

Drivers of Change: The New Pressures Faced by Electric Utilities

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The Current Business Model

- ▶ High capital cost industry
- ▶ Long-lived assets
- ▶ Investments recovered through volumetric sales based on “just and reasonable” rates
- ▶ Investments must be “used and useful” to be eligible for recovery
- ▶ “Obligation to serve” in exclusive service territories

Current Business Model (2)

- ▶ Utilities must balance:
 - Reliability
 - Affordability
 - Environmental performance
- ▶ Opportunity to earn “authorized rate of return” = Regulatory Compact
- ▶ Major threat – Long term revenue erosion = Death Spiral

Existing Challenges to Business Model

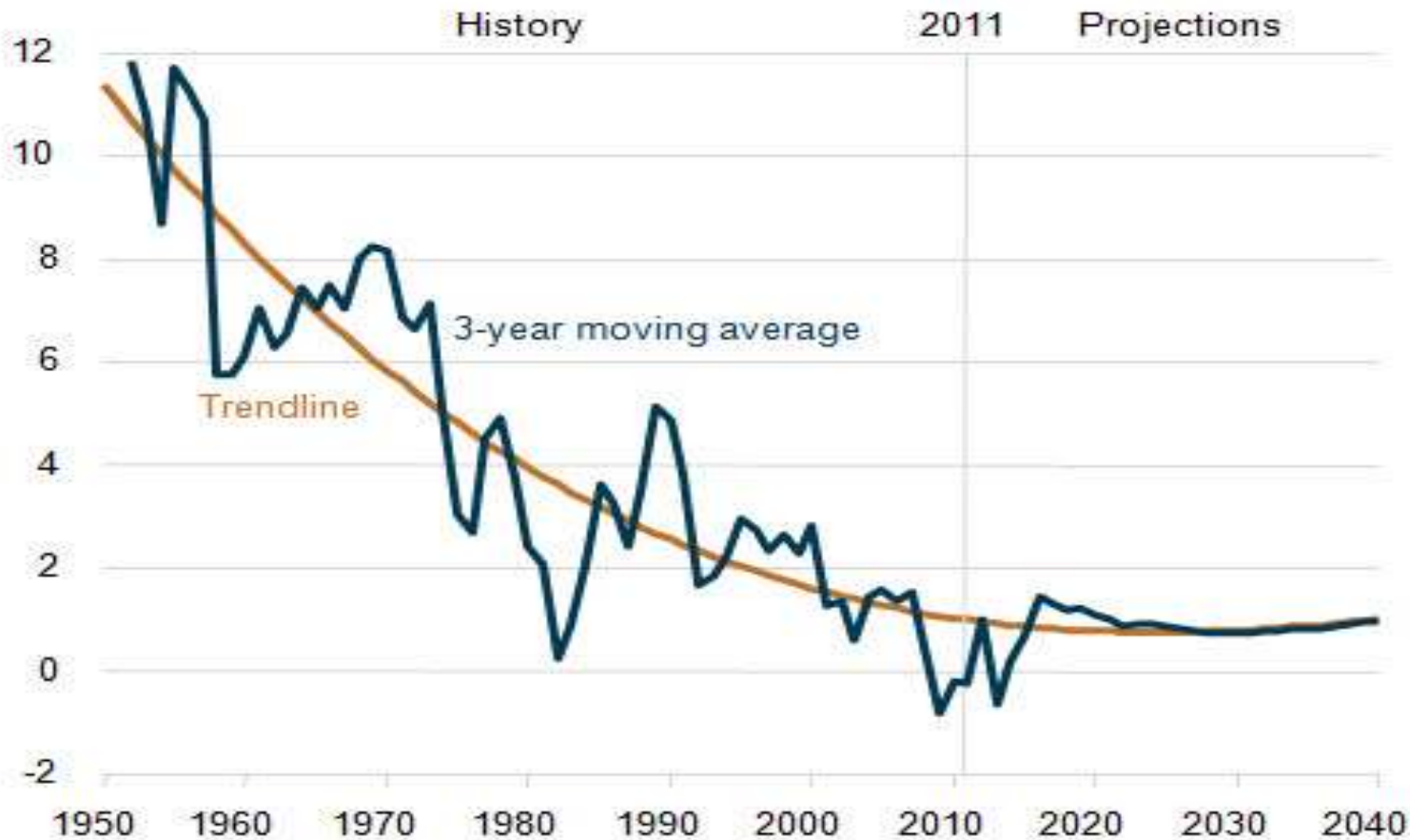
- ▶ Utility-sponsored energy efficiency
 - Compensation for lost revenues
 - Financial incentives
 - Guaranteed cost recovery
- ▶ Cogeneration/CHP/PURPA/Net Metering
 - “Anti-cogen” rates
 - Standby rates
 - Utility ownership

