



# Integrated Distribution Management System in Alabama

Research & Technology  
Management

Joe Schatz

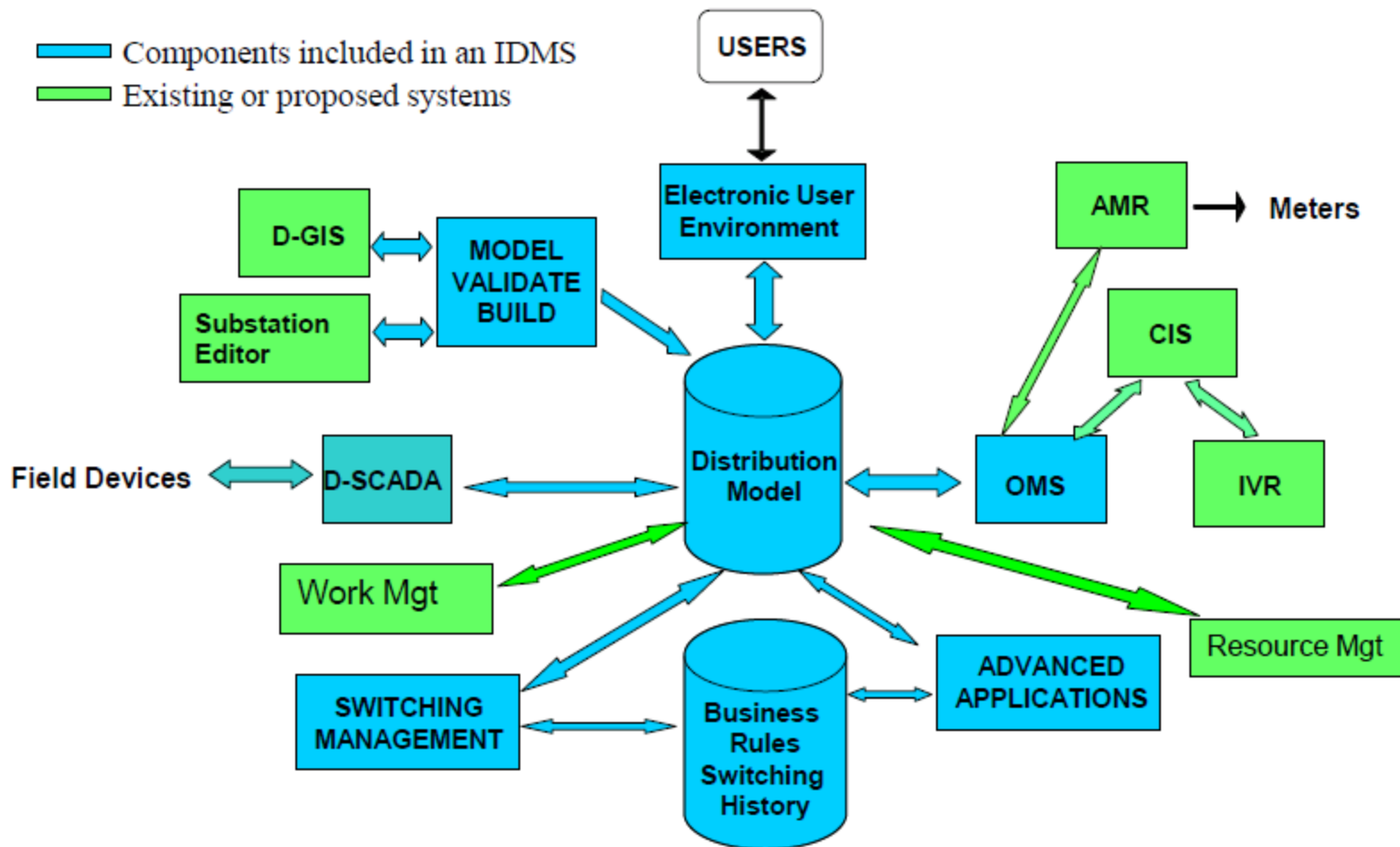


# Integrated Distribution Management System

A photograph of a modern glass-fronted building with a sign that reads "SOUTHERN COMPANY" on the top right corner. The building is partially obscured by the red header bar.

