

# The ScottMadden ENERGY INDUSTRY UPDATE

NEITHER FISH NOR FOWL

Webinar

April 29, 2016

Volume 16 - Issue 1



# Today's Agenda and Your Presenters

---



**Stuart Pearman**  
Partner and  
Energy Practice Leader

## Welcome and Introduction



**Marc Miller**  
Partner and Public Power  
and Electric Cooperatives  
Practice Leader

## SEPA Texas – Lessons from a Unique Market

- Texas Is Two Distinct Markets
- Competitive Market Is Primarily Focused on Near-Term Economics
- Public Power and Electric Cooperatives Have Led Solar Development
- Examples of Leadership in Solar Development



**John Pang**  
Partner

## SEPA Hawaii – Postcards from the Future!

- Operational and Technical Issues
- Customer and Stakeholder Relations
- Leadership and Managing Change



**Jon Kerner**  
Partner and IT Practice  
Leader

## Cybersecurity and IT/OT Convergence

- Learning from Ukraine: A Cautionary Tale
- IT and OT Have Historically Been Distinct
- Recent Developments Are Challenging These Distinctions
- Key Challenges to Securing Converged IT/OT
- Lessons from Successful Companies



**Greg Litra**  
Partner and Energy, Clean  
Tech, and Sustainability  
Research Leader

## Questions and Answers



**Stuart Pearman**  
**Partner and Energy Practice Leader**

Stuart Pearman is a partner with ScottMadden and leads the firm's energy practice. He has performed more than 190 projects for more than 60 clients. He is also a seasoned practitioner, with experience in both line and staff management roles. Stuart earned a B.A. in psychology from Williams College and an M.B.A. from the University of North Carolina Kenan-Flagler Business School, where he won the Best Industry Analysis Award and graduated at the top of his class. In addition to his full-time work at ScottMadden, Stuart is Professor of the Practice at Kenan-Flagler, teaching consulting and leadership.

**Welcome and Introduction**





**John Pang**  
**Partner**

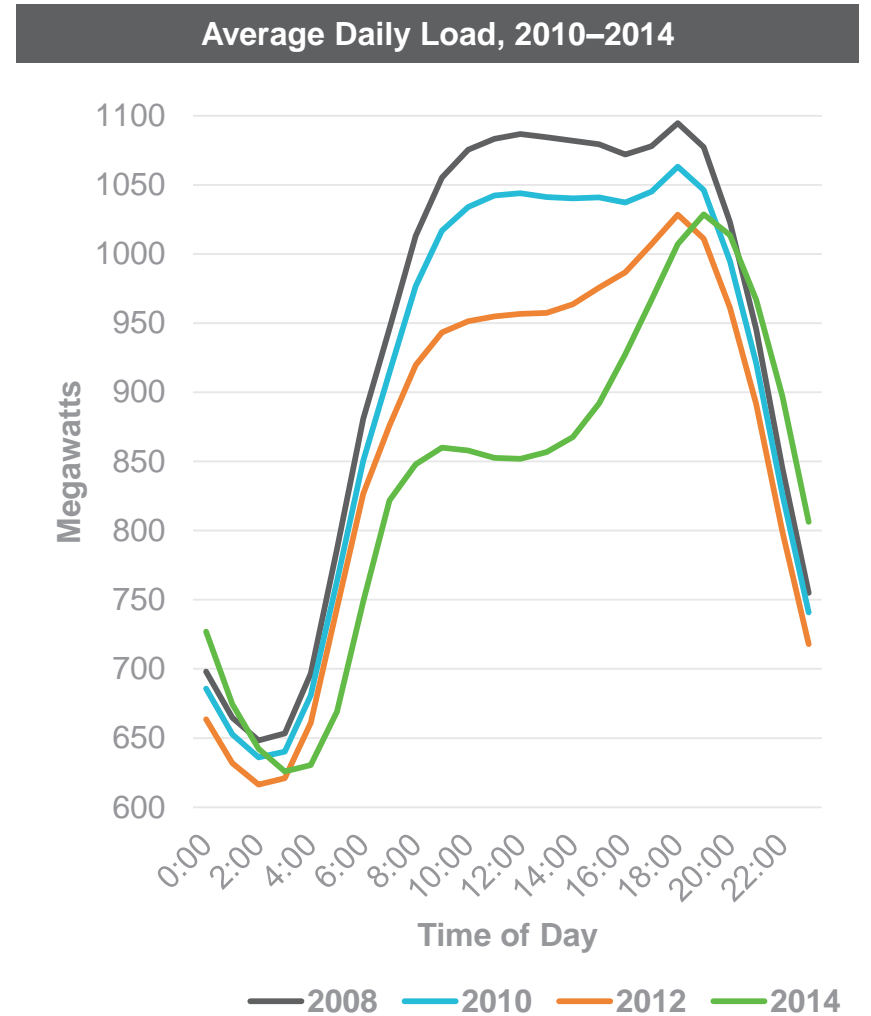
John Pang has more than 20 years of consulting and facilitation experience working in the energy industry. He specializes in strategic planning, process improvement, and change management with a focus on business planning within electric utilities. Prior to joining ScottMadden, John was a consultant and country manager for AsiaWorks Corporate Division in Hong Kong, where he partnered with organizations to create personal growth and development strategies and implement high-impact change management solutions. John has facilitated strategic planning workshops and management development sessions around the world, in 15 countries for more than 40 different multinational companies and utilities. He has published energy industry thought leadership and academic research in international journals dealing with memory and cognition and human performance. John received a B.S. from the University of Guelph, an M.A. in experimental psychology from York University, and an M.B.A. from Duke University.

