

# PSPI Committee Combo Meeting

July 25, 2012

Grand Hyatt, San Diego, CA



**ML Consulting Group**

*Business Strategy & Engineering Planning and  
Implementation for Electric Smart Grid*

# Agenda

1. Introduction (10)
2. Work Products from Transmission WG (20)
3. Paper presentation (100)
  - Impact of Wide Spread Adoption of DGs
  - Optimal Sizing Of PV Systems
  - Market-Based Investigation of Large Scale Renewable Energy Integration
  - Performance Analysis of PV Systems
  - Impact of Integrating EVs into Europe Grid
4. Business Meeting (administrative) (10)
5. Business Meeting (Issues discussion, product proposal, selected program) (100)
  - a. Energy Forecasting
  - b. Energy Supply & Renewable Energy Integration
  - c. Modern and Future Distribution System Planning Integrated Intelligent Customer Systems
  - d. Asset Management
6. Adjourn

# PSPI Committee

ML Chan, Chair

Liaison to PSCE  
Comm. – Anil Pahwa

Vice Chair/TCPC  
Anil Pahwa

Secretary  
Fran Li

IEEE Fellows Comm. –  
Ron Chu

Liaison to Wind Power  
Coord. Comm. – Zhao Xu

Liaison to Emerging  
Technologies Coord.  
Comm – Fran Li

Liaison to Energy Policy  
Development Coord.  
Comm. – Anil Pahwa

Liaison to  
Intelligent Grid  
Coordinating  
Comm. – Fran  
Li

**Conventional &  
Renewable  
Energy Supply  
Planning WG**  
Joseph Yan

**Transmission  
System  
Planning WG**  
Mike Henderson

**Modern & Future  
Distribution  
System Planning  
WG**  
Luis Nando Ochoa – Chair  
Robert Saint – Vice Chair

**Integrated  
Intelligent Customer  
System Planning WG**  
Heber Weller

**Energy Forecasting WG**  
Hong Tao – Chair  
Shu Fan – Vice Chair

**Asset Mgmt. WG\***  
Tony McGrail

# Working Group on Energy Forecasting

Chair: Dr. Tao Hong, SAS, USA

Vice Chair: Dr. Shu Fan, Monash University,  
Australia

# Two Panel Sessions in PESGM 2012

- Room Emma AB, Monday, July 23, 2012, 13:00 – 17:00
  - *Load Forecasting Methodologies and Applications in Operations and Planning*
  - 8 speakers
  - Around 60 attendees
- Room Emma A, Thursday, July 26, 2012, 13:00 – 17:00
  - *Demand Response: Analytics, Practice, and Challenges in Smart Grid Environment*
  - 8 speakers
  - How many people will show up on Thursday afternoon?

# Ongoing Projects

- Call For Participants
  - Global Energy Forecasting Competition (GEFCom2012)
  - **60+ teams from 25 countries**
  - Competition starts: *Aug 31, 2012*
- Call For Papers
  - IEEE Trans on Smart Grid, Special Issue on Analytics for Energy Forecasting with Applications to Smart Grid
  - Abstract Due: *Sep 30, 2012*
- Review/tutorial of load forecasting techniques and practices
- Benchmark of load forecasting accuracy

# Proposed Sessions in PESGM2013

- Super session (Tao Hong)
  - Energy forecasting: state of the art
    - Selected entries from GEFCom2012
    - Invited speakers on forecasting practices
    - Invited speakers on system impact due to forecasting errors
- Paper/panel session (Pierre Pinson)
  - Global Energy Forecasting Competition: Wind Forecasting
- Combo session (Shu Fan)
  - Global Energy Forecasting Competition: Load Forecasting



Dr. Tao Hong, SAS Institute, USA

[Tao.Hong@sas.com](mailto:Tao.Hong@sas.com)



# Power System Planning and Implementation Transmission Planning WG

PES General Meeting

July 2012

# Disclaimer

- Properly Presented Information
  - Accurately represents the positions of ISO New England
- Inaccurate Information or Opinions that May Not Fully Agree with ISO New England
  - My private views and are not meant to represent any organization with which I am affiliated

# GM2012

- **Panel session: New Planning Practices Considering Renewable Resource integration and Distributed Energy Resources**
- **Conference room: Emma B**
- **Time: Tuesday, July 24, 2012 08:00-11:00**

Over 75 attendees with a lively discussion!

