

# Smart Grid

SmartMeter™ Technology Advisory Panel

**Kevin Dasso**

Smart Grid & Technology Integration

November 3, 2011

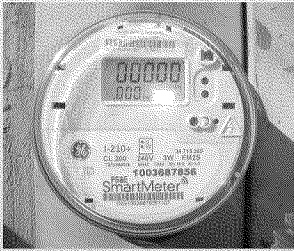




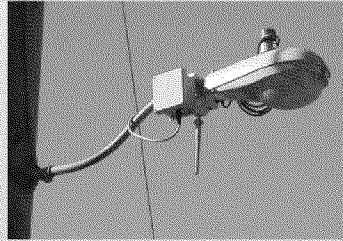
# A Smart Grid

Overlay with intelligence and automation

**Sense**



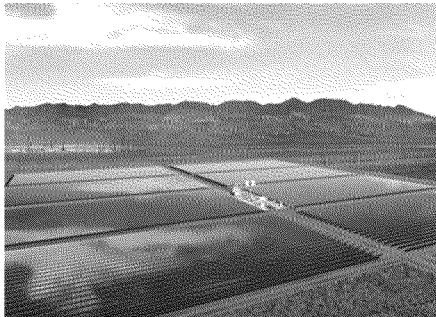
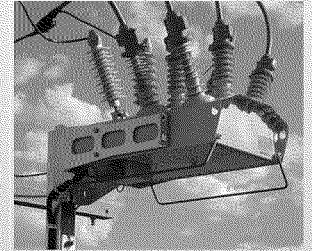
**Communicate**



