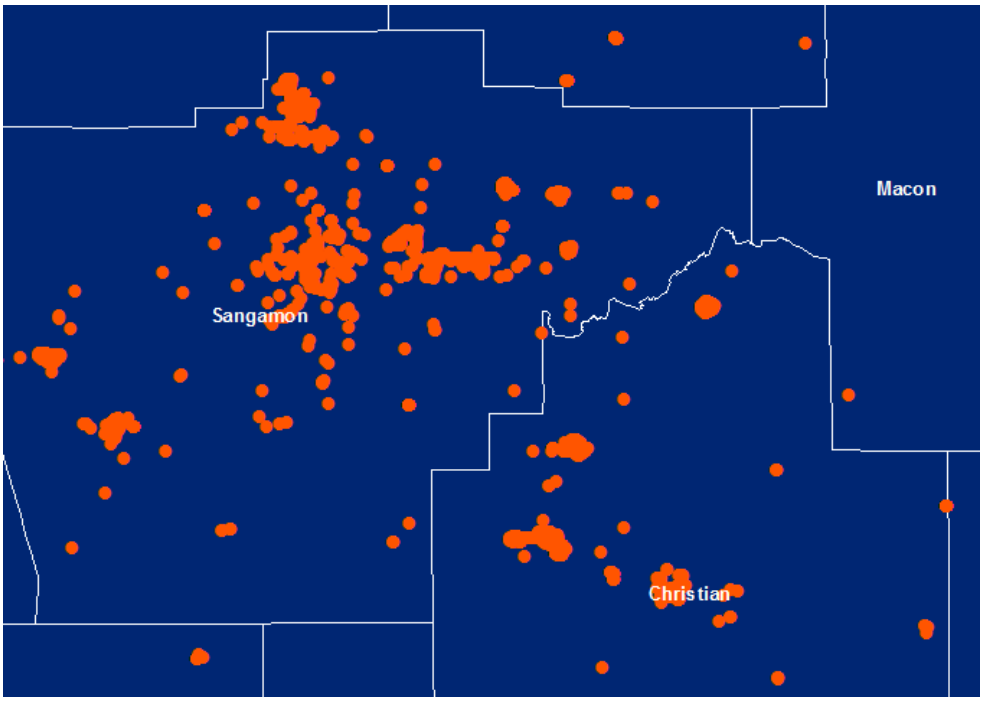
MIDDLE MILE

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



Service address information in this round was provided by the same three carriers that provided it in the last round - Mediacom Illinois LLC, FairPoint Communications and RCN Telecom Services of Illinois, Inc. Mediacom and RCN reported new data in this round; FairPoint data did not change.

Supplied address data was geocoded. Great care was taken to successfully rematch addresses that were not matched during the initial geocoding run. Spelling errors were the most common reason an address failed to geocode correctly. Such errors were resolved via web or Google Earth searches. The resulting point layer was used to derive the missing LATITUDE and LONGITUDE coordinate pair values which were then added to the Service Address layer attribute table. The geocoded results were also used to generate data for the census block layer. Above map illustrates the service address layer.

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:

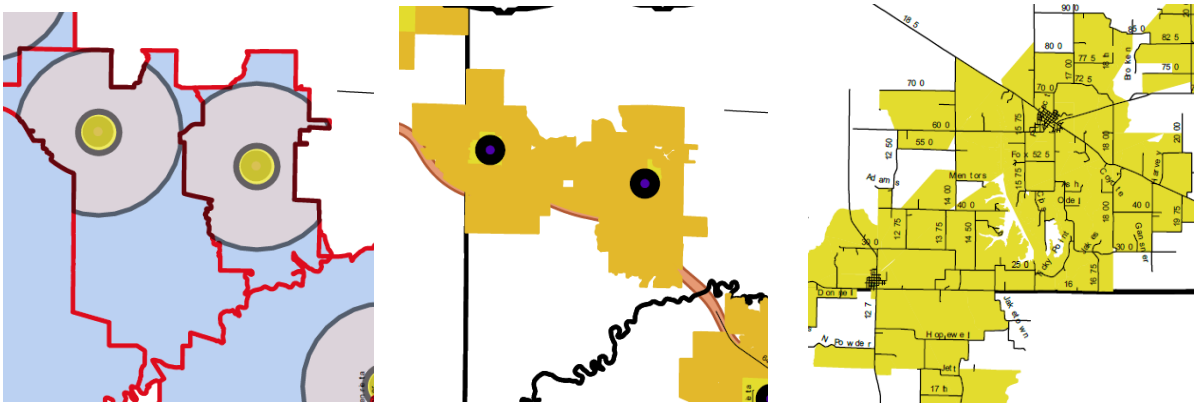
- Provider verification through extensive mapping GeoPDF process
- User verification through online web tools
- Trusted user verification through eTeam groups
- Third Party verification using third party data sets (ex. Gadberry, FCC Speed Test)

PROVIDER

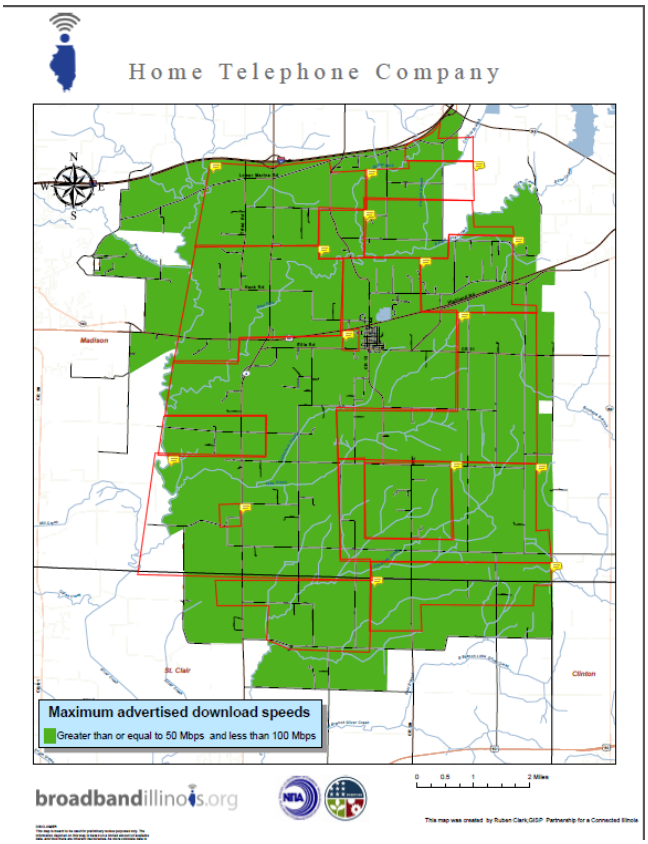
In this Round, PCI worked very closely with the provider sending back versions of the GeoPDF until the data was represented according to the provider. PCI considers this process to be the first of five forms of verification PCI has and will continue to carry out to ensure the data that is submitted to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

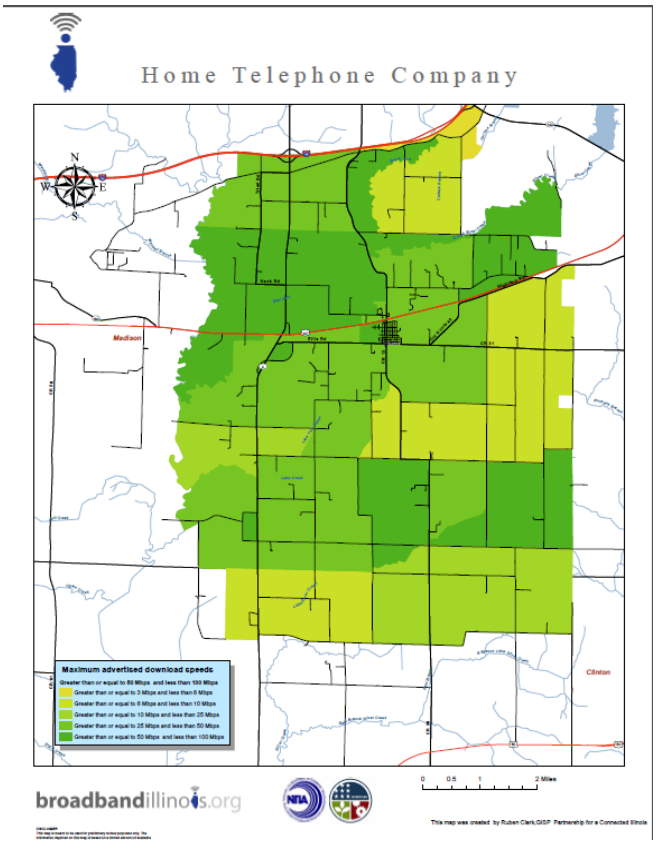
Previously, PCI purchased a set of wire center boundaries, which PCI used to map out DSL coverage for a couple of providers. Knowing that a DSL provider's Central Office or Remote Terminal that fell in a certain wire boundary could not extend service outside that boundary allowed PCI to map out these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



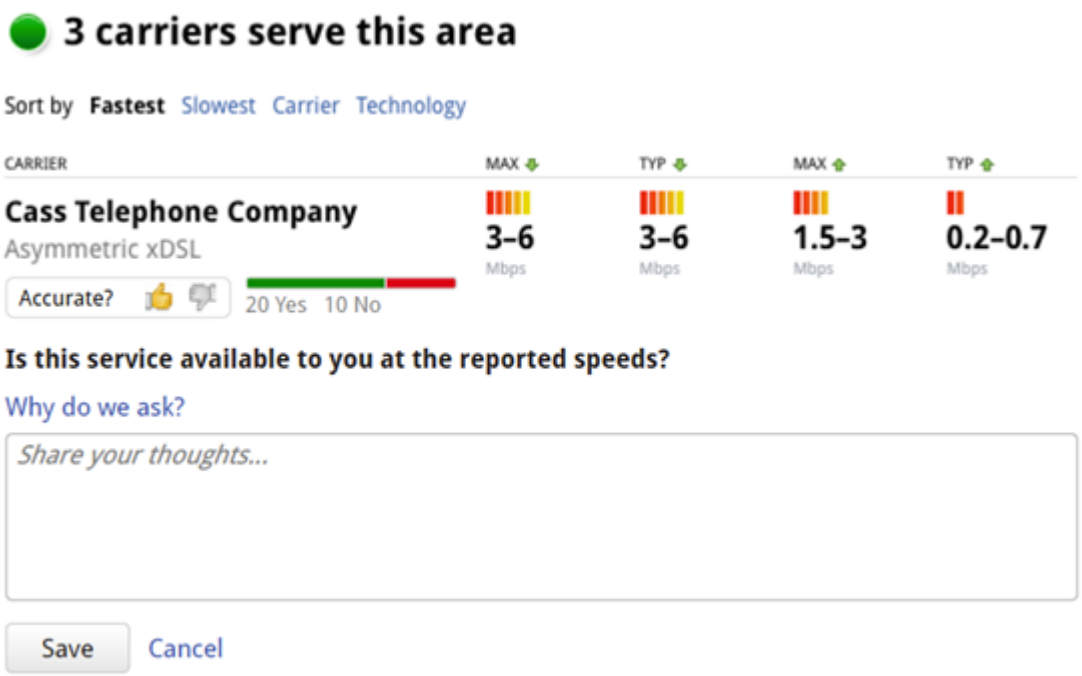
PCI has worked through this process for one of the two largest DSL providers in Illinois as well as a handful of small telephone companies throughout the State. In some instances, small telephone companies admittingly provided this data without sharing the locations and the GeoPDFs made this possible. 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.

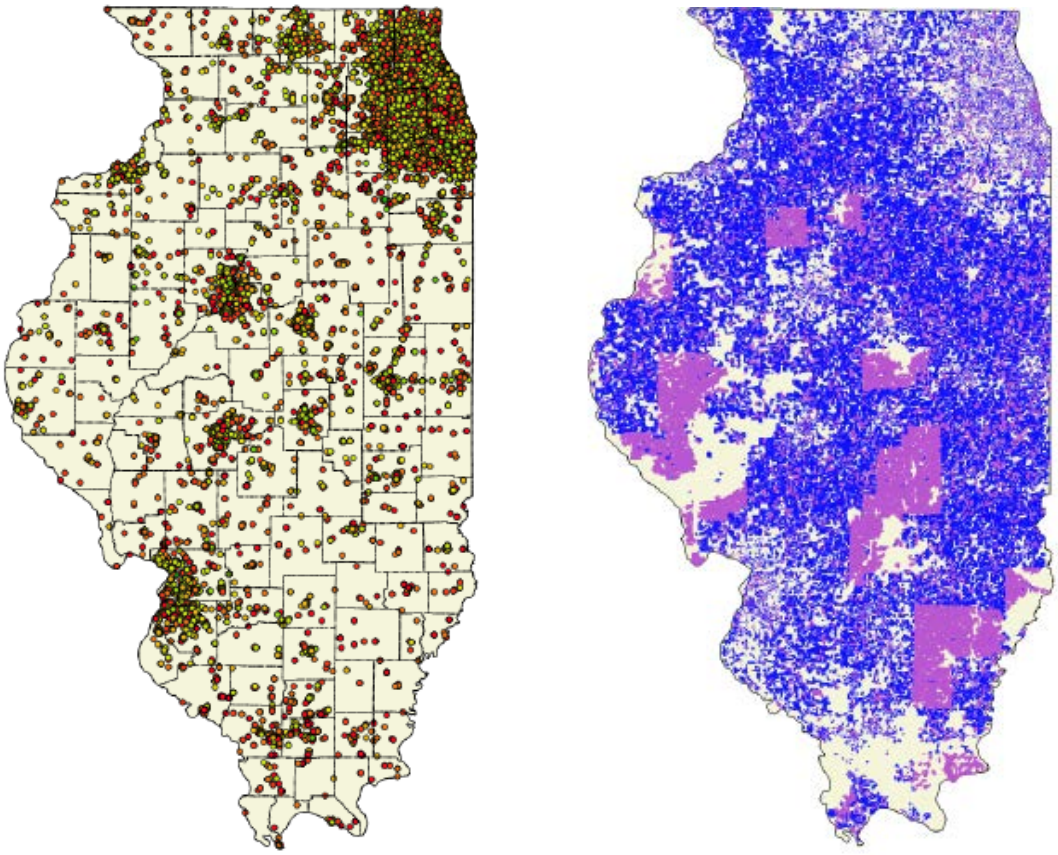
Third Party Data Sources

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

As stated earlier, the focus in this submission cycle has been on (1) increasing the number of school and library records with CAIID number and (2) increasing the number of school records with broadband subscription speed data. The following tables summarize the progress on this front.

	SCHOOLS				
	Total Records	Records With CAIID	% CAIID	Records With Speed Data	% Speed
ROUND 7	5,290	4,590	86.8	1,569	29.7
ROUND 8	5,847	5,847	100.0	4,135	70.7

	LIBRARIES				
	Total Records	Records With CAIID	% CAIID	Records With Speed Data	% Speed
ROUND 7	1,262	592	46.9	656	52.0
ROUND 8	1,262	764	60.5	656	52.0

(1) 557 new schools were added to the database.

(2) All of the schools have been attributed with the CAIID code.
(3) Schools speed data has been improved by 41%.
(4) 91% of Chicago Public Schools have been attributed with speed data.
(5) Library CAIID attribution percentage was improved by about 14%.

Existing school data was compared with school data derived from National Center for Education Statistics (http://nces.ed.gov/ccd/elsi/). In the process, 557 new schools were identified and added to the IL CAI schools database, and all of the resulting 5,847 school records were attributed with CAIID code.

School broadband subscription speed records were derived from data submitted by Illinois Century Network (ICN). The content of this data was analyzed and applied to the existing records for each school district in the state. This allowed us to assign a viable broadband subscription speed to an additional 41% of the schools that were missing this metric. For the Chicago Public Schools District, this brought the number of schools with broadband subscription speed metric up to 91% of the schools in the district.

Relatively low library CAIID attribution rate of 60.5% is explained by the fact that the IL CAI libraries database has a very high level of detail in that it contains an exhaustive list of law, university, prison, research and other types of libraries that do not have an assigned CAIID code. Compared with the Institute of Museum and Library Services (IMLS) (http://www.imls.gov/research/public_libraries_in_the_united_states_survey.aspx) IL library database, 92.8% of IMLS records match the R8 CAI library data records.

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:

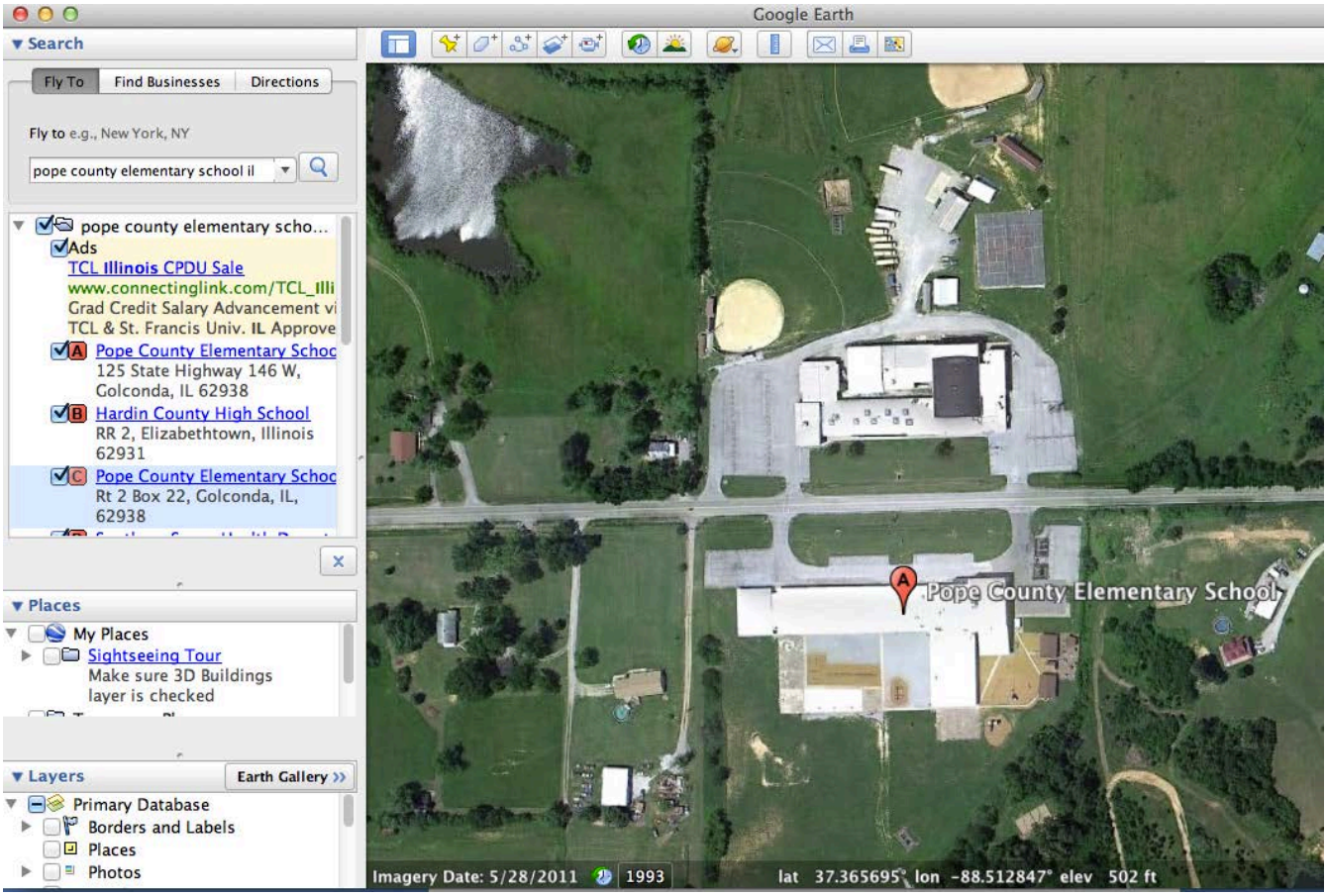
K-12	Illinois Association of Regional School Superintendents, Illinois State Board of Education
Libraries	Illinois Library Association
Healthcare	Illinois Critical Access Hospital Network, Illinois Rural HealthNet, Illinois Healthcare Association
Public Safety	Existing Database
Colleges & Universities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

