

**Minutes**  
**Control Protocols Working Group**  
Thursday, 15 March 2018, 9a.m.-1p.m.  
Hilton Ft. Lauderdale Marina  
Ft. Lauderdale, FL

**Presiding co-chairs:**

Milton Davis; Doug Fleenor Design, Inc.; Doug Fleenor Design, Inc.; P; MP  
Michael Lay; Philips Color Kinetics; Philips Lighting; P; MP

**Recording secretaries:** Karl Ruling and Erin Grabe; ESTA

**Members in attendance:**

Paul Beasley; Walt Disney Imagineering; Walt Disney Company; P; U  
Scott M. Blair; Full Throttle Films/ VER; P; DR  
Eric Bloom; Westview Productions; P; DR  
Javid Butler; Integrated Theatre, Inc.; O; CP  
Steve Carlson; High Speed Design, Inc.; O; MP  
Edward R. Condit; OSRAM Lighting Solutions; OSRAM Licht AG; O; G  
Bill Ellis; Candela Controls, Inc.; P; DE  
Sarah Gascoine; PSAV Presentation Services; O; DR  
Mitch Heffer; USITT; P; U  
Jon Hole; Zero 88; Eaton; P; MP  
Wayne David Howell; Artistic Licence Engineering Ltd.; Artistic Licence Holdings; P; DE  
John Valus\_Jr.; LEX Products; Lex TM3; P; CP  
Sam Kearney; Electronic Theatre Controls, Inc.; P; MP  
Paul Kleissler; City Theatrical, Inc.; P; MP  
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U  
Roger Lattin; I.A.T.S.E. Local 728; P; U  
Kevin Loewen; Pathway Connectivity; Acuity Brands Inc.; P; MP  
Jim Love; Tait Towers; Tait Towers Manufacturing LLC; P; MP  
Daniel Murfin; Royal National Theatre; P; U  
Simon Newton; Open Lighting Project; P; G  
Maya Nigrosh; Sonos; P; MP  
Jason Potterf; Cisco; P; MP  
Peter Willis; Howard Eaton Lighting Ltd.; P; CP

**1 Opening remarks**

Michael Lay called the meeting to order at 9:02 a.m. He thanked everyone for attending and asked attendees to silence their phones.

**2 Attendance**

**2.1 Introductions of those present and circulation of attendance sheet**

A bright pink sign-in sheet was passed around the room while self-introductions took place.

**2.2 Introductions of those present via WebEx**

Milton Davis announced those present online, who in turn introduced themselves.

**2.3 Determination of a quorum**

Michael announced a supermajority present.

**2.4 Recognition of alternate voting members**

None.

### 3 Membership

#### 3.1 Requirements for membership

The following statement was read aloud to the assembly by Michael Lay:

Membership is open to all who are affected by the work of the group. People and companies that would be in any interest category other than a manufacturer interest category are, at this time, particularly encouraged to apply for membership. There is an annual \$100 participation fee for all members. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings without a loss of voting status.

#### 3.2 Changes to observer status due to lack of attendance

No voters were in jeopardy of being moved to Observer status. The streak lives on!

#### 3.3 Processing of new membership requests and changes in membership status:

*As of 27 February 2018, the following applications and status change requests had been received:*

Chris Kennedy; ChamSys Ltd.; Chauvet Lighting; O; MP  
Robert Haycock; Cal Performances; UC Berkeley; I; U

Eddie Kramer moved to accept these applications with Observer status due to lack of attendance. The motion was seconded and approved by a show of hands and WebEx chat. [David Bond, Kinesys, applied and was accepted as an Observer, but noted to us after the meeting that he had applied for the incorrect working group.]

