33. Public carrier systems such as PCS are also unable to provide the unrestricted priority access that many private users demand. Private users, especially public safety agencies, cannot operate with the danger of jammed circuits during emergencies and other periods when their communications needs are most critical. For example, cellular phone circuits are often congested during storms and other major emergencies, especially when land lines are inoperable. PCS is likely to face similar congestion, rendering it equally unusable for emergency communications. Only private systems can provide 24 hour, unlimited access to additional capacity.

34. Public safety and other critical private users also require higher levels of reliability and interference protection than that offered by consumer-oriented, carrier radio services. The average customer of carrier-provided services is far more tolerant of occasional system outages and signal interference than are police, fire, and other critical safety operations. These private users must have near perfect reliability, in the range of 99.995 percent or greater.[17] Public systems also lack disciplined and planned use of radio equipment, an inherent element of most private systems in which end users are usually employees of the licensee. Such control over all end users on a system provides vital protection against interference and

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[17] Reliability of 99.995 percent equates to system outages, on average, of 26 minutes per year.

unauthorized and/or disruptive use of equipment. Anything less is incompatible with the critical operations of private communications systems.

35. Therefore, private users cannot rely upon PCS to provide access to the new telecommunications technologies they need for the critical communications operations. Spectrum must be set aside specifically for direct licensing of private users of new emerging technologies.

V. EXISTING PLMR ALLOCATIONS ARE INSUFFICIENT TO ACCOMMODATE PRIVATE EMERGING TECHNOLOGIES.

A. The Existing PLMR Bands Have Experienced Explosive Growth

36. Existing private land mobile radio (PLMR) allocations will not provide the communications capacity or support the systems configurations necessary for the wireless delivery of private emerging technologies. The spectrum that is currently available for private land mobile communications systems is extremely congested in most of the major urban areas of the country. Moreover, the demand for new PLMR licenses shows no signs of abating. According to the Commission's Annual Reports the number of licensed PLMR radio stations has increased over 400 percent since 1968, and has increased at a rate of 10 percent annually over the last five years.

37. This growing saturation of the available private radio spectrum has resulted in a shortage of available channels in many areas of the country. Existing systems are having trouble securing channels on which they can expand and prospective licensees are finding it difficult to commence operations. Moreover, as the number of PLMR licenses increases there is often a corresponding degradation in the quality of the radio transmissions, which in turn degrades the reliability of the services that these private communications systems support -- an unacceptable environment for the initiation of the critical emerging technology services envisioned by public safety entities, public service utilities and core industries such as the railroads, manufacturers and petroleum companies.

38. In addition, there has been a continuing demand for "exclusive use" frequencies throughout the 1980's by private users interested in upgrading their systems to benefit from the use of advances in technologies such as trunking and computer managed system control. Evidence of this strong demand is the fact that there are no 800 MHz exclusive-use Business or Industrial/Land Transportation frequencies available in the top twenty-two urban areas. At 900 MHz, the band in which the Commission first introduced 12.5 kHz channels, license applications were filed on the first day for all exclusive-use frequencies in the top two urban areas. Of particular significance is the fact that regardless of the average loading,

there are no exclusive use frequencies available at either 800 or 900 MHz in the top seven urban areas, thus eliminating the opportunity for private radio users in those areas to avail themselves of new technologies and the resulting gains in productivity. Public Safety Regional Plans in New York and Los Angeles provide further evidence of this situation where these plans documented a shortage of over 200 channels in each area based on specific public safety agency plans to implement higher technology systems. The above shortages exist even though 12.5 kHz channel splitting was implemented at 900 MHz, effectively doubling the channels, and 12.5 kHz channel assignments with improved performance were employed by Public Safety at 821-824/866-869 MHz, allowing more intensive use of this spectrum in the urban areas.

