MONDAY, NOVEMBER 4

1:30 – 5:00   **Infrastructure Special Session: Electromagnetic Pulse**
Cochairs: Jesse Reeves, (INL), Patti Geppert, (UTSA)
Location: VILLA

1:30 – 1:40	Welcome and Introduction to the Session
1:40 – 2.30	Technical overview of EMP and Threat: Dr. Jesse Reeves (INL)
2:30 – 3:00	Technical overview of 5G and importance in EMP resiliency: Dr. Brian Kelley (UTSA)
3:00 – 3:30	SA-EMP Overview of the San Antonio community effort: Lt. Col. Eddie Stamper (JBSA)
3:30 – 3:40	Break
3:40 – 4:50	Panel Discussion: Dr. Jesse Reeves (INL), Col. Mike Lovell (JBSA), Dr. Brian Kelley (UTSA), Mr. Fred Bonewell (CPS Energy)
4:50 – 5:00	Closing Remarks

1:30 – 5:00   **Communications Industry Special Session: Emergency Communications**
Cochairs: Brad Nelson (INL), Hailey Siple (EEI)
Location: ZAPATA

1:30 – 2:40   Panel: ESCC Resilient Emergency Communications Capabilities
<u>Panelists</u>
- Jonathon Monken (PJM)
- Don Roberts (Southern Company)
- Hailey Siple (EEI)
- Jay Herman (EPRI)
- Brad Nelson (INL)

2:40 – 3:40   Panel: Critical Infrastructure and 6GHz Operations
<u>Panelists</u>
- David Wells (DOE)
- Paul Titus (Idaho National Laboratory)
- Paul Caritj (Harris, Wiltshire & Grannis)
- David Hoover (The Ferguson Group)

4:00 – 5:00   Presentation: Interoperability Solutions for Emergency Response and Recovery
- Robby Hill (Mutualink)

5:00 – 7:00   **Registration and Sponsored Reception**
Location: NAVARRO PREFUNCTION

TUESDAY, NOVEMBER 5

7:00 – 8:00   **Registration and Breakfast**
Location: NAVARRO PREFUNCTION

8:00 – 8:20   **Resilience Week Welcome:** *JoAnn Browning, Dean, UTSA College of Engineering*
Location: NAVARRO BALLROOM

8:20 – 9:30   **Plenary Speaker**
Location: NAVARRO BALLROOM
8:20 – 8:30   Introduction: JoAnn Browning, Dean, UTSA College of Engineering
8:30 – 9:30   *Congressman Joaquin Castro, Texas 20th District*

9:30 – 10:30   <u>TRACK 1:</u> **DOE Special Session Panel: Advanced Sensors and Data Analytics for Enhanced Electric Grid Resilience**
Chair: Eric Lightner (DOE-OE), Yarom Polsky (ORNL)
Location: VILLA
<u>Panelists</u>
- Emma Stewart (LLNL)
- Shannon Strank (University of Texas Center for Electromechanics)
- Tatjana Dokic (Texas A&M University)

<u>TRACK 2:</u> **Cyber: Workforce Development Panel: Recent Graduates**
Cochairs: David Manz (PNNL) Nicole Beebe (UTSA), Nate Evans (ANL)
Location: CAMINO REAL
<u>Panelists</u>
- Chelsea Hicks (USAF, GG-13)
- Jessica Le (Chevron)
- Richard McCaslin (Ernst & Young)
- Mike Stevens (FireEye Inc.)

<u>TRACK 3:</u> **Infrastructure: Intuitive Analytics in Complex Decision Making Environments**
Chair: Jennifer Pedersen (DHS NRMC)
Location: ZAPATA
- *Functional Approaches to Cyber-Physical and Lifeline Infrastructure Interdependency Data Collection and Analysis*, Shane Cherry (INL)
- *Leveraging Data and Models to Visualize Critical Infrastructure Impacts and Resilience*, Charles Rath (RS21)
- *ANL DISrupt (Decision and Infrastructure Sciences for identifying disruptions, dependencies, and infrastructure system risk) approach for critical node analysis*, Frederic Petit (ANL)

