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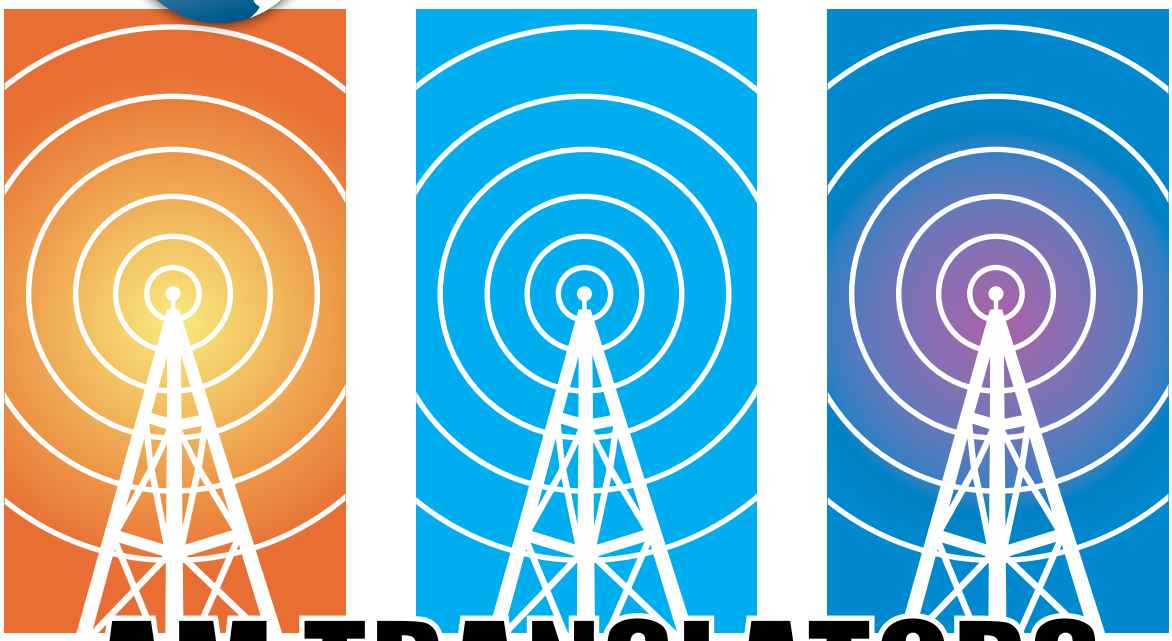
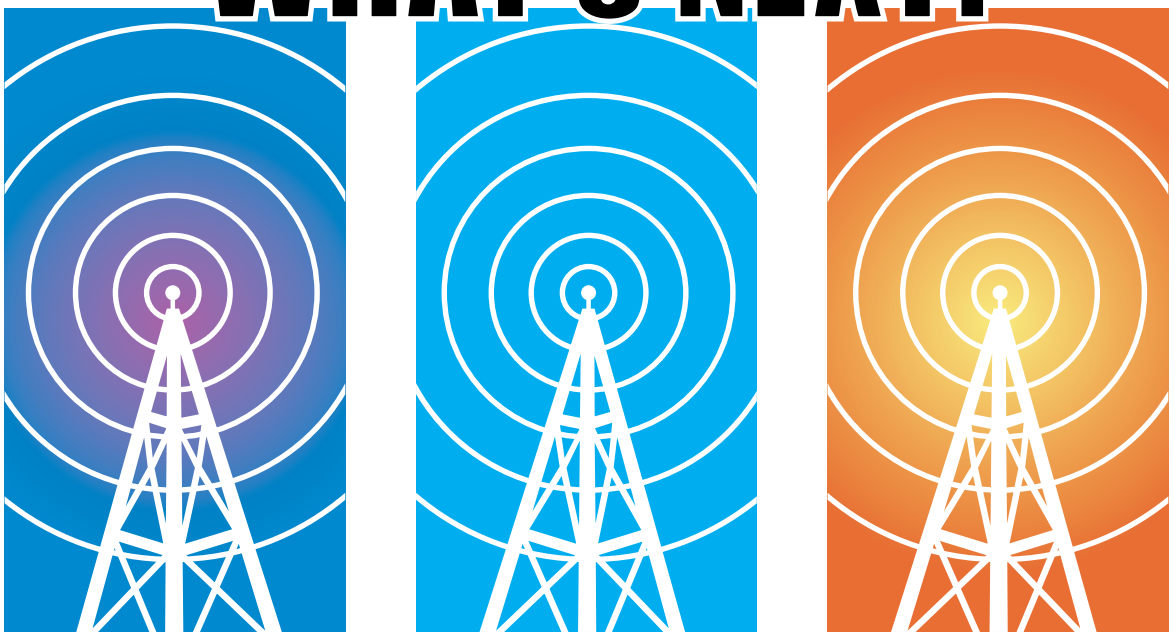


AM TRANSLATORS: WHAT'S NEXT?



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AM Translators: What's Next?

Paul McLane
Editor in Chief

More than 1,000 AM radio stations in the United States participated in a recently concluded FM translator filing window. That's on top of the many that were already taking advantage of recent translator windows and rule changes; and there's yet more ahead.

In 2016, a Radio World eBook explored AM revitalization. It was one of our most popular to date. But this sector is fast-moving; and translator strategy is a whole story in itself. So join us here as we take a deeper look.

This eBook establishes the context by explaining the recent history of U.S. translator policy for AM broadcasters in an overview by RW contributor Randy Stine.

Then we hear from broadcaster Bud Walters and attorney John Garziglia about business and legal implications. What are your revenue opportunities; are AM broadcasters finding success financially with this strategy? What kinds of questions do you need to know to talk intelligently to consultants, legal advisors and equipment makers? And what will the FCC do next?

Next we turn to technical issues. Chuck Anderson, Sam Wallington, Timothy Warner, Ron Castro and Cal Zethmayr provide various perspectives based on their experiences on many translator projects. What options do you have? When can you start building? How is putting a translator up different from building a station from scratch? What might broadcasters in other parts of the world learn from this unusual U.S. spectrum policy approach?

And translator veteran Ed Henson ends our eBook with a discussion about interference considerations and overall conclusions.

This is Radio World's 35th ebook; you can peruse past issues here. And don't hesitate to let me know how these eBooks can be of more help in your work; just email me at *radioworld@nbmedia.com*.

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How We Got Here in the First Place

A summary of important developments that led to FM translators for AM broadcasters

By **Randy J. Stine**

In 2009 an early rule change by the Federal Communications Commission allowed AM radio stations in the United States to rebroadcast their signals on FM translators. Though such translators have a maximum effective radiated power of only 250 watts, this development was welcomed by AM broadcasters, who felt that having a signal on the generally more desirable FM band would help them expand their reach and visibility.

Since then the number of such "cross-service" translators has soared. Few observers who witnessed that initial move — part of the FCC's efforts to "revitalize" the AM band — could have imagined where the fast-moving translator train would go.

The commission has made translators a cornerstone of AM revitalization and has expanded these efforts over several years.

Today 2,035 AM radio stations are rebroadcasting on FM translators, which is nearly half of the approximately 4,700 licensed AMs in the country, according to commission data. A recently concluded, AMs-only translator auction window has another 1,000 or so broadcasters hoping they are on track to own an FM translator; and another AM-only filing window is pending.

The commission has made translators a cornerstone of AM revitalization and has expanded these efforts over several years. A Report and Order in 2015 authorized the translator filing windows exclusively for owners of AM stations; the FCC has taken numerous steps since to accelerate the opportunities by allowing AMs a chance at 250-mile relocation waivers and granting more flexibility in locating translators by expanding site limitations, despite pushback from LPFM advocates. It expanded the program further, allowing translator use anywhere within a 25-mile radius of the AM transmitter or within the 2 mV/m contour of the AM station, whichever is greater.

AM "CHAMPION"

Demand for access to the FM spectrum clearly existed from the beginning. Nearly 500 AM stations applied for an FM translator in the first 24 hours of the first translator modification window in early 2016. This interest has clearly carried through to the most recent filing window, industry observers say.

One traces the origins of additional AM-exclusive FM translators to the date when now-Chairman Ajit Pai joined the FCC in 2012. Ben Downs, VP and GM of Bryan Broadcasting and a vocal stalwart for AM revitalization, points to the speech Pai delivered at the Radio Show in Dallas that year as a turning point. Pai was an early supporter of revitalization plans, specifically including the idea of access to FM translators.

"From that point forward, AM radio had its champion," Downs said. Pai "became AM's seat at the table at the FCC."

Downs was the chair of an NAB committee on AM improvement at the time; he said numerous ideas to help AM broadcasters were presented to the FCC, including the idea of moving all AM licensees to spectrum formerly used by television Channels 5 and 6. "But the ones that would provide immediate relief involved the use of FM translators."

He recalled that in early 2013, the FCC Audio Services Division was presented with the idea of a "one-per-customer" window for AM stations to apply for a "forever paired" translator and that it was favorably received.

Meanwhile, lurking in the background at this time was an earlier, infamous, stalled translator filing window from 2003 that had lingered for years. The commission had received 13,377 translator applications, and subsequently issued 3,476 authorizations before the FCC issued a freeze. It eventually cleared a backlog of filings in 2013 by tossing approximately 3,000 translator proposals from Auction 83 for a variety of reasons. One observer said that this "helped cleared the way for where we are today" with FM translators.

A solar-powered translator installation. Translators may share sites with diverse tenants.

Courtesy Sam Wallington

Downs said the need for AM revitalization was becoming more urgent by 2013. "The increased noise level on AM had risen to the point that local stations were being impacted. And with the introduction of universal smartphone use, the noise increased."

NO "FREE SPECTRUM"

But the commissioners seemed divided on the urgency of that first exclusive filing window.

Commissioner Mignon Clyburn launched the AM revitalization notice of proposed rulemaking in 2013 during her brief teunre as acting chairwoman. But by 2015 she had adjusted course and withdrew support of the exclusive window, saying that "to open such a window would not provide timely relief to AM broadcasters." Yet she remained a supporter of the 250-mile waiver. Commissioner Michael O'Rielly at the time expressed support for the AM-only window.

Pai told Radio World in 2015 that while translators are not a "panacea for the technical problems plaguing the AM band," a translator "can serve as a vital bridge to the future for some AM broadcasters as we work on fixing the AM band's long-term problems."

Meanwhile, then-Chairman Thomas Wheeler, while pushing for technical modifications for AM broadcasters, made clear his feelings: "Everybody has the right to ask for free spectrum, but it's not the general policy of this agency to give away free spectrum," Wheeler said. He wrote in a 2015 blog post that he "believed a translator filing window only for AM licensees was unnecessary."

But the radio industry was busy lobbying the commission and others in Washington, arguing that AM revitalization could wait no longer and that it was time for an AM-only window.

The National Association of Broadcasters stated in a 2015 news release, "Only a fraction of AM radio stations have been able to obtain an FM translator, and because demand far exceeds supply in many areas, leading to exorbitant prices, minority broadcasters who often lack access to capital have been disadvantaged, as have their listeners. An AM-only application window for new FM translators would provide every AM station an equal opportunity to obtain a translator."

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Edgewater Broadcasting Executive Director Steve Atkin told Radio World in 2016: "Translators provide an important compliment to an AM station — a complimentary FM dial position enables an AM station to solidify their current audience with a new FM frequency choice; introduce their AM format on a brand-new media, and much of the time on that new media to a new audience; and translators enable AM stations to stabilize current revenue and/or generate new sustainable monthly and ongoing revenue."

Downs was quoted by Radio World saying that the wider access to translators, announced in late 2015, meant "the closing of the daytime-only slum. Every station that has lived through being off the air during half of morning and afternoon drive time is now able to serve their listeners 24 hours a day. That's a change that would be impossible to minimize."