**SEPA Hawaii – Postcards from the Future!**



# Background

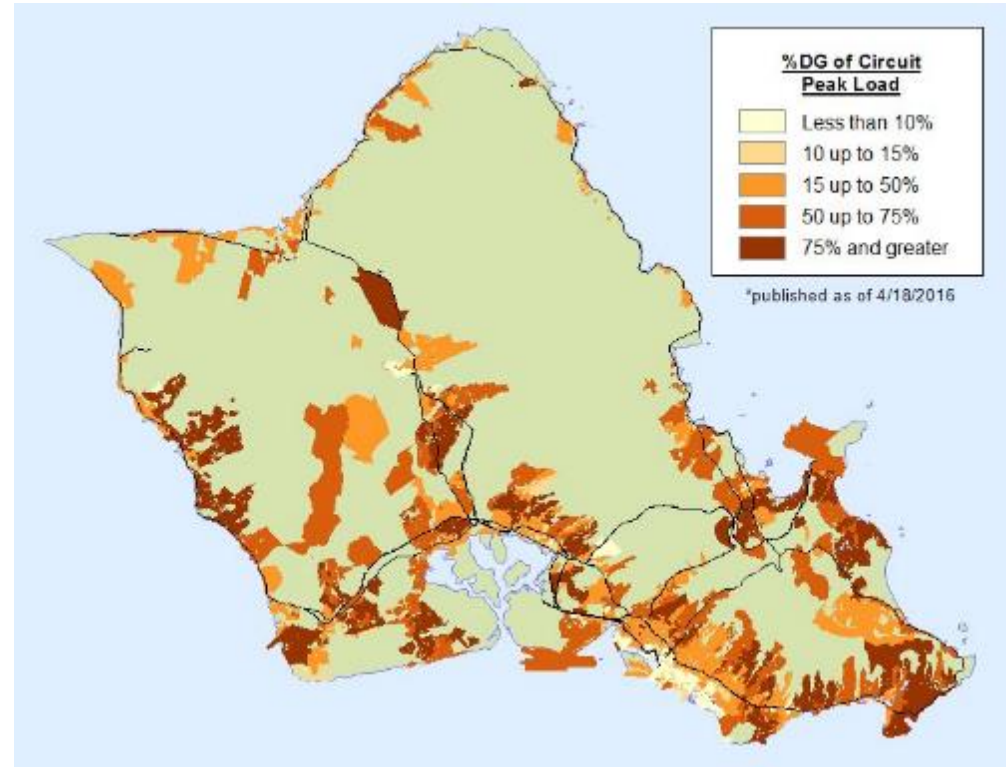
- SEPA and ScottMadden hosted senior executives on fact-finding mission
- Lacking interconnections, each of Hawaii's islands must be energy self-sufficient
- Driven by expensive oil, retail electricity prices average more than 25¢/kWh
- Growth of distributed and renewable energy choices quickly changed the electricity market
- Growth of customer-sited solar continues to reduce average daily load during midday periods



