ETI VIEWS AND NEWS
ECONOMICS AND TECHNOLOGY, INC.
July 2012

IN THIS ISSUE

New ETI Report examines "Handset Interoperability: Increasing 4G competition in the Lower 700 MHz band"

The burgeoning demand for wireless data services, driven by the proliferation of "smartphones" and other wireless devices capable of Internet access, has compelled the FCC to reallocate electromagnetic spectrum away from various other uses and over to Commercial Mobile Radio Service (CMRS). As part of the overall conversion to digital television (DTV), the Commission ordered that all UHF TV spectrum above Channel 51 be reallocated to other uses, and required that holders of TV station licenses in those bands be shifted to lower frequencies. The 700 MHz spectrum (698-806 MHz) had been used for UHF TV channels 52 through 68. The "Lower 700 MHz band" (698-768 MHz) was divided into five "blocks," designated A through E, three of which (A, B and C) were earmarked for two-way CMRS use. In January 2008, the FCC began spectrum Auction 73 to sell these repurposed airwaves to CMRS carriers. 700 MHz offers superior propagation characteristics, which make these new licences particularly valuable and well-suited for the provision of 4G LTE services. All of the early major LTE launches (e.g., Verizon, AT&T, US Cellular) have used the 700 MHz spectrum that had been acquired in Auction 73.

Handsets capable of using all three of the Lower 700 MHz blocks – A, B and C – were designated as "Band Class 12" by the 3GPP, the international standards body for the wireless industry. The 3GPP standards specified interoperability across the entirety of each band class; i.e., a handset manufactured to Band Class 12 specifications would function on any of the three Lower 700 MHz blocks, A, B or C. These specifications were in place at the time of the FCC's Auction 73 for 700 MHz spectrum.

Shortly after Auction 73 had been completed, certain wireless carriers (principally AT&T), now holding B and C Block licenses, began arguing that the proximity of the A Block to DTV Channel 51 and to the E Block created unacceptable interference in the A Block, and that such interference will bleed into the B and C Blocks when equipment capable of operating on all three Blocks is used. They claimed that limiting handsets to only the B and C Blocks eliminates such interference. Advocates of this position petitioned the 3GPP to create a new handset standard, "Band Class 17," that allows for operation on only Blocks B and C. Band Class 17 handsets cannot operate in the A Block, and AT&T does not permit the use of Band Class 12 handsets on its network. As a result, customers of the A Block licensees – mainly small and regional wireless carriers – would be unable to use their Band Class 12 handsets to roam on the geographically expansive B and C block licensees' networks; this lack of full interoperability across all three Lower 700 MHz blocks, thus degrades the functionality of the A block licensees' services. These carriers argue that the claimed interference affecting the A Block from the adjacent DTV and broadcast spectrum, if and to the extent it actually exists, does not justify AT&T's policy of denying interoperability with Band Class 12 handsets, and has asked the FCC to require full interoperability among all Lower 700 MHz devices.

The NPRM

In March, the FCC issued a Notice of Proposed Rulemaking ("NPRM") in WT Docket No. 12-69, *Promoting Interoperability in the 700 MHz Commercial Spectrum*. The FCC explains that the purpose of the NPRM is both "to promote interoperability in the Lower 700 MHz band and to encourage the efficient use of spectrum," noting that "[t]he Commission has a longstanding interest in promoting the interoperability of mobile user equipment in a variety of contexts as a means to promote the widest possible deployment of mobile services, ensure the most efficient use of spectrum, and protect and promote competition."

Notwithstanding any actual substance to these technical contentions, AT&T's insistence upon restricting its network to Band Class 17 handsets and denying roamer access to users with Band Class 12 handsets indisputably enhances AT&T's competitive position in the 4G LTE market while effectively blocking rival carriers from offering customers a serious alternative to AT&T in this sector. AT&T's solution to the alleged "interference" problem – lopping off the A Block – undermines competitors and competition in the wireless 4G data market and is antithetical to its own stated concerns about spectrum exhaust.

