

Often idle ITFS channels get their moment in the sun

The little channels that could (get used or leased)

By Steve Behrens

It isn't the most nubile piece of electromagnetic spectrum, but the once-forlorn 2.5 GHz microwave band—majority-owned by educational institutions, including dozens of public TV stations—has come of age and is getting relatively jiggy. The old Instructional Television Fixed Service channels look likely to become the first major home for WiMax wireless broadband services that work like super-sized Wi-Fi hotspots.

Eager to push telecom technologies that are developing faster overseas, the FCC began allowing holders of ITFS channels to lease out up to 95 percent of their channels as excess capacity, starting in January 2005, and many colleges, school systems and stations have rushed to do so.

"In the ensuing 12 months we have negotiated 42 leases for a net present value of over \$68 million," says Todd Gray of the law firm of Dow, Lohnes & Albertson, who is general counsel of the National ITFS Association. With dozens more deals in the works, he expects the sum will soon top \$100 million.

Among the hundreds of educational licensees in the band, there were 59 public TV licensees with 288 channels in 2001, according to a count by APTS.

Not every licensee plans to lease out most of its ITFS capacity. Some use most of their spectrum for its major original purpose, one-way instructional video, and others hold great hopes for noncommercial uses of the band as it's converted for two-way, digital, cellular-style communication.

The focus for now, however, is on developing for-profit telecom services in the band, since the educators look to giant telecom companies to pay for the costly new infrastructure.

That may fit the plan at Sprint Corp., which now holds licenses and leases in the band for channels reaching 80 percent of the U.S. population—channels it snapped up itself or by merging last year with Nextel Communications, which had been avidly acquiring others. Cellphone billionaire Craig McCaw's Clearwire Corp. is already using owned and leased frequencies in the band to offer WiMax-like services in many small cities, and bought access to a large market

recently by leasing spectrum from WHYI, Philadelphia. Clearwire plans to invest \$1 billion in developing services nationwide, RedHerring.com reported last month.

The FCC laid out plans to overhaul the channels in June 2004. It even gave the channels zippy new names. The old Multipoint Distribution Service commercial channels became the Broadband Radio Service. And the drab old ITFS nonprofit service became the Educational Broadband Service.

Last week the FCC tweaked its 2004 rules to give an extra push to conversion. The commission:

- set a 30-year maximum on excess-capacity leases, while requiring that leases of 15 years or longer give educational licensees the right to review their uses every five years after 15 years. The rule was proposed in a compromise between commercial users and the Catholic Telecommunications Network, representing the parochial school systems that hold many licenses.

- eased rearrangement of local frequency use by making the transition in smaller increments—compact regions called "basic trading areas" instead of in state-sized "major economic areas." Few regions had begun the transition process.

- allowed licensees to take charge of the local band restructuring themselves if a "proponent"—typically a deep-pocketed telecom company—doesn't volunteer to handle the task or drops out before finishing it. To drive the transition, the FCC wants companies to step forward, shuffle the channels for two-way use and front the money for the new equipment needed by licensees in the area.

Details of the order won't be available until the FCC releases its text in coming weeks.

Aside from market pressures, Sprint already has an incentive to develop the band. To win approval for its merger with Nextel last year, the company agreed to bring wireless broadband to areas including 30 million Americans within six years. In the meantime Sprint aims to use cellular channels to reach some 150 million, the company announced early this month.

Telecom companies are in a deal-making frenzy, seeking to offer consumers at

least a "triple play"—a package including telephone, TV and cellphone service—or a quadruple play, adding wireless broadband. Sprint is partnering with cable companies with that objective, and news reports indicate Clearwire will do the same with a satellite TV provider.

"Everything is right for takeoff, and that has an impact on spectrum value," says Patrick Gossman, chairman of the National ITFS Association and head of academic technologies at Wayne State University in Detroit. FCC rules are now much more flexible than before 2004, and the telecom companies involved are big ones with much more capital to invest, he explains. Industry groups have ratified a technical standard for WiMax service for stationary users, and a standard for mobile users is in the works. "And we've got a country that's looking for mobility and speed."

"I just don't see this not taking off."

The valley of the shadow

High hopes have been dashed in the past. Various schemes to use the spectrum for profit, such as delivering pay-TV channels or multichannel "wireless cable" services, stumbled over the years.

Educational uses also have subsided. The major original application—delivering video to schools and workplace viewing sites—declined widely as educators moved to computer-based interactive technology. By the early 1980s educators were typically declaring three-quarters of their channel capacity to be excess and leasing it out.