B. Part 88 Proposals Will Not Provide Sufficient Spectrum For The Widespread Implementation Of Private Emerging Technologies

39. COPE is well aware of the Commission's on-going proceeding to "refarm" the PLMR spectrum to make more effective and efficient use of the bands below 470 MHz through the introduction of more efficient technologies and innovative licensing schemes.[18/] The Coalition applauds the Commission's initiative and as individual industry representatives will remain active participants in that proceeding. However, the refarming

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[18/] Notice of Proposed Rulemaking, PR Docket No. 92-235, 7 FCC Rcd 8105.

of the PLMR spectrum below 470 MHz is expected to be an evolutionary rather than revolutionary process that will take a number of years to carry out, and as the text of the FCC's Notice Of Inquiry makes clear, the need for additional private land mobile radio spectrum is immediate.[19]

40. At best, the refarming of the PLMR spectrum below 470 MHz will only result in moderate relief in overall PLMR congestion, and if PLMR use continues to grow as expected, these gains will quickly be eviscerated. This is true even if the scope of refarming is expanded to include all PLMR bands both below and above 800 MHz. An analysis based on an estimate of PLMR transmitters in a major urban area (e.g., New York or Los Angeles) confirms that refarming all PLMR spectrum will at best provide sufficient capacity to support the growth of traditional voice and data dispatch during the 1990's but not new emerging information technologies.

41. Total PLMR licensed transmitters are forecasted to grow from 15 million in 1990 to 27 million in the year 2000. This estimate is based on a conservative 6 percent compounded annual growth as compared to almost 9 percent during the period 1980 to 1990. Applying this estimate to a major urban area results in 1 million licensed transmitters in 1992 growing to over 1.79 million by the year 2000. Exhibit I of this Petition depicts the

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[19] Inquiry, supra note 3, at ¶¶ 10-20.

results of an analysis of total PLMR channels and spectrum versus PLMR private user channels and spectrum in a major urban area. The results indicate that there are 1733 channels and 58 MHz of private individually licensed spectrum. This analysis is based on the following assumptions:

o	25-50 MHz	Sustained continued use in major urban areas.
o	150-174 MHz	All private individual.
o	450-470 MHz	Private individuals share with Business Radio community repeaters.
o	470-512 MHz	All private individual.
o	806-821 MHz	SMR and Business Radio community repeaters.
o	821-824 MHz	Public Safety - 12.5 kHz offset assignments with 25 kHz equipment.
o	896-901 MHz	SMR and batched/trunked community repeaters.

42. An analysis was then made of the expected increase in the number of privately licensed channels through refarming by the year 2000 based on the following assumptions:

o	150-174 MHz	Currently 15 kHz channels with 30 kHz equipment. 12.5 kHz equipment beginning in 1996. Voluntary use of 6.25 kHz equipment.
o	450-470 MHz	12.5 kHz low power offsets heavily used. Half the 12.5 kHz offsets converted to full power wide area channels by 2000.
o	470-512 MHz	70% of the channels refarmed by 2000 utilizing both FDMA and TDMA technology with an average 3 times improvement.
o	806-821 MHz	70% of channels will be refarmed by 2000.

		70 Public Safety channels will split to 12.5 kHz and the remaining will apply 3 to 1/6 to 1 TDMA with an average of 5-1.
o	821-824 MHz	Public Safety operating on 12.5 kHz channels with modified 25 kHz equipment. Will utilize 12.5 kHz equipment with 20% increase in channels.
o	896-901 MHz	50% of the channels will be refarmed by 2000. Currently 12.5 kHz FDMA. Will apply TDMA on two 12.5 kHz (25 kHz) channels at 5-1 average rate.

43. Based on these assumptions, Exhibit II of this Petition depicts the total number of privately licensed transmitters, the channel capacity and the mobile loading per channel for the years 1992-2000. As indicated, refarming of the PLMR bands will only achieve a small improvement in channel loading, namely 372 to 345 mobiles per channel. These gains will be more than offset by the increasing demands for data dispatch, telephone interconnect and limited fax, all of which are essentially unavailable at present during the busy hours in major urban areas. Thus, rather than offering a reserve of clear spectrum in which to implement private emerging technologies, in many areas of the country, refarming will only allow the FCC to "tread water" in terms of meeting traditional PLMR demand.

44. Further, the completion of Part 88 will not change the essential nature of the PLMR frequencies below 512 MHz. These frequencies will still be used in large part as a "workhorse" band for traditional private voice dispatch communications on a shared-use basis. Even with the Commission's proposed

"exclusive-use overlay plan," shared frequency assignments will be the dominant mode of operation. The potential for interference, both to and from other users, on shared-use frequencies renders them unacceptable for private emerging technologies.