#### 3.4 Consensus body

The full consensus body of this working group at the time of this meeting, including those not present, was:

Name	Representing	Voting status	Int cat
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Maurits van der Hoorn	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Holdings	P	DE
Bill Ellis	Candela Controls, Inc.	P	DE
Brent Boulnois	Candela Controls, Inc.	A	DE
Jim Ohrberg	Candela Controls, Inc.	A	DE
Jason Potterf	Cisco	P	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR
Mit Patel	disguise	P	MP
Marcus Bengtsson	disguise	A	MP
Milton Davis	Doug Fleenor Design, Inc.	P	MP
Ian Campbell	Doug Fleenor Design, Inc.	A	MP
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	P	U
Jon Hole	Eaton	P	MP
Sam Kearney	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Eric Rasmussen	Electronic Theatre Controls, Inc.	A	MP

Name	Representing	Voting status	Int cat
Scott M. Blair	Full Throttle Films/ VER	P	DR
Jeremy Hochman	Full Throttle Films/ VER	A	DR
Claude Ostyn	Full Throttle Films/ VER	A	DR
Andrew Atienza	Full Throttle Films/ VER	A	DR
Robert Goddard	Goddard Design Co.	P	MP
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
David Kane	I.A.T.S.E. Local 728	A	U
John Valus_Jr.	Lex TM3	P	CP
Michael Karlsson	LumenRadio AB	P	MP
Nick Harper	Nick Harper	I	G
Fraser Connolly	Obsidian Controls Ltd.	P	DE
Simon Newton	Open Lighting Project	P	G
Michael Lay	Philips Lighting	P	MP
Daniel Murfin	Royal National Theatre	P	U
Maya Nigrosh	Sonos	P	MP
Andrew Frazer	Stellascapes.com	P	MP
Jim Love	Tait Towers Manufacturing LLC	P	MP
Julian Hoare	Tait Towers Manufacturing LLC	A	MP
Dan Lisowski	University of Wisconsin - Madison	P	DE
Mitch Hefter	USITT	P	U
Paul Beasley	Walt Disney Company	P	U
Eric Bloom	Westview Productions	P	DR
<b>Voting Status Key: P = Principal voter, A = Alternate voter, I = Individual voter</b>			
<b>Votes by Interest Category:</b>			
Custom-market producer		CP	2
Designer		DE	4
Dealer or rental company		DR	3
General interest		G	2
Mass-market producer		MP	13
User		U	6
<b>Total votes possible:</b>			<b>30</b>

#### **4 Approval of the minutes from the previous meeting**

See *CPmin01-2018r2.pdf*

Eddie Kramer moved to approve the minutes as drafted. The motion was seconded and approved by a show of hands and WebEx chat with two abstentions.

#### **5 Reading of the call for patents**

The following statement was read aloud to the assembly by Michael Lay:

ESTA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent and copyright disclosures to implement its intent. ESTA does not conduct patent or copyright searches and does not warrant that its standards contain no protected intellectual property.

In keeping with the open disclosures policy, I ask if anyone present wishes to notify this working group of the existence of a patent, patent application, copyright, or other intellectual property that might protect material in a standard being developed by this working group. You need not be the holder of the patent or copyright to notify this working group of its existence.

No issues were raised.

#### **6 Reading of the anti-trust statement**

The following statement was read aloud to the assembly by Michael Lay:

ESTA and its members take seriously their obligation to comply with all applicable antitrust laws. Therefore, during this meeting and during all ESTA events, all discussions will be limited to those subjects that are permitted by the antitrust laws. All members should refrain from any discussion or mention of competitively sensitive subjects such as the current or future prices charged for any member product or services, current or future marketing plans or strategies, and current or future costs, including employee salaries. There also must be no agreement on the suppliers or customers that members will or will not do business with or the markets in which members will conduct business.

Violations of the antitrust laws can have serious consequences. If you have any questions or concerns about anything that is discussed at a ESTA meeting, please bring your concern to ESTA management. An easy to read pamphlet describing the antitrust laws is available from the ESTA staff.

Karl Ruling held up a copy of the pamphlet. Nothing was revealed.

