

ATTACHMENT A

Low Power Radio Station Availability Under Various Regulatory Scenarios: April 6, 2008

A Joint Project of Common Frequency and the Prometheus Radio Project.

Research:

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The goal of this study is to determine how various regulatory options will affect low power radio availability in major cities around the United States.

Background:

Organizations seeking Low Power FM stations were supposed to have an opportunity to apply for a frequency throughout the United States in the years 2000 and 2001. However, the Radio Broadcasting Preservation Act changed the technical criteria for distributing LPFM channels, forbidding LPFM channels from being distributed on the third adjacent channels to existing stations until the FCC completed a study of interference potential by these small new stations. This drastically limited availability of low power licenses in general, and in urban areas in particular. Groups in urban areas have never had a meaningful application opportunity for low power radio.

In 2004, the FCC released results of the Congressionally mandated study. The findings bore out the FCC's original conclusion that the LPFM service could go forward in urban areas on the third adjacent channels. However, Congress has failed to act decisively up until this point. It is anticipated that legislation could be passed this year returning full authority to the FCC to license LPFM stations on the third adjacent channel. This Congress is likely to lift the third adjacent Channel restriction, as the Local Community Radio act of 2008 has more co-sponsors than any other telecom legislation in the House, has passed the Senate Commerce Committee, and has been co-sponsored by all three presidential candidates.

In 2003, while the interference was still being studied, the FCC opened a filing window for translators, which are repeater stations that can only repeat the signal of full power broadcasters. These stations fit in very similar spectrum opportunities to the ones where LPFMs

fit. They use the same equipment as LPFMs, and are physically identical to LPFM stations. They are allocated using different rules from LPFMs, and opportunities to file for translator licenses are announced at a different time. Translators and LPFMs are both "secondary" to full power stations, meaning that they can be displaced by a future full power radio application. Between an LPFM and a translator, priority is granted to whichever is granted first.

During the 2003 window, over 14,000 applications were filed, with over 2400 applications filed by a single entity. In response to accusations of frequency speculation, the FCC froze the processing of translator applications after distributing most of the "singleton" channels, where only one organization applied for the frequency in question. In the December 2007 Third Report and Order, the FCC announced that they plan to allow translator applicants to retain 10 of their currently pending applications, and the rest of their applications will be dismissed. The FCC also announced that they would take comment on changing the priority between LPFMs and translators. LPFM advocates hope to change priority from "first in time" to a prioritization based on the local public service provided by these stations. While the FCC's action requiring mass filers to withdraw their applications in excess of ten is helpful, it is not sufficient to make meaningful numbers of Low Power FM channels available in the major urban areas. A meaningful balance of the interests of localism and the legitimate interest in repetition of signals for full power stations would result in roughly equivalent numbers of low power stations in most markets.

Current State of the FM Dial:

Instead of a reasonable balance, in the current situation, translators vastly outnumber low power radio stations. In **Exhibit A**, we see what the radio dial looks like in a 60 mile radius of Macon, Georgia; Los Angeles, California; and Portland, Oregon.

In the Macon area, there are:

- 2 low power stations
- 5 translators rebroadcasting a signal from within 60 miles,
- 6 translators rebroadcasting a signal from further away than 60 miles,
- 15 translator applications.

In the Los Angeles area, there are:

- 1 low power station
- 5 translators rebroadcasting a signal from within 60 miles,
- 3 translators rebroadcasting a signal from further away than 60 miles,
- 67 translator applications.

In the Portland area, there are:

- 2 low power stations
- 8 translators rebroadcasting a signal from within 60 miles,
- 6 translators rebroadcasting a signal from further away than 60 miles,
- 25 translator applications.