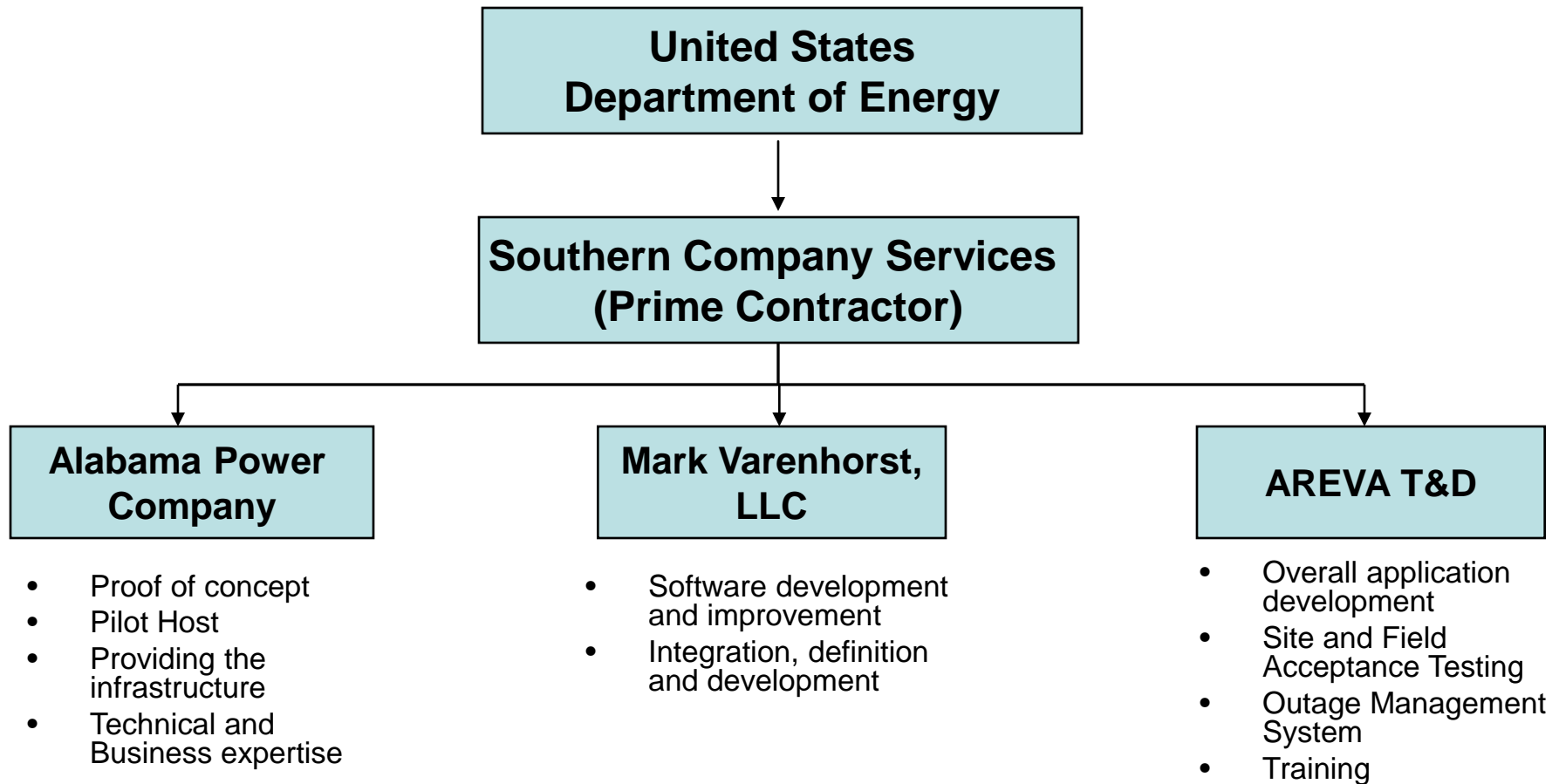
- Develop and demonstrate the principle concepts required for operating the next generation distribution system through implementation of IDMS
- IDMS will provide a seamless integration of distribution mission critical applications to increase the efficiency and operational intelligence of the system operator
- A single user interface for SCADA, Outage Management, Distribution System State & Switching Info and Advanced Applications

