

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Spectrum Policy Task Force	)	ET Docket No. 02-135
Seeks Public Comment on Issues	)	
Related to Commission's Spectrum Policies	)	

**COMMENTS OF THE CDMA DEVELOPMENT GROUP, INC. (CDG)**

The CDMA Development Group ("CDG") hereby respectfully submits these comments in response to the Federal Communication Commission's (the "Commission") Spectrum Policy Task Force's request for public comments on issues related to the Commission's spectrum policies, ET Docket No. 02-135, released June 6, 2002. The CDG supports the Commission's efforts to develop a tentative work plan for the Spectrum Policy Task Force, to initiate a systematic evaluation of spectrum policies, and to promote discussion and encourage comments across a range of spectrum-related issues.

**Background**

The CDG is a non-profit international consortium of over 110 companies, including the world's leading manufacturers and operators of digital cellular, personal communications services (PCS), and third-generation systems based on Code Division Multiple Access (CDMA) technology. The CDG's mission is to lead the rapid evolution and deployment of CDMA-based systems, based on open standards and encompassing all core architectures, to meet the needs of markets around the world in an emerging, information-intensive environment. By working together, CDG members help ensure interoperability

among CDMA systems, while expediting the availability of CDMA technology to consumers.

There are currently more than 120 million CDMA subscribers worldwide, with annual growth surpassing 55 percent in North America.<sup>1</sup> Of these CDMA subscribers, more than 10 million use third-generation (3G) CDMA2000 networks, accounting for over 98 percent of the total number of current 3G users.<sup>2</sup> Furthermore, CDMA2000 continues to grow at a phenomenal rate, adding nearly 1.5 million subscribers per month. Analysts predict that by the end of 2002, 26 percent of CDMA subscribers will be using CDMA2000 phones, with this number increasing to 89 percent by 2006.

Operators worldwide are increasingly deploying 3G services on CDMA2000 networks; there are 15 operators in the Americas, Asia and Europe using CDMA2000 networks. These include Bell Mobility (Canada), Centennial (Puerto Rico), KDDI (Japan), KT Freetel (Korea), Leap Wireless (U.S.), LG Telecom (Korea), Metro PCS (U.S.), Monet Mobile (U.S.), SK Telecom (Korea), Telefonica Celular (Brazil), Telesp Celular (Brazil), Telus Mobility (Canada), Telemobil (Romania), Verizon Wireless (U.S.) and Western Wireless (U.S.). Handset manufacturers are supporting these networks by producing more than 100 CDMA2000 1X enabled models. These state-of-the-art devices are slim, lightweight and provide wireless users access to full-color music videos, Internet broadcasts, and animation downloaded at up to 307 kbps on CDMA2000 1X networks, up to 2.4 Mbps on CDMA 1xEV-DO. In addition to currently available handsets, there are more than 24 CDMA2000 component products, such as PC cards and modules, commercially available today.

The CDMA2000 standard is leading the way for advanced wireless service deployment. Consumers and corporations alike are responding to its efficient use of bandwidth, clear and seamless migration path, and cost-efficiency. The incredible growth rate of

---

<sup>1</sup> Reported by the CDG, May 2002 as CDMA Worldwide Subscriber Growth Analysis: One-Year Period March 2001 through March 2002.

<sup>2</sup> CDMA2000 is fully recognized by the International Telecommunication Union (ITU) as an IMT-2000 (or third generation) mobile standard.

CDMA2000 subscribers is indicative of a strong and viable technology. However, the economic and welfare benefits, which accompany such technological advances, hinge on the ability of corporate entities to respond to changes in market demand and to respond to such changes in the most cost-efficient manner, creating economies of scale and international markets.

Therefore, the issues that the Spectrum Policy Task Force seeks to address, in particular the market-oriented allocation and assignment policies, spectral efficiency, and international issues, are of primary importance. The CDG values the opportunity to provide comments identifying the challenges and opportunities facing the Commission in each of these policy areas.