While some translators undeniably provide significant public service, it can be seen from these

numbers that the allocation system has resulted in a dramatically skewed distribution of available spectrum between LPFMs and translators. **A fair outcome to this proceeding would be one in which there is greater parity between the number of LPFM stations and translator repeating operations.**

LPFM Advocates Recommendation:

The purpose of this investigation is to learn how various regulatory options for this system of priority between LPFMs and translators will affect low power radio availability in major cities around the United States. Low power advocates propose a new rule that establishes an appropriate balance between translators and LPFMs:

No entity shall own more than ten translators with coverage in the top 303 Arbitron rated markets on a basis that is primary to locally originating LPFMs. No originating station shall be repeated more than ten times in the top 303 Arbitron rated markets on a basis that is primary to locally originating LPFMs. Any translators owned, or repetitions of originating stations, above this national limit shall be secondary to and subject to displacement by subsequently filed LPFM applications which pledge to meet the weekly point requirement for locally produced programming. Transfers or assignments of translator construction permits or licenses shall be limited to one per entity per year, as either buyer or seller of the permit. Commission approval will be required for translators to change its input signal from the originating station named in their application. Commission approval will only be granted upon a showing of good cause.

Importantly, this rule can not be described as what LPFMs believe would be an optimal one. As the numbers in attached spreadsheets show, LPFM availability remains spare at best under the scenario painted with these numbers. Based on the data we have been looking at, we believe a more appropriate level would be a limit of 5 translators owned in the top 303 markets, and a limit of no more than 5 repetitions of a station which are primary to new LPFMs in the top 303 markets. We are advancing the "10/303" number in the interest of compromise and expediency, even though quantitative analysis would suggest that lower numbers of translators should be protected from subsequently filed low power FM applicants to achieve equitable treatment for LPFM applicants.

Methods For Ascertaining LPFM Frequency Availability:

The investigators first established the current state of the field in 8 sample markets. Markets were spread out among the top 303 urban areas, avoiding markets that were too close to other radio markets that might complicate the analysis of relevant translator application Mutually Exclusive (MX) groups. Existing translators and mutually exclusive translator applicant groups were specified. LPFMs in the market that would be available under the current spacing rules, as well as LPFMs that would be available if the third adjacent channel spacing ban was lifted by Congress, were investigated using *V-Soft's FM commander*. Then, each application was rated by how various regulatory options would affect it.

Data was extracted from the FCC database showing all current translator applications,

construction permits, and licenses. Communities of license of these translator applications were matched with county data. A list of all counties located within the top 303 Arbitron markets was generated. These two lists were matched, allowing us to create lists of the translator construction permit applications in the top 303 markets.

Ascertainment Method For Current LPFM with Minimum Distance Spacings and Third Adjacent Removed Scenarios

Markets were studied using *V-Soft FM Commander*. For each market, channels were first examined for current LPFM availability according to 47 CFR 73.807. The software displayed the minimum spacing distances in the form of plotted circles on a map for current full power, low power, and translator services for each metropolitan area. Second, each market was viewed with the third adjacent spacing constraint removed. From a map of circles representing minimum spacing requirements per each channel in each metro, open frequency locations were visually deduced for each channel. Channel number and general vicinity of the open channel were then recorded. Current LPFM availability is shown under column x of the attached market spreadsheets, **Exhibit D**. Availability with 3rd adjacent channel restriction removed, but no other changes, is shown in column y of **Exhibit D** spreadsheets.

Ascertainment Method For Scenario Where FCC Does Not Limit Translator Applicants, Uses of Contour Overlap Method to Allocate LPFM ("LCFM"), and Does Not Make Changes in Translator Versus LPFM Priority

How much space would be available for an LPFM station in select metro areas, if an LPFM was able to be placed on the commercial FM band using contour protection criteria specified in 47 CFR 74.1204 and all other affiliated rules? In order to keep clear the distinction between LPFMs allocated using the minimum distance spacing rules and those which use contour overlap method allocation, we shall be calling contour allocated stations "LCFM" or Local Community FM. In this study we assumed the translator MX groups are intact, meaning **at least one party in the MX group would end up a winner of a translator frequency in each pending MX**. We also ignored second and third adjacents to the proposed LCFM, assuming the interference overlap from the proposed station would be engineered so that a transmitter site would be found in an area with zero population affected. We assumed variable wattages (sufficient for placement and ignoring I.F. spacing). The study denotes where an LCFM could possibly be placed, concentrating on immediate city in the metro itself and supplying additional comment when a frequency might be able to be used in a suburb or outskirts (for larger sprawling cities). When either of two adjacent channels can be used, this is listed on the same line, as final allocation in one specific area can accommodate one frequency. This is documented in **Exhibit C**.

