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APPENDIX A

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Own Motion into the Service Quality Standards for All Telecommunications Carriers and Revisions to General Order 133-B	Rulemaking 02-12-004 (Filed December 5, 2002)

COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES RE INCLUSION OF WIRELESS COVERAGE MAPS AS PART OF THE COMMISSION'S RULEMAKING 02-12-004

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May 14, 2007

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I. INTRODUCTION

Commissioner Chong's March 30, 2007 Ruling and Scoping Memo in the above captioned proceeding invites comments on "whether the concerns identified in … D.04-09-062 [the final Decision resulting from I.02-06-003] are addressed by the proposed customer satisfaction surveys and URF service quality monitoring recommendations."

The short answer is that neither customer satisfaction surveys nor URF service quality monitoring recommendations address the concerns of D.04-09-062, which revolved in substantial part around the question of whether customers had sufficient information to make informed choices about wireless telephone service purchase decisions.[1] The Division of Ratepayer Advocates (DRA) believes that it is appropriate to consider wireless telephony service reporting, and specifically the problem of coverage maps, in a separate brief in this proceeding because these matters constitute a subject matter complex not explicitly foreseen in the Scoping Memo, and the Commission specifically stated in D.04-09-062 that it would consider these matters in this proceeding.[2] DRA therefore requests that the issue of service quality information relating to wireless telephone coverage be considered in this proceeding, and the Commission accept and consider these Comments in its deliberations on service quality reporting.

When consumers purchase cellular or wireless phone service, they are purchasing a small handset and – more importantly – service in the form of a radio signal. Without the signal, the handset does not work. As discussed below, wireless service providers still do not provide useful and specific information about the strength of that signal, nor would customer satisfaction surveys or the recommended monitoring provide a substitute for that information.

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[1] *Compare* P.U. Code § 2896.

[2] Ordering Paragraph 5 of D.04-09-062 states:

> Rulemaking (R.) 02-12-004, the Commission's review of service quality standards for all telecommunications carriers, including wireless providers, shall examine options to provide wireless consumers with the kinds of coverage and capacity information sufficient to enable them to make informed choices among wireless providers.

The Scoping Memo states that "a goal of state policy is to rely on competition ... to promote broad consumer interests." The Commission has recognized that information and full disclosure are the keys to efficient competition – customer choices reflect value only to the extent they know what they are purchasing.[3] This principle also undergirds Section 2896 which requires telephone corporations to provide customers "sufficient information upon which to make informed choices among telecommunications services and providers."[4]

A DRA survey of available information about wireless service quality reveals that no wireless service provider makes available signal strength and coverage data of sufficient detail to allow consumers to make meaningful purchase decisions based on coverage. T-Mobile and Cingular do provide on-line coverage maps with some modicum of topographical realism,[5] but they have neither the granularity nor the clear color scheme on maps typically used by industry engineers (and obtained by staff in Investigation 02-06-003).[6] Other companies surveyed offered nothing with any topographical realism, even on request. Some companies' maps are affirmatively misleading. DRA's survey is discussed in greater detail below.

DRA believes that, where the market fails to operate efficiently and protect consumers in the process, it is the legitimate province of this Commission to act as a

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[3] The Commission's General Order 168, adopting a consumer "Bill of Rights," provides that "Consumers have a right to receive clear and complete information about all material terms and conditions, such as material limitations, for i) products and service plans they select or ii) available products and service plans for which they request information." Decision D.06-03-013, adopting G.O. 168, states

> Competitive markets function optimally when consumers' choices are guided by perfect information; or stated more realistically, the more informed consumers' choices are, the better competitive markets function. Not only must consumers understand the differences between the products and services offered, they must understand the options they have in choosing, and switching to, different products and services. (D.06-03-013, mimeo, at 130.)

[4] One might say that a wireless company's failure to provide signal strength coverage maps is akin to a breakfast cereal refusing to disclose its ingredients.

[5] As used herein, "topographical realism" means maps that show evidence of some attempt to map signal strength against the contours of a local geography and topography, generally marked by curved or organic contours of the various coverage bands (on absolutely flat land, coverage maps will show a "fried-egg pattern," i.e., a pattern of concentric rings reflecting the diminishment of signal as it moves outward from the tower).

[6] Generally available wireless signal mapping software allows for its presentation in a simple green-yellow-red format, and on a street-by-street basis. See *See, e.g.*, http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features.

referee, to restore and preserve true market competition, market discipline, and market efficiency. In particular, DRA recommends that the Commission require wireless service providers to post on their Internet sites and make available in their stores coverage maps of the same *granularity* and accuracy as used by their engineers.

