

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Facilitating the Provision of Spectrum-)	
Based Services and Promoting)	WT Docket No. 02-381
Opportunities for Rural Telephone)	
Companies To Provide Spectrum-)	
Based Services)	
)	

COMMENTS OF ITRON, INC.

Itron, Inc. (“Itron”), by its attorneys, respectfully submits these Comments in response to Notice of Proposed Rulemaking (“NPRM”) issued in the above-captioned proceeding.¹

I. INTRODUCTION AND SUMMARY

Itron is the nation’s leading manufacturer and supplier of Automatic Meter Reading (“AMR”) technologies using unlicensed Part 15 devices that operate in the 902-928 MHz band. Itron supplies its RF-based AMR systems to electric, gas, and water utility companies nationwide, including many utility companies that serve “rural areas,” as the Commission proposes to define that term in the NPRM.

Itron’s AMR systems enable a utility to monitor business and residential meters from a remote location using a hybrid architecture that employs both licensed and unlicensed frequencies. On the unlicensed side, utility consumption and other critical

¹ See *In re Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services*, Notice of Proposed Rulemaking, WT Docket No. 02-381, FCC 03-222 (rel. Oct. 8, 2003) (“NPRM”).

information is transmitted from meter modules via unlicensed Part 15 devices operating in the 902-928 MHz band. To date, Itron has shipped more than 24 million meter modules to over 850 utility companies providing service in both rural and urban areas. Collectively Itron's utility customers have invested over \$1 billion in their AMR networks, and tens of millions of AMR devices already are deployed and operating in the unlicensed 902-928 MHz band.

Itron is concerned that the higher output power levels contemplated in the *NPRM* for unlicensed devices operating in rural areas could expose AMR systems and other Part 15 devices to harmful interference. Permitting higher output powers in rural areas, particularly when combined with the extended duty cycles that are becoming increasingly common in unlicensed bands, would jeopardize the billions of dollars of investments that utilities have made in AMR systems. Implementation of cognitive radio technologies, moreover, will not prevent this harmful interference, because a cognitive radio that is too far from a low power unlicensed device to receive its signal nevertheless can be close enough to the low power device to interfere with its signal. In light of these interference issues, Itron asks that the Commission retain its existing power limits for unlicensed operations in the 902-928 MHz band.

Finally, in the event that the Commission does permit higher power in the 902-928 MHz band in rural areas, the definition of "rural area" becomes critical. Itron asks that the Commission, in developing a definition of rural area, take into consideration the unique implementation issues facing AMR operators serving customers over large geographic areas, including both rural and urban communities, with a single, integrated AMR system.

II. DISCUSSION

A. Higher-Powered Unlicensed Devices in Rural Areas Will Cause Harmful Interference to Existing Low-Power Devices.

In the *NPRM*, the Commission stated that it was “exploring more flexible spectrum policies for rural areas to help foster, where possible, a viable last mile solution for delivering Internet services, other data applications, or even video and voice services to underserved or isolated communities.”² While bringing last mile connections to rural communities is an important goal, it should not come at the expense of valuable services that already are provided in rural areas and for which there is a large installed base. These services were developed in reliance on the rules that were in effect at the time. Utilities, manufacturers, and consumers have invested enormous sums to deploy the services. As the Commission has recognized repeatedly, and as the laws of nature dictate, increasing power also increases the potential for harmful interference.³

There may be unlicensed bands for which rural power limits can be raised safely because the bands are largely unused in rural areas. The 902-928 MHz band, however, already is used extensively in rural areas for AMR and other purposes. Exposing even a small portion of AMR systems in rural areas to harmful interference will have wide ranging, adverse consequences, because the loss of readings from the affected portion can prevent the system as a whole from being cost-effective. Considering the fact that Itron alone has installed millions of low power meter modules in rural communities, higher power unlicensed devices could wreak havoc on existing services.

² *NPRM* at ¶ 50.

³ See, e.g., *In re Review of Part 15 and other Parts of the Commission's Rules*, Second Report and Order and Memorandum Opinion and Order, 18 FCC Rcd 14741, ¶ 13 (2003) (“We also decline to allow trained operators to use equipment which operates with a 10 dB higher power than currently permitted . . . Such equipment would have a higher potential for interference to other services, and it is unlikely that even a trained operator would have sufficient information to determine whether harmful interference would occur in a particular location.”)

The benefits of AMR services in rural markets are beyond question. AMR services promote efficiency and safety in the utility industry by reducing the costs of meter reading for utilities and eliminating the need for utility workers to enter customers' premises. In the many rural areas in which Itron's AMR systems have been installed, the systems are used to serve virtually every person in the market.