10:30 – 11:00   **BREAK**

11:00 – 12:00 **TRACK 1: DOE Special Session Panel: North American Electric Resiliency Model**
Chair: David Wells (DOE-OE)
Location: VILLA
<u>Panelists</u>
- Jean-Paul Watson (Sandia National Laboratories), *Resilient Power System Operations Modeling*
- Jason Fuller (Pacific Northwest National Laboratory), *NAERM: Resilience Modeling for Bulk Energy Systems*
- Prakash Thimmapuram (Argonne National Laboratory), *Modeling Natural Gas Systems for Resiliency and Interdependency*

TRACK 2: Cyber: Workforce Development Panel: Career Forward Panelists
Cochairs: David Manz (PNNL) Nicole Beebe (UTSA), Nate Evans (ANL)
Location: CAMINO REAL
<u>Panelists</u>
- Mark Manglicmot (Ernst & Young)
- Dave Baumgartner (FireEye)
- Joseph Filer (Harland Clarke)

TRACK 3: Infrastructure: Intuitive Analytics in Complex Decision Making Environments
Chair: Jennifer Pedersen (DHS NRMC)
Location: ZAPATA
- *Critical infrastructure vulnerability and adaptation to extremes and long-term disruptions, and decision support*, Donatella Pasqualini (LANL)
- *'Squirrel,' a critical failure analysis tool for critical infrastructure*, Jovana Helms (LLNL)
- *Infrastructure analysis using the cloud-based Water Event Lookup Library*, David Judi (PNNL)

12:00 – 1:30 **Hosted Lunch with Plenary Speaker**
Location: NAVARRO BALLROOM
12:25 – 12:30 Introduction: Zachary Tudor, National and Homeland Security Associate Laboratory Director (INL)

12:30 – 1:30 **Brigadier General (Ret.) Guy Walsh, Founding Executive Director, National Security Collaboration Center (The University of Texas at San Antonio)**

1:30 – 2:30 **TRACK 1: DOE Special Session Panel: Institutional Decision-Making for Resilience**
Chair: Joseph Paladino (DOE-OE)
Location: VILLA
Moderator: Joe Paladino (Office of Electricity, US Department of Energy)
<u>Panelists</u>
- Jeffrey Taft (Pacific Northwest National Laboratory)
- Leslie Nicholls (US Department of Energy)
- Charles Hanley (Sandia National Laboratories)

<u>TRACK 2:</u> **Cyber Keynote: Cyber Security Education, What Works and What is Broken**
Cochairs: David Manz (PNNL) Nicole Beebe (UTSA), Nate Evans (ANL)
Location: CAMINO REAL
Diana Burley, Executive Director and Chair of the Institute for Information Infrastructure Protection (I3P); Full Professor of Human & Organizational Learning at The George Washington University

<u>TRACK 3:</u> **Infrastructure: Lightning Talks**
Chairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA
- *Improving Post-Disaster Operational Readiness on DOD Installations through Advanced Infrastructure Planning*, Paul Magoulick
- *Natural Gas and Electric Generation Disruption Model for Enhanced Situational Awareness*, Chloe J. Applegate, Mike Nygaard and Jovana Helms
- *Connect-the-Dots with Meaning: Encoding Dependency Links to Enhance Analysis*, Rob Edsall
- *A Framework to Establish Critical Infrastructure Dependencies for the Energy Sector*, Shiloh Elliott
- *Lifeline Infrastructure Dependencies: Impacts of a Southern California Black Sky Event*, Molly E. Finster, Carmella Burdi, Edgar Portante, Scott Schlueter, Leah Talaber, Grace Egbujor and William McNamara
- *Chlorine Supply Chain for Water Treatment: Risks and Resilience*, Ryan J. Cobey
- *Use of GIS Capabilities and Huff Modeling to Estimate the Geographic Extent of Infrastructure Cascading Failures*, Scott Schlueter, Paul Lewis, and Carmella Burdi

2:30 – 3:30 <u>TRACK 1:</u> **DOE Special Session Panel: Microgrids for Enhanced Resilience**
Chair: Dan Ton (DOE-OE)
Location: VILLA
<u>Panelists</u>
- Russell Bent (LANL)
- Bo Chen (ANL)
- Bobby Jeffers (SNL)
- Kevin Schneider (PNNL)