Also, in the course of rounds 5 through 7, the total number of anchor institutions with connectivity data has continued to increase. In Round 5, some of the most substantial increases have occurred within the healthcare, public safety, higher education, and other non-governmental categories. In Round 6, PCI focused on updating the library records in our CAI database. In Round 7, library Wi-Fi unknown connectivity category was reduced to zero. Public Wi-Fi and URL fields were updated through individually contacting each library. The following table summarizes vast improvements brought about by this effort:

Library Records Update Summary

	R6		R7	
Total Libraries	1321	100%	1262	100%
Public Wifi Yes	1053	79.7%	1115	88.35%
Public Wifi No	133	10.1%	147	11.65%
Public Wifi Unknown	135	10.2%	0	0%

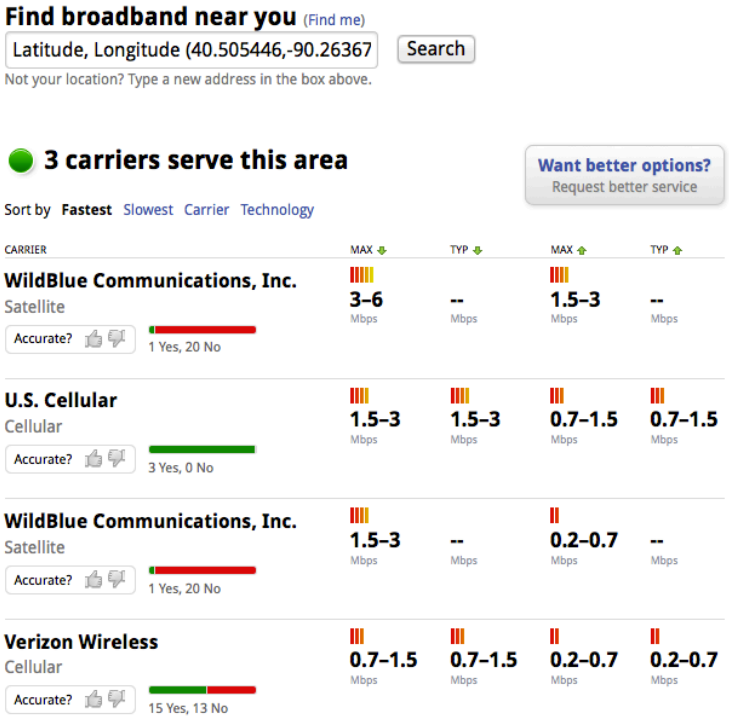
Libraries with Websites	1050	79.5%	1122	88.91%

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.

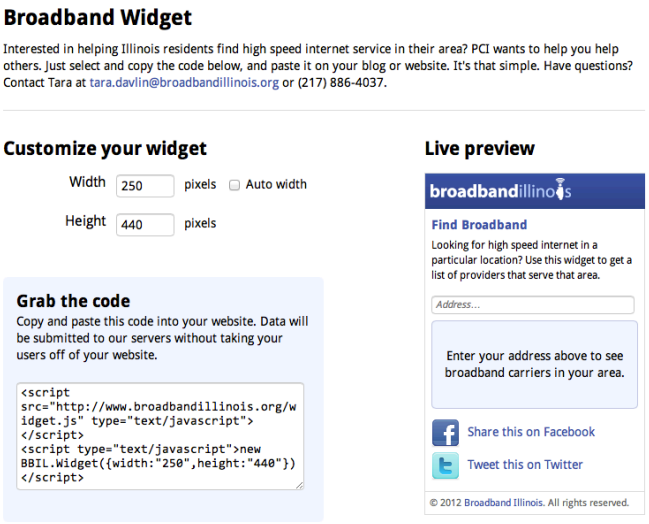
BROADBAND ILLINOIS WEBSITE

The Partnership for a Connected Illinois is constantly expanding and improving our website. Since April of 2013, 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.



- "**Census Block Concept"** is now live (http://www.broadbandillinois.org/Regions.html). This has been a major upgrade to our website. It allows users to easily search all available data (news, events, training, coverage maps, carrier information, grant and employment opportunities) by region, county, zip code, address or even census block. Due to the size of Cook County, each of the 77 Chicago neighborhoods have their own broadbandillinois.org page where users can find pertinent information for their local area, and not just Chicago-wide data, however, not all of these neighborhoods are currently up and running – this component of the project continues to be work in progress.
- **Public Wi-Fi Locations -** PCI has been awarded the Institute for Emerging Issues' Rural Digital Advocacy Grant to build a Wi-Fi locator mobile application. We have been working with a company called Softweb to develop the iOS and Android app variants. We have also partnered with the University of Illinois Extension to collect Community Anchor Institution (CAI) and Wi-Fi hotspot data for the app. The Wi-Fi app is now live on both the Google Play store and Apple Store. A marketing push as well as a push for more data are being planned as the next step in this project.
- **Raw Data –** The web site provides access to raw, non-confidential data submitted to NTIA as well as analysis data produced in-house.

Upcoming Additions

- **Blogs** - Each region will have its own blog, where eTeam coordinators can communicate publicly and private with their volunteers and members. This is expected to be live by November 2013.

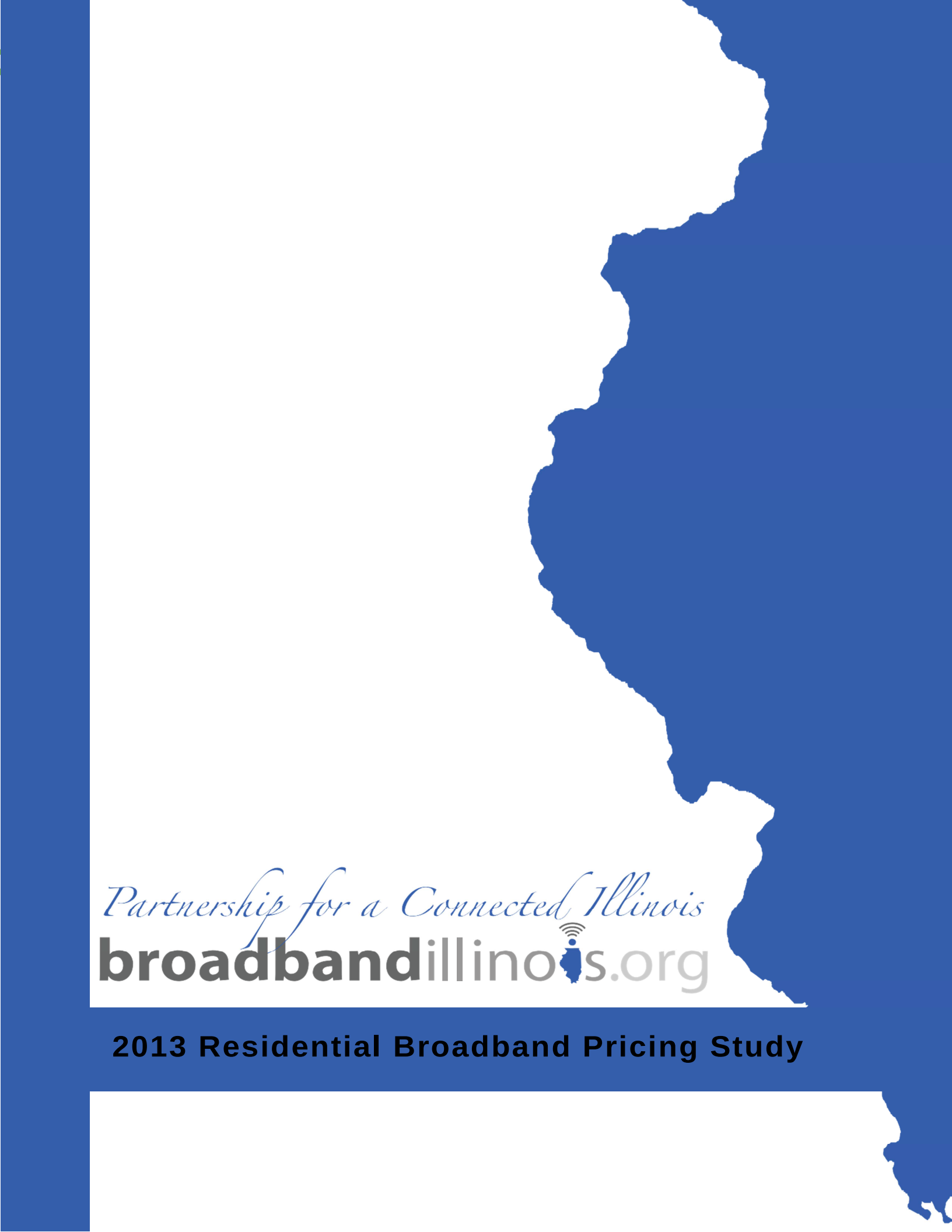
PCI's web site is built around an open source Application Program Interface. This free tool allows software developers to build upon, and add to, the data on the Broadband Illinois website. Documentation for the PCI's API is available at http://developer.broadbandillinois.org.

CONCLUSION

The data submission cycle ending on October 1, 2013, has been the fifth round that the Partnership for a Connected Illinois has conducted every facet of the data collection process. 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. Now that PCI has assumed full control over this process, it has brought the data "closer to home" for Illinois. 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.

APPENDIX

2013 Residential Broadband Pricing Study



2013 Residential Broadband Pricing Study

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Introduction

As part of our ongoing effort to assess the broadband climate in the state of Illinois, Broadband Illinois took a snapshot in time to investigate the pricing for various broadband options and subscriber plans around the state. This was not a study to find out where the cheapest or best values are in broadband, but rather to look at patterns in pricing/speeds as well as the percentages of homes that fall within the various patterns. The report is not written in a way to single out which providers might offer the best plans, lowest prices or best value nor does it attempt to assume any adoption or subscriber rates to the various plans.

It is important to note this report did not include mobile broadband prices nor did we include satellite service pricing. While these are available and important choices for the consumers of the state, our particular focus was on high capacity, multiple device connected fixed broadband services, that would make available all of the types of applications consumers are likely to use, particularly those that need low latency connections.

There are no simple answers in analyzing pricing data for broadband providers. Many carriers offer different plans at different speeds, and it really depends on what the customer's needs are when selecting a broadband plan. Broadband Illinois chose to collect and organize broadband prices according to the National Telecommunications & Information Administration (NTIA) National Broadband Map speed tiers. By taking this approach, Broadband Illinois was able to study the data more uniformly.

Methodology

Information was gathered from visiting websites of the broadband providers in Illinois. Data variables included Technology, Bundle requirement, whether the plan was for a Business or Residential Customer, Download and Upload speeds, Price, and Data Cap Amount was recorded. The source URL was also recorded. If no information was available online, the same data variables were collected by placing a phone call to the broadband provider in question. All data was collected during the month of May, 2013.

Once all available data was collected from the providers, Broadband Illinois used Microsoft Excel to calculate statistics (maximum, minimum, median) and create charts and graphs.

Broadband Illinois merged the data collected to the carrier coverage area (footprint) submitted in the April 1, 2013 data submission to the NTIA for use in the National Broadband Map. Broadband Illinois is assuming that broadband packages are offered completely across a provider's footprint where they reported speed tier data to us. These footprints are current as of December 31, 2013. The join was completed and used to create a shapefile, each individual plan was separated by speed tier and any business plans were removed.

After separating the data, Broadband Illinois used Natural Breaks (Jenks) to classify the broadband plans into 5 price ranges. As many providers overlap with each other, the clip and erase geoprocesses were used to generate map polygons that eliminate the overlap and show the minimum available price for a given point. Then, Broadband Illinois used census block occupied household data from the 2010 Census to calculate the number of households passed by each price range classification. Broadband Illinois specifically used the "have the centroid in the source layer feature" method to select census blocks within each price range class. The numbers generated were then moved to Microsoft Excel and repeated for each NTIA Speed Tier. Charts and Graphs were then created and are represented in the following pages.

To determine if prices vary by economic makeup of any area, Broadband Illinois looked at income data from the United States Census Bureau's 2011 American Community Survey at Census Track levels. Broadband Illinois selected plans using the "intersect the source layer feature" method to select census tracts within each price range. It is important to note this was done with the unclipped and uneased data. The numbers generated were then moved to Microsoft Excel and repeated for each NTIA Speed Tier. Charts and Graphs were then created and also present in the report. When there are any references to household incomes and the word "average" this is an average over the census tracts covered by that particular speed/price tier combination.

Presentation of the Data

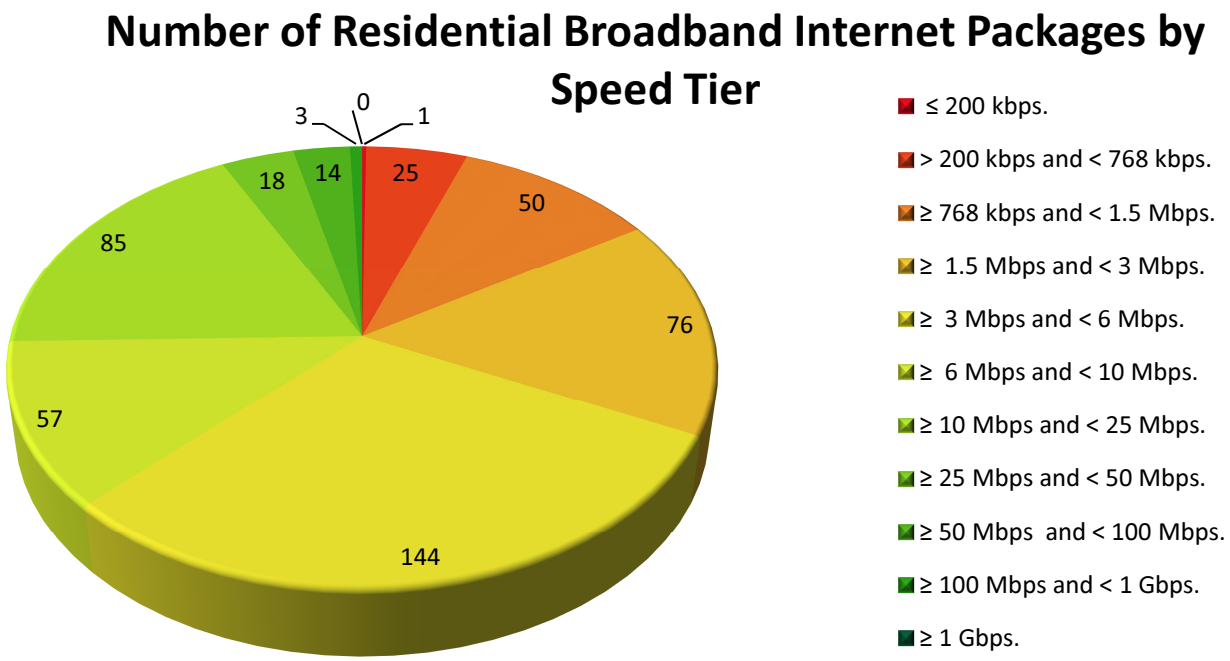


Chart 1. *Number of Residential Broadband Internet Packages by Speed Tier*

Speed Tier	Median Cost	Max Cost	Min Cost	Number of Plans Offered by Carriers
≤ 200 kbps	$ 31.95	$ 31.95	$ 31.95	1
> 200 kbps and < 768 kbps	$ 35.00	$ 89.00	$ 18.00	25
≥ 768 kbps and < 1.5 Mbps	$ 39.95	$ 159.00	$ 19.99	50
≥ 1.5 Mbps and < 3 Mbps	$ 43.95	$ 100.00	$ 19.95	76
≥ 3 Mbps and < 6 Mbps	$ 49.95	$ 276.50	$ 20.00	144
≥ 6 Mbps and < 10 Mbps	$ 59.70	$ 139.95	$ 32.00	57
≥ 10 Mbps and < 25 Mbps	$ 59.95	$ 199.00	$ 29.95	85
≥ 25 Mbps and < 50 Mbps	$ 64.97	$ 139.95	$ 39.99	18
≥ 50 Mbps and < 100 Mbps	$ 74.97	$ 199.95	$ 49.95	14
≥ 100 Mbps	$ 99.99	$ 114.95	$ 69.95	3

Table 1. Residential Broadband Internet Packages by Speed Tier

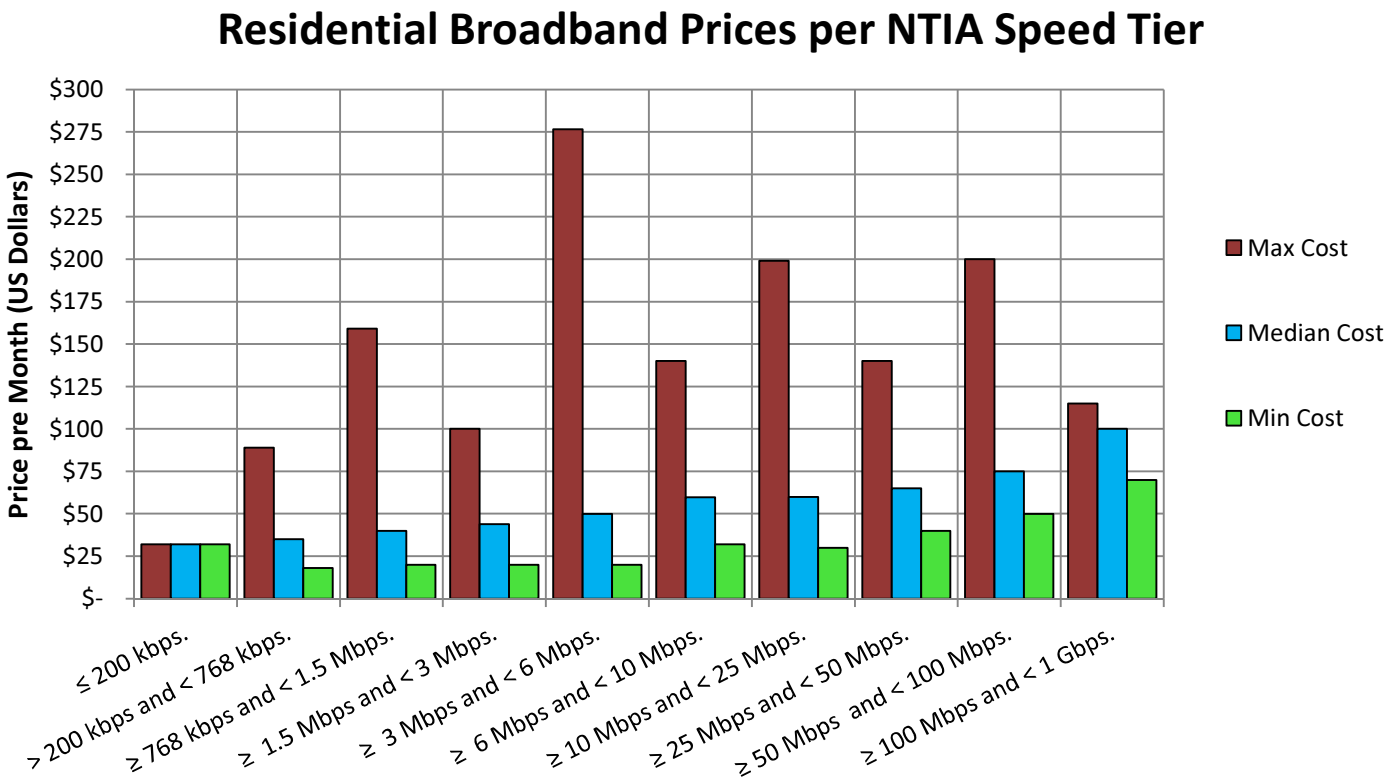


Chart 2. *Max, Median, and Minimum Prices of Residential Broadband Internet Packages by Speed Tier*

