

Before the
Federal Communications Commission

Washington, DC 20554

In the Matter of)
Spectrum Policy Task Force Report) ET Docket No. 02-135
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)

To: The Commission



REPLY COMMENTS OF VODAFONE
ON REPORT OF THE SPECTRUM POLICY TASK FORCE

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February 28, 2003

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Executive Summary

Vodafone appreciates the opportunity to submit reply comments in the Commission's proceeding on the comprehensive and innovative work of the Spectrum Policy Task Force ("SPTF"), including its most recent report and the many comments filed in response. Vodafone is the world's mobile telecommunications leader, with investments in mobile operators in 28 countries that, collectively, serve over 270 million customers. In the United States, Vodafone has a 45% interest in Verizon Wireless. The Commission's work on spectrum policy matters is significant to Vodafone for a number of reasons apart from the many important domestic policy considerations which may affect our US investment. Importantly, the US is in a position to be influential on a global basis in developing innovative approaches to spectrum management, and international spectrum coordination is an important driver of value for Vodafone's businesses.

Vodafone supports the SPTF's market-oriented focus and many, but not all, of the SPTF's recommendations. Vodafone looks forward to following the Commission's work as it proceeds to implement these reform concepts in various proceedings. Drawing on the Report, Vodafone believes that:

- The Commission should have as its primary spectrum responsibility the promotion of access to, and use of, radio spectrum commensurate with the economically efficient allocation of the spectrum resource, except where the Commission determines that non-market driven public interest objectives (limited to national security, safety and emergency, and scientific research objectives) override economic efficiencies.
- Spectrum should be tradable, and licensees subject to a flexible use environment, within the minimum licensing constraints necessary to avoid harmful interference. Consistent with CTIA's recommendations, such flexibility should be part and parcel to future spectrum assignments. This will support the economically efficient allocation of the spectrum resource through a properly functioning secondary market.
- Spectrum regulation should be implemented consistently across a service market. Vodafone suggests that the current narrow issues-led rulemaking

process should be applied in a more strategic way.

- Until a flexible "exclusive use" model of spectrum management is implemented, it will remain impractical to assess the true level of demand for unlicensed or "commons" spectrum. A priority action for the Commission must be to define the minimum license conditions to ensure flexibility based on the following: the existing radio frequency environment in each band; the geographic scope to operate; the maximum RF output, both in-band and out-band; and the maximum level of noise/interference that the spectrum user must accept. Once defined, these conditions alone should apply to future allocations.
- Any "exclusive use" model should be the simplest necessary to support economic efficiency. In particular, complicated and untried concepts such as overlay licenses, and two-way auctions should be avoided. Any market in "exclusive use" spectrum should be sufficiently "thick" to avoid inefficient outcomes, *i.e.*, there should be a broad market of available bands in order to avoid illiquidity."
- The concept of interference temperatures should be pursued by the Commission as a way to help define property rights; however, using an interference temperature to grant easements should be considered with skepticism. It would be difficult to grant easements in frequency bands where mobile and portable devices are deployed in a manner that does not jeopardize quality of service. There may also be an adverse effect on future demand for spectrum if existing easements are inappropriate for new services or technologies.
- Receiver standards are generally unnecessary in a market environment.
- In future spectrum allocations, a "command-and-control" model of spectrum management should only apply to a tightly defined set of services in the areas of national security, safety and emergency and scientific research.
- Spectrum grouping can be effective, but a vibrant secondary market for flexible use spectrum can minimize the need for Commission action, and in all such deliberations, the Commission should not ignore the international dimension of spectrum economics. Harmonization should be pursued where possible because of the beneficial impact on services and costs for consumers.

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Introduction to Vodafone and Our Interest in This Proceeding

Vodafone is grateful for the opportunity to reply to comments addressing the findings and recommendations of the Spectrum Policy Task Force ("SPTF").¹ Vodafone is the world's largest mobile telecommunications company, with investments in mobile operators in 28 countries that, collectively, serve over 270 million customers. It has a 45% stake in Verizon Wireless. The SPTF Report is a welcome attempt to define a more workable and efficient policy structure for spectrum use and management. In this response, Vodafone outlines what it considers the critical actions for Government and the Commission and suggests prioritization of further efforts in the area of spectrum management reform.