Another company in the trenches from the beginning of the movement was Phoenix Media Group, a consulting firm, active in the first window for AMs looking to modify FM translators. "This is a truly golden opportunity for many AM stations to add another platform for their content and, in many cases, a 24/7 platform at that," said Steve Moravec, principal of Phoenix Media Group, which helped initiate applications for translators in Iowa and Minnesota.

The cross-service changes helped spur skyrocketing prices for existing translators. Some observers said that this trend forced some AM owners to sit on the sideline until the exclusive filing windows.

Attorney and John Garziglia, a partner with Womble Carlyle Sandridge & Rice, said few technical policy changes have had such an immediate result in enhancing broadcast service to the public.

"Previous FCC radio station technical policy enhancements, such as new intermediate Class C3, 6 kW FM power increases, and AM technical rule tweaks, enhanced service for just a handful of stations. For our over 4,700 AM stations, however, we may be approaching one-half or more obtaining FM translators, each of which will provide enhanced service. That is an astounding number," Garziglia said.

BEYOND MATOON

Garziglia, too, saluted Pai for advancing revitalization.

"We can all recall the AM proceeding several decades ago that nibbled around the edges of AM interference issues, adopting such AM technical rule changes as the ratchet rule and the related AM expanded-band process removing a minute number of interferers from the AM standard band. There has been much FCC effort over time, but so little to show for it," he said.

He also recounted two important waiver requests by broadcaster Bud Walters at the Cromwell Group.

"Until Bud's successful prosecution of the Mattoon waiver — which allowed for FM translator moves to serve AM stations at greater distance than the miniscule moves allowed in the FCC's rules for FM translator minor changes — an FM translator was simply a dream for most AM stations," Garziglia said.

"Bud and his consultant Chuck Anderson changed many AM stations' fortunes through the precedent set by the Mattoon Waiver."

Meanwhile, the separate Tell City waiver involved a request by Way Media to sell an FM translator in Central City, Ky., to the Cromwell Group, which in turn asked the FCC permission to move the translator to Tell City, Ind., to fill in coverage for WTCJ(AM) in that city. A waiver would have been necessary because the rules didn't allow an FM translator to move that far.

The FCC Media Bureau in 2014 denied the Tell City waiver. But as Garziglia recounted, "Walters, with a coterie of other broadcasters, then prosecuted the Tell City waiver request, which posited that too many FM translators were languishing at locations far too distant to carry AM stations, and if moved significant distances these FM translators could be put to a higher use."

Pai has said translators are not a "panacea" for technical problems on the AM band but can serve as a "vital bridge to the future."

The FCC's AM Revitalization NPRM in 2015 denied grant of the Tell City waiver and confirmed the continued use of so-called Mattoon waivers with an added four-year operating requirement, which states that the relocating FM translator must rebroadcast the proposed AM primary station for a period of four years.

Though the commission ultimately ruled against the Tell City request, Garziglia said, it adopted an almost identical change, allowing more FM translators planning to carry an AM station to move 250 miles, as well as setting up the procedures for AM-exclusive new FM translator filing windows.

It is possible other countries could follow the U.S. lead and allow AM broadcasters to employ FM translators, though translators are used differently elsewhere in the world, according to Ched Keiler, vice president, audio, for the National Translator Association and lead principal with E Three, a broadcast engineering firm.

"Countries outside the United States use translators to extend the reach of their signals. This is a concept that is generally not allowed in the United States. There are

Continued on page 7

Bud Walters: "Don't Analyze. Just Do It"

Small-town AMs were given an opportunity to compete again and to serve their communities

Bayard "Bud" Walters is owner/president of The Cromwell Group, licensee of 17 FM stations, six AMs and 23 translators. The company filed the original "Mattoon waiver" and subsequent "Tell City waiver," which played roles in industry debate over use and regulations of FM translators.

Radio World: *Why is an FM translator a good investment for an AM broadcaster?*

Walters: Disregard whether people *are* listening to AMs; the reality is that local businesses do not *think* that anybody listens to AM. Therefore it's harder to do business on Main Street as an AM-only station, particularly if you have FM competitors. In a small town, the FM translator probably covers the whole town and makes you more acceptable to local advertisers.

[Also there's] the interference from electrical stuff on AM that you don't get on FM.

When [people] think in terms of "AM revitalization," they're not really talking about saving the AM band, in my view. They're talking about continuing the idea of local service in many smaller communities that had failing AM stations. The addition of the FM translator gave a new lease on life to local radio service.

Continued from page 6

still a lot of rules concerning the use of translators in the United States," Keiler said. In that regard, he said, NTA, would like to see an "easier process for broadcasters to acquire translators."

The entire "translators for AMs" strategy has detractors, including some who argue that providing AM stations with more access to the FM band is not really about revitalizing the AM band at all. Some critics also see a stopgap measure, one that only adds to FM band congestion.

However, as we found in researching this eBook, many AM licensees say cross-service translators are allowing them to better serve their communities with extended listening hours and improved sound. ■

RW: *Are AM broadcasters finding success financially thanks to this strategy?*

Walters: Oh yes. Absolutely. I had a gentlemen from Athens, Tenn., who has an AM, I met him at a Tennessee Association of Broadcasters convention three years ago. He was really struggling. He now has an FM translator; and he told me at the Tennessee Broadcasters meeting last month that it was just like manna from heaven. People are listening. He's got a good signal. He's competing. He's happy to be in the business again.

It gives you a chance. Because you think you've got a future, you can invest more in your programming.

RW: *You have a station in Nashville called "The Ville." What can we learn from your experience with that?*

Walters: It is repeating an FM HD, it's not being fed by an AM; but The Ville is a rhythm & blues and soul station serving the minority community. We had been doing gospel and it was not working. It had a presence, but the audience was up and down, and our business was not as strong as it could be.

I was in a class last year called Leadership Music here in Nashville. In that class was a fellow named Shannon Sanders, a black Grammy Award-winning producer and Dove Award-winning artist. He slipped me a note across the table that said, "Bud, what Nashville really needs is a rhythm & blues and soul station, and I want to do it."

A month later, we switched the station to "The Ville." We just had a feature article on the "The Ville" in The Nashville Tennessean.

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It's a translator. It's serving a community. Here it is three months old, and it has 70,000 listeners a week.

RW: *How is putting on a translator different, from a manager/owner perspective, from building a station from scratch?*

Walters: If it is going to repeat your existing programming, it's hardly anything at all. It's a matter of getting the construction permit; you want to find a tower that is as tall as possible and get the antenna as high up as you can; you want to be sure you're selecting a frequency that is not interfering with somebody else but also that somebody else won't interfere with you.

It is possible to get a legal grant but still have interference from a full-power station. You want to listen on the dial before you apply and make sure you've got [a frequency] that's relatively clean.

Once you've got the construction permit, it is a simple matter of putting up an FM antenna, some coax [and] transmitter.

Depending on how you're going to get the signal from your studio to the transmitter site, it can all be done for less than $15,000. You can spend more, but you can do it for $15,000.

That takes your AM from being something non-competitive and not really acceptable in the local business community to something that can be competitive for listeners and compete for advertisers; and you've got a viable business again.

RW: *Are there questions an operator needs to know to talk intelligently with consultants or legal advisors?*

Walters: I think, at this point, most people know. Most of the legal advisors and consultants have been through this enough that they already know. The best thing I can say is, honestly, if you are an AM operator and you do not now have a translator and you have a chance to get one, don't analyze. Just do it. There's no analysis to be done.

RW: *Thoughts about interference complaints — how a distant primary can shut down a translator based on one or two complaints?*

Walters: Localism should prevail.

You don't usually find local listeners listening to a distant signal, except maybe in an emergency. For commercial operators of large stations far away, they usually don't depend on those distant places for advertising. If somebody's in a small town and they can provide a local service, and more people would be listening to them than would be listening to the distant signal, we've got to find out how to work that out.

I have circumstances myself where I have a 100,000-watt FM and it is now being infringed upon by a translator in Paducah, Ky. That's way up in Kentucky. I'm not really getting advertising from up there; I'd like the Paducah guy to pull his signal in some, but the truth is, Paducah's not part of my market.

An AM operator or an existing FM operator, before they build [a translator], needs to be sure to the best of their ability that they're not going to cause interference to somebody else.

RW: *Anything else we should be thinking about?*

Walters: Our company filed the original Mattoon waiver. That set up the circumstance for many people to move translators. The idea had already been approved that AMs could have translators, but the Mattoon waiver made it possible for folks to move more translators to their AM stations.

There's absolutely no question that AM stations that have translators are doing a better job of serving their communities, and they are much more viable than ever before.

Later on, we applied for a waiver that we called the Tell City waiver. While it was turned down, it was appealed by the Multicultural Media, Telecom and Internet Council and the NAB. The commission showed interest in trying to help AMs, in particular Commissioner Pai before he was the chairman.

It's a credit to the FCC staff that they found a way to do the 250-mile thing last year, which in the end almost came out to be what we were requesting as a Tell City waiver.

AM operators in small towns were given the opportunity to compete again and to serve their communities. This is a big, big deal. It does involve the question about interference; we're going to have to find a way to resolve that, because this gets down to making sure the public is served.

In the end there's absolutely no question that AM stations that have translators are doing a better job of serving their communities, and they are much more viable than ever before.

If I was talking about what the commission could do [further]: Just that they enforce the interference rules as it relates to electrical devices, fluorescent lights. … These little connectors that go in your car to charge your cellphone cause a tremendous amount of interference to the AM and FM car radio. That's a whole area of compliance where manufacturers could be held accountable. ■

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Here's What to Watch for Next

John Garziglia explains the process, including two important proposed changes

What happens next in the regulatory arena for FM translators for AM stations? Radio World turned recently to John Garziglia of law firm Womble Carlyle Sandridge & Rice, who keeps a close eye on this sector.

Radio World: *What was your reaction to the outcome of more than 1,000 Class C and D AM stations applying in the most recent window?*
John Garziglia: Surprised. The strong reaction tells me that AM station owners really do care about serving their listening audiences in the very best way possible.

RW: *Why do you think interest was so strong?*
Garziglia: In talking to broadcasters who have already paired an FM translator with an AM station, I have never heard an AM station owner lament that obtaining an FM translator was a bad idea. Rather, I repeatedly hear that even if the FM translator covers just a fraction of the AM coverage area, having the "FM" designation on sales materials alone brings in advertisers that otherwise would not buy. Too many merchants and business owners have the fallacious notion that no one listens to AM anymore. Rather than battling that fake fact, an AM station obtaining an FM translator picks up business that it would otherwise not enjoy.

While there are other items in AM revitalization still to be addressed by the FCC, none has benefits as wide-ranging as the FM translator windows for AM stations.

RW: *What further conclusions do you draw?*
Garziglia: There are some forward-thinking AM broadcasters who view an FM translator as a bridge to an all-digital AM station. The FCC has yet to authorize all-digital AM, and there will be a substantial capital cost to implementing all-digital AM. For AM stations with consistent day/night coverage areas, and otherwise robust signals, all-digital may be the ultimate revitalization of the AM band as increasing numbers of radio receivers with HD capabilities proliferate. No AM station would likely do a hard-cut to all-digital. But with an FM translator to serve the analog listening audience, all-digital operations to that portion of the listening audience with HD radios becomes attractive.

RW: *Briefly describe the next steps in the FCC's process including MX and auction considerations.*
Garziglia: The current 1,000+ applications will be sorted into two silos: "singletons," which are those that do not conflict with any other application filed in this window, and mutually-exclusive applications that do conflict.

The FCC's current plan, according to Peter Doyle, chief of the FCC's Audio Division, is to first open a settlement window for the mutually-exclusive applications. That settlement window will give mutually-exclusive applicants an opportunity to remove the conflicts through either technical changes or agreed-upon dismissals, resulting in additional singletons.