C. Many Private Emerging Technologies, Though "Wireless," Are Not Mobile In The Traditional Sense.

45. Finally, it would be inappropriate to attempt to develop private emerging technologies in existing PLMR spectrum because not all of these technologies are necessarily mobile. Many of the private emerging technologies envisioned would comprise a wireless "last link" to fixed broadband communications systems such as fiber optic networks. Other services would be utilized in point-to-multipoint cell configurations in order to "broadcast" to hundreds of thousands of two-way end unit devices. Thus, the "tetherless" aspect of private emerging technologies will allow for the deployment of millions of end-user devices in a practical and cost effective manner.

46. While unlicensed PCS is expected to accommodate "non-nomadic" applications, the power levels, bandwidth, technical specifications, reliability and security requirements of private users necessitate that private emerging technologies be provided on a licensed basis. Further, in many of the private system configurations envisioned, the non-nomadic end of the system would be "networked" with a mobile or portable unit covering a

significant service area.

47. It is envisioned that private emerging technologies will consist of a multitude of "wireless" technologies that are used both on a mobile and fixed basis.

VI. THE FCC AND NTIA MUST EXAMINE SUITABLE FEDERAL GOVERNMENT SPECTRUM AS WELL AS ANY SUITABLE NON-GOVERNMENT SPECTRUM IN ORDER TO MEET CRITICAL PRIVATE EMERGING TECHNOLOGY SPECTRUM REQUIREMENTS.

A. The Proposed Private Emerging Technology Allocation Is Consistent With Congressional and Commission Guidelines For The Development Of Emerging Technologies In Either Federal Government Or Non-Federal Government Spectrum

48. In directing the Secretary of Commerce to reallocate at least 200 MHz of Federal spectrum to the private sector, Congress mandated the identification of frequencies "that are most likely to have the greatest potential for productive uses and public benefits under the 1934 Act if allocated for non-Federal use."[20] An allocation of spectrum for the development of private emerging technologies below 3 GHz will fulfill this mandate by ensuring the availability of technologies that will enhance essential public services and "core" industries.

49. Moreover, the statute specifically requires spectrum planning in order to accommodate future public safety spectrum

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[20] Budget Act, Title VI, Part B, Section 113(a)(5).

requirements.[21] As indicated above, services related to the protection of life and property are expected to be among the primary applications of private emerging technologies.

50. In attempting to determine whether a band of frequencies is appropriate for reallocation Congress established criteria for the Secretary of Commerce to consider. Three of the most important factors to be considered are: (1) whether the frequencies can be used to stimulate the development of new technologies;[22] (2) the extent to which equipment is or will be available that is capable of utilizing the band; and (3) the proximity of frequencies that are already assigned for commercial or other non-Federal use.[23]

51. In many respects these factors reflect the same criteria that the Commission established for itself in order to allocate portions of its "spectrum reserve."[24] It is appropriate that the Budget Act's criteria for the choice of reallocated frequencies parallels the Commission's since it is the FCC that will ultimately make the reallocation of spectrum to specific non-Federal services. Private Emerging Technologies clearly

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[21] Budget Act, Title VI, Part B, Section 115(b)(2)(C).

[22] Budget Act, Title VI, Part B, Section 113(c)(2)(C).

[23] Budget Act, Title VI, Part B, Sections 113(c)(3)(A) and (B).

[24] Emerging Technologies Proposal, supra note 6, at 1546.

satisfy all of these requirements and warrant an allocation of either Federal or non-Federal spectrum.

1. Private Emerging Technologies Would Make Innovative Use Of New Technology

52. By definition, private emerging technology systems would make use of new communications and information technologies. In fact, many of the same advances in digital technology and signal processing that fueled the development of PCS would serve as the foundation for private emerging technologies. And yet, common enabling technologies notwithstanding, private emerging technologies would serve separate and distinct applications from PCS.

53. In addition, recent advances in communications channel efficiency and information compression technology would provide the necessary reductions in bandwidth requirements to support the viable delivery of wireless imaging, graphics and data. These technologies would enable public safety, public service and private industry to implement a multitude of real-time, two-way advanced wireless communications technologies that are currently available only on a "wired" basis.