Vodafone recognizes that there are a number of significant US domestic policy considerations being discussed by the SPTF and by the Commission in this and other proceedings. Vodafone believes, however, that the issues in this proceeding are important for reasons apart from those policy matters that may have an impact on our US investment. Vodafone would like to emphasize, in particular, that steps taken by the US government to generate innovations in spectrum policy

¹ Spectrum Policy Task Force, Report, ET Docket No. 02-135, at 15, 37 (Nov. 2002) ("SPTF Report").

may well be imitated throughout the world; indeed, we hope that the Commission's helpful innovations will serve as a model for other countries. Also, we believe it is important to emphasize to the Commission the extent to which recognition of the international aspects of spectrum management is critical to proper policymaking. Currently, international spectrum policy does not support optimal management. While Vodafone is a successful company and mobile communications have been a major global benefit to consumers, more should be done to unleash the real value of spectrum.

I. Key Elements of New Spectrum Policy

The SPTF makes a number of recommendations on the overall format of a new spectrum policy that are generally not disputed. For example, the SPTF rightly recommends – and few parties seriously question – that the Commission should “evolve its spectrum policy towards more flexible and market-oriented spectrum policies.”² In other cases, however, there are significant disagreements over the premises for the recommendations.

Vodafone agrees with those commenters advocating that the Commission be guided by the principles of economic efficiency.³ While section V.D of the Report also identifies both technical and spectrum efficiency as goals for US spectrum policy, the overarching rule of spectrum policy should be the promotion of economic efficiency except where there is a demonstrable and countervailing public policy interest. We believe that the SPTF Report is generally consistent with this objective, although some of the recommendations in the Report undermine the clarity that the principle of economic efficiency can bring to spectrum policy. We discuss these further below.

Economic efficiency should be the primary objective of a revised spectrum policy because spectrum is an economic input. Restricting its supply creates two problems: first, a potential mismatch between supply and demand; and second, an inappropriate assignment of spectrum in which marginal uses are abundantly supplied and more economically valuable uses are not supplied at all. This supply side constraint can be addressed through a combination of secondary markets and

² SPTF Report at 15; AT&T Wireless (“AWS”) Comments at 2; BellSouth Comments at 3; Cingular Comments at 2; CTIA Comments at 4; Sprint Comments at 1.

³ See CTIA Comments at 8; *cf.* AWS Comments at 6 (advocating market-oriented spectrum policy); Sprint Comments at 3 (same).

flexible spectrum use. As many commenters have discussed, flexible use is a critical component of a spectrum-efficient policy.⁴ The effect of flexible use will be to incentivize assignment of spectrum to the most valuable uses, thus furthering the Commission's objective of promoting efficient use of the radio spectrum.⁵ Access will be promoted simply by permitting flexible use. Whether access will occur will depend on whether the proposed use is more valuable than the use to which the spectrum is currently put. This analysis should govern the Commission's objectives and, more widely, those of the US Government in spectrum management.

As noted above, the overarching rule of spectrum policy should be the promotion of economic efficiency except where there is a demonstrable and countervailing public policy objective. Vodafone agrees with the many commenting parties in this regard.⁶ Said public policy interest should be clearly defined and restricted to: national security; safety and emergency; and scientific research (such as radio astronomy). Ideally, such countervailing objectives, and therefore limits on full spectrum fungibility, should be defined in the Communications Act so as to evidence the broadest possible public support and the clearest legal authority possible before foreclosing spectrum on terms that are not based on economic efficiency.

Vodafone agrees with the SPTF and numerous commenters that spectrum should be subject to flexible use within specified technical parameters.⁷ The debate should not be about this fundamental principle, but instead should focus on the minimum technical parameters required to define a licensee's property right in spectrum.⁸ Once such parameters are defined, issues of choice (be it use or technology) should be left to the market to determine. The market will only be able to make such determinations if it is permitted to function as such. Future spectrum assignments should emphasize flexibility by limiting the restrictions placed on

⁴ AWS Comments at 7; CTIA Comments at 4; Cingular Comments at 1; Sprint Comments at 6; Wireless Communications Ass'n Int'l, Inc. ("WCA") Comments at 3-5; TDD Coalition Comments at 2; License Exempt Alliance Comments at 2-3; Lucent Comments at 1; RadioShack Comments at 3; see also Agere Comments at pars. 18-19.