#### **7 Approval of agenda**

Michael Lay would like to add a 9.2 ESTA staffing. No other items were added. Mitch Hefter moved to approve the modified agenda. The motion was seconded and approved by a show of hands and WebEx chat.

#### **8 Old business**

##### **8.1 Standards, Guides & Recommended Practice Maintenance**

*This is a placeholder in the agenda, so we don't forget to maintain them. Documents prefaced with an asterisk (\*) are on the agenda elsewhere for reports or action.*

ANSI E1.3 – 2001 (R2016), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification & Application Guide For ANSI E1.3 – 2004 Lighting Control Systems 0 to 10V Analog Control Specifications. (Revision, reaffirmation or withdrawal by 17 February 2021)

\* ANSI E1.11 – 2008 (R2013), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. (Revision, reaffirmation, or withdrawal by 13 March 2018)

ANSI E1.17 – 2015 Entertainment Technology - Architecture for Control Networks (ACN) (Revision, reaffirmation, or withdrawal by 21 May 2020)

\* ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. (Revision, reaffirmation or withdrawal by 4 January 2016 – PINS filed for revision)

ANSI E1.27-1 – 2006 (R2016), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. (Revision, reaffirmation or withdrawal by 8 April 2021)

ANSI E1.27-2 – 2009 (R2014), Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products. (Revision, reaffirmation, or withdrawal by 9 June 2019)

ANSI E1.30-1 – 2010 (R2016), EPI 23, Device Identification Subdevice. (Revision, reaffirmation or withdrawal by 17 February 2021)

ANSI E1.30-3 – 2009 (R2014), EPI 25, Time Reference in ACN Systems Using SNTP and NTP. (Revision, reaffirmation, or withdrawal by 9 June 2019)

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. (Revision, reaffirmation, or withdrawal by 25 September 2020)

ANSI E1.30-10 – 2009 (R2014), EPI 32, Identification of Draft Device Description Language Modules. (Revision, reaffirmation, or withdrawal by 9 June 2019)

\* ANSI E1.31 - 2016, Lightweight streaming protocol for transport of DMX512 using ACN (Revision, reaffirmation, or withdrawal by 11 October 2021)

ANSI E1.37-1 – 2012 (R2017), Additional Message Sets for ANSI E1.20, Remote Device Management. (Revision, reaffirmation, or withdrawal by 18 May 2022)

ANSI E1.37-2 - 2015, Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages. (Revision, reaffirmation, or withdrawal by 25 September 2020)

Application Guide for ANSI E1.3 - 2001, Lighting Control Systems 0 to 10V Analog Control Specification

Recommended Practice for Ethernet Cabling Systems in Entertainment Lighting Applications

Supplement to the Recommended Practice for Ethernet Cabling in Entertainment Lighting Applications

#### Withdrawn standards

E1.45 - 2013 (W2015), Unidirectional Transport of IEEE 802 data frames over ANSI E1.11 (DMX512A)

E1.30-7 - 2009 (W2016), EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts

**8.2 BSR E1.11 – 2008 (R20xx), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories** (Opened for revision before 13 March 2018)

*The working group letter ballot and concurrent public review end at the end of the day on 9 April 2018.*

No comments received yet, said Karl Ruling, who also noted that all those who voted already have voted yes. There are several ballots still due.

### **8.3 BSR E1.20 - 201x, Remote Device Management over USITT DMX512**

*Any news or action on a revised draft for consideration? The PINS for revision was filed 2 November 2015.*

*From the draft January minutes:*

Wayne Howell reported on two days of constructive task group meetings, with the document making good progress. They are planning to get a document into public review in time to have the comments back before the working group meeting, July 21, in Texas.

ESTA staff advised that the draft revised standard will need to be ready soon to be voted on for public review at the March meetings. If that deadline is missed, a special working group meeting would need to be called to approve the public review. The first public review of a revision requires the approval of the TSC.