II. WHAT WE KNOW FROM THE GAO, INVESTIGATION 02-06-003, AND DECISION 04-09-062.

A. The Commission's In-Depth Investigation of One Wireless Service Provider Revealed Extensive Information Regarding Wireless Service Coverage.

Decision 04-09-062 marked the culmination of one of the most extensive investigations into actual operation of the wireless industry in this country. Commission Staff repeatedly requested discovery on Cingular's coverage data, which it was able to obtain only after extensive law and motion practice and multiple depositions of Cingular's engineers.

This investigation revealed that wireless carriers typically have exquisitely precise and constantly updated computer mapping of their "street level signal strength." Using software and technology available *then and now* throughout the industry,[7] the carrier first prepares "propagation maps," i.e., theoretical maps of coverage based on cell tower location, antenna power, and local topography. With the use of standard software, wireless providers are capable of projecting signal strength at any given street corner down to a granularity of 1dB differentiations.[8] Nor is this tool a purely predictive tool. Industry engineers describe performing what is referred to in the industry as "measurement integration," integrating the empirical drive-test data back into the predictive map so that the map becomes more empirically accurate.[9]

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[7] *See, e.g.*, http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features.

[8] Zicker testimony (Exhibit 17) at p. 4, fn. 8; HT at 855-56 (Jacot testimony). These, and all other Exhibits and Hearing Transcript (HT) citations, unless otherwise identified, are from Investigation 02-06-003. The PlaNet maps in the record (Exhibit 17, Att. 6; Exhibit 18, Atts. 4-10) are all done with granularity of 10 dB (i.e., with color contours showing coverage in 10 dB bands -- below –xx on Attachment 5 for instance designating in-building, xx-xx designating in-vehicle, and xx-xx designating on-street). Those maps could, however, be generated with even more granularity – or with less, as were the generally useless coverage maps presented early in this litigation. See Exhibit 2, Att. D (letter describing difficulty of obtaining useful coverage maps).

[9] The engineer responsible for the build-out of Cingular's Southern California system (then Pacific Bell Mobile) described the measurement integration function on the record. *See* Exhibit 36 (Huq Depo.) at pp. 37-38, discussed

The integrated propagation maps, in turn, are used as the basis of another type of internal map which would be very useful to customers, the "street level signal strength" map laid out on the actual grid of streets.[10] Thus, the viewer can follow signal strength on a street-by-street, intersection-by-intersection basis. While such detailed street level signal strength maps are made available to favored institutional clients, they are not, however, regularly provided to retail customers.[11] DRA provides the Commission samples of these maps in a Declaration under Seal.

B. The Starting Point: Industry's Historical Refusal to Share Data.

A 2003 report by the United States General Accounting Office, entitled *Telecommunications: FCC Should Include Call Quality in its Annual Report on Competition in Mobile Phone Services* (GAO 03-501, hereinafter "GAO Report")[12] reflected the situation found by the Commission's Consumer Protection and Safety Division (CPSD) in 2001 when it began to investigate reported consumer abuse and anti-competitive tactics of the cellular industry.[13] The GAO reported that it had asked the six largest national mobile phone service carriers, including Cingular, for "data on the extent of call quality problems." The carriers admitted "they have detailed coverage and service maps that are based on engineering models,"[14] but were unwilling to share these with the

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at HT 972 (Huq); see also HT at 751-52 (Zicker); HT at 815:24-822:11, especially 822:9-11 ("typically, if they're having problems with predicted values not matching their drive test they'll go out and maybe do some special testing"). Again, all references to Exhibits and Hearing Transcript (HT) are references to the factual record in I.04-09-062, unless otherwise noted.

[10] Discussed by Cingular's Ms. Lee in her testimony. HT at 988:21-991:28, and Exhibit 37C; *see also* HT at 989:18-20 ("It is a depiction of a particular signal strength identified in the PlaNet software laid out on the street itself"). One can also see reference to this capability at http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features. See also Declaration filed under seal.

[11] HT at 991:14-28, 996: 5-14.

[12] Available at http://www.gao.gov/new.items/d03501.pdf.

[13] The report was also highly critical about the ineffective efforts of the Federal Communications Commission (FCC) to protect consumers and the marketplace. The Report had been requested by the Hon. Anthony D. Weiner of the U.S. House of Representatives, in response to a rising tide of consumer complaints, and "concerns [that] have been raised by state officials, consumer groups, and media, and others about call quality – the ability to make and complete calls with good sound quality." GAO Rpt at 1

[14] *Id.* at 1-2, 39, 102. Apparently the carriers did not disclose to the FCC that their predictive "propagation maps" are regularly "trued up" by "measurement integration," i.e., the theoretical models are corrected to reflect actual coverage measurements regularly collected in "drive tests." See below.