⁵ AWS Comments at 7; CTIA Comments at 4.

⁶ AWS Comments at 3; TDD Coalition at 3; Motorola Comments at 10; Telecommunications Industry Association ("TIA") Comments at 4; see also United Telecom Council ("UTC") Comments at 12; APCO Comments at 2.

⁷ ArrayComm Comments at 3; AWS Comments at 5; Cingular Comments at 9; CTIA Comments at 4; Motorola Comments at 4; Nokia Comments at 2; TIA Comments at 4.

⁸ Vodafone is aware that under U.S. law, licensees do not have a property right *per se* in spectrum. See AWS Comments at 17; Sprint Comments at 9. Nevertheless, the economic and legal principles underlying property rights are instructive.

licensees to the greatest extent possible, consistent with the need to minimize harmful interference, and promote an efficient secondary market in which the transfer, lease or sub-division of rights is permitted. In this regard, Vodafone agrees with the diverse commenters who support Commission action in the *Secondary Markets* proceeding.⁹

Accepting economic efficiency as a first principle also underscores the case, as some commenters advocate, for permitting users to modify power levels to make the optimal use of spectrum within urban and rural areas.¹⁰ Provided no other user's rights are adversely affected by any change in these technical parameters, it follows that flexibility in use should be matched by flexibility in deployment.

Notwithstanding its apparent desire to support a goal of economic efficiency, the SPTF makes a number of curious recommendations. First, Vodafone does not agree that a regulator's role within a flexible spectrum management system is to "foster technologies," be they for uniform signal strength generation throughout a service area or a means to shift to "hybridizations" with wireline delivery.¹¹ Provided the economic incentive exists to manage spectrum efficiently, it should be unnecessary for the Commission or other government regulators to intervene to coerce the market in any particular direction.

The SPTF recommends that the Commission consider grouping technically compatible systems and devices in close spectral proximity.¹² Like other commenting parties, Vodafone is sympathetic to this recommendation,¹³ as this is a logical consideration if spectrum use is inflexible or new allocations are being considered. Vodafone believes, however, that spectrum management reform must also emphasize flexibility of use, which will produce liquidity in the spectrum market and dynamic reallocation of the spectrum resource. Without flexibility, such groupings may simply result in the maintenance of the market rigidities created by the current service category allocation of spectrum. As new assignments of

⁹ AWS Comments at 18; Arch Comments at 7; Cantor Fitzgerald Comments at 2; CTIA Comments at 20; Cingular Comments at 38; Lucent Comments at 2; Motorola Comments at 26; Nokia Comments at 6; WCA Comments at 5-6.

¹⁰ Rural Commenters at 10; Lucent Comments at 4.

¹¹ SPTF Report at 20; see ArrayComm Comments at 10-12.

¹² SPTF Report at 22.

¹³ ArrayComm Comments at 9; AWS Comments at 21-22; CTIA Comments at 8; License Exempt Alliance at 9; Lucent Comments at 1; Motorola Comments at 11; Qualcomm Comments at 6; TIA Comments at 4, 6.

spectrum incorporate maximum flexibility in use, the need for Commission-imposed service groupings will be minimized as the market will determine the optimal use of spectrum. If market reforms are undertaken widely, any application of groupings should ideally be transitory in any case. Where a market cannot reassign spectrum, however (e.g., where it is reserved for public policy reasons), then service groupings may aid spectral efficiency and may be justified.

A second potential issue arises when considering service groupings -- the benefits of international spectrum harmonization. While the US is sufficiently large a market that equipment will likely eventually be built to support its national spectrum plan, as a number of parties discussed economies can still be accrued if harmonization is wider than the US alone.¹⁴ The cost of provisioning an additional band within a cellular telephone equates to around \$10 at the wholesale level. Further, the benefits of roaming are later in coming to a market if terminals have to support multiple bands. Lastly, delay in the availability of terminals can have detrimental effects for the development of the services and content market, in which the US is likely to be a major player. Should groupings be considered -- notwithstanding Vodafone's view that the market, not regulators, should determine "groupings" dynamically against perceived commercial need -- then international harmonization issues must be a factor in any decisions made.

