“Distribution Grid of the Future”
Distribution Vision 2010

Reclaiming the Distribution Business Unit

June 15, 2005
IEEE Power Meeting – San Francisco

Mark McGranaghan – EPRI Solutions
mmcgranaghan@eprisolutions.com
(for Bob Huber - Distribution Vision 2010, LLC)
This presentation is being made on behalf of the DV2010 group and is based on a presentation made by Bob Huber to the EPRI ADA Advisors Group in Miami, FL in September 2004.
Issues for the Power Distribution System Today

- Bumping the limits of reliability
- Engineers asked to drive the system harder – resulting in reduced bridging capacity

- Customers expect greater reliability
- Reactive Mode, wait for customer to call
- Insufficient information on status of system outside of the substation
- Lack of fault location information
## Reliability Analysis for Delivery System

<table>
<thead>
<tr>
<th></th>
<th>Outage %</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>&lt; 1/2 %</td>
<td>3%</td>
</tr>
<tr>
<td>Substation</td>
<td>&lt; 1/2 %</td>
<td>8%</td>
</tr>
<tr>
<td>Primary Voltage Systems</td>
<td>47 %</td>
<td>83%</td>
</tr>
<tr>
<td>Secondary Voltage Systems</td>
<td>52 %</td>
<td>6%</td>
</tr>
</tbody>
</table>
“Initial Plateau”
- Improved recloser and recloser control system
- Developed the POD system
- Improved Communication systems
- Developed a Local Area Controller
- Developed a Wide Area Controller
- System made of a combination of open loops, closed loops and primary networks
- Elimination of Distribution Dispatcher as first response
- Move from a reactive mode to a PROACTIVE MODE
The addition of automation for remote control of line devices allows the Distribution system to be partitioned into Automated Control Areas called

**Premium Operating Districts**
4 Tier Distributed Logic

- Tier 1: Autonomous Protection
- Tier 2: Distributed Automation Logic
- Tier 3: Local Area Control - Substation
- Tier 4: Wide Area Control - Region

1 Patent applied for December 2002
Consortium Objectives

- Define a Universal need
- Support Cooperative Development
- Provide necessary R & D funding
- Develop new Applications and Guidelines
- Develop Safe Operating Procedures
- Provide Pilot Projects
- Provide Pilot Project validation
DV2010 technologies will...  

- Move the power distribution industry “REactive” ⇒ “PROactive”  
- ...become the norm for utilities by year 2010.
The Next Big Thing....

System Optimization

- Automation assisted operations
- Reduced Losses
- Maximize Asset Utilization
- Integrated Outage Management Analysis
- Dynamic Voltage Control
- Distributed Generation Integration
JOIN US

Let’s Change the Future Together