

FEDERAL COMMUNICATIONS COMMISSION

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PUBLIC SAFETY NATIONAL COORDINATION COMMITTEE

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TECHNOLOGY SUBCOMMITTEE MEETING

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THURSDAY,
SEPTEMBER 19, 2002

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The Subcommittee meeting commenced at 10:20 a.m. in the Commission Meeting Room, 445 12th Street, S.W., Washington, D.C., 20554, Glen Nash, Chair, presiding.

COMMITTEE MEMBERS PRESENT:

GLEN NASH	Chairman
DAVID BUCHANAN	Working Group 6 Chairman
ROBERT SCHLIEMAN	Member

ALSO PRESENT:

MICHAEL WILHELM	Designated Federal Officer
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1 P-R-O-C-E-E-D-I-N-G-S

2 (10:41 a.m.)

3 CHAIRPERSON NASH: We'll open up the
4 Technology Subcommittee meeting.

5 Just a quick review of the proposed
6 agenda. I'd like to start up. At the last meeting
7 we discussed an issue that had been brought up about
8 establishing a minimum signal level. Design
9 criteria, we had some discussion on that. I would
10 like to sort of finish that up and close it off at
11 this meeting.

12 I was hoping for a report from TIA on
13 their progress. I think you said that John was
14 going to be here? Is that going to be tomorrow?

15 MR. WILHELM: He'll be here tomorrow.
16 He will be the first speaker at the meeting.

17 CHAIRPERSON NASH: Okay, so I guess we
18 will hear that report tomorrow.

19 We had had a request from the
20 Implementation Subcommittee to give some
21 consideration to a loading standard on the wideband
22 channels. I would like to open up some discussion

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1 on that. I have had an idea or two on that, and
2 we'll bring that up.

3 Then, as was brought up at the
4 Implementation meeting just this morning, or the
5 Interoperability meeting this morning there was a
6 discussion on expanding the technical standards to
7 the other frequency bands in which interoperability
8 channels have been identified by the Commission.

9 Is there anything else that anyone would
10 like to bring up and discuss?

11 (No response.)

12 Seeing nobody jumping up, we will kick
13 off here.

14 At the last meeting we had a discussion
15 about setting some minimum signal level standards
16 for the design of radio systems. If I might, this
17 question came up basically from the Commission as to
18 whether or not this was a potential solution to some
19 of the interference concerns that public safety has
20 had, particularly relative to the 700 MHz band, in
21 trying to minimize the amount of interference signal
22 coming in from the commercial portions of the 700

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1 MHz band, and certainly is a method of ensuring that
2 we do not get into the same situation we are
3 currently experiencing in the 800 MHz band as far as
4 interference goes.

5 I think, if I might paraphrase, a lot of
6 the discussion at the last meeting was that setting
7 such a standard would probably be of limited value
8 in that you set one threshold, and that in some ways
9 forces everybody else to raise their threshold, so
10 that your threshold doesn't compete with their
11 threshold.

12 So you sort of get started to chase your
13 tail. I raise mine to beat you; you raise yours to
14 beat me, and then I have to raise mine to beat you.

15 You know, at what point do we just end it?

16 So, is there any further discussion as
17 far as setting any minimum signal levels for the
18 design of public safety radio systems in 700?

19 MR. SCHLIEMAN: Robert Schlieman. I
20 just wanted to add one comment.

21 The cost to public safety to get into
22 that rat race is unbelievable.

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1 MR. WILHELM: Well, certainly.

2 MR. SCHLIEMAN: We were doing some rough
3 calculations on coverage in different types of
4 terrain. It is just, it more than doubles the
5 number of sites, more than doubles it.

6 MR. WILHELM: You could go to gadget
7 transmitter sites.

8 MR. SCHLIEMAN: Then you don't have any
9 frequency readings.

10 MR. WILHELM: Well, I know the rules
11 don't allow it, and the environmentalists would
12 probably become upset because it would sterilize all
13 the birds, but, you know.

14 MR. BUCHANAN: Dave Buchanan.

15 A couple of other things: At least at
16 800 in the NPSPAC plan for Southern California, we
17 established a minimum of 40 dBu, along with some
18 other criteria for out of your area, the amount of
19 signal. But that hasn't stopped the interference
20 happening anyway from the Nextel-type perspective.

21 But, also, when you get in, and I
22 represent a very rural area also out in our desert

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1 area. It is extremely hard to come up -- it is not
2 even a matter of money. It is a matter of the
3 environmental laws are such, and there's areas that
4 are closed off, that you can't establish that type
5 of minimum signal level out there. Sometimes it is
6 hard to establish anything above the threshold of
7 the receiver. The 12 dBu signout is the best we do
8 out there or less in some cases, and they have to
9 make do with that.

10 So I think there are some real practical
11 items that make it tough for us as public safety
12 users. It is easy for commercial because they
13 either cover an area or they don't. They can say,
14 "Yeah, we'll cover it at 50 dBu," or whatever, "No
15 problem." But, "We don't have any service. We
16 don't have any customers out here. So we won't
17 worry about covering it." But you can't do that in
18 public safety. You have to cover all the areas. I
19 see it from that standpoint, that it really is some
20 very practical problems.

21 CHAIRPERSON NASH: Dave, I agree, but,
22 again, being familiar with the Southern California

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1 plan, what we said was not that you can't build a
2 system with less than 40 dBu --

3 MR. BUCHANAN: Oh, yes, but --

4 CHAIRPERSON NASH: -- but rather that,
5 if you are going to complain about interference, you
6 don't have an argument unless you have 40 dBu.

7 MR. BUCHANAN: Yes, but, I mean, I'm
8 talking about areas where I have 40 dBu, and that
9 wasn't enough. So how much is enough?

10 CHAIRPERSON NASH: Right.

11 Michael?

12 MR. WILHELM: Glen, I wonder if you
13 could clarify something for me. You posited the
14 situation in which you increase your signal level,
15 and the other guy increases his in response. That
16 assumes that interference is mutual, but in the case
17 where you are dealing with a high-site architecture
18 and a low-site architecture, cellular architecture,
19 that isn't necessarily true.

20 For example, at 700 -- at 800 MHz, you
21 can raise your power by a factor of 10; you're not
22 going to interfere with Nextel because Nextel is

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1 interfering with Nextel. I mean, it is an
2 interference-limited system with all these cells out
3 there.

4 MR. BUCHANAN: No, but I would interfere
5 with my neighbor, the co-channel or adjacent
6 channel.

7 MR. WILHELM: Yes, that's true.

8 CHAIRPERSON NASH: You're certainly
9 right, Michael, we don't necessarily start at least
10 immediately into a chase-your-tail situation, but we
11 are faced with either we change our system design to
12 also use a cellular-type technology and have lots of
13 low sites, which then gets into issues of the cost
14 of developing those sites, the complexity of the
15 radio system because we are not operating a one-to-
16 one system that is typical of a cellular operation.

17 It is a one-to-many.

18 So as many people are now spread across
19 potentially within the coverage area of more sites,
20 we know you have to look at implementing simulcast
21 and other technologies in order to talk with all of
22 the people that might be involved in a single

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1 communication. So the complexity of the radio
2 system goes up. I say the number of sites goes up.

3 The alternative would be to increase the
4 power at our one site, which gets into Dave's
5 problem of, if we do that, well, then the sharing
6 that occurs between two different agencies is
7 impacted because now more of my signal is getting
8 into his area. So it is not an easy answer
9 certainly on how to do this. I think that is sort
10 of what has come out on this, and I'm sorry if I
11 oversimplified the problem.