# IDMS facilitates Smart Grid



The IDMS Will Provide a Seamless Integration of Distribution Mission Critical Applications Required in the Operations Arena to Increase the Efficiency and Operational Intelligence of the System Operator

# Project Management



# Project Management Structure



- Executive Sponsor
- Executive Advisory Committee
- System Steering Committee
- Overall Project Sponsor and PI
- Project Manager
- System Team Leads
- Subject Matter Experts

# Project Management Role



- **Project Planning**

- Lead the project teams to develop project planning documents
- Lead the project teams to develop clear, complete project scope statements in project charters/ definition documents
- Lead the project teams to build project schedules that identify the critical path
- Adjust scope, time and cost dimensions to meet project constraints
- Document and distribute the project plan, including schedule.

- **Project Control/Analysis**

- Maintain project plan, including schedule
- Collect and analyze project information to determine where the project stands and takes corrective action to eliminate negative deviations from the plan
- Maintain the inter-dependencies of project milestones across projects
- Ensure that project standards are followed at all times
- Provide schedule reports to program manager as define in the communication plan
- Provide status updates of project to appropriate management as outlined in the communication plan
- Documentation planning, collection, distribution, reporting and storage of project information
- Maintenance of project web site

# Project Management Role



- **Budget**
  - Manage costs (in particular monitor for variances and appropriate charges)
  - Provide monthly budget updates sponsor
- **Risk/Issue Management**
  - Lead project teams to identify, analyze, respond to and mitigate risks over the course of the project.
  - Ensure overall project issues and risks are managed.