GAO.[15] The GAO also asked the carriers for complaint data, but the "carriers were unwilling to share information on the quantity and kinds of complaints they receive." [16]

The GAO Report accurately reports the problems encountered by Commission Staff in gathering information about wireless coverage and operations from Cingular and other wireless providers, problems that are ongoing, and which are mirrored by the paucity of information available to consumers today (notwithstanding the AVC discussed below). See DRA survey report, below.

C. The Commission Concluded that Consumers Need Better Access to Existing Wireless Coverage Data.

The relevant question addressed by D.04-09-062 was the large information discrepancy between what the company knew about its coverage, and what it disclosed to customers. From Section 6.2.3 of D.04-09-062:

> In Section 5.2 of today's decision, we describe the rate area maps that Cingular includes in its stores, marketing brochures and other advertising. These maps provide little useful information to customers—and no information about the relative likelihood of outdoor, in-vehicle and in-building coverage. The record reveals that Cingular (like all wireless carriers) has detailed engineering information that can predict, typically with 95% accuracy, the likelihood that these services will be available. Cingular collects some of the data itself but also uses other entities, such as drive test companies, to collect and verify data.
>
> Cingular's engineering maps, such as Attachments 4 through 13 of Ex. 17, generally show cell locations, use color-codes to depict predicted coverage and include a legend that specifies the radio frequency sensitivities of each color-code. Cingular also has extensive data on other service issues, like the frequency of

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[15] GAO Report *at 23.* The GAO also asked for information on dropped and blocked calls:

> Carriers said that information on blocked and dropped calls is collected at each base station in their networks. However, none of this network performance data is publicly available nor are the carriers required to report this information to FCC. As part of our effort to determine the extent to which calls cannot be completed or lack clarity, we asked the six largest carriers if they would be willing to provide us such data. All of the carriers declined.

Id. at 21.

[16] *Id.*

> dropped calls. The record of this proceeding demonstrates that wireless providers such as Cingular know much more about the coverage and capacity of their own networks—and about the networks of their competitors—than they care to share with the public.
>
> In fact, a customer has no ready means to obtain accurate, detailed coverage and capacity information. Information of this kind is unavailable to customers at the point of sale, either directly or through sales agents. Our review of the record in this proceeding persuades us that customers should have access to more information than they can obtain at present. While the existence of a trial service period provides a necessary and basic element of consumer protection, the trial is not free if a dissatisfied customer incurs various fixed charges or penalties. A trial does not protect customers from the out-of-pocket expenses of associated activation fees, for example.[17] If customers had better information, they could better assess whether to risk the trial.[18]

The Commission deferred *to this proceeding* a decision on the request of CPSD and UCAN that, as a remedy specific to Cingular's non-disclosure of its deadspots and other service problems, the company be required to disclose to consumers the engineer's maps which clearly show such deadspots. The Commission apparently accepted Cingular's argument that it would be fairer to adopt a regulation applicable to the industry at large, while at the same time indicating that the requested remedy was reasonable and do-able:

> ...[A] generic rulemaking, R.02-12-004, the Telecommunications Service Quality Rulemaking, presently is examining service quality standards for all telecommunications carriers, including wireless providers. Therefore, we will defer resolution of the prospective standards for customer notification of coverage and capacity to that pending proceeding. We anticipate a solution applicable to all wireless providers, which will provide consumers with the information they need to make an informed choice among those providers.[19]

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[17] Customer witness Coxum, who contracted for service in late August 2002 but returned her phone and cancelled service only a few days later, spent several months contesting the activation fee. She testified that she did not object to paying for the limited airtime used and that once the $35 activation fee was waived, she paid the balance of the bill. (Footnote in Decision.)

[18] D.04-09-062 at 65-66.

[19] *Id.* at 68.

III. THE SITUATION TODAY: DRA SURVEY OF AVAILABLE INFORMATION.

DRA has surveyed the information available to consumers today, and found it at best marginally improved, but generally unchanged from the 2001-03 period when the Cingular investigation was active.[20] A table showing the relative usefulness of in-store and on-line coverage maps is attached hereto as Appendix A.

Rate maps are still proffered as coverage maps.[21] The information provided in-stores to wireless consumers is ineffective, uneven, and often misleading.[22] Initial requests for coverage maps are either met with a blank "we do not have any" or with the proffer of what can at best be called "rate maps," i.e., maps showing the whole State of California in 3x4" format, i.e., without any granularity.

