

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

In the Matter of

Commission Seeks Public Comment on Spectrum  
Policy Task Force Report

ET Docket No. 02-135

**COMMENTS OF  
THE BOEING COMPANY**

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The Boeing Company (“Boeing”), by its attorneys and pursuant to the Commission’s Public Notice, hereby files these comments regarding the report of the Spectrum Policy Task Force (“Task Force”).<sup>1</sup>

**I. INTRODUCTION**

Boeing is providing these comments in its role as one of the world’s largest manufacturer of commercial satellites and provider of launch services, and also as a global leader in the design and manufacture of commercial and military aircraft. The company relies on spectrum resources for a variety of industrial functions and commercial purposes, and holds more than six hundred FCC authorizations covering more than fourteen thousand licensed emitters operating in more

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<sup>1</sup> Report, *Spectrum Policy Task Force*, ET Docket 02-135 (November 2002) (“*Task Force Report*”); see Public Notice, *Commission Seeks Public Comment on Spectrum Policy Task Force Report*, ET Docket No. 02-135, FCC 02-322 (Nov. 25, 2002). The Commission subsequently extended the Comment and Reply Comment period by 18 days. See Order, *In the Matter of the Commission Seeks Public Comment on Spectrum Policy Task Force Report*, ET Docket No. 02-135, DA 02-3400 (Dec. 11, 2002).

than four thousand frequency segments. Boeing also operates thousands of unlicensed Part 15 wireless devices in its industrial operations.

Boeing's spectrum interests and needs are extensive and well documented before the Commission.<sup>2</sup> Private land mobile radio ("PLMR") licenses in the Business and Industrial/Land Transportation bands are used by Boeing to provide specialized and critical internal communications needs for security, emergency services, aeronautical and industrial regulatory compliance, research and development, and manufacturing support. Boeing uses spectrum to support the manufacturing, testing and initial operations of commercial and military aircraft. In addition to being one of the largest providers of satellite manufacturing and launch services, the company is an FCC licensee authorized to launch and operate a mobile satellite service ("MSS") network in the 2 GHz MSS band. Boeing also uses radio spectrum for its "Connexion by Boeing" service, where it operates airborne satellite earth stations to provide broadband, inflight connectivity to airborne passengers and crew in the United States and abroad.

Boeing commends the Task Force for its comprehensive and thoughtful analysis of the Commission's spectrum management policies. While Boeing agrees that improvements are needed in how radio spectrum is managed in the United States, the Commission should consider carefully the recommendations found in the Task Force's report. Specifically, Boeing notes with approval that the Task Force acknowledges that differing types of radio services are best allocated through differing mechanisms. Nonetheless, Boeing contends that the Commission should create and maintain a "bright-line" distinction for non-satellite services between how it allocates spectrum for private interest services versus public interest services. However, Boeing

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<sup>2</sup> A more detail description of Boeing's spectrum activities appear in its comments to the Task Force submitted in July 2002. *See Comments of The Boeing Company to Spectrum Task Force*, ET Docket No. 02-135 (filed July 8, 2002) ("*Comments to Task Force*").

opposes any legislative changes that would permit the Commission to use competitive bidding to allocate spectrum for global and international satellite services. The Commission should also proceed cautiously in how it implements the Task Force’s “interference temperature” concept.

## **II. THE COMMISSION SHOULD MAINTAIN A BRIGHT-LINE DISTINCTION FOR NON-SATELLITE SERVICES BETWEEN HOW IT ALLOCATES SPECTRUM FOR PRIVATE INTEREST SERVICES VERSUS PUBLIC INTEREST SERVICES**

In its comments to the Task Force, Boeing urged the Commission not to neglect its statutory obligation to regulate spectrum resources in the public interest in an attempt to maximize spectrum efficiency.<sup>3</sup> While spectrum efficiency is an important consideration in any allocation decision, the Commission’s primary duty is to regulate the use of spectrum in the “public interest” for each of its radiocommunications services.<sup>4</sup> Thus, quantitative comparisons of spectrum efficiency between dissimilar kinds of radio services – such as between public safety (including the Business and Industrial/Land Transportation services) and commercial wireless -- would not be appropriate.<sup>5</sup>

While the Task Force advocates maximizing efficient spectrum use as a goal in any spectrum allocation,<sup>6</sup> Boeing is pleased to learn that the Task Force does not advocate applying a

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<sup>3</sup> *Comments to Task Force* at 4.

