NextNav Inc. (NextNav) filed a petition for rulemaking requesting that the Commission initiate a proceeding to reconfigure the 902-928 MHz band (Lower 900 MHz Band) and adopt new rules to enable the deployment of a 5G terrestrial positioning, navigation, and timing (PNT) network that “complements and backs up” the U.S. Global Positioning System (GPS).\footnote{NextNav Petition for Rulemaking, Enabling Next-Generation Terrestrial Positioning, Navigation, and Timing and 5G: A Plan for the Lower 900 MHz Band (902-928 MHz) at i (filed Apr. 16, 2024). NextNav also filed a supplement proposing specific part 90 rule revisions. Letter from Robert Lantz, General Counsel, NextNav Inc., to Marlene H. Dortch, Secretary, FCC (filed June 7, 2024) (jointly referred to as “Petition”).}

By this Public Notice, the Wireless Telecommunications Bureau (WTB) and the Office of Engineering and Technology (OET) jointly seek comment on NextNav’s Petition.

**Background.** In 1995, the Commission established the Location and Monitoring Service (LMS) in the 902-928 MHz band, defining two types of LMS systems: multilateration LMS (M-LMS) and non-multilateration LMS (non-M-LMS), that share the band with a variety of other users under a hierarchy of spectrum usage rights.\footnote{See generally Amendment of Part 90 of the Commission’s Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, PR Docket No. 93-61, Report and Order, 10 FCC Rcd 4695 (1995). LMS systems use non-voice radio techniques to determine the location and status of mobile radio units.} The Lower 900 MHz Band is divided into sub-bands: two for use by M-LMS, two for non-M-LMS, and one for both types of LMS systems shared on a co-equal basis.\footnote{47 CFR § 90.357.} The band is used for a diverse range of operations, both federal and non-federal, and is allocated on a primary basis to both federal radiolocation systems and industrial, scientific, and medical (ISM) equipment.\footnote{Id. §§ 2.106, 18.301, 18.111(c). ISM equipment is defined as “equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication.” Id. § 18.107(c).} Federal fixed
and mobile services are allocated on a secondary basis to federal radiolocation systems and ISM
equipment. LMS licenses are allocated on a secondary basis to federal users and ISM devices.

Amateur radio operations are allocated on a secondary basis to LMS. Part 15 unlicensed devices
also operate in the band, are not typically afforded interference protection, and may not cause harmful
interference to LMS licensees, amateur operations, or other licensed systems. However, Commission
rules intended to ensure coexistence between services require M-LMS licensees to demonstrate through
field tests that their systems do not cause unacceptable levels of interference to part 15 devices.

According to the Commission’s Universal Licensing System (ULS), Progeny LMS, LLC
(Progeny), an operating subsidiary of NextNav, is one of two M-LMS licensees. Progeny won its M-
LMS licenses at auction in 2000 and has been granted multiple extensions of its construction deadlines,
ultimately conditioned on assisting wireless carriers in meeting their required wireless E911 location
accuracy deadlines. There are approximately 1,500 active non-M-LMS licenses in the band.

NextNav’s Petition for Rulemaking. NextNav asks that the Commission reconfigure the Lower
900 MHz Band by creating a 5-megahertz uplink in the 902-907 MHz band paired with a 10-megahertz
downlink in the 918-928 MHz band, shifting all the remaining non-M-LMS licensees to the 907-918
MHz portion of the band. NextNav proposes a spectrum “swap” to trade in its current M-LMS holdings
for a single, nationwide 15-megahertz flexible use license pursuant to the new band plan. NextNav
proposes specific updates to the Commission’s rules, including the addition of mobile and fixed
allocations to the non-Federal portion of the Table of Frequency Allocations, revisions to existing part 90
(TPNT). We seek comment on all aspects of the Petition, including its associated costs and benefits.
We categorize below certain issues raised in the Petition and include specific questions. We seek to
develop a robust record and welcome comment on additional related issues that commenters may identify.

TPNT as a Complement to GPS. NextNav discusses the vulnerabilities of GPS and states that its
technology is the only viable solution for a nationwide terrestrial PNT system to complement GPS.