Ascertainment Method For Scenario In Which FCC Limits Translator Applicants, and FCC Allows Use Of Contour Overlap Method for "LCFM," But Does Not Alter Priority Between LPFM&LCFM Versus Translators:

In the LPFM Third Report and Order, the FCC specified that it will only accept 10 more

applications per applicant, and after choosing ten priority applications all other applications will be dismissed. Since there is no way to determine which applications will be chosen by the applicants, the potential resolutions of these situations was expressed as a percentage. For example, if an applicant had 12 applications pending, and no single applicant can prosecute more than 10 applications, the Probability of Applicant Retention, (Column O) of any given application was calculated to be $10/12 = 0.833$. Importantly, we made no attempt beyond this to evaluate the likelihood that any given application would be picked to be kept by the applicant. Though it could be argued that applicants would tend to want to keep applications in the most densely populated markets, these MX groups tended to have the most applicants and thus individual applications had a lowered chance of ultimately prevailing in the upcoming auction. We avoided such conjecture and focused upon what the numbers could show. The spreadsheets in **Exhibit D** have a column for "Probability of Voluntary Application Dismissal (FCC)." Each applicant was assigned a probability based on the number of applications they have on file, and then these probabilities are multiplied at the bottom line (highlighted in green) to find the probability that all applications in the group are dismissed through the FCC's action limiting applications to ten.

Ascertainment Method For FCC Limits Translator Applicants, and FCC Allows Use Of Contour Overlap Method for "LCFM," Plus Adopts Change in LPFM&LCFM/Translator Priority.

In each market, MX groups of translator applications were determined. Then, probabilities were calculated for the FCC's initial cap on applications ("Probability of Application Retention (FCC)"). On top of this, we studied the probability that the application would be made secondary if there were a cap of ten on the number of times a single originating station can be repeated with coverage in the top 303 radio markets ("repetitions"). We also studied the probability of an application being made secondary if there were a cap of ten on ownership in the top 303 urban markets. We also added the cumulative effect these potential limitations was added in order to establish whether as a result of adopting Prometheus' recommendations, a LPFM would be able to displace a translator that would be established on that frequency. If the station was a part of an MX group, we evaluated the chances that all the members of the MX group would be eliminated by various limitations.

We summarize the findings about the status of the MX groups for each market at the bottom of each spreadsheet. For the purposes of this summary, we shall consider any MX group where the cumulative chance of the translator applicants remaining primary for each given regulatory option to be a "probably occupied channel, " if the probability is greater than 0.5. If the probability is less than .5%, we described the channel as a " probably secondary channel." This is convenient and accurate for the summarization purposes for which we use it, but of course studying the percentages in a given market gives a much deeper picture.

The spreadsheets for these are contained in **Exhibit D**, and terms and formulas are explained in **Exhibit E**.

Results:

Result For Current LPFM with Minimum Distance Spacings,

If the FCC were to take no action on our recommendations and Congress took no action on third adjacent channels, LPFM availability in urban areas would be paltry. This table shows the number of channels available in these cities currently.

Without 3rd adjacent			Market	
Market	Channel	Quantity	number	
Philadelphia		0		7
Phoenix		0		15
Portland		0		23
Las Vegas		0		33
Orlando	229	1		34
Akron	240	1		74
Reno		0		124
Lincoln		0		174
Wenatchee	245	1		175
ithaca		0		285
	total	3		

No action by FCC, Congress lifts third adjacent Channel restriction: If Congress passed this act, but the FCC took no other action, there would be a handful more LPFMs available, but still a ridiculously small number. This is because translator applications were allowed to "cut the lunch line" while LPFM was waiting for Congress. Even these that were able to locate inside the Arbitron defined market area are usually not able to locate in the city center. Most channels found are far out in the suburban or exurban surrounding counties. Locations of these mostly remote LPFMs are noted in the Spreadsheets in Exhibit D in the notes in Column X.