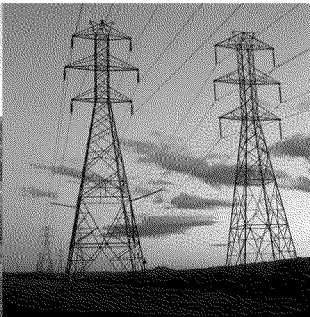
**Compute**



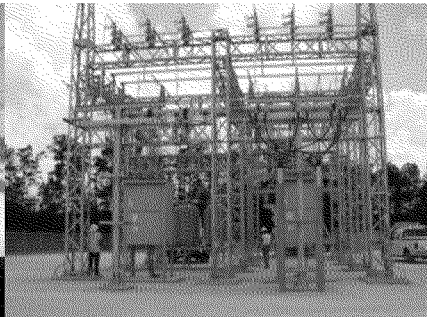
**Control**



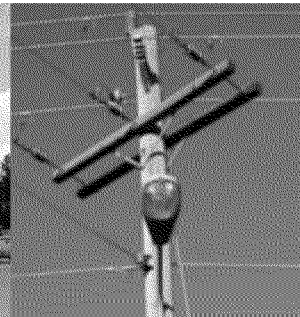
**Power  
Plants**



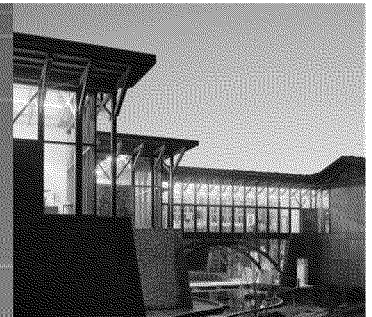
**Transmission  
Networks**



**Substations**



**Distribution  
Networks**



**Consumers**

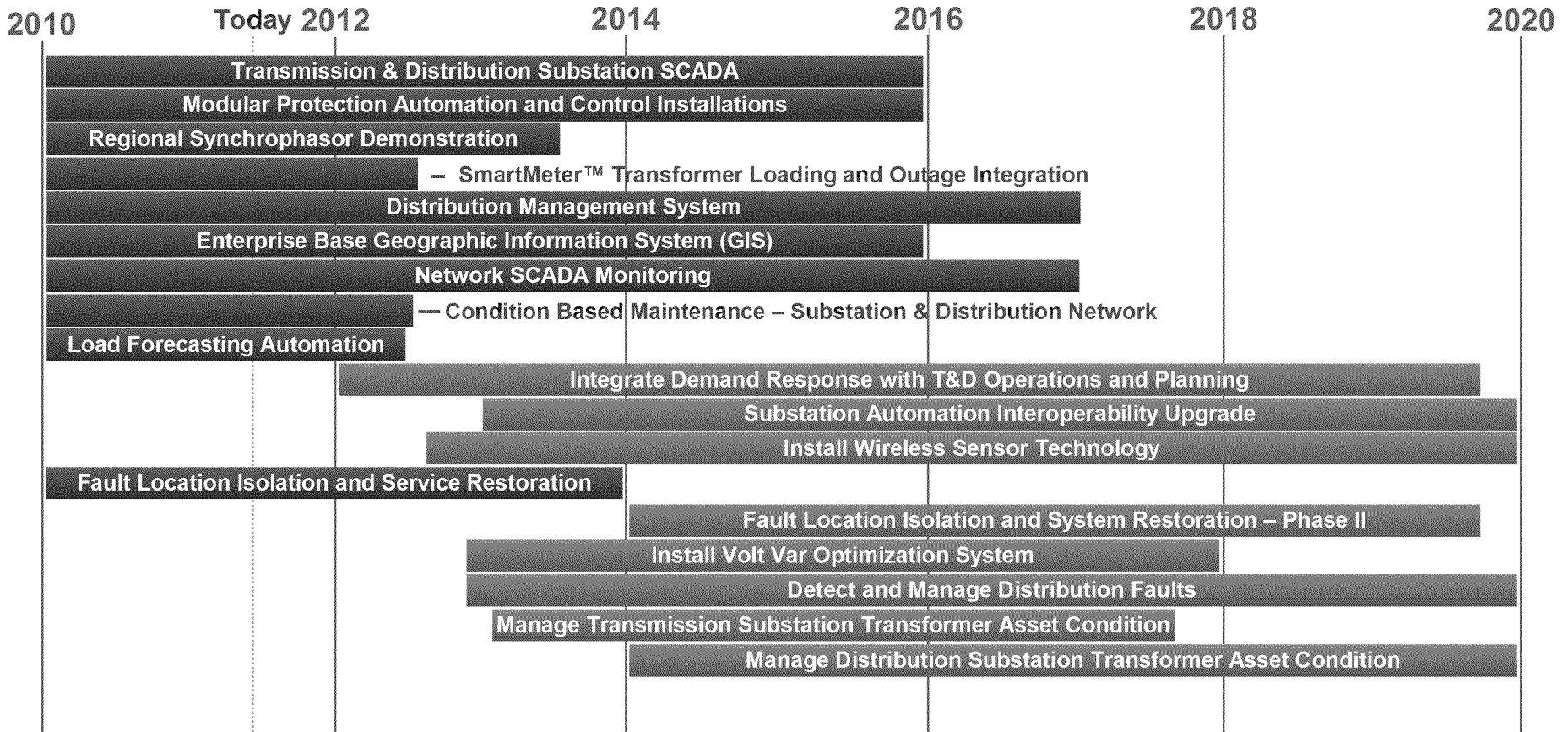


# Smart Grid Roadmap – Smart Utility

## Smart Grid Roadmap – Smart Utility

### Key

- Baseline (in-flight) project
- Roadmap (future) project



Note: All Roadmap projects will follow a technology evaluation approach prior to full production deployment.

# Implementation Approach



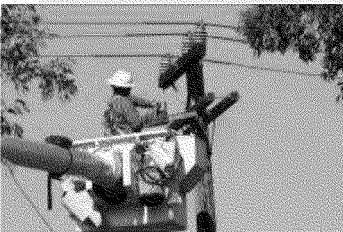
## Standards definition

- Shape and validate the standards that will underlie future smart-grid implementations



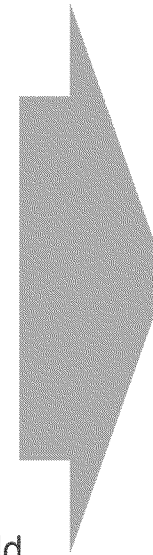
## Testing

- Prototyping and testing of smart-grid technologies before piloting
- Accelerate technology development and ensures standards compliance early on
- Develop preliminary customer communications to support pilots



## Controlled Pilots

- Implement tested technologies in a real-world but controlled setting to demonstrate value
- Work with customers to prepare for the new technologies and services