On specific request, T-Mobile and Cingular made available on-line coverage maps with some modicum of topographical realism,[23] but these maps have neither the granularity nor the clear color scheme on maps typically used by industry engineers (and obtained by staff in Investigation 02-06-003).[24] Generally available wireless signal mapping software allows for signal strength presentation in a simple green-yellow-red format, and on a

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[20] Investigators during that period reviewed not only Cingular materials, but materials of other wireless providers as well.

[21] See Table at Appendix A, and Supporting Declarations of Mickiewicz, Witteman, and Lee at Appendices B, C, and D respectively, and attachments thereto. This is essentially the situation described by the Commission in D.04-09-062, at p. 53-54:

> [T]he maps Cingular placed in brochures and stores are not particularly helpful, since they are rate area maps, not coverage maps. In other words, they show where Cingular's rate plan applies and thereby strongly suggest concurrent coverage, but they do not identify known areas within those rate areas where coverage is problematic or nonexistent. Furthermore, Caceres and some customer witnesses report receiving coverage assurances from agents that proved to be erroneous. There is no evidence that Cingular provided sales people with training about coverage or supplied them with up-to-date coverage information in any systematic way. In fact, Cingular admits that any information more specific than the maps generally is unavailable at the point of sale. It must be obtained from customer service representatives, and even they do not have ready access to the information necessary to predict the actual likelihood of coverage at a given address, but must contact radio frequency engineers for it.

[22] Id.

[23] As used herein, "topographical realism" means maps that show evidence of some attempt to map signal strength against the contours of a local geography and topography, generally marked by curved or organic contours of the various coverage bands (on absolutely flat land, coverage maps will show a "fried-egg pattern," i.e., a pattern of concentric rings reflecting the diminishment of signal as it moves outward from the tower)..

[24] *See, e.g.*, http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features.

street-by-street basis, but these carriers – the best of those surveyed – apparently preferred to present their coverage maps in single-color formats which are inherently confusing (e.g.,one can easily become confused as to whether one is seeing the light green for two-bars, or the slightly darker green for three).

There is no common metric, matrix or presentation used by the carriers (although there could be),[25] thus cross-carrier comparisons are difficult if not impossible. Cingular offers a map on its website different from the on-line map offered in the store, the two maps are different in color scheme (orange-on-orange vs. green on green) and coverage information.[26] T-Mobile's map appears to contradict the statements of its own sales representative.[27]

Verizon provides a map entirely devoid of any topographical realism.[28] Sprint offered no coverage maps in its stores, told the surveyor that a map was available on-line, but the online-map proved to be a regional map without useable detail.[29]

Finally, the survey confirms that third-party resellers of the carriers' service – such as Radio Shack, Good Buy, Costco – may provide even less information than the carriers themselves do.[30]

In sum, no carrier or reseller makes available signal strength and coverage data of sufficient detail to allow consumers to make meaningful purchase decisions based on the quality of the wireless provider's signal coverage. Moreover, providers have no uniform reporting matrix or metric, so the consumer cannot make comparisons among providers.

IV. WHAT THE CUSTOMER WANTS AND NEEDS, AND WHAT THE INDUSTRY CAN PROVIDE TODAY.

Customers want maps, as manifest by their repeated statements that they had specifically asked about coverage, been given in-store "rate" maps, had relied on those

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[25] *Id.*

[26] *Compare* Mickiewicz Declaration, Appendix B, Attachments B and C.

[27] Witteman Declaration, Appendix C, at ¶ 7-8.

[28] Appendix C, Attachment B.

[29] *Id.* at Attachment D (see also Mickiewicz Declaration).

[30] *Id.* at ¶ 6 and Attachments C and D (Cingular and Sprint information provided by Radio Shack).

maps, and were disappointed that those maps did not correspond to reality,[31] and that they believed they "should have [been] provided maps that were specific about the coverage."[32] The real question here is the discrepancy, between what the companies know, and what they reveal to consumers.

The software that is currently available to wireless service providers demonstrates what the service providers are capable of producing.[33] As a further illustration of the service provider's ability to model coverage information, DRA provides to the Commission by Declaration under Seal actual street level signal strength maps obtained by Staff in the Cingular Investigation. These maps demonstrate the feasibility of creating street-by-street granularity in portraying signal strength.

A possible industry rejoinder here would be that those maps are old and no longer reflect accurate coverage. That is irrelevant. The maps are not being submitted for the truth of the specific coverage assertions; they are being submitted to show that sufficiently granular maps exist and are possible. These maps also show that it is possible to disclose signal strength to customers in a way that is readily understandable.

