Demonstration I: <u>Advanced Smart Meter Infrastructure</u>

The smart metering solution can help enhance operational awareness throughout the energy value chain, providing significant operational and planning benefits.

- Increase workforce productivity and safety by automating tasks and limiting the amount of onsite work required.

- Identify and locate outages quickly to speed response times.

- Generate accurate load profiles for better resource planning.

- Motivate customers to limit resource usage by implementing load controls.

- Enable time-based customer billing to help reduce peak demand, reward customers for off-peak use and provide incentives to reduce peak consumption.

- Enable zero touch service—facilitate activation of control functions (curtailment, connect, disconnect) remotely.

Demonstration II: <u>Intelligent Plant Asset Management</u>

An integrated approach driving information management and collaboration over the life cycle of Assets : Design, Build, Operate and Maintain

- Integration of Product Life cycle Management processes with Enterprise Asset Management processes

- Plant operation & maintenance

- Integration of asset sensor / SCADA information to enterprise systems and control systems

- Automated business workflows

Demonstration III: <u>Smart Grid Power Balancing System</u>

Knowing customer phase is important for a number of different reasons, most important of which is load power balancing - the loads on the three phases of a transformer must be balanced for grids to be efficient

- IBM Research's First of Kind project has developed a novel analytics solution for household phase identification wherein the underlying phase assignment is retrieved using a time series of discrete power-flow measurements taken at the households and at the distributing transformer.

- The system accepts raw power measurements collected from the transformer and household meters, which are processed using heuristics and clean-up procedures before being analysed by a modelling engine. The research project has positively demonstrated that power-flow measurements collected from homes and the distributing transformer can be used to evaluate household phase.

Demonstration IV: <u>Grid Performance Analytics Solution</u>

Helps Power Generation, Transmission & Distribution (T&D) Companies to monitor various Operation & Maintenance (O&M) KPI's and metrics such as Line Interruptions, % Availability, SAIDI/SAIFI, Equipment Failures on a regular basis.

- Business Intelligence Reporting & Analysis solution will make operational reporting and analysis more flexible and faster
- Web based Reporting and Analysis using intuitive dashboards for anytime, anywhere access
- Rich reporting features such as drill-down/drill-through, maps, traffic highlighting, filtering, charts etc. for trend analysis, planning, informed decision making etc.
- Role-based reporting to present only relevant information to relevant user
- Automatic Alerting mechanism based on pre-defined events for immediate attention

Demonstration V: <u>Securing Smart Grid</u>

An IBM security framework to manage risk across all grid domains

- People and Identity: How do you establish and federate trust across your organization? Manage users and identities, especially as your business becomes more global?

- Data and Information: How do you protect data across an increasingly complex enterprise that includes wireless technologies, virtual assets and partner networks?

- Applications and Processes: Web applications are the number of target of hackers. How do you automate and secure processes for rolling out applications? Prevent errors during development? Identify and fix defects?

- Infrastructure (network, servers, end points): How do you guard the entry and egress points to your infrastructure? The vulnerable links between the physical and digital system?

- Physical Infrastructure: How do you protect your physical plants and secure access?

Smarter power for a smarter planet

Demonstration VI:

PhasorNet: Synchrophasor based Real time Wide Area Monitoring and Control of Electric Grid

- Stream computing based voltage stability monitor scheme analyzes large volume of Synchrophasor data on fly and calculates real time voltage stability index
- Real time voltage stability index increases operator's knowledge of system voltage stability margins
- It helps to determine optimal remedial actions during normal operation as well as during contingency scenarios
- If proper controls are taken quickly, significantly reduce the risk of blackouts caused by voltage instabilities

For Further Details on Above Contact:

Sainath Bandhakavi
Solution Architect, Energy & Utilities, Communications Sector, IBM
E-mail: sainath.b@in.ibm.com
IBM Energy & Utilities: www.ibm.com/grid/