Without 3rd adjacent			
Market	Channel	Quantity	Market
Phoenix	257D	1	15
Portland	273	1	15
Las Vegas	234D	1	33
Las Vegas	235D	1	33

Las Vegas	260	1	33
Orlando	225	1	34
Orlando	229D	1	34
Orlando	230	1	34
Orlando	258	1	34
Orlando	259	1	34
Orlando	273	1	34
Lincoln	239	1	174
Lincoln	256D	1	174
Lincoln	300	1	174
Wenatchee	227	1	175
Wenatchee	246D	1	175
Wenatchee	252	1	175
Wenatchee	253	1	175
Wenatchee	281	1	175
Philadelphia		0	7
Reno		0	123
Ithaca		0	285
	total	19	

Results For FCC Limits Translator Applicants, and FCC Allows Use Of Contour Overlap Method for "LCFM," But Does Not Alter Priority Between LPFM&LCFM/ Translators: This scenario is based on the current FCC plan of limiting translator applications to ten, and allowing low power radio stations to use the contour method for the allocation of LPFM (or as we would call them, LCFM) stations. As the numbers show, LPFM availability in urban areas would be mildly improved, but still dramatically below a reasonable level. This table shows the number of channels that would be available if LCFMs were able to use contour overlap method to apply on some of the channels vacated by excessive translator applications. This table summarizes information in **Exhibit C**.

City	Channel	City Center	Accept Interference?	# of MX translators	City Total
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Philadelphia	264	Lindenwold, NJ (S Metro)	Co-channel: WLEV (north) & WXXL (south)		
Philadelphia	298	Chester PA (SE Metro)	1 st Adjacent: W297AD, Co-channel: WTKB (north)	7 licensed, 100+ applications	0
Phoenix	225	N of Metro	1 st Adjacent: K224CJ, Co-channel: KAFF, KWMT		
Phoenix	240	City	Incoming interference: KKLD		
Phoenix	247	Eastern metro?			
Phoenix	262	Western metro?		8 licenses, 52 applicants	1
Portland	228	Southern metro	Co-channel: K228EU		
Portland	248	Southern metro Slim chance of northeast	Co-channel: KRPK (north), proposed stations in Salem, Rainer		
Portland	252	metro Mid-north			
Portland	260	metro	Co-channel: KRKT		
Portland	268	City North / east			
Portland	275	metro	1 st Adjacent: k274AR		
Portland	288	East mtero	KUKN		
Portland	300	North metro	KHPE	13 licenced, 25 applicants	1
Las Vegas	251	NE Metro	1 st Adjacent: K250AF. If avoided, could serve on 250 as well.		
Las Vegas	272	City	Co-channel: KJJJ, RM10854	17 licensed, 32 applicants	2
Orlando	224	City			
Orlando	231	NE Metro	WSJT 231C interference contour WWRN 235C interference contour		
Orlando	235	NE Metro			
Orlando	239	City	Co-channel: WBTP, WHOG		
Orlando	241	City	WKTK, WSBH interference contours		
Orlando	253	City	Co-channel: WLRQ, less so with 258		
Orlando	257	Area	Co-channel: WJKD, less so with 260		
Orlando	259	City	Co-channelL WMTX 264C (Tampa)		
Orlando	264	Area	Co-channel: WPIO 268C (Tampa)		
Orlando	268	Area			

Orlando	272	City	Co-channel: WTRS, less so with 273		
Orlando	278	Area	WFUS 278C0, less so with 279		
Orlando	288	City	Co-channel: WDUV		
Orlando	292	City	Co-channel: WCIF		
Orlando	297	W Metro	Co-channel: WXGL	6 licenses, 29 applicants	Multiple
Akron	233	SE / Mogadore	Co-channel: App 632978		
Akron	240	City	Or 241 Co-channel: Pending FX in Akron		
Akron	246	Green, OH			
Akron	256	Fairlawn (west)			
Akron	291	City	Co-channel: WVNO, WBBG	3 licenses, 18 applicants	2
Reno	227	City	Co-channel: K227AW (Truckee) 1 st Adjacent: K241AK (Reno area),		
Reno	240	Carson City	Co-channel: K241BK (Tahoe area) Co-channel: Pending translator (Truckee / Carson City / Tahoe), (in MX)		
Reno	249	NE Reno		34 license, 29 applicants	2
Wenatchee, WA	227	City	Or 228		
Wenatchee, WA	246	City	Or 247		
Wenatchee, WA	253	City	Co-channel: KEYG		
Wenatchee, WA	260	City	Co-channel: KISW, App 648633		
Wenatchee, WA	268	City	Co-channel: KPLZ, less so on 269		
Wenatchee, WA	282	City			
Wenatchee, WA	292	City		14 licenses, 17 applicants	Multiple
Lincoln, NE	227	City	Co-channel: KHUS		
Lincoln, NE	238	City	Co-channel: KNDY, 239 – Co-channel: KROA		
Lincoln, NE	243	City	Co-channel: KRGI Co-channel: KRGY, KBBX, KBLR		
Lincoln, NE	247	City			
Lincoln, NE	268	City			
Lincoln, NE	272	City	Co-channel: pending station		
Lincoln, NE	289	City	1 st Adjacent: KKCD		
Lincoln, NE	294	City	KEXL, less so on 295	6 licenses, 10 applicants	1, others with co-channel