**PG&E Service Area in Northern & Central California**



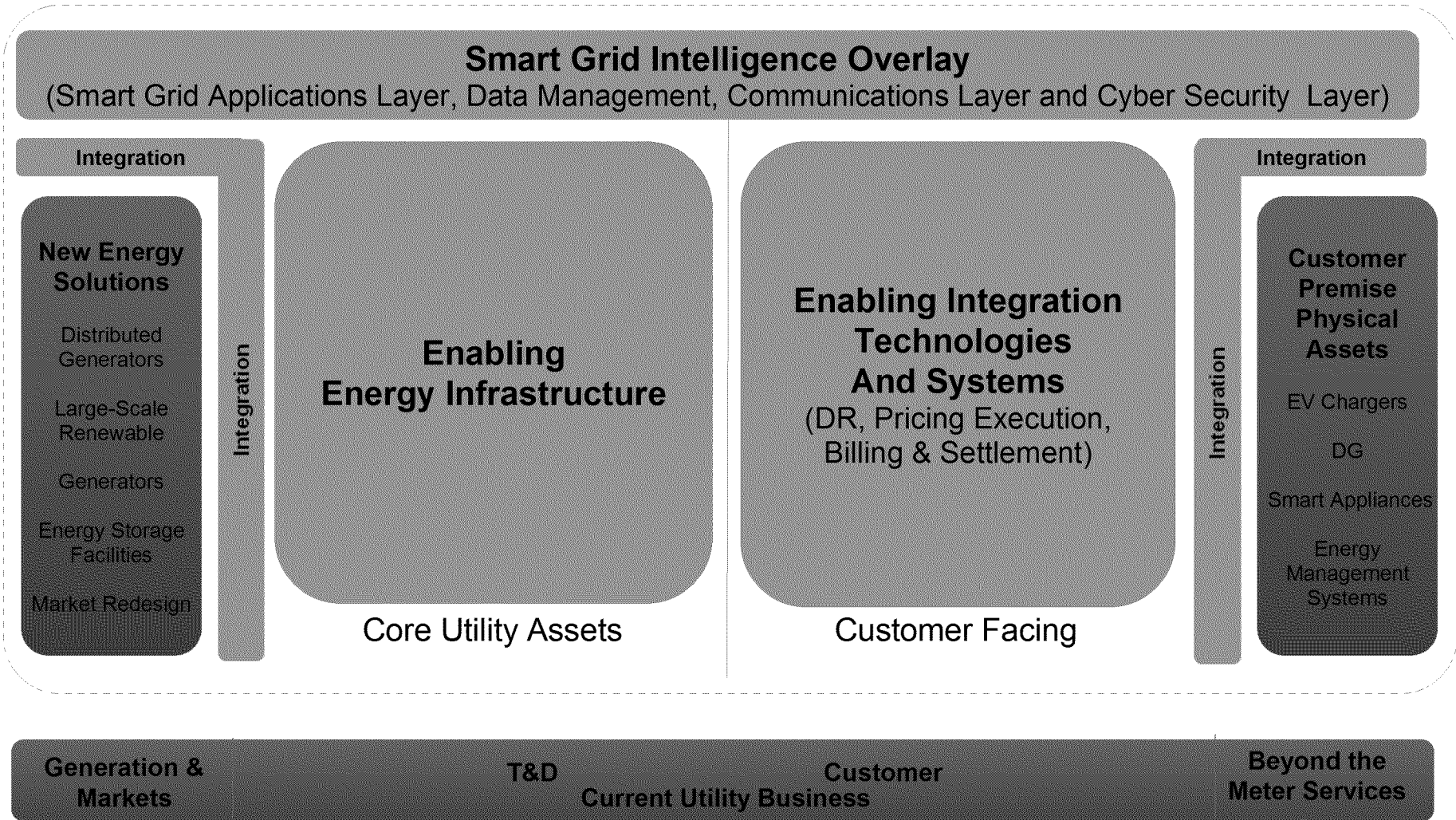
**Targeted deployment**

- Extend pilots to targeted roll-outs based on benefits
- Insights used to feed the next cycle of technology deployment



# Smart Grid Definition

## Industry Definition of Smart Grid



PG&E's Focus Areas



# Transformer Loading

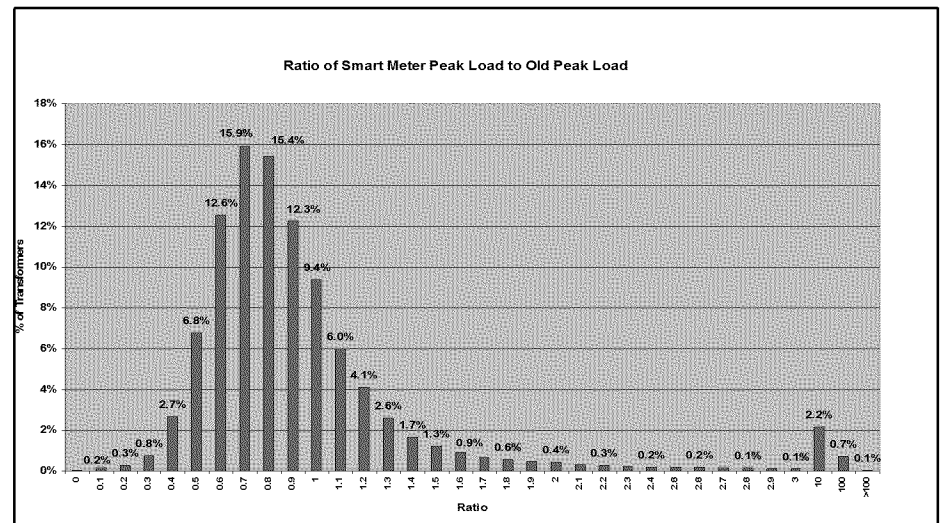
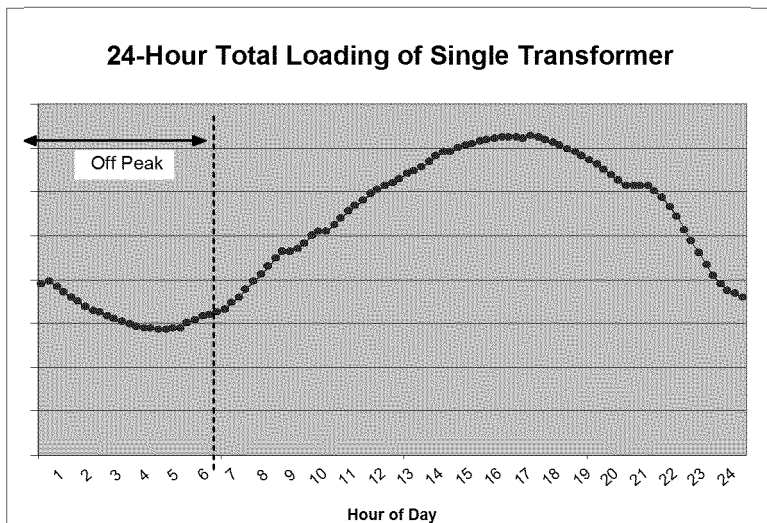