5 Id. § 2.106 footnotes 5.150 and US 11.

6 Id. § 90.353(a). LMS is permitted through a table footnote, subject to not causing interference to all federal
stations and accepting interference from federal and ISM operations. See id. § 2.106 footnote US 275.

7 Id. § 97.301. See also id. § 2.106 footnotes US 267 and US 275.

8 Id. § 90.361.

9 See id. § 90.353(d). Also, users of part 15 devices conforming to specified technical conditions under a safe harbor
rule are insulated from claims in the band that they cause harmful interference to M-LMS systems. See id. § 90.361.

10 The other licensee, Telesaurus Holdings GB LLC (Telesaurus), is an entity formerly controlled by the late Warren
Havens and currently licensed under a court-ordered receivership.

11 See Request of Progeny LMS, LLC for Waiver and Limited Extension of Time, WT Docket No. 12-202, Order, 32
FCC Rcd 122 (WTB MD 2017) (Progeny 2017 Order). In 2023, WTB granted Progeny further relief, consistent
with its license condition to facilitate E911 location accuracy, to substitute coverage of tall buildings in lieu of
population to meet the build-out requirement for its licenses. See Request for Waiver and Extension of Time,
Further Request for Waiver and Extension of Time, Further Waiver Request, and Request for Waiver and Extension

12 Petition at 28–30.

13 Id. at 30.

14 Id. at A-1, A-2. NextNav also seeks the addition of mobile and fixed allocations to the non-Federal portion of the
Table of Frequency Allocations.

15 Id. at 3–7, 10–14, 27.
NextNav notes that in March 2024, the Department of Transportation (DOT) issued a request for quotes for complementary PNT.\(^\text{16}\) Further, DOT recently awarded contracts to nine PNT technology vendors seeking to provide a complementary PNT service to GPS, including a $1.9 million award to NextNav to conduct testing of its 3D PNT technologies.\(^\text{17}\) Will these contracts support experimental testing of PNT in the Lower 900 MHz Band or other frequency bands? We seek comment on what research or testing has been conducted or will be conducted and the timing of such experimental licensing activities. We seek comment, including technical information, on the characteristics and capabilities that are needed for a system to function as a PNT complement to GPS. We seek comment on how a terrestrial PNT system can serve as a “backup” to GPS,\(^\text{18}\) including whether the proposed system is capable of ubiquitous nationwide coverage, including U.S. territories, similar to GPS. What is needed in the way of infrastructure to create such coverage? What costs are involved? What particular considerations support or mitigate against the use of the Lower 900 MHz Band for a terrestrial PNT system, and should the Commission consider other bands for this purpose?

**Wireless E911 Location Accuracy.** NextNav asserts that its NextGen network would provide “3D positioning accuracy” that would provide a better service experience and meet the Commission’s horizontal indoor location requirement and 3-meter z-axis requirement.\(^\text{19}\) We seek comment on how facilitating NextNav’s proposal would enhance wireless E911 indoor location accuracy more generally, including for the provision of dispatchable locations, and any further benefits that would accrue to Public Safety Answering Points (PSAPs) and first responders in emergency situations.\(^\text{20}\) How would NextNav’s plan support the ability to provide first responders with situational awareness and navigation? How would the proposal support land mobile radio (LMR) base station synchronization for public safety? How would NextNav’s proposal seeking to turn in all of its conditioned M-LMS licenses in exchange for a new nationwide flexible use license, focused on providing a complement to GPS and making excess spectrum available for commercial broadband service, affect its ability to meet the conditions currently on Progeny’s licenses, including a requirement to “continue to provide location accuracy services on all of its B and C Block licenses for at least a five (5) year period ending April 3, 2028”?\(^\text{21}\) Further, NextNav states that its “solution will operate according to 3GPP standards....”\(^\text{22}\) Would wireless carriers be able to use a standards-based solution to provide PNT using their networks in commercial bands other than the Lower 900 MHz Band? Would mobile device handsets deployed on wireless carrier networks support the necessary functionality to implement NextNav’s PNT vision that meets the wireless E911 location accuracy requirements? We seek comment from stakeholders on the extent of commercial availability of those handsets, including timing and breadth.