12 MR. SCHLIEMAN: No. Thanks for that
13 clarification. I didn't mean to imply you
14 oversimplified it. I just wanted to point out that
15 there was another case.

16 CHAIRPERSON NASH: Sean?

17 MR. O'HARA: Sean O'Hara, Syracuse
18 Research Corporation.

19 A couple of things here: First, I think
20 it would be nice if we didn't have a minimum
21 requirement for 50 dBu at the edge of the service
22 area, but if it was optional, that would be kind of

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1 nice, to allow for better in-building/portable
2 coverage for some areas who are looking for it.

3 As far as the power race, when you run
4 into those kinds of scenarios in fresh spectrum and
5 green space, that doesn't necessarily have to be
6 true. There's a lot of ways to get that 50 dBu at
7 the service boundary without really affecting people
8 that are co-channel users farther away.

9 For example, you might be able to get
10 another 10 dBu service boundary by moving your site
11 maybe a mile closer to that boundary. The co-
12 channel user might only experience 3 dBu access
13 interference as opposed to 10 at the edge of his
14 service area because of the rate that the path loss
15 falls off.

16 It is probably a lot more important to
17 look at ways of controlling the interference
18 contours, putting the radiation where you need it,
19 trying not to radiate your interference too far out
20 of your service area by downtilting, by going with
21 lower antenna sites.

22 All those ways could probably let 40 and

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1 50 dBu service area users coexist, particularly
2 since frequency coordination has certainly come to
3 the point where they can handle not only the
4 disparate, the different technologies we're going to
5 see at 700 MHz and the different bandwidths, but
6 certainly the type of system designs I think could
7 easily be handled during frequency coordination.

8 I think the major point is a lot of
9 people really need the 50 dBu for cellular maybe
10 type designs, for in-building, portable coverage-
11 type designs, designs that are tailored towards
12 their areas, their urban areas or their highly
13 populated areas. That should be an option that is
14 probably left for them, but I don't think that you
15 can tell everybody that they have to do that,
16 because then you run into the situation where you
17 have the states who simply can't build out that much
18 infrastructure to cover their state.

19 CHAIRPERSON NASH: What you are
20 suggesting, then, is perhaps a recommendation that
21 systems be designed to provide 50 dBu of coverage
22 within your jurisdictional area and to minimize

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1 signal outside your jurisdictional area?

2 MR. O'HARA: I wouldn't set a minimum
3 level of 50 dBu, but I would make it a lot --
4 typically, you're not allowed to put more than 40
5 dBu that's, say, three miles outside of your service
6 area. It might be prudent to change that, too.

7 You may be allowed to do it up to, to
8 put power up to 50 dBu up to three miles past your
9 service area, but with the caveat that you need to
10 keep your 5 dBu "X" amount of miles within your
11 service area, through radiation control and those
12 other methods. That way, you won't affect the re-
13 usability of the spectrum, and you are still meeting
14 your design criteria and your needs.

15 MR. BUCHANAN: I just want to make a
16 comment on that.

17 CHAIRPERSON NASH: David?

18 MR. BUCHANAN: Actually, in the Southern
19 California plan that is how it is written. Both the
20 800 and what we have written so far in the 700 is
21 that, for us, as Glen explained, you have to have a
22 minimum of 40 dBu before you can complain about

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1 somebody else interfering.

2 But it says 40 dBu or greater. So you
3 can put more than 40 dBu within your service area,
4 which we define as three miles outside of your
5 jurisdiction boundary, and you have to roll off --
6 you have to use all the appropriate directional
7 antennas and all that to roll off as quickly as
8 possible, in our case to 20 dBu.

9 So that type of wording I don't have a
10 problem with. What I do have a problem with is, if
11 it was mandated that you have to have 40 dBu or even
12 50 dBu, period, or you lost all your rights, or
13 whatever, if there is some interference, then that
14 is an issue in the rural areas, is what I am getting
15 at.

16 It is even hard to do in the more urban
17 areas when you have a large geographical area to
18 cover, too. I think that is what Bob was referring
19 to.

20 So, yes, I kind of agree with what you
21 are saying. I just think the wording needs to be
22 such that "or greater," whatever level, "and

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1 greater."

2 MR. O'HARA: I guess it doesn't matter
3 what level you want to go up to within health
4 limits, but you really need to put some kind of
5 limit on how far you can interfere with other users,
6 because we want to be able to put this spectrum to
7 good use.

8 MR. BUCHANAN: Yes, and we do that. We
9 do it not such, I mean, it is not a hard-and-fast so
10 many miles away you're down to 20 dBu or 5 dBu, but
11 you have to engineer it and you have to bring it to
12 our Committee and show that you have done your best
13 job in engineering with directional antennas,
14 downtilting, lower sites, if need be, and extra
15 sites, if need be.

16 I mean, we've done all those things in
17 Southern California to minimize the signal and make
18 it work with your neighbor, and they do the same for
19 you. So far, that has worked out over the last 12
20 years or so, but-

21 MR. O'HARA: No, that's good.

22 CHAIRPERSON NASH: David?

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1 MR. EIERMAN: David Eierman, Motorola.

2 I think we need to remember where this
3 50 dBu issue originally came from. It is not part
4 of 96-86 and NCC. It comes from two sources.
5 One was the interference discussion on the other 36
6 MHz in the public safety, the CMRS portion, and we
7 had a long exchange and comments and reply to
8 comments about public safety designing noise limited
9 systems.

10 Motorola had proposed a limit, I don't know,
11 like minus 57 dBu, or whatever it ended up being.
12 And the end, what actually got written in the rule,
13 was something about 11 or 12 dBu higher, minus 46
14 dBu. Buried in the FCC docket somewhere is a
15 comment that the FCC engineers believe the public
16 safety should be designing their systems, not noise
17 limited, but to something more like 10 dBu above
18 noise, so that they can handle interference.
19 Basically, 10 dBu or interference limited.

20 It also found from the 800 reorg docket,
21 because Nextel in their comments also said that
22 public safety should be designing to something like

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1 52 dBu instead of 40 dBu.

2 So I think what I guess the FCC asked
3 TIA to investigate was what happens, you know, what
4 are the issues of changing from what was done at 821
5 with 40 dBu curves to going to 50 dBu curves. I am
6 sorry, I didn't go to the last set of Project 25 or
7 TIA meetings, so I am not aware of what the answer
8 was. I was hoping to see a report there, too.

9 But the concern is outside interference
10 in the public safety band, that raising the noise
11 floor, that then we need to decide whether we are
12 going to design our systems to compensate for that
13 or not. Then that gets into the issue of
14 everybody's got to raise the bar or the sites have
15 to be separated further apart.

16 MR. SCHLIEMAN: Would it not be possible
17 to reduce some of the out-of-band emissions that
18 create the noise problem as another option?

19 CHAIRPERSON NASH: Well, certainly that
20 was the recommendation we went forward with, and the
21 people we went forward with that to come back and
22 said, "Well, but the other half of the equation is

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1 that you raise the desired signal."

2 MR. SCHLIEMAN: Isn't the problem that
3 the way that channels are being utilized they can't
4 be adequately filtered because of the proximities in
5 frequency? So because they're using high-density
6 frequency applications, they have to use hybrid
7 combiners which make the noise additive. And then
8 they don't have adequate out-of-band filtering
9 because of the close band spacing between public
10 safety and the commercial services.