Interoperability is more than just a technical matter. The economic and competitive issues surrounding the Lower 700 MHz band affect the entire wireless ecosystem. AT&T and Verizon enjoy significant competitive advantages over their smaller wireless competitors resulting from their affiliation with the two largest incumbent wireline carriers, their early access to spectrum, and their monopsony power in the handset market, all of which, severally and in combination, assure their continued dominance in the US wireless market over the long run. And as wireless evolves from voice to 4G LTE broadband data, AT&T's and Verizon's incumbency advantages confront smaller wireless carriers with daunting challenges, many of which can be overcome by strict enforcement by the FCC of handset interoperability requirements and safeguards.

The FCC will need to decide how best to reconcile the seemingly conflicting goals of achieving a competitive market while also

assuring optimum spectrum and operational efficiency. Given the dominant positions of AT&T and Verizon, it seems unlikely, absent Commission intervention, that the marketplace will resolve the issues of interoperability in a manner or time frame capable of providing smaller competitors with the nationwide roaming they require to compete.

If present, any interference or other technical issues need to be addressed and resolved directly, without undermining competition and innovation

This is hardly the only instance where AT&T has advanced a claim of "interference" or other putative technical harm that has resulted in significant delays in the introduction of competitive alternatives to the services that AT&T provided. In fact, AT&T has been using this tactic for decades. More than forty years ago, when the FCC was seeking to introduce competition into the customer premises equipment (CPE) market, AT&T had claimed that the direct interconnection of customer-provided CPE would engender serious harm to its network. In the 1970s, faced with the prospect of competition in the long distance market, AT&T had admonished that "the authorization of such proposals would result in harmful electrical interference to existing common carrier routes, inefficient and under-utilization of scarce common carrier facilities, to the detriment of the general public." The FCC has consistently found AT&T's past technical objections to be meritless or easily overcome without harm to the network, and has consistently rejected AT&T's preferred solution – blocking competitive entry outright. Even if it is determined that the claimed interference in the Lower 700 MHz band is present in a limited number of markets, it is critical that the Commission look beyond the walled garden Band Class 17 approach being advocated by AT&T, which effectively blocks other wireless carriers from roaming on the AT&T Lower 700 MHz spectrum and from launching their own 4G services in the A Block. The FCC needs to address those technical concerns having merit without compromising its longstanding commitment to assuring competition and innovation in the telecommunications market.

The consumer and competitive benefits of handset interoperability easily outweigh the level of costs being claimed by opponents

The FCC has always faced a balancing act when it comes to weighing the costs and benefits of regulatory initiatives, and has frequently determined that the benefits of policies aimed at promoting competition, spurring innovation, and achieving lower prices for consumers, clearly outweigh their costs. In such cases, the Commission has acted to impose a regulatory solution where marketplace forces would not by themselves be capable of producing, or be expected to achieve, the desired outcome, and to provide mechanisms to address any cost burden that the prescription might impose. In the proceedings implementing wireless local number portability – a matter with numerous parallels to the issue of handset interoperability – the Commission looked beyond carriers' claims of adverse financial impact to evaluate the true magnitude of the actual costs involved, and to assess the far greater benefits to consumers and competition stemming from the policy. Opponents of mandatory interoperability have made similar claims – that the costs are too enormous to overlook and that imposing such costs in order to achieve mandatory interoperability is not justified. Yet AT&T's own claims as to the costs of interoperability – even if true – if spread over just three years would amount to only 0.5% of aggregate AT&T Mobility revenues – averaging just 27 cents per subscriber per month. If the FCC applies the same analysis here as it did in the case of number portability, it will conclude that the competitive benefits of interoperability – data roaming, increased competition, lower barriers to switching carriers, innovation and lower prices – easily outweigh these minimal costs.

The two largest wireless carriers have little to gain – and much to lose – from the increased competition that would result from handset interoperability, making the prospect of a voluntary industry agreement highly unlikely

In the NPRM, the Commission expresses a strong preference for a market-based, voluntary solution for achieving handset interoperability rather than one that is dependent upon regulatory intervention and prescription. While such a result is theoretically possible, it is not likely to arise in highly concentrated markets presently dominated by one or two very large firms whose smaller rivals are not capable of presenting a serious competitive challenge. In such a market, the large incumbents have little to gain, and perhaps a lot to lose, by subscribing to standards that would enable their customers to easily switch to other service providers. Given the dispute being addressed by the NPRM, no industry consensus on common handset standards and interoperability is likely to arise on its own.