Speed Tier	Most Common Price Range	Percentage of Occupied Households Passed
< 768 kbps	$18.00 - $35.00	8.51%
≥ 768 kbps and < 1.5 Mbps	$19.99 - $28.00	74.20%
≥ 1.5 Mbps and < 3 Mbps	$30.01 - $37.00	72.34%
≥ 3 Mbps and < 6 Mbps	$20.00 - $38.00	88.11%
≥ 6 Mbps and < 10 Mbps	$40.01 - $52.95	90.77%
≥ 10 Mbps and < 25 Mbps	$29.95 - $45.95	77.56%
≥ 25 Mbps and < 50 Mbps	$59.96 - $70.00	19.07%
≥ 50 Mbps and < 100 Mbps	$64.96 - $74.99	62.29%
≥ 100 Mbps	$100.01 - $115.00	74.82%

Table 2. Most Common Residential Price Range with Greatest Households Passed for Each Speed Tier

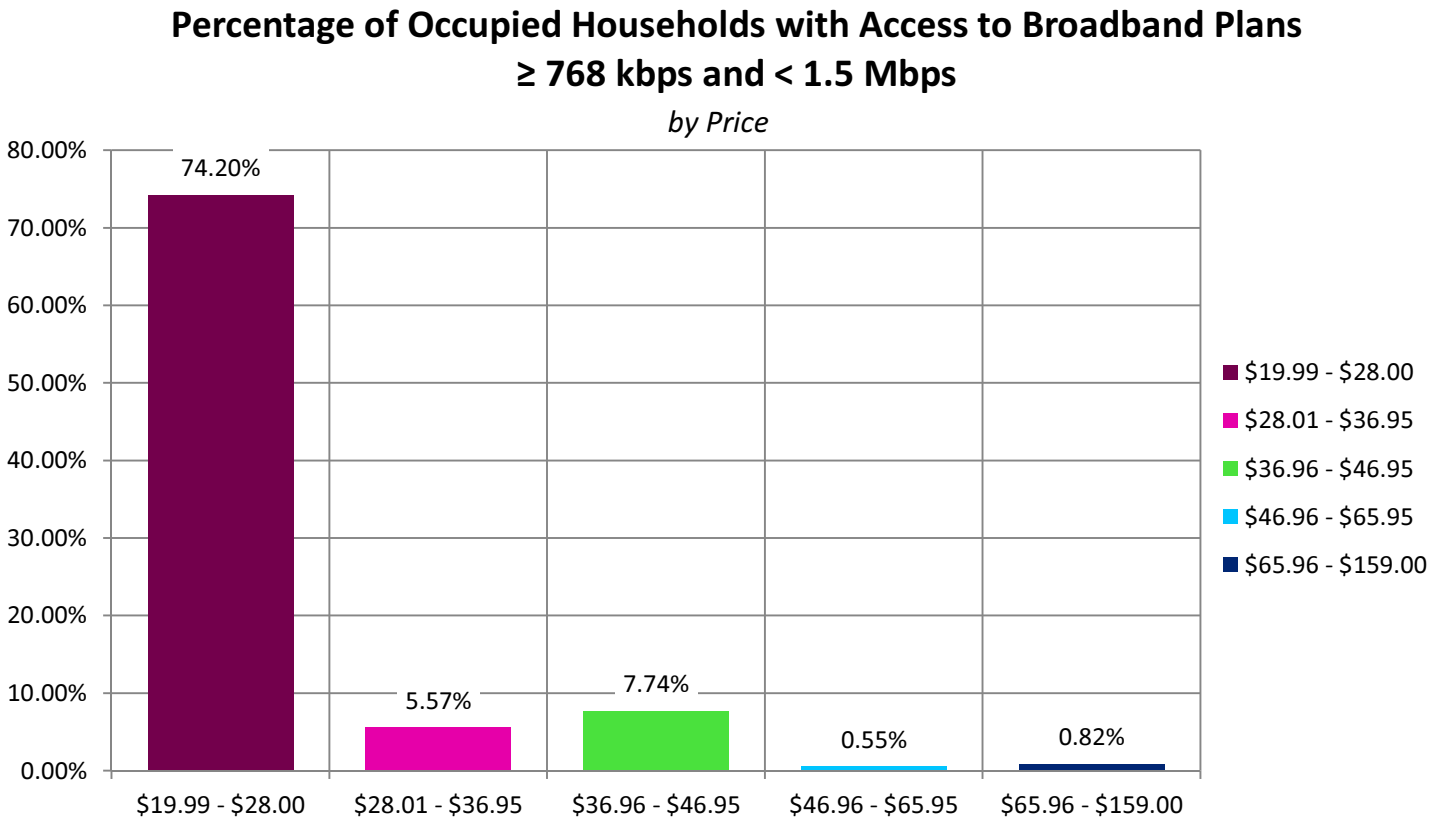


Chart 3. Occupied Households with Access to Broadband Plans ≥ 768 kbps and < 1.5 Mbps

Broadband Plans ≥ 768 kbps and < 1.5 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$19.99 - $28.00	3588807	74.20%
$28.01 - $36.95	269316	5.57%
$36.96 - $46.95	374262	7.74%
$46.96 - $65.95	26465	0.55%
$65.96 - $159.00	39854	0.82%
No Access to Speed Tier 3	538268	11.13%

Table 3. Occupied Households with Access to Broadband Plans ≥ 768 kbps and < 1.5 Mbps

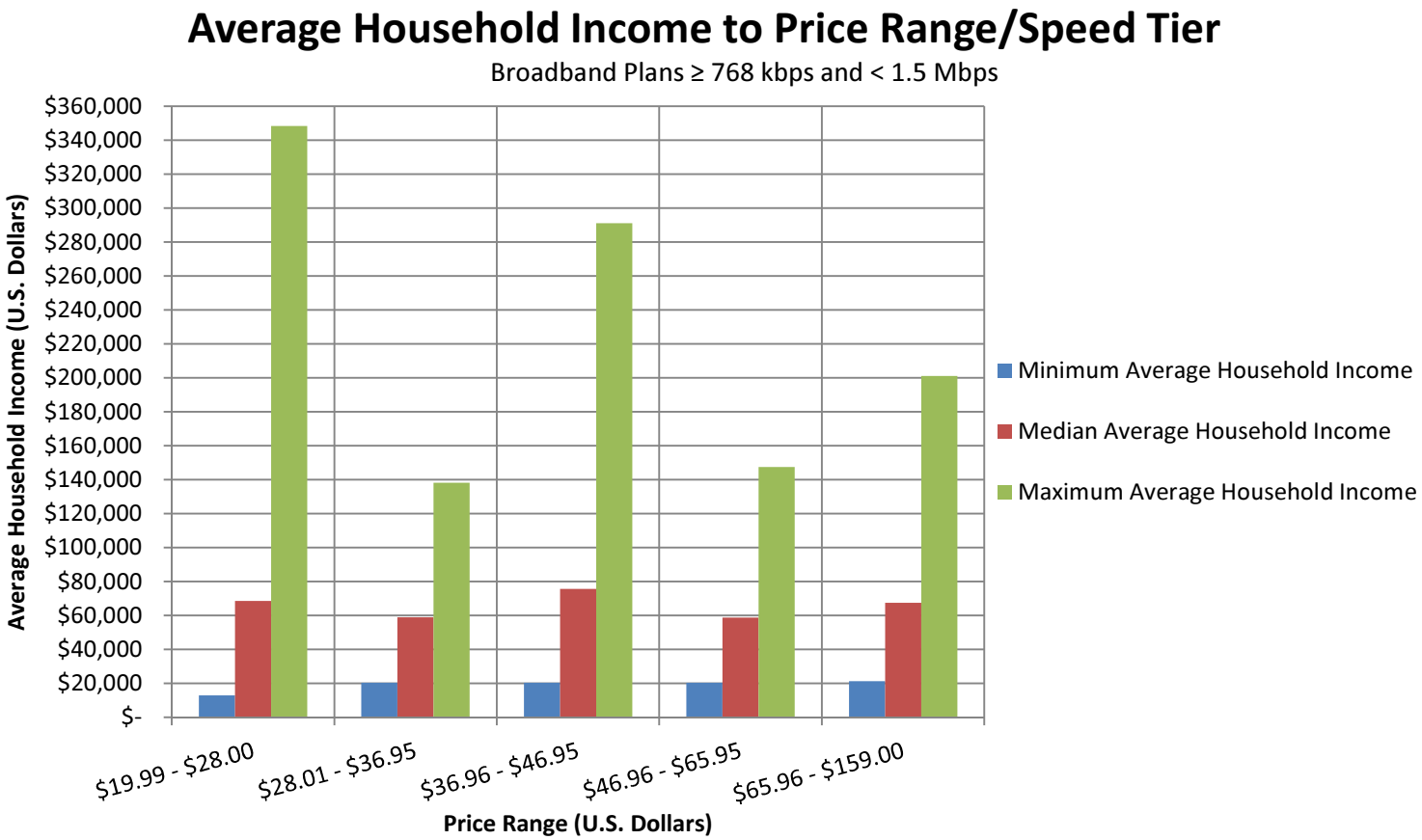


Chart 4. Average Household Income with Access to Broadband Plans ≥ 768 kbps and < 1.5 Mbps

Broadband Plans ≥ 768 kbps and < 1.5 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$19.99 - $28.00	6	3588807	74.20%	$ 12,817.00	$ 68,521.00	$ 348,355.00
$28.01 - $36.95	18	461200	9.53%	$ 20,342.00	$ 58,977.50	$ 138,185.00
$36.96 - $46.95	16	1359233	28.10%	$ 20,342.00	$ 75,621.00	$ 291,158.00
$46.96 - $65.95	8	192820	3.99%	$ 20,342.00	$ 58,775.00	$ 147,399.00
$65.96 - $159.00	2	215278	4.45%	$ 21,175.00	$ 67,490.00	$ 201,192.00

Table 4. Average Household Income with Access to Broadband Plans ≥ 768 kbps and < 1.5 Mbps

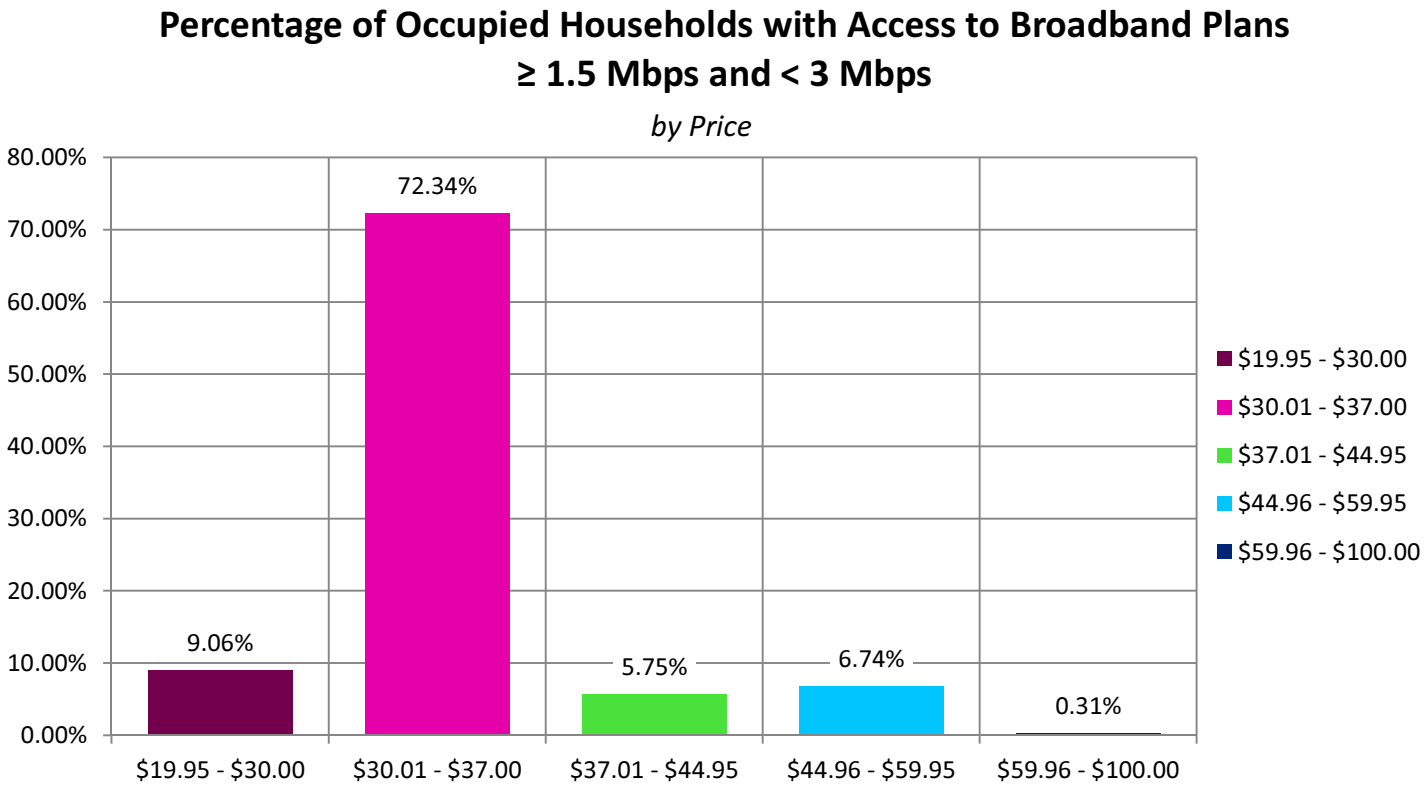


Chart 5. Occupied Households with Access to Broadband Plans ≥ 1.5 Mbps and < 3 Mbps

Broadband Plans ≥ 1.5 Mbps and < 3 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$19.95 - $30.00	438211	9.06%
$30.01 - $37.00	3499116	72.34%
$37.01 - $44.95	278180	5.75%
$44.96 - $59.95	326216	6.74%
$59.96 - $100.00	15007	0.31%
No Access to Speed Tier 4	280242	5.79%

Table 5. Occupied Households with Access to Broadband Plans ≥ 1.5 Mbps and < 3 Mbps

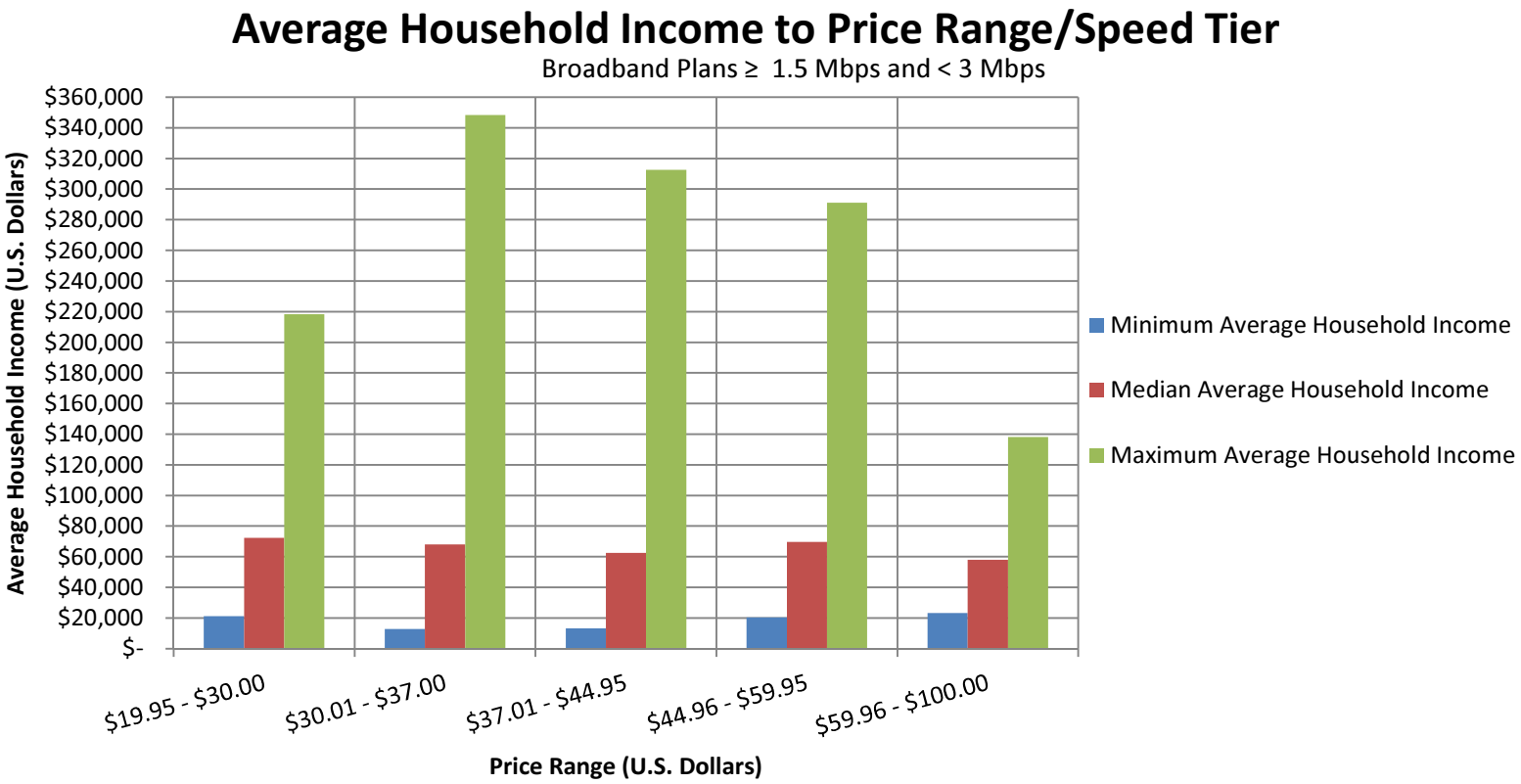


Chart 6. Average Household Income with Access to Broadband Plans ≥ 1.5 Mbps and < 3 Mbps

Broadband Plans ≥ 1.5 Mbps and < 3 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$19.95 - $30.00	10	438211	9.06%	$ 21,175.00	$ 72,307.00	$ 218,234.00
$30.01 - $37.00	12	3823128	79.04%	$ 12,817.00	$ 67,966.00	$ 348,355.00
$37.01 - $44.95	17	657677	13.60%	$ 13,236.00	$ 62,472.00	$ 312,642.00
$44.96 - $59.95	28	1783253	36.87%	$ 20,342.00	$ 69,742.00	$ 291,158.00
$59.96 - $100.00	9	349013	7.22%	$ 23,330.00	$ 57,944.00	$ 138,185.00

Table 6. Average Household Income with Access to Broadband Plans ≥ 1.5 Mbps and < 3 Mbps