The higher power devices that the Commission is contemplating for use in rural areas are the ones with the greatest interference potential. Unlicensed Part 15 devices traditionally have managed to co-exist not only because they operate at low power, but also because they transmit for limited periods. Wireless Internet service providers ("WISPs") and other last mile providers, on the other hand, experience lengthy duty cycles to accommodate customers seeking "always on" services and needing to send and receive broadband communications. Longer duty cycles, like higher power, translate into greater interference potential.⁴

For these reasons, Itron urges the Commission to refrain from allowing high-powered technologies to enter the heavily used 902-928 MHz band. High-powered operations could place tens of millions of low power Part 15 devices at risk of harmful interference.

B. Cognitive Radio Technologies Cannot Prevent Interference to Part 15 Devices in the 902-928 MHz Band.

The Commission suggests in the *NPRM* that "[c]ognitive radio technologies, which permit radio systems to modify their performance in response to . . . external information, would appear to hold great promise in resolving [interference] issues" with other Part 15 devices.⁵ While Itron commends the Commission for exploring innovative technologies, the use of high-powered cognitive radios alone will not reduce

⁴ See *id.* (declining to permit a higher duty cycles for unlicensed devices because the requested change "effectively allows higher signal strength which could result in increased interference potential of devices").

the risk of interference with low-power “dumb” or “non-cognitive radio” unlicensed devices in rural areas.

In the first place, unlicensed spectrum exists for the purpose of promoting low-cost, low-complexity communications solutions.⁶ Thus, requiring the use of complex and costly cognitive radio technologies to overcome potential interference concerns is contrary to the Commission’s long-standing unlicensed spectrum policies and disregards the substantial number of non-cognitive radio unlicensed devices already deployed.

Moreover, cognitive radio technologies will not prevent higher-power devices from interfering with lower-power devices, because, in general, the point of interference is farther away than the point of detection. A cognitive radio that is too far from a low power unlicensed device to receive its signal, therefore, nevertheless can be close enough to the low power device to interfere with its signal. Reducing the power levels of “dumb” or “non-cognitive radio” unlicensed devices only worsens this effect, because it increases the likelihood of interference and decreases the chance of detection.

C. Definition of “Rural Areas”

The Commission seeks comment on how to define “rural areas” for purposes of promoting the development and deployment of spectrum-based services to rural areas pursuant to Section 309(j) of the Communications Act.⁷ Many of the potential definitions of “rural areas” proposed in the *NPRM* are based on county boundaries, which causes Itron concern.⁸ A county-based definition presents implementation

⁵ *NPRM* at ¶ 50.

⁶ See, e.g., *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, Notice of Inquiry, 17 FCC Rcd 25632, ¶ 4 (2003) (“The 1985 and 1989 revisions of Part 15 have provided substantially increased flexibility in the types of unlicensed devices that can be developed, and led to the large numbers of unlicensed devices currently available today.”).

⁷ See *NPRM* at ¶¶ 10-13.

⁸ See *id.* at ¶ 13.

difficulties for unlicensed systems serving both rural and urban areas, as is true of many AMR systems.

A county-based definition also can produce anomalous results. As the Commission acknowledges, “a county might have a very dense population center that covers only a small portion of the geographic area of the county, such that the county might be considered ‘rural’ when, in fact most of the county’s population is not rural.”⁹ For example, Duluth, Minnesota is located in a county that would be considered “rural” under the definitions proposed in the *NPRM*, at only 32 people per square mile, but it is a city with a population of over 88,000 people and a metro area of over 115,000 people.

Another problem with a county-based definition of rural is that counties on the East coast generally encompass a smaller geographic area than counties in the rest of the country. On the East coast, for example, a utility company may serve several adjacent counties. Once again, a “one size fits all” definition can cause problems in practice.

For reasons of efficiency, utilities are accustomed to operate integrated and seamless AMR system encompassing wide areas. A county-based definition for rural areas could prevent utilities from achieving these efficiencies in the future. Utilities could be forced to operate multiple AMR systems in their regions, because they would have to tailor their systems to the differing interference potentials presented by higher power unlicensed devices in rural counties and lower power unlicensed devices in urban counties. The utilities also would have to cope with the fact that, even in urban counties, their AMR systems could be exposed to higher power transmissions from adjacent rural counties.

In formulating a definition of rural areas, therefore, Itron asks the Commission to consider the unique implementation problems facing utility companies that operate

⁹ *Id.*

AMR systems over large geographic areas. Itron also suggests that the Commission consider establishing a "buffer zone" in the boundaries between urban and rural areas to limit the potential for higher-powered devices in rural areas to interfere with lower-powered devices in urban areas.

III. CONCLUSION

For the foregoing reasons, Itron requests that the Commission refrain from allowing high-powered technologies to enter the heavily used 902-928 MHz band to the detriment of existing unlicensed devices. In the event that the Commission does open the door to higher-powered rural operations in the band, it should adopt a definition of "rural areas" that takes into account the unique implementation difficulties facing AMR operators, including the need for a "buffer zone" between rural and urban areas.

Respectfully submitted,

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