

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Policies Regarding Mobile Spectrum Holdings	)	WT Docket No. 12-269
The State of Mobile Wireless Competition	)	WT Docket No. 11-186

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**EX PARTE COMMENTS OF PUBLIC KNOWLEDGE**

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**Introduction and Summary**

Public Knowledge (PK) respectfully submits this filing in response to the above-captioned proceedings. While searching the Universal Licensing System (ULS) for data to support policy positions in several spectrum proceedings, PK noticed how challenging it is to gather meaningful information on carriers’ spectrum licenses and affiliate control in order to understand the mobile wireless market. In the wake of necessary improvements to mobile wireless policies and the upcoming incentive auctions, it is essential that the ULS is well-organized and transparent. By improving data collection processes, the Commission will help innovators and commenters find and analyze data more easily so they can work to cultivate spectrum use and develop better proposals to spur mobile wireless competition.

This comment explains the difficult process of gathering wireless market data to support policy positions, points out problems with the current ULS database, and suggests (hopefully easy) improvements to make ULS data collection and analysis more efficient for future spectrum-related discussions.

**I. ULS data in its current form does not effectively help commenters develop informed spectrum policies or innovators improve the mobile wireless market.**

**A. In accordance with the Commission’s request for comments, PK gathered and analyzed data to support proposals for spectrum screens and other mobile wireless issues.**

In light of increasing consumer demand for bandwidth-intensive mobile wireless services, the Commission seeks comments on how to implement a spectrum screen to “promot[e] economic opportunity and competition and ensur[e] that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses.”<sup>1</sup> The

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<sup>1</sup> *Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, Notice of Proposed Rulemaking, ¶ 3 (2012) citing 47 U.S.C. § 309(j)(3)(B) (*Mobile Spectrum Holdings*).

Commission asked for specific data and other evidence that support commenters' proposals.<sup>2</sup> PK realized it could offer more meaningful proposals on a flexible spectrum screen that promoted competition and innovation by learning more about the competitive state of the mobile wireless market—which meant knowing the carriers in the market and the spectrum licenses that they control. Anticipating the mobile spectrum NPRM and understanding the complexities associated with ownership and licensing data in the ULS database, PK began compiling and analyzing the data two months before the NPRM's September 28, 2012 release data in order to support upcoming proposals.

## **B. PK's Data Compilation and Analysis Methodology**

The Commission currently requires spectrum licensees to report information so that it and members of the public can use the data to learn about the state of wireless competition. While PK applauds the Commission for requiring these reports, it needs to compile and present the data in an organized and useable manner. Until then, commenters like PK and innovators will have to devote significant resources to methodically compiling and analyzing data to develop new policies, technologies, or business strategies. With no "ULS Best Practices" guide, PK devised a strategy and evolved its methodology along the way. What resulted was a multistep process that can be avoided in the future with a few modifications to the ULS database.

To determine the players and the competition in the mobile spectrum market, PK wanted to know how the carriers in the market and the spectrum licenses they controlled changed throughout the years. The tricky part would be determining the affiliate companies that major wireless service providers controlled because control over an affiliate company generally means control over that company's spectrum licenses. Therefore, PK needed to create a timeline of 1) carriers' controlling interest in affiliate companies, and 2) carriers' and affiliate companies' spectrum licenses. The ULS database is the only public place that holds these two key pieces of information. Both key pieces of information required an unbelievable amount of time and attention to detail.

A few notes on the methodology that follows:

- Date Range of Project:
  - January 1, 2005—October 15, 2012.
  - PK started collecting data from January 2005 to avoid lingering effects of the previous spectrum cap that was phased out in 2004.
- The Databases:
  - ULS Ownership Database downloaded into Microsoft Access
    - The database contains all of the current and proposed ownership disclosure forms from about 2001.

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<sup>2</sup> Id. at ¶ 16.

- PK downloaded ownership data into Access to create queries to find specific information, *e.g.*, an alphabetized list of affiliates controlled by a carrier.
  - Microsoft Excel
    - After querying a chronological list of ownership filings in Access, PK exported the information to Excel to input the ownership information relevant to each filing. PK preserved chronology by inserting rows in the middle of data, which is not possible with Access.
  - Ownership Disclosure Information Search on the ULS website
    - Includes information on carrier ownership and control located in attachments and archived files that are not available in the downloadable Ownership Database.
- Calculating Cumulative Time:
  - The amount of time calculated to complete the project is based on a 40 hour work week.