New Challenges

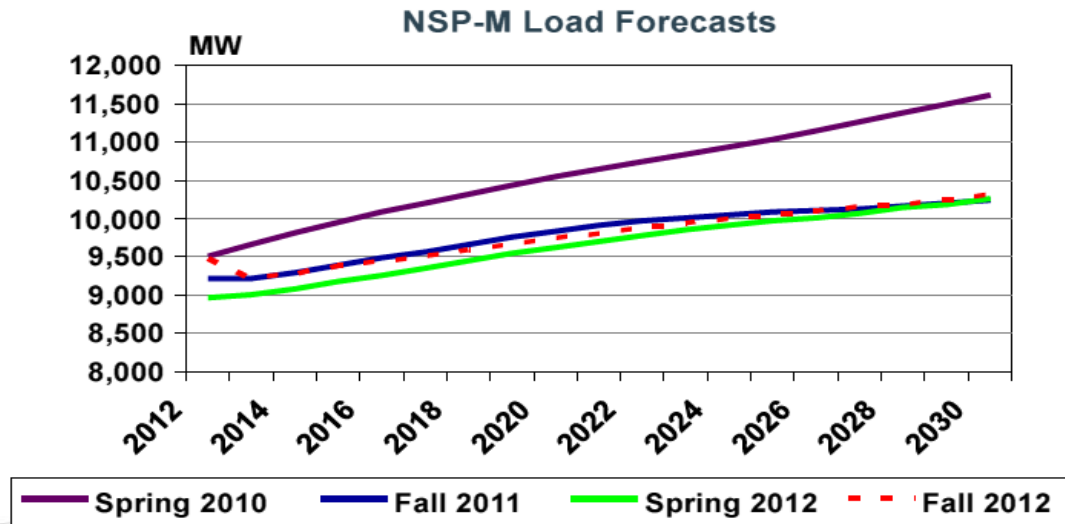
- ▶ Declining sales volumes
 - Poor economy
 - Higher rates to cover fixed costs – transmission build-out, deferred maintenance, new environmental regulations
 - Energy efficiency and conservation
 - Customer-owned generation, e.g. DG, CHP
- ▶ Remember that utilities have relied on sales growth to recover fixed costs and offset rate increases

INDUSTRY TRENDS - Conservation/Efficiency

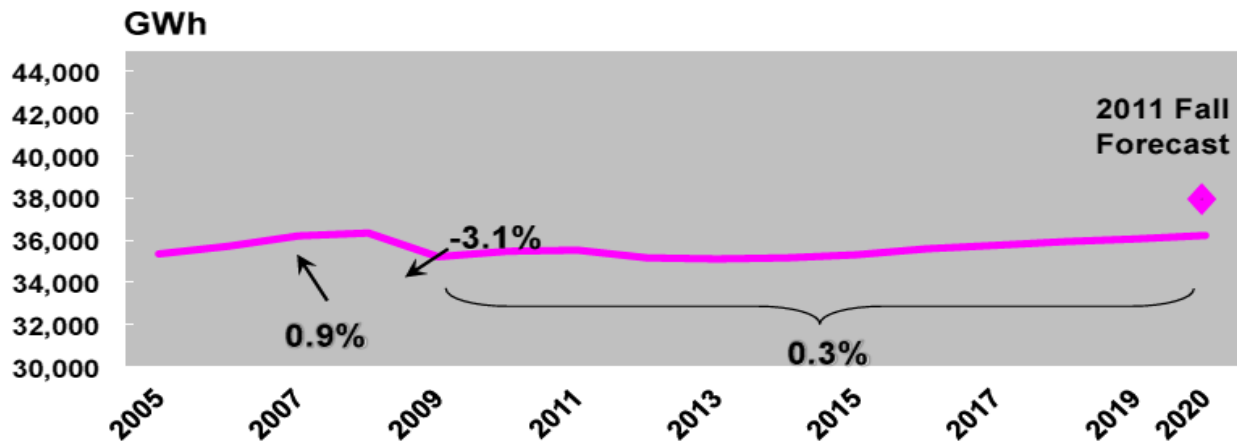
Figure 75. U.S. electricity demand growth, 1950-2040
(percent, 3-year moving average)