# Operational and Technical Issues

## Notable Observations

- **Operations:** Reverse power flows are now normal on the distribution grid
- **Resiliency:** Grid has not collapsed, but requires more refined system planning, detailed analytics, and new technology (e.g., smart invertors)



## Key Lessons

- Expect that the grid can take more
- Technical issues are challenging but not impossible to solve with the right economics and regulatory environment

# Customer and Stakeholder Relations

---

## Notable Observations

- **Strong Driver:** Lower electricity bills drove customers to distributed solar
- **Incompatible Process:** Slow regulatory and planning processes hampered utility responses, including processing interconnection requests
- **Customer Focus:** Utility responses need to align with customer desires while ensuring system improvements, if needed

## Key Lessons

- Market drivers can easily outpace regulatory and utility-planning cycles
- Do not underestimate customers' off-grid options
- Establish trust by communicating with stakeholders
- Be the enabler of solutions by saying “yes, with...”

# Leadership and Managing Change

---

## Notable Observations

- **Challenge:** Interconnection response rates led to customer and regulatory frustration
- **Path Forward:** Situation required utility to have a focused vision for moving forward
- **Executing:** Utility must have internal alignment before being able to partner with service providers, test new technologies, and respond to customer needs



## Key Lessons

- Anticipate change and get ahead of it before it overwhelms you
- Ensure the organizations speaks with one voice
- Establish checkpoints and milestones. Iterate and improve





**Marc Miller**  
**Partner**

Marc Miller is a partner with ScottMadden and leads the firm's public power and electric cooperatives practice. Marc has more than 15 years of experience helping business leaders become more successful. He has expertise in strategic and business planning, operational improvement, organizational design and staffing, and other management practices across a broad range of functions in several industries, especially energy and related services. Prior to joining ScottMadden, Marc gained extensive experience through various leadership positions in operations, supply chain, sales, and customer service. He earned a bachelor of industrial engineering with highest honor and a master of science in industrial engineering from Georgia Tech, where he was a National Merit Scholar, a Governor's Scholar, and a George Fellow.

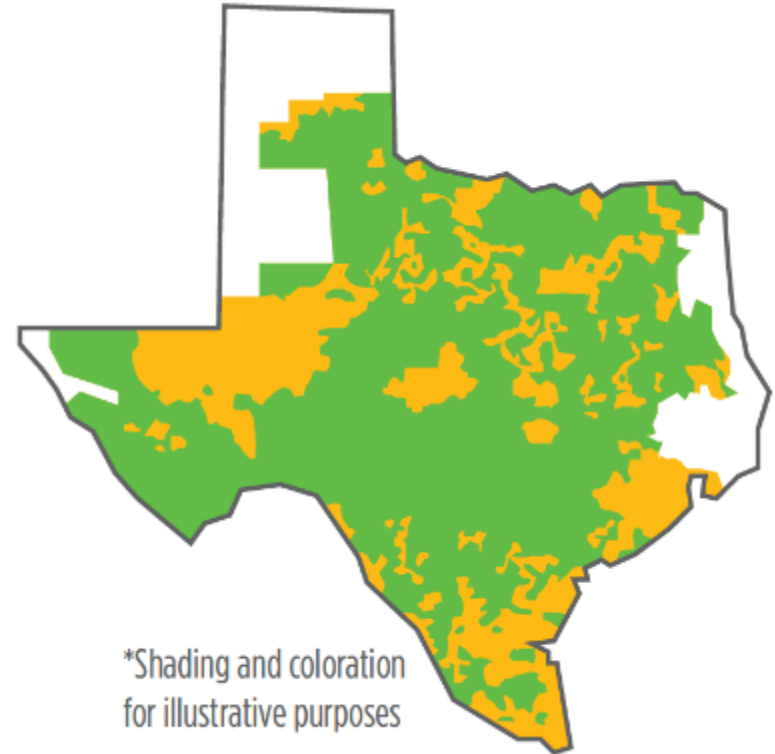
**SEPA Texas – Lessons from a Unique Market**



