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## As SmartMeter deployment expands, consumer skepticism and community opposition escalate

For some time now, energy policymakers and electric utilities have promoted the concept of a "smart grid" as an important energy conservation measure. The smart grid consists of two principal components – "SmartMeters" deployed at every customers' home and business premises, and a telecommunications network of some sort to interconnect those devices with the utility and in so doing maintain bi-directional contact on a real-time basis.

***How SmartMeters work***

At the customer's end, the SmartMeter sends data to and receives data from appliances within the customer's home using any of several technologies – e.g., a data communications protocol known as Power Line Carrier (PLC), or a variant on an in-home Wi-Fi network. Individual appliances are plugged into special adapters that are plugged into standard wall outlets. The SmartMeter can then establish communication with each adapter and control the status of each connected appliance, based upon customer-specified priorities and other customer-programmed parameters based on such things as then-current pricing, time-of-day, and the like.

The SmartMeter continuously monitors the customer's electricity use and transmits that data in real time directly to the power company, which aggregates the demand data across its entire customer base and adjusts its price in real time in response to increases or decreases in demand. These price adjustments are then communicated back to the customer's SmartMeter and, via the customer's in-home data network, to individual electrical appliances that can be programmed to turn off when the per-kwh price rises above a preestablished threshold and turn back on when the price drops back below that level. For example, the customer might program some air conditioners to power down whenever the price goes above $0.25 per kwh, while programming others to stay in operation until the price reaches $0.35. Other appliances that cannot tolerate power interruptions, such as refrigerators, might have no shut-off threshold, while those whose use could be shifted to off-peak times, such as clothes dryers, might be set to shut off at the $0.15 level. SmartMeters can provide a means whereby electric cars can be recharged during late-night time periods when demand for electricity – and the associated price level – is lowest.

But is it really necessary for electric utilities to construct a special high-capacity two-way telecommunications networks in order to provide these capabilities?

***Do SmartMeters really need to maintain real-time bi-directional communication with the electric utility?***

While SmartMeters have the ability to engage in ongoing real time communication, in both directions, with the power company, it is far from clear that any such bi-directionality is actually necessary for a SmartMeter to support real time price-driven demand responses. For one thing, the utility does not need to collect and aggregate usage data in real time from each of its individual customers' meters to know how much electricity is being supplied over its distribution network at any given moment – it just needs to look at the load meters at its power stations. As for communicating real time pricing information to its customers' SmartMeters, the utility could employ any of several low-cost unidirectional communications strategies; for example, it could simply broadcast this data over an FM sideband channel obtained from a local FM radio station to inexpensive FM radio data receivers built into the meters themselves.

While SmartMeters are typically promoted as an effective "demand-side" conservation measure critical to national energy policy, the real motivation for deployment of SmartMeters capable of bi-directional communication with the utility is likely driven mainly – or solely – by certain operational benefits that the utility obtains that have little to do with conservation – benefits that by themselves could not justify the massive expenditures required to constructe a smart grid. These benefits include eliminating manual meter reading, implementing remote service connects and disconnects, and improved outage responses.

Yet it is this claimed need for bi-directional real time telemetry that has driven the second smart grid component – the telecommunications network linking individual meters with the utility's network control facility. Unlike the type of data typically carried over consumer broadband Internet access services – such as the multi-megabit per second data rates required for video streaming and other video applications – the volume of data being sent between an individual SmartMeter and the electric utility is minuscule by comparison – somewhere in the range of a few hundred bits per second. So even if bi-directionality is actually needed – and it probably isn't – such low-speed data transmission requirements are well within the capacity and capability of existing telecommunications services already in place in most American homes – standard telephone service, and high-speed Internet access. Yet despite the availability of an existing telecommunications infrastructure fully capable of meeting the data transmission needs of a smart grid, electric utilities have

almost universally pursued a "build our own" strategy for establishing communications with their customers. And therein lies much of the controversy.

***Does a "smart grid" need its own telecom infrastructure?***

Several types of smart grid telecom networks are being pursued. In a few cases, utilities are constructing fiber optic links to each of their customers. Power Line Carrier over the utility's own power lines is also being used. One particularly popular approach, however, is the so-called "RF (radio frequency) mesh." In a "mesh network," individual SmartMeters deployed at each customer's home or business location establish bi-directional communication links with one or more nearby SmartMeters, creating a daisy chain of these devices that successively hand-off the transmitted data to, and receive transmitted data from, the next SmartMeter down the line. Because each individual SmartMeter has a relatively short transmission distance range, the success of a mesh network depends critically upon the deployment of a large number of individual meters in relatively close geographic proximity to one another.