For the first key piece of information, PK set out to determine what affiliates each major carrier controlled using the three databases described above: the Ownership Database downloaded into Microsoft Access, Microsoft Excel, and the Ownership Disclosure Information Search on the ULS website. It took some time and planning to download the ULS data into Access and format the databases to efficiently input data, but the process resulted in an easy-to-read timeline of carriers' ownership and control. After a few days of siphoning through data and reading the ULS FAQs and Glossary, it was easy to understand the files and information contained therein.

<b>STEP</b>	<b>SETUP</b>	<b>TIME</b>
1	Discussion with experts to develop methodology and determine the specific data to extract from the ULS.	1 hour
2	Download ULS Ownership Database. Export data to Access in order to run queries on the data. Format data by inputting data headings to 1) know what the data represents and 2) complete query searches.	3 hours
3	Learn about the data in the database in order to best organize and analyze it. Research the function and meaning of each set of data within the Ownership Database. Get up to speed on acronyms and rules for filing data.	12 hours
4	Set up a query to put ownership files in chronological order. Realize Access only allows row inputs at the bottom of data columns. Export chronologically-ordered ownership files to Excel in order to add rows under each file entry to input ownership/control information later without disrupting the chronological order of the files.	1 hour
<b>CUMULATIVE TIME</b>		<b>17 hours</b>

Upon completing the setup, PK understood the information in the databases and we began analyzing the ownership data to determine which carriers controlled affiliate companies. PK chronologically inputted the results for each ownership file previously exported to Excel. Then for each ownership file, PK inputted 1) Commission-regulated affiliates of the filer (FRBs in ULS lingo), 2) companies with disclosable interests in the filer (DIHs), and 3) Commission-regulated affiliates of the companies with disclosable interests in the filer (FRBs of DIHs).

The process for obtaining this information involved several steps for each ownership file. First, PK found the file in the Ownership Disclosure Information Search on the ULS website and looked at the FRBs, DIHs, and attachments to determine ownership and control information. The website was crucial primarily because the attachments provided information above and beyond the raw data downloaded to Access. The online searches illustrated corporate ownership structures (*e.g.*, Verizon Communications controls Cellco Partnership controls Alltel Corporation) and explained when actual control contradicted the Commission’s “exceeds 50 percent” control rule (*e.g.*, MetroPCS owns 85% of Royal Street BTA but does not control it).<sup>3</sup>

After compiling about one and a half years of data, PK sought ways to speed up the process and checked the efficiency of our methodology with experts. After speaking with someone fluent in the ULS, PK realized there was no simple(r) way to complete the project. Fortunately, an expert helped improve queries so PK could get information on affiliates in a more convenient format from Access.

Armed with the confidence that a slightly more efficient process brings, PK finished the ownership data collection.

<b>STEP</b>	<b>CHRONICLING CARRIERS’ CONTROL OF AFFILIATES</b>	<b>TIME</b>
5	Searched the online Ownership Disclosure Information Search month by month starting with January 1, 2005. For every file, learned about the ownership structure and control of affiliates. Then, queried the FRB, DIH, and FRB of DIH information in Access, recorded it under the ownership filer name in Excel, and made adjustments based on information in the online attachments. Compiled eight years of data. Compiling one year of data took about 40 hours.	320 hours
6	Meetings with ULS database experts.	6 hours
7	Obligatory Ownership Disclosure Information Search Breakdown Day. (Thankfully, Commission staff promptly fixed the website after being notified of errors and notified PK when the website was working again.)	12 hours
8	Waited on the always slow ULS website or sometimes slow Access query results.	probably 5 hours
	<b>CUMULATIVE TIME</b>	<b>360 hours (2.25 months)</b>

<sup>3</sup> See 47 U.S.C. § 1.2112(a)(6).