## Texas Is Two Distinct Markets

- Competitively served retail deregulated market account for 75% of ERCOT load
- Competitive market is served by 110 registered retail electric providers
- Full retail service (provided by municipal and cooperative utilities) market accounts for 25% of ERCOT load
- With 537 MWs of installed solar capacity, Texas ranks 10<sup>th</sup> in cumulative capacity in the United States

Electric Territories by Provider Type



Competitive Retail Area

Municipality Owned Utilities and Electric Co-Ops

# Competitive Market Is Primarily Focused on Near-Term Economics

---

## Notable Observations

- Consumers and retail energy providers are subject to long-term price uncertainty in the competitive retail market
- If the economics of utility-scale solar continue to improve, solar may be able to follow the example and success of Texas wind
- In this scenario, utility-scale solar development would likely occur in the western portion of state where less cloud cover allows 30% to 50% increase in solar production

## Key Lesson

- Ongoing deployment of solar will be subject to its relative competitiveness with other resources

# Public Power and Electric Cooperatives Have Led Solar Development

---

## Notable Observations

- Municipal and cooperative utilities have been successful in part due to a strong connection with their customers combined with the capability to deliver the services those customers want
- The offering of full retail service to customers has allowed municipal and cooperative utilities to emerge as solar innovators in Texas
- Technical and program implementation challenges are very real, but stakeholders have the time and ability to figure them out

## Key Lesson

- Distributed energy resource deployment (e.g., smart inverters and batteries) can offer solutions but are not yet cost effective



## Examples of Leadership In Solar Development

---

Utility	Solar Activity
<b>Austin Energy</b>	<ul style="list-style-type: none"><li>▪ Goal to meet 65% of energy with renewable resources by 2025</li><li>▪ Shifted from net metering to value of solar payment</li><li>▪ Signed multiple utility-scale solar PPAs totaling more than 400 MWs</li><li>▪ Community solar project with storage integration under development</li></ul>
<b>CPS Energy</b>	<ul style="list-style-type: none"><li>▪ Utility pays a host fee to customers to allow developers to install solar on rooftop; developer owns panels and sells power to utility</li><li>▪ “Roofless” solar allows customers to own panels and receive bill credit from utility-scale system</li><li>▪ Solar activity has driven local economic development</li></ul>
<b>Georgetown Utility Systems</b>	<ul style="list-style-type: none"><li>▪ Moving to 100% renewables with storage and active ERCOT scheduling</li><li>▪ Utility will buy double their energy needs through:<ul style="list-style-type: none"><li>– 144 MWs wind PPA; operations began in 2015</li><li>– 150 MWs solar PPA; operational before Jan. 2017</li></ul></li></ul>



**Jon Kerner**  
**Partner**

Jon Kerner leads the information technology practice area at ScottMadden. With more than 15 years as a management consultant and experience as a chief information officer for multibillion-dollar companies, Jon delivers practical solutions and provides both business and technical expertise across a range of corporate responsibilities, including strategic planning, IT services transformation and delivery, and cybersecurity. Jon earned a B.S. in industrial and systems engineering from the Georgia Institute of Technology and received an M.B.A. and an M.S. in computer information systems from Georgia State University.

**Cybersecurity and IT/OT Convergence**





# Learning from Ukraine: A Cautionary Tale

What Happened	On December 23, 2015, hackers caused a six-hour outage affecting more than 225,000 customers across 8 of Ukraine's 24 regions
How It Happened	<ul style="list-style-type: none"><li>▪ Malware was installed to prevent technicians from detecting the attack.</li><li>▪ Breakers were remotely switched to cut power</li><li>▪ Customer-service centers were flooded with calls to prevent customers from raising alerts</li></ul>
Why It's Important	Credited as the first known power outage caused by a cyber attack, targeting operational technology (OT) and information technology (IT) networks

Reinforces the need for utility cybersecurity programs to include both IT and OT



# IT and OT Have Historically Been Distinct

	IT	OT
<b>Purpose</b>	Business transactions, collaboration, decision support	Control of physical processes
<b>Organizations Supported</b>	Corporate users, back office functions, and customer support	Generation, distribution, and transmission lines of business
<b>Asset Types</b>	Commodity, standards based, dynamic	Proprietary, static
<b>Security Priorities</b>	Confidentiality of data	Availability of systems