It is also easy to craft an explanatory note to help customers interpret the maps, as many providers have done on their websites, along these lines:

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[31] Exhibit [9], Att. 5, CAB Complainant 4 ("Pamphlet # 1 ... is deceptive and misleading. An average consumer ... would logically assume the phone would work in the entire states of California and Nevada"); Complainant 69 ("I was shown a national coverage map and assured that digital service for the Nokia phone that I was sold would be available in all major metropolitan areas"); 112 ("service map said 'northern California' region, I figured service would be possible at Red Bluff or Redding ... But there was no coverage... we were informed there was a no grace period, that it was our fault we did not understand the limitations"); 137 ("Pacific Bell's brochures are not even close, they are misleading and fraudulent"); 159 ("I perused the map in your brochure (see attached) and was assured that your service area included Santa Rosa, Windsor and on up to Healdsburg ... I cannot make or receive calls from [Windsor] ... not on the outskirts of town, but centrally located"); 236 ("I specifically asked about coverage within the local area and was given a coverage map which gave me the impression my area was totally covered ...[this] is false advertising"); 285 ("misleading coverage maps"); 520 ("I signed up for Cingular cellular service in March 2001 based upon at the retail store map indicating high coverage of the San Francisco Bay Area ... this map was not terribly accurate"); 577 ("I was told based on the public map I should have no problem ... I had absolutely no signal whatsoever in or around the perimeter of my home"); etc.; etc.

[32] Exhibit 9, Att. 5 (Misrepresentation Matrix) complainant no 9.

[33] *See, e.g.*, http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features.

> This map shows street level signal strength. Your signal will be less if you are in a car, and less still if you are indoors. Sometimes weather and foliage also affect your signal.

The final piece of an industry wide standard is a common matrix and metric in which to express signal strength. In I.02-06-003, Cingular's actual in-the-field engineers, including the chief engineer for Northern California, testified that the company used internally a -xx, -xx, and -xx dBm scale to measure signal strength sufficient for in-building, in-car, and open-air coverage respectively.[34] DRA is willing to accept a signal strength metric substantially the same as used by Cingular's engineers. Similarly, the maps should be presented the way that industry engineers read them: with green for the best coverage (including in-building), yellow for medium coverage (in-auto, or open air), and red for the lowest level of coverage (open-air only), and grey denoting no-coverage areas.[35]

A. Possible Industry's Objections.

The 2003 GAO Report indicates that providers then were using the same reasons used today to resist public disclosure of its network information:

* The information is business sensitive and proprietary;

* The information would not be useful to consumers;

* The information might not be completely accurate;

* Because their networks are changing rapidly, network performance data would be out-of-date before it could be used; and .

* Performance is affected by various transient factors, such as time of year, weather, and unusual periods of demand that tax network capacity.[36]

[34] These values were declared by Cingular to be confidential, and will be submitted with Staff's confidential declaration. Saiful Huq, the engineer who was designed Cingular's (then Pacific Bell Mobile's) Los Angeles system, testified that the standard used by the Southern California region was actually more stringent.

[35] *Compare,* http://www.sgsi.com/Prod_Soft_PlanetTools.asp#Features.

[36] GAO Report at 22.

In addition, the industry also can be expected to object on the ground of expense, an objection already addressed in D.04-09-062, as well as on the ground of a multi-state settlement entered into by some but not all carriers.

1. The Multi-State Settlement, or AVC.

The wireless industry might be heard to object that many of its members have already entered into "Agreements of Voluntary Compliance" (AVC) with the Attorneys General from the several States.[37] Notably, however, the Attorney General of California apparently had significant reservations about the utility of the AVC and did not enter into the Agreement, and thus there is no enforceable agreement applicable to California. In addition, the AVC does not achieve the information disclosure needed by California consumers as there is no common metric set out in the AVC. In relevant part, it requires the settling wireless service providers to

> implement procedures to provide during a Sales Transaction at its retail locations, and provide on its website, maps depicting approximate Wireless Service coverage applicable to the Wireless Service rate plan(s) being sold ... The maps will be generated using predictive modeling and mapping techniques commonly used by radio frequency engineers in the wireless service industry to depict approximate outdoor coverage, based on then-appropriate signal strength for the applicable wireless technology and signal strength confidence levels under normal operating conditions on Carrier's network, factoring in topographical conditions ... All such maps will include a clear and conspicuous disclosure of material limitations in Wireless Service coverage depiction and Wireless Service availability.[38]

While its flaws are obvious, the AVC, if applicable and enforced in California, would provide substantially more market information than is now available. Apparently not all wireless service providers have entered into this agreement, however, nor is it being uniformly observed or enforced in California,[39] as manifest by the results from DRA's

[37] AVC is available at http://www.nasuca.org/CINGULAR%20AVC%20FINAL%20VERSION.pdf.

[38] AVC, ¶ 28.