Then after the settlement window opens and closes, the FCC plans to publish the list of singletons, and give each of those applicants a time period in which to file a complete application known as a "long-form" application, which, when granted, will result in a construction permit that will be good for three years. For remaining applications that still conflict with one another after the settlement window, an FCC auction will eventually be held.

While there is no exact number of singletons, a good estimate is that 80 percent of the applications filed are

singletons. These 800+ applicants, representing 800+ AM radio stations, are very anxious for the FCC processes to move forward.

The big question now on everyone's mind is timing. Sooner, rather than later, it can be expected that these 800+ AM station owners will start calling, emailing and visiting Chairman Pai and the Audio Division staff asking for a commencement of the opportunity to file long-form applications and get the FM translators on the air. For its own bureaucratic sanity, the FCC should seriously consider expeditiously the issuance of the singleton list and the opportunity to file long-form applications, rather than first opening the settlement window for mutually-exclusive applications.

RW: *Any opinion about when and how we might see action on other AM revitalization rule changes from the FCC soon?*
Garziglia: Chairman Pai announced at the NAB Radio Show that the FCC will shortly revise the Moment-Method AM proof procedures for showing continuing compliance with authorized directional antenna parameters. *[This action was subsequently adopted on Sept. 22, 2017.]*

Every FM station and existing FM translator owner should be working with its consulting engineer now to ascertain whether any FM translator applications filed in this window have a potential to create harmful interference to its established listening audience.

These FCC Moment-Method changes: relax the rule for partial proofs of performance of certain directional AM antenna systems by reducing the number of field strength measurements required; eliminate periodic re-certifications of the performance of a directional pattern for stations licensed pursuant to a Moment-Method proof, requiring recertification only when equipment has been repaired or replaced; eliminate the requirement to submit additional reference field strength measurements on relicensing of a station that was licensed pursuant to a Moment-Method proof; eliminate the requirement of a registered surveyor's certification when towers in an existing AM antenna array are being used; clarify that the provisions of a certain rule section will only apply when total capacitance used for Moment-Method modeling of base region effects exceeds a particular value and only when a particular type of sampling is used; and codify the standards under which a new Moment-Method proof of performance is needed when adding or modifying antennas or other system components above the base insulator of a tower in an AM array.

While there are other items in AM revitalization still to be addressed by the FCC, none has benefits as wide-ranging as the FM translator windows for AM stations. The best additional news the FCC can bring to AM broadcasters is an expedient schedule for processing the 1,000+ just-filed applications, and a scheduled date for the opening of the next AM-exclusive FM translator filing window for Class A and B AM stations.

RW: *What else should we know or be watching for right now?*
Garziglia: In the category of pending issues to watch, "any-channel" and "interference" are both salient topics.

The topic of "any-channel" concerns FM translator channel change applications, both as an amendment to existing un-granted application to enable the removal of mutual-exclusivity, and to remediate a claim of interference once an FM translator is on the air. The FCC now has a proposal filed by the NAB before it in RM-11787 to allow FM translators to modify to any commercial-band channel.

The topic of interference will impact some of the FM translators applied for by AM stations, either prior to a grant or after the FM translator goes on the air. The FCC has before it a proposal to amend the translator interference rules filed by Aztec Capital Partners Inc. in RM-11786.

Every FM station and existing FM translator owner should be working with its consulting engineer now to ascertain whether any FM translator applications filed in this window have a potential to create harmful interference to its established listening audience. The FCC's application processing procedures for the long-form FM translator applications will give only a short amount of time for filing objections. Therefore, it behooves existing stations to watch the changing FM spectrum landscape for the foreseeable future. ■

Commission's Actions Are Paying Off

Anderson: "Our clients report very positive results, citing increased audience and revenues"

Charles Anderson is a broadcast radio owner and FM, FM translator and AM radio engineering consultant specializing in facility improvements including upgrades and moves. He is based in Bowling Green, Ky.

Radio World: *You have done a great deal of FM translator consulting. Give us an idea of the scale of the translator landscape for you and your AM clients.*

Chuck Anderson: My son Chris and I prepared 54 applications in the 2016 windows including Boston, Cleveland, Cincinnati, D.C., and Richmond for Radio One, and 48 in the 2017 window, and several hundred since the 2003 window.

Although we did the engineering on some large-market translators for Cumulus in Atlanta and Kansas City, we have prepared many small-market applications. Many of our AM clients obtained translators at their earliest opportunity in the 2003 by purchasing and improving translators that resulted from that window, while others were aggressive in using the 250-mile move opportunity. Several small group owners have been particularly progressive in the use of translators both for AM and HD rebroadcasts.

The whole idea of FM translators for AM owners is no longer a novelty, now that we've seen the easing of location rules and had several application windows.

RW: *Is the regulatory strategy succeeding? Are AM broadcasters having business success with it?*

Anderson: The commission's actions to allow AM translator rebroadcast, approve the Mattoon waiver permitting more flexible movement, the 250-mile windows, the change in the 2 mV/m - 25 mile rule and now the 2017 window have all had a very positive impact for AM audiences and broadcasters. Jim Bradshaw and Rob Gates at the commission should be commended for their extraordinary and expeditious handling of all of these initiatives and the prompt processing of routine translator applications.

In rated markets, FM translator impact is clearly evident, with many instances of 1 percent or greater shares. Our clients report very positive results with AM translators, citing increased audience and revenues.

At the very least, AM translators are reported to have sustained or improved revenues. One smaller-market client reports that his AM/FM translator combination out-bills three co-owned FM stations and that the audience is clearly listening mostly to the FM translator. We hear that many operators mainly promote the FM frequency, and one broadcaster suggested that many AM licensees would gladly surrender their AM license if they received a protected license for the translator. Daytimers with limited or no night service have clearly benefited from the ability to provide local sporting events and other programming at night.

It seems fair to say that, at the least, an FM translator maintains what would otherwise have been declining audiences and revenues.

RW: *Who among radio group owners have pursued the strategy with notable success?*

Anderson: Among the large groups, iHeart and EMF have been the most active. Among our clients, Radio One and Midwest Communications were very active in the 250-mile window. Bud Walters, president and owner of the Cromwell Group, was one of the earliest FM translator innovators and has a total of 23 currently used for AM, HD2/HD3 rebroadcasting and FM main channel fill-in, including six in the Nashville market. And Bobby Caldwell's Arkansas group has 10 from the 2003 window and acquisitions and applied for eight more in the 2017 window.

His group uses translators primarily for AM, and cites the added value of night coverage for AMs, especially in covering local sports and community events and bringing new audience that might not have listened to the AM.

We are not aware of any broadcaster who regrets hav-

ing obtained an FM translator. All tell us it was a good investment. Most are very positive about its impact.

RW: *What might broadcasters in other countries learn from this unusual U.S. spectrum policy approach?*
Anderson: That would depend on the broadcasting models. It is clearly an efficient use of the spectrum to increase the number and diversity of radio services, particularly in small and medium markets.

RW: *We've heard a good deal about concerns over interference and the fact that translators don't enjoy as much protection as a secondary service. What should broadcasters know?*
Anderson: FM "fill-in" translators, now numbering in the thousands, have changed the radio broadcasting landscape. They have achieved a more vital role in community service than implied by their "secondary" regulatory status. Many of these translators provide community services and programming content of equal importance to that of a full-power station, even in large markets.

Accordingly, in our opinion, they deserve a status commensurate with their service, even if short of that afforded full-service stations.

There should be a definitive basis for determining valid interference complaints where stations have reliable and usable service beyond their FCC-protected contours which deserve protection but short of what a colleague has described as the "owner's contour," which may extend as far as the best receiver can detect a discernible if not listenable signal. The FCC "protected" contours are defined by terrain only from 3 to 16 km from the transmitter site. In many cases this underestimates the actual usable signal. However, there are instances where Class A FMs are claiming listeners 35 to 45 miles from their transmitter site, while the protected contour distance is some 18 miles.

One broadcaster has aptly differentiated between "local" service and "distant" service, whether it is provided by a full-power station or a translator, suggesting that "local" service should be protected in either case and "distant" service should perhaps be secondary.

Translators in small and large markets have substantial audiences that would logically outweigh a few listeners at a great distance and substantially outside the primary, protected contour of a full-power station.

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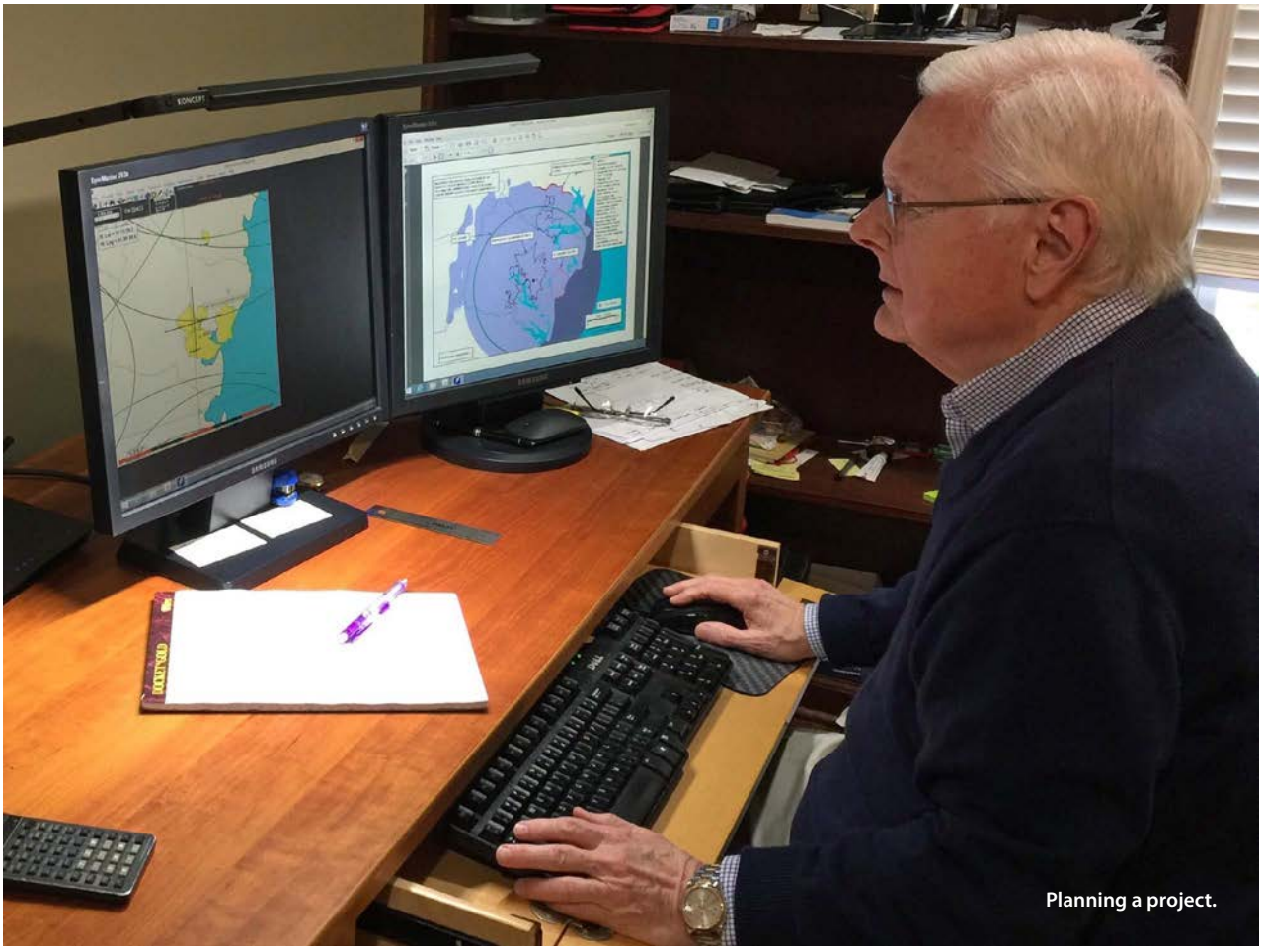

Planning a project.

