OUR RELENTLESS PURSUIT:
Applying 3D Video / VR /AR
"ON THE ROAD TO ZERO"

Consumers Energy

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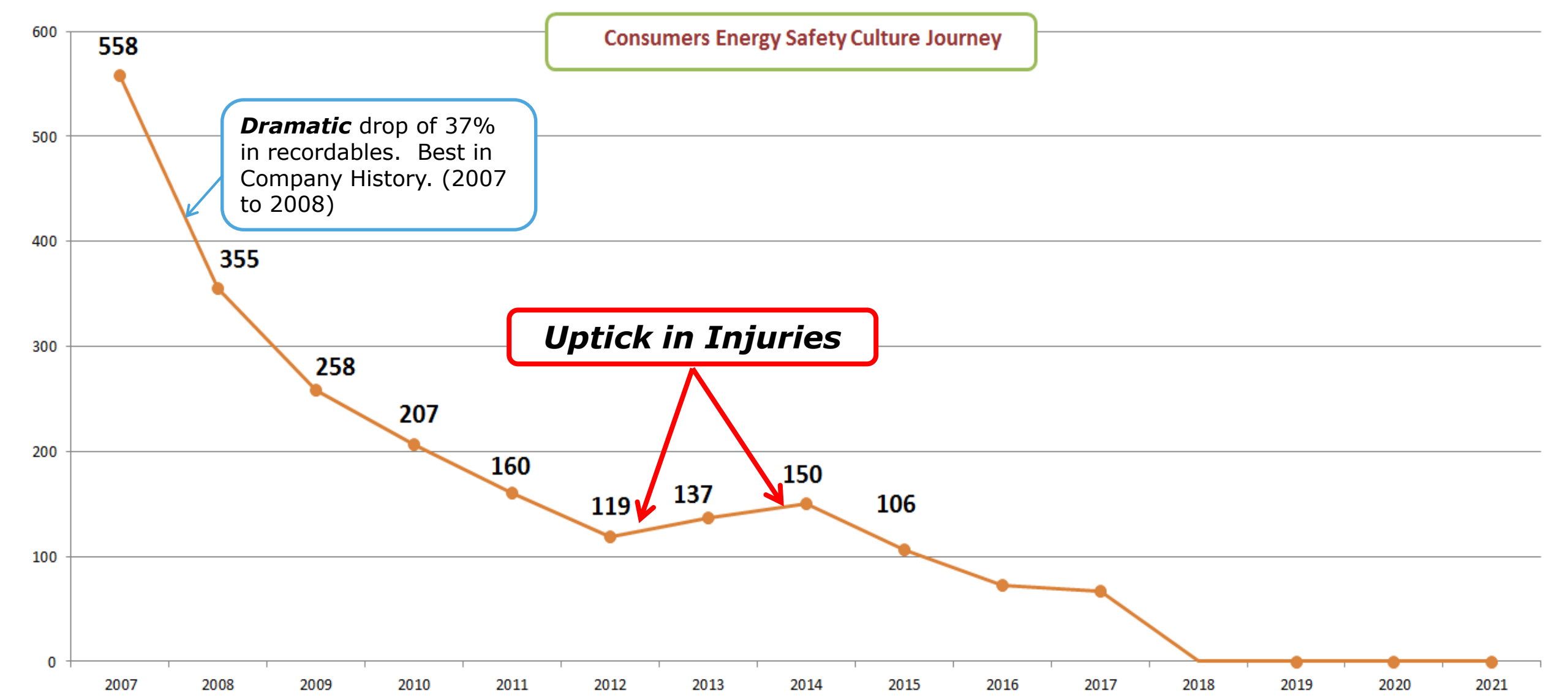
Consumers Energy Safety Culture Journey