# Panel Session – GM2013

- For 2013
  - Panelists and topics need to be identified by ????????
  - Abstracts are due by ????????
  - Just power points are required; papers are no longer required.
  - Papers could be submitted, but will be subject to review similar to conference or transaction papers.
  - Want topics that are more mature

# Panel Session – GM2013 - Ideas

- Sending correct price signals to variable resources so that they will invest in right place at the right time accounting for their risk
- Cost allocation for transmission
  - Relative amounts in bills
- Transmission planning to meet public policy goals
  - Compliance with Order 1000
  - Cost allocation for different types of transmission
  - Interregional planning/seams projects
- Interdependency of gas and electric infrastructure
  - Improved Coordination
  - DOE

# Panel Session – GM2013 – Ideas, continued

## Transmission Planning for Policy and Transmission Cost Allocation

- Order 1000 – ISO/RTOs and non-ISO/RTOs
  - Planning for policy
  - Interregional planning
- International practices
  - International best practices for interconnecting renewable resources
- Regulatory issues

# Panel Session – GM2013 – Invitees

- PJM
- MISO
- ISO-NE
  - Check with others, Cal ISO and ERCOT
- SPP
- Invite Regulator, possibly from FERC
- International invitee
- China

# Panel Session – GM2013

## Invited By Climate Change

- Planning for Environmental Retirements and Renewable Integration
  - Contact ISO/RTOs and other participants in PSPI TPWG



# Long Term Goal – 2 to 3 GMs

## Planning Issues – Special Publication

### A Practical Guide to Planning

- The PSPI will work towards a tutorial or special publication on Power System Planning
  - The goal is to have a practical high level publication that will pass practical knowledge of power system planning issues and practical experience on to new planners

# Planning Issues – Special Publication

## A Practical Guide to Planning

- Intro – What is Planning – Jim, Mike, and Sundar
  - Regulated and deregulated planning
  - Open access transmission system
  - Thermal, voltage, stability, reliability, economic, policy
- Background for transmission planning
  - Load Forecast – check with PSPI Energy Forecast WG
    - Gross load forecast
      - Top down versus bottom up approach
    - Energy efficiency load forecast
    - Distribution of loads by bus
    - Load modeling – Roy Boyer

# Planning Issues – Special Publication

## A Practical Guide to Planning

- Planning Issues
  - Siting
  - Right of way
  - UG versus OH
  - Environmental
- Reliability Planning – Yaming Zhu – Siemens PTI Indiana
  - Criteria
    - Normal
    - Extreme contingency
    - Practices – leapfrog lines, double circuit versus single circuit, etc.
  - Thermal studies
  - Voltage studies
  - Stability studies
  - Short circuit studies
  - Accounting for engineering issues
  - Generator interconnection issues
- Economic Planning - Jamal Khudai – ATC
  - Production cost studies
  - Congestion reduction
- Public Policy planning

# Planning Issues – Special Publication

## A Practical Guide to Planning

- Interregional planning
- Special protection , control, and devices
  - HVDC and FACTS
  - Series caps
- Doing assessments and choosing solutions
  - D'Fritrica
  - Cost evaluation, benefits, and comparisons of plans
  - Cost allocation
  - Timing and risks of plans
  - Commonalities of scenarios and planning horizon
  - Robustness of plans
  - Coordination with operations

# Administrative

- Jim to send power system handbook – Jim, Sundar, Mike
- Editing
- Focus on practical planning as a follow-up publication
  - Include some basic practical information
- Mike to write initial outline – by October timeframe
  - General review – 2 weeks
- Follow-up with smaller conference calls based on volunteers
- Send final outline to the group - November/December
- Assign folks to lead and edit/write sections - January
- Group to review product – before GM

# Questions?



Panel Session on  
**Modern and Future  
Distribution System Planning**  
WG part of PSPI

Chair: Dr Luis(Nando) Ochoa  
The University of Manchester, UK

Tuesday, 24<sup>th</sup> July 2012 – San Diego, CA, USA

# (Basic) Structure of the WG

- Chair: Luis(Nando) Ochoa, University of Manchester, UK
- Vice-Chair: Robert Saint, NRECA, USA
- Secretary: Julio Romero Agüero, Quanta Technology, USA
  
- Current active members: USA, Europe



# Activities Recently Proposed

1. Joint TF with CIGRE WG C6.19 «Methods for Active Network Planning »
  - Liaison Prof Fabrizio Pilo, University of Cagliari, Italy
  - CIGRE WG started 2 years ago and will lead to a Technical Brochure by the end of 2012
  - Objective of this joint TF: to insert IEEE expertise and vision to produce a white paper on the topic

# Activities Recently Proposed

2. TF on «Contingency, capacity and security in distribution planning»
  - Loss of critical infrastructure
  - How much to invest to recover after a major contingency?
  - Is N-1 future proof? N-2?!
  - Coordinator: Larry Trussell, SynerGEE Electric, USA

# Activities Recently Proposed

## 3. TF on «Future LV Networks»

- How to properly integrate domestic-scale generation and future loads into the design of LV circuits?
- What new approaches can be used to manage voltages?
- Coordinator: Sahban Alnaser, The University of Manchester, UK

## 4. TF on «Extreme Events»

- Are extreme events becoming more frequent?
- To liaise with Climate Change WG
- Coordinator: Jukka Lassila, LUT, Finland