As the installation of SmartMeters has proceeded, some consumers and communities have expressed concerns regarding the use of RF transmission and mesh networks. Several California counties have gone so far as to enact local ordinances calling for a moratorium on SmartMeter deployment due to concerns regarding the health effects arising from the electromagnetic frequency (EMF) radiation associated with such transmissions. They have also expressed the concern that SmartMeter transmissions may be intercepted by unauthorized persons, threatening individual privacy and safety, and that these transmissions may interfere with amateur radio and public safety communications. Several state utility commissions (Maryland, Hawaii) have denied permission for SmartMeter deployment, and several others (California, Maine) have proceedings underway to consider how "opt-out" requests by individuals and entire communities may be accommodated. The utilities have claimed that such "opt-outs" engender significant additional costs, and have proposed fairly steep initial and recurring charges to be paid by customers electing this option. The sheer magnitude of the proposed fees have raised concerns that their real purpose is as a deterrent, not cost recovery.

Accepting, for purposes of discussion, the merits of SmartMeters capable of bi-directional communication as a valid and economically justified energy conservation measure, it is far less clear as to why the telecommunications requirements of a smart grid could not be fully – and far more efficiently – satisfied using existing telecom network infrastructure rather than the type of greenfield deployments being pursued by the electric utilities. But there may well be some rational business explanation for the electric utilities' adoption of this approach.

***Averch and Johnson are alive and well***

A seminal 1962 paper published in the *American Economic Review*, "BEHAVIOR OF THE FIRM UNDER REGULATORY CONSTRAINT" by Harvey Averch and Leland Johnson, posited that rate-of-return type regulation creates an incentive for the firm to over-invest in tangible assets. Since the "allowed profit" is based upon the rate base, the firm has an incentive to augment – to "gold plate" – its capital stock. The resulting discourse spawned by Averch and Johnson led ultimately to the phase-out of rate-of-return regulation of most telecom utilities. However, the majority of local electric distribution utilities (LDCs) are still regulated in this manner, which means that their smart grid investments become part of their rate base upon which they are entitled to earn a return. Additionally, federal stimulus money and other explicit government subsidies have been provided to encourage such investment – for example, in 2009, electric utilities across the country received some $3.4-billion in funding under the US Department of Energy's Smart Grid Investment Grant program. Between rate-of-return regulation's assurance of what are by today's standards rather attractive returns and virtually guaranteed investment recovery, together with outright government grant money, the power companies and their shareholders were and are never "at risk" with respect to SmartMeter and smart grid investments. So who is "at risk"? Customers. Whether or not these investments ultimately prove their worth, utility customers will ultimately bear the cost either as ratepayers or as taxpayers.

Moreover, these smart grid networks readily satisfy Averch-Johnson's "gold plating" expectation. The transmission capacities of the networks being constructed far exceed the minimal data rates that are involved in the short-burst telemetry transmissions required for SmartMeter communication. Once in place, the electric utility's telecom infrastructure could be readily adapted to support broadband, wireless backhaul, and other services currently offered by cable television companies and local telecommunications carriers. And while some additional capital outlays may be required to adapt the utility's infrastructure to support these additional services, the core infrastructure will have been underwritten by electricity customers and by government grants. A pretty good deal.

***What happens next?***

Smart grid initiatives have been under discussion in utility and regulatory circles for a number of years, but for the general public they have remained largely opaque until the electric utility technician shows up at the consumer's front door with a SmartMeter in hand. As consumer awareness about these initiatives grows, the extent to which smart grid programs generate widespread public acceptance remains to be seen.

## Supreme Court wipes out last vestige of consumer protection in the wireless market

The April 27 US Supreme Court decision in *AT&T Mobility LLC v. Concepcion* broadly eliminates the consumer protection of being permitted to sue collectively as a class when arbitration clauses and class action waivers are included in adhesion contracts. Separate and apart from its economywide implications, *Concepcion* literally stems from and directly affects the wireless telephone and data industry. Had the decision been handed down in 1985, the effect on wireless consumers might have gone largely unnoticed. Back then, wireless telephone service was quite expensive and was generally viewed as a luxury – only some 340,000 people had wireless phones nationwide. Wireless services were also pervasively regulated by state public utility commissions, with wireless carriers required to file tariffs subject to regulatory review and scrutiny. The presence of filed

tariffs superseded any bilateral agreement between the customer and carrier and, for the most part, what we now know as "customer service agreements" ("CSAs") were still many years off in the future.

Like many products and services provided to consumers and other individual purchasers, wireless CSAs fall into the category of so-called "adhesion contracts." An adhesion contract is one in which the seller provides the buyer with a non-negotiable form agreement that the buyer must either accept as presented and in its entirety or forgo the product or service being offered – in effect, a "take it or leave it" offer. Prior to the elimination of most wireless services regulation, the terms of service were set forth in filed tariffs, and consumers could bring disputes before the appropriate state or federal regulatory agency. Proponents of deregulation argued that the wireless industry had become sufficiently competitive that consumers could rely on the competitive marketplace to protect them from provider abuse, and could always "vote with their feet" in the event that the service or their relationship with the service provider became unsatisfactory. Whatever the state of competition had been at the time that such deregulation initiatives were being pursued, today's wireless market is anything but competitive, and is becoming even less so by the minute (see below).

