LICENSE-EXEMPT BROADBAND SERVICE: A NEW PARADIGM

A Presentation by The License-Exempt Alliance

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FACTS ABOUT THE LEA

- NATIONWIDE COALITION OF WIRELESS INTERNET SERVICE PROVIDERS (WISPs) AND EQUIPMENT VENDORS

- MISSION: TO ACHIEVE REGULATORY REFORM THAT WILL PROTECT AND ENHANCE OUTDOOR LICENSE-EXEMPT BROADBAND SERVICE TO CONSUMERS

KEY TERMS

- **WIRELESS BROADBAND: Wireless delivery of high-speed Internet/IP services over a geographic range to unrelated set of users. May be 802.11b or other proprietary technologies**

- **WIRELESS LAN: Wireless connection of specific nodes, local or remote, to form a shared, common LAN. Usually 802.11b**

- **HOTSPOTS: Horizontal distribution of 802.11b WLAN for broadband in small, strategic pockets.**

THE VALUE OF LICENSE-EXEMPT BROADBAND SERVICE

- Broadband is an economic development issue. Unlike "hotspots," whose value is to the operator, user, and/or retail storefront provider, LE wireless broadband has a value chain that includes the operator and the total community of homes, businesses, schools, etc. within the cell footprint.

- *LE wireless broadband is becoming the vehicle of choice for local civic and business leaders to seize control of their own community's broadband destiny, instead of merely hoping and waiting for an outsider to provide for them.*

- Many license-exempt broadband providers (WISPs) were created to fill the void left by incumbent wireline technologies. The net result is that many consumers, educators, hospitals and local governments no longer have to rely on the cable modem/DSL "duopoly" for broadband service.

THE STORY SO FAR

- Cahners In-Stat estimates there are between 1,500 and 1,800 providers of license-exempt wireless broadband service.

- *Cahners also estimates that nearly 600,000 subscribers are now receiving license-exempt broadband service; subscribership is expected to double by the end of 2003, and reach 2,000,000 by the end of 2005.*

- License-exempt wireless broadband is now available in over 3,000 towns in the U.S. (Alvarion estimate), with the largest mass in Midwest and South Central regions, where line-of-sight is more easily achieved and smaller tier markets are highly concentrated.

LICENSE-EXEMPT SPECTRUM

- 902-928 MHz
  - Best Propagation Characteristics – Penetrates Foliage, Buildings, etc.
  - Protected by "Safe Harbor" Rule (Section 90.361)
  - Limitations: Only 26 MHz of Spectrum, Must Share with Licensed Users, Lower Power Limits
- ISM Band (2400-2483.5 MHz)
  - Adequate Propagation Characteristics, Equipment is Widely Available
  - Limitations: No "safe harbor" rule; interference from indoor ISM devices; power limitations hinder service in rural areas
- UNII (5.15-5.35 and 5.725-5.825 GHz)
  - Spectrum is relatively free and clear compared to the 2.4 GHz band
  - Propagation characteristics less favorable, but less "clutter" from non-communications devices
  - Limitations: only 100 MHz available for higher power operations

REGULATORY ISSUES FOR WISPS

- Insufficient Spectrum for Outdoor Wireless Broadband Service
  - More spectrum is needed to overcome line-of-site requirements above 2 GHz
  - Possibility of spectral congestion in existing bands

REGULATORY ISSUES FOR WISPs (cont'd)

- The FCC Must Encourage More Rational, Efficient Use of Spectrum for Outdoor Broadband Service
  - Current power limitations are mostly arbitrary and thus limit innovation. The rules also do not encourage radio intelligence or spectral efficiency

REGULATORY ISSUES FOR WISPs

- ***SOLUTION***
  - ***"RATIO-BASED" RULES: TIGHTER POWER RESTRICTIONS FOR "OMNI" ANTENNAS; HIGHER POWERS PERMITTED IF SECTORS ARE DEPLOYED (PERMITTED POWER SHOULD INCREASE IN PROPORTION WITH TIGHTNESS OF BEAM PATTERN AND HIGHER ISOLATION)***
  - ***PERMIT HIGHER EIRP IN NON-URBAN, "NON-CONGESTED" AREAS WHERE INTERFERENCE IS LESS LIKELY TO OCCUR***
  - ***APPLICATION OF PART 90 "SAFE HARBOR" RULE TO OPERATION IN ALL LICENSE-EXEMPT BANDS***

REGULATORY ISSUES FOR WISPs (cont'd)

- INABILITY TO CONDUCT FREQUENCY COORDINATION
  - WISPs do not have a centrally located, easily accessible database of who is using license-exempt spectrum for outdoor service in any given area. Often, the result is interference that can otherwise be easily avoided.

REGULATORY ISSUES FOR WISPs (cont'd)

- ***SOLUTION***
  - ***IN PARTNERSHIP WITH THE LEA, CREATE A PRIVATELY-MANAGED INTERNET DATABASE, IN WHICH EACH OPERATOR MUST REGISTER COORDINATES OF ALL PoPS, TYPE OF SYSTEM DEPLOYED, CONTACT INFORMATION, AND WHETHER SYSTEM IS FCC-CERTIFIED.***
  - ***EACH OPERATOR MUST PAY A NOMINAL FEE (EITHER FLAT-RATE OR ON A PER-RADIO BASIS) TO FUND THE ADMINISTRATION OF THE DATABASE AND ENFORCEMENT OF MANDATORY REGISTRATION***

REGULATORY ISSUES FOR WISPs (cont'd)

- FCC Must Encourage "Best Practices" Policy in License-Exempt Spectrum
  - Outdoor license-exempt systems are fast becoming part of the nation's telecommunications infrastructure. FCC policies must promote construction of those systems to the highest standards.

REGULATORY ISSUES FOR WISPs (cont'd)

- *SOLUTION*
  - *CERTIFIED OPERATORS, UNLICENSED SPECTRUM*
  - *NO ENTITY MAY INSTALL AN OUTDOOR SYSTEM ON A TOWER OR MULTI-STORY BUILDING WITHOUT CERTIFICATION FROM OSHA AND FCC-APPROVED TRAINING CENTERS. ALL CERTIFICATIONS SHOULD BE TRACKED THROUGH A PUBLICLY AVAILABLE DATABASE*
  - *NO WIRELESS POINT OF PRESENCE MAY BE INSTALLED ON A TOWER OR BUILDING UNTIL THE DESIGN HAS BEEN INSPECTED AND APPROVED BY A RF SYSTEM DESIGNER CERTIFIED AT AN FCC-APPROVED TRAINING GROUP. A RECORD OF EACH INSPECTION GOES INTO THE PUBLIC DATABASE.*

REGULATORY ISSUES FOR WISPs (cont'd)

- Equipment Certification/Professional Installation
  - Equipment certification rules were originally designed for indoor devices unrelated to wireless broadband – FCC should conduct reevaluation to ensure that "system certification" requirement is not creating unintended results
  - FCC should adopt more specific definition of "professionally installed." There continues to be substantial uncertainty over what the term means, yet both the FCC and operators rely on it when determining whether systems have been implemented properly.