Continued from page 13

In one instance an AM translator serving a market of 300,000 was ordered off the air based on complaints from a dozen or so listeners who wanted to listen to their hometown station, a rural Class C station 90 miles away. This would appear to be entirely incongruent with the rural radio rules, which prohibit rural stations from moving to urbanized areas, or in this case serving an urbanized area.

Commission action to clearly define a boundary for interference complaints is needed. We have suggested adding a 6 dB buffer zone to protected contours, beyond which interference complaints would not be considered.

The commission should relax the rules to permit non-adjacent channel moves for translators facing interference complaints. NAB has proposed such an action in a proposed rulemaking. Full-power stations are permitted to make same-class moves to any channel in the commercial band. Translators should have the same flexibility in order to provide some additional security for their financial investment and now the bulk of their audience.

The commission should also eliminate the antiquated IF spacing for translators, permitting many to increase power from 99 Watts to 250 Watts, and relax the use of the Mattoon waiver, now limited to AM translators and a single "hop," to permit at least one additional "hop" as well as permitting its use for FM fill-in translators.

W240CP, W248CF and W281BV, all with 250 Watts and combined into an inexpensive two-bay broadband antenna at the top of the tower, prove excellent service to Bowling Green, Ky.

RW: *Are there engineering considerations to keep in mind at the start?*

Anderson: Selection of frequency and transmitter site are critical to a successful translator installation. In addition to evaluation of interference risk to full-power stations and other existing translators and LPFMs, the predicted translator's 60 dBu should be driven to evaluate incoming interference levels on frequencies under consideration.

In selecting frequencies for FM translators and modification applications, broadcasters should carefully evaluate the potential for interference where there is not intervening terrain blockage in the path to close co-channel and adjacent channel stations.

Usually a buffer of at least 16 km between the protected station's contour and the translator's interference contour are advisable. However, in very flat terrain and in instances where the translator has a high HAAT (e.g., 500 to 1,000 feet), greater protection may be needed, since our experience indicates that the actual interfering contour at these heights exceeds that predicted by the §73.333 curves. Broadcasters should drive potential translator frequencies toward the closest co-channel and adjacent channel stations to establish the location of listenable signals that should be protected. Longely-Rice prediction of interference is also useful in risk analysis.

An AM site is not necessarily a good site for FM translator coverage. Everyone knows height is important for FM sites, and it is even more vital to FM translator coverage. Again, Longley-Rice is an excellent tool to evaluate potential coverage. Broadcasters should also be aware that locating a translator on a tower in an AM directional array will trigger an expensive partial proof or a method of moments proof.

At translator power levels, FM combiners become economical. We have combined three FM translators into a single inexpensive broadband antenna in Louisville, Glasgow and Bowling Green, Ky., with excellent results. The three translators we developed in Atlanta for Cumulus are combined into a single-bay panel at 1,000 feet also with excellent results. A combiner may be the only solution where favorable tower space is otherwise unavailable. ■

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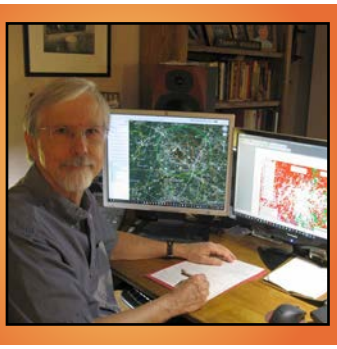
Key Questions to Ask About Your Project

Leverage relationships, consider all options, and most of all, define the area you seek to serve



Timothy L. Warner, P.E., has put translators on the air since 1987, first as a public radio manager and then a full-time consultant, doing applications, specifying antennas and managing site builds.

Radio World: *What advice would you offer to an AM radio manager who may have the opportunity to build a translator thanks to the recent windows?*

Timothy Warner: First let's consider AM stations with window applications.

What has been filed so far is only a short-form "expression of interest." The next step will be either resolution of a mutual exclusivity or a long-form complete application.

By now you should have restudied your application to see if there are others with which you may conflict. If there are conflicts, work with your engineer and attorney on options. Look around for additional useful FM broadcast sites, which are not always the same as good AM sites. If you have a singleton, realize that it is still a short-form, and you can possibly improve it at the long-form stage.

Don't worry about the equipment until much later in the project. When you do start looking at equipment, FM has several differences from AM. You need to process the audio differently. A side-mounted FM antenna is never completely omnidirectional, so discuss mounting in detail with antenna manufacturers or providers.

For Class C and D AM stations without applications: Some who were eligible did not file in the recent window. In some cases, they already have a translator and are satisfied. In other cases, perhaps the benefits did not seem to be worth the costs. In some cases, there are no useful frequencies. For those with existing translators, the recent change to allow translators in the greater of 25 miles or the 2 mV/m provides an opportunity to extend beyond the coverage area of a single translator.

Or, the new translator (which will be permanently bound to the AM station) can substitute for the existing translator, which can then be sold, perhaps to an FM station with an HD2 service that they want to put into analog form. I was able to find two cases where the new translator, through a minor modification, can return to the existing frequency when the new one is sold and moved to a new site.

AM stations with no applications or moves should know that AMs of any class, if they have not taken advantage of the "250-Mile Move Window" or the first new translator window, will be able to apply in the next window, yet to be scheduled.

RW: *How is putting a translator on the air different from building a station from the start?*

Warner: Translators do not require new studios or new program streams. They provide additional distribution for existing programming. They require additional marketing, so that people can find them, but they make use of already existing programming. You do need to pay attention to the differences between AM and FM, though. Do you want to be in stereo? How will your signal sound with improved frequency response and signal to noise ratio?

RW: *What kinds of questions should a manager have ready to talk intelligently about a project?*

Warner: What area are you trying to serve? This is critical. Translators are power-limited, so putting the signal where you can use it is important. If your listeners, and your target listeners, are in a particular direction from the AM site, that is important. Because the FM band is already pretty full, the frequency you choose to serve in one direction may be different from the frequency you would choose to serve in another direction. If you have two or three areas that are at the fringe of the AM signal, you probably need to choose which to emphasize. For AM stations with an existing translator, look at both to see how you can optimize total coverage.

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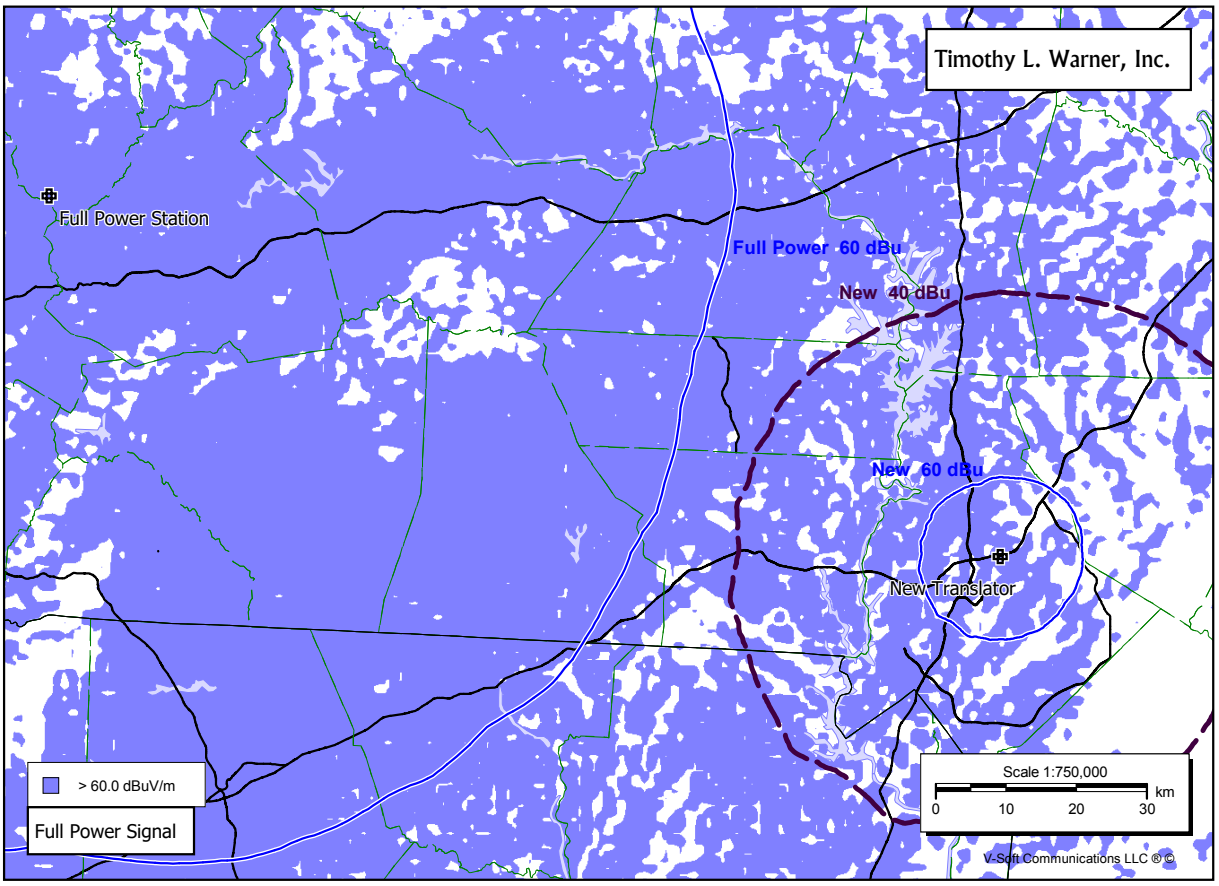
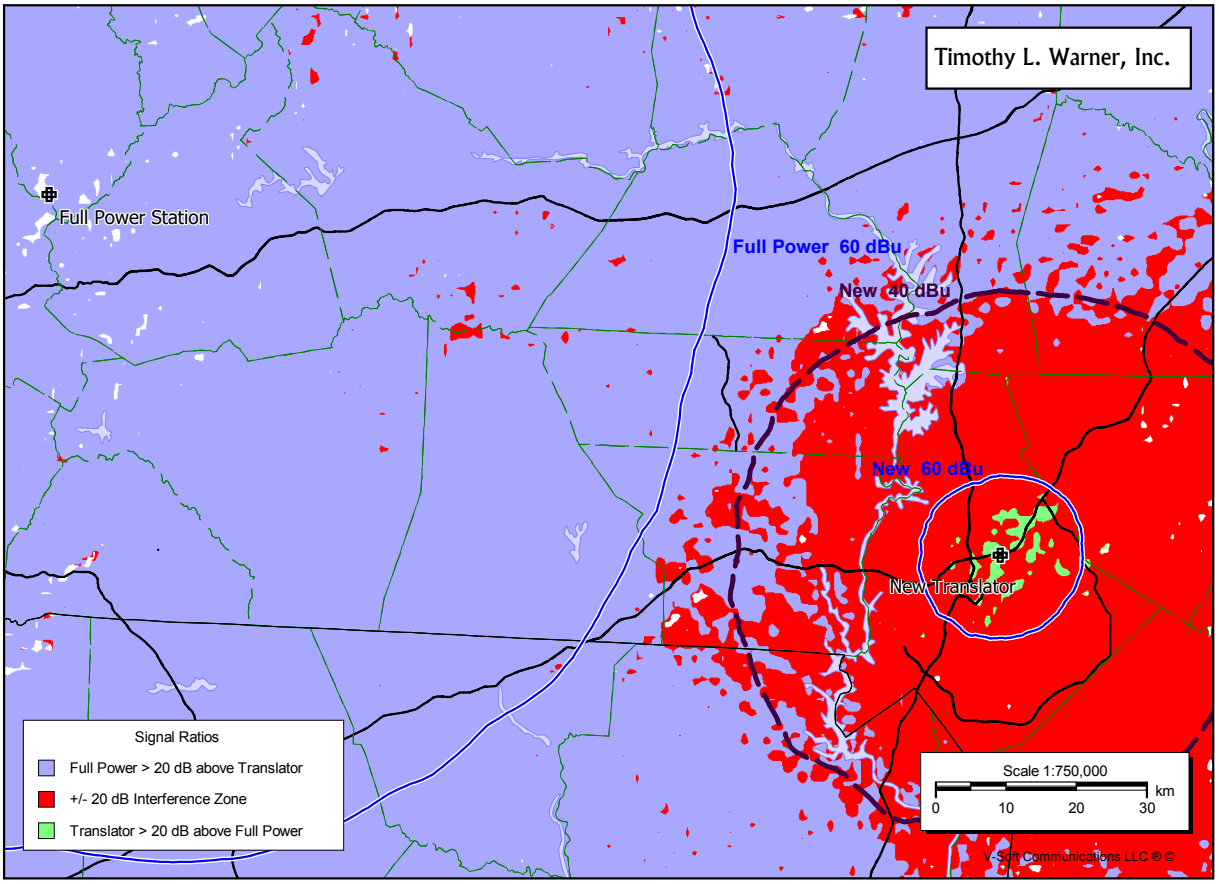


Figs. 1 and 2, above and below, and described in the text, show a translator application in a problem setting. Warner said this allocation meets FCC requirements but would cause significant interference to the full-power station while providing only a small clean service area.



