

STANDARDS COUNCIL MEETING

August 3, 2016

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169
10:30 a.m.

3

1 CHAIRMAN BELL: Good morning
2 everyone. My name is Kerry Bell and I'm
3 the Chair of the Standards Council. And
4 it's my pleasure to call this hearing to
5 order. In a moment we're going to go
6 around the room here and have everybody
7 introduce themselves.

8 Before I do that, I just want to
9 remind everybody that we have a
10 stenographer here today who is going to be
11 recording the sessions. So from that
12 perspective it's important that everyone
13 who is speaking state your name and
14 affiliation before you make a remark so
15 that we can capture that for the record.
16 Also, for those of you who will be
17 speaking, if you'll give your business
18 card to the stenographer or Linda Fuller
19 here to make sure we get the spelling of
20 your name and affiliation, that would be
21 greatly appreciated.

22 All of the hearings that we have
23 scheduled today are related to NFPA 70.

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1 I N D E X

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1 So our plan is to hold two hearings this
2 morning before lunch, take a break for
3 lunch, then reconvene at 1 o'clock to hold
4 the last three hearings this afternoon.

5 With that let's go ahead and start
6 with the introductions and we'll start
7 here to my left. We'll go around the
8 perimeter of the table here, and then once
9 that is completed start to the left here
10 and go around the perimeter of the room.
11 Please state your name and affiliation.

12 Dawn.

13 MS. BELLIS: Dawn Michelle Bellis,
14 Council secretary.

15 MS. FULLER: Linda Fuller, NFPA
16 staff.

17 MR. O'CONNOR: Daniel O'Connor,
18 member of Council.

19 MR. KEITH: Gary Keith, member of
20 Council.

21 MR. GOLINVEAUX: James Golinveaux,
22 member of Council.

23 MR. SNYDER: Michael Snyder,

<p style="text-align: center;">5</p> <p>1 member of Council.</p> <p>2 MR. BUSH: Kenneth Bush, member of</p> <p>3 Council.</p> <p>4 MR. BRADLEY: Randall Bradley,</p> <p>5 member of Council.</p> <p>6 MS. HUNTER: Christel Hunter,</p> <p>7 General Cable.</p> <p>8 MR. BEEBE: Chad Beebe, member of</p> <p>9 Council.</p> <p>10 MR. RICKARD: John Rickard, member</p> <p>11 of Council.</p> <p>12 MS. MANLEY: Bonnie Manley, member</p> <p>13 of Council.</p> <p>14 MR. QUITER: Jim Quiter, member of</p> <p>15 the Council.</p> <p>16 MR. OWEN: Richard Owen, member of</p> <p>17 Council.</p> <p>18 MS. GLEASON: Patricia Gleason,</p> <p>19 member of Council.</p> <p>20 MS. EVERETT: Sally Everett, NFPA</p> <p>21 in staff.</p> <p>22 MR. BURKE: Bill Burke, NFPA</p> <p>23 staff.</p>	<p style="text-align: center;">7</p> <p>1 MR. JOHNSTON: Mike Johnston with</p> <p>2 NECA, chair, Correlating Committee.</p> <p>3 MR. EARLEY: Mark Earley, NFPA</p> <p>4 staff.</p> <p>5 MR. FOLEY: Robert Foley, NFPA</p> <p>6 staff.</p> <p>7 MR. McCULLOUGH: Robert McCullough,</p> <p>8 representing IAEI, alternate on the</p> <p>9 Correlating Committee.</p> <p>10 MR. GALLO: Ernie Gallo</p> <p>11 representing ATIS, alternate on</p> <p>12 Correlating Committee.</p> <p>13 MR. AYER: Larry Ayer,</p> <p>14 representing Independent Electrical</p> <p>15 Contractors, alternate member of</p> <p>16 Correlating Committee.</p> <p>17 MR. MEASE: Gill Mease, NFPA.</p> <p>18 MR. STRANIERO: George Straniero,</p> <p>19 AFC, alternate Correlating Committee.</p> <p>20 MR. HOLUB: Rich Holub,</p> <p>21 representing American Chemistry Council,</p> <p>22 principal of the Correlating Committee.</p> <p>23 MR. POPE: Tim Pope representing</p>
<p style="text-align: center;">6</p> <p>1 MR. ODE: Mark Ode, Underwriter</p> <p>2 Laboratories and alternate member of</p> <p>3 Correlating Committee.</p> <p>4 MR. PIERCE: Jim Pierce, Intertek,</p> <p>5 principal, Correlating Committee.</p> <p>6 MS. PORTER: Christine Porter,</p> <p>7 Intertek, alternate in the Correlating</p> <p>8 Committee.</p> <p>9 MR. SMITH: Michael W. Smith,</p> <p>10 NECA, Code Making Panel 6, chair.</p> <p>11 MR. BRUNSSSEN: Jim Brunssen,</p> <p>12 principal member of Correlating Committee</p> <p>13 representing ATIS.</p> <p>14 MR. MANCHE: Alan Manche,</p> <p>15 Schneider Electric, Correlating Committee.</p> <p>16 MR. DUBAY: Christian Dubay, NFPA</p> <p>17 staff.</p> <p>18 MR. OSBORNE: Robert Osborne, UL.</p> <p>19 MR. ROCK: Brian Rock, Hubbell</p> <p>20 Incorporated.</p> <p>21 MR. KOVACIK: John Kovacik,</p> <p>22 Underwriters Laboratories, principal</p> <p>23 member of the Correlating Committee.</p>	<p style="text-align: center;">8</p> <p>1 the Canadian Electrical Code, non-voting</p> <p>2 member of the Correlating Committee.</p> <p>3 MR. SAPORITA: Vince Saporita,</p> <p>4 representing NEMA, a principal member on</p> <p>5 the Correlating Committee.</p> <p>6 MR. BUCHANAN: Paul Buchanan,</p> <p>7 NFPA staff.</p> <p>8 MR. HULIER: Mark Hulier,</p> <p>9 NFPA staff.</p> <p>10 MS. McWALTER: Kayla McWalter,</p> <p>11 NFPA staff.</p> <p>12 CHAIRMAN BELL: Thank you everyone</p> <p>13 for those introductions. From a process</p> <p>14 standpoint we have a couple of more</p> <p>15 individuals enter the room.</p> <p>16 MR. BIEMAN: Rich Bieman, NFPA</p> <p>17 staff.</p> <p>18 CHAIRMAN BELL: What we have</p> <p>19 planned here is to allow each side a total</p> <p>20 of ten minutes to make their opening</p> <p>21 remarks. After that we are going to open</p> <p>22 up the floor to questions to Council</p> <p>23 members, and then after the questions are</p>

1 completed we'll go into the closing
 2 segment. We'll allow a total of five
 3 minutes for each side to make their
 4 closing remarks.
 5 Now I can tell by the
 6 introductions we have several
 7 representatives from the NEC project here
 8 today including the chair of the
 9 Correlating Committee. So we're going to
 10 allow them to speak to these issues as
 11 well. So at this point did anybody have
 12 any questions regarding the procedure or
 13 process? If not let's go ahead and go
 14 into the first hearing which is related to
 15 a general topic 16-8-3-c which I
 16 understand, Ms. Hunter, you're requesting
 17 the Council overturn the association
 18 action related to mini motion 70-5 which
 19 essentially is requesting the Council to
 20 accept public comment 1136; is that
 21 correct?
 22 MS. HUNTER: Yes, sir, that is
 23 correct.

1 CHAIRMAN BELL: Thank you. Is
 2 there anybody going to be speaking in
 3 opposition to this appeal? (Pause) With
 4 that I think we're ready to go ahead and
 5 get started, and the center of the floor
 6 is yours.
 7 MS. HUNTER: Thank you,
 8 Mr. Chairman. I am not going to take ten
 9 minutes. I only have a couple of
 10 additional of statements. Hopefully the
 11 materials that were submitted were clear,
 12 and of course I'd be happy to answer any
 13 questions.
 14 Just a couple of comments. The
 15 appeal is to add in a short clause back
 16 into the definition of tap conductor, and
 17 if we add that clause back in, the effect
 18 will be that there will be no conflict in
 19 the NEC. If we leave it out there is
 20 conflict with the use of the term tap
 21 conductor in other locations in the NEC.
 22 The concerns that were part of the
 23 original acceptance of the definition of

1 tap conductor in the 1996 and 1999 NEC
 2 were not addressed by the code making
 3 panel during this code making cycle, and I
 4 can understand why. It was 20 years ago.
 5 So that would be a long memory for a code
 6 making panel to remember those
 7 deliberations 20 years ago. Nevertheless,
 8 they were part of the record and those
 9 concerns that were expressed when the
 10 definition was first accepted are still
 11 relevant.
 12 In recent years, going through the
 13 definitions in the National Electrical
 14 Code, it is apparent that code making
 15 panels have started to operate under a
 16 different understanding of how definitions
 17 are applied within the NEC definitions
 18 that appear within in each article. If
 19 you look at definitions that were added in
 20 the '90s and before, it's apparent that
 21 code making panels believed that they
 22 could apply to places where the term was
 23 used elsewhere in the code. If you start

1 to look at definitions that were added
 2 within the last few years, like in the new
 3 article 393 or the new definitions that
 4 were added 480.2 for storage batteries,
 5 it's pretty clear that code making panels
 6 had started to operate under the
 7 understanding that those definitions would
 8 apply only within the article.
 9 Unfortunately, we don't have a clear rule
 10 for that in the style manual or in the
 11 NEC.
 12 So I think it's something that
 13 from a code wide perspective we need to
 14 look at and make sure all of our
 15 definitions are treated the same whichever
 16 we decide to go. At least for this cycle
 17 and this one definition, I think it's
 18 important to put that clause back in to
 19 make it clear it still only applies to
 20 Article 240 and the use of the term within
 21 that article. And I've also asked
 22 hopefully the Correlating Committee is
 23 supportive of having a task group to look

1 at the issue as a whole for the next
2 cycle. Thank you.

3 CHAIRMAN BELL: Thank you,
4 Ms. Hunter.

5 Mr. Johnston, chair of the
6 Correlating Committee, do you have any
7 remarks to make on this?

8 MR. JOHNSTON: Thank you,
9 Mr. Chairman. Thank you members of the
10 Standards Council. The way the
11 Correlating Committee handled these
12 appeals is in an organized fashion, which
13 is pretty typical. We assigned a task
14 group, NEC appeals task group, and
15 Mr. Kovacik chaired that group. And we
16 did our work in short order. And there
17 were members of the group in addition to
18 Jim Dollard was one, Larry Ayer who is
19 here, Alan Manche who is here, Vince
20 Saporita is here, and Bob McCullough who
21 is here. And as we typically do we'll
22 have a designated spokesperson on behalf
23 of the Correlating Committee to talk

1 specifics to each of the appeals.

2 So with this appeal Mr. Kovacik
3 was the designated spokesperson so I am
4 going to defer to Mr. Kovacik to address
5 the appellant.

6 MR. KOVACIK: Thank you very much.
7 Mr. Chairman, members of the Council. I
8 am John Kovacik principal member of the
9 Correlating Committee and the spokesperson
10 for the Correlating Committee on this
11 particular appeal. And I have a statement
12 that has been prepared and supported by
13 the Correlating Committee. With regard to
14 this appeal the Correlating Committee did
15 review all of the documentation submitted.

16 We did our own research in looking
17 to the background and how this issue
18 followed through the process. And
19 ultimately we concluded that we would
20 recommend to the Standards Council that
21 this appeal be denied. The proponent of
22 the appeal however is correct in that
23 there are inconsistencies in the NEC

1 regarding the placement and usage of
2 definitions, specifically those
3 definitions that appear in individual code
4 articles. However, it is readily
5 understood by the code committee that
6 definitions in one article apply only to
7 that article. And as such modifying the
8 definition of tap conductor in accordance
9 with the amendment is not necessary.

10 So in closing and summarizing, the
11 Correlating Committee recommends that the
12 Standards Council deny this appeal.
13 However, in light of the appellant's
14 comments the Correlating Committee will
15 form a task group to review the usage of
16 the term tap conductor throughout the NEC
17 and in general the application of
18 definitions located within individual
19 articles. Thank you very much.

20 CHAIRMAN BELL: Thank you,
21 Mr. Johnston and Mr. Kovacik. At this
22 point we'll open up the floor to questions
23 from the council members.

1 I guess I have a question for
2 Mr. Johnston and Mr. Kovacik or anybody
3 else that wants to speak to it. I think
4 there was a point made that is potential
5 conflicts within the standard related to
6 this definition for tap conductor. Do you
7 believe that there is any conflicts within
8 the standards related to that?

9 MR. JOHNSTON: Thank you,
10 Mr. Chair. I don't believe there is any
11 conflict, just an issue that requires, as
12 Ms. Hunter has indicated, some
13 clarification with how the .2 sections
14 that contain definitions within each
15 article are handled. And that will solve
16 a lot of the issues. So in addition to
17 specific task group to deal with this
18 issue, the usability task group of the
19 Correlating Committee will look at a
20 possible revision to clarify that and do
21 the work that is necessary. As it exists
22 right now, there are some definitions that
23 have the clause as used in this article

1 and there are many that are not. But as
2 Mr. Kovacik indicated, it's generally
3 understood that if a definition appears in
4 the .2 section it's pretty well specific
5 to that article. Thank you, Mr. Chairman.

6 CHAIRMAN BELL: Thank you
7 Mr. Johnston. Additional questions?

8 Mr. Golinveaux.

9 MR. GOLINVEAUX: James Golinveaux,
10 member of Council. Ms. Hunter, just to
11 follow up to Kerry's question, in one of
12 your statements it does create a conflict
13 in other locations in the NEC. Can you
14 identify those conflicts?

15 MS. HUNTER: I can. The term tap
16 conductor is used in multiple places
17 throughout the NEC. One of the conflicts
18 that was also brought up on the floor at
19 the technical meeting by a member of code
20 making panel 5 is use of the word tap
21 conductor with grounding electrode
22 conductors. Now the definition of a tap
23 conductor specifically talks about over

1 current protection which you cannot have
2 with a grounding electrode conductor.

3 Other instances are service
4 conductors. Service conductors are
5 specifically excluded by this definition
6 from being a tap conductor, and yet we
7 have references, several references in
8 Article 230 where service conductors or
9 conductors that are tapped off of a
10 service conductor are called taps or tap
11 conductors. And so there are many code
12 making panel members who believe that
13 those definitions apply within one
14 particular article, but I don't know that
15 is necessarily the general understanding
16 in the population of code users. So I
17 think they will look at that and see that
18 conflict between the definition and the
19 different uses of the term throughout the
20 code.

21 CHAIRMAN BELL: Thank you.
22 Mr. Quiter.

23 MR. QUITER: Jim Quiter, member of

1 Council. I guess the other question is
2 are there other places that use the term
3 tap conductor where this definition would
4 or should apply?

5 MS. HUNTER: Yes, I believe so.
6 For example, if you look in Article 430
7 with motor tap conductors, there is quite
8 a bit of overlap. But we have a reference
9 in Article 240 that allows the use of the
10 term tap conductor in the specific rules
11 that apply to motor tap conductors in
12 Article 430. So that's not really a
13 conflict because we have that specific
14 reference and correlation between Article
15 240 and Article 430. So some places there
16 is a conflict; some places there is not.

17 CHAIRMAN BELL: Thank you.

18 Mr. Owen.

19 MR. OWEN: Richard Owen, member of
20 Council. For either Mr. Johnston or
21 Mr. Kovacik, in a letter from Ms. Hunter
22 it says that the information given by the
23 chairman of code making panel 10 was

1 incorrect. And it seems to be kind of a
2 hard thing, any reply to that statement,
3 is her statement correct or incorrect or
4 any further information on that particular
5 part of it?

6 MR. JOHNSTON: Thank you. No
7 information further on that. We're going
8 to support the chair of code panel 10 and
9 his statement. If I could just maybe
10 clarify a couple of things. The term tap
11 is used in multiple phrases throughout the
12 NEC. Like Ms. Hunter mentioned it's used
13 in Article 250 as a tap conductor. Well
14 the actual phrase that it is used in is
15 ground erector conductor tap. So it's
16 used in a different context. So this is
17 why the Correlating Committee did look at
18 it and was receptive to the identified
19 issues brought forward by the appellant
20 that we need to do some additional work,
21 but the work existed before they removed
22 this small phrase as used in this Article
23 in 240.2. Thank you, Mr. Chairman.

1 CHAIRMAN BELL: Thank you.
 2 Mr. Johnston. Further questions?
 3 So hearing none we'll go into the
 4 closing remarks. Five minutes for the
 5 closing remarks.
 6 Ms. Hunter.
 7 MS. HUNTER: Thank you. I still
 8 believe that the appeal has merit and that
 9 there will be confusion, perhaps not with
 10 code making panel members who have
 11 developed a different understanding of the
 12 way the definitions are used within the
 13 code making panel articles, but if we look
 14 at the broader community of enforcement, I
 15 believe that some people, some enforcers
 16 will believe that yes, those definitions
 17 apply within that particular article. But
 18 others will look at, for example, Article
 19 490 or Article 450 where we still have the
 20 terms as used in this article, and they'll
 21 look at that and say well if this
 22 definition was limited to Article 240 we
 23 would have retained this clause.