Dramatic drop of 37% in recordables. Best in Company History. (2007 to 2008)
Uptick in Injuries
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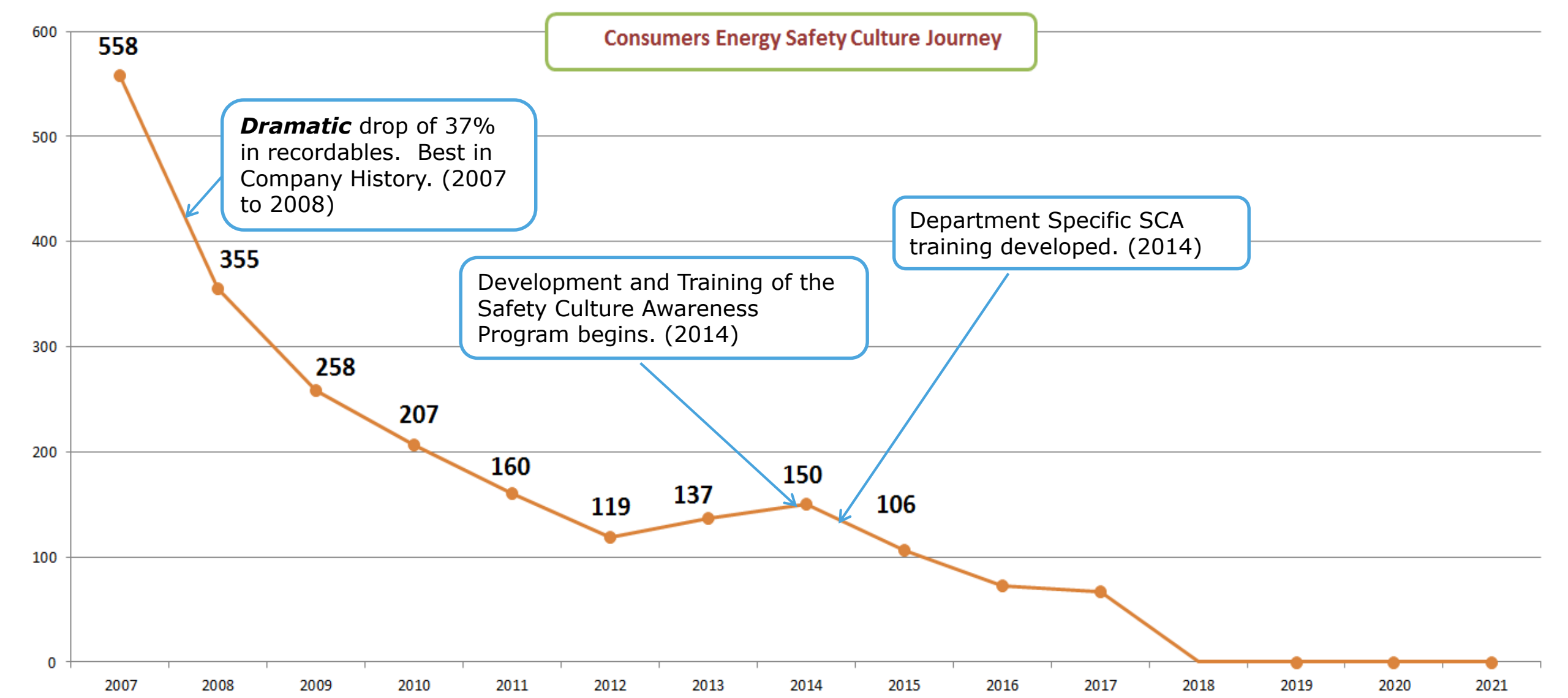
INSANITY EFFECT