<u>TRACK 2:</u> **Cyber Panel: Cyber Security Workforce of the Future: Degrees, Certifications, Diversity, Maturity**
Cochairs: David Manz (PNNL) Nicole Beebe (UTSA), Nate Evans (ANL)
Location: CAMINO REAL
<u>Panelists</u>
- Diana Burley (George Washington University)
- Lt. Col. John Picklesimer (United States Air Force)
- Domini Clark (Blackmere)
- Nate Evans (Argonne National Laboratory)

TRACK 3: Infrastructure: Student Competition: Lightning Talks
Chairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA

- *Federation based Cyber Physical Security Testbed: Architecture, Application, and Evaluation for Smart Grid*, Vivek Kumar Singh
- *Evaluating the Scalability and Generalizability of a Multiscale Approach to Model Interdependent Critical Infrastructures*, Cynthia Lee
- *Hooli: Towards Building Smart City San Antonio*, Artem Skitenko, Harry Staley, David Velez, Joshua Davenport, and Izzat Alsmadi
- *Anomaly Detection and Avoidance in Cyber Physical Systems*, Sridhar Adepu and Aditya Mathur
- *Resilience Traits of Incident Management Teams during Hurricane Harvey: A Quantitative Analysis from a Joint Cognitive Systems Perspective*, Changwon Son, Farzan Sasangohar, S. Camille, and Jukrin Moon

3:30 – 6:30 **Reception with Multiple Parallel Activities**
Location: NAVARRO PREFUNCTION / BALLROOM

Poster Presentations

- *Modeling Cyber Resilience for Energy Delivery Systems Using Critical System Functionality*, Md Ariful Haque (Old Dominion University)
- *The Resilience Shift Program: a safer and better world through Resilient Infrastructure*, Jan Reier Huse (Lloyd's Register Foundation)
- *Development of a Host-Based Intrusion Detection and Control Device for Industrial Field Control Devices*, Theora R. Rice (Pacific Northwest National Laboratory)
- *Cloud Based Intrusion Detection and Prevention System for Industrial Control Systems Using Software Defined Networking*, Jonathon Brugman (University of Utah)
- *SECURE: An Evidence-based Approach to Cyber Experimentation*, Ali Pinar (Sandia National Laboratories)
- *Modeling and Analysis Cyber Threats in Power Systems Using Architecture Analysis & Design Language (AADL)*, Ali Tamimi (Washington State University)
- *Impact analysis of mobility on physical layer security of mmWave networks*, Sarankumar Balakrishnan (University at Buffalo)
- *IEEE 13 Bus Benchmark Model for Real-Time Cyber-Physical Control and Power Systems Studies*, Bjorn Vaagensmith (Idaho National Laboratory)

Gaming Competition

- Capture the Flag

Exhibitor Area and Job Fair

WEDNESDAY, NOVEMBER 6

7:30 – 8:15   **Registration and Breakfast**
Location: NAVARRO PREFUNCTION

8:15 – 8:20   **Student Competition Winners**
Location: NAVARRO BALLROOM

8:20 – 9:30   **Plenary Speaker**
Location: NAVARRO BALLROOM

8:20 – 8:30   Introduction: Hailey Siple, Manager, National Security Policy (EEI)

8:30 – 9:30   *Jonathon Monken, Senior Director (PJM Interconnection)*

9:30 – 10:30   <u>TRACK 1</u> **Keynote Speaker: Resilient Energy Infrastructure**
Location: NAVARRO BALLROOM
Introduction: Dan Elmore, Critical Infrastructure Security & Resilience Division Director (INL)
Patricia Hoffman, Principal Deputy Assistant Secretary for Office of Electricity-Department of Energy

<u>TRACK 2:</u> **Infrastructure Panel: Adapting to New Resilience Challenges**
Cochairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA
Introduction and Opening Remarks: William R. McNamara (DHS CISA)
<u>Panelists</u>
- David Willey (DHS CISA)
- Scott Behunin (DHS CISA)
- Sam Marie Hermitte (Texas Water Development Board)

10:30 – 11:00   **BREAK**

11:00 – 12:00   <u>TRACK 1:</u> **Control: Cyber-Physical Resilience**
Cochairs: Kevin Schultz (JHUAPL), Frank Ferrese (NAVSEA) and David Scheidt (WGT)
Location: VILLA
- *Cyber-physical resiliency for islanded microgrids*, Walter B. Richardson Jr. (University of Texas San Antonio)
- *Evaluating Resilience of Grid Load Predictions Under Stealthy Adversarial Attacks, Xingyu Zhou (Vanderbilt University)*
- *Protecting the Texas electric grid: A cybersecurity strategy for ERCOT and the PUCT,* Les Stanaland (University of Texas at Dallas)