11 CHAIRPERSON NASH: Yes, that was part of
12 the argument that we were making from our side
13 relative to the interference criteria from the CMRS
14 portion of the band, was to set design limits that
15 would restrict the amount of energy they could put
16 into our portion of the band, due to concerns that
17 we had with the proposed technologies there, that we
18 knew they put a lot of energy outside of their own
19 band.

20 The argument they came back with, and at
21 least to date the Commission has not seen to modify
22 its rules, was that our systems should be designed

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1 to accept their levels of out-of-band emission. So
2 the way we would have to do that would be to
3 increase our own signal levels, so that we are not
4 impacted by those levels.

5 Certainly I think at this point, since
6 no systems are yet designed, we may have an
7 opportunity here to say that in your system design
8 you should be targeting -- I don't know -- 50 dBu,
9 52 dBu. Those seem to be the numbers that are being
10 tossed out there.

11 Even if it became suggested that systems
12 be designed to provide 50 dBu within the
13 jurisdictional area, and to minimize signal beyond
14 the jurisdictional area through the use of antenna
15 patterns, downtilt, transmitter power, et cetera, we
16 have an opportunity to make such a statement right
17 now, if that's the statement we want to make.

18 MR. BUCHANAN: I'll let Sean talk, and
19 then I have a comment.

20 MR. O'HARA: First off, I agree with
21 Dave's comments. The intent of that was to deal
22 with the Nextel interference problem primarily. I

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1 have seen the report. I have helped provide some
2 material for it.

3 I can say that in the 800 MHz band it is
4 really a whole different story. You may get into
5 the power battles, which to some extent can be
6 mitigated by moving the sites around a little bit to
7 get them closer to the edge of your service area.
8 Then you have the co-channel effects, you know,
9 where that 10 dB effect that you have in the
10 immediate area is only a 3 dB effect to the guy on
11 the adjacent channel 50 miles away or a co-channel
12 50 miles away.

13 The problem is the adjacent channel user
14 tends to be a lot closer. The power, it might be a
15 70 and affect the adjacent channel user. The
16 problem isn't as easily solvable, and it does
17 involve increased siting pretty much for everybody.

18 But that doesn't have to be, it involves
19 some pain, too, because you would have to move those
20 sites around to optimize. You know, you can't just
21 change your whole design by 10 dB and not re-
22 optimize your whole coverage design for your service

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1 area. There's no way to do that.

2 But since 700 MHz, it is a whole
3 different story. We have a chance to write a whole
4 new page here that gives the users as much
5 flexibility as they want, and we have the power in
6 our frequency coordination methods these days to
7 make sure that everybody gets what they want without
8 interference to each other. We also won't have
9 adjacent channel users that are spilling all kinds
10 of energy into our receivers.

11 MR. BUCHANAN: You know, I would like to
12 put that a little bit in perspective because my
13 County just is finishing up the process of spending
14 a half a million dollars upgrading and adding one
15 site and changing to a simulcast system from a non-
16 simulcast, all because of one Nextel site that went
17 in, so that we won't get interference. They're
18 actually holding off activating their site until we
19 can get done. So I am not knocking them. They have
20 a perfect right to go cover.

21 But, in practical terms, we are talking
22 about a half a million dollars to serve a community

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1 of maybe 2,000 or 3,000 people. You know, that gets
2 expensive after a while when you have to do that in
3 some of the rural areas. That's what this all boils
4 down to.

5 We are fortunate there that we could get
6 the site. As I said before, some cases you can't
7 get the sites to do that kind of thing or you've got
8 to put in just a very special, very localized thing
9 that covers maybe a couple of square miles just to
10 get rid of one interference issue.

11 So I'm not sure what the answer is, but
12 I know it is going to be tough if it is called upon
13 to up all the signal levels by 10 dB.

14 CHAIRPERSON NASH: Bob?

15 MR. SCHLIEMAN: I would like to present
16 a 50,000-foot view of this whole situation. Back in
17 the seventies, the rivers became so polluted that we
18 could no longer fish and eat the fish. And we had
19 to take very serious measures to clean up our water
20 systems and our sewage systems so that we didn't
21 kill all life.

22 We are in a situation now where the

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1 economic models that drive spectrum of recent time
2 have created a pollution problem in the radio
3 spectrum. We really need to clean up the pollution
4 in the radio spectrum by getting these systems
5 rearranged, so that we don't have this problem of
6 noise that we're having. That's the 50,000-foot
7 view.

8 CHAIRPERSON NASH: Okay. It may be a
9 question I would like to ask back to the Commission,
10 Michael. I see in here you are saying, well, okay,
11 public safety, you need to do your part in trying to
12 protect yourself from this interference.

13 To go in and initially design our radio
14 systems for 50 dBu, whatever the number is, that has
15 a cost impact. To go from 40 to 50 is going to
16 require we do something to increase that power,
17 increased number of sites, you know, increase
18 something to make it happen.

19 I guess really the question back to the
20 Commission would be: If we did that, as our share
21 of mitigating this interference problem, and we
22 experience interference, who has to fix it? Does

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1 that become -- you know, CMRS, this came about
2 because we said their proposal would put too much
3 signal into our portion of the band. Their counter
4 is to say, well, you need to be able to accept that.

5 If we come out now and do something to accept level
6 A and they end up at level B, will the Commission
7 force them to get back to level A?

8 MR. WILHELM: Well, the short answer is
9 that the Commission has not made a final decision.
10 There have been suggestions for reduction of out-of-
11 band emissions and suggestions for increase in
12 public safety signal level.

13 What I was addressing when I first
14 raised this issue was, what's going to happen in the
15 700 MHz band? Are we going to be back here 10 years
16 from now saying, "Well, we do have a guard band, but
17 right next door to where I need public safety
18 service we have a transmitter operating 2 MHz away,
19 providing a signal equivalent to 1 kilowatt at 1
20 kilometer," which is, I believe, the current 700 MHz
21 power limit?

22 If that is not a problem, we can go on.

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1 But I think if there is any chance that it is a
2 problem, we have the opportunity to address it
3 within this Committee. It would be very useful when
4 we start building these 700 MHz systems.

5 CHAIRPERSON NASH: Any other comment?

6 MR. PALMER: Clark Palmer, Washington
7 State Patrol.

8 We receive several legislative questions
9 on, and they generally follow the theme: There is a
10 statewide 800 system in the DOT in the State of
11 Washington. It has interference problems. It is
12 going to require a significant amount of money for
13 that.

14 Then the legislative questions come,
15 "Well, why would we consider even building a 700 MHz
16 system if we're going to establish or experience the
17 same type of interference problems?" So the State
18 legislators are looking at, when is this going to
19 end, the interference, and how much money are we
20 going to have to keep putting at these systems to
21 keep them operational?

22 So as we move forward with our SIEC and

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1 looking at state systems, we are continually having
2 questions about what's going to happen in 700 and
3 800 MHz? Is there going to be some type of national
4 perspective or is it going to be a plan that they
5 can at least get their arms around the interference
6 problem? Because as state agencies, we get beat up
7 going back and asking for additional dollars each
8 time. So any help this group could do would be
9 greatly appreciated.

10 CHAIRPERSON NASH: I think Clark brings
11 up, the point is, in designing our systems, we go to
12 our legislative bodies and get a pile of money to do
13 "X." If we do "X" and that doesn't work, our
14 legislative bodies are not too happy with us. So we
15 frequently get caught in this thing of, if we said
16 "X" is going to work, we have to have some assurance
17 that "X" will, in fact, work.

18 All throughout the suggestion is that
19 the Technology Committee could make a recommendation
20 that 700 MHz systems be designed to provide 50 dBu
21 of coverage within the jurisdictional area.
22 Furthermore, you are to minimize signal beyond the

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1 jurisdictional area.