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\(^{16}\) Id. at 7.


\(^{18}\) See supra note 15.

\(^{19}\) Petition at 26–28.

\(^{20}\) 47 CFR § 9.10(i) (wireless E911 indoor location accuracy requirements for Commercial Mobile Radio Service providers). Dispatchable location in the wireless context refers to “A location delivered to the PSAP by the CMRS provider with a 911 call that consists of the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party. The street address of the calling party must be validated and, to the extent possible, corroborated against other location information prior to delivery of dispatchable location information by the CMRS provider to the PSAP.” Id. § 9.10(i)(1)(i).

\(^{21}\) See Progeny 2023 Order, 38 FCC Red at 2357, para. 34.

\(^{22}\) Petition at 23.
Identification and Protection of Incumbents. NextNav indicates that it will work with all the incumbents in the band, including federal (radiolocation, fixed, and mobile), ISM, non-M-LMS, amateur, and unlicensed part 15 device users, and suggests that the Commission could place conditions on a newly issued NextNav license to ensure protection.\textsuperscript{23} NextNav commits to protecting federal users,\textsuperscript{24} but does not identify them, their location, or provide details explaining how it will afford protection. We therefore seek comment on how protection of primary federal users would be accomplished under the proposal and what technical restrictions might be necessary to achieve this goal. Regarding primary non-federal incumbents, NextNav asserts that the “limited number” of these devices should not particularly require protection and proposes a rule generally requiring interference protection to primary incumbents.\textsuperscript{25} We seek comment on whether and what specific technical rules are necessary to ensure required protection. We also invite comment on the status of any outreach with primary federal and non-federal incumbents.

With regard to non-M-LMS incumbents, NextNav indicates it will conduct outreach on impacts and mitigation measures, “including by paying for retuning or relocation,”\textsuperscript{26} but does not quantify or describe the potential effects or indicate how relocation would be accomplished. We seek comment on potential impacts, including details regarding incumbent relocation, whether any incumbents could continue to operate in the proposed 11 MHz segment of the band where currently located, and any information on the status of discussions between NextNav and non-M-LMS incumbents.

The Petition recognizes that there currently are unlicensed part 15 devices operating in the Lower 900 MHz Band, but it is unclear regarding the extent to which the proposed reconfiguration would impact potentially millions of such devices. With respect to part 15 devices, NextNav states that it is completing technical analyses and “will work with unlicensed users to understand their spectrum requirements.”\textsuperscript{27} NextNav does, however, seek the removal of the current requirement that it not cause unacceptable levels of interference to part 15 devices.\textsuperscript{28} NextNav also states that updating the band to increase flexibility will not impact amateur users.\textsuperscript{29} We seek comment on the extent of part 15 devices and amateur operations in the band and what potential impact band reconfiguration and flexible use rules, including elimination of the testing requirements of current rule section 90.353(d),\textsuperscript{30} might have on part 15 devices and on the amateur community. What services are being provided by part 15 devices and amateur operations in this band? Can they be accommodated in other spectrum bands? What are the costs for relocation and how long would it take? We also seek comment on the status of any outreach with part 15 device users and amateur licensees.

Given the multitude of different types of incumbents currently operating in the Lower 900 MHz Band, we ask that commenters address the costs and benefits involved in implementing the proposed band plan, including the impact on incumbents in terms of relocation or protection. Are NextNav’s proposed rule changes adequate, or are additional or revised rules required? Should the Commission consider alternative ways to reconfigure the band that would better increase spectrum efficiency and support a terrestrial complement to GPS, while taking into consideration the variety of incumbents, their respective allocations and levels of protection, and existing operations?