1 So I think there will be confusion
 2 and variability in the enforcement based
 3 on this change. So thank you for your
 4 time.
 5 CHAIRMAN BELL: Thank you.
 6 Mr. Johnston, Mr. Kovacik, do you have any
 7 further comment to make?
 8 MR. JOHNSTON: Thank you,
 9 Mr. Chairman. I don't believe John has
 10 any and I don't have anything additional
 11 to add. I think we covered it pretty
 12 well. Thank you.
 13 CHAIRMAN BELL: Thank you. We are
 14 going to close this hearing, and before we
 15 do that I just want to express my sincere
 16 appreciation for taking the time out of
 17 your busy schedule to come here, share
 18 this valuable information, and actively
 19 participate in NFPA standards process.
 20 I do want to remind everybody that
 21 the official decision of the
 22 Standards Council will be issued in
 23 writing by the secretary of the Council,

1 Dawn Michelle Bellis, and there is no
 2 staff or Council member permitted to
 3 convey information regarding this
 4 decision. So with that, we are going to
 5 close this hearing and go off the record,
 6 take a short break, 10-minute break, come
 7 back, and start the next hearing.
 8 MS. HUNTER: Thank you, Chairman
 9 Bell.
 10 (Recess)
 11 CHAIRMAN BELL: Back on the
 12 record. Good morning, everyone. My name
 13 is Kerry Bell, and I'm chair of the
 14 Standards Council. And in a moment we are
 15 going to go around the room and have
 16 everybody introduce themselves stating
 17 their name and affiliation. I just want
 18 to remind everybody we have a stenotypist
 19 here today who will be recording this
 20 session. So for those of you who will be
 21 speaking, if you could state your name and
 22 affiliation so that we can capture that
 23 for the record, that's greatly

1 appreciated.
 2 Now, if you are speaking I'll also
 3 ask that you give your business card to
 4 the stenotypist so that we make sure we
 5 get the spelling of your name and
 6 affiliation correct as well.
 7 With that we'll go ahead and start
 8 with the introductions. We'll start with
 9 the left here with Dawn. We'll go around
 10 the table and then we'll start with the
 11 left of the room, go around the perimeter
 12 of the room after the table.
 13 MS. BELLIS: Dawn Michelle Bellis,
 14 Standards Council secretary.
 15 MS. FULLER: Linda Fuller, NFPA
 16 staff.
 17 MR. O'CONNOR: Daniel O'Connor,
 18 member of Council.
 19 MR. KEITH: Gary Keith, member of
 20 Council.
 21 MR. GOLINVEAUX: James Golinveaux,
 22 member of Council.
 23 MR. SNYDER: Michael Snyder,

1 member of Council.
 2 MR. BUSH: Kenneth Bush, member of
 3 Council.
 4 MR. BRADLEY: Randall Bradley,
 5 member of Council.
 6 MR. BRENDER: David Brender,
 7 Copper Development Association.
 8 MR. LINDSEY: Travis Lindsey,
 9 Travis Lending Consulting Services.
 10 MR. BEEBE: Chad Beebe, member of
 11 Council.
 12 MR. RICKARD: John Rickard, member
 13 of Council.
 14 MS. MANLEY: Bonnie Manley, member
 15 of Council.
 16 MR. QUITER: James Quiter, member
 17 of Council.
 18 MR. OWEN: Rich Owen, member of
 19 the Council. For the record I'm recusing
 20 myself on this agenda item, and I'll not
 21 participate as a member of the
 22 Standards Council in the hearing,
 23 deliberations, or voting on this matter.

1 MS. GLEASON: Patricia Gleason,
 2 member of Council.
 3 MS. EVERETT: Sally Everett,
 4 member of staff.
 5 MR. BURKE: Bill Burke, NFPA
 6 staff.
 7 MR. ODE: Mark Ode, Underwriter
 8 Laboratories, member of -- alternate
 9 member of NEC Correlating Committee.
 10 MR. PIERCE: Jim Pierce, Intertek,
 11 principal, correlating.
 12 MS. PORTER: Christine Porter,
 13 Intertek, also correlating.
 14 MR. SMITH: Michael W. Smith,
 15 representing NECA, chair of code making
 16 panel 6.
 17 MR. BRUNSSSEN: Jim Brunssen,
 18 principal member of correlating committee
 19 representing ATIS.
 20 MR. MANCHE: Alan Manche,
 21 Schneider Electric, correlating committee.
 22 Mr. DUBAY: NFPA staff.
 23 MS. HUNTER: Christel Hunter,

1 General Cable.
 2 MR. OSBORNE: Robert Osborne, UL.
 3 MR. ROCK: Brian Rock, Hubbell
 4 Incorporated.
 5 MR. KOVACIK: John Kovacik,
 6 Underwriters Laboratories, principal,
 7 member of Correlating Committee.
 8 MR. JOHNSTON: Mike Johnston,
 9 NECA, chair NEC Correlating Committee.
 10 MR. EARLY: Mark Early, NFPA
 11 staff.
 12 MR. McCULLOUGH: Robert
 13 McCullough, alternate member Correlating
 14 Committee representing IAIEI.
 15 MR. GALLO: Ernie Gallo, alternate
 16 member Correlating Committee representing
 17 ATIS.
 18 MR. AYER: Larry Ayer, alternate
 19 member Correlating Committee representing
 20 IEC.
 21 MR. MANESE: Bill Manese, NFPA
 22 staff.
 23 MR. STRANIERO: George Straniero,

1 AFC Cable System, Correlating Committee
 2 alternate.
 3 MR. HOLUB: Richard Holub,
 4 American Chemistry Council, principal,
 5 Correlating Committee.
 6 MR. POPE: Tim Pope, nonvoting
 7 member of the Correlating Committee
 8 representing the Canadian Electrical Code.
 9 MR. SAPORITA: Vince Saporita
 10 representing NEMA, principal Correlating
 11 Committee.
 12 MR. BELAND: Richard Beland, NFPA
 13 staff.
 14 MR. BUCHANAN: Ozzie Buchanan,
 15 NFPA staff.
 16 MR. HULIER: Mark Hulier, NFPA
 17 staff.
 18 MS. McWALTER: Kayla McWalter,
 19 NFPA staff.
 20 CHAIRMAN BELL: Thank you
 21 everyone. The hearing that we have this
 22 morning here is related to Agenda Item
 23 16-8-3-e, and at this point I am going to

1 be recusing myself in this hearing and
2 will not be participating in the hearing,
3 the deliberation, or voting on this
4 matter. And I would ask Council Member
5 Jim Quiter to chair this session. I turn
6 the floor over to Mr. Quiter.

7 CHAIRMAN QUITER: Thank you,
8 Mr. Bell. A little bit on procedure
9 first. We have the appellant and members
10 of the Correlating Committee here. The
11 appellant will be given 10 minutes to
12 present their case, total. After that
13 we'll allow the Correlating Committee to
14 speak as well. At that point we will open
15 it up to members of Council for questions
16 and direct those questions through me.
17 After the questions we will give each side
18 five minutes to close the argument. So
19 we'll have ten minutes at the beginning
20 and five minutes at the close.

21 We'll start with Mr. Lindsey. I
22 understand you're here with an appeal to
23 accept public comment number 1401, the

1 motion filed on the floor of the NFPA
2 technical meeting; is that correct?

3 MR. LINDSEY: Yes, it is. Thank
4 you. Mr. Chair and to the committee, I
5 sent a letter which is a synopsis of the
6 appeal. It basically identifies that
7 there were several inappropriate actions
8 that took place during the process that
9 led to the actions taken on the floor.

10 I would say that the particular
11 action item relates to is rooftop
12 temperature, conduits over rooftops. The
13 correlating committee had appointed a task
14 group, previous code, that would review
15 the issue. That was appointed by Scott
16 Pine the previous chair of Panel 6.

17 The task group as formulated
18 contained two co-chairs: Jim Dollard and
19 Larry Ayers. These co-chairs were known
20 in the hallways at the NFPA hearings to be
21 opposed to this issue. So there could
22 only be one real outcome from that since
23 they were adamantly opposed to it to begin

1 with.

2 Second revision meeting panel
3 chair appointed task groups to set up the
4 daily activities for the review of the
5 code. That was chaired by an outspoken
6 opponent of our issue, Christel Hunter.
7 When we asked Professor Rahakey esteem
8 Professor Rahakey to attend the second
9 revision hearings, he wrote a letter to
10 Chairman Mike Smith. Chairman Mike
11 Smith's answer was concentrated, this was
12 a bad code when it was adapted in 2008 and
13 everybody has tried to prove their point.
14 We continue to ask for substantiation and
15 failures from existing installations and
16 keep hearing nothing but theory and mockup
17 testing. This would say that science has
18 no virtue, that only recorded fires have
19 virtue. But we all know in this room that
20 fire recording is not a perfect science
21 and fires can exist even though they're
22 not properly reported. Many fire stations
23 are operated by volunteer fire people.

1 They don't report fires in the same manner
2 that a larger fire station would. They
3 don't use proper forms. It's all
4 subjected to opinion. And so is there a
5 possibility that what we're talking about
6 here can cause a fire? Absolutely. So
7 the fact that we can't produce the
8 evidence which would be something that
9 would be vetted by court that says there
10 has been a fire and it was definitely
11 caused by some particular thing, we'll,
12 just because we can't provide that doesn't
13 mean there isn't one.

14 Additionally, the chair of the
15 panel had previously in the first revision
16 process stated to the entire code panel
17 that he hated this code section, he hated
18 the code table, and he needed more
19 information to remove it from the code.

20 Now, my whole argument here is on
21 the propriety of making such statements,
22 intimidating those that would be in favor
23 of it, and for embolden those who are

1 against it.

2 So I'm not sure I need 10 minutes
3 to do this. In a nutshell what was done
4 was wrong and it needs to be rectified.
5 It shouldn't be allowed to happen. Now
6 there are plenty of rules. The NFPA guide
7 conduct of participant in NFPA standards
8 development process clearly states that
9 people shouldn't be biased, that people
10 shouldn't try to influence somebody's
11 impartiality. That is not the case in
12 this particular scenario, other than that
13 happened. So I'm asking for relief in
14 that regard.

15 CHAIRMAN QUITER: Okay. Thank
16 you, Mr. Lindsey.

17 MR. LINDSEY: Thank you. David.
18 Brender.

19 CHAIRMAN QUITER: Fine. Your 10
20 minutes are still open.

21 MR. BRENDER: I just want a couple
22 of minutes to add a couple of things to
23 Mr. Lindsey's presentation. I don't want

1 to go over the information he presented or
2 the reply to Professor Rohackey was
3 flawed, but Professor Rohackey asked for
4 permission to testify and was granted but
5 with the words this is bad code and don't
6 bother us, with in effect bother us with
7 science we already made up our minds.

8 I wrote a letter to Michael
9 Johnston pointing out the sections of the
10 code of conduct that we felt were
11 violated, and part of his reply to me, and
12 I am going to be rather brief in it. NEC
13 panel chairs are responsible to lead their
14 committees through their work in unbiased
15 and impartial fashion. And in that sense
16 they have significant responsibility to
17 the committee and to NFPA.

18 And we don't feel that an
19 impartial hearing was given. We feel that
20 opponents to the proposal or the existing
21 code were not only placed in positions of
22 authority and power but actually led the
23 task groups that produced what we would

1 call reports that contravened our argument
2 and Professor Roharky was not able to
3 appear because of a case of prostate
4 cancer but he did have a substitute there.

5 So what we're asking is that this
6 committee consider reverting to the 2014
7 language of the NEC. Thank you.

8 CHAIRMAN QUITER: Thank you.
9 Mr. Johnston, do you have something to say
10 for the correlating committee?

11 MR. JOHNSTON: Mr. Johnston, thank
12 you Mr. Chair. Just as a reminder to the
13 Council that the chair Panel 6 is also
14 here if you wish to ask him, ask for him
15 to respond to some of the claims by the
16 appellants. There were two chair, a chair
17 and a co-chair on this task group. The
18 appeals task group had assigned a response
19 spokesperson and that spokesperson is
20 Vince Saporita. So I would like Vince
21 Saporita to talk on behalf of the
22 correlating committee as a first response
23 to this appeal. Thank you, Mr. Chair.

1 CHAIRMAN QUITER: As a reminder
2 even though we're calling you by name,
3 introduce yourself, Mr. Saporita.

4 MR. SAPORITA: Vince Saporita,
5 representing NEMA as a principal on the
6 correlating committee. The correlating
7 committee recommends that the Standards
8 Council deny this appeal. The proponent
9 of this appeal claims that the actions
10 taken in this revision cycle were not
11 technically accurate. The correlating
12 committee has reviewed the action taken to
13 delete the rooftop adders and conclude
14 that compelling technical substantiation
15 exists to support the revision. See the
16 letter from Mr. Dollard.

17 The proponent of this appeal
18 claims that all NFPA volunteers involved
19 in this revision were biased against his
20 position prior to the revision cycle. The
21 correlating committee has determined that
22 no bias existed at any point in the
23 revision process. Additionally, the

1 chairman of code making panel 6 acted in
2 an exemplary manner during all
3 deliberations on this and all issues
4 before the committee.

5 No violations of any NFPA process,
6 procedure, regulation, or guideline
7 occurred with respect to the rooftop adder
8 issue in the revision process for the 2017
9 NEC. In closing, the correlating
10 committee recommends that
11 Standards Council deny this appeal. Thank
12 you, Mr. Chairman.

13 CHAIRMAN QUITER: Thank you.
14 Mr. Smith, do you have anything you want
15 to add?

16 MR. SMITH: Mike W. Smith from the
17 representative chairman of code panel 6
18 representing NECA. I support my code
19 panel and my task group chairs and task
20 group members and their decision and feel
21 no biases were taken at any time during
22 those meetings. Thank you very much. If
23 you all have my written statement. Thank

1 you for your time.

2 CHAIRMAN QUITER: So we'll open it
3 up for questions from the Council. Yes.

4 MR. O'CONNOR: Daniel O'Connor,
5 member of Council. Mr. Lindsey, so the
6 main point of your appeal has to do with
7 the bias issue.

8 MR. LINDSEY: Yes.

9 MR. O'CONNOR: And you make
10 reference in your letter that we have that
11 there is a violation of NFPA's 3.4
12 additional guidelines applicable to
13 technical committee and correlating
14 committee chairs.

15 MR. LINDSEY: Yes.

16 MR. O'CONNOR: In those sections
17 of the guidelines it talks about conflicts
18 of interest. So I've read your letter.
19 I'm trying to understand are there some
20 specific issues or specific business or
21 client interest, conflicts of interest
22 that you see were being violated here?

23 MR. LINDSEY: Further in Section

1 3.4 beyond potential conflict of interest
2 it says or other circumstances, that could
3 influence the individual's impartiality.
4 Those other circumstances are in the same
5 section. That is what is being referenced
6 here.

7 MR. O'CONNOR: My first question
8 is are you aware of any specific business
9 or client interest that were conflict of
10 interest here?

11 MR. LINDSEY: I'm not speaking to
12 conflicts of interest. I'm speaking to
13 other circumstances that could influence
14 the individual's impartiality. Those
15 other circumstances being that the people
16 that were appointed to these committees
17 were biased. They had agendas of their
18 own from the beginning. We had heard
19 discussions with Larry Ayers and with Jim
20 Dollard their opposition to this thing
21 before the committee was ever formed.
22 Everybody knew what their position was.
23 It's not a matter of whether they were or

1 were not. They were biased against the
2 section. And the fact that they were put
3 in there without some vetting that nobody
4 asked them gee what do you think about
5 this issue, before they established this
6 task group, is to me not very well done.

7 So again I am not talking about
8 the conflict of interest for somebody
9 working for somebody else. I'm talking
10 about the potential influence of
11 somebody's impartiality. Since they're
12 not impartial they should not have been
13 approved.

14 MR. O'CONNOR: Thank you.

15 MR. LINDSEY: Thank you.

16 CHAIRMAN QUITER: Any other
17 questions? Mr. Bush.

18 MR. BUSH: Kenneth Bush, member of
19 Council. Question to Mr. Lindsey. Was
20 your concern only with the chair of the
21 task group, or was it with the membership
22 of the task group as well?

23 MR. LINDSEY: I believe that the

1 two co-chairs were the main problem, main
2 issue.

3 MR. BUSH: Thank you.

4 CHAIRMAN QUITER: Are there other
5 questions? I do have one. You mentioned
6 in your opening comment something about
7 intimidation, and we didn't see that in
8 what you had written. So let me finish my
9 question. We just wondered if you have
10 other documentation that might reflect on
11 that or where the intimidation part came
12 from.

13 MR. LINDSEY: In the first
14 revision cycle, Michael Smith stood and
15 addressed the committee as they were
16 deliberating this issue, that he thought,
17 he hated this code section, and that what
18 he needed was more documentation so that
19 he could remove it from the code.

20 Now this is in the body of panel
21 6. This is the chair speaking to the body
22 of panel 6. This isn't one of the members
23 making a statement. This is the chair,

1 the chair's position, standing and
2 talking. He wasn't as the alternate put
3 something else in the chair so he could
4 say what he thought. He was speaking from
5 the chair. The chair shouldn't have,
6 shouldn't have done that. The chair
7 should not be able to intimidate and guide
8 the committee to some conclusion he wants.
9 And that's what was happening.

10 So if you don't have that, I
11 thought it was in -- it's in my appeal.

12 CHAIRMAN QUITER: It was the word
13 intimidation that we were responding to.
14 Mr. O'Connor, you had another question?

15 MR. O'CONNOR: Yes. Daniel
16 O'Connor, member of Council. Just from
17 the science side of it, some facts. I
18 just want to understand, the research that
19 you are pointing to to back up this all,
20 is it research that you have done,
21 Mr. Lindsey? Because there is references
22 to UL --

23 MR. LINDSEY: There is a history--

1 MR. O'CONNOR: But I am not clear
2 that, it doesn't appear by some comments
3 in here that UL did the research. They
4 performed some certification test.