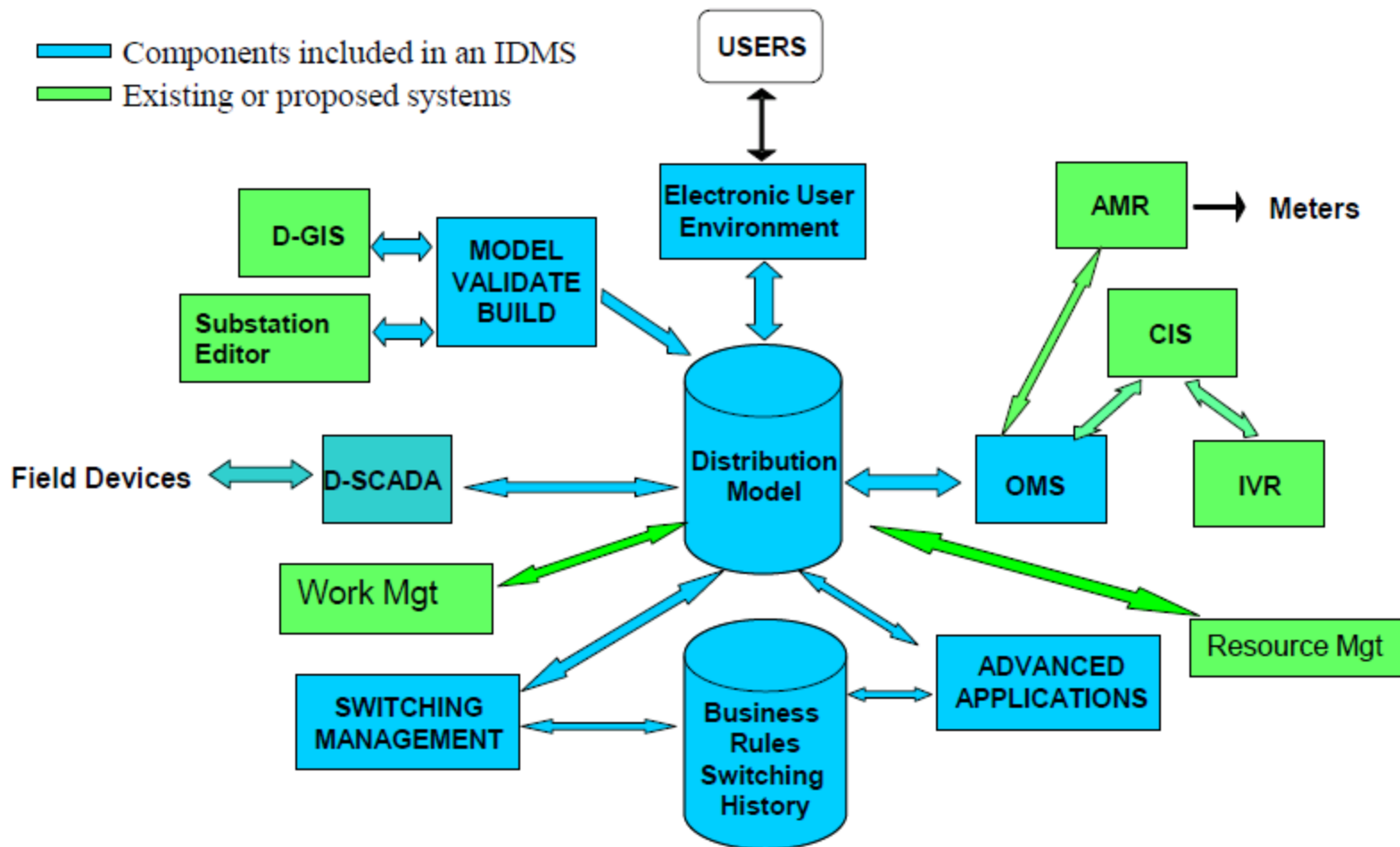
# Project Progression



- **Initial IDMS Project Phase 1**
  - Develop proof of concept to demonstrate the common look and feel of the End User Environment and emulate production-like system functionality and capabilities
  - Completed and Final Report Submitted
- **Fully Developed & Deployed IDMS in Alabama**
  - Build on Phase 1 Prototypes to document comprehensive application requirements for final IDMS product.
  - Prioritize Development plan and complete interface design.
  - Delivered “Production Candidate Release” at various intervals for detailed analysis and evaluations.
  - Internal interface development of BizTalk with ARMS, IVR, CSS.
  - Factory and Site Acceptance Testing
  - Deployment of IDMS to all Distribution Operation Centers and End Users