### **Market-Oriented Allocation and Assignment Policies**

The CDG has been and continues to be a strong supporter of flexible radio spectrum policies that allow this important resource to be used in the most efficient manner. By granting flexibility to existing licensees, the Commission has facilitated the development and deployment of advanced services in the United States by allowing existing operators to migrate spectrum use to its highest value.

For example, under flexible use policies, U.S. Cellular has chosen to migrate the TDMA portion of its network (two-thirds of the network) to CDMA which should be completed by early 2004.<sup>3</sup> The cost of this conversion has also been relatively low, estimated at \$400-\$450 million spread over a three-year period.<sup>4</sup> The ability to develop and apply the lowest-cost, highest capacity solution available has provided U.S. Cellular with a significant advantage in third-generation service delivery. Migration by U.S. Cellular from TDMA technology to CDMA has enabled the company to significantly increase

---

<sup>3</sup> Deutsche Bank, Signals to Noise, "Two Thumbs up on U.S. Cellular's Move to a cdma2000 network," Brian Modoff and Michael Thelander, January 14, 2002.

<sup>4</sup> This includes the cost of upgrading the existing second-generation CDMA IS-95 portion of U.S. Cellular's network to CDMA2000 1X.

network capacity, to reduce capital outlays, to provide data capacity very quickly, and to accomplish these achievements without interrupting service to existing customers.

The experience at U.S. Cellular is mirrored by recent deployments by Verizon Wireless and Sprint PCS. Verizon Wireless was the first wireless service provider in the United States to offer downloadable applications (including games, entertainment, and productivity programs) on a 3G network.<sup>5</sup> Verizon Wireless was able to deliver these advanced service offerings ahead of the competition as a direct result of its early adoption of CDMA technology, allowing for smooth and low-cost network upgrades without interruption of service, additional spectrum, or massive capital investments for new base stations.

Sprint PCS is also taking advantage of the clear and seamless migration path enabled by CDMA technology by expanding its traditional service offerings to provide wireless imaging, advanced messaging capabilities, location-based services, and increased gaming options on its existing second-generation network. It is likely that these services will be offered commercially sometime late this summer; the result of this conversion will be “a network that will dramatically enrich the whole wireless experience, providing capabilities that once were limited to a home or office PC.”<sup>6</sup>

These examples of successful CDMA2000 network development and deployment suggest that advanced wireless services are providing growth opportunities for the telecommunications industry and continue to stimulate innovation in technological systems and applications. Since the commercial deployment of CDMA2000 in the Republic of Korea in October of 2000, SK Telecom and KT Freetel have experienced an increase in average revenue per user (ARPU) of 10 to 15 percent, with the number of subscribers reaching over 6 million.<sup>7</sup> These carriers have found that users are continuing to rely on traditional data services, such as SMS, ring-tones, and screen savers, but have

---

<sup>5</sup> “Verizon Wireless Unveils Downloadable Services Nationally,” Verizon News Release, June 17, 2002.

<sup>6</sup> “Sprint Chairman Outlines Future of Wireless in CES Closing Keynote Address,” Sprint News Releases, January 10, 2002.

<sup>7</sup> “CDMA 1X, W-CDMA and GRPS: Let’s Rumble,” Morgan Stanley Equity Research, June 6, 2002.

also started playing games and downloading applications available on 3G terminals at an increasing rate. The successful deployment of CDMA2000 networks in these countries, and the rapid consumer adoption of new applications is, in turn, stimulating economic growth, competition, and innovation.

The key capabilities and services that have driven the development and deployment of CDMA2000 systems include the following:

- the ability to reach data rates of up to 307 kbps, with average data rates of current CDMA2000 networks reaching 70-90 kbps;
- channel capacities nearly twice that of cdmaOne™ systems and six times non-CDMA second-generation systems, creating more room for data traffic and additional voice subscribers;
- improved management of power resources resulting in a doubling of battery life of existing handsets;
- provision of mobile access to streaming video, videoconferencing, video mail, and MP3 file transfer;
- advanced delivery of text data services (location, mobile-commerce, education, mobile banking, real-time stock status and trading) anytime and anywhere; and
- incorporation of advanced packet data technology for enhanced network efficiency.