There is a risk that the SPTF recommendations on periodic review of rules attached to spectrum assignments, if implemented improperly, could create uncertainty that undermines economic efficiency. If the market is allowed to function, the need for review of the rules is limited. Any such review should include a full and open consultation and have as a presumption liberalization of frequency use (that is, increased flexibility) unless good reasons are given otherwise. If the Commission engages in such review, the NOI rather than NPRM route is preferable, but any review should consider the policy implications of rule changes across all frequencies rather than focus solely on narrow bands of immediate concern. The key objective should be the maintenance of consistent regulation across all markets.

¹⁴ AWS Comments at 20; Consumer Electronics Association ("CEA") Comments at 4; Nokia Comments at 4.

II. Interference Avoidance

While the Task Force makes some noteworthy observations on the use of the "commons" model for spectrum management, Vodafone agrees with the commenters noting that there is an overly-optimistic assessment of this model.¹⁵ There are a number of different technologies being developed which seek to use "commons" spectrum. But regulators must understand why this is the case. The current scarcity of spectrum created by insufficient flexibility in regulated use inevitably constrains market entry, particularly by those wishing to use new technologies. This in turn arguably skews technology development towards unlicensed bands, such as the 2.4GHz ISM band. Flexibility will permit new technologies and entrants to access spectrum more easily and therefore reduce reliance on "commons" spectrum.

Vodafone supports those commenters advocating the exclusive use model in combination with a robust secondary market, as this may change the demand profile for "commons" spectrum.¹⁶ Until such time that the Commission has introduced widespread flexibility into the use of licensed spectrum, including a more flexible secondary market, any analysis of demand for "commons" spectrum is difficult. In addition to licensees themselves, some market players will want to work with exclusive use licensees to use technologies in licensed spectrum, notwithstanding harmonization issues and economies of scale, because network management is simplified and quality of service enhanced.

The record supports Vodafone's view that flexibility also addresses the potential for the "tragedy of the commons." By reducing the barriers to entry in "exclusive use" spectrum, flexible use in concert with a more robust secondary market should reduce the demand for access to "commons" spectrum.¹⁷ This is important for competition reasons, as technologies deployed in unlicensed bands may act, in certain situations, as substitutes (as well as complements) to networks operating in "exclusive use" spectrum. Trying to resolve the "tragedy of the commons" by increasing the availability of "commons" spectrum, without addressing first the flexibility issue, may simply embed a perpetual over-reliance on "commons"

¹⁵ ARRL Comments at 4; CTIA Comments at 14; Metrocall Comments at 5; WCA Comments at 12.

¹⁶ AWS Comments at 19; CTIA Comments at 14.

¹⁷ As discussed at page 12 *infra*, Vodafone shares concerns for the potential inequities resulting from grants of "retroactive flexibility" expressed by some commenters and noted by the SPTF.

spectrum, resulting in degradation of service quality and a negative impact on overall competition.

Clearly there is a delicate balance for the Commission to strike as it faces significant calls for additional "commons" spectrum (as it does also for "exclusive use" spectrum). Vodafone agrees with commenting parties that any additional spectrum for the "commons" should be limited until new policies have been introduced to support the optimal application of the "exclusive use" spectrum model.¹⁸

A. Interference temperatures

The record indicates that parties view interference temperatures as serving two general purposes:

- i. as a part of the interference parameters attached to "exclusive use" of spectrum – effectively setting a noise floor and determining the degree of protection any licensee may expect;¹⁹
- ii. as a means to enhance the supply of spectrum by introducing underlays or easements provided the interference temperature is not breached.²⁰

It is important for the introduction of further flexibility in spectrum use and for the economically efficient assignment of frequencies that interference temperatures – and other technical parameters, including in-band and out-of-band emission controls – are defined. Taken together, these parameters create the rights and obligations of any spectrum user. To that end, Vodafone agrees with those commenters who support the further study of techniques to measure and evaluate interference temperatures.²¹

Like a majority of commenters, Vodafone is much more skeptical about the use of interference temperatures to provide a basis for underlays or easements.²² Where receivers and transmitters are relatively static, the definition of operational

¹⁸ PCIA Comments at 4; *see also* AWS Comments at 3 (new commons spectrum should not be precluded but limited to higher frequency spectrum bands); Motorola Comments at 25 (same).