Wayne Howell said that many of the easy things have been taken care of, but some of the hard things will be addressed via WebEx over the next couple weeks.

#### **8.4 BSR E1.31 – 20xx, Entertainment Technology—Lightweight streaming protocol for transport of DMX512 using ACN** (revise, reaffirm, or withdrawal by 11 October 2021)

See *Summary\_CPWG\_E1-31\_RecircBallotResults\_2017-1020r1.pdf*.

*From an email from Karl Ruling dated 8 February with the CPWG ballot summary attached:*

*The motion to accept E1.31 was approved by an overwhelming majority, but there are some No votes, a few more than there were three weeks ago. We can report these No votes to ANSI as unresolved, but we should discuss the matter at the next meeting. Would a different standard that is compatible with E1.31 but that supports IPv6 only satisfy people? Just a thought. You can think about it until our next meeting, which is scheduled for 9:00 in the morning, March 15...*

Michael Lay said that the ballot timed out after the last meeting and the motion was approved via supermajority. Jason Potterf noted that a resolution document was distributed. The next level of enhancements are desirable, but the volunteer time is lacking at this point in time. He would like to work with a task group when there is time. He would like to craft a survey, particularly to console manufacturers, asking what features are lacking or not desirable.

Maya Nigrosh disagreed with the issue of not having enough volunteer time available. Michael Lay asked if there were any volunteers to help Jason on the study group to look into what the do' and don'ts are for the new protocol, and to come back to the CPWG with options to peruse.

Scott Blair moved to approve the resolutions document that was distributed. The motion was seconded. The motion carried with a supermajority of sixteen yeses and two no votes.

Michael Lay appointed Maya Nigrosh and Jason Potterf to head the "Next Gen Streaming" study group to flesh out the key points of what should and should not be included in a next generation streaming protocol.

In response to the question Karl posed about an IPv6-only E1.31, the group consensus is to not take this action at this time, but rather wait to see what the study group finds. Paul Beasley offered to support Maya and Jason in the study group.

#### **8.5 BSR E1.33, Transport of ANSI E1.20 (RDM) in an E1.31 environment**

*The draft standard is in public review through the end of the day on 9 April 2018.*

Sam Kearney said they are anticipating rave reviews. It was noted that no comments have yet been received.

#### **8.6 BSR E1.30-11, EPI 33, Transport of root PDUs over TCP**

*The draft standard is in public review through the end of the day on 9 April 2018.*

It was noted that no comments have yet been received.

#### **8.7 BSR E1.37-4, Firmware updates via ANSI E1.20, RDM**

*The draft standard is in public review through the end of the day on 9 April 2018.*

No comments received, said Peter Willis, though some should be expected. Task group members have been reminded to respond sooner rather than later so as to schedule a July meeting.

#### **8.8 BSR E1.37-5, General Purpose Messages for ANSI E1.20 RDM**

Scott Blair said that this is in a holding pattern. Resolutions were presented at the last meeting, but E1.20 needs to move forward before the resolutions can be completed.

#### **8.9 BSR E1.37-6 - 20xx, Additional Message Sets for ANSI E1.20 (RDM) - Parameter Description Messages**

Scott Blair said that the group is still considering whether or not to break E1.37-5 up into all these parts.

#### **8.10 BSR E1.37-7 - 20xx, Additional Message Sets for ANSI E1.20 (RDM) - Gateway and Splitter Configuration**

*The draft standard is in public review through the end of the day on 9 April 2018.*

No comments received yet.

#### **8.11 BSR E1.59 - 201x, Automation Vector Transmission Protocol**

Maya Nigrosh said that the group is in the midst of drafting a standard. They are meeting this Saturday to put text on paper. The group feels good about where they are headed.

