Smart Grid

November 2011
Comisión Federal de Electricidad (CFE)

- Single operator of electricity service in Mexico.
- Created and owned by the Mexican government
- Vertically integrated
- 34.9 million customers
- 97.6% coverage (100+ million people)
- 187 generating plants
- 52,905 MW of installed capacity
- 22.68% of installed capacity from Independent Power Producers
- 775,000 km of transmission and distribution lines nation-wide
- Substation transformation capacity of 161,000 MVA
- 60,000 MVA capacity on distribution substations
- 93,000 active personnel
Secretaría de Energía (SENER) is responsible for the development and implementation of energy policy in Mexico.
16 Distribution Regions

Each with approximately 2 million customers
Past Scenario for Smart Grid Projects

- Areas invest on scattered projects
- Pilots are not aligned to strategic objectives
- Limited business and service perspective
- Weak definition leads to deficient project management
- Lack of indicators and metrics for evaluation
- Missing follow-up for benefits and actual ROI
- Poor communication of results and conclusions
- No structures for replicating success or standardization
Information Context

- Challenges in definition of Enterprise Architecture
- CIO position has not been instated
- Incomplete Business Intelligence structure
- Business processes not integrated across organization
- Operation processes not business-oriented
- Lack of Information Architecture
- Multiple sources and low quality of information
- Thousands of non-integrated legacy systems
- Low transactionality, heavy data-transformation
- Governance model and structure not completed
- Low integration of non-standardized infrastructure
Smart Grid Maturity Model

- Result of U.S. – Mexico bilateral cooperation agreement

- Smart Grid Maturity Model Navigation Process
  - Evaluation of Distribution (Corporate + 3 Divisions) at the time CFE was just in the beginning phase of its Smart Grid journey.
  - With regards to individual characteristics of maturity, Mexico was predominantly “in with the majority”.

Software Engineering Institute | Carnegie Mellon
## Smart Grid Maturity Model

### Findings and Aspirations Workshop

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### CFE – Aspirations in 3 years

- **3**: Year 3
- **2**: Year 2
- **1**: Year 1

**2010**

July 2010
Smart Grid challenges

Smart Grid vision was drafted by identifying initiatives that would impact cost efficiency.
CFE’s 5 Strategic Pillars

Smart Grid vision, policies and strategies within CFE must align to strategic lines of action defined by CEO.

- Smart Grid vision must be **Customer Centric**.
- Efforts to include **Clean Energy** will be aligned and increased.
- Major investment is being performed on automation and modernizing infrastructure in the **Central Zone** (Mexico City and surrounding area)
Development of a Smart Grid Roadmap

Smart Grid Starting Vision
2010

Smart Grid Maturity Model

SMR | OS | GO
WAM | TECH | CUST
VCI | SE

International Benchmark and Enrichment

Discussion scripts and guidelines

Corporate Transformation Committee

Specialized Groups

Aligned Strategic Vision & Policies

Strategies & Projects

Integrated Roadmap for Smart Grid
Specifics for Smart Grid Projects

1.- Identify options for technologies, solutions, structures and systems for short, medium and long term projects.

2.- Perform cost-benefit analysis for selected alternatives.

3.- Verify scalability, interoperability, adaptation, convergence and alignment of defined route-maps.

4.- Consolidate all projects into a single, integrated global timeline for Smart Grid deployment within CFE.
Thank you

Francisco A. Acosta
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Comisión Federal de Electricidad