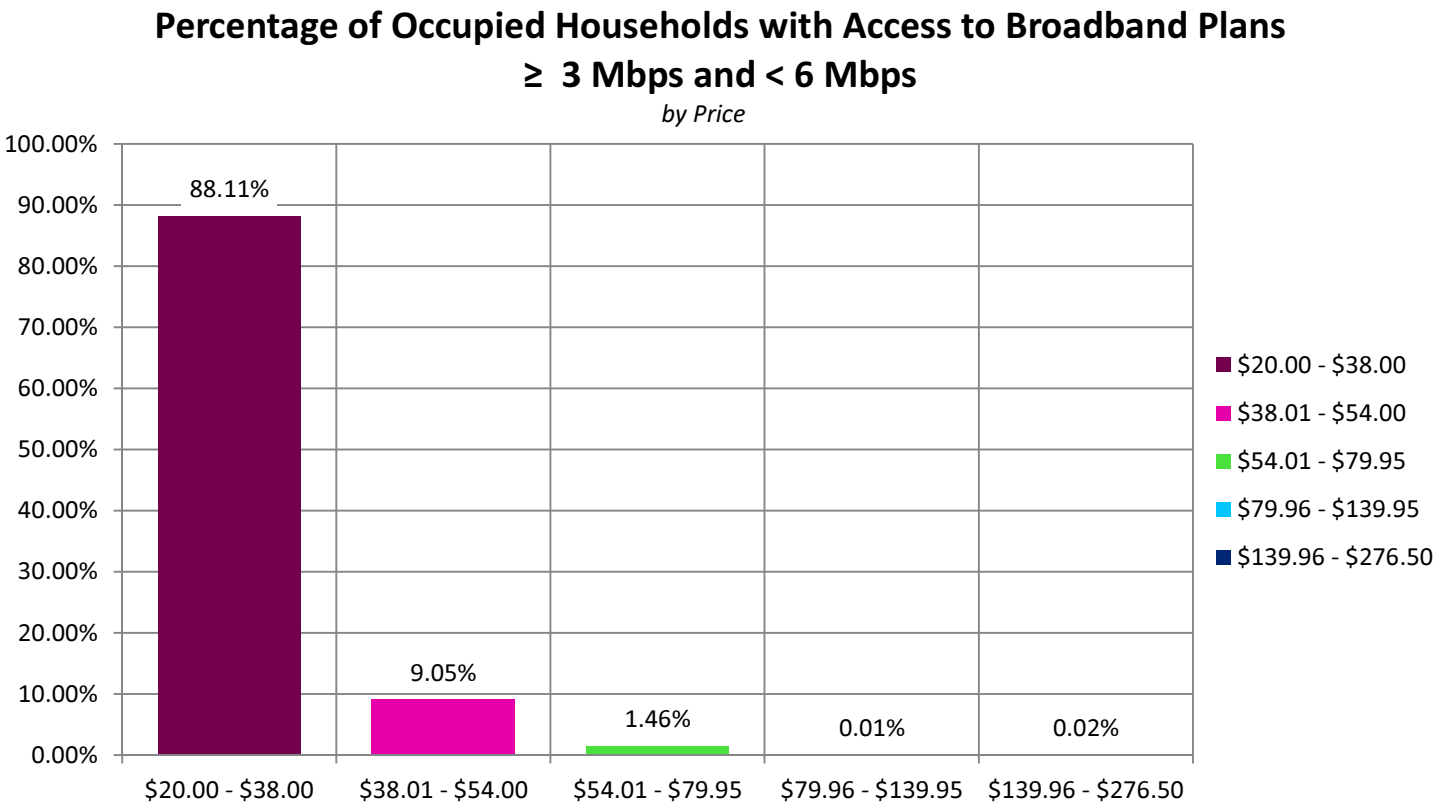


Chart 7. Occupied Households with Access to Broadband Plans ≥ 3 Mbps and < 6 Mbps

Broadband Plans ≥ 3 Mbps and < 6 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$20.00 - $38.00	4262062	88.11%
$38.01 - $54.00	437640	9.05%
$54.01 - $79.95	70584	1.46%
$79.96 - $139.95	292	0.01%
$139.96 - $276.50	993	0.02%

Table 7. Occupied Households with Access to Broadband Plans ≥ 3 Mbps and < 6 Mbps

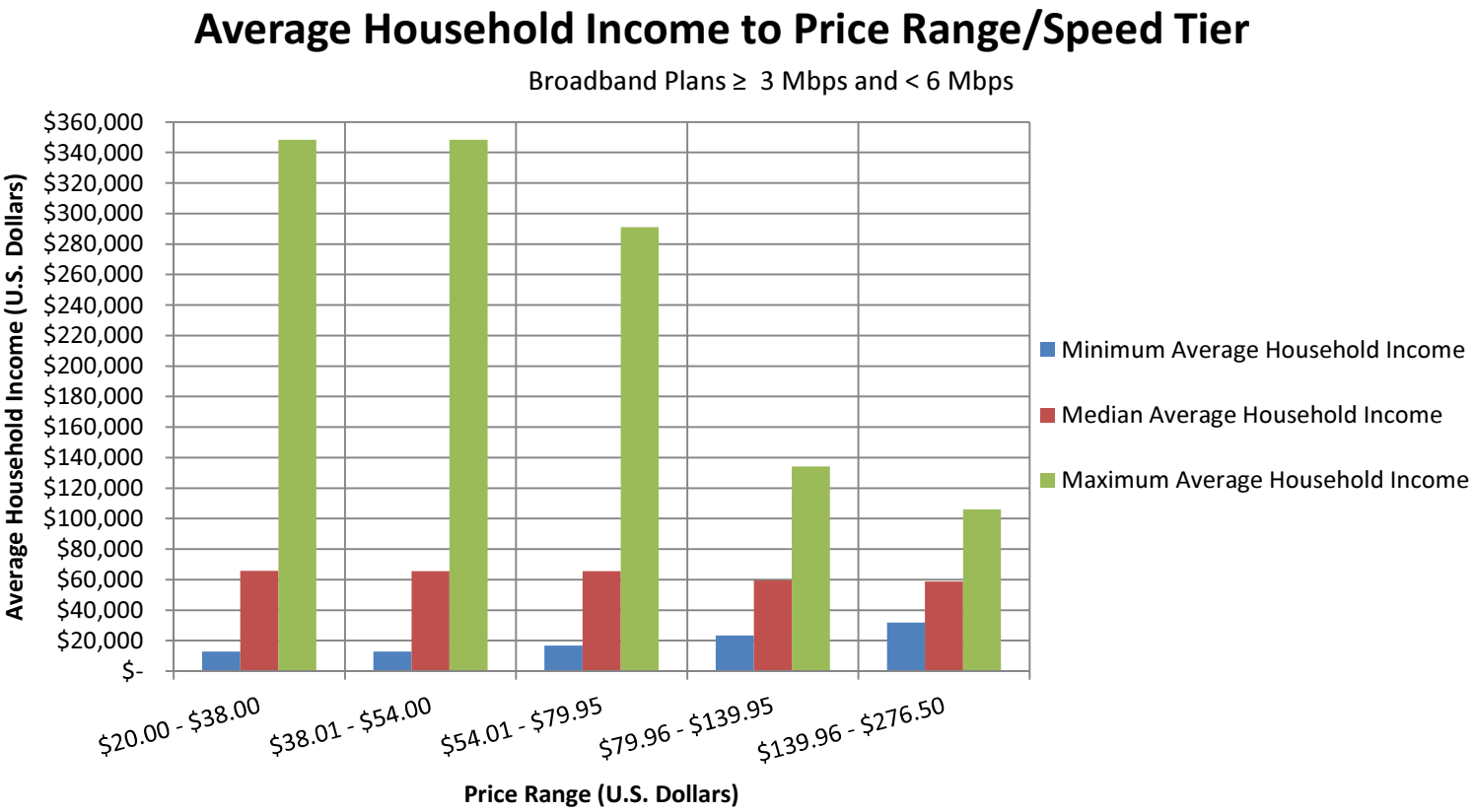


Chart 8. Average Household Income with Access to Broadband Plans ≥ 3 Mbps and < 6 Mbps

Broadband Plans ≥ 3 Mbps and < 6 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$20.00 - $38.00	25	4262062	88.11%	$ 12,817.00	$ 65,722.00	$ 48,355.00
$38.01 - $54.00	58	4410257	91.18%	$ 12,817.00	$ 65,586.00	$ 348,355.00
$54.01 - $79.95	54	2594814	53.65%	$ 16,703.00	$ 65,504.00	$ 291,158.00
$79.96 - $139.95	5	223737	4.63%	$ 23,330.00	$ 59,561.00	$ 134,179.00
$139.96 - $276.50	1	49879	1.03%	$ 31,879.00	$ 58,836.50	$ 106,142.00

Table 8. Average Household Income with Access to Broadband Plans ≥ 3 Mbps and < 6 Mbps

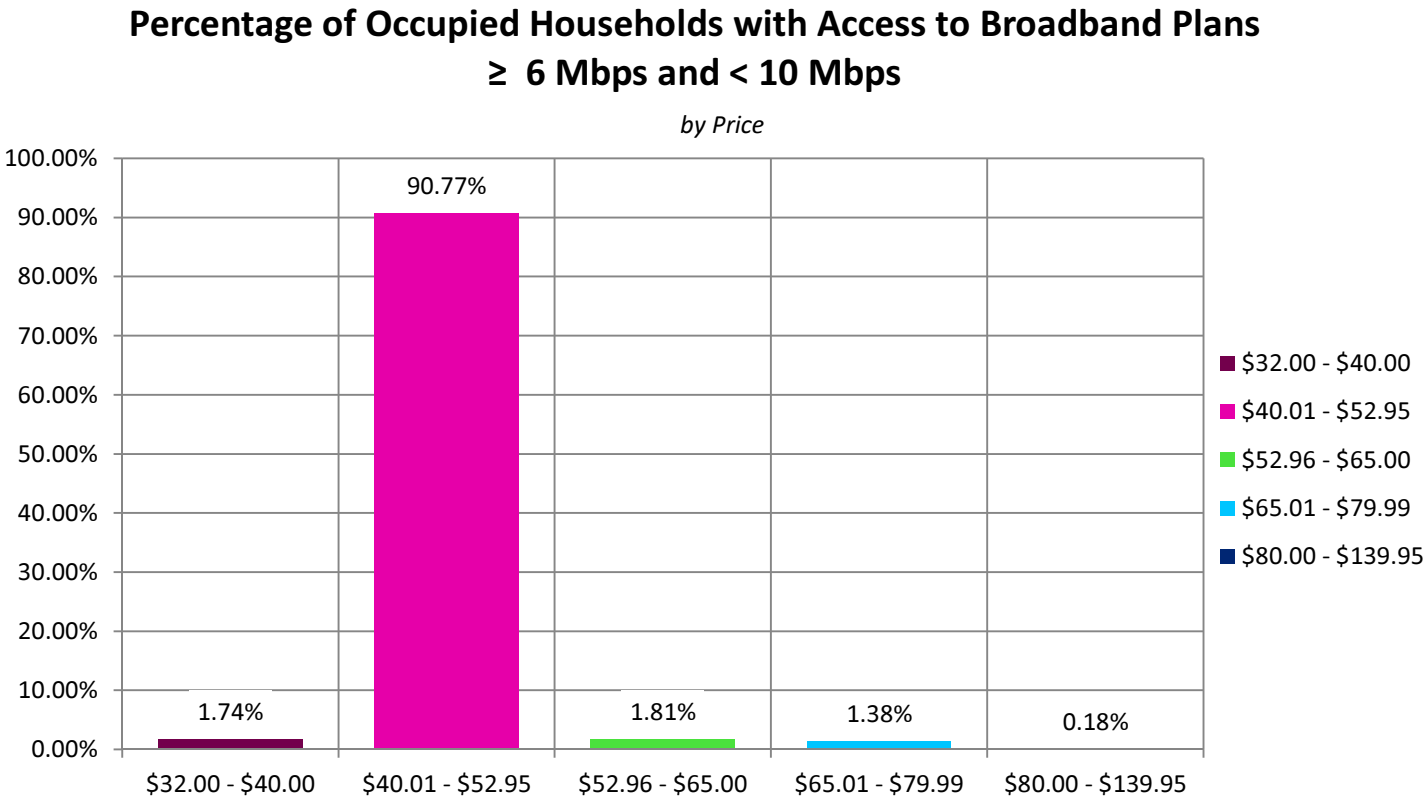


Chart 9. Occupied Households with Access to Broadband Plans ≥ 6 Mbps and < 10 Mbps

Broadband Plans ≥ 6 Mbps and < 10 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$32.00 - $40.00	84146	1.74%
$40.01 - $52.95	4390683	90.77%
$52.96 - $65.00	87679	1.81%
$65.01 - $79.99	66821	1.38%
$80.00 - $139.95	8536	0.18%

Table 9. Occupied Households with Access to Broadband Plans ≥ 6 Mbps and < 10 Mbps

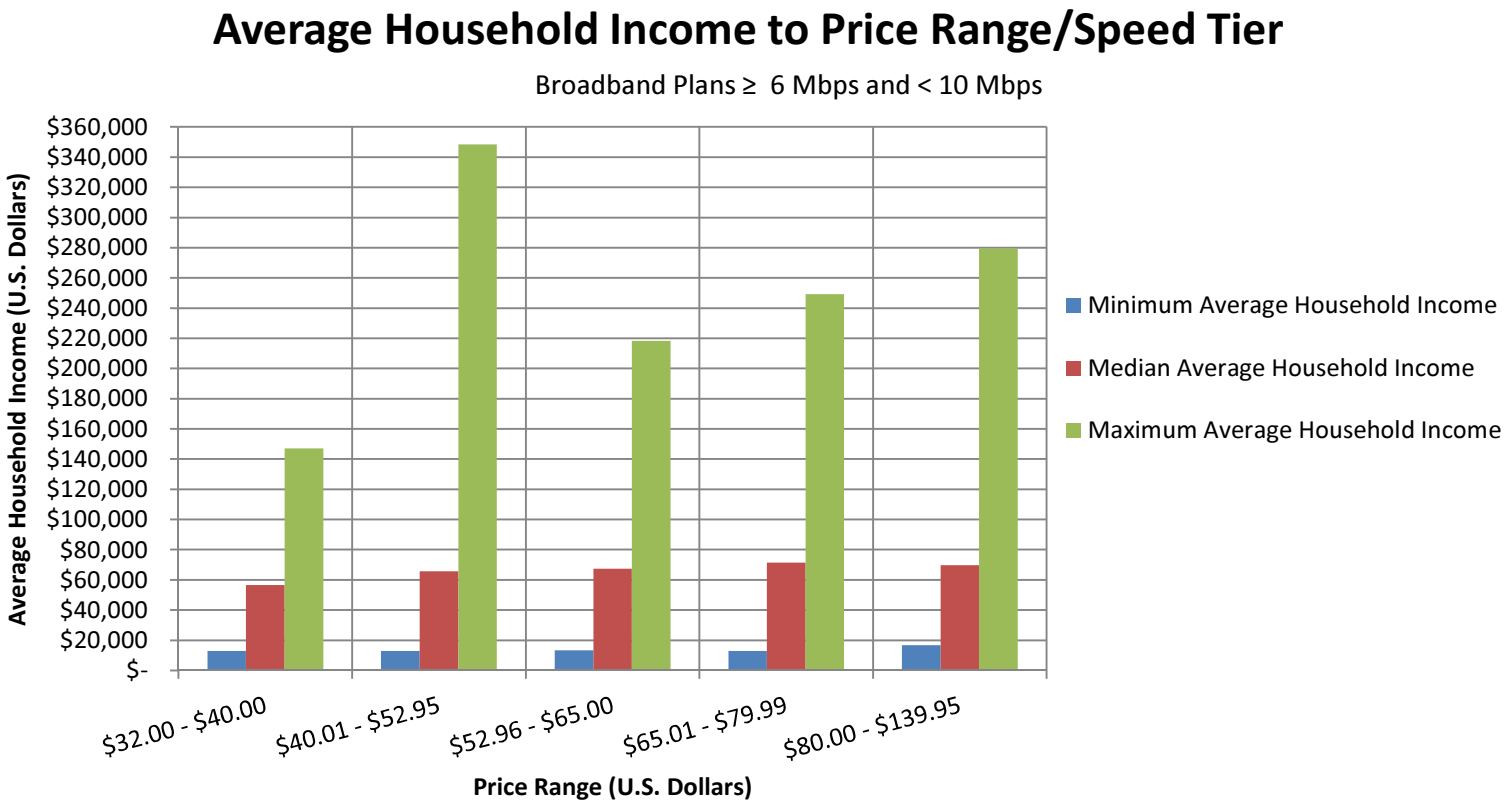


Chart 10. Average Household Income with Access to Broadband Plans ≥ 3 Mbps and < 6 Mbps

Broadband Plans ≥ 6 Mbps and < 10 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$32.00 - $40.00	4	84146	1.74%	$ 12,817.00	$ 56,484.00	$ 147,040.00
$40.01 - $52.95	19	4448370	91.97%	$ 12,817.00	$ 65,617.50	$ 348,355.00
$52.96 - $65.00	9	677645	14.01%	$ 13,236.00	$ 67,437.50	$ 218,234.00
$65.01 - $79.99	14	1063125	21.98%	$ 12,817.00	$ 71,401.00	$ 249,193.00
$80.00 - $139.95	10	1835437	37.95%	$ 16,703.00	$ 69,743.00	$ 279,657.00

Table 10. Average Household Income with Access to Broadband Plans ≥ 6 Mbps and < 10 Mbps

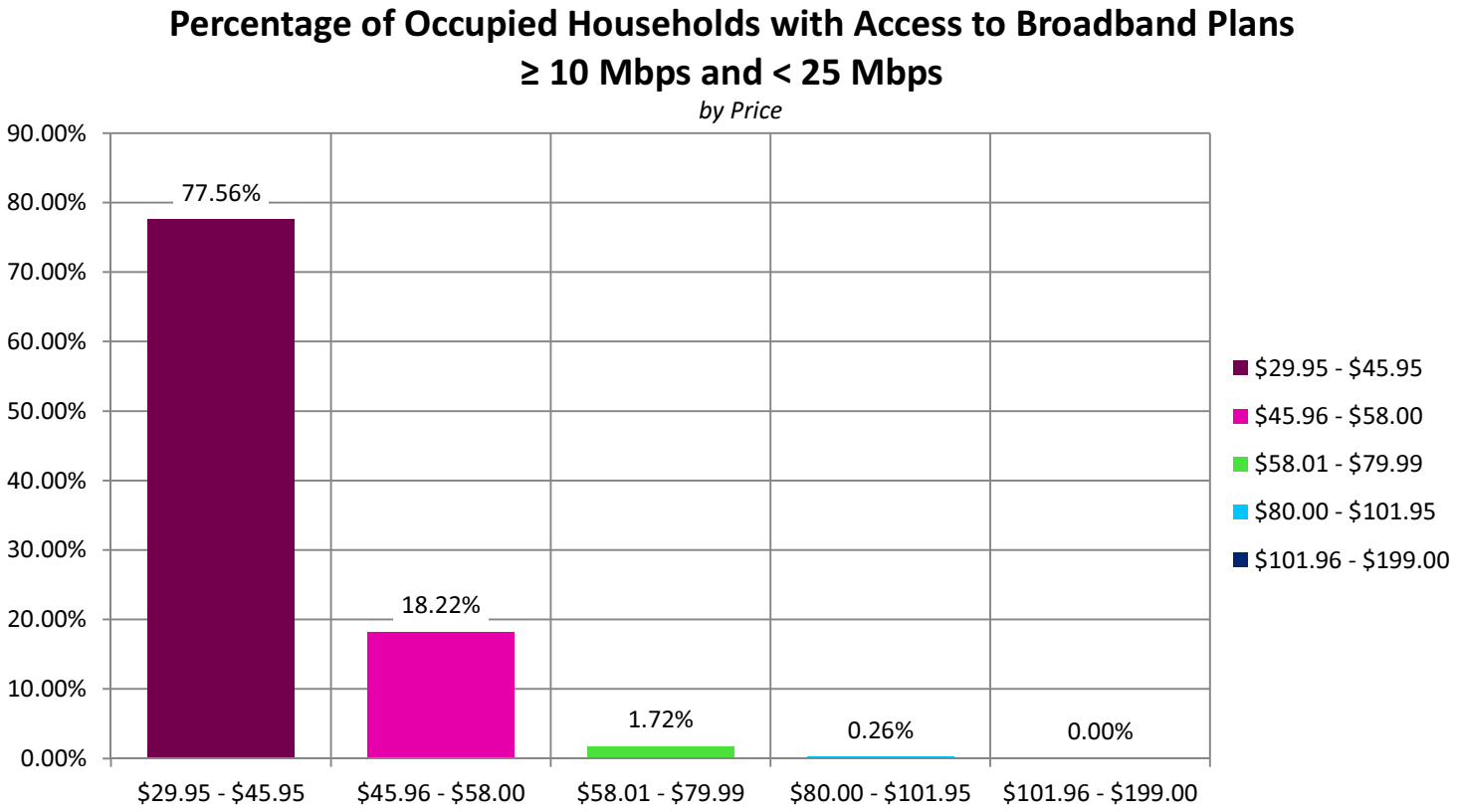


Chart 11. Occupied Households with Access to Broadband Plans ≥ 10 Mbps and < 25 Mbps