5 MR. LINDSEY: Are you familiar
6 with MP fact finding investigation
7 process, in which Underwriters
8 Laboratories will set up a committee to
9 study an issue at the request of
10 somebody -- at this point it was my
11 request -- to study the issue of rooftop
12 temperature. The proposal was they would
13 monitor, they would create first the test
14 regimen. They would decide what was to be
15 tested and how it was to be tested. They
16 would verify all of the equipment was
17 certified, calibrated qualified, that
18 individuals were qualified to do the
19 testing. And they would follow up that
20 testing and evaluate and then produce a
21 report from that testing. That is what
22 happened. I was the technician that did
23 the test, that performed the actual

1 testing, but it was done under the
2 supervision and guise of control of and
3 plans created by Underwriters
4 Laboratories. This was followed up by a
5 second fact-finding investigation, the
6 first one in 2011, second in 2012, which
7 proved and added to the outcome. So those
8 two fact-finding investigations more than
9 40 pages of data that was presented in the
10 report, are the tests that we did.

11 Now there were some other testing
12 that was done, but the problem with that
13 testing is it has flaws, not vetted
14 properly, they didn't have a third party
15 oversight, and in some cases there was no
16 testing at all. In the case of the task
17 group the report that was presented wasn't
18 really a report. It was several slides
19 put on a screen and a presentation was
20 made to the task group, or to the panel.
21 We had no opportunity to review, vet, or
22 respond to any of that. The fact is that
23 they claimed they used a piece of software

1 from NASA that was fantastic. The only
2 problem is you can manipulate the inputs
3 and outputs of software. We didn't have a
4 chance to review or vet any of that.

5 So I would say the only research
6 that has been properly done and properly
7 vetted was the UL research. And I can
8 call UL research because it's got UL's
9 name on top of it.

10 MR. O'CONNOR: You said certified,
11 qualified, but did they develop the
12 protocol for the testing?

13 MR. LINDSEY: Underwriter
14 Laboratories?

15 MR. O'CONNOR: Yes.

16 MR. LINDSEY: Yes.

17 MR. O'CONNOR: They developed the
18 protocol?

19 MR. LINDSEY: They decided what
20 should be tested and how. It was decided
21 to test a number of various electrical
22 conduits and cables above roofs at various
23 elevations, various sizes and various

1 colorations. And they decided how it was
2 to be tested and what thermal couples
3 thermometers were to be used and how it
4 would be recorded at what schedule and how
5 the data were to be submitted to
6 Underwriters Laboratories, and then they
7 created the documents therefor. We had
8 absolutely no influence over those
9 documents.

10 MR. O'CONNOR: I'm just trying to
11 understand, and then what exactly was your
12 role if they're doing all those things?
13 What was your role in the testing?

14 MR. LINDSEY: First of all I was a
15 client actually hiring Underwriters
16 Laboratories to perform the service of
17 creating a fact-finding investigation.

18 MR. O'CONNOR: Okay.

19 MR. LINDSEY: Technically I'm a
20 technician that did the testing according
21 to Underwriters Laboratories' guidelines.

22 MR. O'CONNOR: Thank you for that
23 clarification.

1 MR. LINDSEY: Thank you.

2 CHAIRMAN QUITER: Any other
3 questions from Council? Seeing none,
4 we'll give you five minutes to summarize
5 your position followed by five minutes for
6 the committee.

7 MR. LINDSEY: Thank you very much,
8 Mr. Chairman. I think it is important for
9 us to know that the system is working
10 properly, that people come and they're
11 treated fairly, and that things happen
12 according to our standards. In this case,
13 I think there was a failure of performance
14 and there was not adherence to the
15 standards in many cases. This particular
16 issue has been in the code now, it was in
17 the code for three cycles. And now
18 they're saying they should remove it
19 because of new information. A lot of this
20 new information is not properly presented,
21 not properly vetted, doesn't have the
22 weight of science behind it, and has
23 flaws, and we can address any of those

1 flaws technically.

2 I would like to request that the
3 Standards Council wholeheartedly review
4 this subject and give us the benefit of
5 their wisdoms, and I appreciate being
6 allowed the opportunity to speak. Thank
7 you very much.

8 CHAIRMAN QUITER: Thank you.
9 Mr. Johnston.

10 MR. JOHNSTON: Mr. Chairman, just
11 in closing, I stand behind code panel 6 in
12 their actions. I also stand behind the
13 chair of code panel 6. I wasn't able to
14 sit in on all the second draft meeting and
15 part of the first draft. So the claim of
16 any of that type of conduct I did not
17 witness from Mr. Smith. As far as the
18 task group made up the Larry Ayer and Jim
19 Dollard, it was the result of this issue
20 going back and forth a few cycles and the
21 previous chair panel 6 reaching to the
22 correlating committee for help as well as
23 a reach from public comments for help to

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1 form an independent task group to get a
 2 fresh look at this issue and actually
 3 something that could be worked on
 4 independently of panel 6. And I know as a
 5 chair that you need to be transparent.
 6 So that independence was allowed.
 7 We formed that task group and it was
 8 formed with Jim Dollard and Larry Ayer.
 9 Jim Dollard was a three cycle professional
 10 chair on code panel 10 in this process.
 11 He knows how to remain impartial. I trust
 12 his wisdom, and both of their judgments.
 13 The work of that task group was
 14 exemplary. The reports were provided to
 15 code panel 6 to make some meaningful
 16 decisions where to go with this.
 17 So anyway in closing I don't want
 18 to take up a lot of time. I do support
 19 their work, and I appreciate the time to
 20 talk on behalf of the correlating
 21 committee in response. Thank you,
 22 Mr. Chairman.
 23 CHAIRMAN QUITER: So that will

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1 close the hearing part of this agenda.
 2 Our appreciation to all of you for taking
 3 the time to participate in the process.
 4 At the conclusion we will deliberate in
 5 executive session and determine our
 6 response. That deliberation for the
 7 record will not include the people who
 8 have recused themselves. You will hear
 9 the results from the secretary of the
 10 Standards Council Dawn Michelle Bellis.
 11 And that is the only source of information
 12 that you should hear or rely on as the
 13 official results of the our discussion.
 14 So again thank you very much, and
 15 we'll close the hearing.
 16 We are going to take a 10-minute
 17 break, and then we'll go into executive
 18 session.
 19 (Recess)
 20
 21
 22
 23

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1 Afternoon Session (1:01 p.m.)
 2 CHAIRMAN BELL: Good afternoon
 3 everyone. My name is Kerry Bell, and I'm
 4 the chair of the Standards Council. And I
 5 am going to call this hearing to order.
 6 We have three hearings scheduled this
 7 afternoon all related to NFPA 70. And in
 8 a moment here I am going to go around the
 9 room and ask everyone to introduce
 10 themselves by stating their name and
 11 affiliation. Before I do that, for those
 12 of you who will be speaking, I am going to
 13 ask you to do two things.
 14 First of all please state your
 15 name and your affiliation before you make
 16 your remarks so we capture that for the
 17 record; and secondly, give your business
 18 card to the stenotypist so that she can
 19 capture that for the record. So let's get
 20 started with the introductions. Starting
 21 here to my left, Dawn.
 22 MS. BELLIS: Dawn Michelle Bellis,
 23 Standards Council secretary.

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1 MS. FULLER: Linda Fuller NFPA
 2 staff.
 3 MR. O'CONNOR: Dan O'Connor,
 4 member of Council.
 5 MR. KEITH: Gary Keith, member of
 6 Council.
 7 MR. GOLINVEAUX: James Golinveaux,
 8 member of Council.
 9 MR. SNYDER: Michael Snyder,
 10 member of Council.
 11 MR. BUSH: Ken Bush, member of
 12 Council.
 13 MR. BRADLEY: Randall Bradley,
 14 member of Council.
 15 MS. CRONIN: Amy Cronin, Strategic
 16 Code Solutions representing the Cable Buss
 17 Manufacturers Association.
 18 MR. HARTWELL: Fred Hartwell,
 19 Hartwell Electrical Services representing
 20 myself.
 21 MR. BEEBE: Chad Beebe, member of
 22 Council.
 23 MR. RICKARD: John Rickard, member

1 of Council.

2 MS. MANLEY: Bonnie Manley, member
3 of Council.

4 MR. QUITER: Jim Quiter, member of
5 Council.

6 MR. OWEN: Richard Owen, member of
7 Council.

8 MS. GLEASON: Pat Gleason, member
9 of Council.

10 MS. EVERETT: Sally Everett, NFPA
11 staff.

12 MR. BURKE: Bill Burke, NFPA
13 staff.

14 MR. ODE: Mark Ode, Underwriters
15 Laboratories, member of correlating
16 committee.

17 MR. PIERCE: Jim Pierce, Intertek,
18 principal of correlating committee.

19 MS. PORTER: Christine Porter,
20 Intertek, alternate.

21 MR. SMITH: Mark W. Smith,
22 representing NECA, chair, correlating
23 committee.

1 MR. MANCHE: Alan Manche,
2 Schneider Electric, Correlating Committee.

3 MR. BRUNSSSEN: Jim Brunssen,
4 principal of correlating committee
5 representing ATIS.

6 MR. DUBAY: Christian Dubay, NFPA
7 staff.

8 MR. OSBORNE: Robert Osborne, UL.

9 MR. ROCK: Brian Rock, Hubbell,
10 Inc.

11 MR. KOVACIK: Underwriter
12 Laboratories, principal member correlating
13 committee.

14 MR. JOHNSTON: Mike Johnston with
15 NECA, NEC correlating committee chair.

16 MR. EARLEY: Mark Earley, NFPA
17 staff.

18 MS. FREITER: Kristen Freiter,
19 NFPA staff.

20 MR. McCULLOUGH: Robert
21 McCullough, alternate, correlating
22 committee representing IAEI.

23 MR. GALLO: Ernie Gallo,

1 correlating committee representing ATIS.

2 MR. AYER: Larry Ayer,
3 representing the IEC alternate member of
4 correlating committee.

5 MR. MANESE: Bill Manese, NFPA
6 staff.

7 MR. STRANIERO: George Straniero,
8 AFC Cable Systems, alternate member,
9 correlating committee.

10 MR. HOLUB: Richard Holub,
11 representing American Chemistry Council,
12 principal and correlating committee.

13 MR. POPE: Tim Pope, Canadian
14 Electrical Code Committee, nonvoting
15 member of the correlating committee.

16 MR. SAPORITA: Vince Saporita,
17 representing NEMA principal on the
18 correlating committee.

19 MR. SURIYAMONGKOL: Dan
20 Suriyamongkol, from Advanced Cable Bus,
21 representing the Cable Bus Manufacturers
22 Association.

23 MR. SAGMILLER: Dan Sagmiller,

1 representing Husky.

2 MR. NOAH: Steve Noah, MDF Cable
3 Bus Systems.

4 MR. HULIER: Mark Hulier, NFPA
5 staff.

6 MS. McWALTER: Kayla McWalter,
7 NFPA staff.

8 CHAIRMAN BELL: All right, thank
9 you everyone for the introductions. The
10 procedure today what we're going to do,
11 since we have two appeals related to this
12 first hearing here, we are going to allow
13 a total of 15 minutes for the appellants
14 of the appeal to make their opening
15 remarks. And then we'll also allow 15
16 minutes for anybody speaking in opposition
17 to make their opening remarks. Once that
18 is completed, we are going to open up the
19 floor to questions from the Council
20 members, and then once that is completed
21 we'll go into the closing remarks. A
22 total of five minutes will be allotted for
23 the closing remarks on both sides.

1 So does anybody have any questions
2 regarding the process or procedure we are
3 going to use today? We do have members
4 here of the NEC project including the
5 chair of the correlating committee,
6 Mr. Michael Johnston and we're going to
7 allow him to speak to the issues as well.

8 So at this point, is there any
9 questions? No questions? If not we'll go
10 ahead and move in to the first hearing
11 here which is related to agenda topic
12 16-8-3-f as I understand, and Mr. Hartwell
13 and Ms. Cronin, you're appealing to
14 overturn the association action related to
15 certifying motion 7-13; is that correct?

16 MR. HARTWELL: Yes.

17 MS. CRONIN: That is right.

18 CHAIRMAN BELL: And Ms. Cronin,
19 your appeal is similar.

20 MS. CRONIN: It's to return it to
21 the 2014 edition text as well as panel
22 membership.

23 CHAIRMAN BELL: So anybody else

1 speaking in support of these appeals?
2 Anybody speaking in opposition to these
3 appeals, besides the correlating
4 committee? Okay. Well, if not I just
5 want to remind everybody if you're
6 speaking, state your name and affiliation
7 before you make remarks. And at this
8 point I'll turn it over to Mr. Hartwell
9 and Ms. Cronin for your opening.

10 MR. HARTWELL: Thank you,
11 Mr. Chairman. My name is Fred Hartwell,
12 Hartwell Electrical Services,
13 Incorporated, and I am representing
14 myself. And I think where I want to begin
15 is the oath of hypocrisy, first do no
16 harm. And this change that will be
17 overturned if the appeal is successful
18 does enormous harm to a wiring method that
19 has been around for almost 50 years. And
20 it does this because the way the wording
21 is actually written it can be interpreted
22 and will be widely interpreted, although
23 perhaps unintended, as imposing new

1 limitations on the ampacity of the
2 conductors in cable bus over the entire
3 length of the feeder and not merely where
4 they terminate on equipment. As long as
5 these, this cable bus feeder connects
6 equipment that does have termination
7 temperature restrictions, the new rules
8 apply.

9 The new rules incorporate the
10 existing limitations for conductors in
11 cable tray. There is no real comparison
12 technically between cable tray and cable
13 bus other than the first five letters of
14 the wiring method name.

15 This action was taken by the panel
16 with exactly one sentence of
17 substantiation. Think about it. One
18 sentence. And the sentence stated that
19 cable bus conductors were terminated
20 incorrectly based on code rules. Okay.
21 We don't usually amend sections in the
22 wiring method chapter of the code because
23 people are failing to apply in this case

1 11014 C, the termination rules of the
2 code. That is a problem of inadequate
3 education on the part of those who design
4 and install it in some instances. That is
5 just completely inappropriate.

6 There is another issue, however,
7 even if the wording by education, by
8 perhaps changes in the NFPA NEC handbook,
9 were to clearly indicate that this only
10 applied at terminations, even if that were
11 the case, the new wording, the new rules
12 don't address terminations. That is what
13 is really outrageous about this. If you
14 look at the supplement try material on
15 your agenda that has this spreadsheet on
16 it, and I know that it came out, I did an
17 analysis of every single standard over
18 current device from 1200 amperes up
19 through 4000 amperes 240.6 in the NEC
20 lists standard over current device sizes.
21 And then I said, okay, let's pick some
22 numbers in parallel to divide that up the
23 way it might be, and as you can see there,

1 I have 23 feeders calculated. I have them
 2 calculated according to the existing text
 3 which is the free air ampacity table. I
 4 have them calculated by the new words that
 5 would appear if this appeal is denied,
 6 which you can see the very significant
 7 impact it has on artificially inflating
 8 the size of these wires over the middle of
 9 the run, but now look at the right-hand
 10 column. In every single instance every
 11 single feeder fails to comply with the
 12 termination requirements.

13 So we have this new provision in
 14 the code, the one single sentence for
 15 substantiation said it was to address
 16 terminations and in fact any feeder that
 17 you could possibly, at least as far as I
 18 can see, this table, I don't know of any
 19 rebuttal to this spreadsheet I worked up,
 20 any feeder that you wire to this new
 21 standard, this cable tray standard, it
 22 still is too small a conductor to meet the
 23 termination requirements in 11014 C.

1 Why are we doing this? There is
 2 just no substantiation for this. And this
 3 Council quite correctly over the years has
 4 a record of saying look, you know, we're
 5 not, we're procedural. We're not going to
 6 intervene in technical discussions, but if
 7 there is nothing on the record that
 8 technically supports the conclusion at the
 9 end of the day we're going to do something
 10 about it, and I am going to ask you to
 11 please do something about this.

12 CHAIRMAN BELL: Thank you,
 13 Mr. Hartwell.

14 Ms. Cronin.

15 MS. CRONIN: Amy Cronin from
 16 Strategic Code Solutions representing the
 17 Cable Bus Manufacturers Association, the
 18 CBMA. They are made up of the majority of
 19 cable bus manufacturers in North America.
 20 So Mr. Hartwell has done a great job
 21 talking about the technical issues, and
 22 our appeal is different in that we are
 23 asking for it to go all the way back to

1 the 2014 text. Additionally, our
 2 arguments are procedural and pointing to
 3 the technical arguments that Mr. Hartwell
 4 raised.

5 And I'll apologize to the
 6 electrical people in the room. Explaining
 7 cable bus essentially it's a wiring method
 8 to carry a whole lot of electrical power
 9 for massive uses like with power
 10 generation and industrial plants. And
 11 it's an engineered system, and it's really
 12 carefully designed where the cables go
 13 through, and they're designed to be one
 14 diameter apart horizontally and
 15 vertically. It has to be ventilated.
 16 They're are a whole lot of requirements
 17 for.

18 Now that's cable bus. When it's
 19 regulated by cable tray, one example,
 20 somebody explained a cable tray to me as
 21 like a ladder on the ceiling with the
 22 cables in it. So it's completely
 23 different. Sort of like a commodity.

1 So the reason that the panel is
 2 looking at this is the dissipation of
 3 heat. They were concerned with all these
 4 cables on each other the dissipation of
 5 heat. It's not an issue with cable bus
 6 because it's a total engineered system and
 7 it's designed to carry more ampacity.
 8 Smaller cables more of them, in comparison
 9 to the cable tray. So when you are
 10 thinking about the cable bus installation,
 11 the manufacturers, they follow all the
 12 regulations, all the standards, all the
 13 testing, anything that is required.