TRACK 2: Cyber: Cyber Awareness and Response
Cochairs: David Manz (PNNL), Nicole Beebe (UTSA)
Location: CAMINO REAL

- *Cyber and Physical Anomaly Detection in Smart-Grids*, Daniel L. Marino (Virginia Commonwealth University)
- *Software Defined Cyber-Physical Testbed for Analysis of Automated Cyber Responses for Power System Security*, Jacob Ulrich (Idaho National Lab)
- *Cluster-based Module to Manage Smart Grid Data for an Enhanced Situation Awareness: A Case Study*, Arif I. Sarwat (Florida International University)

TRACK 3: Industry Panel: Leveraging Partnerships Across the Energy Sector
Cochairs: Hailey Siple (EEI), Anna Ballance (EEI), Jillian Vignoe (E-ISAC)
Location: SABINO
Moderator: Anna Ballance (Edison Electric Institute)
Panelists

- Laura Schepis (Edison Electric Institute)
- Kimberly Denbow (American Gas Association)
- Jon Stitzel (Ameren)

TRACK 4: Infrastructure: Regional Resilience Assessment Program: A 10-Year Retrospective
Cochairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA
Presentations

- RRAP: Resilience through Recovery
  - David Willey (DHS CISA)
- RRAP: Critical Infrastructure Resilience in Utah
  - Matthew Beaudry (Utah Department of Public Safety)
  - Scott Behunin (DHS CISA)
- RRAP: Addressing Drought in Texas
  - Sam Marie Hermitte (Texas Water Development Board)
  - John Hummel (Argonne National Laboratory)

12:00 – 1:30 **Hosted Lunch with Plenary Speaker**
Location: NAVARRO BALLROOM

12:25 – 12:30   Introduction: Jillian Vignoe, Senior Manager, Partnerships and Policy, Electricity Information Sharing and Analysis Center

12:30 – 1:30   ***Anne Bomar, Senior Vice President, Gas Transmission Customer Commercial Services, Dominion Energy***

1:30 – 2:30 **TRACK 1: Control: Cyber-Physical Resilience**
Cochairs: Kevin Schultz (JHUAPL), Frank Ferrese (NAVSEA) and David Scheidt (WGT)
Location: VILLA

- *Alternative Actuation Paths for Ship Applications in the Presence of Cyber-Attacks*, Brien Croteau (University of Maryland, Baltimore County)
- *Enabling Secure Grid Information Sharing through Hash Calendar-based Blockchain Infrastructures*, Adam Hahn (Washington State University)

- *Towards Refinement and Generalization of Component State–Based Reliability Models*, Sahra Sedigh Sarvestani (Missouri University of Science and Technology)

TRACK 2: Cyber: Cyber Physical Emulation and Virtualization
Cochairs: David Manz (PNNL), Nicole Beebe (UTSA)
Location: CAMINO REAL

- *Cyber-Physical Emulation and Optimization of Worst-Case Cyber Attacks on the Power Grid*, Anya Castillo (Sandia National Laboratories)
- *Distributed Power System Simulation using Cyber-Physical Testbed Federation: Architecture, Modeling, and Evaluation*, Vivek Kumar Singh (Iowa State University)

TRACK 3: Community Special Session Panel: CPS Energy and Resilience Planning
Moderator: Bobby Jeffers (SNL)
Location: SABINO

Panelists
- Doug Melnick (City of San Antonio)
- James Boston (CPS Energy)
- Jenn Kallay (Synapse Energy Economics)
- Vanessa Vargas (SNL)

TRACK 4: Industry Infrastructure Panel: Threat Information Sharing
Cochairs: Hailey Siple (EEI), Anna Ballance (EEI), Jillian Vignoe (E-ISAC)
Location: ZAPATA

Moderator: Laura Schepis (Edison Electric Institute)
Panelists
- Sam Chanoski (Electricity Information Sharing and Analysis Center)
- Ernesto Ballesteros (State Cybersecurity Coordinator for Texas)
- Matt Bodman (Dragos)