#### **8.12 BSR E1.61 – 20xx, Network Advertisement of Entertainment Protocols**

*PINS for new project filed with ANSI on 15 February 2018. Any news or action at this time?*

Productive meeting at NAMM, said Jason Potterf. He will be sending a survey for meeting slots and then scheduling meetings.

#### **8.13 IPv6 task group report**

*Documents in order of priority for IPv6 consideration:*

- E1-31 - 2016 -Entertainment Technology –Lightweight streaming protocol for transport of DMX512 using ACN (open for revision as of January 2017)
- E1.37-2 - 2015 Entertainment Technology –Additional Message Sets for ANSI E1.20 (RDM) –Part 2, IPv4 & DNS Configuration Messages
- E1.17 - 2015 -Entertainment Technology -Architecture for Control Networks (ACN)  
Elements of E1.17 depended on by E1.31 must be addressed as a high priority

*From the draft November 2017 minutes:*

*Jason Potterf reported that E1.31 and E1.33 have IPv6 added, but that no one has expressed much interest in tackling E1.17. He thinks that E1.37-2 would be a quick add, but it is not critical at this time. There was some discussion about static addressing in IPv6, which Jason says is nearly-impossible largely unnecessary. Michael Lay said that he and Milton Davis will appoint a road map committee to layout time-lines for our projects, including a replacement for E1.31.*

There was discussion on adding IPv6 to E1.37-2. Peter Willis will look at it and come back to the group in July

#### **8.14 Compliance testing study group**

*From the draft January minutes:*

*Wayne Howell said that the study group meeting was very constructive and there is enthusiasm to move this forward. Javid Butler and Wayne Howell said that they had received a lot of feedback on which direction to move this project,. They recommended that at this time it remain a study group.*

Javid Butler said that he has a company ready to get on board in July to join TSP and attend Plugfest. He is hoping that this collaboration will help to flesh out the architectural-related issues that are being seen in the field.

### **8.15 Lighting Protocols Plugfest**

*The event will take place 25-27 April 2018, at a new venue, the Copthorne Hotel, still near Gatwick Airport. Any news? For more information, visit <http://www.plasa.org/technical/plugfest18.asp>.*

Peter Willis said that the registered numbers are healthy and the event is looking promising. Register using the link on the agenda.

### **8.16 Texas Plugfest**

*The 2018 Plugfest is scheduled to be held in conjunction with the July meetings in Westlake, Texas, 19-24 July 2018 at the D/FW Marriott Solana. Visit [estalink.us/plugfest](http://estalink.us/plugfest) for more information or to RSVP.*

Michael Lay said that the website has been updated, the brochure has been updated and is on the website and available in the booth.

There was considerable discussion on the need for a list, forum thread, wiki, etc. where folks can post the list of equipment that is confirmed to be on site.

### **8.17 Task group leader coordination**

*Scott Blair is the official scheduling liaison between the CPWG task groups and Frances Thompson. Anyone needing a physical task group meeting at an upcoming event should contact Scott.*

*BSR E1.20 Scott Blair and Wayne Howell  
BSR E1.30 No single leader; Generic group  
BSR E1.31 Jason Potterf  
BSR E1.30-11, EPI 33 Simon Newton  
BSR E1.33 Scott Blair and Sam Kearney  
BSR E1.37-2 Simon Newton  
BSR E1.37-4 Peter Willis  
BSR E1.37-5 Scott Blair and Simon Newton  
BSR E1.37-6 Simon Newton  
BSR E1.37-7 Scott Blair  
BSR E1.59 Dan Lisowski and Maya Nigrosh  
E1.37-x Video Walls Scott Blair  
E1.61 NAEP Jason Potterf and Kevin Loewen  
IPv6 Task Group Jason Potterf  
Next Gen Streaming Study Group Maya Nigrosh and Jason Potterf  
Plugfest Marketing Task Group Michael Lay  
Task Group Scheduling Liaison Scott Blair*

## **9 New business**

### **9.1 Standards permalinks**

No news or action at this time.