14 So the code change dealt with
 15 let's make cable bus the same requirements
 16 as cable tray, but they're totally
 17 different systems. So they tried to
 18 regulate them the same but if you look
 19 they took the cable bus provision --
 20 sorry, took the cable tray provisions,
 21 there are four of them, they only took two
 22 of them over for cable bus. Not only
 23 would it be egregious if it was the same,

1 it's more stringent now. And then
2 Mr. Hartwell talked about the internal
3 consistencies, inconsistencies of this new
4 text introduced as well.

5 So talking about the two-part
6 appeal. First they're requesting to go
7 back to the 2014 edition text for 378.
8 One of the major reasons is the
9 stakeholders were not involved. Now I
10 always used to cringe when I heard the
11 stakeholders weren't involve. You know
12 what, it's your business. It is incumbent
13 upon you to know what is happening in your
14 world. Whether it be incident, whether it
15 be regulations, anything happening. If
16 you look at it from the cable bus
17 manufacturing association's eyes, they
18 have been in the code since 1968. Almost
19 16 editions, almost 50 years. 30 of those
20 years it was unchanged, so they had no
21 reason to think okay, there's been no
22 incidents, nothing is happening, to cause
23 the NEC to regulate our product.

1 So I mean they know now they're
2 watching, and they're going to be watching
3 in a lot of different fronts and we're
4 helping them with that, but it's
5 understandable they didn't know we have
6 been safe for 50 years. We had no idea we
7 would be regulated particularly with no
8 justification.

9 So this is kind of interesting if
10 you read in the appeal Fred Hartwell he is
11 completely unrelated to this issue at all.
12 He was looking at some of code changes
13 that he was going to teach to the IAEEI,
14 the inspectors. And he said wait a
15 minute. This change, this has been around
16 forever. There has been no incidents. I
17 can't believe this.

18 So on his own he submitted a
19 NITMAM, didn't even notify them until
20 after it was certified. He didn't even
21 know any cable bus manufacturers. He went
22 on the internet found them, did an
23 internet questionnaire and said hey guys,

1 did you know what was happening? They
2 didn't learn of it until late May.

3 So it speaks volumes when somebody
4 technical on the panels says this isn't
5 right, and I am going to submit a NITMAM
6 on my own. So I found that pretty
7 interesting.

8 Mr. Hartwell mentioned no
9 technical substantiation. Both the regs
10 and the Council decisions are huge on
11 substantiations, specifically saying it
12 needs fire experience, research data,
13 engineering fundamental or other such
14 information. There was no justification
15 given. Quite frequently we've all sat in
16 on panel meetings. Sometimes there isn't
17 great justification but historical
18 knowledge and the group think and
19 everybody knows what is best because
20 they're in the industry. Here there was
21 absolutely no justification. And for a
22 massive change that will fundamentally
23 affect an entire industry you really need

1 to make sure that the stakeholders are
2 there and that it is absolutely justified.

3 So the tech session there were
4 several, I shouldn't say tons, there were
5 many manufacturers of competing technology
6 that were there, that voted. They only
7 lost by nine votes. There were many
8 issues that the panel never heard because
9 the industry wasn't there. I mean you saw
10 Fred's table he created. That was
11 something that panel never saw. And you
12 know, if the industry was involved they
13 could have really brought this discussion
14 up. There is some talk about the Canadian
15 Electrical Code, the proposal, public
16 input and the comment came from Canada, an
17 inspector in Canada, and some there is
18 some thought that okay the Canadian
19 Electrical code there is some subtleties
20 in the installation so that may be where
21 that's coming from and it's irrelevant
22 here in the U.S. And the inconsistencies,
23 all these things could have been brought

1 up if the industry was involved.
 2 So precedent I know the Council
 3 has the authority to do what they see fit.
 4 But take in the appeal I went into great
 5 detail about some of the precedents.
 6 They're not exact precedents. They were
 7 the text was turned over because the
 8 industry wasn't involved, but it
 9 definitely played a part in the hearings.
 10 And some of you were there for some of
 11 those. 99 hot tapping, the animal housing
 12 window, you know, pork producers weren't
 13 involved. NFPA 13 the compact mobile
 14 shelving storage, some of those things.
 15 So we definitely have precedent for making
 16 sure that an industry is included. A
 17 devastating impact on the industry because
 18 it is such a substantial system, it costs
 19 more to create it. So when you're
 20 regulating it more stringently than say my
 21 ladder example, ladder with cables just
 22 laying in it, what choice are the people
 23 going to make? It's really taking one of

1 their choices away because they are no
 2 longer going to put that much power into
 3 cable bus. So it is really devastating to
 4 the industry. And if you look at the
 5 support letters it also reiterates that
 6 point.
 7 So it's gone unchanged for 50
 8 years. I urge you to go one more cycle
 9 and say you know what, we are not going to
 10 let this change stand this cycle. The
 11 participation by the stakeholders is at
 12 the heart of fundamental fair play in
 13 standards making.
 14 The last thing is a seat at the
 15 table. They were hoping to possibly be
 16 considered for CMP 8. There is an entire
 17 article or cable bus 370 but there is no
 18 representation by the cable bus industry.
 19 And so they put in two applications for
 20 principal and alternate representing the
 21 Cable Bus Manufacturers Association.
 22 And when I've talked with people
 23 in the electric industry to try to learn

1 more about the cable bus a lot of them
 2 know about it but they never worked with
 3 it, never inspected it, never dealt with
 4 it because it's a specialty application.
 5 So the CBMA asked me to convey
 6 that they have a great sense of respect
 7 for the NEC and the panel members and
 8 their work, and they would really love to
 9 be a part of the solution. Thank you.
 10 CHAIRMAN BELL: Thank you,
 11 Ms. Cronin.
 12 Mr. Johnston.
 13 MR. JOHNSTON: Thank you,
 14 Mr. Chairman. Yes, I was in touch with
 15 the chair of code making panel 8 and
 16 advised him to get his committee together
 17 to discuss this, and it's my understanding
 18 they had at least two conference calls to
 19 confirm their position whether to maintain
 20 and so forth, and I believe that Council
 21 received a document from the chair of code
 22 panel 8, Larry Cogburn.
 23 So the correlating committee

1 appeals task group also analyzed this
 2 issue at great length and that involved at
 3 least tow conference calls in our
 4 deliberations. The spokesperson for the
 5 correlating committee who is going to
 6 provide some detail on that is Mr. Larry
 7 Ayers. So I am going to defer to Larry
 8 Ayer to address the Council. Thank you.
 9 CHAIRMAN BELL: Thank you,
 10 Mr. Johnston.
 11 MR. AYER: Thank you. My name is
 12 Larry Ayer representing IEC, alternate to
 13 the correlating committee. First of all
 14 the correlating committee has reviewed the
 15 entire record regarding this appeal for
 16 certified amending motion70-13. We
 17 reviewed all the associated second draft
 18 revisions that occurred in Article 370
 19 pertaining to the cable bus systems. It
 20 is through our review that we request the
 21 Standards Council not support this appeal
 22 and we reach this conclusion based upon
 23 four reasons.

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1 First, the correlating committee
 2 supports the work of code panel making 8.
 3 Public input was submitted to this code
 4 making panel to revise Section 370.80
 5 based on concern for conductor ampacities
 6 depending on the manner in which the ends
 7 of the conductors were terminated.
 8 During this NEC revision cycle, CMP 8
 9 reviewed, debated, all the public input
 10 and all public comments and reached a
 11 consensus and the processed was followed.
 12 Second certified amending motion
 13 70-13 was argued and debated during the
 14 annual meeting and was unsuccessful in the
 15 floor vote.
 16 Third, the issues brought forth
 17 within the supporting documentation by the
 18 appellants were not brought to the
 19 attention of panel 8 during the first or
 20 second draft meetings.
 21 And finally the correlating
 22 committee did not find any correlation
 23 issues during the review of panel 8's

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1 work.
 2 It is the correlating committee's
 3 position that the appeal should be
 4 rejected for those four reasons. It is
 5 the correlating committee's role not to
 6 look at the technical issues but strictly
 7 look at the correlation issues. The
 8 correlating committee gives great
 9 deference to code making panel 8's work
 10 because those are the people that need to
 11 research and review those technical
 12 issues. While the correlating committee
 13 understands that some of the arguments put
 14 forth by the appellants may have some
 15 merit, the correlating committee will be
 16 recommending to panel 8 that a task group
 17 be formed between members of panel 8 and
 18 stakeholders in the cable bus industry to
 19 attempt to reach a solution on some of
 20 these issues and to develop public input
 21 for the next revision cycle. Thank you,
 22 Mr. Chairman.
 23 CHAIRMAN BELL: Thank you,

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1 Mr. Ayer.
 2 Now we'll open up to questions on
 3 the Council. Mr. Quiter.
 4 MR. QUITER: Jim Quiter, member of
 5 Council. We've heard that it's
 6 devastating to the industry but I haven't
 7 got a feel for what devastating to the
 8 industry really means. What does it
 9 really do to the industry, more defined
 10 than that.
 11 MS. CRONIN: I am going to defer
 12 to Dan because he is one of the
 13 manufacturers. I would say in general you
 14 are taking a system that has very little
 15 engineering to it, and if you take my
 16 analogy of the ladder versus an engineered
 17 system, I don't know if you looked it up
 18 if you Googled what it looks like. It's
 19 like a whole engineered system. So you
 20 are placing the same ampacity requirement.
 21 You're basically derating cable bus which
 22 is its advantage. And Dan, I am going to
 23 defer to you. If that's all okay,

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1 Mr. Chairman?
 2 CHAIRMAN BELL: Sure.
 3 MR. SURIYAMONGKOL: Dan
 4 Suriyamongkol with Advanced Cable Bus.
 5 Well, did a quick example in this case.
 6 Let's say we have a feeder that is to be
 7 rated 2000 amperes and we're using, this
 8 example for cables for phase at 350 kcmil,
 9 based on the free air rate. We get to the
 10 ends we make a transition piece for the
 11 terminals to make sure it meets 110 14 C
 12 and this is based on the text of the 2014
 13 code.
 14 Now if we change it to what is
 15 proposed for the 2017 code and the
 16 inspector interprets the language to mean
 17 the ampacity change has to be applied to
 18 the entirety of the section that means
 19 that 4 350 kcmil conduct per phase is no
 20 longer valid. It has to be increased in
 21 size, to meet the exact same requirements
 22 that the cables and trays would be
 23 subjected to.

1 So that takes away the commercial
2 advantage, the cost advantage, and also
3 takes away the savings in installation
4 time pull smaller conductors fewer
5 conductors and all of these add up to
6 eliminate cable bus as a choice when a
7 contractor or an engineer is selecting a
8 system for their feeder and of course
9 because of scale this problem gets
10 exacerbated the longer your feeder is.

11 CHAIRMAN BELL: Just want to
12 remind you to state your name and
13 affiliation before you make your remarks.

14 Mr. Hartwell.

15 MR. HARTWELL: Yes. If you look
16 at the center column of the additional
17 material you can see it at an immediate
18 glance, the center two columns before and
19 after. Before is the one that says 2014
20 NEC minimum, after is after second
21 revision 21 10 and you see the number of
22 standard wire sizes that the conductors
23 are increased on each of these 23. It's a

1 good way to see in a glance what is being
2 done here. That removes, not me, I don't
3 have a dog in this fight. I don't own any
4 cable bus stock or anything, but I can
5 tell immediately that basically takes that
6 wire method out of the market.

7 CHAIRMAN BELL: Thank you,
8 Mr. Hartwell.

9 I want to remind you to state your
10 name and affiliation before you make
11 remarks.

12 Ms. Gleason.

13 MS. GLEASON: Patricia Gleason,
14 member of Council. Ms. Cronin, you were
15 indicating that the stakeholders who you
16 represent did not have an opportunity as
17 part of the process but then the chairman
18 of the committee stated otherwise. So I
19 just wanted to come back to you so that
20 you could clarify that.

21 MS. CRONIN: Certainly. Amy
22 Cronin, Strategic Code Solutions
23 representing Cable Bus Manufacturers

1 Association. I believe what Mr. Ayer, and
2 Mr. Ayer can correct me if I'm wrong, but
3 what he was saying is there was an
4 absolute opportunity as there is with
5 every code and standard to be at a
6 meeting, public input, public comment. And
7 what my -- and I was actually taking notes
8 here because that is not a reason to not
9 grant this appeal, because in my testimony
10 we talked about that they didn't know
11 about it. They had no reason to think
12 that it would ever be regulated. There
13 haven't been any incidents, haven't been
14 any near misses, nothing to indicate that
15 there would be regulations. Does that
16 answer your question?

17 MS. GLEASON: (Indicating).

18 MS. CRONIN: Thank you.

19 CHAIRMAN BELL: Thank you,
20 Ms. Cronin.

21 As a follow-up to that comment I
22 have a question, Mr. Johnston or Mr. Ayer.
23 Are you aware of any incidents or failures

1 of the cable bus out in the field?

2 MR. JOHNSTON: Thank you,
3 Mr. Chair. I'm not aware of any. I never
4 installed it myself when I was in the
5 field. I was around it installed. I'm
6 not aware of any failures in the news or
7 otherwise.

8 CHAIRMAN BELL: Thank you.
9 Mr. Bradley.

10 MR. BRADLEY: Randall Bradley,
11 member of Council. Mr. Ayer, could you
12 read to me again your third reason for
13 denying the appeal?

14 MR. AYER: Larry Ayer, IEC
15 alternate correlating committee. I think
16 maybe the reason you are referring to, the
17 third one was the issues brought forth
18 within the supporting documentation of
19 this appeal were not brought to the
20 attention of panel 8 during either the
21 first or second draft revisions.

22 MR. BRADLEY: So based on that
23 comment, if you would have had that

1 information at the time the decision was
2 made, would the decision have been
3 different from a correlating perspective?

4 MR. AYER: We're here for
5 correlation issues and in our opinion
6 would not have changed our decision.

7 CHAIRMAN BELL: Thank you,
8 Mr. Ayer.

9 MR. BRADLEY: Thank you.

10 CHAIRMAN BELL: Mr. Ayer, I have a
11 question for you. I think in your opening
12 remarks you had a comment in there that
13 you believe some of the points raised by
14 the appellants have merit. Can you
15 articulate what those issues are that you
16 believe have merit?

17 MR. AYER: Larry Ayer, alternate
18 correlating committee. Some of the issues
19 that we looked at were basically that we
20 think that the issues raised would be
21 better off suited to have a code making
22 panel 8 and a task group formed with the
23 members of the industry to try to come to

1 some consensus. We think that these
2 issues were addressed during the first and
3 second draft at issue and debated, but we
4 think that moving forward we thought it
5 would be best suited for these issues
6 maybe to get together in a task group to
7 try to resolve these differences to see if
8 they can be addressed moving forward.

9 MR. GOLINVEAUX: Mr. Ayer, just to
10 follow up on Randy's question. James
11 Golinveaux, member of Council. Follow up
12 to Randy's question. Your comment that
13 the correlating committee wouldn't have
14 changed their opinion. I believe your
15 opinion would have been it would have been
16 the task group's responsibility to look at
17 that data and recommend a change if they
18 were to do that; is that correct?

19 MR. AYER: Larry Ayer, alternate.
20 That's correct. We would make, it's up to
21 the CMP 8 to review those technical issues
22 because we're just responsible for
23 correlating between articles and the

1 document. Thank you.

2 CHAIRMAN BELL: Mr. Quiter.

3 MR. QUITER: Jim Quiter, member of
4 Council. The other thing that we seem to
5 be going back and forth on is this a
6 matter of interpretation and the code
7 intent was only to apply to the
8 terminations but the feeling is the
9 language isn't clear that it only applies
10 to the terminations or does it apply to
11 the entire bus? That seems to be going
12 back and forth. I guess that's to you,
13 Ms. Cronin.

14 MS. CRONIN: Yes, I would say that
15 it is way beyond just a text
16 interpretation. I would say that because
17 the industry was not involved, some of
18 these issues like is the Canadian code
19 different where this came from? Is there
20 other internal inconsistencies? All these
21 issues beyond just an interpretation, I
22 believe, would have been avoided had there
23 been debate at the panel level or at a

1 task group before it. I'm thrilled that
2 the correlating committee is recommending
3 a task group, but I encourage you to don't
4 just do it moving forward. Let's do it
5 starting today. Let's say look, it's been
6 that way 50 years. Let's let it lie, do a
7 task group, and then see where it will go.
8 So I don't think it's just interpretation.
9 I think it can be a lot more than that.
10 And the example I gave was the cable tray
11 had four options. They only brought over
12 2 for the cable bus was that an oversight
13 I'm not sure. The cable bus people seem
14 to think it was an oversight and will be a
15 massive problem. So I think it's more
16 than just interpretation. Thank you.

17 CHAIRMAN BELL: Thank you,
18 Ms. Cronin.

19 MS. CRONIN: And I'm Amy Cronin.
20 Strategic Code Solutions. Sorry.

21 CHAIRMAN BELL: Mr. Hartwell.

22 MR. HARTWELL: Fred Hartwell,
23 Hartwell Electric Services representing

1 myself. I would have framed the appeal
 2 differently if it were simply a matter of
 3 interpretation. I want to emphasize that
 4 either way it's wrong. If it's over the
 5 entire length of this the wiring method
 6 it's plainly wrong, open and shut. If
 7 it's just the terminations, then there is
 8 an issue with terminations, but the
 9 solution they chose is a direct conflict
 10 with 110 14 C and the NEC. And you can
 11 look at the spread sheets here. I did 23
 12 feeders and every single one of them meets
 13 the new requirement and fail, and an
 14 educated inspector looking at this is
 15 going to fail all 23 of them. And they
 16 all meet the new language. So at this
 17 point, why is this going forward?