\textsuperscript{23} Id. at 30.
\textsuperscript{24} Id.
\textsuperscript{25} See Petition, at A-11.
\textsuperscript{26} Id. at 31.
\textsuperscript{27} Id.
\textsuperscript{28} See Petition at A-6 (proposing to amend § 90.361), A-11 (proposing to add § 90.1410(c)).
\textsuperscript{29} Id. at 32.
\textsuperscript{30} 47 CFR § 90.353(d).
Spectrum Swap, Increased Flexibility, and Potential Windfall. NextNav proposes a spectrum “swap,” whereby NextNav would “return all active licenses and associated applications and petitions in exchange for a nationwide license consistent with the new 15-megahertz band plan configuration.” NextNav states that it holds approximately 64% of all B and C Block licenses and seeks to acquire all active M-LMS A Block licenses. NextNav seeks to swap post-transaction holdings of 14 megahertz for a 15 megahertz flexible use nationwide license. We seek comment on NextNav’s proposal to receive more spectrum in a larger geographic area than currently held. We seek comment on the relationship of the requested swap to Progeny’s prospective compliance with license conditions applied to its M-LMS B and C Block licenses through prior grants of relief, as well as its currently pending requests for relief. We also note that Progeny’s A Block licenses were terminated and, unlike its B and C Block licenses, were not authorized by the Commission for commercial operations. How would this fact impact the proposed swap?

NextNav indicates that its PNT solution would only use a small amount of the 10-megahertz capacity, and that it would partner with wireless providers to use the excess capacity for broadband. We seek comment on the mechanics of a partnership that would be consistent with section 310(d) of the Communications Act. To enable carrier use of NextNav’s prospectively licensed spectrum, does the proposal necessarily rely on secondary markets, e.g., leasing or partitioning/disaggregation? Are other arrangements possible that would provide operational authority and comply with our regulations and the Act? WTB notes that until April 3, 2028, Progeny’s B and C Block licenses may not be assigned, transferred, partitioned, disaggregated, and/or leased to any third party unless the potential assignee, transferee, partitionee, disaggregatee, and/or lessee requests a waiver consistent with the relief granted to Progeny, and WTB grants such relief. Would similar requirements be needed in connection with NextNav’s proposal as a way to help ensure that arrangements with wireless providers are consistent with the conditions of Progeny’s licenses? We seek comment on the costs and benefits of the proposal that the Commission designate NextNav as the nationwide licensee with rights to lease almost 10 megahertz of spectrum.

NextNav requests that the Commission modify its M-LMS service and technical rules to “align with the Commission’s flexible-use rules (e.g. Part 27) for mobile and/or fixed broadband operations, including full macro power limits and standard out-of-band-emissions limits,” and eliminate the
restrictions on real-time interconnection obligations, services that may be provided, and the amount of M- 
LMS spectrum that a licensee can hold. We seek comment on NextNav’s proposed “provisional” 
rules. Do they provide sufficient protection for incumbent operations while enabling the proposed PNT 
services and contemplated broadband operations by wireless providers, however authorized? Are 
NextNav’s proposed rule changes (e.g., permissible communications) and the addition of fixed and 
mobile allocations sufficient to authorize proposed TPNT operations and 5G broadband by other mobile 
service providers not offering TPNT services? Are additional rule changes needed to authorize operations 
and clarify the scope of services to be offered? What performance requirements would be necessary, 
considering the proposed operations, to ensure intensive use of the spectrum, and thereby fulfill the 
Commission’s obligations under the Act?

In addition, NextNav proposes to exchange its existing restrictive part 90 licenses for a single, 
nationwide license to be operated under flexible use rules including, under proposed rule section 90.1403, 
being able to provide “any services” for which the band is to be allocated, i.e., fixed and mobile 
services. If such a nationwide flexible use license were ultimately issued in a newly reconfigured Lower 
900 MHz Band as NextNav proposes, should the Commission adopt regulations, or impose license 
conditions, to ensure that a terrestrial PNT system complementing GPS is permanently implemented and 
maintained on a nationwide basis? Further, as noted, NextNav is required through license conditions to 
assist wireless carriers in the deployment of z-axis technology to meet E911 indoor location accuracy 
requirements. We seek comment on the appropriate scope of flexible use operations in a newly 
reconfigured Lower 900 MHz Band and on the impact that the proposed mobile network operator (MNO) 
partnerships might have on public safety. We also seek comment on the appropriate service obligations 
of any MNO partners, which under the proposed definition would not appear to be “TPNT licensees” 
offering PNT related services.