<sup>4</sup> *See* 47 U.S.C. § 157, 303, 307 & 309(a). *See Comments to Task Force* at 9-11.

<sup>5</sup> *See Comments to Task Force* at 5-6.

<sup>6</sup> *See Task Force Report* at 21. Further, the Task Force provides three different conceptual definitions of “efficiency” for purposes of spectrum management. Spectrum Efficiency “occurs when the maximum amount of information is transmitted within the least amount of spectrum.” Technical Efficiency “occurs when inputs, such as spectrum, equipment, capital, and labor, are deployed in a manner that generates the most output for the least cost.” Economic Efficiency “occurs when all the inputs are deployed in a manner that generates the most value for consumers.” *Id.* The Task Force does not explain the source or rationale for these definitions or how they should play out in any future spectrum allocations. These definitions are merely concepts, and do not offer any measurable performance criteria. Boeing does agree, however,

single regulatory model to all spectrum. Rather, the Task Force proposes three differing “spectrum usage models” for assigning spectrum rights: (1) “command and control”; (2) “exclusive use”; and (3) “commons” or “open access”.<sup>7</sup> In developing these models, the Task Force acknowledged that the majority of commenters opposed a spectrum policy of “one size fits all.”<sup>8</sup> Boeing supports this conclusion, but further suggests that the Commission create and maintain a “bright-line” distinction between how it allocates spectrum for private interest services as opposed to public interest services for non-satellite services.<sup>9</sup>

The exclusive rights and commons models are more appropriate for private interest services where licensed spectrum is used to provide a communications service to a broad segment of the public for a profit. These entities must operate under market incentives and goals, which are better reflected in the exclusive rights and commons allocation models. At the other extreme are public safety users who require dedicated, non-competitive and reliable spectrum for emergency communications. As the Task Force concluded, these services are best allocated spectrum under the command and control model.<sup>10</sup> Such public interest services cannot operate under the same market incentives and goals, and, therefore, should not be subject to the same market mechanisms for allocation, such as competitive bidding. The Commission should

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with the Task Force’s ultimate conclusion that there should not be a single economic metric to compare spectrum “efficiency” across services. *Id.*

<sup>7</sup> *See id* at 35-38.

<sup>8</sup> *Id.* at 36.

<sup>9</sup> The most appropriate allocation model for international satellite spectrum is discussed in the following section.

<sup>10</sup> *Task Force Report* at 41.

create and maintain a bright-line distinction in how it allocates spectrum between these private interest and public interest services.

Somewhere in between is shared spectrum for like users for internal communications. While this spectrum is used for private purposes, it is not used to provide a communications service to the public as a commercial business. For example, Boeing's licenses in the Business and Industrial/Land Transportation ("B/ILT") radio services are used for safety and critical internal operations purposes. Indeed, Boeing uses many of these licenses as a "first responder" to supplement local public safety entities near several of Boeing's facilities.<sup>11</sup> Therefore, licensees are more analogous to public safety services than to commercial radio services in their need for dedicated and reliable access to spectrum and the inapplicability of market incentives and goals. Moreover, the needs of many B/ILT licensees, including Boeing, cannot be met by "off the shelf" commercial radio services. Conspicuously absent, however, from the Task Force's grouping under the command and control model are these B/ILT services. Boeing therefore suggests that the Commission draw this bright-line to place these B/ILT services on the same side as the public interest services.

### **III. THE "COMMAND AND CONTROL" ALLOCATION MODEL IS MOST APPROPRIATE FOR INTERNATIONAL SATELLITE SPECTRUM**

Boeing agrees with the Task Force's conclusion that international satellite spectrum is most appropriately allocated under the command and control model, which does not contemplate the use of competitive bidding.<sup>12</sup> The necessity and difficulty of coordinating international

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<sup>11</sup> *Comments to Task Force* at 6-7.

<sup>12</sup> *Task Force Report* at 41.

agreement for satellite spectrum, and the need to conform to treaty obligations,<sup>13</sup> are best addressed through the command and control model.

The Task Force, however, further recommends that the Commission consider proposing to Congress that the ORBIT Act be amended to permit competitive bidding for mutually exclusive applications for global and international satellite services.<sup>14</sup> Boeing disagrees with this recommendation and would oppose any attempt to alter the ORBIT Act. As the Commission is well aware, Congress specifically enacted this prohibition because it recognized that auctioning spectrum for global and international satellite services would seriously harm the US satellite industry.

