



Demand Response - The Changing Landscape

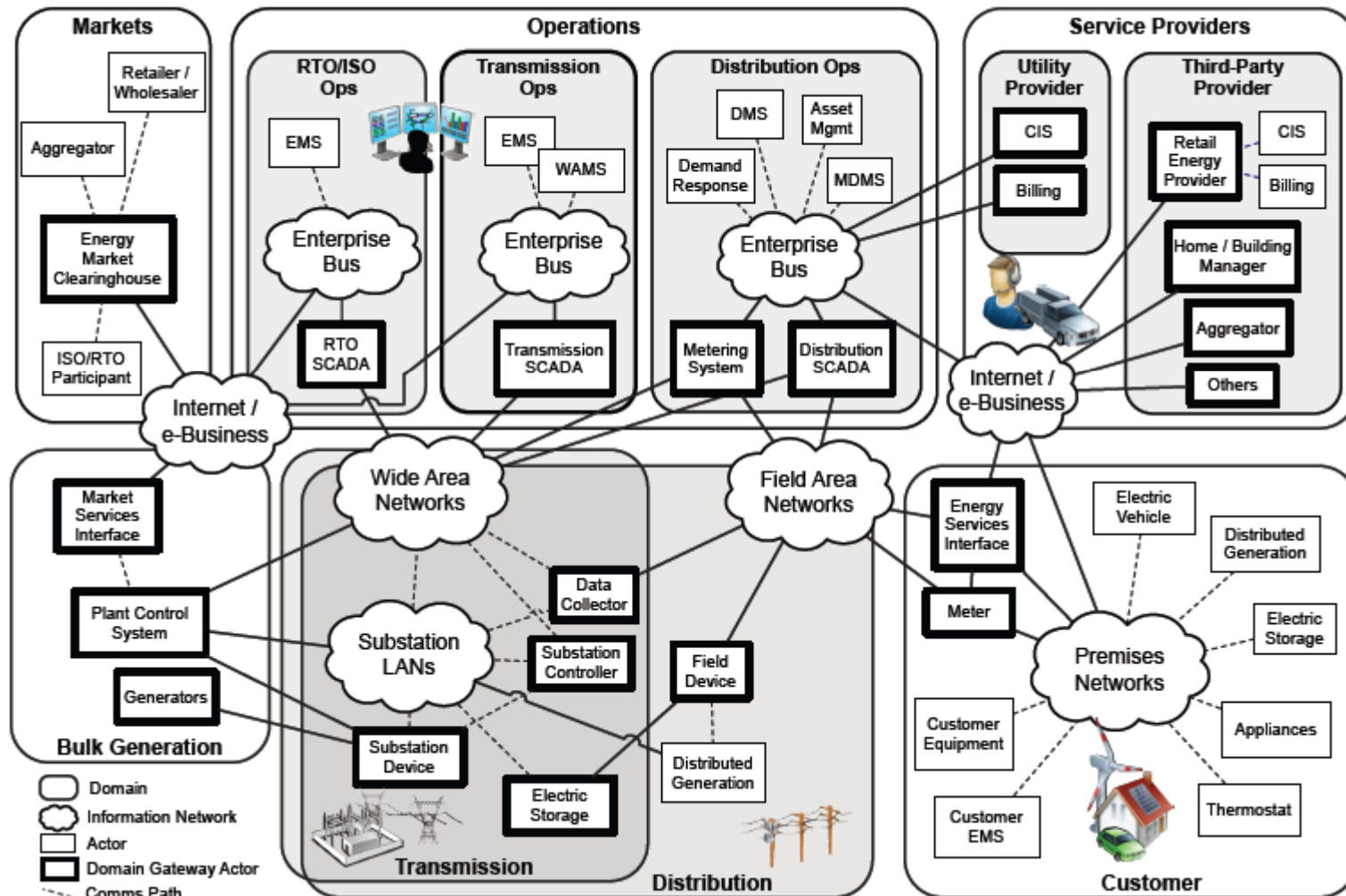
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Demand Response Framework



NIST Smart Grid Framework 1.0 January 2010



Two Types of Demand Response

- ***Emergency Demand Response:***
To avoid Power Outages

- ***Economic Demand Response:***
Lowers the cost to suppliers and customers



Benefits of Demand Response

- ***Lower Energy Prices***
- ***Improved Reliability***
- ***Reduced Volatility and Risk***
- ***Defer needed infrastructure expansion***
- ***Better management of outage scheduling***
- ***Environment: Reducing operation of inefficient power plants for meeting peaking needs***



Differences in Perspectives

- Utilities: Separation of revenue and profitability
- ISO's: Bulk DR, Dispatching Megawatts and Negawatts
- Aggregators: Understanding changing rules
- Commercial and Industrial customers: BMS, Energy efficiency,
OpenADR
- Residential customers: Participation, Responsiveness
- Policy making bodies: Fairness to all concerned
- Technology/ Solution Providers: Standards, Recurring streams



Demand Response 2.0 will be here!

- FERC Order 745 – March 15, 2011
- DR Resources can participate in wholesale markets
- Demand Response 2.0: Continuous participation
- Next generation of aggregators
- Grid- Scale Energy Storage Companies
- Innovation and Acquisitions: JCI, Honeywell, Siemens
- Issues: Net Benefits test, Minimal requirements (100 KW), ISO regulations, Restrictions, Timelines



Net benefits determination

- Beneficiary has to be a market participant with RTO/ ISO
- Not applicable for reliability or emergency conditions
- Not applicable for ancillary services market
- Billing Unit effect of dispatching demand response
- Overall reduction of LMP is a pre-requisite
- Price to be settled at market cleared LMP
- Complex calculations



PHEV's are here!

- Existing U.S Power plants can meet the needs 73% of nation's light vehicles if replaced by plug-ins charged at night!
- Can eliminate 52% of current imports of oil!
- Need an integrated communications infrastructure and price signals
- Smart Chargers are coming!



Customer engagement - Social Media

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Social Media Usage - Emerging

- Crisis Communication – PEPCO
- Public & Customer relations - Xcel Energy
- Customer Education - SCE&G, Progress Energy, NPPD
- Customer Choice - Cooperatives
- Green Power and Carbon Offset - Duke Energy
- Rate Cases – Avista Power
- Recruitment = Ameren, SCE, Progress Energy, Xcel
- Branding – NPPD
- Stakeholder Engagement - Duke Energy
- Smart Grid: Edison Electric Institute, SC&G, SCE
- Interactions with regulators: FERC

Transforming passive customers to informed participants!



Customer engagement - Social Media

- DR in 2009: Potential: 58 GW, Achieved: 16 GW
- Customer education and involvement: Pervasive, Persistent, Trustworthy
- Coordinating Power Outages and Safety Issues
- Twitter, Facebook: revolutionizing communication
- Words of caution: Legal issues – Employer, Corporate Entity, Regulated Entity, Public Power Govt. Body

Transforming passive customers to informed participants!



Web 2.0, Wires 2.0, Demand Response 2.0

- Web 2.0: Interactive information, User-created content, Collaboration

Customizes user web experience by creating profiles and content

Multi-dimensional – Videos, Slides, Articles

Inexpensive

- Wires 2.0: Allows customers to control and personalize their electric usage

Wires 2.0 and DR 2.0 expected to be a reality by Year 2012!