2:30 – 3:30   **TRACK 1: Cyber: Frameworks**
Cochairs: David Manz (PNNL), Nicole Beebe (UTSA)
Location: VILLA

- *Recommended Functionalities for Improving Cybersecurity of Distributed Energy Resources*, Ricardo Siqueira de Carvalho (National Renewable Energy Laboratory)
- *A Review of Cybersecurity Risk and Consequences for Critical Infrastructure*, Sri Nikhil Gupta Gourisetti (Pacific Northwest National Laboratory)
- *Demonstration of the Cybersecurity Framework through Real-World Cyber Attack*, Sri Nikhil Gupta Gourisetti (Pacific Northwest National Laboratory)

TRACK 2: Communications: Wireless Security
Cochairs: Krishna Kant (TeU) and Gurdip Singh (SU)
Location: CAMINO REAL

- *Plug and Play Flexible Signal Classification and Processing System*, Christopher Becker (Idaho National Laboratory)
- *Physical Layer Security Analysis in The Priority-Based 5G Spectrum Sharing Systems*, Morteza Soltani (University of Idaho)
- *Physical Layer Security for UAV Swarm Communications via Protected Zone*, Yavuz Yapici (North Carolina State University)

TRACK 3: Control Special Session: Renewable Energy Integration as the Catalyst for Distributed Grid Resilience
Cochairs: Jake Gentle (INL), Jay Caspary (SPP)
Location: SABINO
<u>Invited Speakers</u>

- Jay Caspary (Southwest Power Pool)
- Bret Barker (Distributed Generation, DOE Wind Energy Technologies Office)
- Guohui Yuan (DOE Solar Energy Technologies Office)

TRACK 4: Industry Infrastructure Panel: Mutual Assistance Programs for Cyber and Physical Resilience
Cochairs: Hailey Siple (EEI), Anna Ballance (EEI), Kimberly Denbow (AGA), Sharla Artz (UTC)
Location: ZAPATA
Moderator: Peter Grandgeorge (Berkshire Hathaway Energy)
<u>Panelists</u>

- Wally Mealiea (Edison Electric Institute)
- David Batz (Edison Electric Institute)

3:30 – 4:00   **BREAK**

4:00 – 5:30   **TRACK 1: Cognitive Special Session: The Three R's of Post-Event Resilience-Robustness, Recovery, Restoration**
Cochairs: Kimberly Lewis (DoD), Megan Kendle (DoD), David Ball (DSTL)
Location: VILLA

- *On the Use of Microworlds for an Error Seeding Method to Support Human Error Analysis*, Thomas A. Ulrich (Idaho National Lab)
- *Operator Resilience to Cyber Interdictions in Nuclear Power Plants*, Ronald L. Boring (Idaho National Lab)
- *Balancing Smart Grid's Performance Enhancement and Resilience to Cyber Threat*, Rezoan Shuvr (Marquette University)
- *Understanding the Human Element of Organisational Resilience to IEMI*, (Invited paper), David Ball (Defence Science and Technology Laboratory)
- *Development of THREAT (The Human Reliability Effects Assessment Tool)*, (work in progress), Duncan Adam (Defence Science and Technology Laboratory)
- *Human Reliability Analysis in the Electric Grid Domain*, (work in progress), Susan Adams (Sandia National Laboratories)

TRACK 2: Communications Special Session: Wireless Security Including 5G and Beyond
Cochairs: Arupjyoti Bhuyan (INL), Gurdip Singh (SU)

Location: CAMINO REAL

Presenters
- Serena M. Reynolds (Department of Homeland Security)
- Stephen Hayes (Ericsson North America)
- Arup Bhuyan (Idaho National Laboratory)

TRACK 3: Control Special Session Panel: Renewable Energy Integration as the Catalyst for Distributed Grid Resilience
Cochairs: Jake Gentle (INL), Jay Caspary (SPP)

Location: SABINO

Panelists
- Bret Barker (DOE WETO)
- Jake Gentle (Idaho National Laboratory)
- Alice Orrell (Pacific Northwest National Laboratory)
- Jim Reilly (National Renewable Energy Laboratory)
- Brian Naughton (Sandia National Laboratories)

TRACK 4: Infrastructure Industry: Owner Operator Panel
Moderator: Cherrie Black (INL)