[39] In this regard, DRA's survey contradicts the Commission's assumptions in D.06-03-013, where the Commission concluded that California wireless providers would abide by the AVC:

survey. Indeed, some wireless service providers may be in violation of the AVC's prohibition of marketing "nationwide," "national," or "coast-to-coast" services without "clearly and conspicuously" disclosing that coverage may not be available in all areas.[40] Thus, at best, the AVC is a touchstone for further Commission analysis.

2. The Trade Secret Objection.

There are several fallacies in the industry's traditional argument that its coverage maps – i.e., the depiction *of the very service that the consumer is purchasing* – are a trade secret: (1) much of the underlying data, including cell tower location, cell tower signal strength, topography, and the like are already in the public record, either through cell tower citing proceedings or through other generally accessible information like topographical maps;[41] (2) if all wireless providers in California were required to submit these maps, then there can be no argument that a given wireless service provider would be suffering competitive disadvantage by revealing this information; and (3) it is untenable as a matter of law and policy that wireless service providers be able to wrap *essential service characteristics of a generally available consumer product* in the mantle of a trade secret.

For practical reasons described by industry experts, wireless carriers have committed to adhere to the principles of the AVC in California. Thus California consumers will benefit from the settlement even though the California Attorney General ("AG") was not a party to the action.

[40] AVC at ¶25; *compare* Sprint map at Appendix C, Attachment __ ("Sprint Nationwide Voice Coverage" with no clear and conspicuous disclaimer).

[41] Detailed information regarding cell tower location, height, number of antennas, and power output, *inter alia,* is regularly submitted to local zoning authorities. Exhibit 34 (San Francisco); see also exhibit 24 (Carlsbad); HT 863:11-864:6-14. In addition, Cingular was required to submit to the FCC the Form 600, which was later supplanted by Form 601, which disclose cell tower by cell tower the longitude/latitude, antenna type, antenna direction ("azi" or azimuth), and transmit power ("ERP" or effective radiated power), and antenna downtilt ("ANT DN TLT"). Exhibit 31 (last four pages).

It should also be noted that In other words, Cingular's competitors have available to them the processed information of Telephia's comparative drive test maps and data (HT at 781:24-782:8), as well as the raw data in the public file which could be used to produce coverage maps. The only ones who do not have access to this information are the customers who buy Cingular's phones and service. The notion that Cingular will be somehow harmed by disclosure is belied by the fact that it has already shared this information with its main competitors.

3. Contrary to Industry Assertions, the Information is Useful *and Understandable* to Consumers.

Cingular takes the position that its internal maps are too complex for ordinary consumers to understand. There are even indications that Cingular, if not the wireless industry generally, wants customers to believe the wireless phone is "magic" and that they have no means to compare service providers, thus shielding the industry from meaningful competition on the merits of its system.[42]

Some of Cingular's own maps undercut the assertion that only an ordained priesthood can understand the vagaries of radio frequency engineering. These maps convey signal strength information in a simple three color format: good in-building coverage in green; good in-car coverage [yellow]; open-air coverage only in red; and no-coverage in grey. [43]

4. The Maps are Accurate Enough for Cingular's Engineers, so Presumably are Accurate Enough for Consumers.

No representational depiction of empirical reality can be 100% accurate. The fact remains, however, that the coverage maps used by Cingular's engineers are deemed by Cingular itself to be accurate enough to steer the investment of thousands, if not millions, of dollars a year in the build-out of their systems.

DRA suggests that if the area propagation maps currently in the possession of the wireless companies were outfitted with the simple legends now used by the wireless companies in their otherwise inadequate Internet sites, the result would be plainly intelligible to the vast majority of California consumers.

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[42] CB at 106-17; *compare* HT at 744:20 (consumers think phone is "magic").

[43] Exhibit 18, Att. 5 (see also Atts. 4-10); HT 1424:1-3.

5. Provision of Already-Existing Maps Would Not Pose a Burden on Wireless Service Providers.

These maps are already in existence, already in the wireless service providers' possession,[44] and making them available to consumers would not pose significant further costs for their use by consumers. Cingular's expert witness estimated that this could be done *nationwide* for approximately $1.5 million:

> CPSD and UCAN argue that the Commission should order Cingular to make its engineering maps available to customers over the Internet. Cingular contends that such a requirement would be unfair and would cause it competitive harm, since no other wireless carriers must disclose their engineering maps. Cingular also contends that the maps would be difficult for many customers to interpret and would require detailed, complex disclaimers. However, the back-of-the-envelope estimate prepared by Cingular's witness Cruz suggests it could take a relatively modest $1,510,000 to develop and maintain a software system to create and constantly update the maps for all six Cingular regions. Cruz said this estimate, which represents a company-wide, national cost, is inadequate for budgeting purposes, since among other things, third-party software license fees could be much higher than the $300,000 he factored into his calculation. Cruz's estimate anticipates a six-month lead-time to develop the software system.[45]

[44] Evidence in I.02-06-003 indicated that the carriers need detailed coverage area not only to operate their systems on a daily basis, but also to plan future cell tower siting.