Broadband Plans ≥ 10 Mbps and < 25 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$29.95 - $45.95	3751781	77.56%
$45.96 - $58.00	881435	18.22%
$58.01 - $79.99	83028	1.72%
$80.00 - $101.95	12392	0.26%
$101.96 - $199.00	0	0.00%

Table 11. Occupied Households with Access to Broadband Plans ≥ 10 Mbps and < 25 Mbps

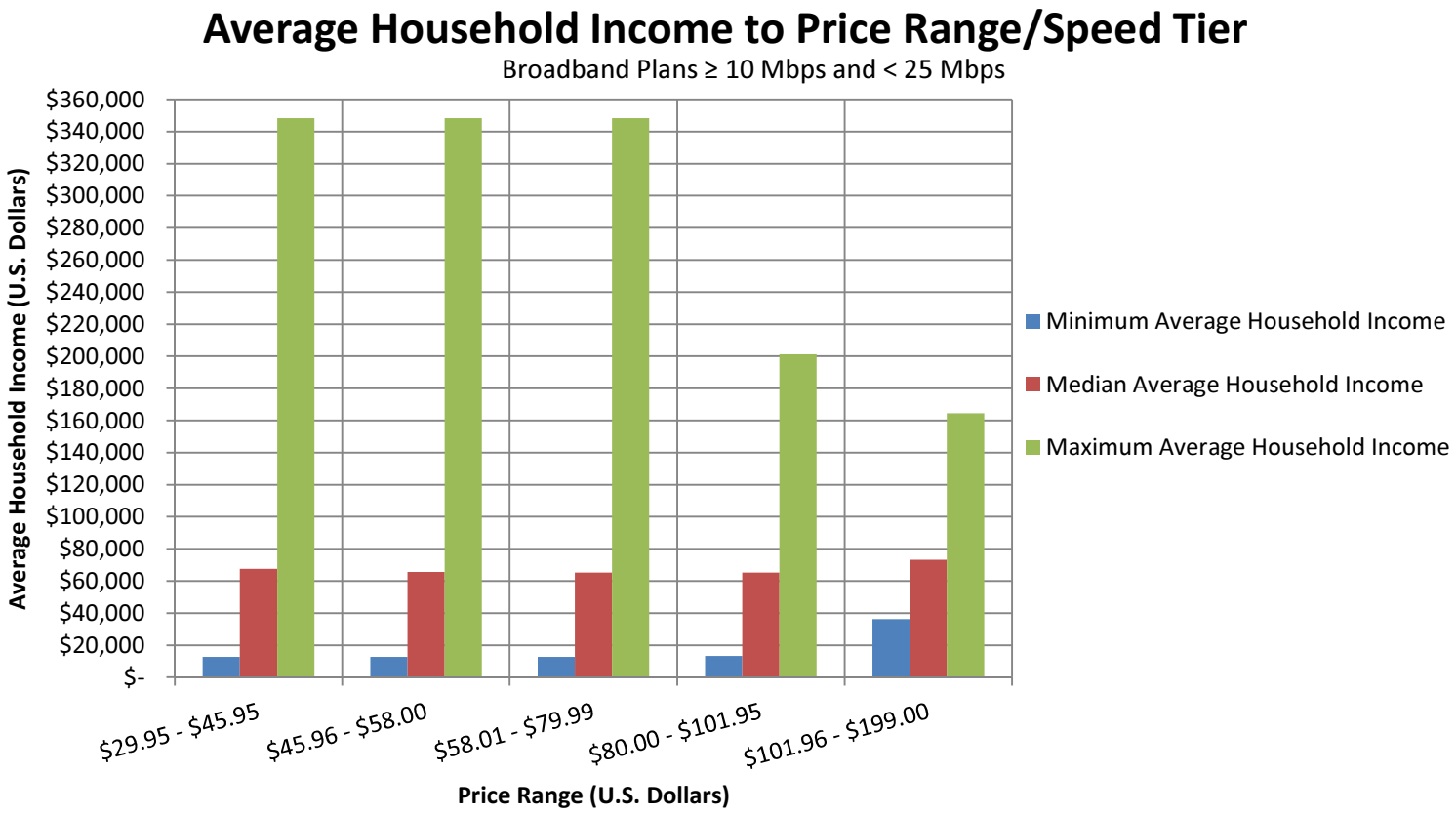


Chart 12. Average Household Income with Access to Broadband Plans ≥ 10 Mbps and < 25 Mbps

Broadband Plans ≥ 10 Mbps and < 25 Mbps						
Price Range	Number of Providers	Occupied Households Passed	Percentage of Occupied Households Passed	Minimum Average Household Income	Median Average Household Income	Maximum Average Household Income
$29.95 - $45.95	14	3751781	77.56%	$ 12,817.00	$ 67,572.00	$ 348,355.00
$45.96 - $58.00	22	4439431	91.78%	$ 12,817.00	$ 65,644.00	$ 348,355.00
$58.01 - $79.99	30	4596115	95.02%	$ 12,817.00	$ 65,282.00	$ 348,355.00
$80.00 - $101.95	15	943097	19.50%	$ 13,236.00	$ 65,270.00	$ 201,192.00
$101.96 - $199.00	3	157357	3.25%	$ 36,212.00	$ 73,287.00	$ 164,576.00

Table 12. Average Household Income with Access to Broadband Plans ≥ 10 Mbps and < 25 Mbps

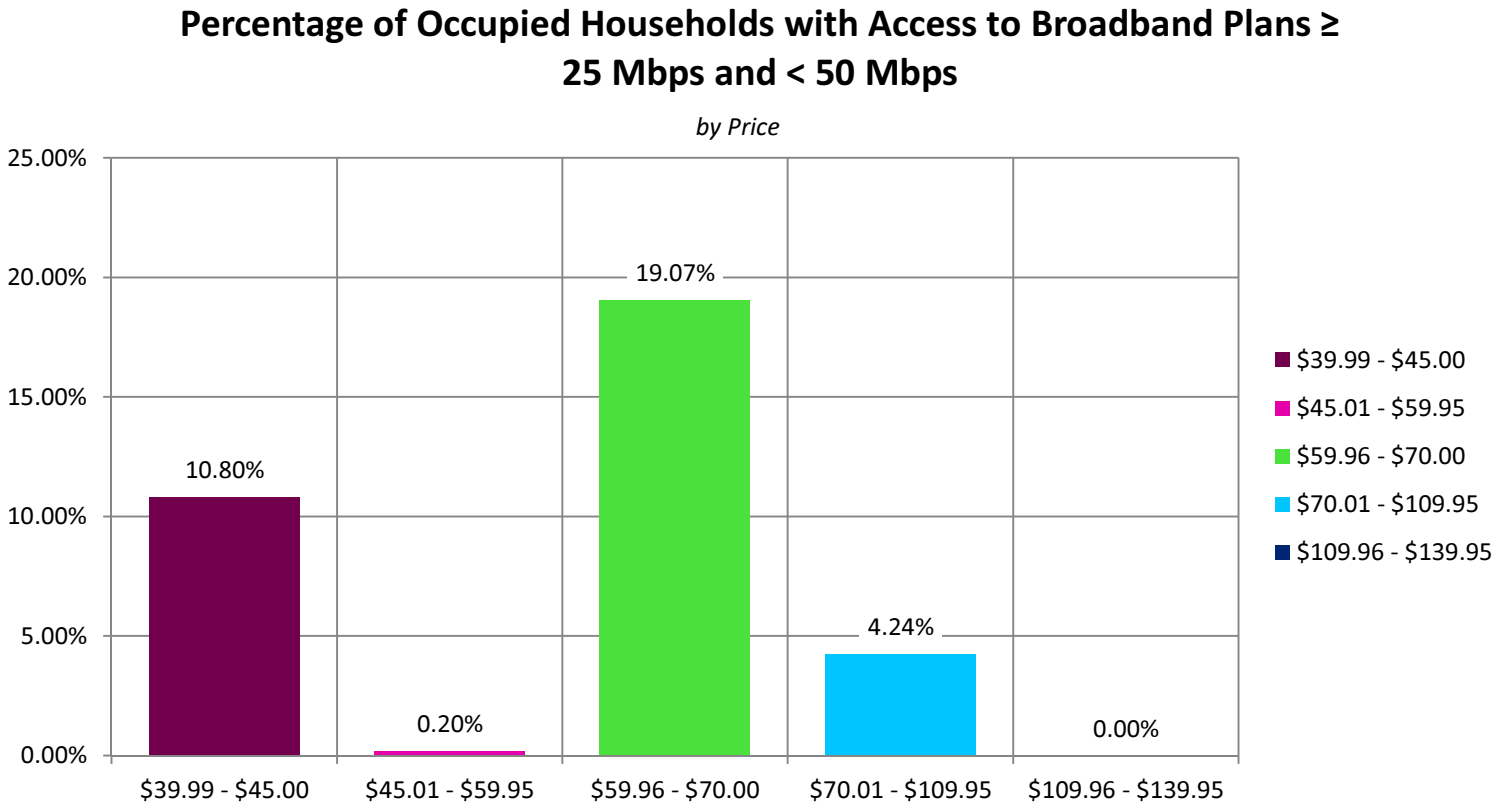


Chart 13. Occupied Households with Access to Broadband Plans ≥ 25 Mbps and < 50 Mbps

Broadband Plans ≥ 25 Mbps and < 50 Mbps		
Price Range	Occupied Households Passed	Percentage of Occupied Households Passed
$39.99 - $45.00	522603	10.80%
$45.01 - $59.95	9637	0.20%
$59.96 - $70.00	922528	19.07%
$70.01 - $109.95	205075	4.24%
$109.96 - $139.95	0	0.00%

Table 13. Occupied Households with Access to Broadband Plans ≥ 25 Mbps and < 50 Mbps

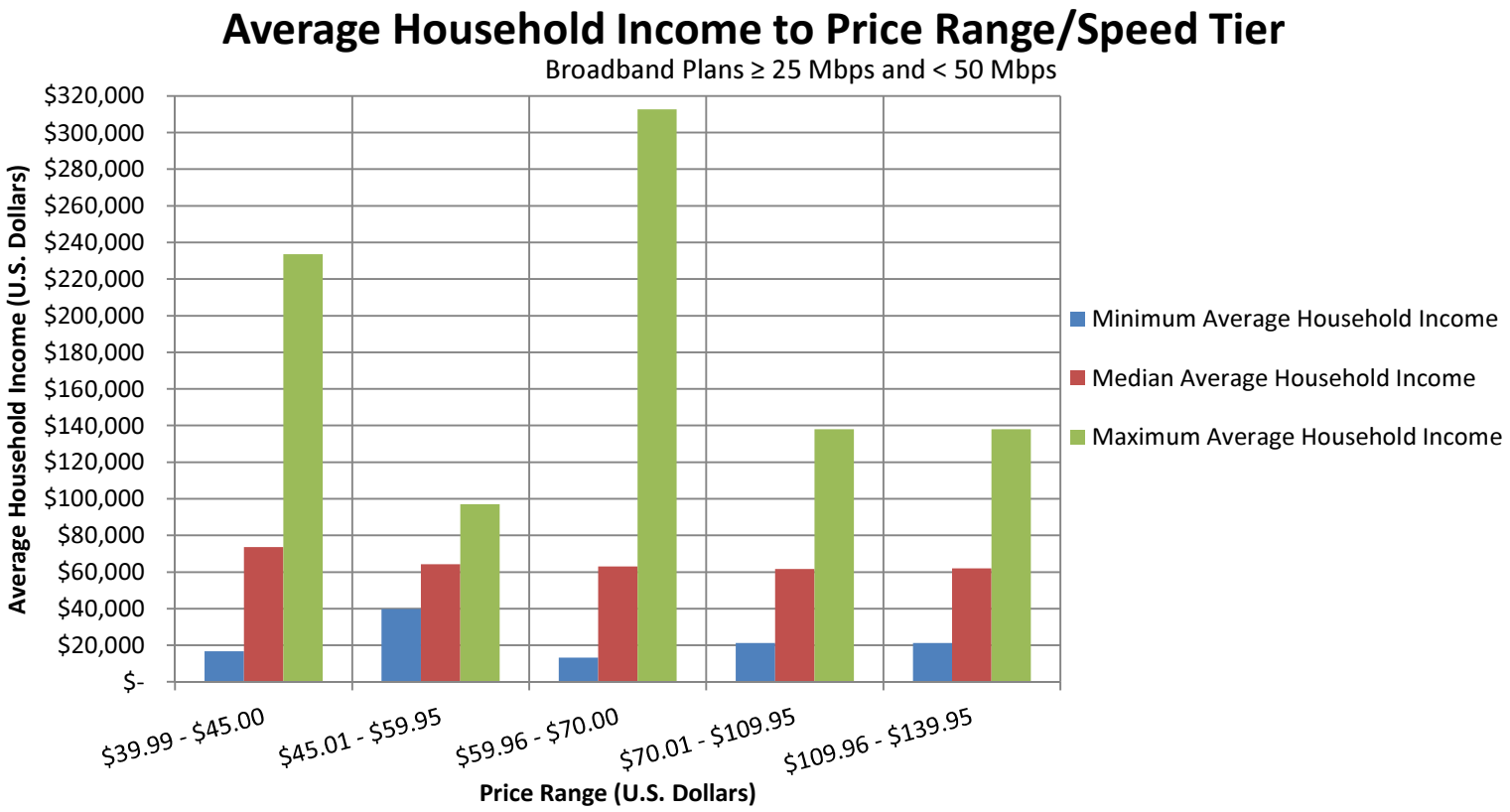


Chart 14. Average Household Income with Access to Broadband Plans ≥ 25 Mbps and < 50 Mbps

Broadband Plans ≥ 25 Mbps and < 50 Mbps						
Price Range	Number of Providers	Occupied Households Passed	Percentage of Occupied Households Passed	Minimum Average Household Income	Median Average Household Income	Maximum Average Household Income
$39.99 - $45.00	3	522603	10.80%	$ 16,703.00	$ 73,665.50	$ 233,549.00
$45.01 - $59.95	4	24393	0.50%	$ 39,783.00	$ 64,189.50	$ 97,039.00
$59.96 - $70.00	6	956265	19.77%	$ 13,236.00	$ 63,051.00	$ 312,642.00
$70.01 - $109.95	3	426281	8.81%	$ 21,175.00	$ 61,687.00	$ 138,032.00
$109.96 - $139.95	2	394474	8.16%	$ 21,175.00	$ 61,927.50	$ 138,032.00

Table 14. Average Household Income with Access to Broadband Plans ≥ 25 Mbps and < 50 Mbps

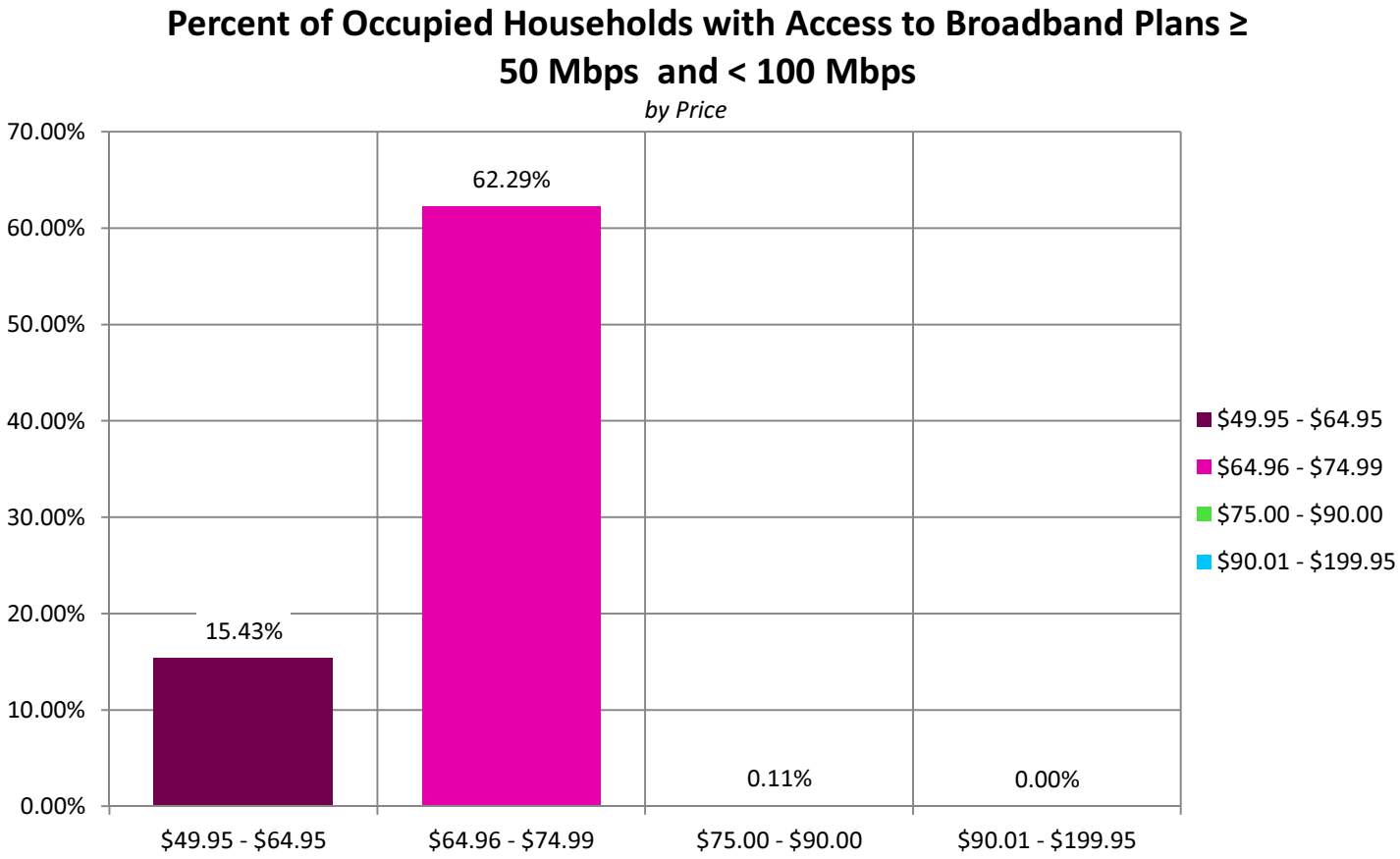


Chart 15. Occupied Households with Access to Broadband Plans ≥ 50 Mbps and < 100 Mbps