Auctioning of global and international satellite spectrum by the Commission would result in subsequent auctions by other nations, thus likely raising the barriers to entry beyond the ability of any satellite service provider to meet. The possibility that other nations would erect similar auction schemes cannot be dismissed, and the result would be an exponential increase in the costs faced by US-based international services providers. At best, such auctions would significantly increase what the ultimate users would have to pay; at worst, no provider could afford to build and operate an international satellite communications system. Moreover, as one of the leaders in offering satellite services, US providers would be most affected by such a change. The Task Force offers no sound public policy rationales for amending the ORBIT Act, because no such rationales exist.<sup>15</sup>

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<sup>13</sup> *See id.*

<sup>14</sup> *Id.* at 42. The relevant language is codified at 47 U.S.C. § 765f.

<sup>15</sup> Boeing notes that the Satellite Industry Association (“SIA”), of which Boeing is a member, is expected to submit comments in this proceeding in which it will more fully explain why the Task Force’s recommendation should not be pursued by the Commission. Boeing agrees with the arguments to be set forth by the SIA.

#### **IV. THE COMMISSION SHOULD PROCEED CAUTIOUSLY IN ADDRESSING THE TASK FORCE’S RECOMMENDATIONS ON INTERFERENCE**

Boeing applauds the Task Force’s attempt to improve how the Commission manages interference issues. As a licensee in many bands providing a wide variety of services, Boeing has suffered from harmful interference caused by third parties.<sup>16</sup> Nonetheless, Boeing asks that the Commission proceed cautiously in implementing these recommendations set forth by the Task Force.

The Task Force proposes that the Commission manage interference issues through the application of a new “interference temperature” metric that assesses interference based on the actual RF environment through interactions between transmitters and receivers in a band.<sup>17</sup> Boeing agrees with the supporting proposal that the Commission issue a *Notice of Inquiry* considering receiver performance standards.<sup>18</sup> Receiver technologies have greatly improved in recent years and should be added to the “toolbox” of available methods to manage potential interference concerns. While a first *NOI* could, for example, examine the state of the technology, the application of such receiver standards to specific bands and services should follow only from subsequent rulemakings. The characteristics and needs of specific bands and services should dictate the appropriate receiver standards.

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<sup>16</sup> Because it holds B/ILT licenses in the 800 MHz band, Boeing is an active participant in the current proceeding on interference to public safety users in the band caused by cellular-like activities. See *Improving Public Safety Communications in the 800 MHz Band; Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, Notice of Proposed Rulemaking, WT Docket No. 02-55, 17 FCC Rcd 4783 (2002).

<sup>17</sup> *Task Force Report* at 27.

<sup>18</sup> *Id.* at 33. While not specified in the Task Force report, Boeing assumes that this recommendation is targeted toward receivers used for voice and data wireless services, and not mass media services. Any subsequent *NOI* should clarify this distinction.

This “interference temperature” metric also contemplates quantifying “harmful interference” for the purpose of establishing a noise floor in a band under which other users, especially unlicensed users, would be permitted to operate.<sup>19</sup> Quantifying what is or is not “harmful interference” may be an attractive theory, but likely unworkable in practice. As presented, the “interference noise” concept seeks to establish a seemingly simple black/white test for determining harmful interference. The concept, however, fails to consider the reality that the structure of individual bands is most often vastly complicated. For example, co-primary licensees may have to be coordinated with each other; secondary users may also exist with different rights. Any attempt to establish a maximum noise floor for a band must take into account these and other factors – and on a band-by-band basis. Even assuming all the technical, rights and other issues could be resolved, it is questionable whether the Commission has the resources to implement the concept across all bands.

The Task Force also ignores the fact that the international community through the International Telecommunication Union has already established a definition of harmful interference that does not utilize such an “interference temperature” metric. Moreover, the report does not address how the concept would or would not apply to secondary users.

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<sup>19</sup> *Id.* at 27-30.

## V. CONCLUSION

As the Commission implements many of the recommendations found in the Spectrum Task Force report, Boeing asks that it does so with caution and thorough deliberation. While Boeing agrees that improvements are needed in how spectrum is managed in the United States, Boeing, and many others, have significant existing spectrum needs and interests that should be given due consideration, and these existing needs and interests contribute to the strength of the US economy and to the general public welfare. Boeing will continue to be an active participant as the Commission moves forward.

Respectfully submitted,

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