# IDMS facilitates Smart Grid



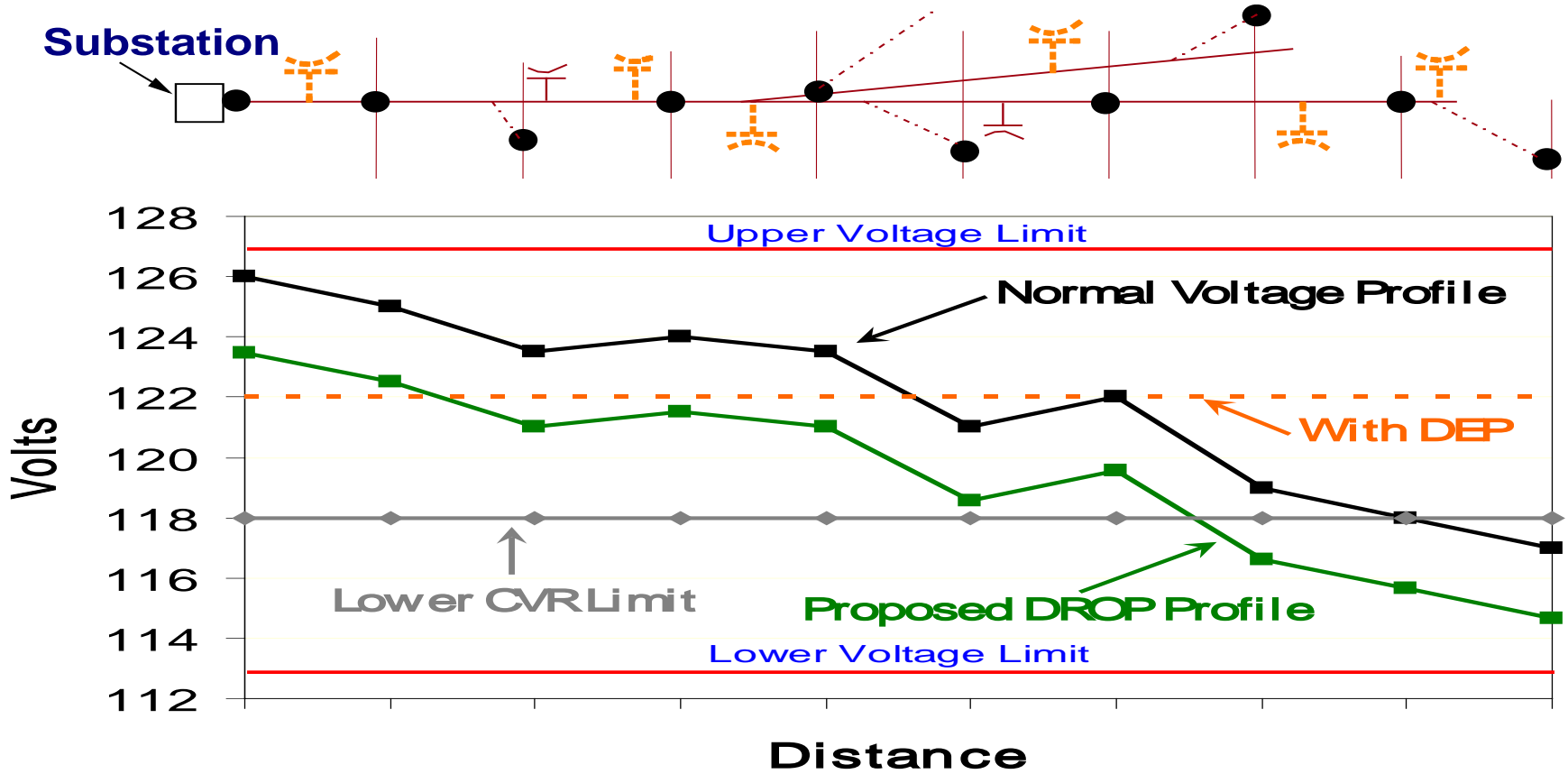
The IDMS Will Provide a Seamless Integration of Distribution Mission Critical Applications Required in the Operations Arena to Increase the Efficiency and Operational Intelligence of the System Operator

# Advanced IDMS Applications



- Fault Isolation and System Restoration
- Oscillography Based Fault Location
- Power Flow / Short Circuit / Coordination Analysis
- Contingency Analysis
- Distribution Operator Training Simulator
- Distribution Energy Efficiency Program