[45] D.04-09-062 at p. 67.

IV. CONCLUSION

For the reasons set forth herein, the Commission should adopt clear and substantive disclosure requirements related to wireless service quality, specifically meaningful maps of wireless service coverage.

May 14, 2007

Respectfully submitted,

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APPENDIX B

Comparison of Out of Service Intervals for the 50 States

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	AVG.
NEBRASKA	14.1	14.8	12.8	12.9	14.2	15.0	14.1	14.8	15.3	12.3	**14.0**
WYOMING	14.1	10.7	10.5	11.3	13.2	13.7	14.5	16.3	19.2	17.3	**14.1**
IDAHO	14.6	12.8	12.7	12.0	12.5	13.9	14.3	14.2	16.9	18.5	**14.2**
MINNESOTA	18.4	14.5	13.3	12.8	13.6	14.0	12.7	13.7	14.5	14.9	**14.2**
MONTANA	15.2	13.2	13.1	12.4	14.0	14.1	14.2	14.8	17.7	15.8	**14.5**
SOUTH DAKOTA	18.6	14.4	13.9	13.1	13.3	13.8	13.1	13.2	15.4	17.1	**14.6**
NORTH CAROLINA	17.1	12.6	15.5	16.3	14.8	14.5	15.0	13.9	16.4	16.2	**15.2**
COLORADO	18.1	13.8	12.2	15.5	15.2	13.5	14.1	15.3	17.2	18.9	**15.4**
NORTH DAKOTA	19.5	16.3	14.4	13.6	13.3	14.6	12.9	13.6	13.7	26.6	**15.9**
SOUTH CAROLINA	16.0	13.8	15.7	15.9	15.7	19.6	14.6	13.8	17.0	18.6	**16.1**
UTAH	20.4	15.5	13.7	14.0	18.6	16.6	16.0	15.5	16.1	16.3	**16.3**
OREGON	16.2	14.3	14.1	14.0	14.9	16.9	17.6	16.7	19.1	20.8	**16.5**
IOWA	19.3	16.0	14.4	14.3	17.2	15.3	14.0	17.0	20.9	17.2	**16.6**
NEVADA	12.4	12.0	13.6	14.5	16.7	28.2	15.6	14.0	19.3	20.5	**16.7**
ILLINOIS	20.9	17.0	14.6	14.6	14.6	13.9	17.4	18.2	21.9	19.1	**17.2**
WASHINGTON	17.2	14.0	13.7	13.6	16.1	16.7	21.3	18.5	19.2	22.0	**17.2**
KENTUCKY	17.0	16.4	17.4	21.9	16.9	15.3	15.3	15.7	17.4	30.4	**18.4**
NEW MEXICO	19.2	15.9	18.1	14.6	19.7	21.7	33.4	19.3	15.7	13.3	**19.1**
WISCONSIN	39.9	15.8	12.9	11.9	13.3	12.0	14.8	19.0	27.9	24.0	**19.2**
ARIZONA	24.5	15.6	13.8	16.5	17.2	27.1	18.3	20.4	22.0	18.5	**19.4**
MISSOURI	15.6	13.6	18.1	19.3	23.5	17.2	16.5	21.8	23.6	28.2	**19.7**
ARKANSAS	20.6	17.9	12.5	15.6	24.8	17.7	15.5	22.7	28.1	27.5	**20.3**
GEORGIA	25.8	18.3	16.8	18.0	17.4	20.4	17.8	17.8	22.4	28.9	**20.4**
FLORIDA	15.8	15.4	14.4	16.3	44.8	39.5	17.5	16.2	19.2	19.4	**21.9**
OHIO	38.9	16.5	16.1	19.2	19.3	21.1	20.1	22.0	22.3	26.2	**22.2**
MAINE	15.2	17.0	19.1	22.6	20.7	21.3	23.7	24.0	N/A	38.6	**22.5**