2 I guess if we say, if you do that, what
3 sort of interfering signals should you be protected
4 from? We can certainly put a burden on the Regional
5 Planning Committees that they not authorize a
6 competing system that would put more than -- pick a
7 number -- 30, 25, 20 dBu of signal into your area,
8 as a condition in the regional planning process, in
9 their decisionmaking processes.

10 But, again, I have some concerns about,
11 what originally raised this was the out-of-band
12 emissions coming from other user groups and what
13 sorts of protections we could assure ourselves of
14 having there.

15 MR. BUCHANAN: If we go that route,
16 Glen, I would only add that it should be with the
17 caveat, where possible, because I don't think when
18 you start talking about that again over
19 everywhere --

20 CHAIRPERSON NASH: Well, we've got to
21 say, "shall be designed to provide" --

22 MR. BUCHANAN: "Should be," yes, but it

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1 can't be everywhere.

2 MR. SCHLIEMAN: The 20 dB was on the
3 same frequency or any frequency?

4 MR. BUCHANAN: Co-channel, yes.

5 MR. SCHLIEMAN: Okay, I didn't hear that
6 part.

7 CHAIRPERSON NASH: Okay, so the RPCs
8 then should not allocate channels that would result
9 in --

10 MR. BUCHANAN: Well, no, it wouldn't be
11 the channel. Should recommend that systems be
12 designed for a 50 dBu contour within the service
13 boundary.

14 CHAIRPERSON NASH: Right, but then the
15 other side of it is that they should not make an
16 allocation that would provide more than 20 dBu from
17 a competing system.

18 MR. BUCHANAN: And to the co-channel
19 system, yes.

20 CHAIRPERSON NASH: Yes.

21 MR. SCHLIEMAN: That's the number you
22 use in California, I take it?

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1 MR. BUCHANAN: Yes.

2 MR. SCHLIEMAN: As opposed to 5 in the
3 Northeast?

4 MR. BUCHANAN: Oh, yes, as opposed to 5
5 a lot of places, but we had to live with 20 at 800.
6 So we're going to live with it at 700, too.

7 CHAIRPERSON NASH: If you say 20 dBu co-
8 channel, that's going to give you a 30 dB margin.

9 MR. BUCHANAN: We were doing it with 40,
10 with only a 20 dB margin, and it was working. I
11 know it makes Dave Eierman shudder.

12 CHAIRPERSON NASH: David, do you want to
13 comment about those numbers?

14 MR. EIERMAN: Well, you know, David
15 Eierman, Motorola.

16 Putting my Implementation Subcommittee
17 hat on again, there is a technical appendix in the
18 Guidelines that discusses the co-channel numbers and
19 the adjacent channel numbers and how to do that
20 analysis. So, again, anything you guys decide
21 affects that document and it affects the NPSTC
22 document.

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1 The analysis done there was the same
2 analysis, was the same procedure that was used at
3 8.21, defining that the co-channel or adjacent
4 channel, whatever, there's a 1 percent probability
5 of interference based on contour-type coverage. So
6 there is a, it ends up with a recommendation of
7 different contour levels. Again, if you start
8 changing the design, all the contours change in
9 relation to one another.

10 CHAIRPERSON NASH: Well, as Dave pointed
11 out, I think the recommendation was that we use the
12 TIA TR8 --

13 MR. SCHLIEMAN: TSB-88

14 CHAIRPERSON NASH: -- yes, TSB-88
15 interference analysis for doing co- and adjacent
16 channel assignments. That was the recommendation we
17 put forth. That gives you the protection from those
18 systems.

19 MR. BUCHANAN: Yes, really, if you use
20 that, you have to put the standard of where to start
21 at in your coverage area, and then it automatically
22 falls out, what the ratios are, depending on the

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1 bandwidth and all that.

2 CHAIRPERSON NASH: Right.

3 Sean?

4 MR. O'HARA: Sean O'Hara, Syracuse
5 Research again.

6 If you're going to do that, if you want
7 to follow TSB-88, then probably don't talk about
8 these 20 dB contour levels as a recommendation at
9 all. Because if the TSB-88, the title-based method
10 is obviously going to be a lot better than any
11 contouring method.

12 If we are going to talk contours, then
13 we should definitely go to Appendix O that talks
14 about what basically used to be the pre-sort
15 criteria document, and that talks about the contour
16 levels that I think are much more appropriate to
17 this.

18 If we want to look at nationwide,
19 looking at different contour levels, I think we need
20 to start over from scratch and start that
21 investigation and rationalize that investigation to
22 make sure that everybody is happy with the

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1 reliability numbers that you are going to get out of
2 something like that.

3 CHAIRPERSON NASH: No, I'm comfortable
4 with what we've said, you know, just using TSB-88 to
5 make those co- and adjacent channel assignments.

6 MR. O'HARA: Okay. Secondly, again, I
7 think it would be nice to see that there should be a
8 minimum signal threshold of at least 40 dBu and up
9 to 50 dBu in the service area, but I wouldn't want
10 to try to place a mandate on everybody that they
11 have to put 50 dBu out all over the service area.

12 Because there's a whole lot of
13 different, across this band there's going to be a
14 whole lot of mix between interference and noise-
15 limited and somewhere-in-between designs. They are
16 going to be driven by the amount of re-use you need
17 in certain areas and other factors. I don't think
18 we should generalize the entire country to one
19 design.

20 If we do the 50 dBu, we are really
21 moving things in almost a cellular-type fashion.
22 Not everybody can do that. Not everybody wants to

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1 do that, and not everybody has to do that.

2 CHAIRPERSON NASH: Any other comments?

3 (No response.)

4 Okay, so the way we have it at the
5 moment, "Systems should be designed to provide 50
6 dBu within the jurisdictional area and to minimize
7 signal beyond the jurisdictional area through the
8 use of antenna patterns, downtilt, transmitter
9 power, et cetera.

10 "Regional RPCs should follow TSB-88 for
11 making co- and adjacent channel assignments."

12 MR. BUCHANAN: Do we want to add
13 anything like Sean mentioned, maybe to strive for
14 50? I know you're saying "should," but he's saying
15 -- and I kind of tend to agree -- that in some cases
16 in some areas 40 may be the best you get. I am not
17 sure we should just set the threshold arbitrarily at
18 50.

19 CHAIRPERSON NASH: We could put a limit,
20 just say something like, "Lesser signal levels are
21 permitted but may experience interference from other
22 user groups," from out-of-band, or whatever. It is

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1 just, if you will, a warning statement.

2 MR. SCHLIEMAN: Is that creating a
3 liability issue then in terms of, if somebody goes
4 to the expense of putting in 50 and they have
5 interference, that --

6 CHAIRPERSON NASH: Well, that was the
7 question I threw back at Michael: If we do 50, are
8 we going to have some guarantee?

9 MR. WILHELM: Which is a question I
10 can't answer either in my capacity as DFO of this
11 Committee or speaking for the Commission.

12 MR. SCHLIEMAN: The short answer is
13 "no," right?

14 MR. WILHELM: Okay, thank you. The
15 short answer is no.

16 (Laughter.)

17 CHAIRPERSON NASH: Go ahead, Sean.

18 MR. O'HARA: Sean O'Hara again.

19 The thing I'm not too sure about with a
20 statement like that is, the first one in, whether he
21 wants to be at 40 or 50, he should be coordinated
22 around based on what he chose. He shouldn't

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1 experience any more interference at 40 than he would
2 at 50 if he was there first and the coordinator did
3 his job as far as selecting channels that didn't
4 cause a loss of reliability over the first person's
5 service area.

