proposes that there be adequate roaming capabilities, it has consistently opposed roaming relief before the MFJ Court for the cellular operations of the BOCs. MCI's proposals are discriminatory, self-serving, and at odds with its asserted positions in other proceedings.

IV. AMOUNT OF 2 GHz PCS SPECTRUM ALLOCATION/NUMBER OF PROVIDERS.

APC suggests that 40 MHz of spectrum per PCS provider is needed, with an 80 MHz separation. SBC disagrees. The Commission should only award 40 MHz of spectrum to each PCS provider in the presence of compelling evidence that there is an actual need by each PCS provider for that amount of spectrum. No such need has been demonstrated.

The market forecast used by APC in support of a 40 MHz assignment is based upon the United Kingdom example, which has proven to be based upon unreal expectations and appears to have been based upon overstated market needs. Given the scarcity of spectrum resources in this country, the United States can ill afford to replicate such an inefficient and potentially wasteful overassignment of spectrum resources for what is at present only a speculative use.

The proposed 80 MHz separation, regardless of forecast, is both unnecessary and infeasible for an efficient use of spectrum resources. SBC's studies in Houston, Texas show that standard 80 MHz separations are

generally not used, and having an 80 MHz separation will make it more difficult to find spectrum and to promote the use of Time Division Duplex ("TDD") type systems.[35]

SBC believes that 20 MHz of spectrum should be considered generally sufficient for each new PCS provider with an additional 5 MHz held in reserve for each provider's future use. If more spectrum is determined necessary as demand materializes, the Commission can always release or allocate the reserve spectrum.

In terms of the number of PCS providers, SBC believes that the number should ultimately be determined by the marketplace. Only the market will determine the total amount of spectrum needed for PCS (based on a fixed amount per provider) and the total in turn will determine the number of viable licensees. For example, if 50 MHz is available for newly licensed PCS use, perhaps no more than two new PCS providers in each market should be licensed. If 75 MHz is available, three as opposed to two new licensees would appear viable, and so on.

In any event, for reasons stated earlier, the amount of spectrum assigned to each licensed provider for new and existing PCS use should be equivalent. No PCS

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[35]For example, simply because spectrum may be found in the first 20 MHz band does not mean there will be any spectrum in the next band separated by 80 MHz. And using a Frequency Division Duplex ("FDD") system will make finding vacant spectrum even more difficult than would be the case using a TDD-type system.

provider should be given an advantage by being allocated a greater amount of PCS spectrum than another provider. Accordingly, SBC suggests that LECs and existing cellular PCS providers should be given the opportunity to obtain the same amount of PCS spectrum as other applicants, and should not be limited, as suggested by certain commentors, to a smaller amount of spectrum.[36]

V. PCS REGULATION.

Some commentors suggest that the FCC should allow a licensee to choose which type of regulation is more appropriate for the services it plans to offer.[37] SBC believes that it would be legal error to permit unrestricted self-designation, because that would inevitably result in licensees operating in an identical manner to other carriers being subject to a different set of service rules. Furthermore, if carriers should decide to classify their PCS as private to avoid state regulation, the result could be that they would only offer those services to special interests, not to the public at large, thereby limiting PCS availability. Alternatively, self designating carriers could offer the service on a broader basis, but still claim it is private, in which event the distinction between

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[36]Specifically, LECs should not be limited to an assignment of 10 MHz of spectrum to meet the needs of their customers when other providers would be assigned between 20 and 40 MHz. That result would be unlawful and patently discriminatory.

[37]*Time Warner*, pp. 15-19.

private and common carrier services would be blurred to the point of practical non-existence. Moreover, a quasi-public, but labeled private, service concept would be contrary to the original concept of a private carrier.

The most important point is parity or a requirement that all providers of PCS be regulated on the same basis. In practical terms, this may not be achievable unless all PCS is regulated as a common carrier service.[38] However, any regulation that is applied should be flexible and minimal so that the marketplace, as opposed to regulation, will determine how both existing and newly licensed providers respond to and meet their customers' PCS needs.

VI. TECHNICAL ISSUES.

A. Unlicensed Devices.

SBC agrees with the Utilities Telecommunications Council ("UTC") that the proposed peak power levels for unlicensed devices may not provide adequate protection for 2 GHz microwave operations. FCC-authorized PCS transmitting equipment should be required to avoid causing harmful interference, and should not be capable of transmitting, without prior authority and assurances of non-interference, from an associated base station. SBC further believes that

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[38]Of course, waivers from this rule could be granted on a case-by-case basis or where facts justify classifying the service as private, and SBC is not suggesting that limited waiver flexibility be eliminated.

to avoid harmful interference to fixed operations, guard bands and guard zones must be established and spectrum must be cleared to allow the use of unlicensed devices in the 1910-1930 MHz band. In addition, the Commission should recognize that the 1900-1910 and 1930-1940 MHz spectrum will also be affected by the use of unlicensed devices in the 1910-1930 MHz band.