Location: ZAPATA

Panelists
- Danielle Hale (Port of Corpus Christi)
- Edwin "Lee" Otten (Department of Homeland Security)
- Jake Krumnow (San Patricio Water District)
- Charles Brower III (American Electric Power)
- Brandon Luttrell (Moda Midstream & LEPC)

6:30 – 8:30   **Attendee, VIP, and Best Paper Highlight Reception**
Location: Biga on the Banks, 203 S St Mary's St

THURSDAY, NOVEMBER 7

7:30 – 8:25 **Registration and Breakfast**
Location: NAVARRO PREFUNCTION

8:25 – 9:30 **Plenary Panel: Evolutionary Resilience Challenges to Achieve the Grid of the Future**
Location: NAVARRO BALLROOM
8:25 – 8:30 Introduction: Ron Fisher, Homeland Security Division Director (INL)
<u>Panelists</u>
- *Patricia Hoffman, Principal Deputy Asst. Secretary for Office of Electricity-DOE*
- *Rita Baranwal, Asst. Secretary for Nuclear Energy-DOE*
- *Kimberly Denbow, Sr. Director, American Gas Association*
- *Jonathon Monken, Sr. Director, PJM Interconnection*

9:30 – 10:30 <u>**TRACK 1:**</u> **Community: Social Sciences and Simulation**
Cochairs: Abraham Ellis (SNL), Ray Byrne (SNL)
Location: CAMINO REAL

- *Resilience and mindfulness in active duty and veteran U.S. military service members*, Valerie Rice (Army Research Laboratory)
- *Newswire versus Social Media for Disaster Response and Recovery*, Rakesh Verma (University of Houston Department of Computer Science)
- *Identifying Heterogeneous Infrastructure Interdependencies through Multiverse Simulation*, Craig Poulin (Northeastern)

<u>**TRACK 2:**</u> **Cyber Special Session: Firmware Code Analysis**
Chair: Rita Foster (INL)
Location: VILLA
<u>Panelists</u>
- Rita Foster (Idaho National Laboratory)
- Jed Haile (Idaho National Laboratory)
- Talha Siddiqui (aDolus, Inc.)
- Andrew Storms (New Context)

<u>**TRACK 3:**</u> **Infrastructure: Lightning Talks**
Cochairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA

- *Introductory Analysis of NG911 Vulnerabilities*, Laurie Trueax-Leffel and D. C. Grant
- *Multi-Asset and System Assessment*, Dave Dickinson, Frederic Petit, Dawn Howard, Debra Fredick, and Leslie-Anne Levy
- *IP Gateway Special Event and Domestic Incident Tracker*, Ovila T. Gagnon
- *Vulnerability Factors of Hurricanes: Impact of Hurricane Maria in the Rural Community of Maricao*, Puerto Rico, Laura Andrea Arce Polanco and Stephen Bayne

- *Evaluating Cyber Risk Reporting in U. S. Financial Reports*, Celia Porod, Ron Fisher, Lydia S. Greco, and Justin Wood
- *Multi-label Classification of Infrastructure Related Text*, Christopher Dixon

10:30 – 11:00   **BREAK**

11:00 – 12:00   <u>TRACK 1:</u> **Community Special Session: Using Detailed Simulation Tools to Support Scenario-Based Analysis**
Chair: Paul Roege (Typhoon-HIL)
Location: CAMINO REAL
<u>Invited Presentations</u>

- Ryan Jacobs (MITRE), *Toward Systems of Systems Resilience Analysis with Graph Metrics*
- Ivan Celanovic (Typhoon-HIL, Inc.), *Real-Time Simulation to Support Operational Activities*
- Igor Linkov (US Army ERDC), *Resilience and Efficiency in Complex Systems*
- Dan Bennett (NREL), *Cyber Attack Visualization*

<u>TRACK 2:</u> **Communications: Communications Resilience**
Cochairs: Krishna Kant (TeU) and Gurdip Singh (SU)
Location: VILLA

- *Survivor-Centric Network Recovery for Search-and-Rescue Operations*, Alaa A. R. Alsaeedy (Colorado State University)
- *Cost-Aware Optimal Filter Assignment Policy Against Distributed Denial-of-Service Attack*, Rajorshi Biswas
- *Optimal Monitor Placement Policy Against Distributed Denial-of-Service Attack in Datacenter*, Rajorshi Biswas