6 If you don't do it like that, then what
7 could happen is then somebody could come in and want
8 to do 50 or something like that, and then it does
9 cause a loss of reliability, which then you do have
10 to pump up your power to compensate for or do some
11 increased siting and things like that.

12 So what you are doing is you are forcing
13 -- you are changing your whole design based upon
14 what somebody else is doing, and that's almost like
15 doing to ourselves what Nextel has done to us in the
16 past. I don't think that's really fair.

17 CHAIRPERSON NASH: Well, but to play
18 devil's advocate there, Sean, if I design my system
19 for 10 dBu because I am a real cheap guy, should I
20 be protected? Should I prevent somebody else from
21 being able to come in and put a system in because I
22 have been cheap? At what point do my rights end?

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1 Where do I have responsibility for protecting myself
2 against the other guy? Where do you draw that line?

3 MR. O'HARA: Oh, I understand your
4 argument, but the 10 dBu -- I mean, I would rather
5 talk about 40 dBu. We also have a fiscal -- I mean,
6 there's some responsibilities in terms of what is
7 realizable, in terms of what you can actually do in
8 systems cost.

9 Statewide systems cannot put 50 dBu out
10 across entire states. It just simply can't happen,
11 nor do they need to. They don't have the same needs
12 as far as portable, in-building coverage, and all
13 those other things.

14 If those systems are up first, then the
15 systems shouldn't be placed into obsolescence when
16 people start using co-channel frequencies at 50 dBu
17 and start lowering the reliability of the whole
18 system. Those things should be coordinated around.

19 If someone wants to operate a 50 dBu
20 system, and I want to come in and operate a 40 dBu
21 system, well, then my channel selections are going
22 to have to be based upon the here-and-now realities

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1 of what is out there. So I don't get any
2 interference from him, and he doesn't get
3 interference from me.

4 There should be a minimum threshold of
5 perhaps 40 or perhaps less, but I don't think that
6 that should drive whether or not you have
7 interference within your system. That is not
8 necessarily a fair approach, I don't think.

9 This could be certainly debated further.

10 CHAIRPERSON NASH: But that gets us back
11 to the original question: We do have a 40 dBu
12 design criteria today, and the CMRS providers
13 argued, when we said that we weren't expecting
14 greater interference from them than we could live
15 with, their argument was, "Well, you need to design
16 more robust systems." So the question was raised,
17 should we raise that floor from 40 to 50? Kind of
18 what I am hearing you say is, no, we should not.

19 MR. O'HARA: That is exactly what you
20 are hearing me say. If they are, in fact, going to
21 cause problems, then they should have their out-of-
22 band interference lowered.

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1 It gets basically back to the pollution
2 problem. You can't let the CMRS people drive all
3 the taxpayer dollars that have to go into building
4 these systems. I mean, the 10 dB difference in a
5 statewide system is a whole lot of sites,
6 quadrupling, perhaps five, six times the amount of
7 sites.

8 No one is going to want to absorb those
9 kinds of costs just because the CMRS operators are
10 putting out a little more pollution into the band.
11 I mean, that is just not -- it is inconceivable.

12 MR. SCHLIEMAN: In terms of your 10 dBu,
13 I think that's a bit ridiculous. Forty was based on
14 a mobile, in-street signal, was it not, with
15 adequate reliability? That's a question.

16 CHAIRPERSON NASH: I agree it was being
17 ridiculous, but it was in response to Sean's comment
18 that, if I am the first guy in and I design my
19 system for something, then everybody else has got to
20 live with whatever I design --

21 MR. SCHLIEMAN: Rather than be
22 ridiculous about it, if somebody designed a system

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1 for mobile in-street, using good engineering
2 practice with signal levels that were known to be
3 appropriate, and somebody else wants to come on and
4 do something entirely different in a manner which
5 causes interference, it seems like they have to fix
6 the interference.

7 If I want to put in a system in street
8 and I don't need 52 dB to penetrate buildings, why
9 should I have to put in 52 dB? If I want to later
10 put in a signal in those buildings, they're are many
11 ways that I can do that. I don't need to increase
12 the overall signal level in the street to get the
13 signal in the building. I can put the signal in the
14 building. I don't have to force it through the
15 walls of the building.

16 CHAIRPERSON NASH: Bob, the argument was
17 not being made that we need to set 50 in order to
18 get in-building coverage.

19 MR. SCHLIEMAN: Well, your
20 recommendation for over 50 was that largely based on
21 getting enough signal level at the service boundary
22 to provide for in-building penetration.

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1 CHAIRPERSON NASH: The argument that was
2 coming from the FCC and from CMRS was that that
3 level be increased by 10 dB in order to protect
4 ourselves from the interference coming from the CMRS
5 portion of the band.

6 CHAIRPERSON NASH: This noise is a
7 result of pollution, and we have to correct it or we
8 have to get it corrected. I submit we have to get
9 it corrected.

10 MR. BUCHANAN: How about if we did this:
11 Since what we are really aiming at is not the 40 or
12 the 50, but how to deal with this interference we
13 expect may happen, I think if we made a statement
14 that, well, we already have 40 dBu's the lowest. We
15 could recommend that system users, to protect
16 themselves, should strive for 50, at least in urban
17 areas.

18 However, the public safety community
19 will have an extremely hard time building those
20 systems across the country for all types of systems.

21 Therefore, we don't see this as a viable
22 alternative to eliminating interference from other

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1 users in the band, and that we still feel, which I
2 think we all do, that the real cure for this is to
3 minimize the out-of-band interference that's coming
4 to us.

5 MR. O'HARA: Furthermore, too, if the
6 first one in wants to use a 40 dBu-type design
7 methodology, and somebody comes in and wants to use
8 co-channels, frequencies and they want to do a 50
9 dBu contouring methodology, that still doesn't need
10 to cause any change. This shouldn't have any impact
11 on the 40 dBu, and the 50 dBu design could certainly
12 still do the same thing just by applying a little
13 better radiation control.

14 I mean, all he needs to do is keep his
15 "X" dBu, whether 5 dBu or 8 dBu contour, away from
16 that 40 dBu contour. It doesn't matter if he puts
17 out 100 dBu of signal at his service boundary, as
18 long as he's not putting out his interference
19 contour past that boundary that's already been
20 defined by somebody else's service area.

21 I think that that is the effect that we
22 are kind of looking for. There is always a way to

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1 do these things, but the person who wants that
2 higher robustness to interference or higher re-use
3 within a service area, for whatever reason he wants
4 those kinds of things, he is just going to have to
5 design a system accordingly, so that he doesn't
6 interfere with everyone else.

7 MR. SCHLIEMAN: Just a word of caution
8 about the super-high signal strength. When it gets
9 to interlinked channels, you have to be concerned
10 about the adjacent channel overload in the receiver
11 and the intermodulation characteristics. I do too.

12 CHAIRPERSON NASH: Well, again, there's
13 two sides to the problem. One, if you are going to
14 be using TSB-88, you have to have a level that you
15 are going to be doing basing that upon. So sort of
16 what I am hearing people say is, okay, let's base
17 that on 40, not 50. Okay?

18 MR. SCHLIEMAN: We all agree on that.

19 CHAIRPERSON NASH: We're going to base
20 it on 40. We're going to suggest that users --
21 well, let me read what I've got here:

22 "Systems should be designed to provide

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1 40 dBu within the jurisdictional area and to
2 minimize signal beyond the jurisdictional area
3 through the use of antenna patterns, downtilt,
4 transmitter power, et cetera.