Low to Flat Load Growth



NSP-M Retail Sales Trends

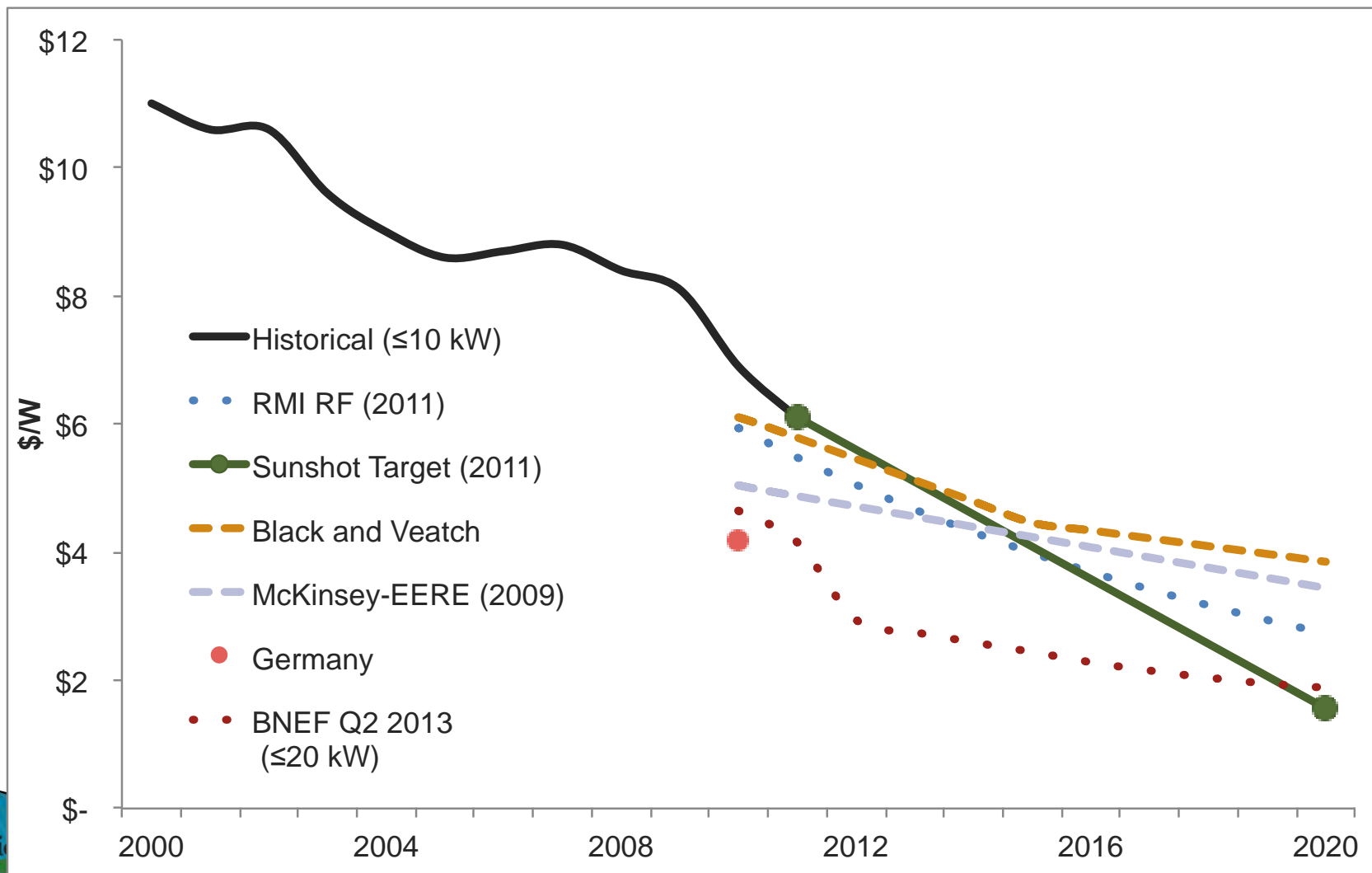


New Challenges (2)

- ▶ Falling costs for customer-owned generation, especially solar – 10% DG by 2020?
- ▶ Desire for in-state renewable development, both utility-owned and otherwise to keep jobs and dollars in state's economy

...and declining costs

Total installed cost for <10 kW systems



Source: LBNL, DOE, BNEF, RMI Analysis

New Challenges (3)

- ▶ Need for massive investment to maintain transmission and distribution systems
- ▶ Risks of centralized generation – future of microgrids?
- ▶ 111(d) for new and existing coal plants
 - Retire, repower or replace?
 - Carbon capture and storage?



Minnesota Microgrids: Barriers, Opportunities, and Pathways toward Energy Assurance

- Microgrid Institute (www.microgridinstitute.org) completed study, report, and policy roadmap on Sept. 30, 2013
- Rapid technology advances (PV, storage, CHP, control systems) and rising needs for resilience are driving interest in microgrids
- Other drivers: growing interest in local self-reliance, renewable energy integration, and grid modernization to support local economic development
- Barriers include utility business model conflicts, onerous interconnection policies, and limited opportunities to monetize value streams
- Several states and federal agencies are supporting community microgrid development directly and through policy changes
- Utility interconnection and integration practices are evolving to allow more flexible operation of DG and microgrids
- Microgrids serving as incubators for Utility 2.0 business model concepts
- Microgrids considered for non-transmission alternatives, smart grid, and self-healing network applications

Recent Activities

- ▶ 2013 Legislation
 - Changes to net metering
 - Solar Energy Standard – 1.5% by 2020
 - Value of Solar Tariff
 - Solar incentives
 - Community solar gardens
 - Industrial EE, CHP incentives
 - Studies:
 - 40% RES by 2030
 - Value of On-site energy storage
 - Minnesota Energy Future

Closing Thoughts

- ▶ Need new metrics for a new utility business environment
- ▶ Models will likely be different for IOU's, cooperatives, municipal utilities
- ▶ Utilities as providers of energy services vs. commodity electricity
- ▶ Look forward to the rest of the day!