Broadband Plans ≥ 50 Mbps and < 100 Mbps		
Price Range	**Occupied Households**	**Percent of Occupied Households in the State of IL**
$49.95 - $64.95	746229	15.43%
$64.96 - $74.99	3013083	62.29%
$75.00 - $90.00	5434	0.11%
$90.01 - $199.95	0	0.00%

Table 15. Occupied Households with Access to Broadband Plans ≥ 50 Mbps and < 100 Mbps

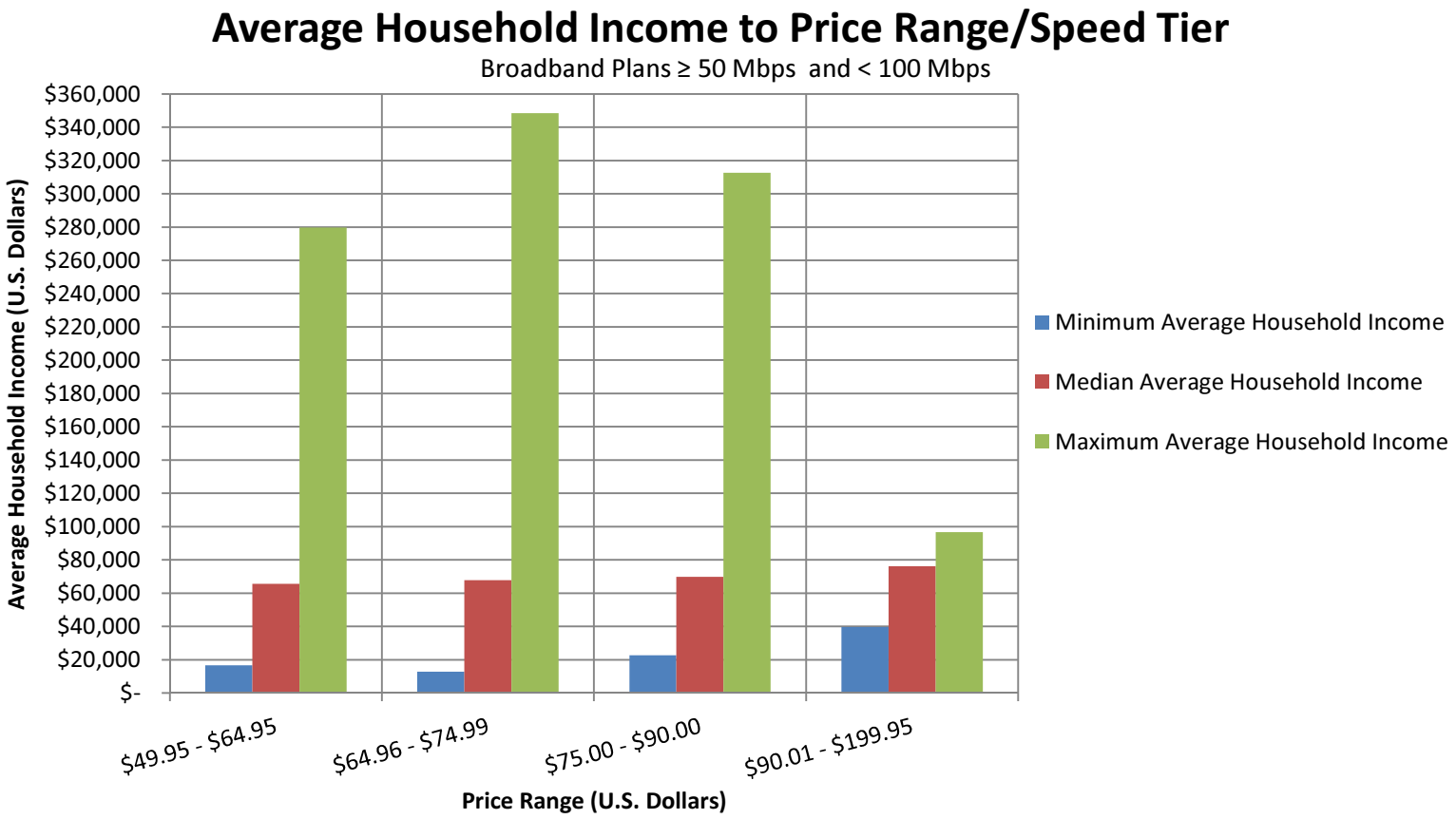


Chart 16. Average Household Income with Access to Broadband Plans ≥ 50 Mbps and < 100 Mbps

Broadband Plans ≥ 50 Mbps and < 100 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$49.95 - $64.95	5	1005987	20.80%	$ 16,703.00	$ 65,613.00	$ 279,657.00
$64.96 - $74.99	3	3739255	77.31%	$ 12,817.00	$ 67,770.00	$ 348,355.00
$75.00 - $90.00	5	195917	4.05%	$ 22,656.00	$ 69,792.00	$ 312,642.00
$90.01 - $199.95	1	17510	0.36%	$ 39,783.00	$ 76,170.00	$ 96,747.00

Table 16. Average Household Income with Access to Broadband Plans ≥ 50 Mbps and < 100 Mbps

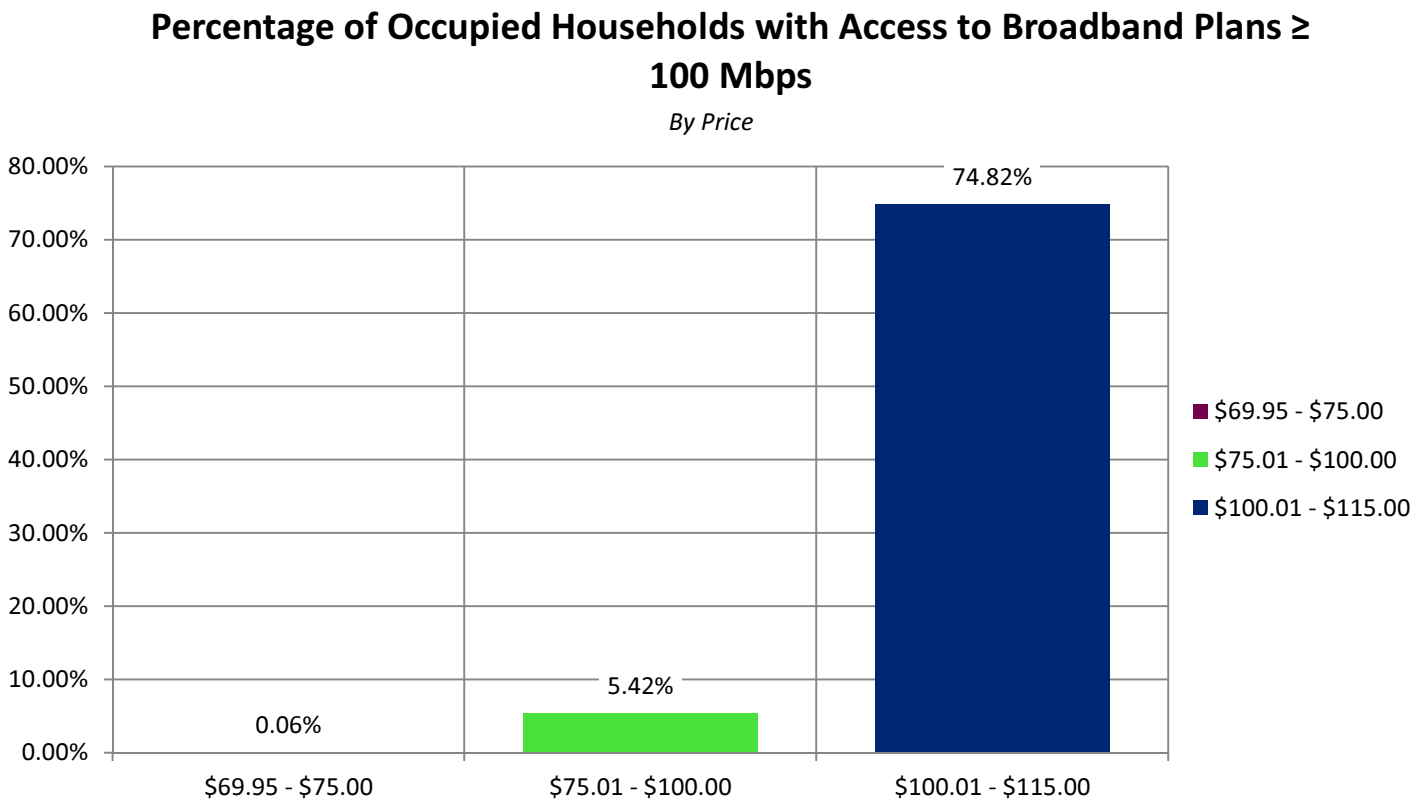


Chart 17. Occupied Households with Access to Broadband Plans ≥ 100 Mbps

Broadband Plans ≥ 100 Mbps		
Price Range	**Occupied Households Passed**	**Percentage of Occupied Households Passed**
$69.95 - $75.00	2986	0.06%
$75.01 - $100.00	262037	5.42%
$100.01 - $115.00	3619203	74.82%

Table 17. Occupied Households with Access to Broadband Plans ≥ 100 Mbps

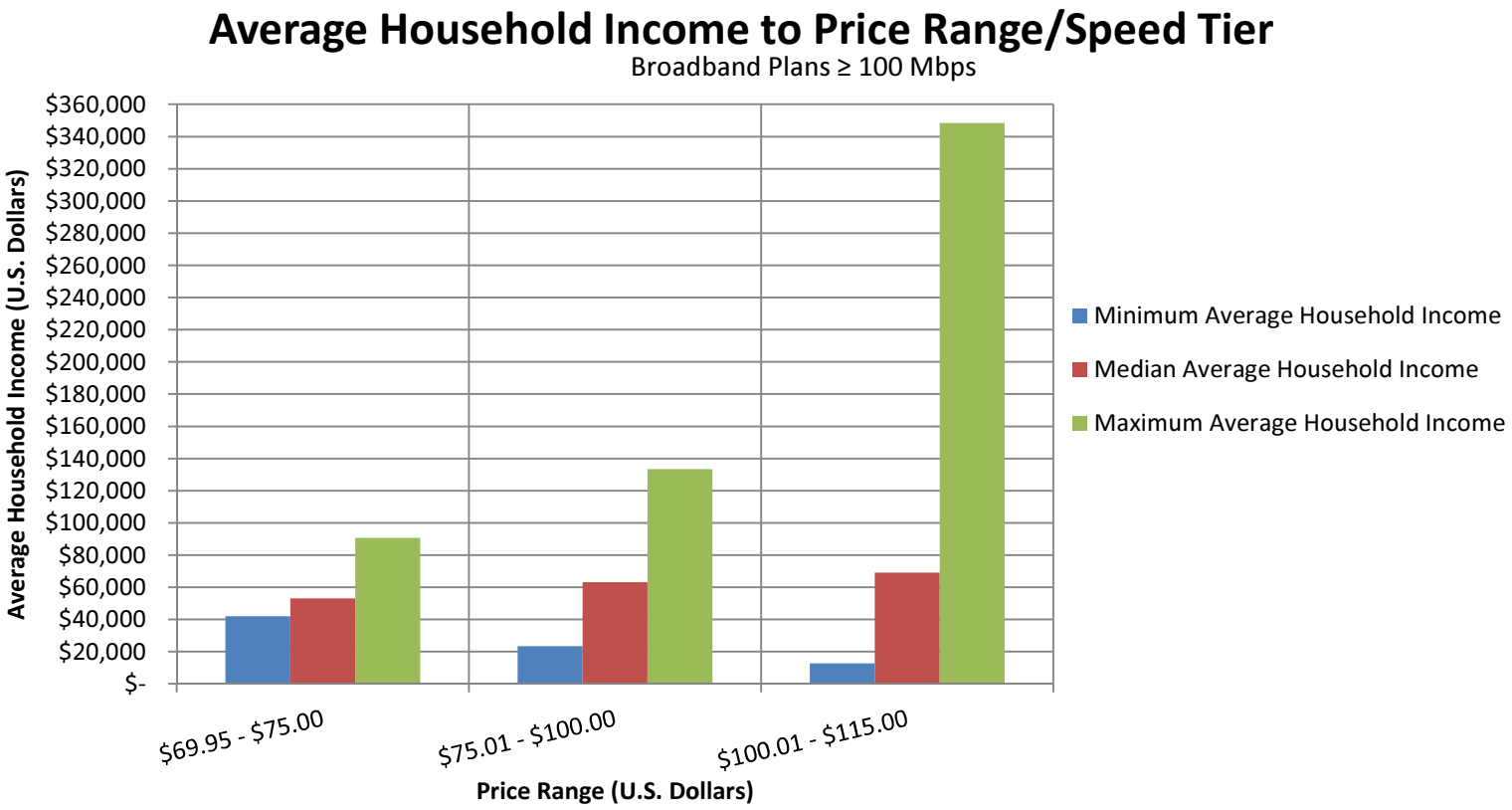


Chart 18. Average Household Income with Access to Broadband Plans ≥ 100 Mbps

Broadband Plans ≥ 100 Mbps						
Price Range	**Number of Providers**	**Occupied Households Passed**	**Percentage of Occupied Households Passed**	**Minimum Average Household Income**	**Median Average Household Income**	**Maximum Average Household Income**
$69.95 - $75.00	1	2986	0.06%	$ 41,979.00	$ 53,026.50	$ 90,689.00
$75.01 - $100.00	1	262037	5.42%	$ 23,330.00	$ 63,257.00	$ 133,371.00
$100.01 - $115.00	1	3619824	74.84%	$ 12,817.00	$ 69,074.50	$ 348,355.00

Table 18. Average Household Income with Access to Broadband Plans ≥ 100 Mbps

Conclusion

This study purposely did not go in to any deep analysis of the data to try and determine why various speed plans/prices were offered and where or which technologies offer which prices. Our goal was not to single out specific carriers or technologies and their pricing strategies, but to see the trends statewide. As we have seen over the lifetime of the mapping project, the carriers have been responding to consumers increased demand for bandwidth by improving and upgrading their network capacities. As the speeds have increased, the prices seem to be holding steady or dropping when you compare the cost per megabit of bandwidth. When we compare the current speed/price combinations to T1 circuits of only a few years ago, the costs have dropped dramatically.

As the demographic income data was examined it became obvious there were not any patterns of broadband deployment or pricing plans that seemed discriminatory by income. This does not address adoption for the same reasons however. The competition within the state also did not appear to show any areas where pricing seems to be out of the norm due to a fewer number of broadband providers, not does there seem to be a any dramatically lower prices where you have many more providers in an area.

We look forward to conducting this study again in a year to be able to investigate the trends at that time and also investigate the change over time if any.

About the Authors

- **John Horrigan-** John, in addition to his work at Broadband Illinois, is Vice President of Policy Research at TechNet, the bipartisan network of technology CEOs, where he is responsible for formulating and carrying out TechNet's research agenda to promote innovation. Prior to that, he was Research Director and member of the leadership team for the National Broadband Plan. He has a PhD in public policy analysis from the University of Texas at Austin.

- **Brian Webster-** Brian serves as the Telecom Data Coordinator for the Partnership for a Connected Illinois. He has led the data collection and analysis efforts for PCI and was instrumental in developing many of the measurement methods of broadband supply within the state. He is a wireless engineer and the President/CEO of Wireless Mapping Inc. His experience spans more than 23 years in the wireless and telecom industry in addition to the more than 2 years he has been working with Broadband Illinois.

- **Steve Dryden-** Steve currently serves as a GIS Database Analyst for the Partnership for a Connected Illinois where he is responsible for managing the semiannual submission of broadband provider data to the NTIA along with developing maps for publication. He has a Bachelor of Science in Meteorology from Western Illinois University along with a minor in GIS and Mathematics.

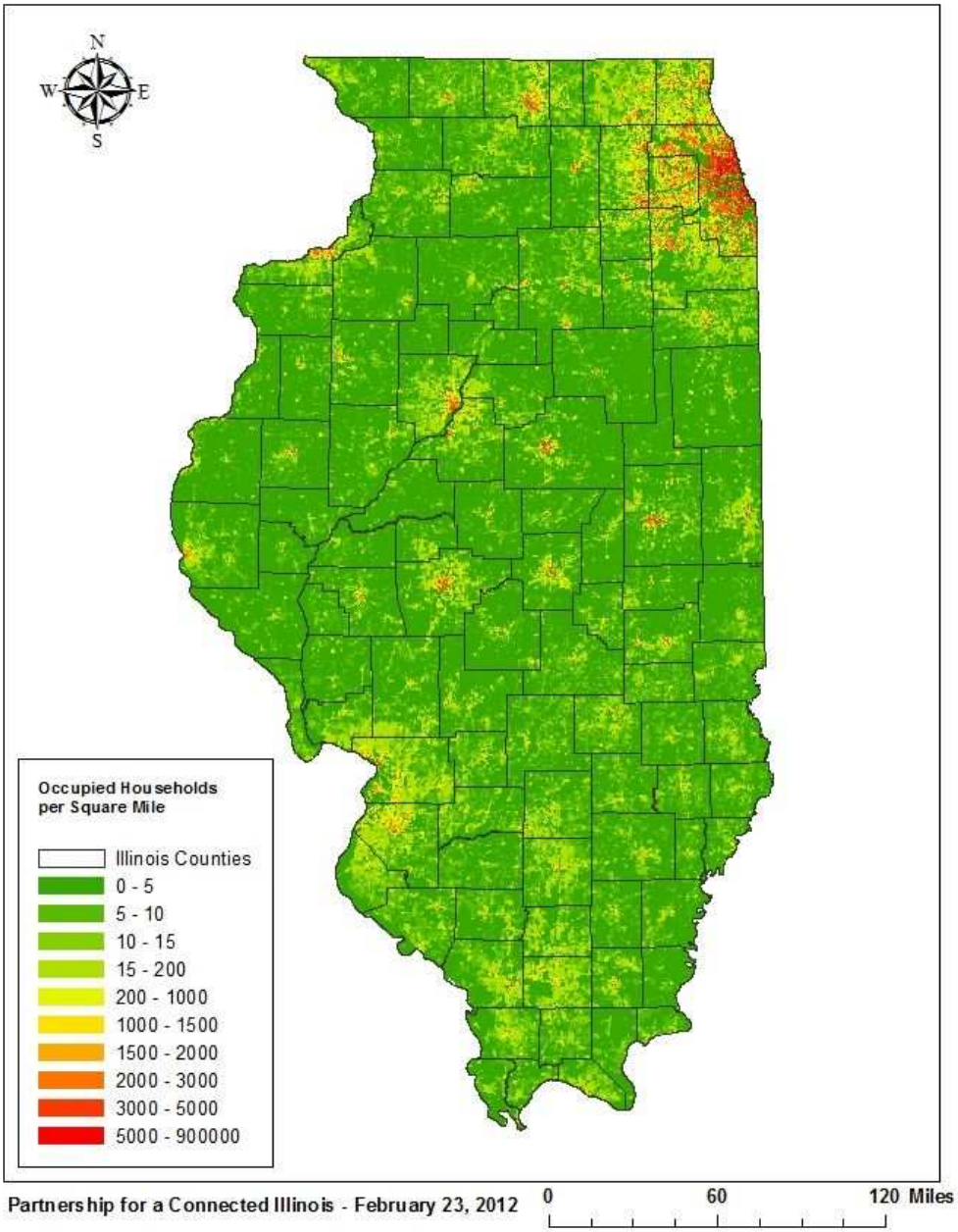
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Broadband Illinois is located on the fifth floor at
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Map Appendices