¹⁹ AWS Comments at 11; CTIA Comments at 10-13; Sprint Comments at 14.

²⁰ Microsoft Comments at 7

²¹ *See* ArrayComm Comments at 13; AWS Comments at 13; BellSouth Comments at 9; Cingular Comments at 321; Public Safety Wireless Network Program Comments at 9-10; Sprint Comments at 15; WCA Comments at 10.

²² *See, e.g.*, Arch Comments at 8; AWS Comments at 14; Cingular Comments at 18; CTIA Comments at 20; Sprint Comments at 13; *see also* Wi-Fi Alliance Comments at 5-7.

criteria to meet a particular interference temperature is relatively simple and potentially manageable. It is far more difficult to define criteria to meet a particular interference temperature where transmitters and/or receivers are mobile or portable.²³

Numerous commenters appropriately note that a uniform temperature is simply not feasible.²⁴ While a mobile terminal may ordinarily be some distance from any potentially interfering transmitter, this will not always be the case. The interference temperature at the terminal varies substantially with the separation of the terminal from the transmitter, and it will be very difficult to define technical criteria that ensure the interference temperature is not exceeded. For example, for a transmitter technology that might be widely embedded in office equipment, it would be hard to derive appropriate protection of mobile terminals, while still offering useful functionality.

There is also a critical issue of service quality.²⁵ A mobile network will seek to achieve a call drop ratio of less than 1%. For example, although a transmitter may only breach an interference temperature in, say, 1% of the office space, this effect may be magnified by the mobility of the handset. Mobile phones are not evenly distributed throughout the volume of the office. Office workers typically spend the majority of their time at their desks, in front of their computers. If the transmitter is embedded in the computer, the proportion of time that the interference is breached will be much greater than 1%. Also, a call may be dropped if the phone is carried through the effected 1% of the office space at any time during the duration of the call. Average metrics of interference (commonly derived by Monte Carlo analysis) can therefore seriously underestimate the real-life effects of interference.

A number of commenters also correctly note that there is an additional difficulty in defining operational criteria for unlicensed equipment, where the number in use cannot be controlled, and there is typically very little restriction on the type of usage.²⁶ In these cases, it will probably be necessary to use worst-case

²³ See Arch Comments at 3; AWS Comments at 8-13; Comsearch Comments at 3; Nokia Comments at 5; see *also* ArrayComm Comments at 12.

²⁴ BellSouth Comments at 9; Cingular Comments at 18, 25-30; CTIA Comments at 10-13; Lucent Comments at 2; Sprint Comments at 15; TIA at 8; WCA Comments at 11-12.

²⁵ AWS Comments at 15-16; Cingular Comments at 20-23; CTIA Comments at 10-13; TIA Comments at 9; Lucent Comments at 2; Sprint Comments at 13.

²⁶ AWS Comments at 10-12; BellSouth Comments at 9-10; see *also* Maximum Service TV Comments at 16.

assumptions about the quantity and use of unlicensed devices when defining technical and operational criteria, as there is no regulatory means to restrict these unlicensed devices once they have entered the market. Indeed, in many cases, there will be several different contributions to the total interference temperature, from both co-channel and out-of-band emissions. It will be difficult to apportion these contributions to the cap of interference temperature. There is also the issue of identifying who breaches the interference temperature and should therefore be deemed culpable.²⁷

Vodafone also agrees with commenters that establishing an interference temperature, below which unlicensed technologies may operate, acts against future flexibility of the "exclusive use" bands.²⁸ The opportunity to deploy new technologies may well be restricted because historic interference temperatures are not conducive to the effective use of the new technology.

