Eugene G. Preston, Ph.D., PE TX, Senior Life Member IEEE
6121 Soter Parkway
Austin, Texas 78735-6100
(512) 892-3621 (leave a message, no texting)
Updated Sept 4, 2020
https://egpreston.com
g.preston@ieee.org

Recent Presentations:

Engineering Council of Houston August 2020 Climate Change Symposium video and file.

IEEE RAWG (Resource Adequacy Working Group) 2020 report shows wind intermittency:
https://egpreston.com/IEEERAWG.pdf https://egpreston.com/IEEERAWG.mp4

2020 RTS3 NREL Update at PMAPS 2018 and similarly for the Austin Physics Meetup Group.

My comments on the DOE FERC RM18-1 concerning grid reliability and resilience.

How wind and solar affect grid reliability is presented to ERCOT and Univ. of Texas at Austin.

IEEE PES GM July 2017 Chicago: How wind in ERCOT affects the reserve margin and reliability.

University of Texas panelist on Decarbonizing The Electric Grid, presented April 21, 2017.

Off Grid Technologies and the Replacement of Fossil Fuels, Solar Business Festival in 2016.

Calculating How Much Solar Power Can Be Injected Into The Grid, Solar Business Festival 2016.

WECC Presentation August 2016 on combining two area ATC with two area LOLP.

Loss of Load Expectation Working Group, Boston, July 2016.

UT Law Conference on Renewables: LOLP, reliability, and the importance of microgrids.

ERCOT presentation on renewables displacing fossil fuels in the 2030 Clean Power Plan.

Presentation to the Austin EUC concerning wind and solar generation in ERCOT.

IEEE 2015 Denver Power Engineering Society Panel Session

IEEE 2015 Denver LOLE Working Group presentation.

ERCOT 100% renewables would require an infeasible $6600 billion investment in batteries.

WECC video 1 - file 1 and repeated to the IEEE video 2 - file 2 which has study results.

Comments to the PUCT project 42302 concerning LOLE as a measure of risk. A 2016 update.

ERCOT Seminar on generation adequacy LOLP mathematical methods in 2002.

Professional - DBA Transmission Adequacy Consulting (1998-2020):

DayCoHoldings, LauraBowen, BNB, Hill Country, AB Power, High Road, Duke, Innergex, Intermix, Engie, NERC, Amshore, Sunchase, 74 Ranch, APEX Wind, Adams Wind, Adjunct Professor at the University of Texas at Austin 2005-2008, 2013-2014, Airtricity, Alexander Wind, Alstrom, Amshore, Austin Energy, Babcock and Brown, Bank One, Blackwell Wind, Brightman Energy, British Petroleum, CSWE, Central Nebraska Public Power, Chris Hill, Cielo Wind, Citizens Energy, City Public Service, ClearView, Constellation, DKRW, DOE Smartgrid proposals evaluation team, Daniel Wind, Direct Energy, EAPC Wind, ENEL, ENRON. EON, ERCOT, Element Power, Eurus, First Wind, Fox, Smolen & Associates, GDS, Grandville Energy, HARC, Hill Country Wind, Hillard Energy, Horizon Wind, Hunt Power, Invenergy, JP Morgan, Jim Byrd, Koch, LBA, LCRA, MCNIC, MKM Engineering, Martin Baughman, Merrill Lynch, Mirant, NaturEner, NextEra, Northeast Utilities, OwnEnergy, Padoma, RES America, STEC, Seattle City Light, Sharyland, Sigma Energy, Signal Hill, Skyward, Spinning Star, Stratus Energy, Suez, TIE, TMPA, Tiemann and Assoc, Tractebel, Tradewinds, TremWell Energy, Westerly Wind, Whirlwind, and Wind Plus.

Professional Experience:

- Chaired the IEEE Task Force to Update the IEEE RTS model to 2020
- Presented ERCOT reliability evaluations to IEEE LOLE working group 2016-2020
- City of Austin representative assisting the PUC Synchronous Interconnection Committee
- Electric Utility representative on a City task force for implementing Internet connectivity
- Vice Chairman, APPA Engineering and Operations Workshop Planning Committee
- DEED Board Member, American Public Power Association
- Dean's Committee, College of Engineering, UT Austin
- Member of ERCOT Engineering Subcommittee
- Chairman, ERCOT Engineering Subcommittee Load Flow Task Force
- Registered Professional Engineer, Texas
- Member, ERCOT Reliability Task Force
- Member, Institute of Electrical and Electronic Engineers

Education:

- Doctor of Philosophy in Electrical Engineering, UT Austin, 1997, overall GPA: 3.567/4.000 dissertation: Reliability Of Electric Generation With Transmission Constraints
- Master of Science in Engineering, UT Austin, 1979, thesis: A Technique For Allocating Losses In Large Interconnected Transmission Systems
- Bachelor of Science in Electrical Engineering, UT Arlington, 1970

Honor Societies

- Senior Life Member IEEE 2017
- Phi Kappa Phi, Tau Beta Pi, Eta Kappa Nu

Austin Energy Employment: 1970 – August 1998 (retired)