Ithaca, NY	231	City	if on 230, co-channel: WKXZ	
Ithaca, NY	245	North	1 st adjacent: pending translator in south	
Ithaca, NY	254	City	Co-channel: WGMM, WLZW	
Ithaca, NY	264	City	Limited watts: I.F	
Ithaca, NY	297	City	Co-channel: WRCK, WCCR	
				14 licenses, 16 applicants
				0

Results For FCC Limits Translator Applicants, and FCC Allows Use Of Contour Overlap Method for "LCFM," Plus Adopts Change in LPFM&LCFM/Translator Priority. This table shows the cumulative effect of the above mentioned proposals , plus a limitation on ownership and repetitions of a full power signal of no more than ten with a status that is primary with respect to subsequently filed LPFM applications. Full document is **Exhibit D.**

City	Ch	Probability of voluntary application dismissal (FCC)	fccsurvive300own	fccsurvive repetition	Probability translator could be secondary with LPFM priority recommendation
Phoenix, Arizona	232	0	0.857007428	0.619467057	0.559658634
	236	0	0.895238095	1	0.180952381
	244	0.946282768	0.050555113	0.372929076	0.979966411
	253	0	0.736631782	0.454684268	0.701419531
	259	0.721042471	0.421464539	0.936630875	0.368906738
	266D	0.75	0.172413793	0.526315789	0.909255898
	271	0	0.898824884	0.673938074	0.509681239
	277	0	0.906671021	0.977619903	0.311547504
	287	0	0.866106443	0.743748512	0.453891011
	299	0.721042471	0.421464539	0.589684915	0.775872805

Portland,

Oregon

233	0	0.973977524	1	0.027142624
237	0	0.622908623	1	0.379481522
245	0	0.633635249	1	0.367780767
249D	0	0.909929954	0.938765564	0.094760052
250A	0	0.973977524	1	0.027142624
257	0	0.633449132	0.96801977	0.468362284
265	0	0.794357543	0.967857547	0.358368077

Las Vegas
Nevada

230	0	0.669718756	0.617440593	0.608212763
234D	0.576833977	0.575890325	1	0.427477091
237	0	0.973977524	0.979001976	0.027166802
241	0.171428571	0.453296703	0.511599512	0.733361622
245	0.123437084	0.554217049	0.564021049	0.613030661
267	0	0.601259895	0.262806266	0.843005816
269	0	1	1	0.25
281	0	0.754182441	0.669218523	0.496867807
292	0.249930511	0.310803987	0.267005102	0.924473169
296D	0.584084881	0.589811667	1	0.412345197

Orlando,
Florida

Ch?	0	0.799694742	0.826631534	0.492307993
246D	0.922516499	0.059171598	0.636363636	0.962794525
273	0	1	1	0.25
288D		0.009225092	0.909090909	0.991613552
299C		0.87012987	0.632867133	0.426164744

Akron,
OH

230	0	0.973977524	0.812778707	0.353584197
234	0	0.965320227	0.83952912	0.197152486
242	0	0.973977524	0.812778707	0.189294826
260	0.109195402	0.651567944	0.428705441	0.770717979
280	0	0.925956666	0.774848004	0.23104142