18 CHAIRMAN BELL: Thank you,
 19 Mr. Hartwell. I have a question for
 20 Mr. Johnston, and that is I think the
 21 appellant has suggested that they have
 22 representation of panel 8. What is your
 23 thoughts on expanding the membership of

1 panel 8 to include representation from the
 2 cable bus industry.

3 MR. JOHNSTON: Thank you,
 4 Mr. Chair. We certainly would welcome
 5 that, classification is already filled but
 6 that certainly would be valuable. The
 7 other thing if I may, this task group as
 8 the correlating committee appeals task
 9 group looked at it and looked at the
 10 appellant and their documentation
 11 submitted it was clear there was more than
 12 just panel 8 involved here. Panel 6 is
 13 ampacity, panel 1 deals with terminations,
 14 and if a task group is formed it should be
 15 more than just general panel 1 panel 6
 16 might be involved as well since that's
 17 where the free ampacity cable is as well.
 18 So just like to go on record, Mike
 19 Johnston NEC correlating committee. Thank
 20 you.

21 CHAIRMAN BELL: Thank you,
 22 Mr. Johnston. I had one more question for
 23 you, if you don't mind. And that if the

1 Council is to uphold the appeal revert
 2 back to the previous edition of the text,
 3 take another look at this issue, do you
 4 believe there is any issue related to
 5 safety out in the field concerning use of
 6 the previous edition text?

7 MR. JOHNSTON: No, I don't,
 8 Mr. Chair. For all intent and purposes
 9 looking at what happened it got a little
 10 bit more restrictive. To go back to what
 11 was there in the existing code, in light
 12 of not a whole lot of evidence that I'm
 13 aware of of failures or anyone getting
 14 hurt or building burning down, I would say
 15 if the appeal was upheld it shouldn't be a
 16 problem to allow work to continue on this
 17 issue.

18 CHAIRMAN BELL: Thank you,
 19 Mr. Johnston. Any additional questions
 20 from the Council? Seeing none we move
 21 into the closing remarks. And we'll allot
 22 five minutes for Mr. Hartwell and Ms.
 23 Cronin to make closing remarks.

1 MR. HARTWELL: I think I am only
 2 going to say one thing. First, do no
 3 harm.

4 MS. CRONIN: And that's it.

5 CHAIRMAN BELL: That's it. Thank
 6 you very much.

7 Ms. Cronin.

8 MS. CRONIN: Amy Cronin, Strategic
 9 Code Solutions, Cable Bus Manufacturers
 10 Association. I just want to thank you for
 11 this opportunity to have this appeal, and
 12 I just want to say that Mr. Ayer giving
 13 the four reasons for why the correlating
 14 committee didn't support it that makes
 15 perfect sense. But in this case those are
 16 the exact reasons why this text needs to
 17 be turned back to 2014, just the lack of
 18 industry participation in the
 19 consideration of all the issues.

20 And also I urge you that going
 21 forward I think the task group is a
 22 fabulous idea but I think it's a fabulous
 23 idea if the code text gets changed back to

1 the 2014. And going forward I think it
2 would be great to have the task groups
3 made up of panel 6, 1, 8, and member
4 stakeholders out in the field.

5 I would like to mention that
6 membership on CMP 8 was an ideal request
7 and we understand that. We understand
8 that there is a huge hold list for every
9 single panel and it's incredibly difficult
10 to get on. Right now the manufacturers
11 category is filled, but I also noticed it
12 has a beautiful, all the categories like
13 seven different categories on CMP 8, and
14 no more of them, the majority of them are
15 15 percent or so. The manufacturers where
16 the cable bus manufacturers would be is
17 filled. So my suggestion from the cable
18 bus manufacturers is to fill it with one
19 of these other categories since it's only
20 at 15 percent and then there would be room
21 to add the manufacturers. That is the
22 request. And that would only bring the
23 panel up to the traditional 15 which I

1 know a lot of them like at. And I don't
2 pretend to be an expert at their numbers.
3 They know what their perfect numbers are.
4 And I would just submit that having a
5 whole article on an issue you would
6 probably want to have them on the panel.
7 Thank you very much.

8 CHAIRMAN BELL: Thank you,
9 Ms. Cronin. Mr. Johnston, concluding
10 remarks.

11 MR. JOHNSTON: Thank you,
12 Mr. Chairman. No, I don't have anything
13 additional to add.

14 CHAIRMAN BELL: Mr. Ayer?

15 MR. AYER: No, I do not.

16 CHAIRMAN BELL: Thank you.

17 With that we are going to close
18 this hearing. Before I do that I just
19 want to express my sincere appreciation
20 for taking time out of your busy schedules
21 to come here and share this valuable
22 information and participating in the NFPA
23 standards process. I do want to remind

1 everybody that the official decision of
2 the Council will be issued in writing by
3 the secretary of the Council, Dawn
4 Michelle Bellis, and there is no staff or
5 Council member permitted to convey any
6 information regarding that decision.

7 So with that we are going to close
8 this hearing and go off the record, take a
9 10 minute break, come back, and we'll
10 proceed with the next hearing. Thank you.

11 (Recess)

12 CHAIRMAN BELL: Back on the
13 record. Good afternoon everyone. I'm
14 Kerry Bell and I'm the chair of the
15 Standards Council. And in a moment we are
16 going to go around the room and have
17 everybody introduce themselves by stating
18 their name and affiliation. Before we do
19 that, I just want to remind everybody that
20 we have a stenotypist here with us in the
21 room today who will be capturing
22 everything on the record. So I see that
23 we have a lot of individuals planning to

1 speak to this issue.

2 So for those of you who are
3 speaking I am going to ask two things of
4 you. First of all state your name and
5 affiliation before you make your remarks
6 so that we can capture that for the
7 record. And then secondly if you can give
8 your business card to the stenotypist so
9 that we get your spelling of your name and
10 affiliation correct.

11 So let's go ahead and get started
12 with the introductions and start here with
13 Dawn to my left and around the table and
14 then start to my left here go around the
15 room.

16 MS. BELLIS: Dawn Michelle Bellis,
17 Council secretary.

18 MS. FULLER: Linda Fuller, NFPA
19 staff.

20 MR. O'CONNOR: Dan O'Connor,
21 member of Council.

22 MR. KEITH: Gary Keith, member of
23 Council.

1 MR. GOLINVEAUX: James Golinveaux,
2 member of Council.
3 MR. SNYDER: Mike Snyder, member
4 of Council.
5 MR. BUSH: Kenneth Bush, member of
6 Council.
7 MR. BRADLEY: Randall Bradley,
8 member of Council.
9 MR. PETERS: Jerry Peters, SPI
10 Society of Plastics.
11 MR. GOERGEN: Joel Goergen, Cisco
12 Systems.
13 MR. BEEBE: Chad Beebe, member of
14 Council.
15 MR. RICKARD: John Rickard, member
16 of Council.
17 MS. MANLEY: Bonnie Manley, member
18 of Council.
19 MR. QUITER: Jim Quiter, member of
20 Council.
21 MR. OWEN: Richard Owen, member of
22 Council. For the record I am recusing
23 myself on this agenda item. I'll not

1 participate as a member of the Standards
2 Council in the hearing, deliberations, or
3 voting on this matter.
4 MS. GLEASON: Patricia Gleason,
5 member of Council.
6 MS. EVERETT: Sally Everett, NFPA
7 staff.
8 MR. BURKE: Bill Burke, NFPA
9 staff.
10 MR. ODE: Mark Ode, Underwriters
11 Laboratories, member of correlating
12 committee, alternate.
13 MR. PIERCE: Jim Pierce, Intertek,
14 correlating committee, principal.
15 MS. PORTER: Christine Porter,
16 Intertek, correlating committee,
17 alternate.
18 MR. SMITH: Michael W. Smith,
19 representing NECA, chairman of the code
20 making panel 6.
21 MS. CRONIN: Amy Cronin, Strategic
22 Code Solutions representing Cisco.
23 MR. MANCHE: Alan Manche,

1 Schneider Electric, correlating committee.
2 MR. BRUNSSSEN: Jim Brunssen,
3 principal correlating committee
4 representing ATIS.
5 MR. DUBAY: Christian Dubay, NFPA
6 staff.
7 MR. OSBORNE: Robert Osborne, UL.
8 MR. ROCK: Brian Rock, Hubbell
9 Inc.
10 MR. KOVACIK: John Kovacik,
11 Underwriters Laboratories, principal
12 member correlating committee.
13 MR. JOHNSTON: Mike Johnston with
14 NECA, NEC correlating committee chair.
15 MR. EARLEY: Mark Earley, NFPA
16 staff.
17 MS. FREITER: Kristen Freiter,
18 NFPA staff.
19 MR. McCULLOUGH: Robert
20 McCullough, IAEI, representative alternate
21 on correlating committee.
22 MR. GALLO: Ernie Gallo, alternate
23 correlating committee representing ATIS.

1 MR. AYER: Larry Ayer, alternate
2 correlating committee representing IEC.
3 MR. MANESE: Bill Manese, NFPA
4 staff.
5 MR. STRANIERO: George Straniero,
6 AFC Cable Systems, Correlating Committee
7 alternate.
8 MR. HOLUB: Richard Holub,
9 principal representing American
10 Chemistry Council on correlating
11 committee.
12 MR. POPE: Tim Pope, representing
13 the Canadian Electrical Code Committee
14 nonvoting member Correlating Committee.
15 MR. SAPORITA: Vince Saporita
16 representing NEMA, principal in the
17 correlating committee.
18 MR. DiMINICO: Chris DiMinico, MC
19 Communications.
20 MR. ZIMMERMAN: George Zimmerman,
21 CME Consulting.
22 MS. HUNTER: Christel Hunter
23 General Cable.

1 MR. KUSUMA: Roy Kusuma, General
2 Cable.
3 MR. DAWSON: Fred Dawson from
4 Chemours.
5 MR. JONES: J. Jones Cisco
6 Systems.
7 MR. IVANS: Randy Ivans,
8 Underwriters Laboratories.
9 MR. FOSTER: Lyn Foster,
10 engineering
11 MR. HULIER: Mark Hulier, NFPA
12 staff.
13 MS. McWALTER: Kayla McWalter,
14 NFPA staff.
15 CHAIRMAN BELL: Thank you
16 everyone for the introductions. The
17 hearing that we are going to be dealing
18 with this afternoon related to 16-8-3-q of
19 our agenda. And at this point I am going
20 to recuse myself from this hearing and not
21 participate in the deliberation and voting
22 on this matter. I am going to turn the
23 chair over to Councilman Jim Quiter to

1 take over here.
2 CHAIRMAN QUITER: Thank you,
3 Mr. Bell, who has left the room. A little
4 bit of procedure. We are going to set
5 this up so that each side, the proponent
6 and opponent, have ten minutes total to
7 talk. So one of the issues or questions I
8 have is who will be speaking for the
9 proponents of the request.
10 MR. GOERGEN: I will. Joel
11 Goergen, Cisco System.
12 CHAIRMAN QUITER: Only you. And
13 opposed?
14 MR. PETERS: Terry Peters speaking
15 for it, and Randy Ivans will be providing
16 points as well.
17 CHAIRMAN QUITER: We'll have 10
18 minutes for the proponent and 10 minutes
19 for the opponent. We'll stick to that
20 time. At that point we'll open it up for
21 questions from the Council, and those will
22 be directed through me, I should say. And
23 then we'll at the end give each side five

1 minutes to summarize. So the process will
2 be 10 minutes each and then questions and
3 then five minutes each to summarize.
4 I remind you again, for the
5 stenographer's sake, to state your name
6 before you start even if it's the 10th
7 time you've spoken, and also do not speak
8 too fast that she can't get everything
9 down. That is an important part of this.
10 So let's open it up to Mr. Goergen.
11 MR. GOERGEN: Joel Goergen with
12 Cisco Systems, and I know that you are
13 going to have to slow me down a couple of
14 times. So we're here today to talk about
15 Section 84160 which is a new addition to
16 the, for us on the telecommunication side
17 it's a new standard that we're looking at
18 and trying to understand how we meet that,
19 how companies, how customers will
20 interpret that and how they'll have to
21 meet that.
22 What is interesting is that if you
23 go back to the vote that was done in June,

1 right when I put forward CAM 70-42 and the
2 vote on it was, basically it was 119, 139.
3 In a standards organization you really
4 want to have like a 90, 10 or 10, 90. So
5 I saw this vote and it really looked to me
6 like it was close to 50/50. I am getting
7 to a point and that point is there is no
8 communications between either side. And
9 when 84160 when the text was actually
10 crafted -- let's back up for a second and
11 look at what that text was and I'll get to
12 my point on ampacity.
13 The original text in that meeting
14 was proposed by Terry Coleman from the
15 IEBW, and unfortunately in, well,
16 fortunately the original text ampacity was
17 covered, wattage was covered, cable
18 labelling was covered. There was
19 functions in there that even I won't put
20 words in his mouth, but I believe that
21 Randy was looking for, it was sort of a
22 convergence of everybody's viewpoint
23 carefully crafted, and it was text that I

<p style="text-align: center;">101</p> <p>1 believe at that time everybody could have 2 used. Could have agreed to.</p> <p>3 Now what happened after that was 4 unfortunately it was completely voted out 5 and a new set of text is what we have 6 today was put in there. And what was put 7 in there was only wattage. There is no 8 ampacity. And here is what I want to say 9 something at a level -- so I don't have 10 the relationship building that all of you 11 do in this room. I'm a newcomer to it. 12 And I do not want to throw UL or Randy 13 Ivans or anybody like that under the bus. 14 The work that Randy and team did it's good 15 data, and it was good data that was 16 brought forward to propose a change. It 17 was a small section of the entire 18 community, of the entire industry.</p> <p>19 I know from the SPI side that they 20 made an attempt to bring people in to 21 participate in the study. But nobody in 22 the 802.3 body looking at power over 23 Ethernet was -- 200, 300 people in the</p>	<p style="text-align: center;">103</p> <p>1 the source, talking about the load? There 2 is a number of issues.</p> <p>3 So what I did I followed the NFPA 4 rules and I went back into the public code 5 and looked at what I could propose as a 6 motion, legitimate motion. And what I 7 could propose was .5 AMPS. And honestly I 8 don't really care about the 60 watts, but 9 because of the way I had to pull the 10 comment out, what is important is the 11 hundred watts and the .5 AMPS had to be 12 brought out together.</p> <p>13 Now we need to have ampacity in 14 there. But further, we need to have 15 communications between these two groups. 16 For some reason we seem to be split down 17 the middle, and the fact that Randy Ivans 18 is one side and Joel Goergen is on the 19 other side. So I drive telecommunications 20 across the industry, but not only just for 21 Cisco but drive it across the industry. 22 And Randy and I should never be in a 23 situation like this where we're walking</p>
<p style="text-align: center;">102</p> <p>1 room. Nobody in that room was brought in 2 to participate in the study. So we had 3 the study done. Ampacity ratings were 4 calculated, ampacity values were looked 5 at. And I use the term ampacity values 6 were looked at. So when the text was 7 unfortunately crafted on the floor real 8 time live what was put in there was 60 9 watts or less. There is no ampacity 10 rating.</p> <p>11 Now at the time we were very 12 respectful to the NEC process, and we 13 weren't able to interrupt or speak. Hence 14 the CAM and hence the opportunity to be 15 here before you guys to speak now. Being 16 respectful of the rules I respect the data 17 that was brought forward by UL, I think 18 there needs to be a lot more done to it.</p> <p>19 An entire study is based on 20 ampacity, but went into 84160 was all 21 wattage. It's a text that is crafted that 22 I don't know how to enforce. I don't know 23 how to interpret it. Is it talking about</p>	<p style="text-align: center;">104</p> <p>1 into a room and we're on opposite sides 2 because that means we are not 3 communicating.</p> <p>4 So what I'm asking for out of this 5 is not only the ampacity to put in the .5 6 AMP value but to also set up a task group. 7 I'd really like to see 84160 just 8 completely pulled out and a task group set 9 up so that we can as an industry get 10 together and build upon the information 11 that I have and the information that Randy 12 has brought forward. I think that is 13 really of great value.</p> <p>14 Further, to help move things 15 along, in CMP 3 there needs to be more 16 from a communications perspective in 17 there. I'm not talking about the 18 installer. I'm talking about the guy who 19 designs it. The guy who thinks it through 20 who works across the industry. I'd really 21 like to have a seat at that table at CMP 22 3. I think with the passion and with my 23 understanding of this, of what we're</p>

1 talking about here, the scope of this,
 2 right, I think I can bring incredible
 3 value to the value that Randy Ivans is
 4 bringing in in CMP 16. And further, I
 5 think that the Ethernet alliance, could
 6 bring incredible value into CMP 16 in
 7 telecommunications conversations, right.
 8 So now that we're not just getting
 9 the safety aspect of it, we're getting the
 10 real safety aspect of it which is Ethernet
 11 communications has never been designed to
 12 run above 60 degrees C conductor ampacity
 13 temperatures. It never has. And there is
 14 a letter that was sent to Mark Earley that
 15 described that. Hopefully he got that
 16 letter in support of that comment from the
 17 I triple E, basically because of the text
 18 that is in NFPA and because companies like
 19 Honeywell are now using Ethernet, using
 20 POE, using WiFi based Ethernet for fire
 21 alarm controls, and because the health
 22 care industry is also using this, I have
 23 got to look at this, and the old P cable