5 "Regional RPCs should follow TSB-88 for
6 making co- and adjacent channel assignments. Users
7 may design their system for lesser signal levels,
8 but may not be protected from interference. Users
9 are encouraged to design their system for 50 dBu or
10 greater to protect themselves from interference and
11 to provide better in-building coverage. However, in
12 doing so, they should not increase the signal level
13 outside their jurisdictional area."

14 Sound acceptable? Yes?

15 MR. SALIBA: Jean-Pierre Saliba, State
16 of Florida.

17 I think you should include right along
18 the jurisdictional area of so many miles of
19 protection for each user or each system. Because
20 right out along the jurisdiction, we are finding
21 that it is very hard to really maintain that signal
22 where you need it to be. Therefore, if you give it

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1 a little bit more leeway right along the
2 jurisdiction, it might be easier for a systems
3 engineer's design to be able to accommodate the
4 design for the agency.

5 CHAIRPERSON NASH: Well, what I said
6 here was to minimize it outside your jurisdictional
7 area.

8 MR. SALIBA: Yes, but that is very vague
9 when you say --

10 CHAIRPERSON NASH: Oh, I understand
11 that, but even if we said jurisdiction plus five
12 miles, that's not a Faraday shield. It doesn't end
13 at that point.

14 MR. SALIBA: Well, you have to do your
15 best to end it at that point.

16 MR. BUCHANAN: Yes, that is the whole
17 intent of saying that you use the patterned
18 antennas. We have wrestled with that quite a bit in
19 Southern California, and the best we have ever come
20 up with is similar statements to that: that at some
21 point you have to say, what's reality of who can be
22 here adjacent --

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1 CHAIRPERSON NASH: Beyond jurisdictional
2 area plus three miles, five miles?

3 MR. BUCHANAN: Well, we have always
4 defined the jurisdictional, and I think it is
5 defined in the implementation, as your jurisdiction
6 boundaries plus three miles. That is the area that
7 your coverage is. At that point, from there on, you
8 then have to roll it off as quickly as you can,
9 given all the technical constraints.

10 MR. SALIBA: Three miles is acceptable.

11 CHAIRPERSON NASH: Okay, so "Systems
12 should be designed to provide 40 dBu within the
13 jurisdictional area and to minimize signal levels
14 beyond the jurisdictional area plus three miles,
15 through the use of antenna patterns, downtilt,
16 transmitter power, et cetera.

17 "Regional RPCs should follow TSB-88 for
18 making co- and adjacent channel assignments. Users
19 may design their system for lesser signal levels,
20 but may be not be protected from interference.
21 Users are encouraged to design their systems for 50
22 dBu or greater to protect themselves from

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1 interference and to provide better in-building
2 coverage, et cetera. In doing so, however, users
3 should not increase the signal level outside of
4 their jurisdictional area plus three miles."

5 MR. BUCHANAN: Can we just add one --
6 where you say, to protect them, the 50 dBu is to
7 protect from interference, it would be out-of-band
8 interference as opposed to in-band? Out-of-band
9 emissions, I guess?

10 CHAIRPERSON NASH: Okay. How about high
11 noise conditions?

12 MR. BUCHANAN: I would just like to make
13 it clear that that protection is not to your
14 neighbors and your other public safety agencies, but
15 from the commercial systems.

16 CHAIRPERSON NASH: So "to protect
17 themselves from out-of-band interference and to
18 provide better in-building coverage, et cetera."?

19 MR. BUCHANAN: Yes.

20 CHAIRPERSON NASH: Okay? We have
21 consensus? Nods? Okay. I will write that up and
22 get it for the Steering Committee tomorrow, Michael.

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1 MR. WILHELM: Thank you. It probably
2 needs to go to Implementation to put in their
3 guidelines.

4 CHAIRPERSON NASH: Yes, well, with the
5 recommendation that it be included in the
6 implementation guidelines.

7 MR. WILHELM: Yes.

8 CHAIRPERSON NASH: Okay, we will get our
9 report from TIA tomorrow on the wideband data
10 standard.

11 So moving on to the question that was
12 raised about loading on the wideband channels, a
13 little background is that, traditionally, at least
14 at the 800, there was a loading requirement of 70
15 users per channel on the conventional channels and
16 100 users per channel on the trunk channels, if I
17 remember my rules correctly. That was sort of
18 targeted towards voice users.

19 The question came up, with the wideband
20 channels being more of a data-type application, was
21 there any sort of recommendation we could come up
22 with as to the number of users on the wideband

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1 channels?

2 I'm opening this up for discussion. Let
3 me toss out, sort of as a starting place, some
4 thoughts I had on this. If we start with the
5 kilohertz channel, and assuming a general data rate
6 of 125 kilobits per second, which just takes the 384
7 that we've talked about at the 150 and sort of
8 rounds it off, divide by three, round it off. It is
9 a nice, easy number to work with.

10 Multiply it by 3600, gives you available
11 bits per hour; multiplied by eight gives you
12 available bits per shift. Then grabbing a number
13 that I heard from a Motorola rep. a couple of weeks
14 ago who said that the average user generates about 5
15 megabits per shift of data, so if you divide by the
16 available bits per shift, by 5 megabits per user,
17 and then I just threw in a "fudge" factor of, say,
18 well, we are only going to load the system to 25
19 percent, and you work all the math, and I will admit
20 to having done it with pencil and paper, so there's
21 the likelihood of an error, I came up with 180 users
22 per 50 KHz channel.

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1 As I say, I am open to anybody with a
2 calculator or a better, sharper pencil to prove that
3 number wrong. But that was an approach I took.

4 I am open to suggestion on (a) whether
5 or not those numbers were valid numbers to use,
6 whether or not there's alternative approaches, but
7 it was something.

8 MR. SCHLIEMAN: Where did the 5 megabits
9 come from originally, other than from the Motorola
10 salesman?

11 CHAIRPERSON NASH: Strictly from the
12 Motorola salesman --

13 MR. BUCHANAN: Yes, we asked Motorola to
14 come in and speak to our local APCO chapter, or
15 actually it was part of our 700 planning, too, but
16 it happened to work out that he could do it at one
17 of those meetings, and everyone was there that was
18 considering this. That was just something that came
19 out of their work, I assume from their Greenhouse
20 Project.

21 I am sure we couldn't hold them to that
22 number, but it is one that was mentioned. I don't

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1 know if there is --- we have had a hard time finding
2 any other numbers or any other information.

3 We just had a 700 meg workgroup meeting
4 on this specific issue, also asking about re-use
5 that Glen hasn't brought up, but we are having a
6 tough time finding any numbers or any of the
7 manufacturers that want to step up to the plate at
8 this time and tell us any good information. That is
9 where that came from.

10 MR. SCHLIEMAN: Do you know if there are
11 any, where they ran the Greenhouse Project in
12 Florida, have they published any reports on the
13 performance or is that strictly proprietary to
14 Motorola?

15 CHAIRPERSON NASH: I think one of the
16 issues with Pinellas County was that it was so
17 lightly loaded that -- and I'm not sure that we got
18 any really good information about what possible
19 loading might be.

20 MR. SCHLIEMAN: We don't know what type
21 of applications that they put to work there? Has
22 anybody correlated the information that Dr. Stone

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1 did in the Public Safety Wireless Advisory
2 Committee, and the NCIC 2000 Project, with different
3 types of data requirements?