# Recent Developments Are Challenging These Distinctions

---

- OT systems are moving toward standard and commodity technology platforms (IP networks, windows operating systems)
- New technologies (e.g., Internet of Things, mobility, cloud) are creeping into operating environments
- Real-time energy trading and demand response requirements have forced integration of IT and OT data
- Inefficiencies and talent shortages are forcing companies to relook at how these technologies are managed

# Key Challenges to Securing Converged IT/OT

---

To support these new developments, a converged cybersecurity model is required, but a number of challenges have slowed progress

- **Cultural/political:** Finding common ground between IT and OT organizations has proven difficult
- **Technical:** Even though the technology is converging, there are still differences in the conditions and tolerance
- **Workforce:** The nature of these systems requires knowledge of both current technologies and older, even outdated technologies
- **Security:** Moving OT toward more current technologies introduces security risks – voiding “security through obscurity”

# Lessons From Successful Companies

---

## Secure IT/OT convergence requires a new approach to cybersecurity programs

- Scope and mandate converged security from the top
- Acknowledge and design program for legitimate differences within IT and OT environments: a one-size-fits-all solution will not work
- Realize that cybersecurity is a journey
- Support efforts with strong governance, and project and change management





## **Greg Litra** **Partner**

Greg Litra is a partner with ScottMadden, with principal expertise in financial, economic and regulatory analysis, strategic planning, corporate governance, risk management, and transaction support. He specializes in the energy and utilities business sectors. He also leads the firm's energy, clean tech, and sustainability research activities and spearheads publication of ScottMadden's Energy Industry Update. Prior to joining the firm in 1995, Greg was a corporate lawyer and business litigator on Wall Street and in Atlanta. As a lawyer, Greg worked with utilities, investment banks, and other companies in equity and debt offerings, project and secured financings, corporate litigation, and transaction due diligence. Greg earned a J.D. from the University of South Carolina School of Law, where he was editor-in-chief of the South Carolina Law Review, and an M.S. in industrial administration from Carnegie Mellon University. Greg is a Phi Beta Kappa graduate of Wofford College, where he earned a B.A. in economics and philosophy.

## **Questions and Answers**





# Contact Us

## John Pang

Partner

ScottMadden, Inc.  
2626 Glenwood Avenue  
Suite 480  
Raleigh, NC 27608  
[johnpang@scottmadden.com](mailto:johnpang@scottmadden.com)  
O: 919-781-4191



Smart. Focused. Done Right.

## Marc Miller

Partner and Public Power and  
Electric Cooperatives Practice Leader

ScottMadden, Inc.  
3495 Piedmont Road  
Building 10, Suite 805  
Atlanta, GA 30305  
[mdmiller@scottmadden.com](mailto:mdmiller@scottmadden.com)  
O: 404-814-0020



Smart. Focused. Done Right.

## Jon Kerner

Partner and IT Practice Leader

ScottMadden, Inc.  
3495 Piedmont Road  
Building 10, Suite 805  
Atlanta, GA 30305  
[jkerner@scottmadden.com](mailto:jkerner@scottmadden.com)  
O: 404-814-0020



Smart. Focused. Done Right.

## Greg Litra

Partner and Energy, Clean Tech,  
and Sustainability Research Leader

ScottMadden, Inc.  
2626 Glenwood Avenue  
Suite 480  
Raleigh, NC 27608  
[glitra@scottmadden.com](mailto:glitra@scottmadden.com)  
O: 919-781-4191



Smart. Focused. Done Right.

## Stuart Pearman

Partner and  
Energy Practice Leader

ScottMadden, Inc.  
2626 Glenwood Avenue  
Suite 480  
Raleigh, NC 27608  
[spearman@scottmadden.com](mailto:spearman@scottmadden.com)  
O: 919-781-4191



Smart. Focused. Done Right.

See the link below for the latest Energy Industry Update  
<http://www.scottmadden.com/insight/energy-industry-update-volume-16-issue-1>