Next PK deduced carriers’ control of affiliates for the end of each calendar year from the completed chronological timeline of ownership information. (Knowing the yearly, rather than daily, changes in carriers’ spectrum licenses that would be pieced together with year-end ownership information would be enough to better understand the wireless market and develop educated spectrum policies.) Sometimes this was straightforward because a major carrier would only have one filing in a particular year. But carriers are required to file ownership information based on when they apply for or alter a spectrum license, so they could have many ownership files throughout the year. Some years major carriers had multiple ownership filings within a year or even within a few days, making it difficult to tell which file was latest in the year.

Sometimes there were obvious errors in the forms such as when a carrier only reported half of its affiliates in between two filings with twice as many reported affiliates. Other times errors were less obvious—certain “omissions” required a combination of comparing all the filings for the year with the filings of the previous and subsequent years to determine whether a carrier still controlled an affiliate. If it was impossible to tell whether or not an error existed, PK analyzed the information as though it were correct.

PK charted the major carriers and the carriers with the most affiliates to quickly see how ownership was changing over time. PK discovered missing data on carriers that existed in given years. For example, there was no information on T-Mobile’s ownership disclosures from 2005-2009. Surely T-Mobile must have applied for or altered a spectrum license at least once in five years. An ownership search by T-Mobile’s registration number revealed archived files that provided the information. It turns out that the downloadable Ownership Database does not include archived files.

PK might have noticed the downloadable Ownership Database did not include archived files sooner but PK always unchecked the filing-type boxes in the Ownership Disclosure Information Search even though it offers the choice of getting results for any combination of current, proposed, and archived files. Initial monthly searches with checked filing-type boxes resulted in “no matches found.” Un-checking all the filing-type boxes produced a bunch of results, so PK stayed with that approach. In the end, PK searched the archived files to fill in missing information on major carriers’ control over affiliates using the carriers’ registration numbers. A complete picture of year-end ownership information slowly developed.

<b>STEP</b>	<b>GENERATING YEAR-END RESULTS</b>	<b>TIME</b>
9	Compiling information from archived files.	20 hours
10	Analyzing and formatting data to determine ownership and control of affiliates at the end of each year.	80 hours
	<b>CUMULATIVE TIME</b>	<b>460 hours (~ 3 months)</b>

PK now has the plethora of ULS ownership information in an organized and easily understandable database and knows how major carriers control affiliates. But obtaining this information took three *months* and is only the *first* key piece of information to better understanding the wireless market.

It will still be a while before PK concludes which major carriers actually control which spectrum licenses. Gathering this information requires inefficient searches in ULS of specific spectrum license databases and the Advanced License Search to determine the spectrum holdings of each company from January 2005. Then, using the ownership and affiliate control information obtained as described above, PK can devise a list of all the spectrum licenses each major carrier controls.

Only when all the data is gathered and analyzed will PK fully understand the wireless market and have the necessary support for proposals on spectrum screens or other wireless issues that promote competitive and innovation.

## **II. The Commission can help fix the unnecessarily time consuming, technologically inefficient, difficult, and possibly unreliable ULS database and redirect resources toward developing informed spectrum policies.**

### **A. Problems with ULS data**

#### 1. Poor data compilation, inefficiency, and limited technological capabilities

The ULS holds an abundant amount of information that could help corporations, public interest groups, and others develop successful mobile wireless policies, but the data is not useful in its present form. Easy and convenient are foreign concepts in the ULS. Rather, any way to compile the data is inevitably inefficient, frustrating, and generally lousy.

#### 2. Databases do not provide the right types of information

For example, the Ownership database does not include archived files. As another example, instead of collecting the ownership data in chronological order as described above, PK could have collected the data based on spectrum type. Knowing the type of spectrum that carriers were licensing when collecting ownership data would have been useful for PK even without knowing the exact spectrum licenses. But there was no database to download ownership filings by type of spectrum, and the ownership filings themselves do not state the type(s) of spectrum that the carriers license. And even if PK had the option to arrange the data in this order, it still would have been an incredibly time consuming process.

#### 3. Filers do not always submit accurate information

Another difficulty with the ULS database stems from the filers themselves. Numerous filers submitted incorrectly or carelessly filled out forms. Unfortunately, it is not always possible to tell if a filing has errors. Careless errors in a major carrier's ownership or spectrum license

filing can lessen the accuracy of the data analysis and lead to incorrect determinations about the wireless market or unsuccessful policies or regulations.