B. Spectrum Measurements/Sharing.

SBC disagrees with UTC that PCS licensees employing spectrum sharing techniques should be required to calculate the interference potential to the microwave system without regard to any special spectrum sharing technique. Special spectrum sharing techniques - like SBC's Intelligent Multiple Access Spectrum Sharing ("IMASS"), an active interference avoidance system - are intended to be substantially more accurate and therefore more spectrally efficient than modeling techniques. SBC's IMASS system is capable of providing specific information regarding the worst-case isolation from a potential Personal Communications Network ("PCN") coverage area to all nearby microwave receivers and transmitters in the 1850-1990 MHz band.[39] This type of information, along with a plan detailing the aggregate PCN transmitter power to a microwave

[39] *SBPC's First Quarterly Progress Report*, pp. 3-9 through 3-13.

receiver of interest, should be considered preferable by the Commission, to modeling-based calculations.[40]

In fact, SBC believes that simplified modeling techniques, such as suggested by Ericsson and LCC, will not be adequate to provide effective spectrum sharing in urban areas with a high density of fixed microwave links, because they apparently only consider diffraction effects. SBC believes that appropriate modeling methodologies must also account for significant reflection and diffuse scattering effects. Nor is the Hata model adequate in many cases.[41]

In terms of specific measurements, SBC disagrees with LCC's claim that computing a signal strength based on median building height is accurate enough for all floors within a building. Such a measurement will tend to be conservative.[42] The path loss or isolation for indoor microcells depends on a large number of factors which are not accounted for by simply utilizing median building

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[40]As indicated in SBPC's Third Quarterly Progress Report (December 17, 1992), interference testing conducted in downtown Houston has validated the IMASS prediction that harmful interference to a faded microwave link, about one mile away, can be avoided using the IMASS system.

[41]*See SBPC's Second Quarterly Progress Report*, pp. 2-7, 2-86. SBC further disagrees with Ericsson's assumption that propagation conditions are necessarily the same in both directions. The assumption would only be true if the microwave receiving system employs path diversity techniques. If path diversity is not employed, the propagation loss can be as much as 30 Db greater in one direction than in the other.

[42]*SBPC Second Quarterly Progress Report*, pp. 2-58, 2-86.

height. Information, such as building shape, building materials, size and location of various protrusions on the roof, size and location of windows, and type of metalization on window glass must also be considered.

Similarly, utilizing the maximum building height dimension is also inadequate. Such an assumption would be unusually restrictive, especially since the PCS provider may not even plan to offer any microcell or PCS coverage near the top of the building in interest. Moreover, there is a large variation in Radio Frequency ("RF") isolation to nearby microwave receivers from portables on various floors of the building.[43]

Utilizing the discrimination angle between the height of the PCN user and the height of the microwave receiving antenna, as suggested by PCN America [page 11], is likewise inadequate for areas with a high density of fixed microwave systems. Measured data have demonstrated that urban scattering effects and actual antenna radiation patterns in three dimensions in an urban environment have a significant impact on the path loss or isolation which would not be taken into account based on the discrimination angle approach.[44]

SBC suggests that, in areas with high fixed microwave usage, rather than using either median building

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[43]*SBPC Second Quarterly Progress Report*, pp.2-58, 2-86.

[44]*SBPC Second Quarterly Progress Report*, pp. 2-58, 2-86.

height, maximum building height, or the discrimination angle between the height of the PCN user and the height of the microwave receiving antenna, measurement-based techniques should be preferred as they will provide more available PCS spectrum without causing harmful interference to the incumbent fixed microwave systems.

VII. CONCLUSION.

The public interest would be served by allowing all qualified entities to participate in PCS. The Commission should reject proposals to limit or delay LEC and cellular carrier participation. *OPP # 28* shows that such participation would be in the public interest.

A large number of diverse parties support the use of MSAs/RSAs for the PCS license service areas. MSAs/RSAs are well known and their use would be consistent with cellular and IVDS service licensing.

The Commission should proceed under the principle of license parity - parity in terms of licensed service areas; parity in terms of the amount of PCS spectrum available to existing and newly licensed PCS providers; and parity in terms of PCS regulation.

The Commission should expressly allow measurement-based techniques, such as SBC's IMASS, to be used to

facilitate spectrum sharing in lieu of modeling-based techniques.

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CERTIFICATE OF SERVICE

I, Mark P. Royer, hereby certify that copies of the foregoing Reply Comments Of Southwestern Bell Corporation have been served by first class United States mail, postage prepaid, on the parties listed on the attached.

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