Finally, we seek comment on the windfall that NextNav might receive as a result of its proposed 
spectrum swap for a new nationwide license, including the acquisition of accompanying rights as a 
licensee and lessor, the application of flexible use and less restrictive technical rules to this band, and how 
the Commission should address any such windfall.

For this proceeding, we assign a rulemaking number, as is typically assigned to petitions for 
rulemaking, and also open a docket.

**Filing Requirements.** Interested parties may file comments and reply comments on or before the 
dates indicated above and must reference WT Docket No. 24-240. Comments may be filed using the 
Commission’s Electronic Comment Filing System (ECFS) or by filing paper copies.  

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the 
  ECFS: https://www.fcc.gov/ecfs.

- Paper Filers: Parties filing by paper must file an original and one copy of each filing.
  
  o Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. 
  Postal Service. **All filings must be addressed to the Secretary, Federal 
  Communications Commission.**

  o Hand-delivered or messenger-delivered paper filings for the Commission’s Secretary are 
  accepted between 8:00 a.m. and 4:00 p.m. by the FCC’s mailing contractor at 9050

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38 Petition at 29.

39 See id. at A-2–A-11.

40 See id. at A-9.

41 See Electronic Filing of Documents in Rulemaking Proceedings, GC Docket No. 97-113, Report and Order, 13 
FCC Rcd 11322 (1998); Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (May 1, 
1998).
Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.

- Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express must be sent to 45 L Street NE, Washington, DC 20554.

**People with Disabilities.** To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice).

**Ex Parte Rules.** This proceeding shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules. Additionally, the Application to assign licenses from Telesaurus to Progeny, File No. 0011022019, shall be treated as a “permit-but-disclose” proceeding. This Application also seeks permission, in an attachment, to assign 128 terminated licenses from Skybridge and one terminated license from Telesaurus to Progeny. The Application also includes a request for waiver of section 90.353(d) of the Commission’s rules, which prohibits an entity from holding A Block M-LMS licenses with B and C Block M-LMS licenses in the same license area. Further, the 128 active licenses listed on the Application have renewal applications that are pending. These renewal applications shall also be treated as a “permit-but-disclose” proceeding. Additionally, the proceeding that terminated the 128 Skybridge licenses and one Telesaurus license, WT Docket No. 16-385, shall continue to be treated as a permit-but-disclose proceeding.

Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must: (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made; and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memorandum, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memorandum, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to...

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42 See 47 CFR § 1.1200 et seq.


44 Application, Description, PIS, and Waiver Request at 2–3, [https://appsint.fcc.gov/UlsEntry/attachments/attachmentViewRD.jsp?applType=search&fileKey=1368470315&attachmentKey=21960417&attachmentInd=applAttach](https://appsint.fcc.gov/UlsEntry/attachments/attachmentViewRD.jsp?applType=search&fileKey=1368470315&attachmentKey=21960417&attachmentInd=applAttach) (Application, Description).

45 47 CFR § 90.353(d).

46 Application, Description, at 3-4.


be written *ex parte* presentations and must be filed consistent with section 1.1206(b) of the Commission’s rules. In proceedings governed by section 1.49(f) of the rules or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules. Participants whose presentations include a discussion of the Application to assign licenses to Progeny, the renewal of Telesaurus licenses, and/or the termination of Skybridge and Telesaurus licenses, must also file a copy of any written presentation or a memorandum summarizing any oral presentation in File No. 0011022019 in ULS, File No. 0008711633 in ULS, and/or WT Docket No. 16-385 through the electronic comment filing system, respectively.

_Availability of Documents._ Comments, reply comments, and *ex parte* submissions will be available via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

_Additional Information._ For further information regarding this Public Notice, please contact Melissa Conway, Attorney Advisor, Mobility Division, Wireless Telecommunications Bureau, at Melissa.Conway@fcc.gov or Jamison Prime, Associate Chief, Office of Engineering and Technology, at Jamison.Prime@fcc.gov.

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