Thus, while the introduction of interference temperatures may create an opportunity for the Commission to enhance spectrum usage at some point in the future, there are at least two real risks that must first be addressed: (i) mobile or portable technologies are likely to be inadequately protected, with quality of service consequences; and (ii) flexibility in the future use of any frequency may be adversely affected by historic interference temperatures and consequential easements. In light of these concerns, and consistent with other commenting parties, Vodafone is not convinced that the arguments presented by the SPTF are sufficient to justify the use of interference temperatures as a basis for awarding easements.²⁹ While the theoretical application of easements may be attractive to policymakers, the practical derivation and enforcement of easements are likely to be very difficult. Further, the imposition of interference temperatures to create easements introduces constraints on the flexible use of spectrum.

²⁷ See AWS Comments at 12; PCIA Comments at 5; Lockheed Comments at 7;

²⁸ AWS Comments at 14; Sprint Comments at 14.

²⁹ Agere Comments at 6; ArrayComm Comments at 6-7; AWS Comments at 17; Cingular Comments at 18; Lockheed Comments at 6-7.

B. Receiver standards

Vodafone agrees with the SPTF that maximising spectrum efficiency requires good receiver performance.³⁰ Cellular mobile operators have always pressed this requirement on their suppliers, and this is one reason why cellular networks are able to achieve very high spectral efficiency. In Europe, receiver parameters have been included in product standards for many years. Within the EU, the Harmonised Standards to place products on the market under the R&TTE Directive (Radio and Telecommunications Terminal Equipment Directive) can include receiver parameters where these are justified to use the spectrum effectively so as to avoid harmful interference.³¹

The record in comments, however, supports Vodafone's view that receiver performance should not be mandated unless it is demonstrable that the market is not incentivized to adopt spectrally-efficient receivers. This approach is consistent with the objective of economic efficiency.³² Any view on the correct standards or performance criteria to be met should consider the international nature of receiver manufacturers and the applicability of performance criteria across the market in which receivers might be sold or used.³³ Failure to do so might leave receiver manufacturers facing conflicting performance criteria across the international market.

The SPTF also makes recommendations on other means to control interference. Like other commenters, Vodafone does not believe that it should be the role of the Commission to promote the use or development of favored technologies, such as automated transmitter power and frequency control or advanced antennas.³⁴ Provided the economic incentives to manage spectrum efficiently are in place, market manipulation or direction should not be required.

³⁰ SPTF Report at 31.

³¹ Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

³² BellSouth Comments at 11-12; CEA Comments at 6-9; Qualcomm Comments at 5; Motorola Comments at 15; Lucent Comments at 4.

³³ Japan Telecommunications Bureau Comments at 1; RadioShack Comments at 7.

³⁴ SPTF Report at 20; ArrayComm Comments at 10-12.

III. Spectrum Usage Models

Consistent with its comments made herein in Section II, Vodafone agrees with commenters supporting the SPTF's recommendation that the Commission place greater emphasis on "exclusive use" and "commons" models of spectrum management rather than on a "command-and-control" model.³⁵ The priority should be to develop a management system that permits the most flexible use to be made of "exclusive use" spectrum, after which determination of the true demand for "commons" spectrum can be more readily assessed. "Command-and-control" should be limited to those instances where public policy concerns override economic efficiency – namely, national security, safety and emergency, and scientific research.

With reference to "command-and-control" spectrum, the arguments for maintaining "command-and-control" over satellite and broadcast bands are not convincing.³⁶ If flexibility is a core objective and economic efficiency is to be achieved, then the market for "exclusive use" spectrum should be as wide as possible. Vodafone recognizes that any application of "exclusive use" models to satellite spectrum would require international agreement to be effective.

IV. Transition Issues

It is difficult to determine the optimal transitional route. Much depends on the long-term policy the Commission ultimately decides to follow should it take the opportunity of the SPTF's report to define a comprehensive policy. At minimum, Vodafone agrees with commenters that a move from the command and control model of spectrum management is long overdue.³⁷ Underlay rights may be appropriate for some bands, but, as a number of commenters note, the case made for them in the STPF Report is not convincing.³⁸ Leasing should be permitted – that it is not currently seems inconsistent in a market where spectrum trading (*e.g.*, assignments and transfers, disaggregation and partitioning) is otherwise allowed.³⁹

³⁵ AWS Comments at 3; CTIA Comments at 14; Nokia Comments at 5; RadioShack Comments at 3-4; Sprint Comments at 8.