1 that general cable did a phenomenal job
 2 designing, it operates up to 60 degree C.
 3 The N E C tables now are saying that my
 4 cables, the Ethernet can run up to 60
 5 degree C conducting operating temperature.
 6 An Ethernet has never been tested on that,
 7 and we are now going to be using that in
 8 life critical and control critical
 9 applications.
 10 So we really need to have that
 11 discussion on what that means, what we can
 12 do about it. Again, that's why I would
 13 like to be at the table because there is a
 14 significant amount of work now that has to
 15 happen in 802.3, in TIA, to go back and
 16 look at and evaluate these cables for
 17 Ethernet operations so it's a safe use.
 18 And until that point, I have to go back
 19 and look at how I can stop people from
 20 adopting Ethernet above 60 degrees C
 21 because again in the NEC in 2017, the NEC
 22 sort of alludes to the fact it is now safe
 23 and perfectly fine to run Ethernet

1 communications up to that point.
 2 CHAIRMAN QUITER: Two minutes.
 3 MR. GOERGEN: The last thing I
 4 want to say is on the research and
 5 technology aspect of it, the UL fact
 6 finding report was done along with the
 7 plastics industry, and I don't want to get
 8 into a he said she said thing. I really
 9 didn't get to participate in it. And
 10 there is a lot of data that TIA has.
 11 There is a lot of data that 802.3 has.
 12 There's a lot of data that other cabling
 13 companies have that should have been
 14 looked at. When I look at the fact
 15 finding report I think that, I think that
 16 UL should have come forward as special
 17 experts and not necessarily voted or taken
 18 part in what was happening in
 19 CMP 16. And further, I think that one
 20 thing that you ought to be doing is
 21 lecturing some of us in this room for not
 22 communicating because it's been a year,
 23 and honestly this is like the first time

1 we have been in a room to have this
 2 serious conversation. And we need to have
 3 more communications like that. And had we
 4 had those communications, I feel that the
 5 UL fact finding report would be twice as
 6 thick as it is, that it would have
 7 Ethernet supported data by the University
 8 of New Hampshire which advised in the
 9 setup had not idea what the setup was for.
 10 Or they would have offered the fact that
 11 we should actually be sending data down
 12 those connections at the same time we're
 13 monitoring the temperature. And also Tyco
 14 Electronics --Tyco Cabling which is now
 15 part of CommScope, they had a setup and UL
 16 went and looked at it, but again they
 17 weren't informed of what the setup would
 18 be copied for or used for, to my
 19 understanding.
 20 Now had we had that open dialogue,
 21 right, had I known from NEC been able to
 22 bring in 802.3, TIA, or from 803.2 into
 23 TIA and to Fred Dawson's credit, Fred was

1 the one who came to 802.3 and said, "guys,
2 you need to look at this." And so in all
3 the study what is really coming out is the
4 84160 the co text in there, the standards'
5 text is poorly written. We won't be able
6 to enforce it really, and an example is
7 that 60 watt limit 802.3 is already put,
8 publishing another draft not made for the
9 automotive industry, by the way, made for
10 industrial Ethernet control applications
11 that is going to be 50 watts with 1.36
12 AMPs on it. And the UL fact finder
13 report, which I agree with, should not be
14 more than .5 AMPs per conductor.

15 So there is a problem there. To
16 further complicate things Thomas Burke
17 from UL in 2005 stated in front of all of
18 802.3 that the ampacity rating as long as
19 you stayed under a hundred watts you can
20 put 1.3 AMPs down that wire. We never
21 heard anything since until Fred Dawson
22 stood up in front of the group last year
23 in July of 2015. And which I have worked,

1 I put a team together and I struggled very
2 hard to learn the NFPA process, very
3 humble to be granted a CMP 12 principal
4 membership, very humble to be here before
5 you today to argue this case. And at the
6 very least I understand that you don't
7 want to get into the middle of technical
8 issues, but at the very least if we can't
9 pull the text out, if we can't add
10 ampacity in there, at the very least I am
11 begging you for a task group.

12 I am begging you for a seat at the
13 table of CMP3 and I'm begging you for a
14 seat at the table of CMP 16. I believe if
15 we do that the 802.3 community, the NEC
16 community, TIA and entire
17 telecommunications can come together and
18 work solidly like this and there will
19 never be an opportunity where a man who
20 just like myself we spent our entire lives
21 focused on safety, we're on opposite sides
22 of the fence. Thank you, sir.

23 CHAIRMAN QUITER: You filled that

1 10 minutes very well.

2 Mr. Peters.

3 MR. PETERS: Terry Peters, SPI.
4 I'd like to read a brief statement. As a
5 voting member of NFPA I'm here
6 representing the SPI wiring cable section
7 to oppose the appeal of CAM 70-42. The
8 appeal submitted by Amy Cronin Strategic
9 Code Solutions on behalf Joel Cisco
10 Systems is without merit. NFPA policies
11 and procedure were followed completely and
12 the appellant admits this in the appeal.
13 "It's not being alleged there was any
14 panel wrong-doing and we are not aware of
15 any rules being broken. On this alone the
16 appeal should be rejected. Moreover the
17 technical issues raised by appellant and
18 discussed in detail and consistently
19 rejected by two code making panels and by
20 the National Fire Protection Association
21 general membership, 2016 annual conference
22 and technical session.

23 The fact finder report clearly

1 shows cables can exceed the maximum rate
2 of operating temperature in many
3 installation configurations power took
4 over in excess 60 watts. Relief requested
5 by the appellant to raise the suggested
6 limit to 100 watts far exceeds the
7 findings and is not warranted. I would
8 like to now go to Randy Ivans to speak to
9 the technical issues within the appeal.

10 MR. IVANS: I'll come up here. My
11 name is Randy Ivans from Underwriters
12 Laboratories. I'm a 40-year veteran of
13 UL, member of panel 16 speaking in
14 opposition to the CAM 7042. First I'd
15 like to point out that in panel 16 the
16 wording in 84160 was unanimously approved.
17 Not one descending vote at the meeting.
18 The CAM 7042 does not correct or just add
19 ampere ratings. 84160 it increases the
20 wattage from 60 watts to 100 watts. This
21 increase is not supported by the data from
22 the fact finding report based on the
23 temperature data contained in the report

1 operating cables at half an AMP a hundred
2 watts will result in temperatures in
3 excess temperature rating of the cable,
4 significant number of installation
5 scenarios.

6 This is a safety issue. Within
7 the powering of land community 60 watts is
8 generally accepted as representing 0.3
9 amperes at a nominal 50 volts. The
10 complete fact finding report was provided
11 to the code making panels in accordance
12 with the policies and procedures of NFPA.
13 Results of the fact finding report were
14 publicly shared with the industry weeks
15 before the cut-off date through UL webinar
16 provided by the cable installation
17 maintenance magazine on September 15th,
18 2015. In the written appeal there was
19 reference to an IEEE standard 802.3BU
20 which is a draft standard for Ethernet
21 amendment physical layer management
22 parameters of power over data lines, of
23 single balanced pair Ethernet. It's not

1 the same kind of systems we're talking
2 about when talking about general land
3 cable installations. It's only a single
4 pair, not four pair, and there are
5 sections in 725 that allow you higher
6 ampere ratings if I have less than all 8
7 conductors carrying current. The project
8 authorization initiating this work on this
9 particular standard says it was for
10 automotive transportation and industrial
11 automation, nothing about general land not
12 appropriate for this type of application,
13 and it's unlikely that a standard
14 developed for the automotive and
15 industrial environments will be used
16 instead of those developed specifically
17 for building land systems like 802.3 A T
18 and proposed 802.3 B. In the written
19 appeal it was mentioned of N E C
20 requirements not having marking labeling
21 requirements, the reference to article 725
22 specifically in 725, 124 requires class 2
23 circuits to be durably labeled. The

1 second revision which has already been
2 approved adds a next section 725, 121 C
3 which requires labeling of voltage and
4 current for limited power circuits.

5 This new section has already been
6 approved. No appeals on that section.
7 There is no need for additional labelling
8 requirements since they're already there.
9 I ask the Standards Council to reject this
10 appeal and support panel 16 and its work
11 and well established NFPA processes.

12 CHAIRMAN QUITER: Thank you. I
13 should have mention at the beginning that
14 the correlating committee is also
15 represented here, and we'll give them a
16 chance to speak also. Mr. Johnston.

17 MR. JOHNSTON: Thank you, Mr.
18 Chair. Mike Johnston chair of correlating
19 committee. The Standards Council should
20 have a response from the chair of code
21 panel 8, 16, Thomas Moore. So that I know
22 that is in your position or should be, and
23 the correlating committee appeals task

1 group looked at this. And Mr. Robert
2 McCullough, who is the spokes person, so
3 I'll ask him to address the issue. Thank
4 you.

5 MR. McCULLOUGH: Robert
6 McCullough, IAIEI alternate rep. The
7 relief requested by the appellant appears
8 to be three fold. First over turn the
9 floor vote on CAM 70-42 and modify the
10 text of 840.160 accordingly, and to form a
11 task group to work on the issue. Second,
12 the point members from the specific
13 industry involved to code making panels 3
14 and 16 as in the appellant's words few or
15 no stakeholders with the depth of
16 expertise to address all the relevant
17 aspects of power over communications
18 cabling are on the panels.

19 And third, perform a policy review
20 of the research/testing categories
21 responsibilities during committee work and
22 data developed and used to drive standards
23 development. From a review of the record

<p style="text-align: center;">117</p> <p>1 and the appellant's own statements the 2 regulations governing the development of 3 NFPA standards were followed at every 4 stage of the process, and there were 5 numerous opportunities for input on the 6 proposed language. Not being satisfied 7 with the result is a natural by-product of 8 the process. The changes were approved by 9 an overwhelming majority of code making 10 panel three members in Section 725.144 and 11 unanimously by the code making panel 16 12 members in Section 840.160. Appointing a 13 task group at this point in time will not 14 affect the language already approved by 15 both code making panels. Adding 16 additional members to the code making 17 panels also will not affect the language 18 already approved. A review of existing 19 membership experience does not indicate a 20 need for an immediate or retroactive 21 change in the panel's makeup. The review 22 requested in item 3, the policy review, 23 does not appear to have an urgency that</p>	<p style="text-align: center;">119</p> <p>1 forming a task group to work through the 2 language that has already been approved by 3 the panels. We just felt that appointing 4 a task group now, whatever work they do 5 shouldn't affect the work that was already 6 done and approved through the entire 7 process. 8 CHAIRMAN QUITER: So you don't 9 want it to be retroactive. 10 MR. McCULLOUGH: That's correct. 11 CHAIRMAN QUITER: Other questions? 12 Mr. O'Connor. 13 MR. O'CONNOR: I just want to 14 follow your -- 15 CHAIRMAN QUITER: Identify 16 yourself. 17 MR. GOLINVEAUX: James Golinveaux, 18 member of Council. I just want to follow 19 up on your testimony. When you first were 20 introducing the issue of 50 watts you were 21 saying it was a safety issue with 22 temperature. 23 MR. GOERGEN: Yes.</p>
<p style="text-align: center;">118</p> <p>1 would alter the already completed process. 2 The correlating committee's recommendation 3 to the Standards Council is to deny the 4 appeal and continue to reject CAM 70-42 as 5 the process was followed. And 6 representatives from industry 7 organizations can submit applications for 8 membership on either or both code making 9 panels through the normal procedure. 10 Thank you, Mr. Chairman. 11 CHAIRMAN QUITER: So that 12 concludes open comments and we'll open it 13 to questions from the Council. Seeing 14 nothing yet I'll ask one of the 15 correlating committee. It sounds like 16 you're opposed to a task force and members 17 that would cause retroactive change, but 18 it wasn't quite clear whether you're 19 opposed to a task force looking at the 20 next cycle. 21 MR. McCULLOUGH: Robert 22 McCullough, IA EI, rep. No. The 23 correlating committee is not opposed to</p>	<p style="text-align: center;">120</p> <p>1 MR. GOLINVEAUX: With the current 2 language. And your proposal has to do 3 with a hundred watts, and what -- as 4 written today is there a safety issue in 5 your opinion with the language that is 6 written today at 50 watts? 7 MR. GOERGEN: I'm sorry. 8 Confused. The language that is written in 9 841.60 is for 60 watts, the 50 watts that 10 I was referring to was the 802.3 B U 11 standard. 12 CHAIRMAN QUITER: Identify 13 yourself again. 14 MR. GOERGEN: Joel Goergen, Cisco 15 Systems. 16 MR. GOLINVEAUX: So the 60 watts 17 are you identifying that as a safety issue 18 the way the committee has written it. 19 MR. GOERGEN: Yes, sir, I am. It 20 is a huge safety issue. We have ampacity 21 listed throughout the entire NEC entire 22 code. Very few places is target wattage 23 without following the entire ohms law</p>

1 which is wattage equals voltage times
 2 current. If you don't control two of the
 3 three variables you don't control
 4 anything. And if you look at one of the
 5 major concerns from some of the members on
 6 the CMP 16 was for close circuit
 7 television camera on calf I cables. I can
 8 put 5 amps down a conductor and at 12
 9 volts and still be at the 60 watt limit.
 10 I reference the case for 802.3 BU which is
 11 single pair of power over data line that
 12 is an industrial Ethernet application and
 13 it is made for local area networks and it
 14 is a single pair and the project
 15 authorization statement does say that.
 16 And it's targeted for 50 AMPs at 1.3 -- 50
 17 watts at 1.3 AMPs and had I unfortunately
 18 been able to speak when that text was
 19 written in November of last year I would
 20 have said if you want to leave, if you
 21 want to leave 60 watts in there I don't
 22 care. That battle is long gone. I agree
 23 with the correlating chair. That battle

1 is long gone. But there needs to be an
 2 ampacity. And to make sure it's safe.
 3 And the only ampacity number that I could
 4 grab by NFPA rules was the .5 AMPs that I
 5 had put in a public comment. I'm much
 6 smarter now. So for the next 2020 code
 7 sequence I will be putting in a series of
 8 comments that I can go back on and put a
 9 motion in at a later time.
 10 MR. GOLINVEAUX: James Golinveaux,
 11 member of Council. Just one follow-up
 12 question to respond to the safety issue
 13 aspect of what he just stated. A quick
 14 comment if you could. Anyone can answer.
 15 MR. IVANS: Randy Ivans,
 16 Underwriters Laboratories. The work that
 17 we did in the fact finding report was
 18 based on average so our charts and graphs
 19 that show the .5 amperes being a problem
 20 and .3 amperes not being a problem start
 21 off with amperage. The wattage was
 22 referenced in those tables and within the
 23 report because virtually all of the

1 deployments and power over Ethernet up to
 2 this point have a nominal 50 volt rating,
 3 some have 47 to 52, some are 47 or 48 to
 4 56, but a nominal 50 volts it's generally
 5 understood in the industry that 60 watts
 6 with today's technology for land cabling
 7 represents .3 amperes. And at that level
 8 our studies have shown there is not an
 9 overheating of cable problem.
 10 MR. DiMINCO: Anyone else answer
 11 that question, I would like to comment on
 12 that.
 13 CHAIRMAN QUITER: Yes, identify
 14 yourself.
 15 MR. DiMINCO: Chris DiMinico.
 16 725, 144 where the work really that UL did
 17 translated into sufficient code it provide
 18 tables of ampacity provide butt cable
 19 configurations, all of the details are
 20 there in order for you to assess the
 21 safety aspects of it. And the committee
 22 work that they've done approval they got
 23 to integrate the findings into two

1 sections of the code completely done in
 2 724, 725 and it's missing NA 16. So there
 3 is not sufficient information. If you go
 4 to 725 you see a perfect example of what
 5 is missing. You need to have ampacity
 6 specified. It's got to be related to a
 7 bundle of cable configurations, ampacity
 8 is a -- term invented to describe ampere
 9 capacity. It runs throughout the code.
 10 Everybody is familiar with it. They
 11 understand it. It's missing. It's not
 12 sufficiently characterized.
 13 CHAIRMAN QUITER: Thank you.
 14 Mr. Beebe.
 15 MR. BEEBE: Chad Beebe, member of
 16 Council. Mr. Goergen, you mentioned a
 17 couple of times you were following the
 18 NFPA process, but a couple of places you
 19 were unable to speak. Can you expand on
 20 what you mean? Can you expand on that?
 21 What you mean by that.
 22 MR. GOERGEN: Joel Goergen, Cisco
 23 Systems. In November, November of last

1 year, November of 2015, our first real
 2 meeting my first meeting there the way the
 3 rules of the committee are set up is that
 4 and my personal impression at that time
 5 for CMP 16 was that you had to request
 6 time to do a presentation, but then when
 7 the committee was in process and they were
 8 deliberating, conversations, that you are
 9 not allowed to speak and that you would
 10 not be recognized if the chair did not
 11 want to recognize you. And that's my
 12 understanding of the NFPA rules. So not
 13 being able to be recognized by the chair I
 14 was unable to speak. And we tried through
 15 you IEEE rep on that panel. SEC 18 was
 16 unresponsive to our concerns about the
 17 wording of the text that he had just put
 18 in there. And I, not understanding Mr.
 19 Beebe, the complete process at that time,
 20 I was unable to get attention from the
 21 chair and point out to him that you should
 22 never write S D O text on the fly. They
 23 should have waited 24 hours and came back

1 and then put the text in after they had an
 2 opportunity to think it through. But to
 3 just craft it, and I know a lot of people
 4 were there, but it took about 20 to 25
 5 minutes to craft it and deliberate and
 6 it's just not enough time for a section
 7 that is that important.
 8 MR. BEEBE: Thank you.
 9 CHAIRMAN QUITER: Mr. O'Connor.
 10 MR. O'CONNOR: Mr. Goergen, in
 11 your appeal there is about three pages of
 12 text here regarding research testing
 13 laboratory, it is referring to UL, through
 14 this process here. It seems to intimate
 15 to me something maybe you think some,
 16 there may have been some violations of
 17 rules here and how UL represented their
 18 position here relative to the client in
 19 the process. Could you comment on that
 20 and then after you comment I would like to
 21 see Mr. Ivans' response to any comments
 22 you would have on that.
 23 MR. GOERGEN: Joel Goergen,

1 Cisco. Yes, in the process we felt, so
 2 our understanding of the process was that
 3 the plastics industry worked with a small
 4 group of people to go to UL and generate
 5 this report. And it was more of a report
 6 generated from a niche part of the
 7 telecommunications industry. And based on
 8 that, my personal feeling was that in this
 9 case, UL was a special expert and not
 10 there as a research technologist. From my
 11 point of view they should have recused
 12 themselves on voting CMP 3 and CMP 16.
 13 CHAIRMAN QUITER: Mr. Ivans.
 14 MR. IVANS: Randy Ivans, UL. We
 15 were approached by SPI to do a fact
 16 finding report. Most people are familiar
 17 with a fact finding report is. Basically
 18 it's to develop test protocols, develop
 19 test programs, generate data, and report
 20 that data. In the course of that we
 21 developed a fact finding report, provided
 22 that report back to SPI, and then they
 23 submitted or they used that report to

1 generate the information that is in 725 in
 2 the tables right now. In the course of
 3 the testing and evaluation we did on the
 4 cabling, we found in agreement with a lot
 5 of other international interests that
 6 cable heating is a problem and it's a
 7 safety issue and because of that we
 8 decided to take a position both in the
 9 panel and meetings here like today and
 10 basically stating to the industry, stating
 11 to the standards industry, that there is a
 12 safety issue that needs to be addressed in
 13 short order. The report itself belongs to
 14 SPI. We were just the people who
 15 generated the data for the report. The
 16 reason I'm here is because we believe it's
 17 a safety issues not because we generated
 18 some data. The data that we generated is
 19 not very much different from the data
 20 that's been rated from 35 companies,
 21 international standards organizations. If
 22 I put current through the cable put the
 23 cable in a bundle it going to overheat,

1 and that overheating is a safety issue.