Reno, Nevada

237	0.583240223	0.586969509	1	0.414646313
246	0	0.750996086	0.973527541	0.399080814
250	0.538375591	0.505771121	0.871535334	0.260037075
253D	0.961389961	1	0.987405542	0.932885906
Ch?	0	0.70142427	0.857830271	0.491345402
264D	0.912280702	0.086206897	0.918699187	0.913793103
278	0.369473445	0.506949588	0.279378389	0.85969615
282	0.560721296	0.543947456	1	0.460394787
288	0	0.532679739	0.732510288	0.643719125
294	0.224648031	0.570599838	1	0.430521716

Lincoln,
Nebraska

256D	0	0.885204082	1	0.167182945
278	0	0.973977524	1	0.027142624

Wenatchee, Washington

276	0	1	1	0.296296296
288D	0	1	1	0.296296296
291	0	1	1	0.245746692

Ch? 0 0.99043697 0.799112651 0.378387051

Conclusion:

As can be seen, the only scenario which yields a reasonable level of low power radio availability in urban areas is when all these measures are taken together. The FCC can do no less and fulfill its mandate for promotion of localism and diversity of ownership in broadcasting. The FCC's declarations of commitment to localism and creating new opportunities for LPFM can only be viewed as hollow talk unless some form of adjustment is made to the priority between LPFMs and translators, beyond the dismissal of some of the superfluous applications. The FCC has the authority to remedy this situation and create genuine opportunity for aspiring groups to apply for low power frequencies. These measures do not put numerical limits on translators outside the markets where there is frequency competition, thus not threatening the role of translators in providing rural service. These measures also do not limit translators unnecessarily, they merely make the eleventh and greater translators with coverage inside the top 303 markets secondary to subsequently filed LPFMs that plan to do local origination. The Commission, in the past, has considered these channels to be of low value and thus has used loose policies thus far in their governance (neglecting to impose the policy tools used in full service radio policy such as ownership limits, application limits, repetition limits, articulated trafficking policies and other regulations to protect the public interest). For the FCC to distribute these last viable frequencies willy-nilly, and then to say that there is nothing left for organizations seeking low power stations, would be a profound neglect of the FCC's role of steward of the spectrum for the public's interest, convenience, and necessity.

Exhibit A. pdfs attached showing the distribution of stations in the Macon, Georgia; Los Angeles, California; and Portland Oregon markets.

Exhibit B. Channels that probably would be cleared, and channels that probably would not be cleared.

FCC Application Limit

LPFM Advocate Recommendation

Market	Channels that probably will be cleared	Channels that probably won't be cleared	Total

Market	Channels that probably will be cleared	Channels that probably won't be cleared	Total

AZ/Phoenix	4	6	10
OR/Portland	0	7	7
NV/Reno	4	6	10
NV/Las Vegas	2	8	10
FL/Orlando	2	3	5
OH/Akron	0	5	5
NE/Lincoln	0	2	2
WA/Wenatchee	0	4	4
Total	12	41	53

AZ/Phoenix	5	5	10
OR/Portland	0	7	7
NV/Reno	4	6	10
NV/Las Vegas	5	5	10
FL/Orlando	2	3	5
OH/Akron	1	4	5
NE/Lincoln	0	2	2
WA/Wenatchee	0	4	4
Total	17	36	53

A summary of the greater probabilities of channel clearance shows the extreme moderation of the Low Power advocates proposal to open up channels for potential low power use, while preserving the substantial use of translator stations for reasonable needs. It should be noted, though, that the probability of a channel becoming available in many cases goes from zero under the FCC’s measure to a significant chance of clearance, even if it is under 50%, with the LPFM advocate proposal.

Exhibit C.

SAMPLE MARKETS: CHANNELS AVAILABLE IN IMMEDIATE CITY ON NON-RESERVED CHANNELS

The following lists the most usable channels found and their constraints.

Philadelphia, PA – Market 7

- 264 Maybe around Lindenwold, NJ (south metro); would need to accept co-channel interference from WLEV (north) and WXXL (south)
- 298 Maybe around Chester, PA (southeast metro); needs to avoid 1st adjacent W297AD that covers Philadelphia, PA and accept interference from WTKB co-channel from north.

Conclusion: Using translator rules, there appears to be no channels open for Philadelphia proper because of the pending translator MXs occupying all open channels.