³⁶ SPTF Report at 41-42, 44-45; PanAmSat Comments at 4; Boeing Comments at 5-6.

³⁷ *See supra* note 35.

³⁸ ArrayComm Comments at 6-7; AWS Comments at 14; Cingular Comments at 18; Lockheed Comments at 6-7; Sprint Comments at 13.

³⁹ *See supra* note 9.

In addition, a successful transition to a market-based approach must take into account all potential usable spectrum, including that reserved for government use. Finally, Vodafone shares concerns for the potential inequities resulting from grants of “retroactive flexibility” expressed by some commenters and noted by the SPTF.⁴⁰

Vodafone is concerned as well about the trial and error form of transition the SPTF suggests. The SPTF talks of only making 100 MHz available for transition. The Commission should look at a much broader initial liberalization; otherwise, the economic benefits of liberalization will be limited and the whole concept open to unnecessary questioning of its ultimate value. The market must be sufficiently “thick” to enable changes of use and allow parties to trade spectrum to the greatest economic benefit. If, for example, flexibility is introduced in a few bands but not in a broad range, a user considering selling its spectrum to someone who values it more for an alternative use may be disincentivized to do so if it is unable to re-enter the market. In a “thin” market, overall economic efficiency may not be possible.

The Commission should not over-complicate spectrum reform. If it accepts the view that economic efficiency is paramount, subject to a few exceptions, current and prospective exclusive use licensees in flexible use spectrum should be able to trade spectrum for as wide a variety of uses as possible and the economically efficient assignment of spectrum will, over time, come about. Overlay licenses simply introduce further transactional costs and create uncertainty. Revenue raising should not be a part of spectrum reform.

For these reasons, it should not be necessary to introduce “two-sided” auctions under which the Commission could auction spectrum with expanded rights and incumbents could also make their spectrum available for auction in order that they might be able to bid for similarly expanded rights. The role of the Commission should be to liberalize the market to the extent necessary to support its overall goals of economically efficient use of spectrum.

⁴⁰ See SPTF Report at 51; AWS Comments at 7-8; CTIA Comments at 4-6; Sprint Comments at 14.

V. Promoting Access for Unlicensed Uses

The SPTF itself finds that "it is not practical at this point to develop estimates of the optimal amount of spectrum that should be provided for unlicensed operations."⁴¹ It does, however, conclude that additional spectrum is needed for unlicensed services. Two "access" approaches are proposed: one based on the "exclusive use" model under which incumbent licensees could lease spectrum to those wishing to provide unlicensed services. As a number of parties note, this represents a market-led approach.⁴² The second involves easements (both above and below an "interference temperature") under which the unlicensed operator can provide a service provided it does not interfere with the rights of the incumbent spectrum user.

Vodafone agrees with commenters' arguments that the Commission should have, as a priority, the implementation of the "exclusive use" model. For reasons discussed above, this will allow the Commission to gauge the true demand for unlicensed spectrum.⁴³ Easements are not the right policy solution because of the rigidities they might bring to the market in "exclusive use" spectrum and the difficulty of defining a viable system of easements where mobile and portable devices are deployed.

⁴¹ SPTF Report at 54.

⁴² AWS Comments at 3; CTIA Comments at 20; Sprint Comments at 2-3.

⁴³ See *supra* Section II.

Conclusion

The record before the Commission evidences broad support for increasing the extent to which spectrum resources are managed by the market as opposed to government allocation and licensing. We are hopeful that the Commission will successfully move forward on this basis, both through outstanding proceedings and those building on the SPTF Report. We are also hopeful that, in so doing, the Commission will remain conscious of the international aspects of spectrum policy management, both in terms of the importance of international harmonization and in terms of the developing innovative policy reforms that are worthy of imitation outside the US.

Respectfully submitted,

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February 28, 2003