2 CHAIRMAN QUITER: Are there other
3 questions from Council? Seeing none we'll
4 move to closing discussion. Mr. Goergen.
5 Five minutes.

6 MR. GOERGEN: Joel Goergen Cisco
7 Systems. I think I laid out a pretty good
8 case in the first two minutes, the first
9 ten minutes. So I won't take my entire
10 five. I do want to come back and point
11 out a couple of things that why would I be
12 a good candidate to be added to CMP 3 or
13 why would Ethernet alliance be a good
14 candidate to be added to CMP 16. If you
15 read Section 725, 121 C which is just
16 changed from the 2014 code for labelling,
17 you see now we have to label voltage and
18 amperage on a per port basis. In a one RU
19 piece of communications equipment which is
20 1.57 inches high, we put 96 ports in
21 there. I have no room for labeling. I
22 don't even get the Cisco logo on the
23 front. I don't even get the leds in

1 there. There is no place to put labeling.

2 So had I been or someone like me
3 been involved in that conversation when it
4 came to telecommunications equipment I
5 would have said the only way that labeling
6 would apply is if its optical transport
7 because optical transport there is always
8 about this much room for labeling. But
9 again, I barely get this much room for
10 each RJ 45. So again, there is, for
11 having somebody like me added to the panel
12 there is value because now between NEC and
13 802.3 and a hundred, a thousand companies
14 out there producing telecommunications,
15 this note goes into effect January 1st,
16 2018. How do I solve that problem? I
17 don't know how to solve it. I get the
18 need to put a label, but we need to have
19 these discussions. And so I believe that
20 we can add value there.

21 And I really do appreciate you
22 hearing what we have to say and listening
23 to my passion on this. Again whatever you

1 guys do today is absolutely about safety.
2 .Randy and I are in full agreement about
3 this. This is a very safety center issue.
4 Thank you.

5 CHAIRMAN QUITER: Mr. Ivans.

6 MR. IVANS: Randy Ivans,
7 Underwriters Laboratories. As I said
8 before, fact finding report presents the
9 facts obtained during an investigation.
10 The fact shows that systems operating over
11 60 watts will overheat cables in a
12 significant number of installation
13 scenarios. We believe this is a safety
14 issue and should not be ignored.

15 CHAIRMAN QUITER: Okay. Thank
16 you. So that brings to an end the hearing
17 on this issue. First of all our sincere
18 appreciation for coming, participating in
19 the NFPA properties. It is participation
20 that makes this process work.

21 Secondly, the process from here is
22 that the Standards Council will discuss it
23 in executive session. You will hear the

1 results of that executive session from the
2 our secretary Ms. Bellis. Nothing you
3 hear from staff or Standards Council
4 members is applicable, and you should not
5 hear anything from staff or
6 Standards Council members. So you will
7 hear the results in writing from the
8 secretary of the Standards Council. I
9 should also again say that the members who
10 recused themselves will not be
11 participating in that discussion. Thank
12 you very much. We'll take a ten-minute
13 break.

14 (Off the record.)

15 CHAIRMAN BELL: We'll go back on
16 the record. Welcome everybody to the
17 final hearing for today. My name is Kerry
18 Bell, and I'm the chair of the
19 Standards Council. In a moment we are
20 going to go around the room and have
21 everybody introduce themselves, but before
22 we do that, I just want to remind
23 everybody that we have a stenotypist in

1 the room with us today who is going to be
2 recording this session. So from that
3 perspective I would ask any speakers to do
4 two things for us to help us out. First
5 of all state your name an affiliation
6 before you make your remarks, and then
7 secondly, if you'll give your business
8 card to the stenotypist so we make sure we
9 get the spelling correct for your name and
10 affiliation.

11 So with that let's get started
12 with the introductions. And to my left is
13 Dawn.

14 MS. BELLIS: Dawn Michelle Bellis,
15 Standards Council, secretary.

16 MS. FULLER: Linda Fuller, NFPA
17 staff.

18 MR. O'CONNOR: Dan O'Connor,
19 member of Council.

20 MR. KEITH: Gary Keith, member of
21 Council.

22 MR. GOLINVEAUX: James Golinveaux,
23 member of Council.

1 MR. SNYDER: Michael Snyder,
2 member of Council.

3 MR. BUSH: Kenneth Bush, member of
4 Council.

5 MR. BRADLEY: Randall Bradley,
6 member of Council.

7 MR. LUI: Sean Lui, Tesla Motors.

8 MR. MOLDOVEANU: Andrei
9 Moldoveanu, NEMA.

10 MR. BEEBE: Member of Council.

11 MR. RICKARD: John Rickard, member
12 of Council.

13 MS. MANLEY: Bonnie Manley, member
14 of Council.

15 MR. QUITER: Jim Quiter, member of
16 Council.

17 MR. OWEN: Rick Owen, member of
18 Council. For the record I am recusing
19 myself on this agenda item. I'll not
20 participate as a member of
21 Standards Council hearing, deliberations,
22 or voting on this matter.

23 MS. GLEASON: Patricia Gleason,

1 member of Council.

2 MS. EVERETT: Sally Everett, NFPA
3 staff.

4 MR. BURKE: Bill Burke, NFPA
5 staff.

6 MR. ODE: Mark Ode, Underwriters
7 Laboratories, alternate correlating
8 committee.

9 MR. PIERCE: Jim Pierce, Intertek
10 principal correlating committee.

11 MS. PORTER: Christine Porter
12 Intertek alternate correlating committee.

13 MR. SMITH: Michael W. Smith,
14 representing NECA. Chairman code panel 6.

15 MR. MANCHE: Alan Manche,
16 Schneider Electric, correlating committee.

17 MR. BRUNSSSEN: Jim Brunssen,
18 principal correlating committee
19 representing ATIS.

20 MR. DUBAY: Christian Dubay, NFPA
21 staff.

22 MR. OSBORNE: Robert Osborne, UL.

23 MR. ROCK: Brian Rock, Hubbell

1 Inc.

2 MR. KOVACIK: John Kovacik,
3 Underwriter Laboratories, UL principal
4 member correlating committee.

5 MR. JOHNSTON: Mike Johnston with
6 NECA chair NEC correlating committee.

7 MR. EARLEY: Mark Earley, NFPA
8 staff.

9 MS. FREITER: Kristen Freiter,
10 NFPA staff.

11 MR. MC CULLOUGH: Robert
12 McCullough, correlating committee
13 alternate representing IAIEI.

14 MR. GALLO: Ernie Gallo,
15 correlating committee representing ATIS.

16 MR. AYER: Larry Ayer, correlating
17 committee alternate representing IEC.

18 MR. MANESE: Bill Manese, NFPA
19 staff.

20 MR. STRANIERO: George Straniero,
21 AFC Cable Systems correlating committee
22 alternate.

23 MR. HOLUB: Richard Holub,

1 representing the American Chemistry
2 Council, correlating committee. 4.
3 MR. POPE: Tim Pope representing
4 Canadian Electrical Code Committee,
5 nonvoting member of the correlating
6 committee.

7 MR. SAPORITA: Vince Saporita,
8 principal correlating committee
9 representing NEMA.

10 MS. HUNTER: Christel Hunter,
11 General Cable.

12 MR. BOLONA: Guy Bolona, NFPA
13 staff.

14 CHAIRMAN BELL: Thank you everyone
15 for those introductions. The hearing that
16 we have scheduled here this afternoon is
17 related to a general topic 16-8-3-1-1 and
18 at this point I am going to recuse myself
19 from this hearing and will not participate
20 in the deliberation of voting on this
21 matter and will now ask Council member Jim
22 Quiter to chair this session. Mr. Quiter.

23 CHAIRMAN QUITER: Thank you,

1 Mr. Bell. A couple of procedural issues.
2 We'll give the proponent 10 minutes to
3 talk about their appeal. One question I
4 have so I don't butcher your last name.
5 I'll just refer to you as Andrei. Are you
6 with the proponent or are you opposed?

7 MR. MOLDOVEANU: Proponent. But
8 the main speaker is Mr. Lui.

9 CHAIRMAN QUITER: I knew that
10 part. I wanted to get a lay of the land.
11 So the proponent will get 10 minutes to
12 make their case. The correlating
13 committee is also represented here so
14 we'll ask them for their opinion, through
15 Mr. Johnston. After that we'll open it to
16 questions from the Council, and at the
17 conclusion of questions we'll give each
18 side again five minutes to complete and
19 summarize their case.

20 So with that we'll open it up to
21 Mr. Lui.

22 MR. LUI: Thank you. Sean Lui. I
23 am with Tesla Motors, and I'll have a

1 quick question before I start. Does every
2 member of the audience have the attachment
3 because I am going to be referring to some
4 of the slides that I submitted for you.

5 CHAIRMAN QUITER: Yes.

6 MR. LUI: Today I am going to
7 focus the appeal on three main substantive
8 parts, or arguments. First one is that is
9 critical for development and deployment
10 of the fast charging network in the United
11 States. This is essential for electric
12 cars to be able to travel long distances,
13 long trips.

14 Number 2, I am going to go and
15 describe some key difference between DC
16 charging and AC charging and how it
17 relates to the text that we are proposing.

18 And number 3, and more importantly
19 that the amendment does not compromise
20 safety any way, shape, or form.

21 With that if we could move to page
22 8 of 14 of the addition that has a map,
23 you see a map like this. So this is a map

1 of the DC fast charge stations that
2 deployed world wide three or four years
3 ago. When I just join Tesla there were no
4 such chargers, and we have over 4,000
5 super chargers deployed ready throughout
6 the world. Super chargers are fast DC
7 charger stations that can charge electric
8 vehicle up to a 150 miles of range and the
9 20 minutes.

10 If we go to the next slide, it
11 gives you an overview of where we are
12 today and where we want to go. If you
13 look at the far right we have the charging
14 times in 8 hours for just like 400 miles.
15 This is usually done in the chargers at
16 home actually the people put in their
17 garages. So when we do this this is
18 usually overnight charging. It takes
19 several hours to go and get enough
20 charging in the car. If you want to go
21 for long distance travel this is not going
22 to work.

23 We have to go and move toward DC

1 charger. When it circled in red is what
2 state of the art today. Super chargers
3 are a hundred, hundred 20 kilowatts and it
4 can charge at 150 miles in about 20
5 minutes. To be competitive with the
6 gasoline cars we going to need move 10 X
7 more power to the car in order to achieve
8 the same range or to 300 mile range under
9 5 minutes which is a sweet spot today so
10 we have a long way to go.

11 Let's go to page 10 of 14. Take a
12 look at this little picture, let me start
13 with AC charging. AC charging is again
14 what we show in the picture is what we
15 have people install in garages or
16 sometimes they have the portable ones that
17 plug in the wall. The small engine on the
18 left is the supply cable in the wall and
19 goes into a control unit, and the output
20 cable is the cable that we plug into the
21 car.

22 Now charging currents on the
23 outward cable for AC charging is the order

1 of 80 amps max state of the art technology
2 today. And the main reason is because
3 inside the car you have to convert the AC
4 power from the wall to DC power to charge
5 the battery. Now if it goes inside the
6 car we can't make it so big or too heavy
7 otherwise either it won't fit or is going
8 to impact the range.

9 Now test with DC charger, DC
10 charging the same AC to DC converters are
11 housed inside this large cabinet that you
12 see on top. Looks like a refrigerator.
13 We have probably this unit we have about a
14 dozen of the on board chargers inside.
15 They weigh probably upwards of over a
16 thousand pounds. And because we combine
17 parallel we can supply much more current
18 than the ones in AC charging.

19 Currents on the DC charging range
20 is 200 to 300 AMPs of power of current
21 going to the car. And one thing that is
22 key here, and I want to point out, which
23 is part of our appeal, we are focused on

1 DC cable on the output cable because this
2 is the cable that the user, the owner has
3 to handle and be able to plug into the
4 car. So this cable we have to make it
5 small and light enough to make it usable.

6 Now today these cables are about
7 the size of your gasoline station, the
8 hose. The big difference is the hose is
9 hollow. Our cable is filled with copper.
10 Now imagine if you want to pump 10 times
11 more power to this, just unusable. We
12 have to develop new technology to solve
13 this problem. And the way they did it is
14 to use liquid cables. So we can pump that
15 much power with same cross-section because
16 we are able to cool the copper inside the
17 cables.

18 Now I think one of the comments is
19 if the output cable is this big, also have
20 to make the input cable this big. I said
21 no that is not correct. The input cable
22 can be big because a lot of times these
23 cables actually on the ground. Users

1 don't have to handle this cables. They
2 handle the output cable. The input cable
3 can be large. So that is one of the, one
4 key point how we text in the amendment.

5 Let's go to the next slide page
6 11. There it a lot of words in there but
7 I just want to make two points on this
8 slide. Point number 1, there is safety to
9 engineering. Basically we designed in a
10 lot of the built-in safety features in
11 there. For example we have temperature
12 sensors that detect if the handles or the
13 connectors overheat, and upon detection
14 either lowers the charge rate or stops the
15 charge session completely. Number 2, also
16 safety is guaranteed because engineering
17 has to do validation. We have product
18 safety standards that have the same
19 temperature, touch temperature
20 requirements. The handle cannot be over
21 60 degree C otherwise going to burn your
22 hand when you go to touch it. Besides the
23 engineering validation, we also have the

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1 EVSEs reach the cable part detach from
 2 equipment they have to go through listing.
 3 And when you go through listing has an
 4 extensive set of requirements that are --
 5 it's tested and verified by NRTL test labs
 6 which are independent from us.

7 A similar approach happens in
 8 AC charging. The AC chargers have a lot
 9 of built-in safety features as well, but
 10 one of the things is unique, and this is
 11 not just a dumb extension cord, is each
 12 one of the charge stations communicates
 13 with the car constantly during the charge
 14 session. So if there is a problem the car
 15 detects, or -- self detects or they would
 16 come in and stop charging.

17 CHAIRMAN QUITER: Last two
 18 minutes.

19 MR. LUI: So the last slide, when
 20 we made this amendment summary has a
 21 history of impact just a month and a half
 22 ago I just saw a picture of President,
 23 Obama in Germany and the German

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1 manufacturer showed him the liquid cool
 2 cable, proud how they developed this
 3 technology. Meanwhile here Tesla has this
 4 technology to develop the cable and yet we
 5 cannot deploy it because the National
 6 Electric Code says use the capacity tables
 7 and forces us to go build a cable
 8 according to the table which only has air
 9 cool cables. It is not usable.

10 And again, to the point safety is
 11 not compromised. And there is a comment
 12 about verified throughout
 13 NRTLs. And I give my few minutes or so to
 14 Andrei here. Thank you.

15 MR. MOLDOVEANU: Andrei Moldoveanu
 16 speaking on behalf of NEMA. I'll just
 17 briefly touch the procedural arguments
 18 that the -- of the appeal brought up.
 19 There was a mishap in announcing the
 20 CMP 12 ballot result. NEMA vote in favor
 21 of the CAM was not counted. There were a
 22 couple of fellows that didn't show up in
 23 the first count. So the initial vote was

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1 not realistic not reflecting the ballot.
 2 And we claim that essentially since it was
 3 a recycle ballot coming after that that
 4 shouldn't have counted a lot. Although, I
 5 like to stress that I think that in this
 6 particular case I would like you to
 7 consider that it is relevant and the
 8 relevance of it is NEMA change its vote.
 9 And who is NEMA to make that relevant
 10 change. And that is the point that I try
 11 to highlight.

