

# William Bush - Panel Participant

- *President, CEO - Enetics, Inc.*
- *BSEE, MBA*
- *Chairman IEEE Rochester Section*
- *Chairman IEEE Communications Chapter*
- *Vice Chair Software Executives Group of Greater Rochester*
- *Tau Beta Pi; Eta Kappa Nu*
- *Chairman of the board – Rochester Oratorio*



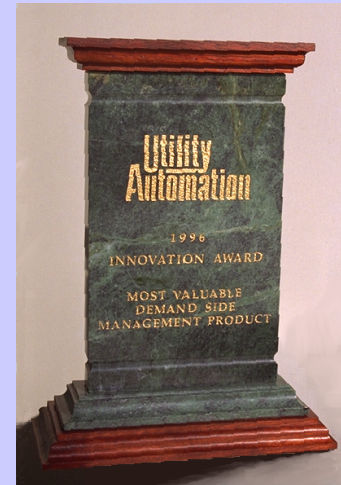
# About Enetics, Inc.

- *Providing data telemetry for both gas and electric applications for ESCOs, Utilities, and Industry*
- *Initial developer of NILMs technology using the Hart patents.*
- *Now in 20<sup>th</sup> year of operations*
- *Privately held C-Corp.*
- *New York State Certified “Meter Data Service Provider”*
- *Key supplier to ESCOs in support of DR initiatives for NYISO, PJM, NEISO, CAISO: Over 7,500 meters in service*



# ***NILMS Design Excellence***

- ***Utility Automation  
Innovation Award***  
*“Most Valuable Demand Side  
Management Product”*
- ***R&D 100 Award***  
*SPEED™ selected as a winner of the  
“R&D 100” Award - Known as the most  
prestigious award in applied research*





Dr Katie Russell  
Head of Data Science

Using its cloud based platform, API and Apps, ONZO provides the utility industry with solutions to better engage, understand customers and drive more value into their business.



# ONZO's Insights Portal... Managing and disseminating personalised insights



Example: Automatically segment customers for demand response.

Most are low impact – not contacted – reducing cost.

High impact customers are segmented by different characteristics. Relevant messages are sent to each group. Greater relevance ensures better response.

# Wenpeng Luan

**Wenpeng Luan** received the B.Sc. degree from Tsinghua University, Beijing, China, in 1986, the M.Sc. degree from Tianjin University, Tianjin, China, in 1989, and Ph.D. degree from Strathclyde University, Glasgow, UK, in 1999, all in electrical engineering.

He has extensive academic and industrial experience in power system analysis, power system planning, smart grid applications, and distributed generation integrations. He joined China Electric Power Research Institute as Chief Expert in 2013. His special fields of interest include smart metering data analytics, distribution system analysis, non-intrusive load monitoring, renewable energy resource integration, and utility advanced applications. He is a member of CIGRE, a senior member of IEEE, also is a Professional Engineer registered at the Association of Professional Engineers and Geoscientists of British Columbia, Canada. He has been an active member in committee works. Currently he is Convener for IEC SMB System Evaluation Group SEG6: Nontraditional Distribution Networks/Microgrids, Chair for IEEE P2030.9 Working Group: Recommended practice for the planning and design of the microgrid, leading and making efforts for microgrid standardization.



**Tianjin  
Univers**



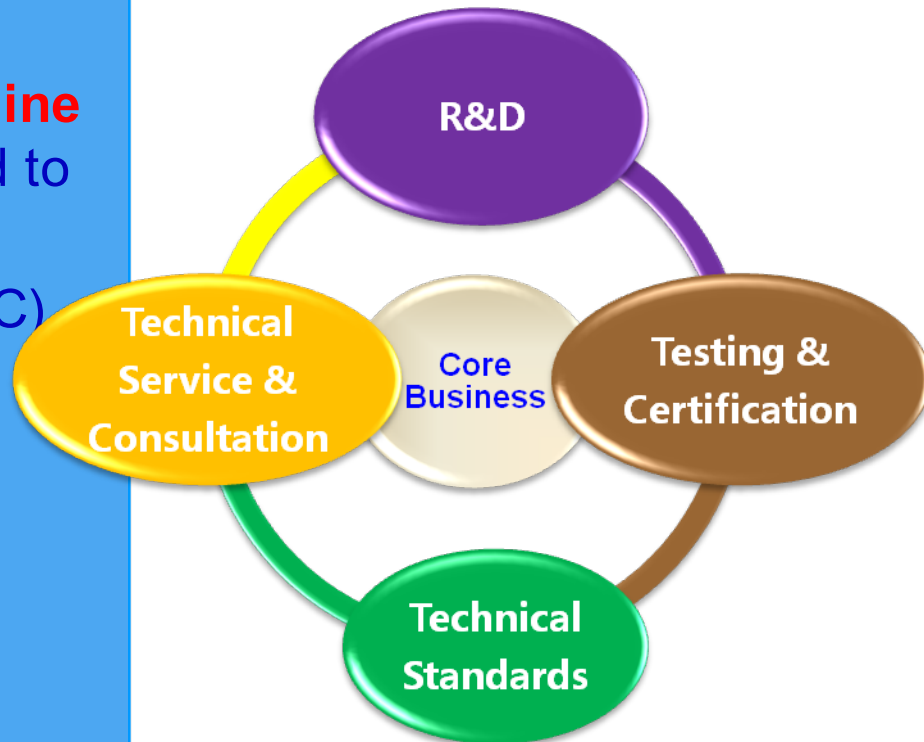
# China Electric Power Research Institute