## Before SmartMeter™

- Single monthly kilowatt-hour readings for all customers on transformer were added together
- Mathematical model to estimate demand on the transformer
- Compared estimated demand to transformer capacity

## With SmartMeter™

- Hourly kilowatt-hour readings for each customer (average demand over the last hour) are added together
- Compares demand to transformer capacity

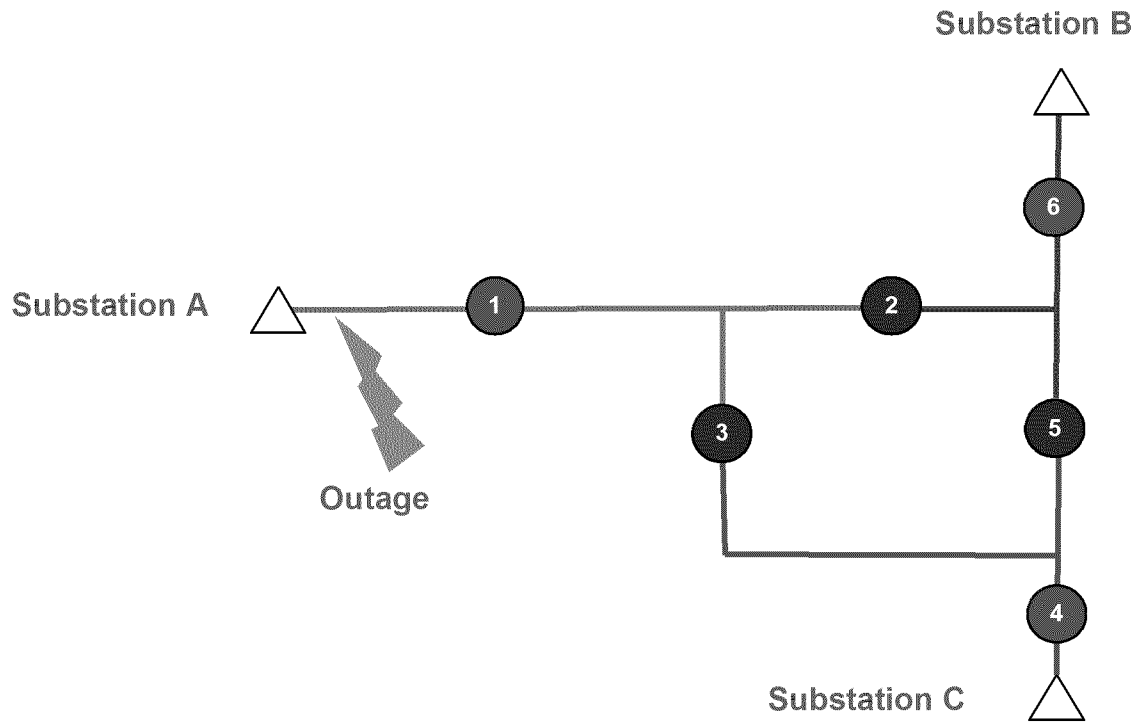




# Distribution System Automation

## Distribution System Automation Requirements

- System must be designed to isolate faulted line sections and restore a significant amount of affected customers **within five minutes of outage**
- Automate the entire circuit's mainline protection zone utilizing "self-healing" fault location, isolation, and service restoration schemes.





# Questions?