Wireless services are no longer a luxury. There are now more than 302-million wireless phones in the US out of a total population of 311-million (i.e., a 97% penetration rate), and more than 26% of all US households have "cut the cord" and now rely on wireless as their only connection to the public telephone network. Whereas wireless started out as a luxury, it must now be viewed as an essential service, especially for the 80+ million Americans that are "wireless only." Yet this essential service remains unregulated, with the extent of consumer rights confined to the four walls of the substantively identical adhesion contracts being used by all major US wireless carriers.

Up until this latest Supreme Court ruling, the principal surviving consumer protection mechanism was the class action lawsuit. Most individual consumer disputes with wireless carriers involve relatively small dollar amounts, usually well below $200, and certainly far too small to justify the expense of individual litigation. The specific dispute with AT&T Mobility at issue in the *Concepcion* case amounted to roughly $30. Although most wireless service agreements had routinely contained provisions requiring customers to resolve disputes through arbitration and expressly prohibiting class action lawsuits, up to now those provisions have typically been rejected by courts as unconscionable and hence unenforceable. California went so far as to enact legislation expressly prohibiting the inclusion of such arbitration/anti-class action provisions in consumer agreements. But by a 5-4 decision, the US Supreme Court has now upheld these contract provisions, shutting down most future – and some ongoing – wireless class action litigation.

***The Concepcion decision in today's wireless marketplace***

Whether by design or accident, the major wireless carriers have engaged in practices that have been sufficiently widespread in their impact as to prompt a great deal of class action litigation. The challenged conduct has included the imposition of flat rate early termination penalties, locking of handsets to block their use on a different carrier's network, the method of timing calls and billing for unanswered calls, among others. Were wireless rates, terms and conditions subject to active regulation, such issues would have been addressed and resolved by regulatory bodies. In the wake of the *Concepcion* case, however, consumers are now effectively being denied access to the one remaining legal remedy – to economically litigate claims as a class where a company has set out "to deliberately cheat large numbers of consumers out of individually small amounts of money." In his dissent, Justice Breyer put it simply: "What rational lawyer would have signed on to represent the Concepcions in litigation for the possibility of fees stemming from a $30.22 claim?" But the majority in *Concepcion* confirms that federal law allows AT&T, Verizon, and other wireless service providers to circumvent class actions by virtue of their being able to require consumers to agree to adhesion contracts with onerous terms that limit a consumer's legal options. Consumers are not permitted to negotiate these contracts, nor can they "vote with their feet" because all of the major carriers include similar arbitration clauses and class action waivers in their terms and conditions. Even carriers like MetroPCS that have "broken rank" with industry practice by not requiring term contracts to obtain service, still force subscribers to agree to contract provisions requiring arbitration and waiving class action rights. Marketplace forces have clearly not worked to compel any wireless carrier to offer more consumer-friendly agreements.

***Is it finally time to reregulate wireless?***

A more precise characterization of the regulatory status of wireless services is that they are unregulated, not deregulated. This is an important, albeit perhaps subtle, distinction. The FCC, pursuant to Title III of the *Communications Act* as amended (by, among other things, the *1993 Omnibus Budget Reconciliation Act* that transferred jurisdiction over wireless rates from the states to the FCC, and by the *Telecommunications Act of 1996*), maintains full regulatory jurisdiction with respect to wireless rates. State commissions have jurisdiction with respect to wireless terms and conditions and other consumer protection issues. The FCC and most state commissions have chosen to *forbear* from exercising their regulatory authority in this sector, but such forbearance can be – and certainly should be – revisited in light of the "perfect storm" of the essential nature of wireless communication, the escalating concentration in the wireless market that is about to be increased as a result of the pending AT&T/T-Mobile merger, and now the *Concepcion* ruling by the Supreme Court.

While a generic review of current forbearance policy is certainly warranted, the pending merger affords an even more immediate opportunity for regulators to step in where the market has failed to provide a check on wireless carrier market power. AT&T has acknowledged that it will likely have to make concessions in order for regulators to approve the transaction. An obvious merger condition will be the divestiture of overlapping wireless properties in markets where AT&T and/or T-Mobile already have market power. Another condition that regulators should consider would be a voluntary agreement from AT&T and T-Mobile that the post-merger company will forgo class action waivers in its standard form consumer contracts. And, in view of the "highly concentrated" nature of the US wireless market that will exist post-merger, a more general reinstatement of regulatory oversight with respect to rates, terms and conditions is also warranted.

