

SMART GRID

Name of the Event	: National Workshop on Smart and Green Technologies for Sustainable Energy
Theme of the Event	: This Program is to provide a solutions for smart and green technologies for sustainable energy
Event coordinator	: Dr. S. V. N. Lalitha
Date of Event	: 16-10-2017
Venue	: Peacock Hall
Timings	: 9 am - 5 pm

Report:

Outline:

- Introduction
- Global Issues of Concern
- U. S. Situation
- Challenges in EPES RD&D
- New and Innovative Technologies
- Challenges in EPES Education
- EPES Curriculum and Recommendations
- My Vision, Predictions and Dreams

Global Issues of Concern:

The real world is full of uncertainties Many needs of the society geographically are imbalanced energy demand and supply imbalance will continue to exist Global population will increase by 25% to 30% to about 400 million in the US and to 10 billion in the world in next 50 years The demand for power and energy will increase correspondingly. After air and water, energy is the next important need of the society electric power/energy is no exception how do we achieve balance among the many conflicts that we face? Ecology and environment protection is essential – Example: Climate change seek sustainable resources without sacrificing air and water quality.

Part 1: Predictions for EPES Research, Design and Development:

Electric energy is the backbone of our survival EPES have become larger and more complex in the last fifty years society demands higher standards of living How do we meet the needs in the wake of increased demand and environmental concerns, while assuring higher reliability, resiliency, security, sustainability and at reduced costs? Innovate and create new ideas and solutions.

“Interdisciplinary materials science” a key to progress” according to former Sandia National Laboratories executive Julia M. Phillips

Need for New and Innovative Technologies :

Need new materials for advancing technologies – Alternate energy resources – Sensors and monitoring systems – Powerful and refined communications equipment – Highly advanced computing equipment and paradigms – Advanced power electronics of higher ratings – Advanced protection equipment – Advanced conductors and insulators – Advanced data acquisition, visualization, analytics and simulation modeling.

New Energy Sources

Cleaner coal: Will demand reduce natural Gas: Abundant supply nuclear: Tremendous RD&D progress made Solar: Will play a dominant role with storage wind: Has an important role to play energy storage: This is critical for solar and wind to continue to grow. Need new discoveries in materials science need catalysts to convert feedstocks into fuels need to improve ways to convert waste into energy need new architectures for better solar cells. Integration of power and IT infrastructures Composite poles and conductors Massively deployed sensors for automation Vacuum Fault Interrupters (VFI) Remotely controlled Automatic Reclosers (RAR) and Sectionalizes (RCS) Intelligent Electronic Devices (IED's) Fault Current Limiters (FCL's): solid-state and superconducting) Advanced Metering Infrastructure (AMI). Electromagnetic Voltage Transformers (VTs) and Current Transformers (CTs) - classical – Metering and protection classes optical VTs and CTs temperature sensors Gas sensors pressure sensors.