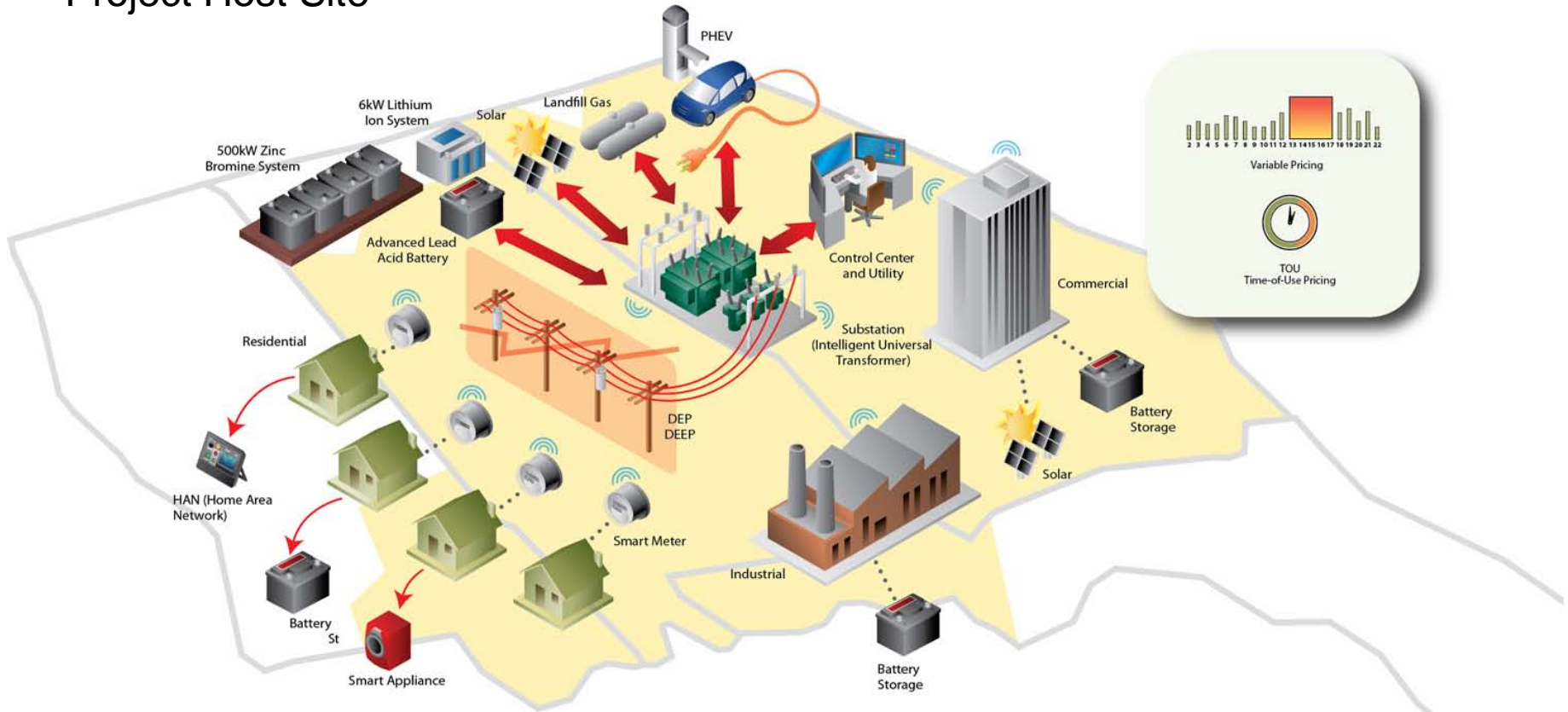
# Distribution Energy Efficiency Program



# Technology Transfer



## EPRI Smart Grid Demonstration Project Host Site



# Technology Transfer –

## Renewable Energy Demonstration



### PV panels installed on Alabama Power rooftop

- 4 different arrays (1.1 kW each)
- Side-by-side performance comparison
- 120V AC modules using micro-inverters on each panel
- Increased understanding of PV operations in southeast climate



EPR | ELECTRIC POWER RESEARCH INSTITUTE

Panel Type (Silicon)	Panel Cost June '09 (\$/W)	Panel Cost May '10 (\$/W)
Polycrystalline	\$ 3.54	\$ 2.42
Monocrystalline	\$ 3.50	\$ 2.74
Thin film (flexible)	\$ 4.22	\$ 3.54
Heterojunction with intrinsic thin layer	\$ 4.60	\$ 4.46

as purchased → today →

© 2010 Electric Power Research Institute, Inc. All rights reserved.

2

- Install 50 single-module, utility-connected photovoltaic (PV) sites in Alabama
- Monitor each ac module's output and sunlight input at 1- to 5-sec intervals for 18 months
- Generate datasets to feed into detailed distribution system circuit models
- Study the impacts of bringing high penetration of PV onto the distribution system

### Data acquisition monitors ac & dc electricity, sunlight, temperature for each array



- At this site micro-inverters on each PV panel will track individual max power point output

99 total data points recorded every minute

EPR | ELECTRIC POWER RESEARCH INSTITUTE

✓ First hand knowledge of installation issues and system impacts of Distributed Solar PV

# Technology Transfer – Energy Storage Demonstration

SOUTHERN  
COMPANY

- Installing 10 GreenSmith Li-Ion battery storage systems rated 6kW and 24kWh each



✓ Energy Storage will add a completely new dimension to power delivery operations

# Questions?