If you do what you've always done,
You will get what you've always got.

To get what you never had,
You must do what you never did.


Consumers Energy Safety Culture Journey
Dramatic drop of 37% in recordables. Best in Company History. (2007 to 2008)
Development and Training of the Safety Culture Awareness Program begins. (2014)
Department Specific SCA training developed. (2014)
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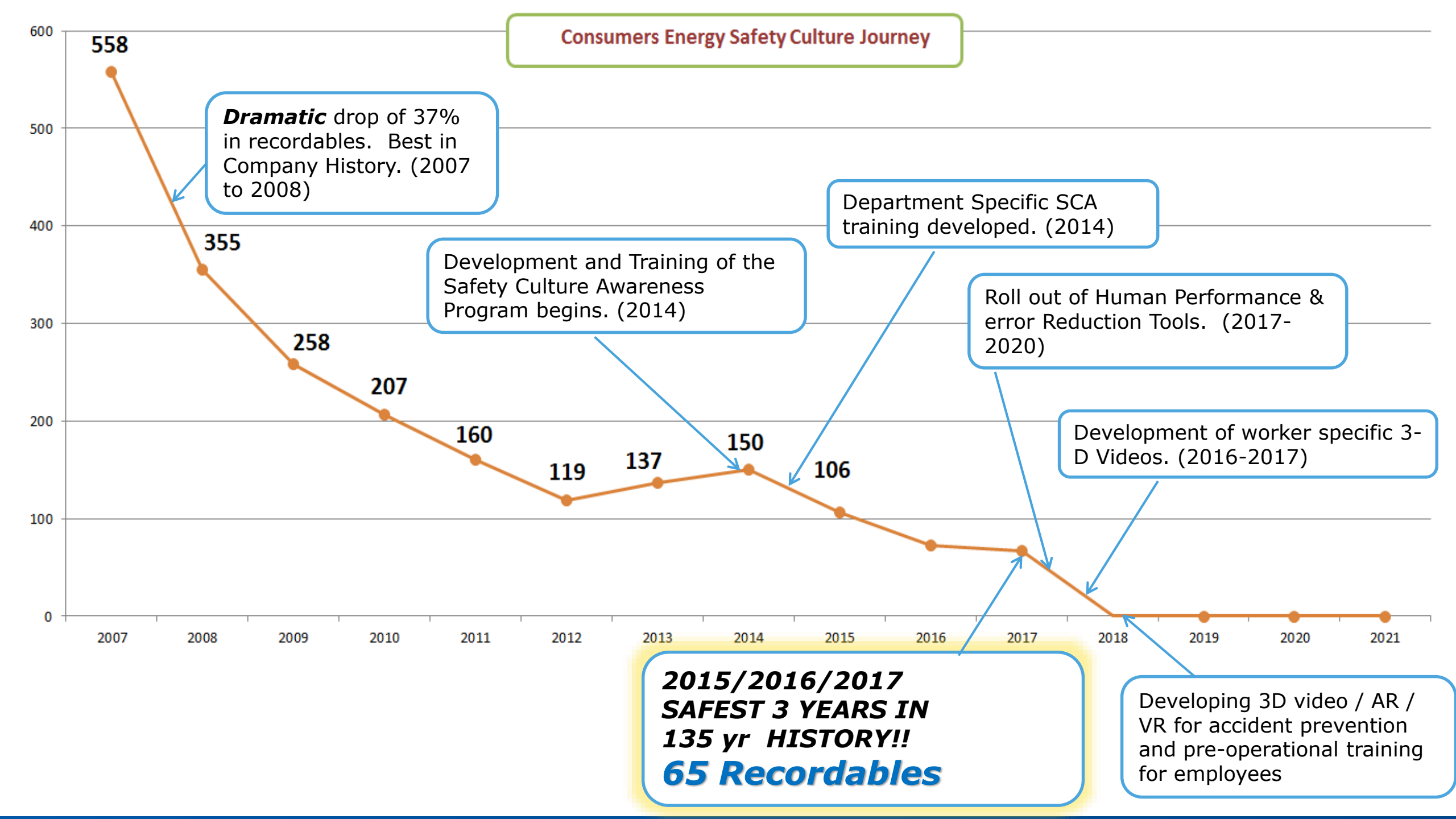
Consumers Energy Safety Culture Journey



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REAL-TIME COMPUTER BASED SIMULATION

NERC/NATF HP conference

(2018 Human Performance Conference)

Benefits of Using Simulators

- Interactive computer-based simulations bridge the gap between theory and hands-on by allowing the learner to practice difficult procedures inside a safe environment
- Both safety and reliability are achieved by keeping your workforce knowledgeable of new procedures and equipment
- “Learn by doing” provides 75% to 95% retention rates and simulators can be deployed on mobile devices and learning management systems

Growing Popularity of Simulator Training

- After 20 years of providing simulator training to the Utility and Energy Industries, there is a large shift now to real-time simulations

- This shift is happening because of:
  - AI - Artificial Intelligence
  - Cloud based data analytics
  - Increased computer processing speeds
  - Increased mobile & internet communication bandwidth (5G is 100x faster than 4G)

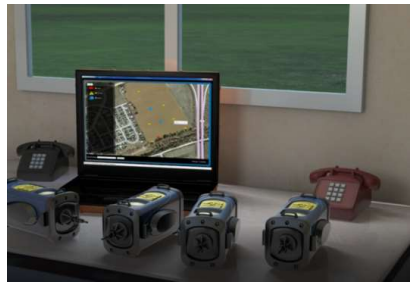
- People are now able to get instant information like calculations and visual results