4 CHAIRPERSON NASH: Yes, I don't know of
5 anybody that -- I haven't seen where anybody has
6 come up with any sort of number about what the
7 average user does per hour, per shift, per month,
8 per anything, other than what Mike came up with from
9 Motorola. It was as good a number as any. If
10 somebody's got another number or a better number, I
11 am open to suggestions.

12 MR. BUCHANAN: I would also like to say
13 that they reported a lot of different applications
14 from that project, and a lot of them, frankly,
15 revolved around low-speed, slow-scan -- well, I
16 wouldn't say slow-scan -- but, anyway, low-data-rate
17 video was a great number of applications, a lot of
18 database-type applications, things like that.

19 So, that seems to be the trend, which is
20 quite different than what we are used to today in
21 mobile data, which is simply text, short text
22 messaging.

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1 CHAIRPERSON NASH: Sean?

2 MR. O'HARA: One thing I guess I would
3 ask is -- we could probably check to see how that
4 correlates with what PSWAC said under the "special
5 data" requirement per user, which had so many bits
6 per user for special data. It seems to fit well
7 into the category that this technology is going to
8 be covering.

9 Secondly, just a comment: Whatever user
10 data we come up with, if that is actual payload data
11 that he needs to send, the actual bit rates after
12 the pilot sync overheads, MAC overheads, and
13 retransmissions is going to be, at best case, 50
14 percent of what you're talking about, too. So, you
15 may want to, that would cut the number of users
16 right in half, if you're scaling everything
17 accordingly.

18 MR. SCHLIEMAN: Is that megabits, 8
19 megabits or 8 megabytes?

20 MR. BUCHANAN: I'm pretty sure he said
21 "bits."

22 MR. SCHLIEMAN: Not characters or

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1 anything like that?

2 MR. DEVINE: A quick note, Steve Devine,
3 does the same application in the proximity of the
4 tower -- are we talking apples and oranges here when
5 we're talking about if that's going to be the
6 standard? Is the throughput being directed in
7 proportion to the proximity to the tower, and that
8 dropping off, and how does that affect how we can
9 predict loading, if that's going to be at least our
10 interoperable standard, which, granted, is another
11 issue?

12 CHAIRPERSON NASH: Again, those all have
13 an impact on the overall data rate. I think part of
14 the difficulty that we are seeing, and the reason
15 that Teddy brought this up and asked us to take a
16 look at it, was that, as the RPC started to look at
17 this and give consideration to channel allocations,
18 the experience that Southern California has had was
19 that users came in and said, "Well, I've got five
20 MDT channels today. So I need 10 wideband channels
21 to allow me to have some growth."

22 On the surface that doesn't seem

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1 reasonable, but nobody has an answer as to, well, if
2 that's not reasonable, what is? So what we are
3 trying to do is come up with some estimates here of
4 what is reasonable.

5 One of the difficulties that I have,
6 from a personal aspect, as we look back at the PSWAC
7 report, yes, we identified some things that wideband
8 data could do and were answers for. Let me remind
9 everyone that we asked for 73.5 MHz of spectrum to
10 do those things.

11 These wideband channels that we have
12 certainly were not the entire answer, and yet we at
13 times seemed to be trying to make it the entire
14 answer. And so it may be necessary for us to, in
15 fact, limit what happens on these channels at this
16 point, so that we don't have one user grabbing the
17 whole thing off, getting his needs satisfied, and
18 everybody else is left with nothing.

19 This is not enough spectrum to satisfy
20 all of the requirements of PSWAC. Let's stop trying
21 to shove PSWAC into this in its entirety.

22 MR. DEMPSEY: Ted Dempsey.

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1 Just to reiterate what Glen was talking
2 about, the reason you put this out on a listserver
3 again wasn't to ask the FCC to mandate any kind of
4 channel loading. It was strictly for the RPC
5 process.

6 Glen, I just wanted to strike in that a
7 little bit. The dialog on the listserver started
8 out, "Yeah, we can suggest so many units," moved
9 right up into, "Well, the FCC should mandate
10 certain" -- it never was the intention for us to ask
11 the FCC to make this any kind of mandate or
12 standard. It was simply for guidance during the RPC
13 process.

14 The second thought I want to talk about,
15 the PSWAC report, the first recommendation was 25
16 MHz of immediate relief for voice and data, and
17 wideband wasn't included in those original 25 MHz.
18 We got 24 MHz, they got us--

19 CHAIRPERSON NASH: And half of it is
20 wideband.

21 MR. DEMPSEY: And half of it is
22 wideband, and the other quarter of it is

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1 interoperability.

2 So some of the regions, especially in
3 the larger areas, only have between 80 and 100
4 usable channels after wideband data and
5 interoperability.

6 MR. BUCHANAN: And I can tell you some
7 of the other things we have been struggling with in
8 Southern California as we have tried to look at the
9 wideband usage. Once you decide on a loading, then
10 you get into, well, as Steve said, where does it
11 roll off on the data rate and also what is the re-
12 use factor, because the re-use factor makes a big
13 difference, too, as to how you can allocate these?

14 So there's still a lot of issues before
15 you at the regional level start allocating anything.

16 And I think that is what we are struggling with.

17 It would sure help if the manufacturers
18 could give us -- I know they're struggling, and you
19 can only do this research and development so fast,
20 but it would really help if, whatever information
21 they have that's not proprietary, that they could
22 get out to us; it would make our job a lot easier.

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1 MR. SCHLIEMAN: Glen, would you re-read
2 your numbers that you said originally?

3 CHAIRPERSON NASH: Okay. I was basing
4 just upon a data rate of 125 kilobits per second
5 times 3600 seconds per hour, times eight hours, to
6 come up with available bits per shift. I then
7 divided by Motorola's number of 5 megabits per user,
8 divided by four to give us a "fudge" factor.

9 MR. SCHLIEMAN: Five megabits per user?

10 CHAIRPERSON NASH: Five megabits per
11 user per shift.

12 MR. SCHLIEMAN: That's actual
13 throughput, the 5 megabits.

14 CHAIRPERSON NASH: That was identified
15 as being a data load, whatever that is supposed to
16 mean.

17 MR. SCHLIEMAN: So there was no overhead
18 or any of that stuff in there?

19 CHAIRPERSON NASH: I don't know where --
20 then I divided by four simply as a "fudge" factor
21 and wound up at 180 users. You know, it is as much
22 a shot in the dark as anything else.

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1 You know, on the one side, with the SAR
2 technology, the closer you are to the site, 125
3 kilobits per second might be too low, and when
4 you're further away from the site, it might be too
5 high. There is certainly argument as to whether or
6 not 5 megabits per user is a valid number. About
7 the only thing I'm sure of is that there's 3600
8 seconds per hour.

9 MR. SCHLIEMAN: And there's eight hours
10 in a shift, I guess.

11 CHAIRPERSON NASH: Well, there's eight
12 hours --

13 MR. SCHLIEMAN: In some shifts.

14 CHAIRPERSON NASH: -- in some shifts.

15 (Laughter.)

16 MR. SCHLIEMAN: Assuming a three-shift
17 day.

18 MR. DEVINE: Steve Devine.

19 That sounds like as good a place to
20 start as any. I mean for lack of anywhere else to
21 start, if we could start there and if there's
22 corrections down the road, I am sure we will be told

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1 of the corrections or things that we overlooked. If
2 that's a place to start, then so be it.