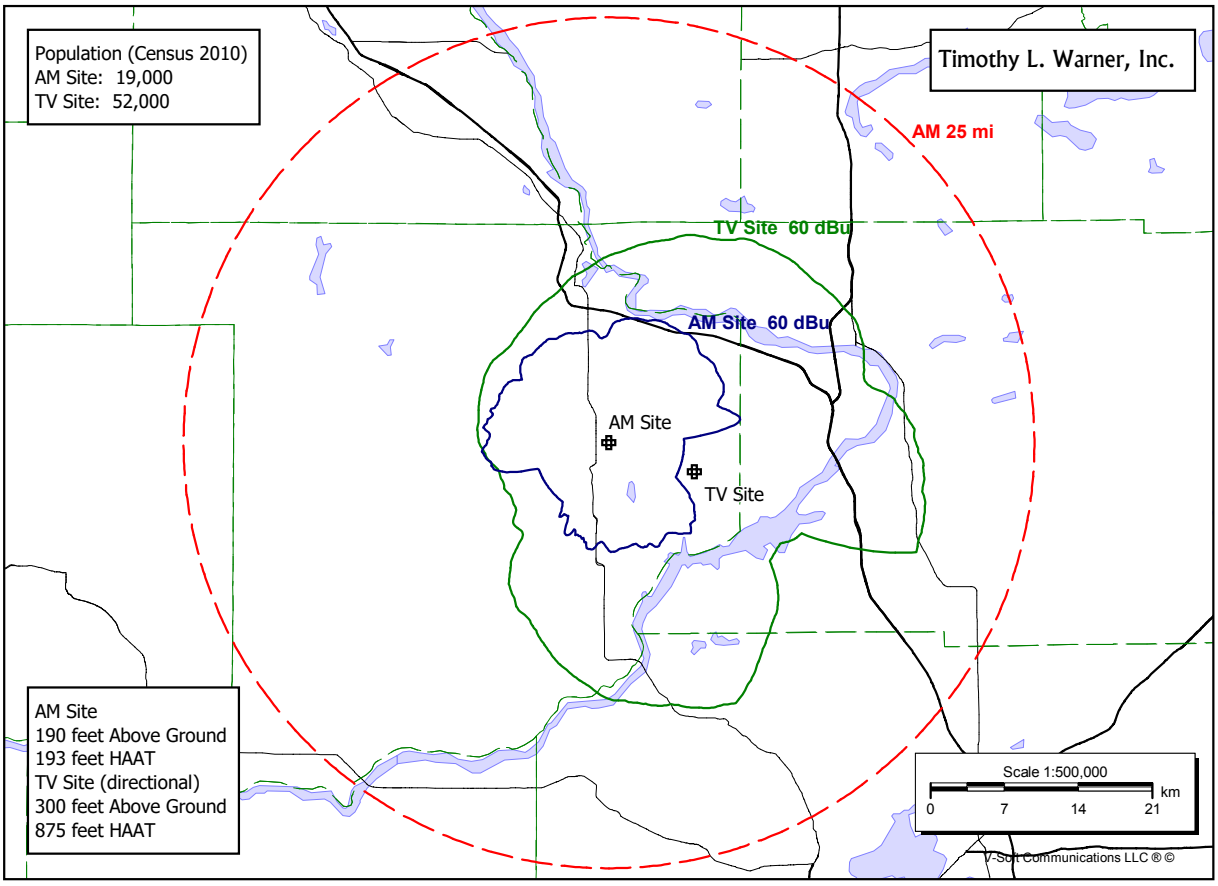


Fig. 3. With increased HAAT and a directional antenna, population served by this translator almost tripled.

◗ *Continued from page* **16**

Are there areas that are not important? If you consider yourself local to a specific area, and that is your programming advantage, where are you willing to sacrifice? If you broadcast sports for one school system but consider another system the opponents, that can be important.

Do you have existing relationships with other broadcasters in the area, particularly any with tall towers? AM translators are limited in power, but not necessarily in height. Do you have any connections with other desirable sites — mountaintops, for instance?

When it comes time to talk equipment, look at the different options before deciding on a single path. Sometimes a single-bay antenna is all that a tower can hold, and you will need a more powerful transmitter. Sometimes a second- or third-adjacent channel protection will require a very specific multi-bay antenna, and the transmitter will be much smaller. Allocations issues many times restrict your choices.

RW: *Now that the translator movement has taken hold, are AM broadcasters finding success with it financially?*
Warner: AM stations are finding new listeners, and in many cases increased listener satisfaction. Making it pay is a little slower. Stations need to educate their advertisers in advance, particularly stations whose nighttime coverage has been limited. For instance, if your Friday night football now covers the whole town, both potential new listeners and advertisers need to be brought on board.

For those AM stations who have marketed the improvement, the translators are paying off.

RW: *You told me that some people do not fully appreciate limits to translator allocations — that it's possible to build a translator or LPFM that meets allocation requirements but suffers from so much incoming interference that it is worthless. How can a planner avoid this problem?*
Warner: First, have your technical consultant study the incoming interference, co-channel and adjacent channel. Pay attention to whether close in signals on first- or second-adjacent channels are broadcasting in hybrid HD mode. Second-adjacent with HD acts more like first-adjacent near the HD transmitter site. Digital interference into analog sounds different, but still can cause significant reception problems.

Then drive the area and listen. Get a list of possible frequencies, as early in the process as you can, and listen to any frequency that might work. It takes some time to become familiar with your radio, to be able to distinguish

between really quiet channels and those with too much interference for a translator to overcome.

The biggest value of listening is in identifying stations where terrain or other factors distort coverage, which can be good or bad. FM coverage contours are based on terrain from 3 to 16 kilometers (2 to 10 miles) from the transmitter site. I know of stations where the official Height Above Average Terrain is one number, but in some directions, the effective height is triple that number. Conversely, sometimes a mountain ridge can block a station that looks like it would be a problem.

Translators are a secondary service. If a translator causes interference to regular listening to a full-service station or a previously authorized translator or LPFM station, the translator must correct the interference or go off the air. The FCC has issued several decisions, making it clear that the listening must be real, and not station personnel or relatives. The translator must be offered the opportunity to observe and try to correct the interference. You don't want to go to the expense and effort of building a translator, only to turn it off. In the current windows, you can only do minor modifications to solve a problem.

There are several proposals before the FCC that would change some of the requirements for interference complaints or increase flexibility in changing channels, but those are not to the status of proposed rules yet.

RW: *What's the most interesting experience you've had with a translator project?*
Warner: I helped one client put on a translator, where the allocation was clear. However, there was an old-line station in a neighboring market, with program hosts who had loyal followings for over 30 years. People had moved to my client's area but still listened to the distant signal. The personal connection to the old home town was strong enough that people listened through the noise. We turned the translator off, and found another frequency.

Early on, I was involved with a translator that looked good, but in reality there was too much incoming signal from a distant station. The terrain was perfectly against it. I suspect that the antenna for the distant station was optimized in the direction of the translator, but there was no way to fix coverage on that frequency.

On the plus side, one of my AM clients has changed all the marketing materials to show the call letters of the AM station but only the FM frequency. That translator is 1,000 feet above average terrain, with great coverage.

RW: *What else should we know?*
Warner: Most of the available translator frequencies now require waivers of interference to second- or third-adjacent stations. When done properly, the possibility of interference is quite small. The procedures are well studied. Often, to get a waiver, you will need to use a very specific antenna, with multiple bays and sometimes non-standard bay-to-bay spacing. The antenna expense goes up, but the specific antennas are necessary.

It seems counterintuitive, but you can use a simpler antenna if you move toward the second- or third-adjacent station. Where their signal is stronger, they can tolerate more translator signal without real interference. If you must use the AM site, you may pay a penalty in antenna cost.

Many translators are also directional. There are some off-the-shelf directional antennas that can be quite useful. Often, you can cover the most area with a custom directional antenna. Many of the major manufacturers can directionalize their low-power antennas, but some cannot. Check before you specify in your construction permit application, because you must use the antenna you specify, or you will need to file a modification.

RW: *Are there visuals you can suggest to illustrate this topic?*
Warner: I prepared a couple of maps (Figs. 1 and 2) showing a translator application in a problem setting. Contours show that the translator 40 dBu interference contour is well clear of the full-power station 60 dBu service contour, but a Longley-Rice propagation showing reveals that there is 60 dBu signal around and beyond the translator site. The second map shows signal ratios. The area where interference is predicted, that is, the signals are within 20 dB of each other, is very large. The area where the translator would have a predicted clean signal is small and spotty. The allocation meets FCC requirements, but would cause significant interference to the full-power station, while having a very small clean service area. (Some car radios can survive ratios lower than 20 dB, but that does not get around the full-power station service area near the translator site. The full-power station has reported listening in the Zip code where the translator is proposed.)

I worked with an AM station with an existing translator on the AM tower, 190 feet above ground (Fig. 3). They were able to get space on a TV tower on higher ground. It meant using a directional antenna. With the antenna 300 feet above ground, the Height Above Average Terrain increased from 193 feet to 875 feet overall, and more than 1,000 feet HAAT over the community of license. Population nearly tripled. The signal reports are even better than the map shows. ■

Translators: What to Expect When You're Expecting

Practical advice based on building a network of hundreds of signals

By **Sam Wallington**

The author is vice president of engineering for K-LOVE and Air1.

When I built my first FM translator way in the 1980s, the process was simple. We told our consultant where we wanted to go; after his application was granted, all we had to do was finalize the lease with the tower owner and order the equipment. The chief engineer and I put everything we could think of in the back of the pickup, drove to the site and spent a day or two hanging antennas, running coaxes and connecting things. And we smiled as we listened to our handiwork on the way home. Easy peasy.

The last few decades have not been kind to simplicity. Thousands of applications filed, granted and built have made the band far more congested. Liability concerns have caused landlords to care about more than whether your antenna will fit and not cause interference. Budget-starved communities have discovered that zoning and permitting fees can help keep a town limping along.

Sam Wallington

EXPECTATIONS

Let's start with the expectation and hope that a 250-watt (or less) fill-in translator will cover the famous town of "Everywhere I Want." This usually means "at least to the City Limits sign in every direction, with an extra-great signal at Big Advertiser Bob's house, commute and place of business."