Established in 1951, China Electric Power Research Institute (CEPRI) is **a comprehensive and multi-discipline research institute** directly affiliated to the

State Grid Corporation of China (SGCC)

- Head Office **Beijing, China**
- Employees: **2,631** (by end 2014)
- Facilities:
  - 45 labs and research centers**  
(7 national labs, 15 labs of SGCC)
  - 4 UHV test bases**
  - 3 R&D Test Centers**

## Functions





# Tianjin University

Tianjin University (TJU), established in 1895 as Peiyang University, is the first university in China. A National Key University directly under the administration of the Ministry of Education of China

- Based at Tianjin, China
- Students: **31,519**
- Faculty and Staffs: 4,553
- Research funds: 2.2BN CNY (Y-2013)



## Introduction: Joseph S. Lopes

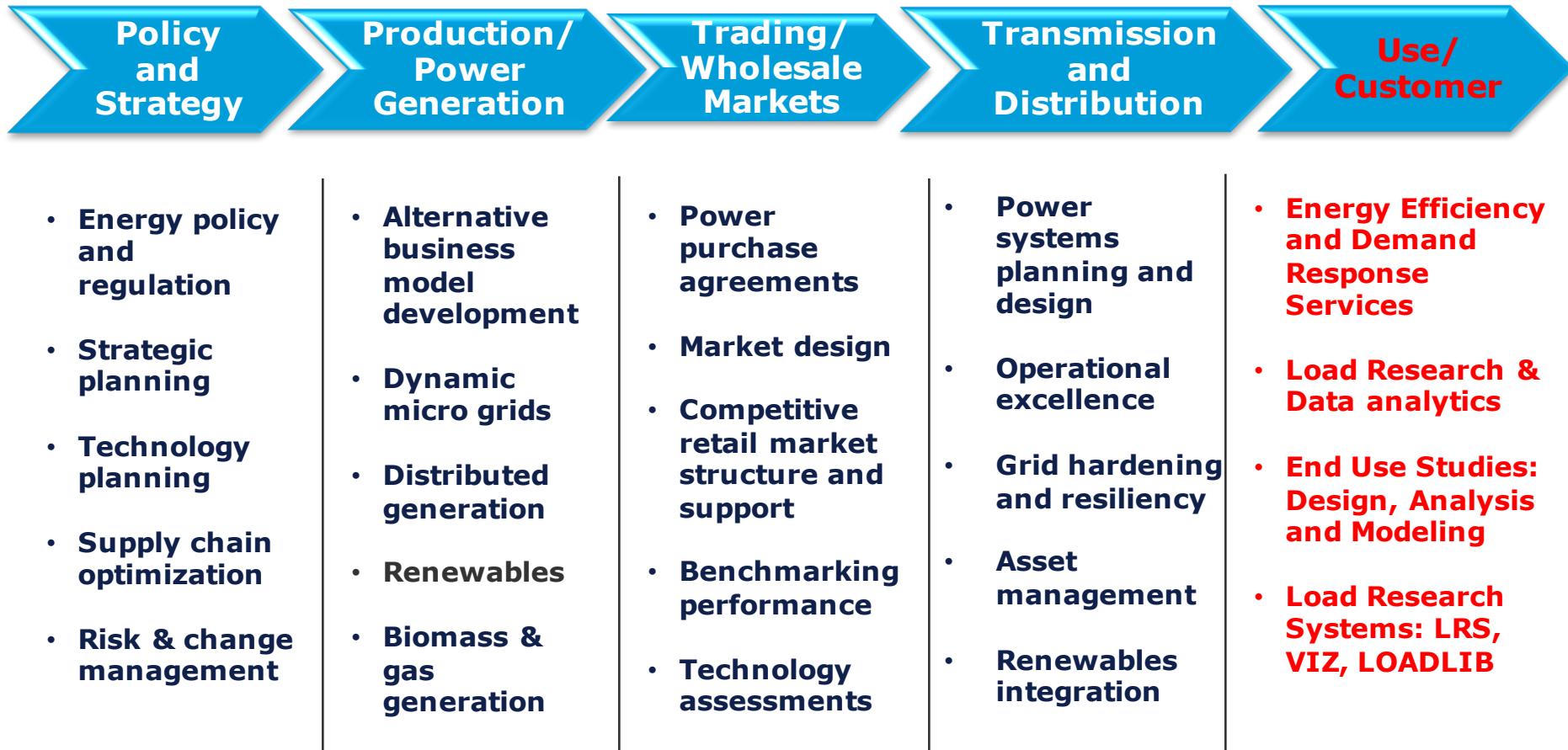
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- **Joe Lopes**, Senior Principal Consultant DNV GL
  - ***Born in Burnaby!***
  - Formerly AEP, Co-founder of Applied Energy Group
  - **Specialize in Load Research, End Use Modeling, Load Libraries**
    - LIPA, Regional Technical Forum (RTF), ISO-NE, NYPA, Dominion
  - **DSM Program Evaluation, Demand Response**
    - TVA, LIPA, NYPA, Austin Energy
  - **DSM Potential Studies and Economic Analysis**
    - BC Hydro, Sask Power, Barbados, Dominion
  - **Thermostat Load Control Program Design, Operations & Evaluation**
    - Con Edison, LIPA, PSE&G, Austin Energy, FPL Energy, Col. Springs
  - **Regulatory Support, Testimony, Cost-of-Service/Rate Design Support**
  - **Technical Assessments, Special Metering/Multifamily Studies**
    - NYSERDA, NYPA, NYCHA