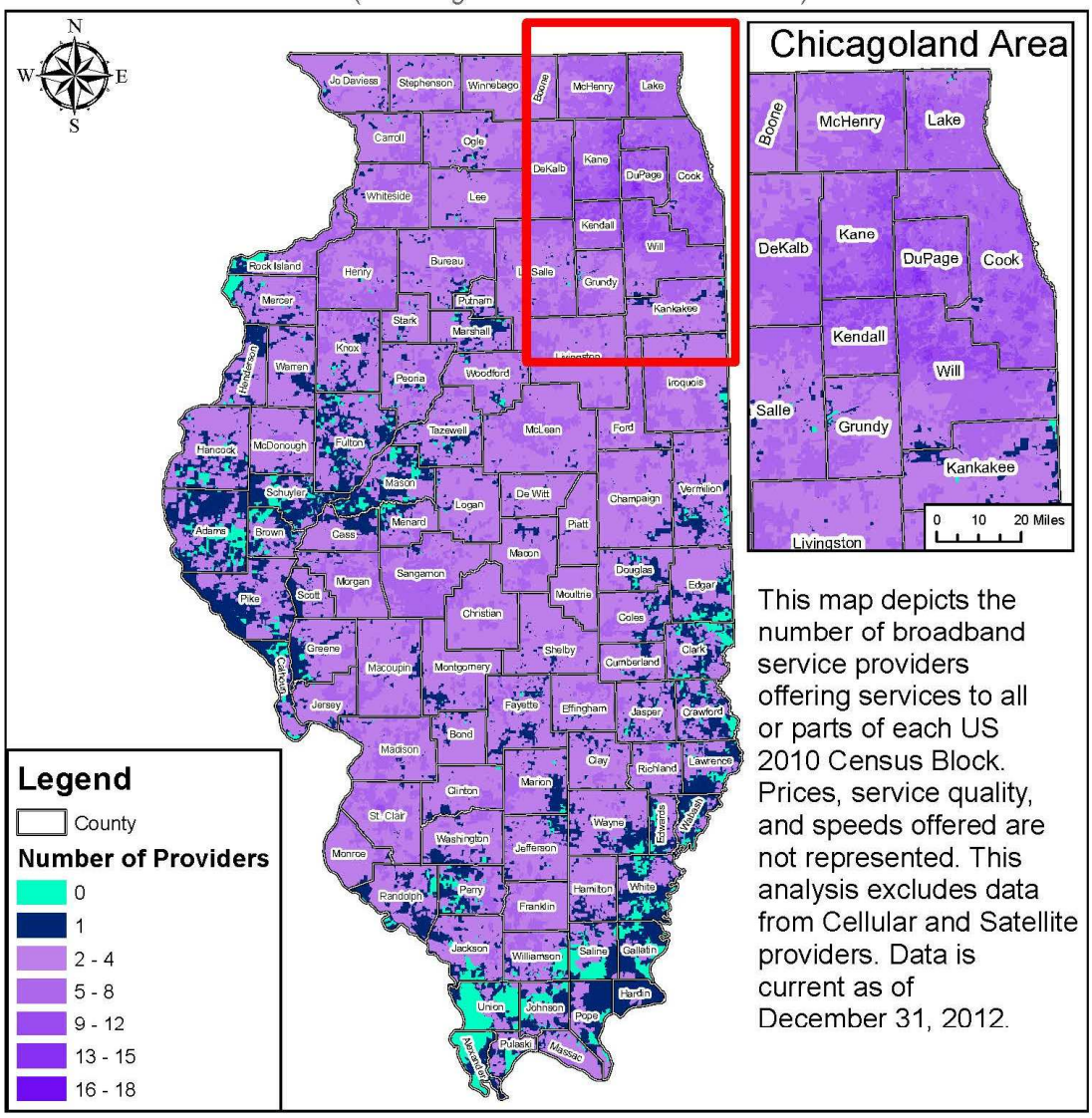
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Number of Broadband Providers per Census Block

(Excluding Cellular and Satellite Providers)



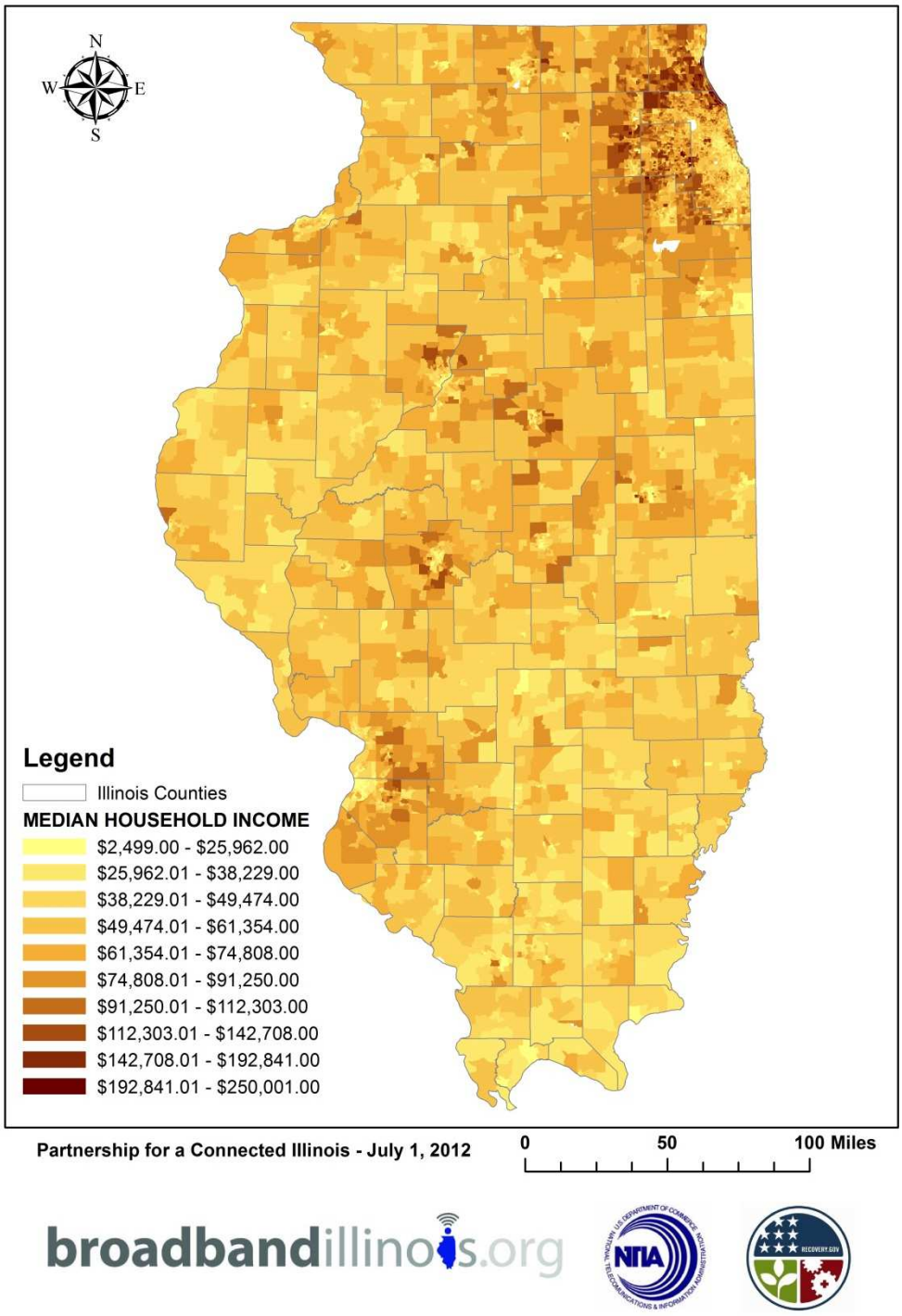
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0 50 100 Miles

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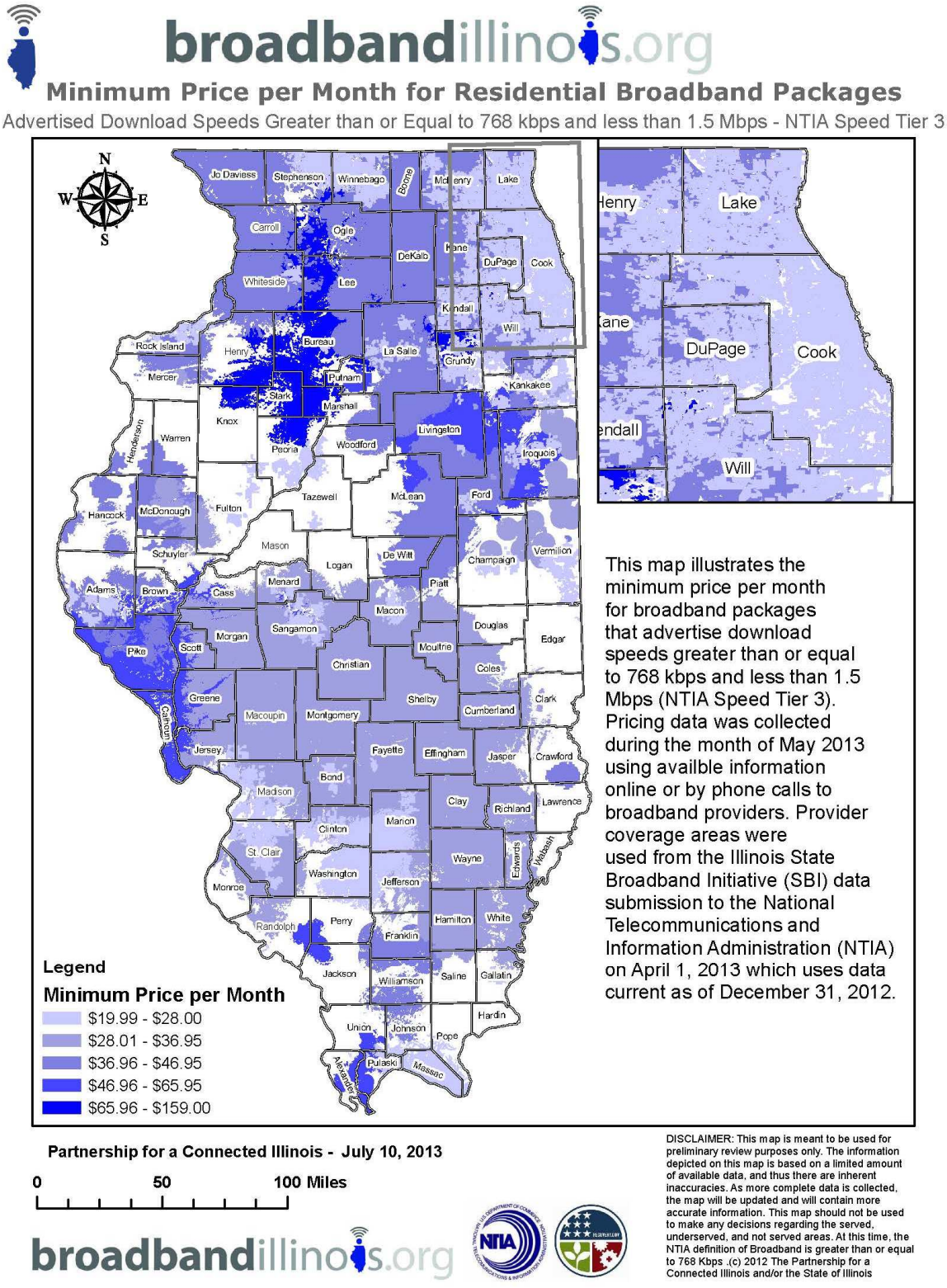
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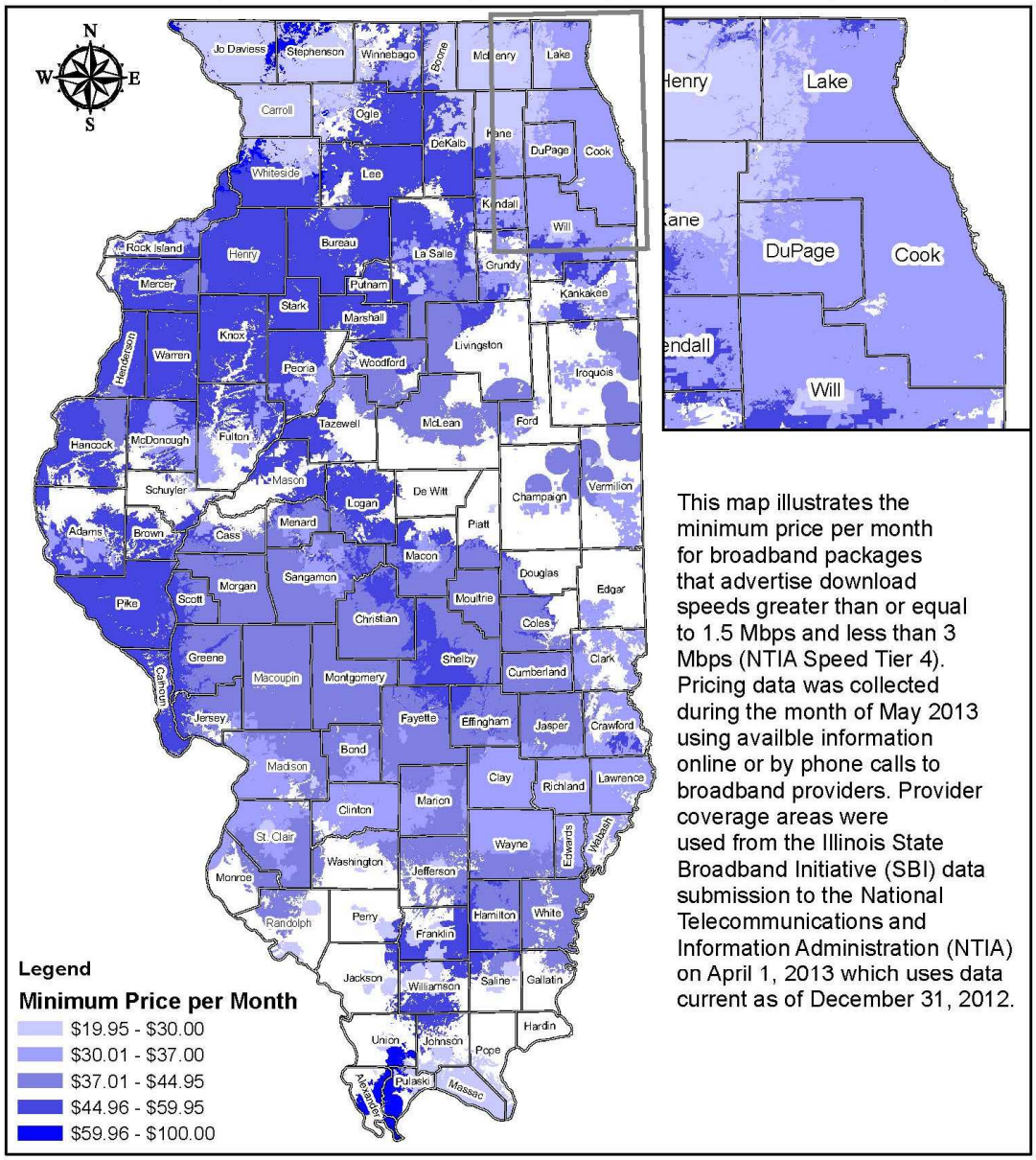
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Minimum Price per Month for Residential Broadband Packages

Advertised Download Speeds Greater than or Equal to 1.5 Mbps and less than 3 Mbps - NTIA Speed Tier 4



This map illustrates the minimum price per month for broadband packages that advertise download speeds greater than or equal to 1.5 Mbps and less than 3 Mbps (NTIA Speed Tier 4). Pricing data was collected during the month of May 2013 using availble information online or by phone calls to broadband providers. Provider coverage areas were used from the Illinois State Broadband Initiative (SBI) data submission to the National Telecommunications and Information Administration (NTIA) on April 1, 2013 which uses data current as of December 31, 2012.