Things may work out that way, but it is much more likely that the signal will be noisy or nonexistent over some

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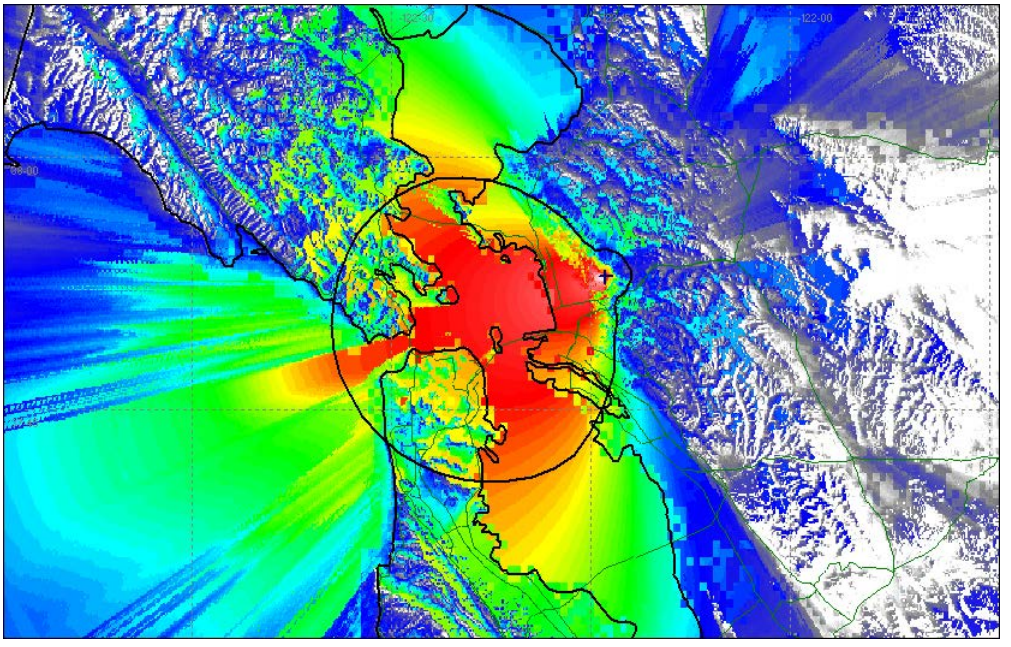

A map of a translator coverage area in San Francisco using RadioSoft ComStudy software.

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of the extended market, with increased interference from others. Realistically, 250 watts will never perform as well as 6 — or 60 — kilowatts.

You should do preliminary work to determine likely coverage. Just because a translator clears the protected contour of a station does not mean the latter doesn't have significant coverage in the proposed translator's area.

There are computer models that just about any FCC consultant can use to evaluate real-world, interference-free coverage. If modeling is not in your budget, at least take a drive listening to the proposed frequency. Understand where other signal(s) come in well and where the frequency is open.

Ideally, because car radios and car antennas vary, drive the frequency using multiple vehicles. An in-glass antenna may not hear another signal while a fender-mount antenna might. Do this early to help manage expectations or prompt a change to a different tower or frequency.

PLAN TWICE, APPLY ONCE

Once the translator application is ready to file, double-check it carefully. Frustration will reach new levels when you discover that coordinates on the application and the tower coordinates are different, especially if vastly different — or in the middle of a lake!

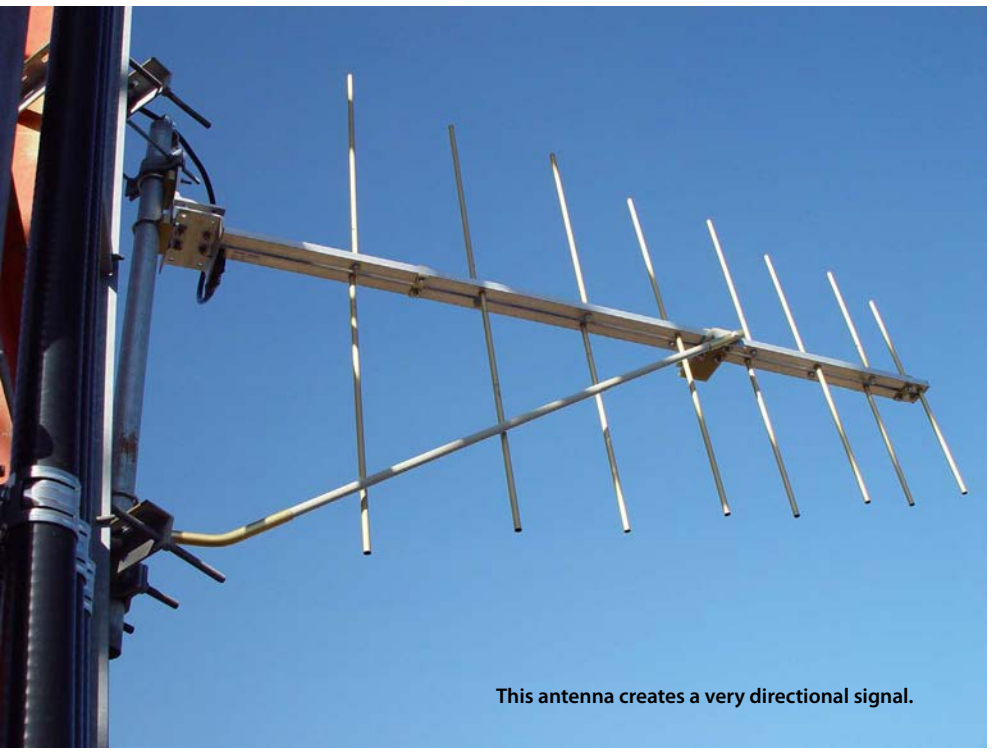
An easy way is to take a GPS device to the site (with landlord permission). It should be within +/- 2 seconds, the error potential of a normal GPS after about 25 minutes of being in one place. Make sure your GPS is set to NAD27 coordinate datum rather than NAD83 or WGS84, etc., or you'll get a false result. The FCC uses NAD27 for broadcast.

You can also use Antenna Structure Registration (ASR) information to validate the parameters, but remember that ASR data uses NAD83 coordinates, so you'll need to convert the coordinates that are on the FCC Form 349 application.

GPS units are not very accurate on elevation, so you'll need to verify elevation using other means. If the application has already been filed when you find an error, file an amendment to the pending application.

Tower owners, the ones controlling the "vertical real estate," will want a few answers: Will your translator cause interference to any of their other tenants? Will your antenna(s) and coax over-stress the tower? Will you pay a fair-market rent rate?

If locating inside a real building is not an option, consider placing your translator equipment in a small outdoor shelter or NEMA enclosure.



This antenna creates a very directional signal.

To resolve interference concerns, they may ask you to perform an intermodulation interference or other study. Most consultants can handle the studies but may require information from the tower owner such as the transmit and receive frequencies of other tenants. The tower stress question may require you to pay an engineering firm for a structural analysis (or to update the previous one); and,

Realistically, 250 watts will never perform as well as 6 — or 60 — kilowatts.

of course, you will have to come agree on a rent rate.

Many tower owners will expect you to handle — or cooperate in obtaining — zoning and permitting approval. You can hire someone to do a "scrub" of local ordinances to determine what, if any, zoning adjustments or permits will be required and how much these might cost. If you have time, you can go to the community zoning and permitting (Z&P) offices yourself, explain your proposal and learn what the process, costs and timeline look like. Some jurisdictions are relatively simple and inexpensive (maybe even have no requirements for your proposal), while others can have complex and expensive processes that take months or even years to navigate.

Because of the potential for delaying your project (perhaps even past the CP expiration date), investigate Z&P requirements early in the process. The FCC generally is not inclined to extend CP expiration dates for Z&P issues.

While we are on the subject of tower owners, many now require specific tower crews or crews that meet their criteria for work on the tower. At issue is ensuring that the crew is trained, equipped and experienced, as well as demonstrating that sufficient liability insurance is in place. With most landlords, don't expect your second cousin to show up with a ratty climbing belt and be given approval to climb.

The same goes for other skilled trades such as electrical work around the facility. Even though your engineer knows how to spell NEC (National Electrical Code), he or she may not be allowed to do electrical work at the site unless properly licensed. Depending on the jurisdiction and the landlord, you may be required to hire union labor even to move your equipment into the building, especially if it is a rooftop site.

ENCLOSURE OPTIONS

Some transmitter buildings are beautiful inside and out — clean, secure and easy to access year-round, equipped with properly filtered air conditioning and/or heat, generator backup power, on-site comfort facilities and various telecom services.

Many sites, however, lack one or more of these amenities. Plan either to upgrade the non-negotiables (such as adding air conditioning) or to upgrade the equipment (such as making sure it can handle the 150-degree indoor temperature during the summer).

If locating in a real building is not practicable, consider placing your translator equipment in a small outdoor shelter or NEMA enclosure, waterproofed and ventilated. Remember that temperature inside the box can be higher than ambient temperatures; the gear will need to be able to handle that. You can buy outdoor enclosures with air conditioning, though they are relatively expensive. Cutting up-front costs by buying cheaper air conditioner (A/C) units will mean repairing or replacing the A/C equipment more frequently, raising operating costs. Additionally, when it's time to access or service the equipment, weather has much more of an impact than if the equipment were inside a building. There's nothing like trying to keep a translator dry while opening the box in a heavy rainstorm.

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INTERFERENCE TIPS

Eventually your CP is granted, your landlord's requirements are met, your equipment is assembled and you turn on the translator. Yay! All done, right?

Not quite. The application for license (Form 350) needs to be on file. Also, your translator now is subject to the FCC rule about actual interference (47 C.F.R. 74.1203). It basically states that the translator cannot stay on if it causes any interference to (among other things) a regularly-used broadcast signal from someone else — even if that other signal comes in poorly.

Your translator may not be the only FM on a site. Note translator antenna near the bottom of the closer tower.

Be careful about pushing your audience to a signal before you are reasonably sure it will be on the air long-term.

There are proposals before the FCC to try to give more protection to translators, but for now, interference can be a death knell to your translator. I lean toward not promoting the new translator for at least a month to give time for any interference complaints to surface, though occasionally complaints show up months later. Be careful about pushing your audience to a signal before you are reasonably sure it will be stay the air long-term.

If you do receive an interference complaint, hopefully it is informal — a call from a listener or someone at the other signal. It is easiest (and cheapest) for all parties to deal with complaints at this level. Once the FCC or attorneys get involved, it costs everyone more time and money, though this may be necessary if informal efforts do not produce reasonable results in a timely manner.

If you receive a complaint, deal with the problem immediately. Don't pretend it doesn't exist. Instead, investigate by talking to the affected listener(s), driving in the affected area(s) with various radios, and so on.

Determine if the complaint is legitimate. Is it really about a "regularly used" signal? Or is it from the brother of the disgruntled program director across town?

Next determine the scope of the problem. Is it widespread or in a very small area? Are there many complaints or just one?

If there are only a few complaints, you may be able to provide better radios or antennas to the people affected, resolving the problem. Is a better frequency available? Does reducing the power of the translator solve the problem? If so, is the translator still usable elsewhere? That may signal the possibility of filing to change the translator's transmit antenna to directionalize the translator away from the problem area. Meantime, you may need to shut the translator off until you have resolved the situation.

Ultimately, the goal of a new FM translator is to improve your station's coverage, increase listenership and improve income. Even though there are more hurdles now, it is still possible to use a translator or three to strengthen your ability to reach your audience.