Phoenix, AZ – Market 15

- 225 Northern edge of metro (translator K224CJ 1st adjacent covers Phoenix), would need to accept co-channel interference from KAFF and KWMT
- 240 *Phoenix; would need to accept incoming interference from KKL D*
- 247 Maybe in eastern metro (Apache Junction)
- 262 Maybe western edge of metro

Conclusion: Using translator rules, there could be one open channel for Phoenix, AZ. Pending FX MX groups on 93.7/93.9/94.1, 94.9, 96.5, 98.3, 99.1, 99.5, 101.1, 101.9, 102.9, 105.1, and 107.5, licensed translators, and full power minor modifications have utilized all the best usable channels.

Market 23Portland, OR –

- 228 Possibly in southern end of Metro. K228EU operates co-channel in the northern metro; this contour would need to be protected.
- 248 Possibly in southern end of Metro. Pending FX's are in northern metro, some able to cover into central city; would need to protect that contour.
- 252 Slight possibility in northeast end of Metro. There is a centrally-located pending FX application on CH 251 that would cover most of the Portland metro. Would need to accept interference from proposed full power co-channel in Salem, and co-channel in Rainer, Or (KPPK) to the north.
- 260 Will receive interference from southeast co-channel KRKT, best for mid north metro
- 268 Appears it would get coverage of city of Portland.**
- 275 Possibly north or east metro; K274AR, 1st adjacent covers core metro
- 288 Possibly in the east metro, accepting interference from KUKN

300 Maybe north metro accepting interference from KHPE

One channel appears prime for coverage in the city Portland itself. One encroached LPFM exists in the east metro, and three in the south area; some these channels may accommodate those. Minimal opportunity for LPFM exists in Portland.

Licensed translators that currently cover Portland area:

Portland City: K220IN, K240CZ, K242AF, K274AR, K284BF, K296FT 6

Portland Area:K224CP, K224DL, K228EU, K231AM, K249DK, K272EL, K288FT 7

Pending translator MX groups to cover Portland area:

(91.1), (94.1/94.3), (95.1), (96.7), (97.5), (98.1), (99.1), (100.7), 106.3 9

Parenthesis indicate possible coverage into Portland proper

Total Projected Translator Usage if Pending MXs have 1 winner/piece: 22

Conclusion: There are NO LPFMs currently licensed to Portland proper, there might be ONE to TWO possibilities that an LCFM service (using translator placement methodology) could serve Portland central city, and FOURTEEN already licensed *or* pending translators that may serve into Portland. This indicates that there are not enough frequencies available for low power service in Portland even if LCFMs can use translator placement methodology.

Las Vegas, NV - Market 33

251 If positioned directly in NE metro to avoid 1st adjacent translator K250AF (K250AF's community of license is Las Vegas), then Las Vegas could possibly be served by channels 250 and 251

272 Las Vegas proper, receiving incoming interference from KJJJ and RM10854, on co-channels.

Conclusion: Only one to two non-reserved channels at most, when positioned correctly, could serve Las Vegas if all pending translator applications are granted. Change of community of license, new allotments/minor modifications to full powers, licensed translators, and translator MX groups on 93.7, 94.5, 95.1, 95.9, 96.7, 100.9, 101.5, 103.9, 106.1, 106.9/107.1 have locked-out LPFM use.

Orlando, FL –Market 34

- 224 Orlando
- 231 maybe NE Orlando metro, within WSJT 231C interference contour
- 235 maybe NE Orlando metro, within WWRN 235C interference contour
- 239 Orlando, within WBTP and WHOG interference co-channel contours, or 240
- 241 Orlando
- 253 Orlando, within WKTK and WSBH interference contours
- 257 Orlando area, receiving int from co-ch WLRQ, or 258
- 259 Orlando, receive into from co-ch WJKD, or 260 is the preferred channel
- 264 Orlando area, co-ch int from WMTX 264C from Tampa
- 268 Orlando area, co-ch int from WPIO 268C from Tampa
- 272 Orlando, co-ch int from WTRS, or 273
- 278 Orlando area, int from WFUS 278C0 or 279
- 288 Orlando, incoming co-ch int from WDUV
- 292 Orlando, incoming co-ch int from WCIF
- 297 west Orlando area, incoming co-ch int WXGL

Conclusion: Multiple possibilities of placement. Orlando resides at a distance from Tampa where class C stations from Tampa are dropped from protected contour, allowing equivocal use of channels based upon placement.