3 CHAIRPERSON NASH: Any other comments?

4 MR. PALMER: I agree. Clark Palmer,
5 Washington State Patrol.

6 Typically, on networks, as you load your
7 network and it slows down, then the applications
8 become more efficient. So eventually you will get
9 to a better data loading. Five megabits is as good
10 as anyplace to start because you are also assuming
11 efficient application development and communication
12 between applications. So it really is just a guess.

13 CHAIRPERSON NASH: That may mean that
14 you're not able to run streaming video back from
15 every car on this band.

16 MR. DEMPSEY: I don't want to finish
17 your sentences, but that was never the intent.

18 (Laughter.)

19 CHAIRPERSON NASH: Of this band or --

20 MR. DEMPSEY: Of this band or I should
21 say of this allocation.

22 CHAIRPERSON NASH: All right, it is a

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1 starting place for discussion. Give it some
2 thought.

3 MR. BUCHANAN: How about re-use?

4 CHAIRPERSON NASH: Again, about the only
5 input I have ever heard is at the point at which you
6 reach 5 percent bit error rate due to an interfering
7 signal, that's when your own becomes unusable. So
8 how do you define that in a re-use pattern? Yes, we
9 can ask TIA for some help as to what does that mean.

10 Okay, the last item that was on the
11 agenda -- and we are getting pretty close to lunch
12 here -- was the issue of expanding the technical
13 standards that we adopted for the 700 MHz band to
14 the interoperability channels that have been
15 recommended in the other bands, low-band/high-band,
16 UHF, and at least in theory the 800.

17 As I commented during the
18 Interoperability meeting, I certainly could go along
19 with the concept that, if you are going to be using
20 digital on the interoperability channels and those
21 other bands, that it would make sense that that
22 follow the Project 25 standard that we have

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1 recommended for the 700 MHz band.

2 There certainly are some technical
3 reasons for doing that that relate at least to the
4 VOCODER and concerns that have been raised about
5 significant degradation of the voice if you try to
6 use one VOCODER, go to analog, and then go into
7 another VOCODER, what some people refer to as
8 "transcoding," although that is not exactly valid
9 there, but there are concerns there.

10 However, there are legacy systems, both
11 on some of those interoperability channels and
12 certainly legacy systems that people, we would hope
13 they are implementing the new interoperability
14 channels are on. Those legacy systems are analog
15 FM. So, therefore, I think we need to allow for
16 that and would suggest that we permit analog FM on
17 those interoperability channels for the foreseeable
18 future.

19 The Commission has already defined those
20 channels as 12.5 KHz narrowband. That's fine. You
21 can do 12.5 KHz in analog FM. It doesn't sound the
22 best, but it works.

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1 MR. SCHLIEMAN: Can our recommendation,
2 therefore, be that where presently analog is used,
3 that it be allowed to continue, and that where
4 digital is being used, that it on these
5 interoperability channels conform to the ANSI-102
6 standards that were implemented in the 700 MHz band?

7 CHAIRPERSON NASH: Right.

8 MR. BUCHANAN: Are we asking that to be
9 a rulemaking, too, or just a guidance --

10 MR. SCHLIEMAN: A recommendation to the
11 NCC Steering Committee or Governing Board, or
12 whatever we want to call it, Steering Committee.

13 CHAIRPERSON NASH: It would then go
14 forward to a rulemaking?

15 MR. SCHLIEMAN: Rulemaking?

16 CHAIRPERSON NASH: It needs to be a
17 rule. The other thing that--

18 Do we have pretty good acceptance of
19 that?

20 MR. DEVINE: Steve Devine.

21 That was the intent, that one of the few
22 things we actually wanted a rulemaking proceeding on

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1 was the standardization of the NAC or the CTCSS for
2 all band interoperability. So regardless of the
3 band, when they showed up, they were confident that
4 there was some compatibility there. So that was the
5 original intent from the Interoperability
6 Subcommittee.

7 CHAIRPERSON NASH: Okay. So we have
8 consensus to go forward with that recommendation,
9 that on the other interoperability channels, that
10 analog FM, 12.5 KHz, be permitted where analog FM
11 systems exist, and that if digital is to be
12 implemented, it shall follow the ANSI-102 Project 25
13 standard in the 12.5 KHz conventional mode, as was
14 recommended for the 700 MHz band.

15 Lots of head-nodding out there. I have
16 consensus? Good.

17 The other question that was brought up
18 was relative to CTCSS. There currently is in the
19 800 and also in a couple of the other bands the
20 recommendation to use 156.7 nationwide in the analog
21 FM mode.

22 The question was raised, what about

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1 regional systems? Let me just discuss here briefly
2 what we have done in California was to say that you
3 may implement other CTCSS tones, either on a local
4 or a regional basis. However, you must be capable
5 of receiving the 156.7 so that roamers that come
6 into the area are able to access the system.

7 I'm seeing some head-nods out there that
8 that's an acceptable way of putting it. Okay, I
9 will draft that up and present it to the Steering
10 Committee tomorrow.

11 Any other comments?

12 MR. DEVINE: Steve Devine, State of
13 Missouri.

14 To complicate matters, as if they need
15 complicating, with regard to some of the legacy
16 channels, in particular the fire and mutual aid on
17 54.282, 265, 295, there's interstitial narrowband
18 channels associated in between those channels that
19 are assigned the same limitation. To a large
20 extent, I would imagine, they are not as widely used
21 as the 20 K. analog, the wideband channels currently
22 are.

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1 So, in addition to the legacy use that
2 we have discussed earlier, there is going to be a
3 eventual use of those interstitials as well in
4 there. So there's going to be an education, even to
5 the regional systems as they begin to narrow and
6 make more use of those interstitials.

7 So the 2875, and whatever the other one
8 is, 2725 -- so there's going to be more and more of
9 that down the road. So even the legacy systems
10 using the intersystem sharing channels are still
11 going to be affected by this to some degree, because
12 those interstitials are provided the same
13 limitation. So as that becomes more popular, we
14 will see more of that developing as well.

15 CHAIRPERSON NASH: Any other comments?

16 (No response.)

17 Any other business for the Committee?

18 (No response.)

19 Well, with that, we're about two minutes
20 short of the noon hour. I will go ahead and
21 adjourn --

22 MR. WILHELM: I'll take those two

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1 minutes, if I may.

2 CHAIRPERSON NASH: Michael is going to
3 fill our two minutes.

4 MR. WILHELM: A couple of items of
5 business: First of all, somebody picked up Joy's
6 list of NCC members, thinking it was a handout. As
7 a matter of fact, it was a list she was keeping and
8 entering corrections in. So if you would examine
9 the papers you picked up, if you see any corrections
10 on it, please give it to Joy, who is over there.

11 The second matter is lunch. You are
12 free to leave the building, but you must be escorted
13 when you come back in. I think that probably rules
14 out use of our cafeterias. There are fast-food
15 restaurants in L'Enfant Plaza, which is across 12th
16 Street. There are some seafood restaurants on Maine
17 Avenue, which is easy walking distance.

18 I am going to suggest that we allow an
19 hour-and-a-half for lunch --

20 CHAIRPERSON NASH: I was going to make
21 the same suggestion.

22 MR. WILHELM: -- and that we will have

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1 people at the front door of the building to escort
2 you between 1:15 and 1:30. So please be back by
3 1:30. Follow the same process that you used to
4 enter the building this morning.

5 I have 10 seconds left. Glen, do you
6 want them?

7 (Laughter.)

8 CHAIRPERSON NASH: No, go for them.

9 MR. WILHELM: Thank you. We're
10 adjourned.

11 (Whereupon, the proceedings of the
12 Technology Subcommittee were concluded at 12:01
13 p.m.)

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