The ability of U.S. operators to keep up with changes in technology and in the marketplace by migrating existing networks or implementing new networks to maximize the use of spectrum allocations is contingent upon flexible radio spectrum policies.

Allowing operators, both those with existing services and those seeking entrance into the market, to respond to market demands by selecting the appropriate technologies, rather than following government mandates, fosters competition, provides strong incentives to innovate, and ensures rapid deployment of new technologies. Consumers, commercial interests, and the economy as a whole, are stimulated as a result. In this era of

digitalization and convergence, wireless operators must be empowered to consider all technology solutions, both existing and future unforeseen, to better service businesses and individual users.

The success of this policy framework is evident in the emergence of advanced technologies both within and beyond the United States. Those markets currently deploying IMT-2000 networks, where customers are enjoying the benefits of 3G systems, are not associated with restrictive technology policies, but instead share the defining characteristic of a technologically neutral regulatory approach. In the United States and Korea, for example, second-generation cellular and PCS systems can be upgraded to systems with third-generation capabilities without the need for regulatory approval or additional fees.

However, in other countries, the decision to assign particular mobile bands of radio spectrum to specific technologies, reserving bands for second-generation and other bands for third-generation wireless systems, has resulted in increased migration costs and delayed deployment of advanced systems. Some operators have been forced to strand investment in unusable spectrum without being able to realize a return on investment until equipment for the mandated technology is available for deployment. A technology-restrictive policy approach, therefore, prohibits or hinders deployment of new technologies by placing limits on the ability of operators to meet consumer demand, to employ the most advanced systems, and to make optimal use of spectrum allocations.

Flexible spectrum policies ensure that market incentives will determine not only the choice of technology for wireless services but also the timing of the migration between systems. Spectrum flexibility ensures that operators with immediate needs for third-generation services can deploy them, but allows other operators to wait until market demand increases. Investments in CDMA technology allow companies to support growth in the retail business yet at the same time continue to support and provide roaming on the existing network. Consumers, therefore, benefit from a transition phase that requires no interruption of service.

The Commission's adoption of flexible use policies for radio spectrum is providing the proper market incentives for the development and deployment of advanced wireless services in the United States. The relative effectiveness and efficiency of this regulatory framework have been demonstrated by the overwhelming correlation between flexible use policies and the deployment of advanced services internationally; the current policies of the Commission are providing the proper market-driven incentives for the migration of networks. We therefore recommend no specific policy or rule changes to the spectrum licensing process.

### **Spectral Efficiency**

The Commission asks for comment on the mechanisms and incentives required to ensure "efficient" use of the spectrum resource and to continue the development of spectrally efficient technologies. Specifically, the Public Notice asks for comment on existing new technologies that, if deployed, could improve spectral efficiencies and utilization, in addition to identifying the barriers to their deployment.

In response, the CDG would like to identify and detail several of the efficiency gains that accompany implementation of CDMA networks. CDMA2000 1X requires only a 1.25 MHz carrier channel. In comparison with other third-generation protocols, CDMA2000 1X is clearly the most spectrally efficient technology currently available. Each CDMA2000 1X channel, furthermore, has nearly twice the capacity of cdmaOne™ systems and six times the capacity of non-CDMA second-generation systems, creating more room for data traffic and additional voice subscribers. This allows many operators to transition to third-generation services without the necessity of expanding their spectrum requirements, thereby reducing pressures on limited spectrum resources and allowing for implementation of third-generation networks without significant reallocation of radio spectrum. However, these efficiency gains are only possible under a regulatory framework that permits flexible spectrum use. We believe that current Commission rules optimize the efficient use of scarce resources and feel that the deployment of advanced

technologies will continue to move forward as markets increasingly provide returns to more efficient systems.