AT&T and Verizon have "nationwide" spectrum coverage and vast cash resources to acquire more as necessary, limiting their need to enter into roaming agreements with other carriers. Whether one measures size in terms of geography or population covered, by dollar value, or by any other standard, AT&T and Verizon each possess holdings of electromagnetic spectrum that dwarf those of all other US carriers. As of year-end 2011, AT&T valued its spectrum holdings at $51-billion; Verizon valued its spectrum licenses at some $73-billion. On a MHz-POP basis, AT&T and Verizon together hold a majority of the spectrum bands most widely used to provide wireless data services. By contrast, smaller carriers have relatively small holdings across the same bands.

Smaller carriers face many competitive challenges, including paying more for key inputs such as handsets

Not only are AT&T and Verizon the largest providers of wireless services, they are also the largest US purchasers of wireless handsets. As a consequence, they have the unique ability to dictate terms to handset manufacturers, to secure significant cost advantages, to arrange for exclusive deals, and to exercise design controls that are not available to smaller carriers. In economics, a *monopsony* is said to exist when there are a limited number of buyers for a good or service, and some of these buyers, by virtue of their size and clout, hold market power over the suppliers of the affected goods and services. Wireless devices are sold by their manufacturers not to individual consumers but to the wireless carriers for resale. As such, the carriers comprise the bulk of the direct demand for handsets, and AT&T and Verizon, with a combined nationwide market share of over 65%, easily purchase more handsets than all other carriers combined. Smaller carriers lack the power to negotiate favorable pricing with handset manufacturers even for devices that are identical to those being purchased by AT&T and/or Verizon. And

if smaller carriers are also required to utilize handsets supporting different configurations than their larger rivals, the small carriers will be subject to even higher unit prices due to what will necessarily be smaller production volumes and the correspondingly lower manufacturing efficiencies than those associated with the large volumes being produced to satisfy the demands of AT&T and Verizon.

The Commission has long understood the importance of roaming to competition in the wireless industry

Telecommunications is a network-based industry subject to network effects where the value of the service increases exponentially with the number of points served. Smaller networks can overcome this disadvantage by interconnecting with larger networks, and accessing and incorporating components of the larger network, in effect offering its customers the same connectivity and extensive coverage as that being offered by its much larger rivals. A small carrier's economic ability to invest in its own infrastructure will be significantly enhanced if it – or its customers – are able to economically gain access to the larger network than if such access is denied or priced at an uneconomic level. Indeed, if access to the larger network is denied, the economic value of the smaller competitor's owned facilities may well decrease to the point where it is no longer viable and would be forced out of the market altogether, diminishing competition.

For mobile telecommunications services, network effects arise not just from the aggregate number of members with whom connectivity may be established, but also from the number of physical locations at which a customer may gain access to the mobile service. Roaming enables customers of one network to access and seamlessly utilize the services of other networks. Without roaming, a small, geographically limited network would be unable to compete with larger, more geographically extensive networks with respect to the coverage area – the territory from which the wireless service could be utilized. Stated more generally, the revenues available from any given customer are influenced by the specific demand offered by that customer together with the aggregate connectivity that the carrier is able to offer to that customer.

As the wireless industry transitions from a voice to a data oriented service platform, interoperability of handsets across multiple technically compatible networks is critical to the continued market viability of small and regional carriers in that it permits them to offer their customers the same type of broad geographic reach that facilities-based "national" carriers are able to offer via their own network assets. In its 2011 order mandating CMRS data roaming among facilities-based carriers, the FCC recognized that roaming requirements for the growing market for wireless broadband data services would benefit consumers and the industry while facilitating public policy goals, just as did the longstanding roaming requirements the Commission put into place for wireless voice services beginning in 1981. Yet in the face of otherwise unanimous industry support, resistence to mandatory data roaming requirements by carriers with national facilities-based networks demonstrates that smaller carriers cannot realistically expect to achieve commercially viable roaming agreements without FCC involvement. The persistent and vociferous opposition to mandatory data roaming by AT&T and Verizon serves to confirm their strong financial incentive to resist entering voluntarily into such agreements with competitors.