The FCC now doesn't require licensees to use the channels at all until the conversion is done.

When the commission was proposing to reallocate more than half of the ITFS channels to commercial use in the early 1980s, PBS applied for dozens of the channels to create a National Narrowcast Network to deliver training video to workplaces. (Microband Corp. of America, then active in the band, assailed PBS's action as an "unprecedented channel grab.") By March 1982 PBS said it had applied for four-channel sets in at least 65 areas, *Current* reported.

However, PBS couldn't raise the capital

needed to launch the training network, then estimated at \$50 million, and pubTV stations adopted many of the orphaned ITFS channels, says Bill Reed, then a PBS vice president and later president of Kansas City pubTV station KCPT. For years the Kansas City station used ITFS to deliver training video to local hospitals, but the channels eventually fell idle.

Before Reed's recent retirement the station leased excess capacity to Sprint, says Chief Engineer Robert Hagg. KCPT will keep the "midband" channels for noncommercial uses, but Hagg isn't sure what those will be.

In Philadelphia, WHYY has signed a long-term release with Clearwire while continuing to use some of its capacity for educational uses, says Kyra McGrath, v.p. for strategic projects and general counsel.

One of the biggest pubTV users of the band, South Carolina ETV, will issue a formal request for proposals to lease out excess capacity on its 64-channel system, says Moss Bresnahan, president. He aims to lease out capacity in the whole statewide system—not just the bigger cities that carriers covet—to bring wireless Internet service to rural areas.

But even with so much spectrum to lease out, Bresnahan doesn't see a huge fiscal windfall. He expects the income won't equal what state lawmakers have cut from the network's budget in recent years.

Another big educational user, KLVX in Las Vegas, plans to listen to offers from telecom companies, but it's now using much of its capacity on 20 channels, says Lee Solanche, director of distance learning at the station and president of the National ITFS Association. KLVX, owned by the local school district, serves about 300 schools and workplace sites, peaking at 15 hours of broadcasts a day.

The Las Vegas station is also interested in adding new public services, including communications for emergency responders. KLVX will help New York's WNET demonstrate that function at the National Association of Broadcasters convention next week (see box on next page).

Assets worth selling, using or both

Telecom companies also realize the channels' value, paying a total of \$216 million to buy commercial channels in the band in the FCC's 1996 auction, according to spectrum analyst Adlane Fellah of Maravedis Inc. in Montreal.

Phone companies persuaded the Clinton administration that the frequency band was

needed for third generation (3G) of cell phones, Gossman recalls. The FCC inquired into the idea in 2001. The upshot: "We said, 'No, not here,' and we were proven out."

Commercial and educational licensees in the band, spread across nearly every congressional district in the country, joined forces to defend their licenses, coordinated by attorneys Todd Gray for the ITFS group, Edwin Lavergne for the Catholic Television Network and Paul Sinderbrand for the commercial users' group, the Wireless Communications Association.

The FCC not only squelched a direct takeover by cellular interests but also rejected pleas from consumer groups led by the New America Foundation, which urged the commission to devote half of the 2.5 GHz band to unlicensed public access similar to Wi-Fi and Bluetooth usage in the adjacent 2.4 GHz band. The foundation questioned the assumption that excess educational spectrum should be leased out to profit educational groups rather than giving the spectrum directly to the public.

Instead of giving the channels to telecom companies, the FCC let them lease up to 95 percent of the capacity if they'd rebuild the infrastructure. The spectrum will be shuffled, one region at a time, into contiguous blocks feasible for cellular-style usage.

Newly refurbished, it will be a nice hunk of telecom real estate, equivalent in bandwidth to 31 TV channels, though control is highly fragmented, driving down its lease prices. Educational channels are split among 1,598 organizations, according to Fellah, who maintains databases of spectrum owners.

The physics of the frequencies also makes them less valuable than lower broadcast channels, which can bend around or go through obstructions, according to Steven Schaffer of the law firm Schwartz, Woods & Miller. And many lower frequencies will go on sale in coming months and years, though not at low, low prices.

The FCC will auction off the upper UHF-TV channels in the 700 MHz band after TV broadcasters convert entirely to digital in 2009. More imminently, the FCC will auction off 1,122 licenses in the 1.7 GHz and 2.1 GHz bands on June 29. The commission okayed new auction rules last week, withholding key information on bidders' identities and objectives to prevent manipulation of prices if there are not many bidders.