# Panel Session for GM 2013, Vancouver

- Findings/outcomes from CIGRE WG C6.19 «Methods for Active Network Planning»
  - Prof Fabrizio Pilo, University of Cagliari, Italy
- Network reliability and ICT, co-simulations
  - John McDonald, EDF R&D, France
  - To liaise with corresponding WG if applicable
- Paper from PSACE/PSPI TF on «Distributed Generation Planning and Optimization»
  - Andrew Keane, University College Dublin, Ireland

# Conventional & Renewable Energy Supply Planning WG

# Plan for 2013 GM

- Will have a panel session to address The Value Of Conventional Resources in the Presence of Renewable Resources, a continuation of the session held in GM2012; 5 speakers in a 4-hour session

# Asset Management WG

# Topics Discussed During WG Meeting

- There was much discussion about the individual topics:
  - development of standards
  - cable life management
  - an insurance perspective on transformers
  - managing ageing infrastructure with Markov model analysis
- Attendees came from a variety of backgrounds including consultancy, insurance, utilities and vendors.



# Topics Discussed (cont'd)

- Discussed much about the philosophy and content of asset management as a discipline
- Decided to set up a technical discussion/tutorial with papers and presentations centered on the key questions of asset management
- Also decided to develop a questionnaire and circulate as widely as possible, would provide a 'pulse measurement' of asset management understanding within the IEEE and help identify where more depth is needed in terms of resources and tools.

# Discussion (cont'd)

- Plan to have a panel session of 8 short presentations, each backed by a short technical paper (This format worked well this year.) . This will be in GM2013. A compilation of these papers will constitute the IEEE PES inputs to ISO standard.
- We will liaise with asset specific groups within IEEE PES , including Transformers, Breakers, Cables, Batteries, Substations and Energy Generation Committees.

# Suggested Future Programs for 2012 GM During 2011 GM

| WG   | T&D Show, Orlando, April 2012  | GM2012, San Diego, July 2012  | PSCE , 2013                                   |
|--|--|---|---|
| Energy Supply                                      |  | Panel on Current status of conventional & renewable supply to meet RPS requirements ( ISOs)   |   |
| Distribution WG                                    |  | Panel on Modern & Future Distr. Planning (Ochoa)  |   |
| Energy Forecast WG                                 |  | Panel on Practical Real-World Energy Forecasting (Shu Fan /Tao Hong)  | Panel on CIGRE Equivalent Lives for Asset (?) |
| Transmission WG                                    |  | Panel on Transition for Renewable – Supersession ? (X2 panels)  |   |
| Asset Management WG                                | Panel on Online Condition Monitoring Solutions (?)<br>Panel on Green Design and Lifecycle Carbon Footprint in Asset Management (?)<br>Panel on Dist. System Planning with DER, Renewable, EVs, and DRs (Tao Hong/Jim Cleary) | Panel on Lifecycle Asset Planning (?)<br>Panel on Risk-Based Asset Management Strategy (Dave Miller?)<br>Tutorial on PAS 55 (Tony McGrail?) |   |
| Integrated Intelligent Customer System Planning WG |  |   |   |

# Future Programs Developed in 2012 GM

| WG   | GM2013, Vancouver, July 2013  | T&D Show, Chicago, April 2014 |
|--|---|-------------------------------|
| Energy Forecasting                                 | <ol style="list-style-type: none"> <li>1. Super session (Tao Hong) - Energy forecasting: state of the art by selecting entries from GEFCom2012</li> <li>2. Paper/panel session (Pierre Pinson) - Global Energy Forecasting Competition: Wind Forecasting</li> <li>3. Combo session (Shu Fan) - Global Energy Forecasting Competition: Load Forecasting</li> </ol> |                               |
| Conventional & Renewable Energy Supply Planning    | <ol style="list-style-type: none"> <li>1. Panel Session – Value of Conventional Resources in the Presence of Renewable Resources (Joseph Fan, 4 hours /5 presenters)</li> </ol>   |                               |
| Modern & Future Distribution System Planning WG    | <ol style="list-style-type: none"> <li>1. Panel Session on finding/outcomes from CIGRE WG C6.19 «Methods for Active Network Planning»</li> </ol>  |                               |
| Asset Management WG                                | <ol style="list-style-type: none"> <li>1. A panel session of 8 short presentations on Asset Management, each backed by a short technical paper</li> </ol>   |                               |
| Transmission System WG                             | <ol style="list-style-type: none"> <li>1. Panel Session – Order 1000 Status and Implementation Strategy (2 half day panel sessions); ISOs, Regulators and international perspectives)</li> <li>2. Panel Session – Transmission Planning &amp; Plant Retirement (Joint with Climate Change WG)</li> </ol>  |                               |
| Integrated Intelligent Customer System Planning WG | <ol style="list-style-type: none"> <li>1. Combo Meeting with focus on dispatch of DR/DER resources.</li> </ol>  |                               |