Akron, OH – Market 74

- 233 Better suited towards SE/Mogadore to dodge interfering with co-channel app 632978
- 240 **Akron; or 241**
- 246 in Green, OH (but co-channel fx in Akron pending)
- 256 in Fairlawn, west of Akron
- 291 Akron; incoming interference from co-channels WVNO and WBBG

Conclusion: Two possible channels.

Reno, NV - Market 124

- 227 Reno, but must avoid co-channel translator K227AW Truckee
- 240 Carson City (avoid 1st adj K241AK Reno area and co-channel K241BK Tahoe area)
- 249 NE Reno (must avoid pending co-channel translators for Truckee/Carson City/Tahoe), could receive incoming interference pending co-channel translator selected in MX.

Conclusion: Even in 100+ markets translators limit availability of remaining channels. Around two channels could exist to possibly serve Reno.

Wenatchee, WA – Market 175

This study looked directly at the availability of coverage within the city of Wenatchee

- 227 Wenatchee; or 228
- 246 Wenatchee; or 247
- 253 Wenatchee, accepting incoming interference from co-channel KEYG
- 260 Wenatchee, accepting incoming interference from co-channels KISW and APP 648633
- 268 Wenatchee, accepting incoming interference from co-channel KPLZ; or 269
- 282 Wenatchee
- 292 Wenatchee

Conclusion: As expected, the small city of Wenatchee, located in mid-Washington, can accommodate multiple frequencies, although translators utilize many frequencies in the area.

Lincoln, NE – Market 174

- 227 Lincoln, accepting incoming co-channel interference from KHUS
- 238 Lincoln, accepting incoming co-channel interference from KNDY; *or* 239 receiving incoming co-channel interference from KROA
- 243 Lincoln, accepting incoming co-channel interference from KRGI
- 247 Lincoln, accepting incoming co-channel interference from KRGY, KBBX, KBLR
- 268 Lincoln – good channel
- 272 Lincoln - accepting incoming co-channel interference from proposed co-channel
- 289 Lincoln – accepting 1st adj interference from KKCD
- 294 Lincoln – accepting co-channel interference from KEXL; *or* 295

Conclusion: Most channels would need to receive co-channel interference if allowed to be utilized.

Ithaca, NY - Market 285

- 231 Ithaca, (230 limited contour— would need to protect co-channel WKXZ)
- 245 Ithaca, from the north, although 1st adjacent translator application is pending for south part of the metro
- 254 Ithaca, receiving co-channel interference from WGMM or WLZW
- 264 Ithaca, limited watts due to immediate I.F.
- 297 Ithaca, receiving co-channel interference from WRCK and WCCR

Conclusion: This is a small market example that shows that frequency availability doesn't increase linearly with descending market size. Licensed and pending translators have vastly impacted ability to utilize better channels for LCFM. *Note: Under **current** LPFM spacing rules, Ithaca, NY has no additional LPFM openings—but it has nine licensed translators (W201CD, W205CB, W238AA, W242AB, W252AA, W262AD, W269AW, W276AO, W288AS) and eight pending translator applications (on 92.3, 92.5, 94.9, 96.7 (outside city), 101.1, 102.3, 104.5, 107.7FM)..*

Final notes on LCFM utilizing translator methodology placement:

1. 2003 translator window has greatly impacted remaining channels available for usage in many cities. In larger cities (even in markets over 100) this has eliminated most channels.
2. 2003 translator window has not only impacted *quantity* of channels left, but *quality* of channels left. Remaining open channels available can often have incoming co-channel interference.
3. Remaining frequency availability appears to not solely follow a linear increase with *descending market size* (aka increasing market rank number, 1,2,3,4,5...). Open frequencies in

markets are based upon market size, market proximity to adjacent markets, number of pending/licensed translators in the market, and market desirability.

4. A huge inequality exists between number and quality of pending/licensed translator frequencies and number and quality open low power frequencies. More frequencies need to be provided for LCFM usage in order for LCFM to be a viable service.

Exhibit D, Market Spreadsheets: *These are in a separate attached excel spreadsheet.*

Exhibit E: Explanation of spreadsheet terms. Attached separately.