Some EBS licensees have hurried to find renters before more spectrum comes on the market. But Schaffer, in his profession's tradition of wariness, sees risks in haste.

For example, what if the license holders themselves get the itch to provide a WiMax broadband service themselves—around a university campus, for instance?

Also, what if Congress halts auctions of other spectrum—perhaps to use it for public safety—making the 2.5 GHz channels much more valuable? What if the leasing price rises closer to the level that carriers pay for comparable spectrum?

Some educators have let go of spectrum for pennies per MHz per person the coverage area, says Schaffer, while telecom companies, by the same measure, pay many dollars to buy similar wireless spectrum. Gossman says educational channels typically lease out in the range from 25 cents to \$1.50 per MHz per person.

"It seems to me that it's got to come up," Schaffer says. He likes the idea of licensees having their own auctions, run by private auction firms such as SpectrumMarket.com.

John Schwartz, president of the Instructional Telecommunications Foundation in Boulder, Colo., is not rushing to lease out capacity on the many EBS channels he controls in seven major metro areas.

But Schwartz, a veteran FCC observer who helped start pubcasting operations in Philadelphia, Denver and Pittsburgh, regards leasing as a plus even in public-service terms: Somebody else will pay big bucks to make the channels vastly more usable.

"I think there's a lot of benefit in symbiotic relationships," he says. Being able to use even 5 percent of the spectrum in a digital, high-capacity, cellularized system would probably be more valuable than having all of the spectrum and just one transmitter, Schwartz suggests. "There's a lot of benefit in trying to craft a good deal with someone who would build an expensive, high-capacity network."

In the Washington, D.C., area, George Mason University is leasing capacity to both Nextel and Clearwire, says Michael Kelley, who runs GMU's Capital Connection service, which televises federal meetings through the region. A wireless enthusiast who watched last week's FCC meeting on a Nokia Wi-Fi tablet, he's eager for the companies to bring the university's service into the digital domain at last.

GMU now has four program streams on four EBS channels, Kelley says. After the EBS band's digital, cellular transition—even after leasing out three of the channels—it will be able to offer eight or more streams of educational service.

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Demo at NAB: old ITFS sees new uses in public safety

EBS spectrum—the old ITFS channels held by many pubTV stations—are a valuable resource that stations can offer to local police, fire and homeland security responders, according to New York's WNET, which will demonstrate the workings next week at the National Association of Broadcasters exhibition in Las Vegas.

With the help of equipment vendors and KLVX in Las Vegas, which will lend some EBS spectrum, WNET will run demos Monday through Thursday, April 24 through 27, says Steven Carrol Cahnmann, WNET's director of digital convergence. On the way to NAB he'll demo the system at KETC in St. Louis, April 18 and 19.

In an NAB exhibit hall, laptops and handheld computers around the booth of KenCast Inc., one of the project's vendors, will receive data sent via satellite from Atlanta and relayed to the hall over the borrowed spectrum by a WiMax-like hub in a truck outside.

Uses could include automatic vehicle location for tracking ambulances, says Cahnmann, or connecting fire commanders' electronic command boards with their troops.

WNET calls the project "GUARD"—Geospatially aware Urban Approaches for Responding to Disasters.

When the old one-way spectrum is largely converted to two-

way digital cellular transmission, as planned by the FCC, it will easily handle two-way video. "That's the killer application that first responders want," says Cahnmann.

When he came to New York's WNET several years ago he began pitching DTV channels as a highway for emergency information, and he still backs APTS-led efforts to use DTV datacasting for emergency alerts, but WNET has shifted its focus to the EBS spectrum with its two-way capability.

New Yorkers have been reminded repeatedly of the failings of emergency communications systems with the release of audio tapes and accounts from 9/11. Cahnmann expects Congress will provide UHF spectrum from former analog TV broadcast channels that will become available when TV completes its digital transition in 2009.

That spectrum has terrific qualities, he acknowledges, but the EBS channels in the 2.5 GHz band are available now and, in his view, nearly as good for emergency purposes. "Rather than waiting for 2009 to get started building these architectures, we can get started now," Cahnmann says. Though standards bodies are still working toward ratification of a mobile WiMax standard, he has already used a version of mobile WiMax in a moving vehicle.

Cahnmann would like to see a national discussion among EBS licensees about devoting some of the spectrum for emergency response. "The clock is ticking," he says, "because a lot of the folks are trying to lease this spectrum for commercial purposes."

—Steve Behrens