The FCC will also be releasing additional spectrum for use by CMRS carriers – including, potentially, existing TV channels that are under consideration for redeployment to wireless. Spectrum auctions can be used both to limit market concentration (by restricting the amount of spectrum in any market that can be owned by any one carrier) as well as by linking the availability of spectrum to carrier acceptance of other conditions, such as (in this instance) a commitment not to include class action waivers in their CSAs.

The wireless industry has been extraordinarily successful in promoting its self-interests through the regulatory and political processes. In the beginning, many of the concessions it received were rationalized under a nascent industry theory. More recently, policies such as regulatory forbearance and *de facto* deregulation have been rationalized on the notion that the wireless market is intensely competitive. Facts and realities have proven both of these claims to be inapposite and incorrect. As a start, the AT&T/T-Mobile merger should not be permitted to go forward. But whether or not it is allowed – and especially if it is – policymakers need to recognize that deregulation and nonregulation simply don't apply here, and need to implement effective measures to constrain the market power of the few incumbents that remain.

## AT&T/T-Mobile Merger: Measuring Wireless Market Concentration

As we discussed last month (Views and News, March 2011), there are already ample reasons to be concerned about the competitive implications of the "AT&T&T" merger. Nationwide market concentration in the wireless industry already raises red flags in that it meets threshold levels specified in the Department of Justice/Federal Trade Commission HORIZONTAL MERGER GUIDELINES. The GUIDELINES use the "Herfindahl-Hirschman Index" (HHI) as the measure of market concentration and potential market power. The increase in HHI that will result from the merger raises concentration levels even further. Our analysis was based on the national HHI values rather than those applicable in individual geographic markets because current "Economic Area" carrier subscriber data is not publicly available. As a general matter, it is nearly impossible for nationwide carrier market share data to overstate total concentration, as aggregating regional market shares for nationwide companies necessarily lowers HHI calculations and, as such, resulted in conservative HHI estimates. Right out of the gate, AT&T stated that national market share wasn't the proper way to examine the wireless marketplace, and that local markets should be examined on a case-by-case basis. We couldn't agree more.

The FCC publishes more granular HHI figures on an Economic Area (EA) basis for the wireless industry as a whole in its annual CMRS Report submitted to Congress. Even the most recent data as released by the FCC is somewhat stale – the latest edition reflects only year-end 2008 HHIs by EA. The data also shows only the total HHI for each market, not the underlying market shares of the top carriers upon which those calculations are based. The EA results are still unequivocal – EA market concentration is higher than the national average in nearly every geography. 19 of the largest 30 EAs exceed the current national HHI figure, and exceed the DOJ's threshold of "highly concentrated." All 30 of the top EAs qualify as moderately or highly concentrated by DOJ standards. And subsequent to the 2008 timeframe reflected in the latest FCC analysis, Verizon has acquired Alltel, and Sprint has lost customers (and market share) to AT&T and Verizon, indicating that the 2008 HHIs likely understate existing market concentration levels.

Both AT&T and T-Mobile currently offer service in at least a portion of all of these top-30 markets. If the merger goes forward without a concurrent requirement that one or the other firm divest its spectrum and operations in any overlapping geography, local market concentration levels will be subject to further – and potentially significant – escalation.

Wireless Market Concentration
Top-30 Economic Areas by Subscriber Count
Year-end 2008

| Economic Area (EA) | Herfindahl-Hirschman Index (HHI) | DoJ Merger Guidelines Concentration Category |
|---|---|---|
| Cleveland | 3773 | High |
| Pittsburgh | 3157 | High |
| Columbus | 3080 | High |
| Charlotte | 3059 | High |
| Indianapolis | 3033 | High |
| Detroit | 2971 | High |
| Boston | 2800 | High |
| Washington, DC | 2731 | High |
| Phoenix | 2683 | High |
| Nashville | 2679 | High |
| St. Louis | 2674 | High |
| New York | 2640 | High |
| Dallas | 2623 | High |
| Sacramento | 2621 | High |
| Seattle | 2615 | High |
| Philadelphia | 2614 | High |
| San Francisco | 2610 | High |
| Minneapolis | 2588 | High |
| San Diego | 2574 | High |
| Los Angeles | 2488 | Moderate |
| Orlando | 2486 | Moderate |
| Portland, OR | 2469 | Moderate |
| Atlanta | 2411 | Moderate |
| Denver | 2339 | Moderate |
| Tampa | 2291 | Moderate |
| Kansas City | 2290 | Moderate |
| Houston | 2279 | Moderate |
| Miami | 2250 | Moderate |
| San Antonio | 2220 | Moderate |
| Chicago | 2140 | Moderate |

Source: FCC 14th Annual CMRS Report



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