- Manager System and Corporate Planning – performed generation, transmission, and corporate financial model integrated studies and planning
- Manager Research and Planning – performed distribution planning and managed EMF analysis and public interface on EMF issues concerning new transmission projects
- Manager System Engineering – performed transmission and distribution planning including a new 35 kV downtown network
- Manager System Planning – performed transmission and generation planning
- Manager System Analysis – performed transmission system analysis
- Substation Engineer – added several new substations and several new unit substations

Accomplishments While Employed By Austin Energy

- Managed the purchase and installation of Austin Energy's first mini-computer system dedicated to performing engineering and planning. In the early 1980's this was nearly a million dollar purchase that included a Prime computer and software packages such as PSS/E, Promod, and distribution analysis software, plus the corporate financial analysis software I had developed in the late 1970's.
- Provided the planning and economic analysis and justification for conversion of an older 11 and 12 kV downtown underground distribution system to 35 kV to maximize the power handling capability of the existing downtown duct system that was nearing its end of life and had little expansion capability. Two new 35 kV substations on opposite sides of the downtown area currently supply all the power for the downtown network.
- Developed an EMF program that included both engineering design and analysis as well as the public interface with concerned citizens at public meetings and other participations.
- Managed the development of an advanced distribution analysis package that led to the identification for the need for new substations, feeders, and reactive support.
- Developed probabilistic analysis techniques that led to a Ph.D. and provided a study supporting the need for an additional 345/138 kV autotransformer when the 550 MW Holly Power Plant is retired. Deterministic studies did not show a need for the additional transformer.

Professional Journal Papers Published

- "Adequacy Assessment of the Idaho Power Generation System with Integrated Variable Energy Sources", 2020 IEEE International Conference on Probabilistic Methods Applied to Power Systems, Belgium hosts a virtual meeting, August 2020
- "Evaluation of Year 2020 IEEE RTS Generation Reliability Indices", 2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems, Boise, ID, June 2018
- "Variable Energy Resource Capacity Contributions Consistent With Reserve Margin and Reliability", IEEE PES GM, Chicago Ill, July 2017
- "A New Model For Outaging Transmission Lines In Large Electric Networks," IEEE Transactions on Power Systems, May, 1999
- "A New Planning Model For Assessing The Effects Of Transmission Capacity Constraints On The Reliability Of Generation Supply For Large Nonequivalenced Electric Networks," IEEE Transactions on Power Systems, August, 1997

- "Reporting Bulk Power System Delivery Point Reliability," IEEE Task Force Member, Published in the IEEE Transactions on Power Systems, August, 1996
- "Reduction of Stray Currents and Magnetic Fields From Single Phase Power Distribution Systems," IEEE Transactions on Power Delivery, April, 1995
- "Efficient Method For Calculating Power System Production Cost and Reliability," IEE Proceedings-C, Vol. 138, no. 3, May, 1991

Conference And Workshop Papers Presented

- Presented to AiCHE the outlook for ERCOT in an August 2020 on line meeting
- Chaired the IEEE Task Force to Update the IEEE RTS model to 2020
- Presented ERCOT reliability evaluations to IEEE LOLE working group 2016-2020
- "Evaluation of Year 2020 IEEE RTS Generation Reliability Indices", 2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems, Boise, ID, June 2018
- "Adequacy Assessment of the Idaho Power Generation System with Integrated Variable Energy Sources", 2020 IEEE International Conference on Probabilistic Methods Applied to Power Systems, Belgium hosts a virtual meeting, August 2020
- "Variable Energy Resource Capacity Contributions Consistent With Reserve Margin and Reliability", IEEE PES GM, Chicago Ill, July 2017
- "A New Planning Model For Assessing The Effects Of Transmission Capacity Constraints On The Reliability Of Generation Supply For Large Nonequivalenced Electric Networks," IEEE Transmission and Distribution Conference, Los Angeles, September, 1996
- "EMF Modeling In URD Systems," Annual Power Distribution Conference, Austin, 1994
- "Distribution Planning at the City of Austin," Institute of Electrical and Electronics Engineers Summer Power Meeting, Panel Session, San Francisco, 1994
- Demonstration of the City of Austin FeederCAD program, Western Underground Group meeting, El Paso, 1994
- "A Linear Method for Allocating Losses in Interconnected Power Systems Sharing Transmission Facilities," EPRI Workshop, Dallas, Texas, 1992
- "A Demonstration of the City of Austin FeederCAD Program," Annual Power Distribution Conference, Austin, 1991
- "A Financial Corporate Model for WASP II," APPA E&O, Orlando, 1991
- "A Demonstration of the WASP II Generation Planning Program," APPA Engineering & Operations (E&O) pre-conference workshop, 1990
- "EMF Effects from URD Systems," EPRI EMF Seminar, Austin, 1990
- "Radio Interference", Texas Municipal Electric Conference, College Station, TX, 1990
- "Testing Planning Models To Gain Confidence and Learn Limitations," APPA E&O, Washington DC, 1989
- "EMF Effects from URD Systems," APPA E&O, Washington DC, 1989
- "Magnetic Fields from URD Feeders," Annual Power Distribution Conference, Austin, 1988
- "City of Austin Two Area Production Costing Model," American Public Power Association E&O Mid Year Meeting, 1987