12 Probably some of you know NEMA is
 13 kind of an association of trade
 14 associations. So within our own
 15 constitution we have groups presenting
 16 product. EVSE is only one product. So
 17 when NEMA votes it is not the product
 18 itself that is represented but it's the
 19 collection of all the products that are
 20 involved in it. This is one of our first
 21 product EVSE, the system, so it includes
 22 boxes. It includes cables. It includes
 23 connectors, you name it. Contactors,

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1 personal protection of the GFCI kind,
 2 et cetera, et cetera, et cetera.

3 So when we looked at the topic in
 4 the first two cycles, the first cycle and
 5 the second one, NEMA was the one that
 6 actually put the requirement that the
 7 cables, the output cables should
 8 correspond, should be selected based on
 9 table 400 but that was the safe way of
 10 addressing the issue at that time. There
 11 were no standards. The standards 40 VSCs
 12 were not developed and that was the
 13 consideration that ended up with the
 14 requirement in the code if the first
 15 place.

16 CHAIRMAN QUITER: Wrap up.

17 MR. MOLDOVEANU: It took us two cycles
 18 and the emergency of this for type of new companies
 19 promoting high tech level technologies and thinking
 20 out of the box to convince NEMA we should go back
 21 and do something more about it. And this happened
 22 recently. It helped people like UL and Intertek
 23 certified there are no issues no safety issues.

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1 So the recommendation that we have for
 2 the Council is to consider this move towards a
 3 performance requirements rather than a for safety
 4 one that could hinder the progress.

5 CHAIRMAN QUITER: Thank you.
 6 Mr. Johnston, would you like to
 7 speak to the correlating committee?

8 MR. JOHNSTON: Yes, thank you,
 9 Mr. Chair. I was made aware that Scott
 10 Kline sent the document that he had
 11 prepared. Apparently I haven't received a
 12 copy of that, but I did see it and
 13 verified that it was consistent with the
 14 correlating committee's position on the
 15 appeal. So hopefully the Council has
 16 that. Mary reached out to Scott and I was
 17 assured that you have it.

18 CHAIRMAN QUITER: It was handed
 19 out prior to the hearing.

20 MR. JOHNSTON: Good. Just
 21 verifying. Thank you, Mr. Chairman. The
 22 correlating committee appeals task group
 23 did work on this. We had two conference

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1 calls and we prepared a response and
 2 position for the Council. Thank you, and
 3 Larry Ayer is going to talk on our behalf.

4 MR. AYER: Larry Ayer, alternate
 5 correlating committee representing IEC.
 6 The correlating committee reviewed the
 7 entire record on this issue on 625.17
 8 certified amending motion 70-25, and the
 9 appeals has been brought to the
 10 Standards Council. It has been
 11 acknowledged there is possible in the
 12 appellant's argument that there was an
 13 issue with the voting. They acted that it
 14 was 6 to 3 during initial ballot. But if
 15 you look at the regulations governing the
 16 development of NFPA standards in 4.6.2
 17 this issue is allowed to be reballoted for
 18 21 days. After the 21 day period, the
 19 ballot was 6 to 5 it did not achieve the
 20 two thirds necessary recommended votes.
 21 The correlating committee does not support
 22 the appeal since during each stage of the
 23 revision cycle all NFPA regulations were

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1 followed. The correlating committee
 2 understands the importance of this issue
 3 to you E V industry and the fast changing
 4 technology that's taking place but we give
 5 great difference to code making panel 12
 6 who is in charge of this technical issue.
 7 The correlating committee will request
 8 that panel 12 form a task group with all
 9 concerned parties and members of panel 12
 10 to determine if consensus can be achieved
 11 on this issue and public input can be
 12 submitted for the 2020 revision cycle.
 13 Thank you.

14 CHAIRMAN QUITER: We'll open it up
 15 to questions from the Council. Are there
 16 any questions? Mr. O'Connor.

17 MR. O'CONNOR: Dan O'Connor,
 18 member of Council. So the technology
 19 you're using you're saying is a liquid
 20 cool cable.

21 MR. LUI: Correct.

22 MR. O'CONNOR: So as a liquid cool
 23 cable it's different than what is in the

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1 provision of NEC right now because they're
 2 not liquid cool.

3 MR. LUI: That's correct. Again
 4 my name is Sean Lui, Tesla Motors.
 5 Ampacity tables resumes certain
 6 construction for these cables, certain
 7 materials used, and I think the basic
 8 assumption that they all air cooled. Do
 9 not have liquid cool. But liquid cooled
 10 cables are very common, is not something
 11 that is brand new. Welding industry using
 12 liquid cool cables all the time because of
 13 the high currents they have to go and use
 14 in order to weld metal.

15 MR. O'CONNOR: Thank you.

16 CHAIRMAN QUITER: Mr. Rickard.

17 MR. RICKARD: John Rickard, member
 18 of Council. I have a follow up question
 19 to that. In looking at table 400.4 and it
 20 lists the types EV, EVJ, EVE, EVJE, EVT,
 21 et cetera. Do I understand correctly
 22 you're saying your liquid cool cable is
 23 not one of those cables or is it one of

1 those liquid cool.
 2 MR. LUI: Sean Lui from Tesla
 3 Motors and I'm responding. Very good
 4 observation and actually that was brought
 5 up by one of the same 12 members. John
 6 Holmes Jeffrey Holmes mentioned that. The
 7 liquid cool cable because it is new at
 8 least in application in our industry, is
 9 not yet EVJ because those types of cables
 10 are for air cool, conventional cables.
 11 And I admit I think oversight probably the
 12 language that we put in the amendment
 13 exception did not cover that. It covers
 14 the second part -- two sentences. The
 15 first sentence is that the cable has to be
 16 EVJ or EV type cable 400 4. The second
 17 part of the sentence says for larger
 18 cables for larger wires 8 gauge that need
 19 to follow the ampacity tables which is 400
 20 5. To answer the question, the liquid
 21 cool cable as today it not one of these.
 22 Now another CMP 12 member called
 23 Cunningham, he is the wrote to me and I

1 think also these comments are in the
 2 records submitted in the comment for this
 3 appeal. He says that he would have voted
 4 yes if or amendment or exception had gone
 5 far enough and also covered the tables,
 6 the 400 4 table. I really appreciate his
 7 comment. But when we, year and a half ago
 8 when we first proposed this, we tried to
 9 do the minimum on the changes because we
 10 thought that the NFPA membership would be
 11 more receptive to less change. Wouldn't
 12 be as radical.
 13 So I think at this point I need
 14 help from Council and from NFPA what is
 15 the best way to proceed? I don't know if
 16 you are able to go and change the text of
 17 the appeal -- of the amendment this time.
 18 If not then we will see what the next step
 19 is to do it. We want to do the right
 20 thing but also want to do it the right
 21 way.
 22 MR. RICKARD: So just one last
 23 question so I understand how this fits

1 together. When your proposal talks about
 2 a listed cable so liquid cool cable is
 3 listed, is that correct?
 4 MR. LUI: The language, exact
 5 language on the amendment says listed
 6 equipment. The cable would be evaluated
 7 as part of the system as part of the
 8 overall commitment not just the cable by
 9 itself.
 10 MR. RICKARD: John Rickard, member
 11 of Council. So what I hear you saying is
 12 that there isn't a listing for the cable
 13 itself. So my followup to that, do you
 14 have the kind of data on the cable that
 15 would fit neatly into table 400 A or is
 16 that something that would have to be
 17 tweaked or something more done in order to
 18 find a category to create a new category
 19 that would drop into 400 4?
 20 MR. LUI: That is, think about
 21 what way to answer this one. The product
 22 specifics safety standards that covers the
 23 overall equipment, has requirements for

1 things has performance requirements. For
 2 example the touch temperature on the
 3 handle for which the cable is integral
 4 part of. And tested like the temperature
 5 rise data under all different conditions,
 6 ambient conditions, under fault
 7 conditions, simulate a fault short circuit
 8 make sure the table doesn't over heat and
 9 if it does over heat it has other
 10 safeguards that would prevent. Having
 11 said that, we believe the product safety
 12 standards cover the hazards.
 13 Now as for the cable itself and
 14 data, we use UL 62 which is the standard
 15 for EV cables, and that standard does not
 16 have the liquid cool cable specifically at
 17 this time. Now we will have to develop
 18 some of the specific test procedures
 19 because this doesn't have water now. Also
 20 there is other outside like temperature
 21 sensors and other ways to prevent some of
 22 the hazards that associated with liquid
 23 cable that doesn't have in air cool

1 cables. Yes. There is more work to be
2 done in this area.

3 MR. RICKARD: Thank you.

4 CHAIRMAN QUITER: Are there other
5 questions? I have one. I think there was
6 some intimation somewhere in the papers
7 that implied that this was perhaps opening
8 it up to more than just this particular
9 cable and that was one of the concerns I
10 think. Can you address that?

11 MR. JOHNSTON: Yes. Thank you,
12 Mr. Chair. I know Scott Fine sent a very
13 colorful response for the committee and
14 that is classic Scott Fine. Mike
15 Johnston, correlating committee.

16 I think probably what he was
17 referring to is ending up with something
18 in the code that would welcome product
19 like this but not be exclusive to just a
20 product like this. I think that's where
21 he was going with that. But that is
22 response to the appeal.

23 CHAIRMAN QUITER: So while you are

1 up one more question.

2 MR. JOHNSTON: Sure.

3 CHAIRMAN QUITER: And that is
4 there is also some inconsistency about
5 whether this is product or whether it's
6 part of, and therefor maybe the NEC
7 wouldn't apply or whether it's part of
8 construction in which case it would so how
9 does this fit in? Maybe that's the
10 question for both of you.

11 MR. JOHNSTON: Thank you,
12 Mr. Chair. In EVSE there is two issues.
13 There is an input cord there is an output
14 cord. And cords are addressed and the
15 types of cords are addressed, but there is
16 also electric vehicle supply equipment
17 that is built as an assembly with
18 appropriate product standards that have to
19 apply to the complete assembly. So that
20 has to factor into this as well. And
21 typically when you are looking at cords or
22 these types of cords that would look at it
23 as an assembly and also look at the code

1 being arranged so that that type of cord
2 could be used in a nonassembly
3 application. So it's looked at from more
4 of a global standpoint as well when the
5 code is being developed.

6 CHAIRMAN QUITER: Okay. Do you
7 want to answer that?

8 MR. LUI: Sean Lui, Tesla Motors.
9 I can see the concern but I don't see this
10 being reality, and the main reason is
11 these cables that goes between the charger
12 stations and the car are specialized.
13 They are not something you can just go and
14 build in your garage. The connectors are
15 different. They're different shapes,
16 different geometry that only fits in the
17 cars. Also, in the US I haven't seen to
18 today that you can buy just a cable and
19 then you buy your control for the AC
20 charging separately and plug it in.
21 They're always integral part of the
22 charger station.

23 In addition to that, as I

1 mentioned in my presentation, the control
2 unit has logic, has intelligence in there
3 that needs to communicate with the car in
4 order to start charging. Has relays, has
5 control mechanism there that first
6 establish communication with the car. The
7 car responds says okay, I'm the right car.
8 I have the right voltage, the right
9 battery, right charger. You can issue
10 charge. This doesn't exist in a cable by
11 itself.

12 CHAIRMAN QUITER: Okay. One
13 more question sort of along those lines.
14 Is there anything that would get in the
15 way of you getting the cable listed since
16 it's not listed today, is there anything
17 that would get in the way of getting it
18 listed.

19 MR. LUI: Sean Lui, Tesla Motors.
20 I think that would be some work with UL
21 and the rest of the industry including
22 welcome from cable industry as well to go
23 and develop improve the current UL 62 to

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1 add the liquid cool cables and I think as
 2 an industry as well. There are other
 3 concerns that maybe we haven't thought
 4 about, and I welcome any participation to
 5 add to this. One thing when we are
 6 testing the cables and we using UL 62 as
 7 guide is that some of the interesting
 8 requirements is there is a pull test and
 9 the pull test stand up is not based on the
 10 size of the cable based on the number of
 11 amps, based on ampacity. So if I have a
 12 cable can carry 300 AMPs they want me to
 13 pull as if the whole cable was made of
 14 copper. We have problem with that one
 15 because the cable had hoses inside. So
 16 when you start pulling, pulling is not
 17 that bad. We can do that. But pull and a
 18 twist. We can pull we survive, but when
 19 you start twisting this is, it wasn't
 20 good. So we have to work on the, make
 21 that appropriate test for the appropriate
 22 cable. So that is one example.
 23 CHAIRMAN QUITER: I'll have one

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1 more, open it up to anybody else, either
 2 of the correlating committee or the
 3 proponent have an issue with one of the
 4 solutions be a task force coming out of
 5 this? Would either of you have an issue
 6 with that as a solution.
 7 MR. JOHNSTON: I have no issue
 8 with that, Mr. Chair, nor does the
 9 correlating committee.
 10 MR. LUI: Sean Lui, Tesla Motors.
 11 No issue. We welcome the participation.
 12 Thank you.
 13 CHAIRMAN QUITER: Are there
 14 questions from Council? Seeing none we
 15 come to the closing discussion and we'll
 16 start with Mr. Lui. Five minutes.
 17 MR. LUI: So this three points in
 18 conclusion, number 1 ampacity table. If
 19 you use ampacity table would result in the
 20 increase of the cable size so big for next
 21 generation fast charges that just becomes
 22 unusual. The amendment does not
 23 compromise safety because A, the products

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1 that engineer built-in safety features; B
 2 these safety features follow the current
 3 product safety standards that look at many
 4 other concerns not just the sizing, but
 5 also temperature, durability. We go
 6 through driving over the cable to make
 7 sure it survives because these are
 8 foreseeable misuse of the cable. And
 9 three, all these products also have to get
 10 a listing not just the cable but overall
 11 product, the end product has to go through
 12 the listing, listing process.
 13 So I urge Council please support the
 14 industry. I think we need to work
 15 together just not to be the best products
 16 in the world because if you don't do
 17 another country will do it. One engineer
 18 came up to me and said he saw a picture of
 19 President Obama at a German company
 20 claiming that they had the liquid cool
 21 cables that he said, "How come company
 22 gets more support in foreign countries
 23 than United States here." Thank you.

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1 CHAIRMAN QUITER: And
 2 Mr. Johnston, any closing comments.
 3 MR. JOHNSTON: No, Mr. Chair, I
 4 don't have any. Thank you.
 5 CHAIRMAN QUITER: Thank you. So
 6 that concludes --
 7 MR. MOLDOVEANU: May I use his
 8 last minute?
 9 CHAIRMAN QUITER: He didn't use
 10 his whole five.
 11 MR. MOLDOVEANU: Andrei Moldoveanu
 12 with NEMA. Just one point I think that
 13 one of the relevant part of the discussion
 14 is the fact that Article 625 requires the
 15 product and components to be listed. So
 16 whatever part of the component be the
 17 cable is becoming so sophisticated that by
 18 itself cannot be listed. It's already
 19 covered in the requirements that it is
 20 listed, and relevant part of it is the
 21 fact that the standards that are governing
 22 this product UL 2594 and UL 2202 are
 23 standards that develop enormously in the

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1 last three or four years. We put a lot of
 2 effort in the industry as well as other
 3 stakeholders, users, develop dramatically
 4 those documents. When we started in two
 5 cycles ago, one of the main standards 2594
 6 was not even a standard. It was an out ly
 7 of investigation. Today harmonize so
 8 Mexican, Canada, and U.S. they are all
 9 three are using the standard to certify
 10 safety of this product. The requirements
 11 for safety regarding the cables are
 12 already part of it. They can be made
 13 better, develop new procedures, that is
 14 not an issue. Obviously this industry
 15 that moves so fast will get there by
 16 necessity but what I'm trying to tell you
 17 right now is that the safety concerns have
 18 been already addressed. They are in
 19 place, a part of the system if nothing
 20 else.

21 CHAIRMAN QUITER: Thank you.
 22 Since I bent the rules a bit,
 23 Mr. Johnston, do you have anything you

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1 want to respond to that.

2 MR. JOHNSTON: No, Mr. Chair.
 3 We're looking just as a comment we're
 4 looking at we already formed the new
 5 technology task group. We know we're
 6 faced with harmonizing with international
 7 standards and products and we're on the
 8 edge of seeing a lot of that and we are
 9 going to have to deal with that type of
 10 thing. I think Andrei said it nicely.
 11 There is a listing provision in there that
 12 covers it, but we're also dealing with the
 13 unique and hybrid applications that may
 14 end you up being recognized components of
 15 overall listed assemblies, and they have
 16 to be looked at that way from the product
 17 standard side. So in that there is
 18 nothing else the correlating committee has
 19 to add. Thank you, Mr. Chair.

20 CHAIRMAN QUITER: Thank you very
 21 much. So that we'll draw an end to the
 22 hearing. First I want to express my
 23 sincere appreciation for taking the time

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1 to be here. That's all the members of the
 2 correlating committee you have been here
 3 all day. We appreciate that. Also the
 4 proponents participating in the NFPA
 5 process. Greatly appreciated as well.

6 Following this we will deliberate
 7 in executive session that will include the
 8 members of the Council but not the two
 9 people who recused themselves. You will
 10 hear from the Council secretary, Dawn
 11 Bellis, about what the results are, no
 12 other staff members or Council members are
 13 allowed to be pass on that information.
 14 So she will pass on the official response.
 15 So again thank you very much. That
 16 concludes our hearings for today and we
 17 will go into executive session in ten
 18 minutes.

19 MR. MOLDOVEANU: Thank you.
 20 (The proceedings adjourned
 21 at 3:36 p.m.)
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C E R T I F I C A T E

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 5
 6 I hereby certify that the
 7 foregoing 168 pages contain a full, true
 8 and correct transcription of all my
 9 stenographic notes to the best of my
 10 ability taken in the above-captioned
 11 matter at said time and place.
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16 Carol DiFazio
 Registered Professional Reporter
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