### **9.2 ESTA staffing**

Erin Grabe announced her promotion and the hiring of Richard Nix to take over as Asst. Technical Standards Manager beginning in May.

## **10 Other business & announcements**

### **10.1 Above & Beyond Awards**

Michael Lay announced that the Above and Beyond Award nomination form, as well as a list of past recipients, is available at <http://estalink.us/aboveandbeyond>.



## **10.2 ESTA DMX512/RDM Educational Kit - "Train the Trainer" Session**

No update at this time.

## **10.3 USITT sessions**

*Program proposals for USITT 2019 are due by the time of the USITT 2018 Conference. The 2019 Conference will be in Louisville, Kentucky.*

Mitch Hefter said that there are online program submission forms, though Karl noted the forms are very difficult to find on the website. The new forms allow for some more breathing room in terms of proposal deadlines.

## **11 Future meetings**

*The full meeting schedule may always be found at <http://www.esta.org/ESTA/meetings.php>.*

### **11.1 July meetings**

Michael Lay said that the July 2018 meetings are scheduled to be held 19-24 July 2018 at the D/FW Marriott Solana in Westlake, TX. The CPWG meeting is scheduled for 21 July from 09:00 to 13:00.

Task groups start Thursday and are planned through Tuesday. Michael Lay added that this will be a big meeting, so folks should try to attend. There will be a lot of public reviews over before July.

### **11.2 Fall meetings**

Michael Lay said that the autumn meetings will be held 4-8 October 2018 at the D/FW Marriott Solana in Westlake, TX.

Peter Willis noted that he is presenting on RDM portable control devices at LDI. Manufacturers with relevant products are invited to contact him.

## **12 Adjournment**

Kevin Loewen moved to adjourn. The motion was seconded. Michael Lay declared the meeting adjourned at 10:19 a.m.

Name	Company	Representing	Voting status	Int cat
Christian Allabauer	Christian Allabauer	Christian Allabauer	O	G
Matthew Ardine	IATSE Local 728	IATSE Local 728	O	U
Andrew Atienza	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Nick Ballhorn-Wagner	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	O	MP
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Paul Beasley	Walt Disney Imagineering	Walt Disney Company	P	U
Robert Bell	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Marcus Bengtsson	disguise	disguise	A	MP
Scott M. Blair	Full Throttle Films/ VER	Full Throttle Films/ VER	P	DR
Eric Bloom	Westview Productions	Westview Productions	P	DR
Brent Boulnois	Candela Controls, Inc.	Candela Controls, Inc.	A	DE
Javid Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Justyn Butler	JBOTS	JBOTS	O	CP
Ian Campbell	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	O	CP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Anthony Chiappone	Chauvet Lighting	Chauvet Lighting	O	MP
Jon Chuchla	Audio Visual Systems, Inc.	Audio Visual Systems, Inc.	O	G
Edward R. Condit	OSRAM Lighting Solutions	OSRAM Licht AG	O	G
Gareth Conner	Creative Conners, Inc.	Creative Conners, Inc.	O	MP
Fraser Connolly	Obsidian Controls Ltd.	Obsidian Controls Ltd.	P	DE
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Jeremy Day	Lumenpulse Lighting Inc.	Lumenpulse Lighting Inc.	O	MP