# DNV GL - Services Along the Entire Energy Value Chain

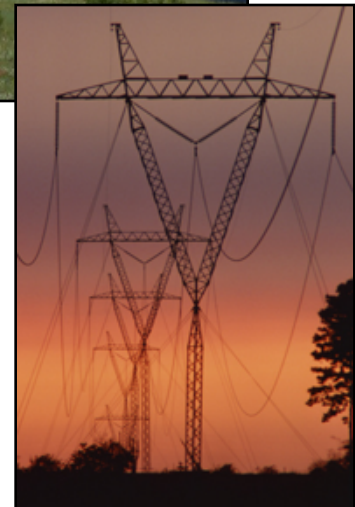
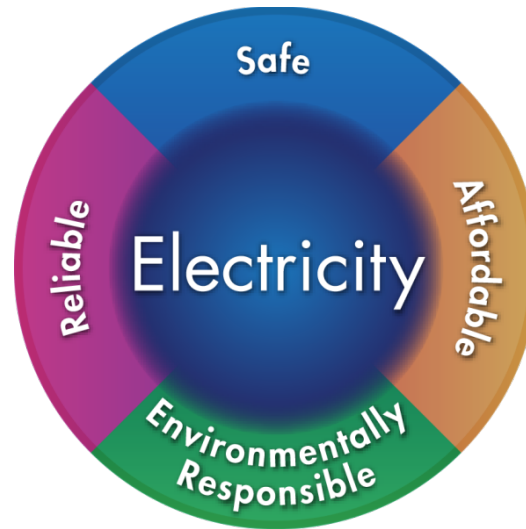


# Christopher J. Holmes - Technical Leader, Principal, Electric Power Research Institute (EPRI)

- Twenty-five years experience in Rates, Planning and EE&DR Program Planning and Evaluation
- Based in Knoxville TN
- Varied experience at:
  - ✓ Salt River Project, Tempe, AZ
  - ✓ Duke Energy in Cincinnati, OH
  - ✓ Aquila, Kansas City MO
  - ✓ Tennessee Valley Authority, Knoxville TN
  - ✓ Currently at EPRI in Knoxville, TN as Project Set Lead for EE&DR Analytics
- Mr. Holmes is a trained economist with an undergraduate degree from the University of Colorado in Boulder, Colorado and Master's degree from Arizona State University in Tempe, Arizona

## About EPRI

- Objective, tax-exempt, collaborative electricity research organization
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- Technology development, integration, demonstration and applications
- Broad technology portfolio ranging from near-term solutions to long-term strategic research



***Together...Shaping the Future of Electricity***

# “Driving Down the Cost of End-Use Load Collection”

## Challenge

“Capturing end-use data is complex, intrusive and expensive to collect

## Current Situation

- New digital technology, new metering technology and new communication technology have combined to drive down the cost of collecting interval data from customers.

## EPRI Focus

Assessing three areas of load data collection technology for cost/accuracy /suitability in applications:

- **Non-Intrusive Load Monitoring Devices (NILM)**
- Conditional Demand Analysis (CDA)
- Low-cost Sensors
- Data Repository (Load Shape Library)

### NILM Use Cases