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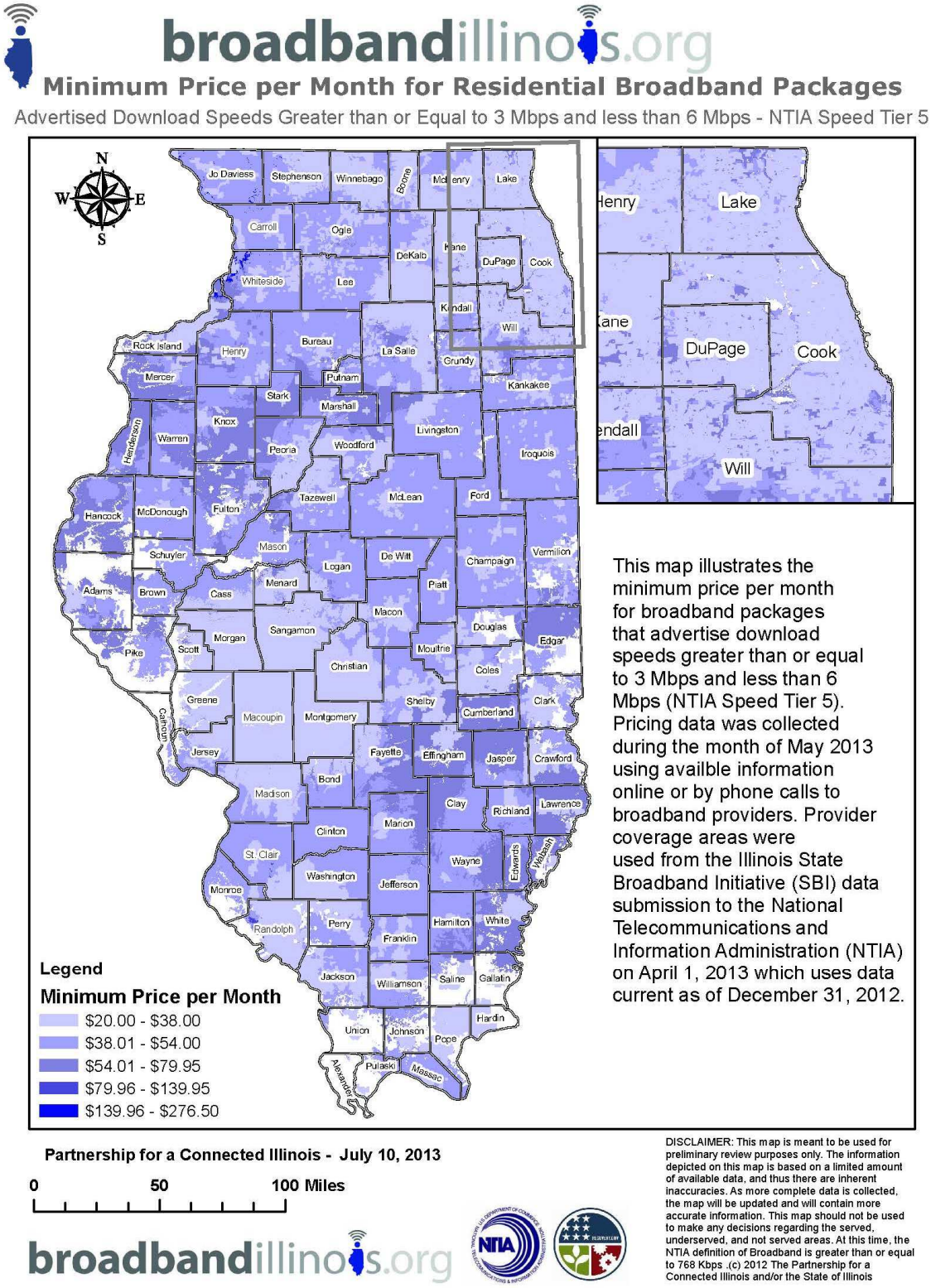
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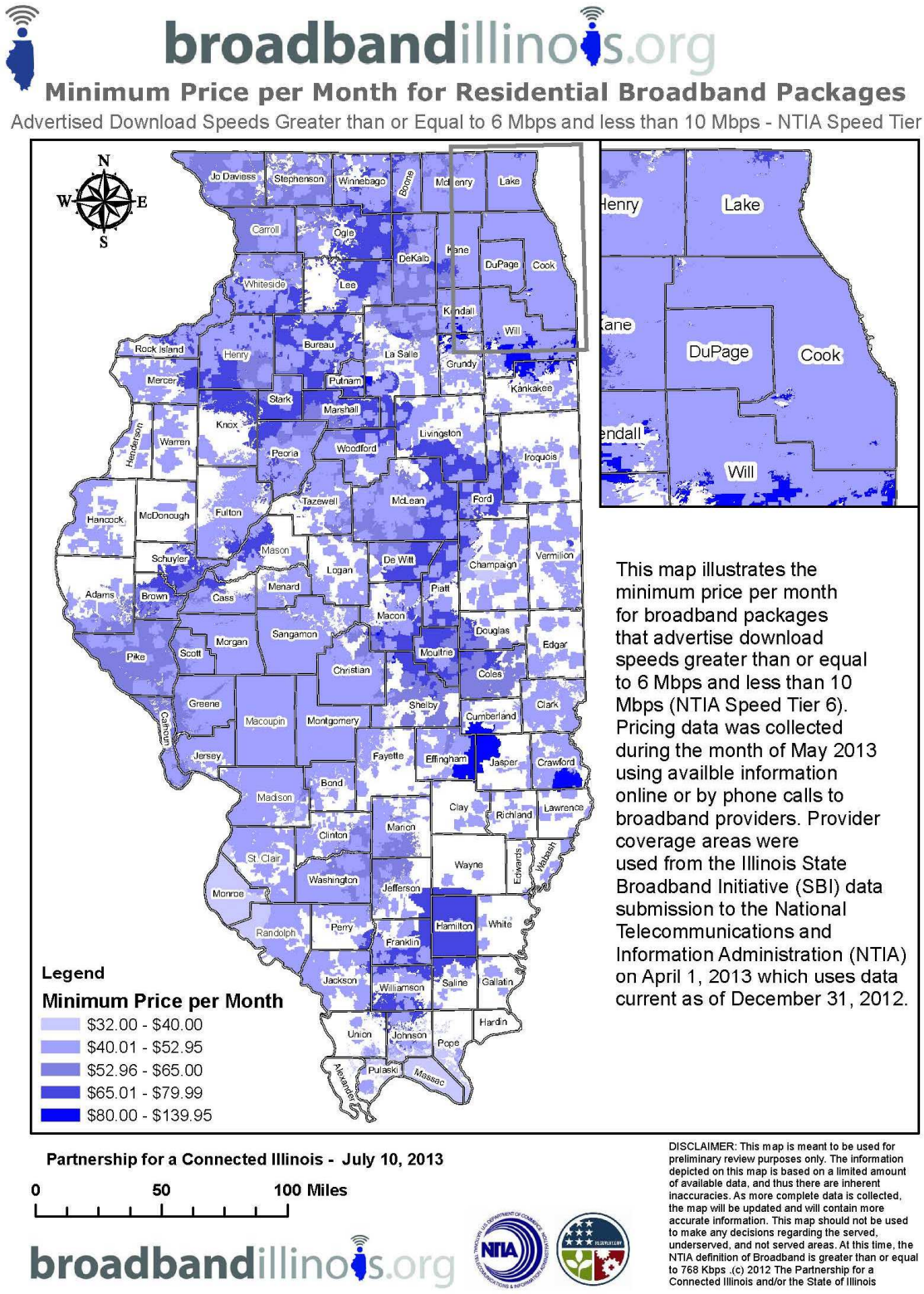
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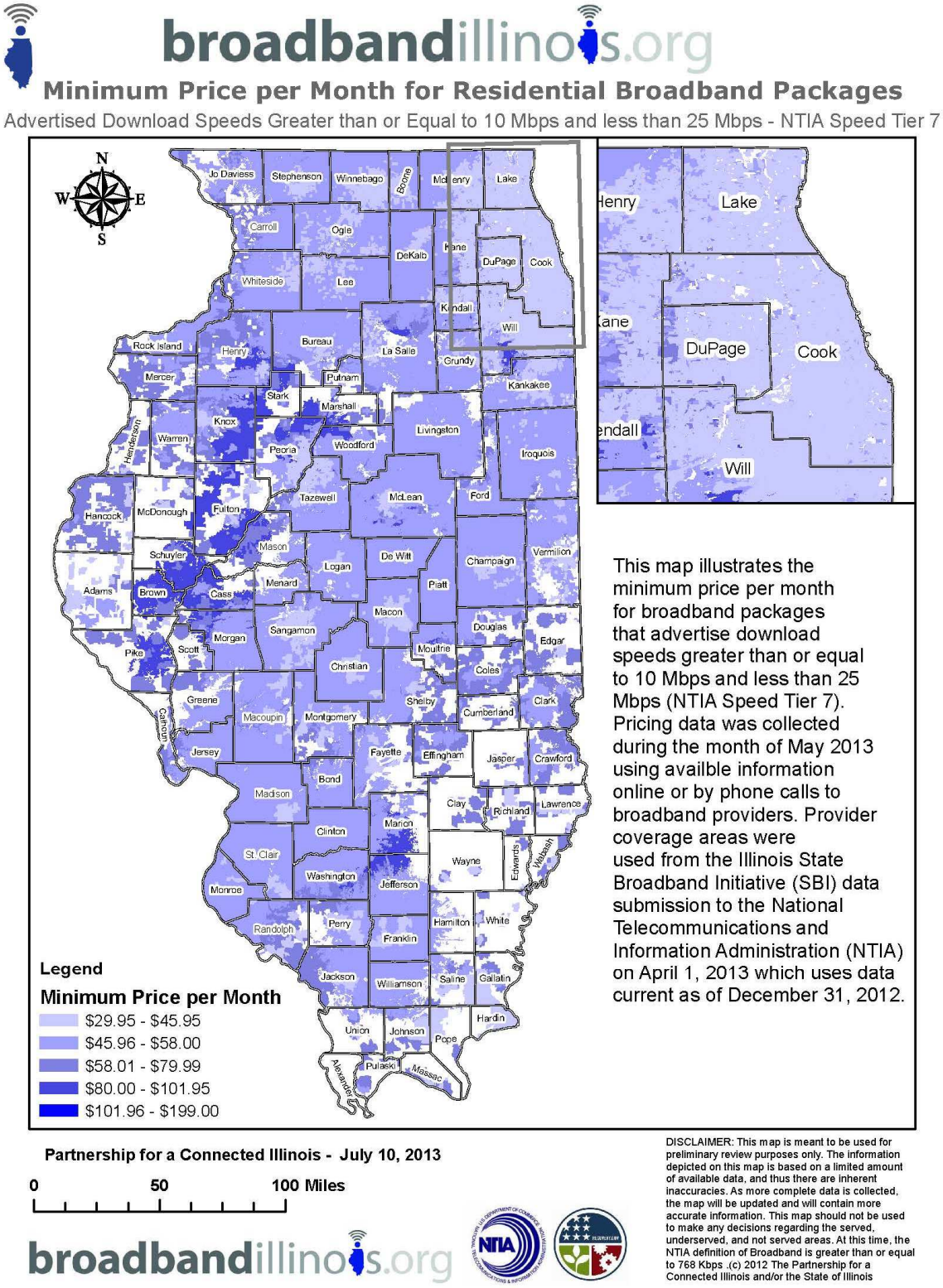
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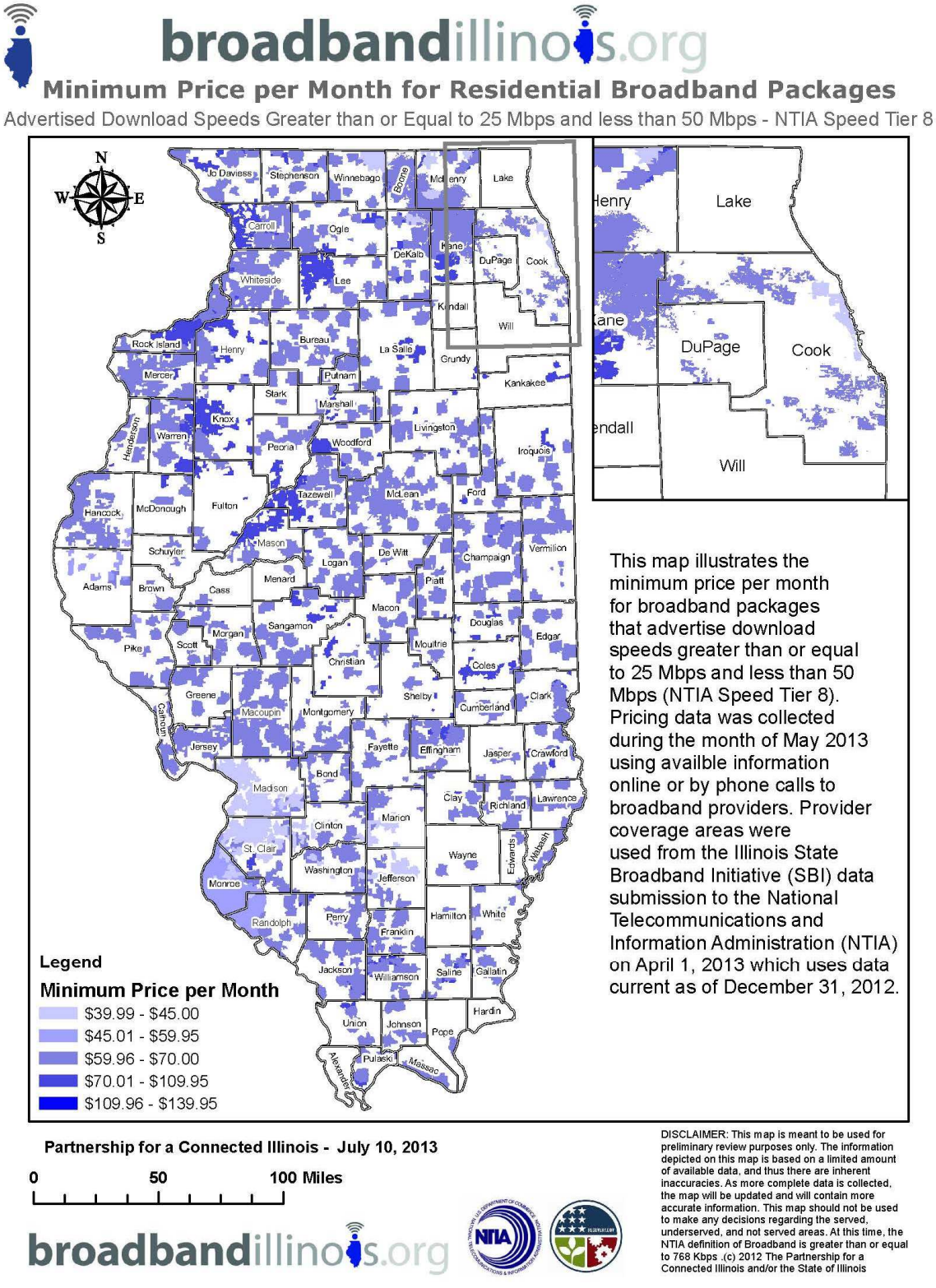
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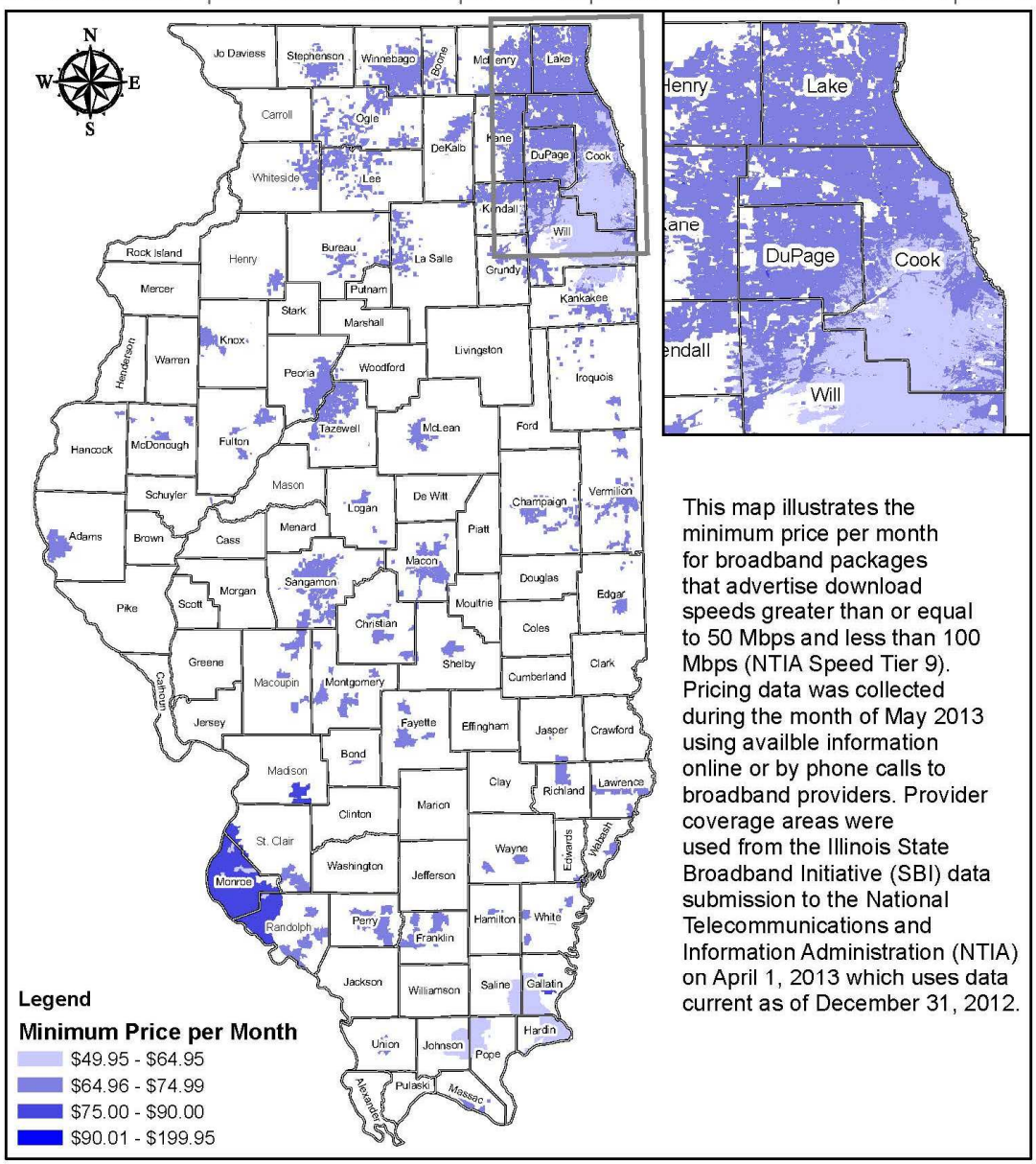
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Minimum Price per Month for Residential Broadband Packages

Advertised Download Speeds Greater than or Equal to 50 Mbps and less than 100 Mbps - NTIA Speed Tier 9



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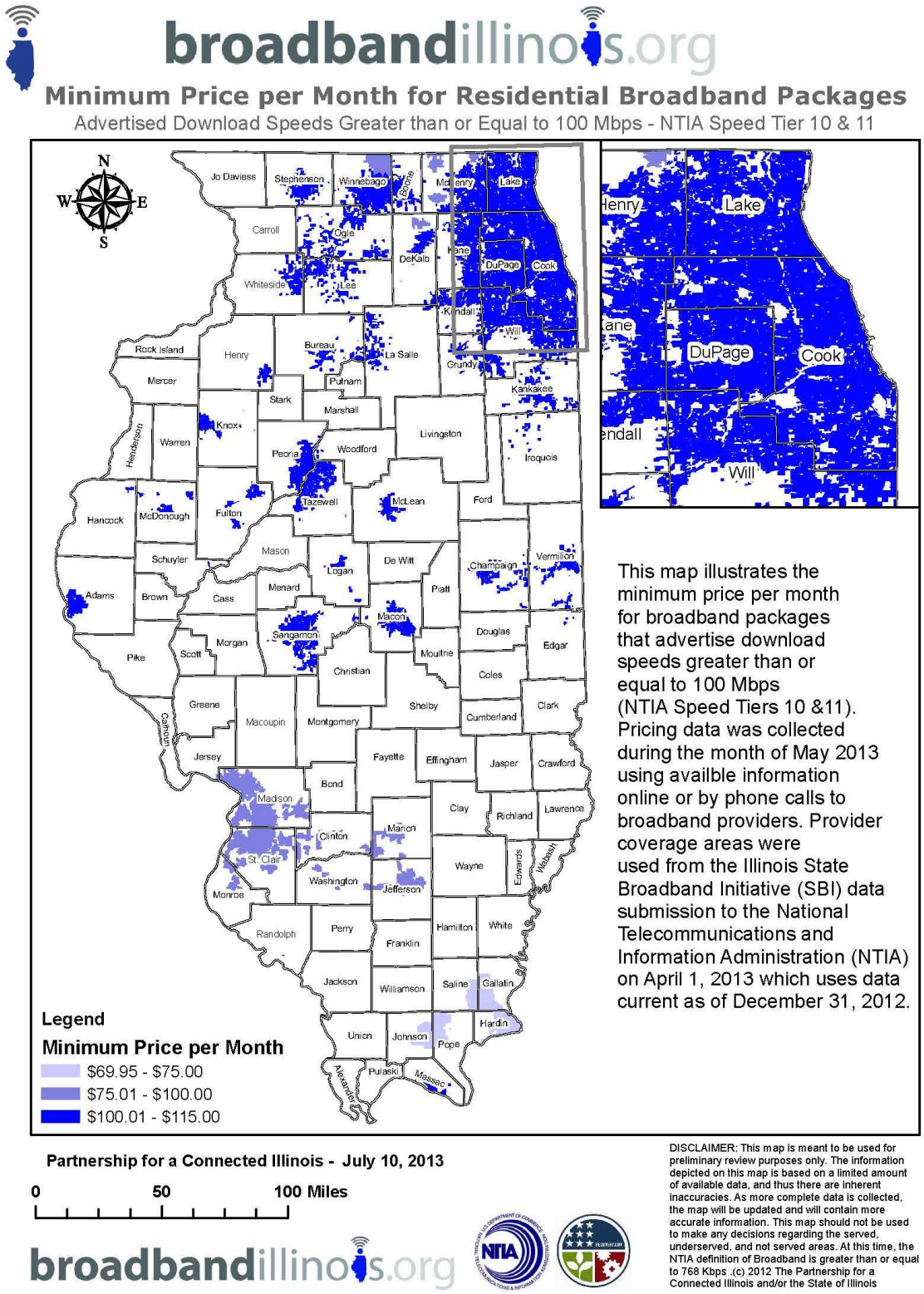
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