Sam Wallington and his team at Educational Media Foundation have built a nationwide network of more than 900 signals. He participates in the NAB Radio Technology Committee and the Society of Broadcast Engineers. ■

Castro: Invest in Your Location and Facility

Promote, promote, promote … and resist the urge to cut corners

Q
A

Ron Castro

Ron Castro is chief technical officer for Results Radio LLC, a family of stations serving the Sacramento Valley in northern California. He wrote the chapter about translators and boosters in the new edition of the NAB Engineering Handbook.

Radio World: *Your chapter is more than a dozen pages, so it is a topic we could talk about all day. But in brief, did you learn anything surprising or really important that might help an AM operator avoid pitfalls?*

Ron Castro: It isn't too much of a surprise, but building a good facility with the best fidelity possible is a great investment.

If you're not already originating source material from your studio in stereo, you should start. Feed high-quality, processed audio using the best FM processor you can afford.

I would avoid locating on an AM tower if there is any location that's higher or better situated to cover the target population, such as an established communications site or a location on a much higher hill.

Remember that since these are considered "fill-in" translators, you can use any method to deliver audio to the transmitter. You can use analog or digital 950 MHz STL, unlicensed 5 GHz equipment, or if you have a really good, reliable internet service at both the studio and transmitter, preferably from the same service provider, you can take advantage of that.

For translators co-locating on an existing AM tower, be sure to consult an engineer on isolating the FM feedline at the base insulator of the tower and use established best practices for hanging and connecting the feedline to the tower and the AM ground system.

Remember that the FM antenna will retune the AM tower, so you may need to modify the AM license to reflect the new base measurement. This becomes even more critical and complicated if the FM antenna is placed on an AM directional array.

RW: *Once a station has the CP, can you suggest a general outline of how they should go about planning to construct it? How is putting a translator on the air different from building a station from scratch?*

Castro: Other than the power rating of the transmitter, transmission line and antenna, there is not a lot of difference. Every installation is unique, but all require reasonable access, good shelter and reliable power.

The FCC rules require that you be able to shut off the translator right away if it's causing interference, and the translator should also shut down automatically if the primary station goes off the air. The exception to that last rule is that AM daytime-only stations can leave their translators on the air during night hours.

If you're going to use an RF STL, make sure you have line-of-sight access, and if you're using 950 MHz, plan on a few weeks to get coordinated and licensed. My chapter in the 10th and 11th editions of the NAB Engineering Handbook goes into much more detail in these areas.

Generally, I would avoid locating on an AM tower if there is any location that's higher or better situated to cover the target population, such as an established communications site or a location on a much higher hill. If you got the CP issued using the coordinates of the existing AM tower of the station that you will be retransmitting, you might want talk to a consultant and consider your options.

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An interesting difference between a translator and a primary station is the FCC legal ID. For primary stations, it's once an hour and you're free to include the associated translator call sign and city of license in each ID, but the rules only require that the translator be identified once between 7 a.m. and 9 a.m., once between 12:55 p.m. and 1:05 p.m. and once between 4 p.m. and 6 p.m. (§74.1283). Alternately, you can use an hourly Morse code transmission of the call sign using frequency shift keying or amplitude modulation of the carrier.

RW: *We hear concerns about interference between translators and existing stations. What have you encountered? Should the FCC change its regulations to be more accommodating to new translators, as requested in Aztec Capital Partners' petition for rulemaking, FCC RM-11786?*

Castro: I have had some experience in this area that was cured by relocating the translator antenna to a different position on the same tower. The original location that we inherited from a previous owner at a very large commercial communications site had the directional Log Periodic antenna positioned in such a way that the self-supporting tower members were reradiating the signal in a direction where there should have been a deep null. Moving the antenna to a different leg of the tower fixed that, but the experience did acquaint me with the vagaries, inconsistencies and subjective nature of the existing rules as engendered in §74.1203(a)(3) and §74.1204(f).

The rules need to be updated in order to best use the spectrum, and the suggestions put forth in

Tower workers install a directional translator antenna.

RM-11786 are a good start. Programing carried by fill-in translators, whether originating from an AM station, an HD2 signal or simply from an analog FM signal that's blocked by terrain, can be of great value to thousands of listeners, but they cannot have their existence continually threatened by interference complaints from full-service station listeners far outside the protected contour of the full-service station.

Under the current rules, a translator station can be forced off the air by complaints of interference based solely upon one anecdotal report from a person who may have limited or no technical background or who may be using defective, improperly installed, operated or maintained equipment or who may be receiving interference that actually originates from some other source. Translator applicants can be stopped simply because a handful of people sign a boilerplate internet "declaration" claiming to listen to a full-service station in a distant populated area that might receive interference from a proposed translator. The current rules apparently require no specific, objective documentation that can be relied upon by engineering personnel attempting to remediate reports of interference or concerns about potential interference and there is no limit as to how far away a full-service station can claim to have listeners.

Give the station a local presence and connection to the community, and you can't go wrong!

The FCC's contour coverage and interference prediction methodology is woefully outdated, but still works as a pretty good allotment tool. Its advantage is that any engineer can "run the numbers" and come up with substantially the same result as another engineer. Longley-Rice is a big improvement in propagation prediction, and I would hope that crafting a solution that protects primary stations without stifling translators will employ both propagation prediction methods.

The most important aspect should be that objective criteria are used in such a way that any competent engineer can get the same reliable results as any other engineer, and that if the proposed translator passes muster, it can be built, licensed and put on the air with no threat of disruption by complaints from other users of the spectrum.

RW: *Are there technical strategies to be aware of that could help an AM station with an FM translator get more impact for its investment?*

Castro: As I mentioned, look for the best location and build the best facility you can get. Hire experienced professionals to do the work and resist the urge to cut corners.

In the non-technical area, I have heard from programming people that most of the listeners that an AM station's FM translator gets in its early months of operation are new listeners, rather than existing listeners who have moved over from the AM side. This gives rise to the need to "promote, promote, promote" every way you possible can. Give the station a local presence and connection to the community, and you can't go wrong!

RW: *Are AM broadcasters finding success with this strategy financially?*

Castro: They should be; and if they aren't now, they will be in time. Having a new FM signal on the dial reenergizes the staff and becomes of more interest to advertising clients. Besides having a larger audience base to sell to advertisers, the facility will be worth far more when it comes time to sell or refinance.

RW: *What might broadcasters in other parts of the world learn from this unusual U.S. spectrum policy approach?*

Castro: That having programing on both AM and FM can be a valuable resource for many communities, in particular during emergencies like the recent hurricanes that hit Texas and Florida. AM stations often serve communities with formats that are ignored by wide-coverage FM stations, and by having an FM outlet, even one with a small footprint, those AM stations and their formats can remain viable. There are still a lot of AM listeners, especially in places where FM is less viable due to terrain, distance or local interference, and we need to keep the medium alive. FM translators won't "save" AM radio, but it will keep it healthy for years to come. ■

Florida AM Makes Its Fx Plans

Cal Zethmayr offers a case study in planning to add a translator in his market

Q
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Cal Zethmayr

Cal Zethmayr is general sales manager of 100 kW WAAZ(FM) and 5 kW WJSB(AM) serving northwest Florida and south Alabama, and host of "The Z-Files" program. An active ham radio operator, W4GMH, he earned his first license in 1953 and his FCC First Phone the next year.

Radio World: *Tell us briefly about WAAZ and WJSB.*
Cal Zethmayr: Both stations are owned by Crestview Broadcasting Company Inc. James T. "Jimmy" Whitaker built WJSB(AM) on 1490 with 250 watts when he was 19 years old in 1954. The call letters stood for Jimmy; Sheldon Henderson, his stepfather; and Betty Kennedy Whitaker, his bride.

WAAZ(FM) went on the air in 1964 as a 3 kW on 104.9 and then later moved to 104.7 with 30 kW. In 2000 it went up on a taller tower with 100 kW.

I am talking to my accounts to get their reactions to possible formats. I'm going to do some survey work to get a better feel from the general public.

Our area has a unique situation. Because of our proximity to the very large Eglin Air Force Base, no tower can be built that is over 500 feet above ground. We are one of three C1s but cannot have a 2,000-foot tower! Our advantage is we are at 206 feet above sea level; all of the other stations in our county are grouped in a three-block area of Fort Walton Beach at 14 feet above sea level and also less than a mile from the Gulf of Mexico. Not a lot of commuters going home from work travel south!

WJSB went through power and frequency changes over the years, first up to 1 kW on 1490, then a change to 1050 1 kW, then 5 kW. When a rebuilt 10-bay ERI antenna and a new taller (466-foot) tower were installed for the upgrade to 100 kW at WAAZ, the WJSB AM transmitter output had to be reduced to 3.1 kW, but now it's on a half-wave tower.

RW: *Why is the station pursuing plans for a translator for the AM?*
Zethmayr: In 1993, Crestview, Fla., was "blessed" with the first Walmart Supercenter store in Florida. One year later, WCNU(AM) went out of business; one of the two local newspapers folded and the name was merged with the survivor.

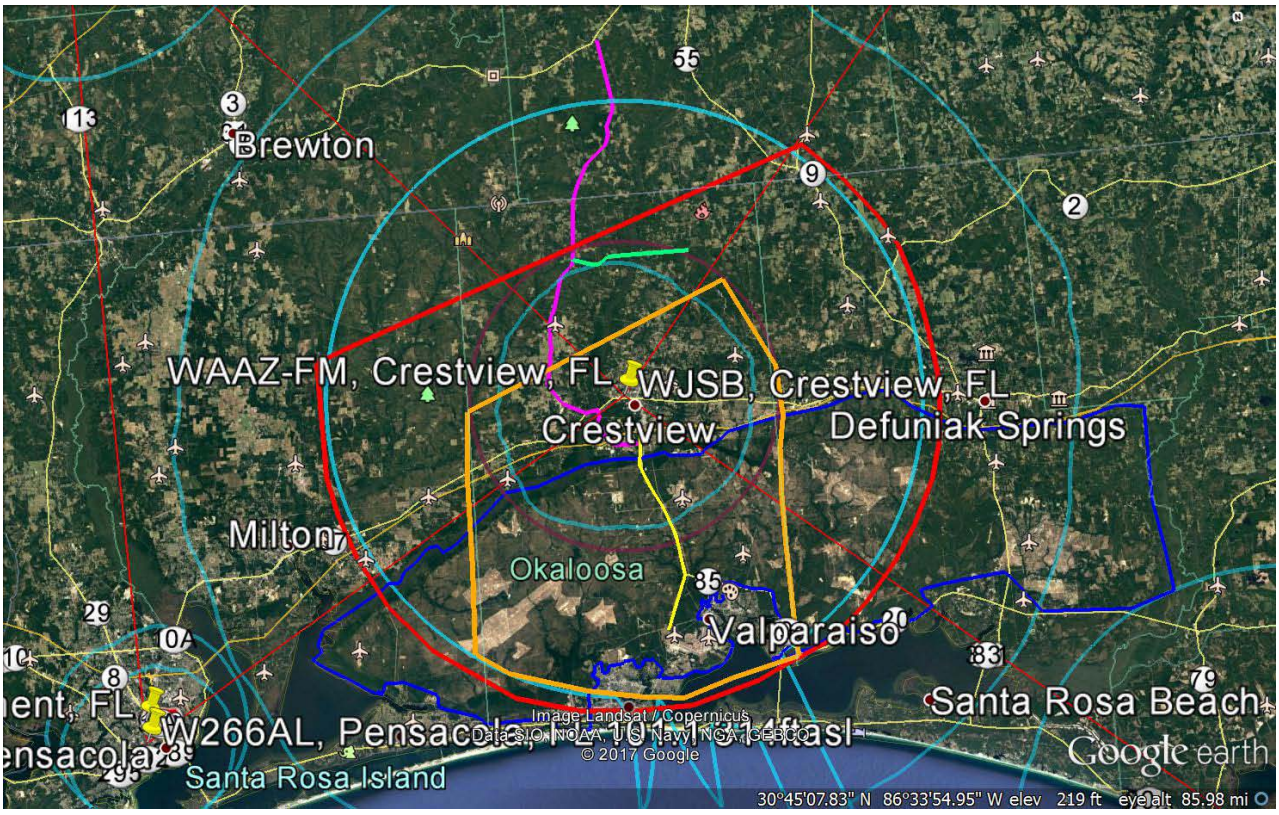
WAAZ(FM) and WJSB(AM) went from 14 employees to four in that one-year span. A rather clunky automation system using a DOS 386 computer and four CD changers that had a capacity of 250 CDs were installed.