KANSAS	14.4	15.5	19.6	20.7	25.6	25.6	22.5	28.1	26.1	26.7	**22.5**
TENNESSEE	24.5	22.8	21.7	26.4	20.9	19.4	18.0	17.1	21.2	34.3	**22.6**
INDIANA	39.2	19.8	15.2	15.6	16.2	17.5	17.4	21.8	31.5	36.3	**23.1**
RHODE ISLAND	20.6	19.0	23.7	25.3	22.6	22.7	28.0	23.9	25.5	23.9	**23.5**
DELAWARE	25.8	16.5	18.0	19.3	19.4	33.5	35.0	33.8	17.6	18.8	**23.8**
VERMONT	16.6	16.9	23.5	32.5	27.6	25.1	24.9	24.0			**23.9**
TEXAS	23.4	25.9	20.4	20.5	26.7	24.2	22.5	29.1	28.9	29.5	**25.1**
NEW HAMPSHIRE	15.8	18.2	22.2	29.5	23.4	26.0	32.5	31.3		28.2	**25.2**
OKLAHOMA	19.1	20.3	18.4	19.6	27.9	20.7	21.4	39.3	34.1	37.3	**25.8**
NEW YORK	23.3	21.2	24.1	32.5	25.3	27.1	30.4	23.8	26.8	31.1	**26.6**
DISTRICT OF COLUMBIA	31.6	20.5	20.8	31.5	21.3	25.0	34.7	26.6	30.4	31.0	**27.3**
HAWAII	11.9	22.2	17.6	32.6	38.9	N/A	N/A	40.3	32.3	29.3	**28.1**
CONNECTICUT	37.9	27.1	27.2	26.6	26.6	29.6	32.1	21.7	34.0	19.5	**28.2**
MICHIGAN	68.3	34.7	27.7	18.6	20.0	17.3	20.4	24.3	26.9	28.6	**28.7**
PENNSYLVANIA	26.2	19.0	19.1	24.8	25.7	30.0	34.7	33.5	40.6	36.6	**29.0**
ALABAMA	24.4	25.6	25.7	26.5	30.9	32.5	22.8	22.1	29.5	50.8	**29.1**
MASSACHUSETTS	19.9	19.2	23.9	35.2	29.5	37.2	43.1	29.3	30.8	27.5	**29.6**
VIRGINIA	22.5	19.4	19.4	38.3	29.3	31.7	35.0	32.5	45.7	49.3	**32.3**
CALIFORNIA	34.7	23.9	23.2	24.7	29.0	45.6	44.3	31.0	34.8	35.8	**32.7**
LOUISIANA	23.6	22.8	24.3	22.0	27.0	63.5	32.7	28.7	39.8	43.7	**32.8**
NEW JERSEY	34.2	24.3	23.5	29.3	28.6	36.8	42.6	39.1	38.5	40.8	**33.8**
WEST VIRGINIA	24.7	21.5	20.7	26.2	28.5	26.0	31.0	41.0	58.1	60.0	**33.8**
MISSISSIPPI	24.3	29.0	25.5	25.8	29.8	96.5	21.3	23.4	27.7	41.4	**34.5**
MARYLAND	34.3	24.5	22.4	34.9	34.6	38.9	50.6	52.7	61.6	75.4	**43.0**

APPENDIX C

Telephone Service Provider Report Card

WIRELINE Telephone Company	Installation Interval (days)	Installation Commit Met	% Repaired Within 24 hrs.	% Repeat Out-of-Service	Trouble reports per 100 lines	Time to Reach a Live Operator (Seconds)	CAB Complaints Per 100 lines
Company1	na	na	20	10%	1.6	65	1.2
Company2	na	na	23	12%	1.9	20	1.5
Company3	6	93%	40	20%	2.1	10	1.6
Company4	3	97%	24	11%	1.1	70	0.8
Company5	2	98%	24	14%	1.03	80	0.8
Company6	7	94%	45	23%	1.3	6	1.0
Company7	5	92%	30	21%	1.7	63	1.3
Company8	1	99%	24	13%	1.6	15	1.2
Company9	na	na	20	14%	2.6	10	2.0
Company10	1	99%	24	10%	1.4	20	1.1

WIRELESS Telephone Company	Detailed Street Level Coverage Maps	Blocked Call Rate	Dropped Call Rate	Lost Call Rate	Time to Reach a Live Operator (Seconds)	CAB Complaints Per 100 lines
Company1	Yes	0.0012	0.0006	0.0008	65	1.2
Company2	Yes	0.03	0.015	0.0195	20	1.5
Company3	No	0.004	0.002	0.0026	10	1.6
Company4	Yes	0.012	0.006	0.0078	70	0.8
Company5	Yes	0.006	0.003	0.0039	80	0.8
Company6	No	0.0019	0.001	0.0012	6	1.0
Company7	No	0.0089	0.0045	0.0058	63	1.3
Company8	Yes	0.018	0.009	0.0117	15	1.2
Company9	Yes	0.01	0.005	0.0065	10	2.0

Meets Standard

Below Standard