<u>TRACK 3:</u> **Infrastructure: Lightning Talks**
Cochairs: Cherrie Black (INL), John Hummel (ANL), Fred Petit (ANL)
Location: ZAPATA

- *Security vs Safety in Cyber-Physical and IoT Systems*, Marilyn C. Wolf
- *Prairie Storm Exercise 2019 Case Study*, William O. Redwood
- *Improving the Water Sector's Approach to Cybersecurity*, Andrew Ohrt, Kevin Morley, and Dan Groves
- *Teaching Resilience: Warboarding MicroSystems and Experimenting with Pen Testing*, Larry R. Leibrock
- *Can the Pyramid be Shared? Comparing the Risk Perspectives of the Industrial and Cyber Environments*, John Hummel, Jennifer Schneider, Carol Romanowski, Sumita Mishra, Trevor Pfeffer, William Horsthemke and Nate Evans
- *Modeling and Spatial Temporal Analysis of Cyber-Physical Impacts*, Tim Klett and Michael Haney

12:00 – 1:30   **Hosted Lunch with Plenary Speaker**
Location: NAVARRO BALLROOM

12:25 – 12:30   Introduction: Zachary Tudor, National and Homeland Security Associate Laboratory Director (INL)

12:30 – 1:30   *Howard Grimes, CEO of Cyber Manufacturing Innovation Institute (CyManII)*

1:30 – 3:00   <u>TRACK 1:</u> **Community: Resilience Analysis methods, role of technology, and institutional factors**
Cochairs: Abraham Ellis (SNL), Ray Byrne (SNL)
Location: CAMINO REAL
<u>Panelists</u>
- Venkat Banunarayanan (Integrated Grid Business & Technology Strategies, NRECA)
- Efrain O'Neill (University of Puerto Rico – Mayaguez)
- Jeremy Kasper (University of Alaska Fairbanks)
- Dayne Broderson (University of Alaska Fairbanks)

<u>TRACK 2:</u> **Control Special Session: Cyber Physical Resilience in Smart Grids**
Cochairs: Nathan Lemons (LANL), Deepjyoti Deka (LANL)
Location: ZAPATA
- Emma Stewart (LLNL)
- Kate Davis (Texas A&M)
- Anna Scaglione (ASU)

3:00 – 3:30   **BREAK**

3:30 – 5:30   <u>TRACK 1:</u> **Community: Resilient Power Systems Operations Simulation**
Cochairs: Jessica Lau (NREL), JP Watson (SNL)
Location: CAMINO REAL
- *Resilient Power Systems Modeling and Simulation*, Jessica Lau (NREL)
- *Consequence Modeling for Multi-Sector Resilience Analysis*, Andrea Staid (SNL)
- *Resilience Metrics for Analysis of Gas and Power Grid Infrastructures*, Bobby Jeffers (SNL)
- *Bayesian Methods to Assess Recovery and Restoration Strategies*, Hiba Baroud (Vanderbilt)
- *Scalable Models for Multi-Sector Resources*, Ben Knueven (SNL)

<u>TRACK 2:</u> **Cyber Special Session: Agile cybersecurity response capabilities for control systems**
Chair: Andrew Storms (New Context)
Location: ZAPATA
<u>Panelists</u>
- Rita Foster (Idaho National Laboratory)
- Jed Haile (Idaho National Laboratory)
- Andrew Storms (New Context)

FRIDAY, NOVEMBER 8 – OPTIONAL TOURS

Individuals are responsible for their own transportation

9:00 – 12:00   <u>TOUR OPTION 1</u>: **Southwest Research Institute**
- Join tour at 6220 Culebra Road, San Antonio, TX 78238-5166
- Tour Contact: Victor Murray 210.522.6589
- Click <u>HERE</u> for more details

<u>TOUR OPTION 2</u>: **San Antonio Office of Emergency Management**
- Join tour at 8039 Challenger Drive, San Antonio, Texas 78235
- Tour Contact: Ashley Carter, 210.206.8551
- Click <u>HERE</u> for more details

<u>TOUR OPTION 3</u>: **The University of Texas at San Antonio College of Engineering**
- Join tour at UTSA Main Campus, One UTSA Circle, San Antonio 78249 (Park in Tobin Garage)
- Tour Contact: Patricia Geppert, PhD, 210.663.6725
- Click <u>HERE</u> for more details