In terms of methods of quantifying or benchmarking spectral efficiencies and utilization, the CDG recommends that market forces continue to be the major determinant of efficiency. With flexible radio spectrum use policies, commercial interests will balance the economic incentives offered by new technologies against the costs of implementation. The efficiency of the systems will therefore be determined by a cost-benefit analysis of the transition. An effect of these market mechanisms will be the prevalence of cost-based pricing mechanisms, which benefit consumers seeking competitive pricing for advanced service offerings. Market mechanisms are already directing technological choice; they will work equally well in ensuring that spectrum is used to the greatest and most efficient benefit.

### **International Issues**

The opportunities provided by advanced technology systems extend beyond the borders of the United States, creating economies of scale, increasing the forces of competition, and necessitating international cooperation. The CDG commends the Commission for its commitment to multilateral and bilateral proceedings dealing with the global and regional challenges of spectrum allocation policies and for its recognition of the importance of roaming capabilities (national, regional, and global).

With the identification of a wide variety of frequency bands for IMT-2000 at the ITU's World Administrative Radio Conference of 1992 (WARC-92) and at the World Radiocommunication Conference of 2000 (WRC-2000), governments have a chance to choose the best option for their particular circumstances. The ITU and CITEL continue to review options for band pairing arrangements for IMT-2000. In addition, the U.S. Government still has not selected additional bands for advanced wireless communications, including IMT-2000. The result is that many countries are therefore opting to focus, at present, on deploying IMT-2000 technologies in the cellular and PCS

bands that are already in use. The Commission's flexible use policies and commitment to competitive markets allows the United States to be a leader in this "in-band migration" process.

Currently, governments internationally and especially throughout the Americas are considering using the 1710-1850 MHz and 2110-2200 MHz bands for additional frequencies for IMT-2000. The use of these bands will advance the potential for international roaming and should therefore be encouraged via U.S. participation in international proceedings. Developing U.S. policies consistent with regional trends (every country in the Americas that has taken a position on IMT-2000 allocations at CITELE has supported the 1710-1770 MHz band as part of the uplink frequencies for third-generation systems) and the ITU should be a priority in the Commission's decision-making process.

The 1710-1770 MHz with 2110-2170 MHz band pairing is the most viable option for identifying and allocating additional spectrum for new advanced wireless services in the United States, not only for reasons of international roaming, but also because of the constraints faced by the Commission and other Federal Government agencies. It is, furthermore, the best alternative in light of the necessity for the U.S. Government to convey its spectrum policy plans as soon as possible to other nations as they consider alternatives for advanced wireless services. The identification and allocation of this band pairing will also provide manufacturers and operators with market certainty, which will, in turn, permit these companies to develop products and strategies to better serve regional and global marketplaces. The CDG, therefore, urges the Commission and other Federal Government agencies to work towards the identification of the 1710-1770 MHz/2110-2170 bands for IMT-2000 in the near future.

## **Conclusion**

The CDG commends the Commission's efforts to establish and empower a Spectrum Policy Task Force to examine these important regulatory challenges. We believe the

Commission's flexible spectrum policies allow for the maximum benefit to derive from the lowest possible cost and ensure the most efficient use of spectrum. Competition, efficiency, and consumer welfare are all products of the regulatory structure currently upheld by the Commission.

The current regulatory scheme for spectrum usage and for ensuring spectrum efficiency relies upon and advances the interests of market economics, ensuring a careful balancing of costs and benefits. This system of telecommunications transactions, furthermore, extends to the international arena where radio spectrum and harmonization play important roles. The Commission should continue to advance the interests of the United States in international fora to the greatest extent possible, encouraging cooperation and ensuring the growth of competitive markets.

Respectfully submitted,

**CDMA DEVELOPMENT GROUP, INC.**

Perry M. LaForge  
Executive Director  
575 Anton Boulevard, Suite 560  
Costa Mesa, California 92626

Date: July 8, 2002