National Academies' Roundtable on Science and Technology for Sustainability

Sustainable Energy: A Utility Perspective

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Baseline

- Sales = revenue & profit
  - Rising fixed costs share
  - Increasing competition for sales & savings
- "Obligation to serve" - regressivity, low income
- Legacy investments
- Legacy business models
- Reliability & safety
- Regulatory risk

10 Shifts Needed

FROM →. TO

- Compliance → Prevention
- kWh → Services
- Ratepayers → Customers
- Incremental → Integrated
- Row → Steer
- Build → Buy
- Prescription → Performance
- Building Energy Management → Building Conversations
- Price → Cost
- Resources → Capital
- Prevention → Sustainability

Frame of Reference - Austin Energy

- 8th largest municipal utility, 400,000 customer, 2500 MW
- 25+ years strong public & local gov't support for DER
- Leader in efficiency, green building, climate protection, electric vehicles, smart grid, green power
- Annual DER budget of about $35 million, supplemented by $30 million in Federal grants over the last 3 years
- Over 1,000 MW in demand reduction, 400 MW more by 2020
- 1,500 PV systems in place

Compliance → Prevention

- Many electric service providers have already taken this step regarding business-as-usual undertakings
- Most utilities undertake green initiatives to prevent public regulatory mandates, bad image
- Emerging leadership view that utilities must help prevent climate change for the benefit of customers and shareholders

kWh → Services

- "Spin the Meter" model vs. value-based services model
- Austin Energy Distributed Energy Services
  - Energy Efficiency
  - Green Building & Energy Code
  - Electric Vehicles & Emerging Technology
  - Market Research & Product Development
  - Key Accounts
  - Distributed Generation
- Big kWh buyers are the "key" accounts
  - Leverage opportunity, e.g., green power
  - ISLA - Industry Sustainability Leadership-Austin

Ratepayers → Customers

- What will they buy from you when they don't have to buy from you?
- Programs vs. products
- Segmentation & data-based marketing
- Bills v. rates, long-term benefits (Austin Energy experience)

Incremental → Integrated

- Products (pricing & service bundles), not gimmicks
- Pecan Street, Inc.
- Better Buildings
  - Whole building science & savings
  - Co-delivery of savings service - gas, water
- Electric vehicle infrastructure planning

Row → Steer

- Customer & stakeholder engagement
- Innovative tariff & incentive design
  - Commercial performance-based incentive
  - Residential Value of Solar Rate
  - Performance-based efficiency products
- Electric vehicle charging network

Build → Buy

- Dynamic markets increase regulatory risk
  - Smart meters
  - Clean energy investments
- Alliances, contracts, out-sourcing
  - "Bottom Up" demand response
  - Solar & weatherization contractors
- But, build project & contract oversight capacity

Prescription → Performance

- Dynamic market environments, faltering regulatory systems
- Improving building & energy service technologies
- Most prescriptions are obsolete and sub-optimal the moment written
- Building energy codes, retrofits, solar incentives

Building Energy Management → Building Conversations

- "When buildings talk, what will they say to each other?"
- Smart Grid 1.0 automates the current electric utility system
- Smart Grid 2.0 brings the opportunity of the "Net Energy Market"

Price → Cost

- National energy policy for a century has had low price as a key objective
- Costs exceed price for most electricity products and services
- Same for other energy, water, materials, agriculture, education and other policies

Resources → Capital

- Natural Capital
- Human capital
- "Climate Economics in Four Easy Pieces"
  http://sei-us.org/Publications_PDF/SEI-SID-ClimateEconFourEasyPieces-08.pdf

Prevention → Sustainability

- Triple-bottom line
- Catalyst for voluntary market
- Systems thinking
    - Electric vehicle infrastructure
    - Buildings as systems
- Multiple attribute problem solving
- Embracing Technology

Image → *Ethics* → *Advantage* → *Risk* → *Profit*

Thanks!

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