2. Equipment Availability And Propagation Characteristics Dictate That Private Emerging Technologies Are Most Appropriately Suited To Operate Below 3 GHz

54. The 1-3 GHz region is the most appropriate "home" for

private emerging technologies in terms of spectrum availability, propagation characteristics and technology costs. As the Commission noted in its First Report and Order (First R&O) in ET Docket No. 92-9, non-Federal government frequencies below 1 GHz are used principally for broadcast and mobile services that would be difficult to relocate or consist of narrow, scattered bands that aggregated would not provide sufficient spectrum for emerging technologies.[25]

55. Similarly, the propagation characteristics of the frequencies above 3 GHz are not appropriate for the types of mobile and wireless applications envisioned for private emerging technologies. The Budget Act's mandate that at least half of the Federal government spectrum to be reallocated come from bands below 3 GHz implicitly confirms the inadequacy of spectrum above 3 GHz for emerging technologies.

56. However, the historical and technical evidence available indicate that viable small and wide area private emerging technology systems can be developed in the 1-3 GHz region. The numerous experiments with micro-cell architectures in the 2 GHz band by PCS proponents provide ample technical support for the development of small area systems in the 2 GHz band. Further, the successful implementation of wide area trunked mobile systems in the 1.5 GHz band in Japan confirms the

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[25] Emerging Technologies Allocation, supra note 9, at 6888.

ability of frequencies in the 2 GHz range to support wide area private emerging technology systems.[26] While there were additional propagation losses at 1.5 GHz as compared to 800 MHz, these were overcome by taking advantage of the higher antenna gains and the lower noise figure of receivers at 1.5 GHz as well as receive diversity techniques. Additional improvements in antenna gain, receiver noise figures and diversity reception will be available to offset the propagation loss in moving from 1.5 GHz to 1-3 GHz.

57. Finally, it is generally agreed that the 2 GHz band is the upper operating limit for the state-of-the-art silicon equipment components required for private emerging technologies. Higher bands would necessitate the use of gallium arsenide which could be prohibitively expensive.

3. An Allocation Of Spectrum For Private Emerging Technologies In The Vicinity Of The 1-3 GHz Band Would Be Consistent With Existing Non-Federal Allocations

58. In determining which Federal spectrum to reallocate, the Budget Act requires the Secretary of Commerce to consider the proximity of frequencies that are already assigned for commercial or other non-Federal use. An allocation of spectrum for private emerging technologies in the 1-3 GHz range would satisfy this

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[26] Appendix B provides a more extensive analysis of the use of the 2 GHz band for private wide area systems.

requirement, since the 1850-2200 MHz portion of this band has already been designated by the FCC for the development of emerging technologies. Thus, private emerging technologies would be able to utilize the same component technologies as are being developed for commercial emerging technologies such as PCS. The proximity of these allocations would also allow for the interoperability and interconnection of private emerging technology systems with commercial systems operating in adjacent (or nearly adjacent) bands.

4. Private Emerging Technologies Would Offer A Substantial Improvement In Quality Of Service And Spectrum Efficiency

59. The Commission also required in its spectrum reserve proceeding that requests for new service allocations include a showing that the new service would offer some substantial improvement in either quality of service or spectrum efficiency over existing services.[27]

60. While private emerging technologies, when taken as a whole, would constitute an entirely new class of service, they also would provide substantial improvements to some existing services. For example, they would significantly improve upon the amount of information available to mobile workers. Rather than being limited to voice and short data bursts police officers, utility crews and industrial workers would have real-time access

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[27] Emerging Technologies Proposal, supra note 6, at 1546.

to data banks, schematic diagrams and imaging technologies that are currently only available to wired office workers, thereby supporting real-time decision making and immediate and intelligent responses to best serve the public and consumers.

61. Further, the advanced communications capabilities of private emerging technologies would enable fundamental changes in essential services ranging from emergency medical diagnostics and treatments to energy conservation and environmental protection.

62. In addition to the innovative communications capabilities that private emerging technologies would offer they would also include a number of existing functionalities, such as mobile/portable voice, paging, trunking, and utility distribution automation. By combining these capabilities into a single intelligent system utilizing the same frequencies, private emerging technologies would provide greater benefits to individual private users and would be more spectrally efficient overall.

5. A Private Emerging Technologies Allocation Would Accommodate The Parallel Needs Of Private Industry And The Federal Government

63. A further benefit of an allocation of spectrum for the development of private emerging technologies is that the same allocation could be used by Federal government agencies to meet their similar needs for vital emerging technology services.