Why did WAAZ/WJSB lose 10 employees? About $25,000 a month of local advertisers were out of business. And WJSB(AM), a daytimer, began simulcasting WAAZ(FM). Many people who listen to us at night think they are hearing WSJB.

Shortly after becoming GSM, my job description was "sell the ads, get the spots on the air and whatever else needs to be done." I quickly discovered some unhappy advertisers who complained about the CDs playing the music being cut off mid-song twice an hour when the system switched to CBS. A broadcast friend introduced me to a low-cost software program created in New Zealand. It was in its early stages. I became one of a group of "alpha testers," and once the old DOS PC began to break down we put this software, StationPlaylist Creator, on the air. It works great and I'll use it to program the new WJSB(AM) format and its associated translator.

With a translator that I hope will cover all of the highway that travels north and south through our county, and which has 56,000 vehicles every 24 hours using it, I will be able to create different programming and of course a source of new revenue.

By the way, Interstate 10 travels east and west through



Zethmayr used this map to explain translator scenarios. The Gulf of Mexico is at very bottom; the large area outlined by a dark blue line, lower center, is Eglin AFB. The largest light blue circle is the 60 dB for WAAZ(FM); the light blue circle inside it is the 0.5 mV/m signal of WJSB(AM). The purple is the WJSB(AM) FCC defined 2 mV/m, and the lighter blue circle just inside that is the FCC calculated 60 dB for the translator, based on a non-directional antenna at the top of the company's 466-foot tower. The yellow line running south from center is Florida Highway 85; the magenta line running generally north is another highway, busy in summer. The red semicircle with flat side is Zethmayr's "dream" translator coverage; the small gold one with flat side is his "compromise" coverage. He has yet to determine if a directional antenna is needed. Under current tower siting rules, a translator can reach out to the 25-mile circle, the one in red with possible flat side to the northwest to prevent interference to a station 100 km away. Although WAAZ(FM) is a C1, it cannot have a tower that exceeds 500 feet, nor can any station in this part of Florida because of the military presence.

the south end of Crestview, and averages about 25,000 vehicles per 24 hours.

RW: *What important steps lie ahead for you in the process of building this?*

Zethmayr: I attended the Radio Show in Austin. I talked with all the equipment folks, especially the antenna manufacturers. I feel we will need to use a directional antenna. Our extra 200 feet above sea level is going to be a benefit to hopefully get our signal out close to the 25-mile FCC limit.

I listened closely to the comments by Peter Doyle, Audio Division chief of the Media Bureau. Of the 1,081 applications filed in the one-week August 2012 window, 826 of us are singletons. I think it's amazing that there are only 261 "mutually exclusive" apps. In our area of northwest Florida, all of the AMs that filed are singletons.

Our consultant, Bob du Treil Jr., gave us a list of frequencies; Mr. Whitaker and I did a lot of listening on all of them. I traveled around the area quite a bit. I put the data on the stations on all of the frequencies into a spreadsheet; and we think our choice was the best one to give us the best coverage and least interference from other stations on the frequency or adjacent.

Some of the frequencies on Bob's list were applied for by other stations in our area that would have made us compete via the mutually exclusive process.

RW: *Are AM broadcasters finding success with translators financially?*

Zethmayr: I only know the info I read in the magazines and online newsletters. I don't have any financial info from those who put translators on the air last year.

I do notice when listening to stations when I travel — in Florida, Alabama, Georgia — that the AM frequency rarely gets mentioned. I have heard some where the FM frequency and/or station image phrase is all that is given.

I have done my own very conservative projections on potential new revenue, and I am talking to my accounts to get their reactions to possible formats. I'm going to do some survey work to get a better feel from the general public. We have a website, I have a YouTube Channel and a Facebook presence. I publish a weekly Z-FILES newsletter every Friday with a very large subscription list and way above the national average of percentage of opens and clicks.

I will use these ways to contact these readers/viewers to engage them in participating in an online survey. And we will promote that on the air, telling our current listen-

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On Interference, "We Need a Better Solution"

We asked Ed Henson to shed more light on discussions about translators vs. full-power signals

Ed Henson Jr. served on an NAB working group that proposed a rule change to facilitate resolution of interference complaints between translators — which are classified as a secondary service — and distant but full-power stations. We asked him about it.

Henson is president and owner of Henson Media, which has two AM stations (each with an FM translator) and two full-power FM stations, all in Kentucky. He is a media broker and valuation expert; member of the NAB Radio Board; board member and former president of the Kentucky Broadcasters Association; and son of a radio engineer.

RW: *Has the AM translator regulatory strategy generally been successful?*

Henson: This proceeding has done a lot to help revitalize AM broadcasters. And it helped to revitalize the AM *band* as well, because it makes those stations more viable and people will keep those AMs on the air. AM stations can now do [more] high school sports. A lot of stations are daytimers with no nighttime signal, or have highly directional nighttime signals; now they're able to provide service to that community. I've been in towns in Kentucky where people are very grateful; they can hear their station on AM, and now they can also hear it on FM.

RW: *You expressed concern that AM stations put in such effort to build and promote translators, yet with one interference complaint, all that can be lost.*

Henson: I have a lot of respect for the way the allocation rules and policies work, except when it comes to translators. From my perspective, the way translator interference issues are resolved is like the Wild West.

There were already many translators on the air prior to the 250-mile waiver move window last year, and there were about 1,000 filed to move translators; and there were 1,081 [applications] filed in the July window this year. So there are a lot of translators coming on the air. [Interference] is only going to get more prevalent. We need a better solution for it.

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ers that we are adding a new radio frequency and asking for their opinions.

I looked at some of the survey companies at the Austin meeting and also some of the online survey providers. Haven't made a final decision on which to use.

RW: *What's the most interesting experience you've had with a translator?*

Zethmayr: Last year I checked the applications data on the FCC Daily Digest and looked at the prices that a "piece of paper" — a CP or license — cost. We knew that was way out of our budget. Now I am in the equipment-pricing mode. And the most difficult part is going to be getting our translator's one-bay antenna high on our tower, considering there is a 10-bay with 100 kW up there.

RW: *What else should people interested in this topic know?*

Zethmayr: Have a good relationship with your consultant, get info from the equipment people, hope you can get a tower crew when it comes time to install your antenna.

I read in the industry publications — and since Mr. Whitaker is in the cell tower business, I also see that industry's magazines — that the TV repacking is going to make it a challenge to get tower crews.

Both of our transmitters are here in our office/studio building. We won't need to deal with STL or remote control costs.

A new translator owner will have to decide if they are going to expand what they are already programming on the AM, or if they want to reach a different audience [with both]. ■

Several translators share the facility in this photo. "Translators are secondary services and they must remain secondary services," said Ed Henson Jr. "But they're also rebroadcasting a primary service. We don't want to lose sight of that, either."

Courtesy Sam Wallington

Among the 1,081 applications filed in July by Class Cs and Ds, there were 93 groups of mutually exclusive applications involving 201 applications. But that would leave 880 singleton applications, and those stations are probably coming on the air pretty soon. And then of course the next window will open up in 2018.

I know of cases where stations had to hire a private investigator to investigate the person making the complaint to prove whether or not that person is a disinterested listener, or whether they have any ties to the complaining station.

I've heard people say, "There are only 25 or 30 complaints with the FCC involving interference with translators; how big an issue is this?" But whatever that number is, on both sides of the equation, the full-powers and the translator operators, it's a huge issue. They deserve a better system.

I represent broadcasters in Kentucky and West Virginia on the NAB Board. I approached the staff at the NAB because I'm getting a lot of comments from broadcasters in my district that we need a better system of resolving these complaints.

RW: *So where does that effort stand?*

Henson: We had a committee of eight people. We had [engineers] Jeff Littlejohn from iHeartMedia, Sam Wallington from EMF, Mike Cooney from Beasley, Sam Caputa from Emmis; but then you also had Bud Walters, who is a small-market broadcaster; Bruce Goldsen, an NAB board member and a small-market broadcaster in Michigan; and Dr. Chuck Anderson, a consulting engineer who is very knowledgeable about translators.

We made three proposals in January. The board adopted one and asked the NAB staff to file a request for rule-making at the commission. That request is pending at the FCC.

Currently, if a translator is on the air and a full-power station comes on the air and displaces it, that translator can move anywhere in the band to find a new home as a way to resolve that interference.

But say a translator is on the air and a full power comes and complains, "Hey, you're interfering with me," the only flexibility a translator has in that case — not displacement, but interference issues — is to move three channels up and three channels down. So if you're 101.1, you can go to 101.3, 101.5, 101.7 — or three the other way.

What we proposed is that the FCC would allow that translator to move *anywhere* on the band. Of course, it's

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going to have to prove that the new frequency won't cause interference; but this gives it more flexibility in finding a new home.

It won't be a panacea, especially in larger markets, because it may be hard to find additional frequencies in larger markets; but in small and medium markets, in most of the country, you could probably find another frequency.

Say a translator is on the air and a full power comes and complains, "Hey, you're interfering with me." ... What we proposed is that the FCC would allow that translator to move anywhere *on the band.*

That helps full-power stations, because they get rid of the interference more quickly; it helps the translator because it can have more options to stay on the air; and it helps the public, who continue to get the service of the translator.

My personal view — and this is only Ed Henson Jr. talking — is that we also may need some kind of contour. We'd say, "Within that contour, we're going to be very diligent about protecting full-power stations, resolving interference complaints, making sure these things don't drag on; but at some point, beyond that contour, before it becomes totally unreasonable, full powers are no longer protected."

Translators are secondary services and they must remain secondary services. But they're also rebroadcasting a primary service. We don't want to lose sight of that, either. So the question becomes, at what contour do you have that cutoff? If you get 10 broadcasters in a room, you'll get 10 answers.

My own view is that full powers should be protected beyond their FCC-protected contours. When you calculate HAAT for protected contours, the calculation is only done from two to 10 miles. Beyond 10 miles, it takes into account nothing about terrain, which can change dramatically. I think you need to go beyond protected contours. My own personal feeling is somewhere, at least 6 dBu more than in the protected contours — or you can make somewhat a good case for a 48 dBu contour — beyond that, full powers would no longer be protected.

Some of the great stations in my area are big Class C FMs, and they need to be protected. They provide a real service for people. [But] if you have a thousand people listening to the FM translator, and maybe two or three people complaining they can't hear the full-power station 100 miles away, at some point I think the translator deserves — I think the FCC needs to look at it and say, "Where is the public being served the most?"

RW: *Is there anything else you would want AM broadcasters to know to maximize a translator opportunity?*

Henson: Not all translators are created equal. Any money spent on good engineering even before you file is money well spent. Make sure you get a competent engineer to design your translator.

The best way to avoid interference complaints is to make sure, when designing it, that you're looking for the frequency you want to be on; make that extra effort to look at the Longley-Rice studies; drive your signals and see where you don't hear other stations. Put a lot of effort into finding the right frequency for your translator.

Also, I don't even call it a translator, I just say WSON(AM), and WSON(FM). We embrace the fact that you can now hear our signal on FM.

Maximize it like you do any other station. Put good programming on there, of local interest. Don't just flip whatever syndicated programming on it. You've got to stay local. You've got to be involved. ■

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