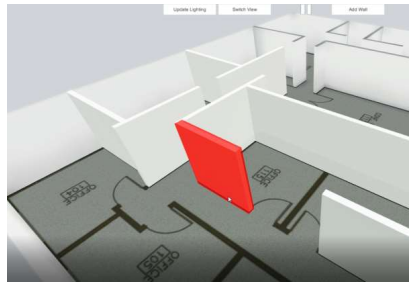
Artificial Intelligence in Simulators

- AI can greatly increase reliability and emergency responses. Here are some major examples of real-time simulators:
  - Simulators have been used by police departments predicting where and approximately when a minor crime will take place (home break-ins) so they can respond before it happens
  - EMS being aware and informed about areas of drug use and overdoses
  - Predicting where forest fires can start due to lightning strikes
  - Predicting major earthquakes
  - SCADA Data Analytics

3DInternet Simulators

- Here are a few examples of how some of our simulators are being used in the Utility industry for real-time feedback:





Transformer Simulator

- Used for live 24/7 troubleshooting

Substation Circuit Breaker Troubleshooter

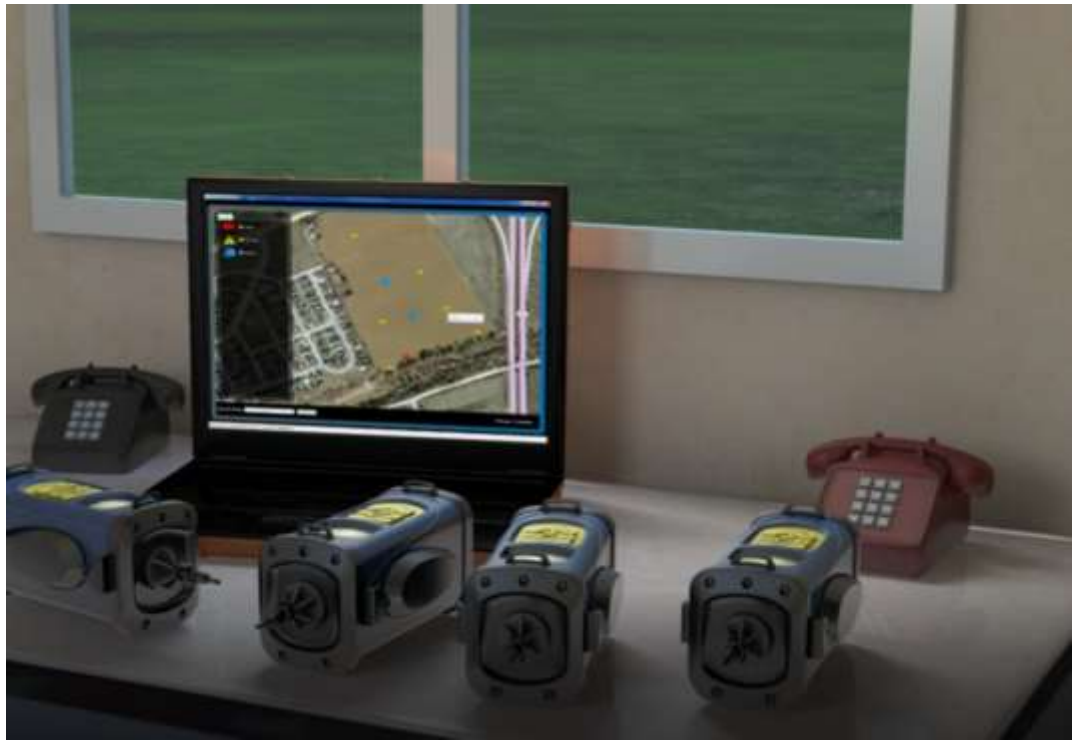
- Used by experienced workers as a real-time on the job refresher

Electrical Recloser Simulator

- Rapidly train workforce prior to new equipment deployment so line workers can operate and install correctly

Virtual Gas Leak Simulation

- Creates virtual gas leaks that communicate to real hand-held gas meters
- Allows instructors to vary leak data and locations while getting instant feedback on the steps workers take to locate them