Under the Budget Act, Congress allowed for limited "mixed-use" of Federal spectrum between Federal and non-Federal licensees to count towards the total amount of spectrum to be reallocated. In fact, in determining whether a band of frequencies should be reallocated the statute dictates that the Secretary of Commerce "seek to promote the sharing of frequencies."[28/]

64. There are many Federal government entities that could benefit enormously from the development and use of emerging technologies. However, the same issues of reliability, security, and control, that necessitate the development of private emerging technologies will compel Federal systems to be owned and operated internally. A shared allocation would therefore benefit both the private sector and the Federal government by facilitating the development of equipment that could be used by either private sector users or federal agencies, thus minimizing equipment costs for the Federal government.

65. Moreover, there are many instances in which the Federal government and the private sector would require the same types of emerging technologies and functionalities. For example, the FBI and state and local police departments share an interest in the development of mobile fingerprint/mug shot transmission capabilities. Similarly, Federal Power Marketing Agencies would benefit from the use of the same emerging technologies as private

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[28/] Budget Act, Title VI, Part B, Section 113(c)(1)(B)(ii).

sector utilities.

66. Finally, a joint government/non-government private emerging technologies allocation would facilitate economies of scale in the research, development and production of emerging technologies and would avoid needless duplication of effort.

B. The FCC and NTIA Should Examine All Other Possible Options, Including Non-government Spectrum Alternatives, In An Effort To Meet The Critical Private Emerging Technology Spectrum Needs of Private Users.

67. The FCC and NTIA should actively examine all options and then allocate spectrum for private emerging technologies. Without this allocation, essential utility, public service and public safety services will certainly suffer. The public interest, as a result, will be harmed due to degraded and unsafe service.

1. FCC Action Allocating the Emerging Technologies "Reserve" Has Disadvantaged Private Users.

68. On September 23, 1993, the Commission allocated 160 MHz in the 2 GHz emerging technology bands for licensed and non-licensed PCS service.[29/] The entire 2 GHz emerging technology band is only 220 MHz.[30/] While this substantial allocation will

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[29/] Second Report and Order, supra note 5, at ¶¶ 54 & 88. See Also, New Personal Communications Services Established, FCC News, Report No. 2503, at 1, September 23, 1993.

[30/] Emerging Technologies Allocation, supra note 9, at ¶ 3.

certainly promote PCS technology, it fails to address the emerging technology needs of private users and thus disadvantages the members of the public who rely on private users for various essential and non-essential services.[31] The Coalition urges the FCC and NTIA to consider the many needs of private users which are not met, and cannot be effectively provided or developed due to the total allocation to common carrier PCS entities. Further, we urge the Commission to note that many of these unique needs and special service requirements -- some of which are specified in Section III of this document -- can only be satisfied using dedicated user-operated private emerging technology systems. Understandably, without spectrum allocated, these emerging technology private user systems cannot develop and private users and the public interest will be disadvantaged.

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[31] The compelling need for an allocation of spectrum to accommodate private emerging technologies is discussed in two petitions that seek reconsideration of the FCC's Second Report and Order in Gen. Docket No. 90-314. In a Petition for Reconsideration filed December 8, 1993, the Association of Public-Safety Communications Officials-International, Inc. ("APCO") notes that spectrum is needed for new public safety emerging technologies such as high-speed and high-resolution transmission of fingerprints and mug shots to and from police vehicles, transmitting building plans and hazardous material information to firefighters in the field, providing live remote video capability for tactical use by police and fire personnel, and transmitting complex medical data and images from EMS units to hospitals. (APCO Petition, p. 3). Similarly, the Petition for Reconsideration of the Utilities Telecommunications Council ("UTC"), also filed on December 8, 1993, documents the need for mobile data communications capable of transmitting, among other things, schematic diagrams and power switching orders. UTC's petition also points out that a variety of factors arising out of concern for the public safety, including the need for absolute control over the priority of communications, system security, reliability and efficiency, will preclude power utilities from using carrier-provided PCS service. (UTC Petition, p. 3).