The FCC should promote spectrum efficiency, competition, and broadband availability by requiring handset interoperability

In the case of wireless service, entrants are required to obtain spectrum licenses covering a defined geographic area as well as a defined frequency band within that geographic area. Spectrum is the *real estate* of virtually all wireless enterprises, from two-way common carrier services through radio and television broadcasting. Allocation of spectrum is – and has pretty much always been – a government function. While theoretically open to any who wish to participate, experience has demonstrated that government spectrum auctions have contributed to greater, not less, concentration in the US wireless market *precisely because the largest carriers are able to pay the most for the spectrum that becomes available.*

The presence of hard-and-fast supply constraints on the availability of a key input required for the provision of wireless services – electromagnetic spectrum – confronts the FCC with the task of navigating among the often conflicting goals of maximizing spectrum efficiency, providing affordable and robust wireless broadband nationwide, maintaining effective competition at a level sufficient to discipline the ability of holders of the limited spectrum resources to extract economic rents from customers and from the economy generally, and limiting regulatory intervention to only those areas in which marketplace forces cannot be relied upon to produce a competitive outcome. One such area where regulatory intervention is required is mandating full wireless device interoperability across all technically compatible networks.

The Commission needs to view AT&T's technical arguments with a good deal of skepticism and, in any event, weigh their importance against the detrimental impact upon competition in the wireless broadband market. Mandatory device interoperability and data roaming on a commercially viable basis represent the means by which the putatively conflicting goals of spectrum efficiency and vigorous competition can be reconciled and implemented in support of the broader public interest.

Download the Report:
ETI's newest publication, "Handset Interoperability: Increasing 4G Competition in the Lower 700 MHz Band" was submitted by United States Cellular Corp. in the record in FCC WT Docket No. 12-69 on July 16, 2012. A copy of the paper is available for download online at http://www.econtech.com/pubs.php

Third Circuit Court of Appeals relies upon ETI testimony in overturning Sprint ETF settlement agreement

On June 29, 2012, the United States Court of Appeals for the Third Circuit vacated a 2008 class action settlement reached with Sprint Nextel over its practice of charging flat rate early termination fees (ETFs). The Third Circuit Court relied upon the testimony of ETI Vice President Colin B. Weir in reaching its decision. In reversing the settlement's approval, the three-judge

panel found that the lower court had failed to act in the best interest of potential plaintiffs when it decided that it would be unreasonable for Sprint to conduct a search of its electronic billing records that Sprint admitted could identify more than 4-million class members.

The *Larson* Case

In *Larson et al v. Sprint*, a nationwide class of plaintiffs alleged that Sprint's flat-rate early termination fee (ETF) of as much as $200 was illegal and violated state consumer protection laws. After a year of litigation, the parties reached a settlement agreement that was ultimately approved by the trial court. Under the proposed settlement, Sprint had agreed to pay $14-million in cash and $3.5-million in services and credits. Sprint also agreed not to include flat-rate ETFs in its contracts. The settlement covered the *Larson* case and numerous other similar class actions then pending in other state courts.

The district court had originally rejected the proposed settlement notice plan, suggesting that Sprint had not made an adequate effort to identify potential class members, but subsequently approved the amended notice plan after Sprint submitted a declaration stating that a search of any of its billing records would be unreasonable.

ETI was retained by a separate group of objector plaintiffs after the settlement agreement was reached as part of an effort to determine whether the terms of the deal were inadequate, whether Sprint's efforts to identify potential plaintiffs thus far were unreasonable and if the additional proposed efforts were, in fact, reasonable. Mr. Weir's testimony addressed the ability of Sprint to identify individual subscriber accounts (as opposed to government or corporate/business accounts) from Sprint's own billing records. Mr. Weir conducted such an analysis on a subset of Sprint's records and determined that identification of individual subscriber accounts was indeed possible and that the required analysis was not burdensome.