Motor Control Simulator

- Real-time design, testing and producing quotations

PLC Simulator

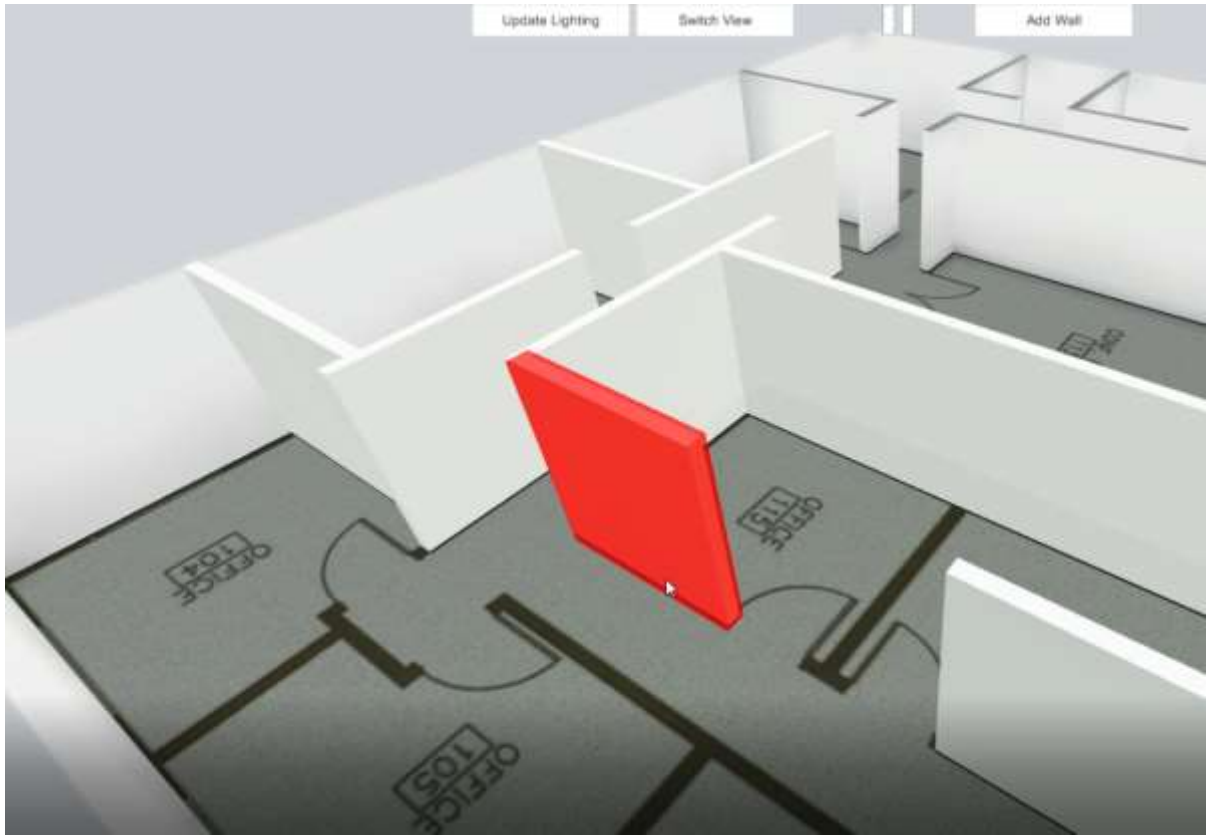
- Connecting real-time PLC programming software to a virtual conveyor belt to test and design configurations

Transmission line pre-design utilizing GIS, GPS and EMF data

- Used in real-time open-house discussions covering rural areas

Facilities Design

- Office setup, furniture, carpet and paint colors



Emergency Response and Disaster Planning

- Used to increase reliability by:
  - Preventing potential down times and injuries
  - Providing training to Patroller and wire watchers prior to a major storm
  - Being able to train for an emergency instead of just planning for it

- Using real-time plume calculations for:
  - deadly gases and spills
  - connecting to live wind data
  - traffic and pedestrian flows

