For Reference of NECA 2018 Philadelphia Attendees Only
The Pace of Change

• The electrical industry is changing and evolving
• Change is not necessary, because survival is not mandatory – W.E. Deming
• Installation and safety rules must change and accordingly
• Codes and standards must stay relevant to be adoptable and effective
• Workplace safety rules must be practical, enforceable, understandable

Forces and Drivers

• Impactful Technology – Disruptive Technologies
• Speed of technology development and evolution
  – What is possible is here, and coming faster
• Faster and cheaper computing power – enabling and driving society’s (customer) needs and wants
Smart Technologies

- Smart Device Use for communications and resources
  - 7.4 B people on Earth (2016)
  - 1.8 B connect through smart devices (2010)
  - 3.0 B connect through smart devices (2017)
  - 5.0 B will be connected (2022-2025)
- The more connectivity and communication, the more needs of society (driving capacity needs and opportunity)

Power Production and Use

- Smart Grid Initiatives – U.S. Department of Energy
- Renewable energy – 25% of the earth’s power (2016)
- Drives the need for installing and maintaining energy storage – lots of it
- Drives the need for effective and conservative use of energy
- Drives the need for new use methodology such as active micro- and macro-grids
- Significant business opportunities for NECA and IBEW
Leadership in Energy Management

- Energy Storage, Control and Use
- New electrical load technologies (more for less using LED loads, etc.)
- Energy management services (NECA and IBEW members provide) NEC® Article 750
- Intelligent buildings (designed and installed by NECA and IBEW members)
- Smart Cities and the Internet of Things (IoT) and the Industrial Internet of Thing (IIoT)

Electrical INDUSTRY Leadership

- Electrical Contractors and Electricians
  - NECA Contractors and Management
    - Foremen and Project management
  - IBEW Electrical Workers
- Application and Use of New Technologies
  - Construction Methods and Means
- Electrical and Overall Safety (tools/work practices)
- Pacing Knowledge and Skillsets (staying trained)
  - Requires world-class training and continuing education
Evolution of Codes and Standards

- Development of Codes and Standards is evolving
  - ANSI commented “Less cyclical, more real-time”
- Not your grandfather’s NEC® any longer
- Electrical Codes and Standards need to remain relevant
  - Changes and new requirements inevitable
- NEC® rules need to support the safe, sound growth of expanding electrical technologies (existing and new)
- Solar, wind, storage, EVs, others (V2X technologies), POE, and so forth

Communication and Correlation

- Effective communication and correlation between electrical standards in development (including electrical product standards)
  - NEC® (2020 in development)
  - NFPA 70E®
  - NFPA 70B®
  - National Electrical Safety Code® – NESC®
  - Energy Codes
  - ASHRAE 90.1
  - ICC Energy Code
Collaboration Essential

- Between electrical codes and standards development organizations
  - NFPA
  - NEMA
  - NECA
  - IEEE
  - ASHRAE
  - ICC
  - UL, CSA, INTERTEK, others
- Cannot have tunnel vision or operate in a vacuum

NEC® Progression 2011 – Present

- Renewable Energy Rules
  - Large Scale PV Systems
- DC Micro-grids
- Energy Storage Systems
- Energy Management Systems
- Internet of Things (IoT) and Power Over Ethernet (PoE)
  - New lighting, sign, communication technologies
- EV wired/wireless equipment charging and V2X Technologies
Power Over Ethernet

- Vacuum Cleaner
- Curling Iron
- Garbage Disposal
- Refrigerator
- Dish Washer
- Garbage Disposal
- HVAC
- Safety Systems
- PoE
- Wine Cooler / Cellar

Power Over Ethernet Devices

- Voice and Video IP Phones
- WiFi Access Points
- Network Security Cameras – Enclosures – Heaters – Pan and Tilt
- Building / Access Control – Gas and Fire Alarms – Digital Signs
- Digital and School Clocks – SIP IP Paging – Door locks - Gateways
Effects on Standards

- Consumer choice creates chaos
  — “Democracy is the worst system – except for all the others”
- Standards make a difference

Certifying POE Devices – IEEE 802.3

- Identifies interoperable PSEs, PDs
- Includes power class for PDs & PSEs
- First certifications announced Jan. 2018
Electrical Loads and Calculations

- Electrical Load Calculations – Need to evolve
- Need to reflect conventional (legacy) methods and new technologies
- NEC® Article 220 requirements not current – Need to include both conventional and energy efficient load calculation requirements
- Working to include more practical load calculation values in VA per square foot
  - ASHRAE 90.1 Studies used as a basis

Staying Current and Relevant

- It comes down to education, communication and leadership
- Maintaining current skillsets (training others to do and to lead)
- Succession planning (identify the shining stars)
- Managing attrition…work needed here in workforce development
Safety as a Core Value

- As leaders we have no greater responsibility than the safety of our people; they are our greatest asset.
- Safety is a responsibility shared by the employer and employee.
- Leading by example in safe work practices and policies.
- If you allow it, it is as good as authorizing it.

Questions?

Don’t forget…
- 9:00 am – 1:00 pm – NECA Show
- 1:15 pm – 2:30 pm – Closing General Session with Jon Dorenbos
- 7:15 pm – Closing Celebration – Foreigner