Larson* in light of the verdict in *Ayyad v. Sprint

ETI had previously been instrumental in obtaining a $299-million jury verdict in another class action case involving Sprint's early termination fees (*Ayyad v. Sprint*). That case had also challenged Sprint's practice of charging flat rate ETFs. The case culminated with a 5-week jury trial during which ETI President Dr. Lee L. Selwyn provided expert testimony. The $299-million judgement was obtained for a class of approximately 1.9-million California subscribers. (Sprint's appeal of the *Ayyad* case is still pending.) The *Larson* settlement represents a nationwide recovery of just 5% of the amount awarded to the California-only subscribers, thus raising serious questions as to the adequacy of the *Larson* agreement.

With *FiOS* growth nearing its end, Verizon turns to harvesting what it has sown

Back in May of 2004, Verizon announced an ambitious plan to deploy a fiber-to-the-home (FTTH) infrastructure under its *FiOS* brand name. Ultimately, Verizon aimed to deploy its *FiOS* service to some 42-million customers across its (then) 28-state (plus the District of Columbia) footprint. In all, some 60% of Verizon's 70-million residence customers were to have access to *FiOS*. A lot has changed since those lofty announcements.

Between 2005 and 2010, Verizon off-loaded a number of its ILEC operations in the former GTE operating areas as well as several legacy Bell states (Maine, New Hampshire, Vermont, and West Virginia). A small amount of *FiOS* investment had occurred in a few of these spun-off jurisdictions, but that generally came to an abrupt halt upon the divestiture. In at least one of the divested former-GTE service areas (Indiana), the acquiring company (Frontier) raised *FiOS* prices by 50% but concurrently offered its FiOS subscribers free DirecTV service for a year if they would switch out of *FiOS*.

Then in 2010, Verizon announced that after having dumped $23-billion into the project, it would cease further *FiOS* investment as of the end of that year. At that point, some 18-million homes had been passed by *FiOS* plant, but only 3.8-million customers had signed up for the service.

Verizon's second quarter 2012 operating results, released by the company earlier this month, confirm that the growth in *FiOS* TV and Internet subscribership is slowing considerably, as a comparison of second quarter net additions for 2009 through 2012 confirms:

	Net adds TV	Net adds Internet	Total subs TV	Total subs Internet
2Q2009	300K	303K	2.5M	3.1M
2Q2010	174K	196K	3.2M	3.8M
2Q2011	184K	189K	3.8M	4.5M
2Q2012	120K	134K	4.5M	5.1M

FiOS has yet to turn a profit, and that prospect becomes even more elusive if growth continues to slow. If you can't increase revenue by adding many more customers, the only alternative is to raise prices for the customers you already have. According to Verizon CFO Fran Shammo, the company began this process in May of this year, and anticipates more price hikes to come. "We started [raising *FiOS* prices] in the second quarter but there's more on the plate for the third and fourth quarter," Shammo said. This tactic is sometimes referred to as "harvesting." Raising *FiOS* prices certainly won't help attract customers, and the fact that Verizon has embarked upon a harvesting strategy reveals Verizon's less-than-optimistic outlook for the future of this service. Harvesting will likely produce additional revenue in the short run simply due to customer inertia – defections from *FiOS* in response to the price increases will likely be slow – although Comcast, whose own service area overlaps much of the Verizon footprint, has launched its own marketing campaign to exploit Verizon's pricing moves. Shammo said the company currently has no plans to build out the *FiOS* service to new areas, but he said that *if the service becomes profitable*, the company may re-examine its options. In the long run, though, harvesting is a slow march toward oblivion.

About ETI. Founded in 1972, Economics and Technology, Inc. is a leading research and consulting firm specializing in telecommunications regulation and policy, litigation support, taxation, service procurement, and negotiation. ETI serves a wide range of telecom industry stakeholders in the US and abroad, including telecommunications carriers, attorneys and their clients, consumer advocates, state and local governments, regulatory agencies, and large corporate, institutional and government purchasers of telecom services.