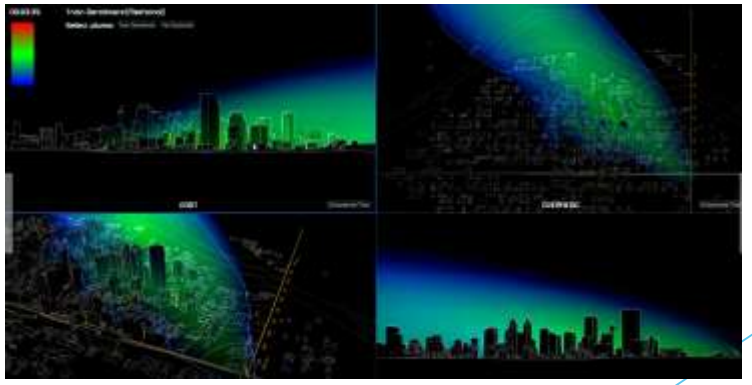
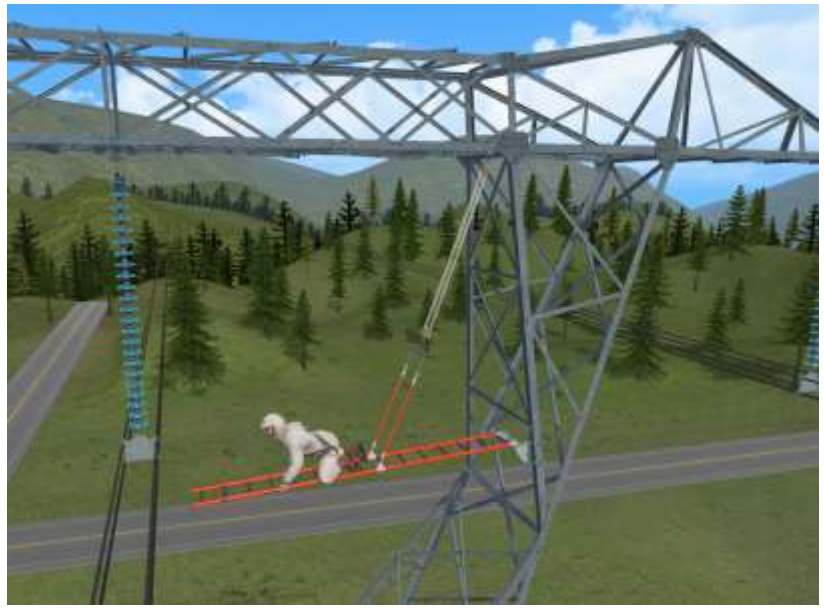
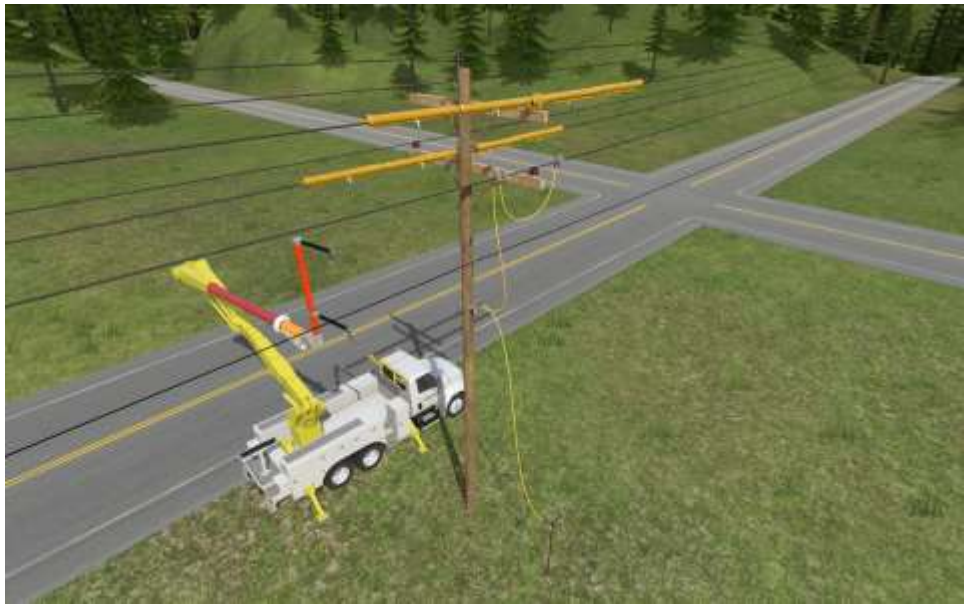


Table Top Simulator

- Used for pre-job briefings, design and engineering, community open houses, accident reconstruction, creating custom images and scenes, weekly safety meetings





VR and AR

- Technologies like VR (virtual reality) and AR (Augmented Reality) are now allowing people to visually experience and simulate environments and processes

VR and AR

- VR is currently the most immersive and interactive learning solution available next to very expensive hardware simulators like Flight Simulators
- VR can involve your human senses of touch, smell, hearing, and of course sight
- With wireless technology, 5G cell networks, and incorporation 3D cameras and smart sensors, we can look forward to interacting immediately with everything and everyone using VR and AR
- The applications are endless!