Name	Company	Representing	Voting status	Int cat
Larry Dew	W.A. Benjamin Electric Co.	W.A. Benjamin Electric Co.	O	DE
Rich Dionne	Dept. of Theatre	Purdue University	O	DE
Tucker Downs	Tucker Downs	Tucker Downs	O	U
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	O	MP
James Eade	ABTT	ABTT	O	G
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	P	DE
Paul K. Ericson	Sparling	Stantec	O	DE
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Andrew Frazer	Stellascapes.com	Stellascapes.com	P	MP
Sarah Gascoine	PSAV Presentation Services	PSAV Presentation Services	O	DR
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
George Gong	Philips Lighting	Philips Lighting	O	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Erin Grabe	ESTA	ESTA	exf	G
Sean Harding	Port Lighting Systems	Port Lighting Systems	O	G
Nick Harper	Alphabet	Nick Harper	I	G
Robert Haycock	Cal Performances	UC Berkeley	O	U
Mitch Hefter	Mitch Hefter	USITT	P	U
Bill Hewlett	ImageCue LLC	ImageCue LLC	O	MP
Julian Hoare	Tait Towers	Tait Towers Manufacturing LLC	A	MP
Jeremy Hochman	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Jon Hole	Zero 88	Eaton	P	MP
Jim Holladay	Luxence	Luxence	O	G

Name	Company	Representing	Voting status	Int cat
Maurits van der Hoorn	Pathway Connectivity	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	P	DE
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Eric Johnson	Eric Johnson	Eric Johnson	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
John Valus_Jr.	LEX Products	Lex TM3	P	CP
David Kane	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Sam Kearney	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Jonathan Kemble	High End Systems	ETC	O	MP
Christopher Kennedy	ChamSys Ltd.	Chauvet Lighting	O	MP
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	E3 Engineering & Education for Entertainment GmbH	P	U
Jason Kyle	JPK Systems Ltd.	JPK Systems Ltd.	O	MP
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Michael Lay	Philips Color Kinetics	Philips Lighting	P	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Dan Lisowski	Dept. Of Theatre and Drama	University of Wisconsin - Madison	P	DE
Kevin Loewen	Pathway Connectivity	Acuity Brands Inc.	P	MP
Jim Love	Tait Towers	Tait Towers Manufacturing LLC	P	MP
Royal Marty	ZFX, Inc.	ZFX, Inc.	O	MP

Name	Company	Representing	Voting status	Int cat
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Daniel Murfin	Royal National Theatre	Royal National Theatre	P	U
John Musarra	John Musarra	John Musarra	O	U
Simon Newton	Open Lighting Project	Open Lighting Project	P	G
Maya Nigrosh	Sonos	Sonos	P	MP
Jim Ohrberg	Candela Controls, Inc.	Candela Controls, Inc.	A	DE
Danilo Oliveira	Chauvet Lighting	Chauvet Lighting	O	MP
Claude Ostyn	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Mit Patel	disguise	disguise	P	MP
Jason Potterf	Cisco	Cisco	P	MP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Eric Rasmussen	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Charles Reese	Production Resource Group	Production Resource Group	O	DR
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Karl G. Ruling	ESTA	ESTA	exf	G
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Nicolai Gubi Schmidt	Gobo & Highlight A/S	Gobo & Highlight A/S	O	DR
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Ford Sellers	Chauvet Lighting	Chauvet Lighting	O	MP
Sean Sill	Sean Sill	Sean Sill	O	CP
Ralph Stillinger	Strand Lighting	Philips Lighting	O	MP
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Christopher B. Tilton	About the Stage, LLC	About the Stage, LLC	O	DE

Name	Company	Representing	Voting status	Int cat
Robert Timmerman	Philips Color Kinetics	Philips Lighting	O	MP
James Tomlinson	Team Tomlinson	Team Tomlinson	O	G
Tracy Underhill	Triple C Lighting & Controls	Triple C Lighting & Controls	O	G
Carlo Venturati	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Colin Waters	TMB	TMB	O	DR
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	Showman Systems	O	CP
David Yellin	Sumolight GmbH	Sumolight GmbH	O	MP
Jeong Sik Yoo	Ghost LX	Ghost LX	O	DE

**Voting Status Key:** P = Principal voter, A = Alternate voter, I = Individual voter, O = Observer member, exf = Ex Officio member (staff)

**Interest Category Key:** CP = Custom-market producer, DE = Designer, DR = Dealer or rental company, G = General interest, MP = Mass-market producer, U = User