2. Private Users Are Often the Actual Developers and Harbingers of New Technologies Which Benefit the Public Interest.

69. If private users are allocated emerging technology spectrum, they will purchase, develop and operate new technology devices different from PCS. Many of these new technologies will benefit the public, for example, by enhancing the operations of utilities, law enforcement agencies and other private entities. These new devices, while certainly in the public interest, will not see the light of day without a spectrum allocation allowing their use and development. This is because the consuming public often cannot afford or foresee the need for certain devices and applications. The public, therefore, is often not in a position to demand that carriers provide unique services. However, private users often can foresee a need and <u>will</u> purchase or develop unique devices, applications and services. Then, once the devices are in place, the public derives a benefit. Without an allocation for privately owned and operated systems, there will not be any significant impetus for the development of a variety of beneficial new technologies and applications.

70. PCS is an exciting technology and has attracted tremendous interest. However, other equally deserving technologies and interests can make a credible case for the allocation of spectrum. In this Petition, the Coalition, acting on behalf of private industrial, business, and public safety users, requests that the Commission give due consideration to the

fact that the public interest value of spectrum cannot be measured solely by the demand demonstrated by proponents of carrier-provided services.

3. FCC/NTIA Have A Public Interest Mandate To Allocate Spectrum That Will Accommodate The Public Safety/Public Service Requirements Of Private Users.

71. The public relies on private users to supply essential services and perform critical safety functions. The FCC and NTIA are under a mandate to ensure that these indispensable services are provided with viable communications systems.[32/]

72. Carrier operated PCS systems will not, and probably cannot, offer the customized service required by most public safety, public service or large industrial and manufacturing users.[33/] Tragic events often reinforce that the distinction

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[32/] The FCC is clearly required to ensure the "safety of life and property through the use of wire and radio communication." Communications Act of 1934, Purposes of Act, Creation Of Federal Communications Commission, Title 1, Section 1. Likewise, NTIA is tasked with "[f]ostering national safety and security, economic prosperity, and the delivery of critical social services through telecommunications." National Telecommunications and Information Administration Organization Act, Organization and Functions, Title I, Part A, Section 102(c)(2).

[33/] "The recent common carrier telecommunications system outages that have occurred in the Northeast and other parts of the country have demonstrated what a devastating effect a breakdown in communications can have on the operation of basic public

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between private users and carrier operated systems cannot be dismissed. Recent hurricanes have demonstrated that private systems must be designed for worst case situations so that they can continue to operate and are able to support emergency communications immediately following these disasters. Utilities must be able to provide water, power and petroleum products swiftly and safely. Law enforcement agencies must be able to keep abreast of rapidly changing events, such as rescue operations and the activities of looters. Many other private users have needs of similar urgency and resonance. Emerging mobile technologies capable of transmitting multimedia material, e.g. data, voice, video and graphics, will become essential tools for these critical operations.

73. In addition to the reliability factors that affect public safety and public service, the Commission should recognize that many of the other factors that first motivated the Commission to develop private systems have not changed.

74. On a daily basis, private users bear the burden of meeting a significant amount of the public trust. The mobile communications systems of private users include, but certainly

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[33/](...continued)
services."

Hearing Before the Subcommittee on Communications of the Committee on Commerce, Science, and Transportation, United States Senate, June 3, 1992, Spectrum Reallocation of the 2 GHz Band, Prepared Statement of Charles J. DiBona, American Petroleum Institute.

are not limited to, the nationwide management and maintenance of oil and gas pipelines, railways, forest fire control and law enforcement activities. For example, the Federal Bureau of Investigation ("FBI") is currently upgrading its communications with public safety agencies throughout the United States. The new FBI National Crime Information Center NCIC-2000 System, once implemented, will open communications between FBI headquarters and police patrol cars. This will allow for the image transmission of fingerprints, mug shots, stolen objects, contraband, detailed maps and personal property. The public service benefits of the secure operation of this system, and ones like it, in emergency situations should be evident. Moreover, once this standard is established, field officers and the public at large will begin to depend on law enforcement systems that are reliant on the heavy usage of real-time, mobile image transmissions. Similar dependence on these evolving systems by other private users and their clients will also develop.

75. Obviously, as our societal needs become more complex, the needs of private users for unencumbered spectrum and efficient mobile technologies, grows. The evolution in the computer industry from terminals to portable lap and palm top computers demands full mobility and corresponding radio interconnection. Accordingly, the FCC and NTIA, when considering where, and in what manner, spectrum should be allocated and managed should actively consider their mandate to serve the

public interest by providing private with an emerging technology 2 GHz allocation.