4. Many parties, likely including the Commission, lack the resources to use ULS effectively

The Commission itself is supposed to be able to use ULS data to learn about the communications landscape before implementing policies or regulating the industry. But with such unorganized and erroneous databases, even the Commission looks to other sources to gather and analyze data. In trying to compile ownership and spectrum license data to learn about the landscape of the wireless market, PK asked the Commission for the data used to calculate local Herfindahl-Hirschmann Indexes (HHIs) in its Mobile Wireless Competition reports thinking that maybe the Commission had already compiled the ownership and spectrum licensing data from ULS in order to calculate the HHIs. Instead, even the Commission avoided ULS and used proprietary data that it gathered from the North American Numbering Plan Administration (NANPA).

While the Commission may be able to get around the flaws in the ULS database, the public relies on ULS for nonproprietary spectrum-related data. Innovators, large or small, should be able to learn about the wireless markets around them in a much more efficient way than is currently possible in order to best implement competitive technologies and business strategies.

**B. Quick fixes now**

The Commission has the opportunity to help commenters and innovators improve the mobile wireless market by improving its ULS data collection processes. One of the best ways to understand current mobile wireless competition is to know the current market for mobile wireless devices and services and how the market has changed over time. The ownership and licensing data that explains the market is all available in the ULS, and the data will be more useful and drain fewer resources with a few adjustments in the short term. After all, the Commission collects data not for the sake of collecting data, but to understand and improve the wireless market.

1. The Commission should make available all nonproprietary data that it has used in its Mobile Wireless Competition Reports (Reports)

Allowing access to this type of data may allow commenters to better understand and expand on the results presented in the Reports. The Commission should also be sure to not withhold nonproprietary data from the public just because carriers put up a fuss or want to remain secretive about certain business activities.

2. The Commission should ensure that filers comply with, and take seriously, reporting rules

This will help ensure accurate data and analysis.

3. The Commission should include archived files in downloadable databases

Just because an archived file is not current does not mean that someone will not want it to research the history of a company or determine changes in the wireless market.

4. The Commission should consider how parties that care about spectrum might want to use the data

For example, combine the reporting requirements of spectrum license holdings (currently form 601) and ownership (currently forms 602 and 175) into one form for purposes of collecting and uploading the data to ULS. This is only one of many ways to improve data collection in ULS. It is specific to the work PK has been doing, but many others will benefit from this change as the information provides an excellent overview of the wireless market. Then, an innovator or policymaker could learn more about a carrier in the wireless market by reading the form or learn more about the entire market by downloading all the relevant information in a single combined ownership and licensing database. Having all the information in one place will allow a query search that will draw out a major carrier's control of spectrum licenses and avoid a more piecemeal approach to determine the carrier's licenses through the several additional steps of searching separate ownership and licensing databases (described above).

### **C. Improvements for the future**

In addition to these low-tech, quick fixes, the Commission needs to improve the ULS database for the future.

1. Continue updating the technology behind the ULS to make it easier to search

The Commission needs to update the technology behind the ULS or move the data to other platforms. Currently, the Commission is testing GitHub, a potentially inexpensive solution to making ULS data more easily accessible. Since the Commission gathers ULS data for itself and for the public, it should consider what type of information it and other policymakers will want to glean from the databases. The Commission should also realize how better access to the data can benefit the public by encouraging innovators to more easily learn about the marketplace and make competitive improvements.

2. Continue to simplify forms when possible

With simpler forms, filers are more likely to be accurate and truthful, and data analysts can more easily find and use the data they need.

3. Improve and add different types of downloadable databases

This will maximize the availability of downloadable information and avoid the slow processing times associated with searching the ULS website. For example, having more search options and including more databases on specific spectrum bands and licensing will be helpful in looking at certain wireless markets.

## Conclusion

Commenters are not always equipped with the resources or knowledge base to quickly and successfully gather and analyze data. The Commission, on the other hand, is responsible for collecting wireless market data and has engineers and data analysts more equipped to efficiently complete data analysis. Information necessary to help promote competition and innovation in the wireless market is not available in any useful or easily attainable form right now. With better organization and transparency in the ULS, commenters can more easily acquire the data necessary to make and support arguments to improve the communications landscape.

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