76. To further this end, we urge the FCC and NTIA to consider sharing the under-utilized facilities in the Federal 2 GHz band with private users.[34/]

VII. AN ALLOCATION OF 75 MEGAHERTZ OF SPECTRUM FROM THE FEDERAL GOVERNMENT BANDS IS REQUIRED TO ADEQUATELY ACCOMMODATE THE USAGE REQUIREMENTS FOR PRIVATE EMERGING TECHNOLOGIES.

A. Existing Federal Government Frequency Bands Are A Likely Source For the Spectrum Required to Accommodate Private Emerging Technology Systems.

77. The Budget Act requires that at least 200 MHz of federal spectrum be allocated for non-government use.[35/] Because the Act allows for this spectrum to be shared, and because the 2 GHz band is ideal for private land mobile emerging technology systems, we highly encourage both the FCC and NTIA to consider a sharing arrangement with private users. Moreover, due to the above-mentioned reliability, flexible-use, and encryption requirements which are unique to private users, it is quite possible that government entities may wish to employ comparable

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[34/] See Exhibit I.

[35/] Budget Act. [The Act requires the Secretary of Commerce, through NTIA, to allocate 200 MHz of government spectrum from below 5 GHz for nongovernment use. The Act allows NTIA to count shared government/nongovernment spectrum toward the 200 MHz total.]

systems using technologies developed in the private arena.[36] Doing so could assist government agencies in obtaining systems at lower costs. The combined Federal and non-federal market for communications products will provide economies of scale not available in the Federal market alone. This Coalition supports such a scenario.

78. Under the legislation, NTIA must tentatively identify to the public in February 1994 the 200 megahertz of spectrum that could be made available. COPE looks forward to a review of NTIA's recommendations. The spectrum in the 1710-1850 MHz ("2 GHz") Federal band is one possible source of spectrum to accommodate the requirements identified in this Petition.[37] As

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[36] History has shown that communications developments in the Federal sector, particularly during wartime, tend to exert a great influence over developments with respect to industrial, public safety and business systems. The converse is also true. Technological developments in the private sector very often are adapted to serve the needs of Federal users. The ideal climate for this mutually beneficial process occurs when Federal and non-federal allocations are located in close proximity in the spectrum. It has been widely suggested, for example, that the Federal government would have been in a much better position to take advantage of developments in trunking technology had there been an allocation of spectrum for Federal land mobile systems in the vicinity of the 806-821/851-866 MHz private land mobile allocation.

[37] The Coalition recognizes that there are other demands, as well, for access to the 1710-1850 MHz band. The Coalition believes that this band represents one possible source for satisfying a portion of the 75 megahertz of spectrum required to accommodate private uses. The Coalition understands that a significant portion of the spectrum in the 1710-1850 MHz band is used for tactical satellite command communications. The Government may not be able to relinquish the spectrum used for this purpose. However, once NTIA tentatively identifies the 200

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depicted in the graph provided as Exhibit III of this Petition, the 1710-1850 MHz band is not as congested as the facilities in the commercial 2 GHz band.

B. Private Users Have Unique Spectrum Usage Requirements.

79. As discussed above, private land mobile systems capable of delivering new and emerging information technologies clearly qualify for an emerging technologies spectrum allocation. These emerging technologies which private users will need to utilize are unique and separate from the PCS services that carriers will provide. Accordingly, these systems have different spectrum needs. Often, these systems must be real-time and absolutely reliable because communications during, for example, the clean-up of a hazardous chemical spill, cannot afford to be: 1) delayed while a carrier serves another customer, or 2) of low quality. Transmissions often need to be encrypted, as in the case of sensitive law enforcement information or privileged information regarding an oil field find.

80. Private users have other unique needs that PCS carriers

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[37] (...continued)
megahertz of spectrum to be transferred to non-federal use, other bands of equal or greater promise may become evident. The spectrum needs which the Coalition has identified are not premised on an allocation of one contiguous block of spectrum. The Coalition urges the Commission, if necessary, to consider the possibility of dedicating spectrum from different bands to accommodate the requirements specified in this Petition. The only constraint that the Coalition would impose is that the upper limit of the spectrum designated should be in the range of approximately 3 GHz.