



**ANALYSIS GROUP**  
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

**Setting the Context:**

**Thinking about the Past  
as a Prelude to the Process:  
Policy ⇔ Electric Industry Interactions**



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**New England's Electricity Scenario Process  
November 9, 2006**

## **ISO-NE Scenario Process – Recapping the Purpose**

- **Use of scenario analysis to characterize possible resource portfolios and analyze their implications for:**
  - **Environmental, economic, reliability impacts and outcomes**
- **Identification of key constraints affecting moving in the direction of the different scenarios**
- **Platform for interested parties to work together to identify key issues to address through action in policy arenas**

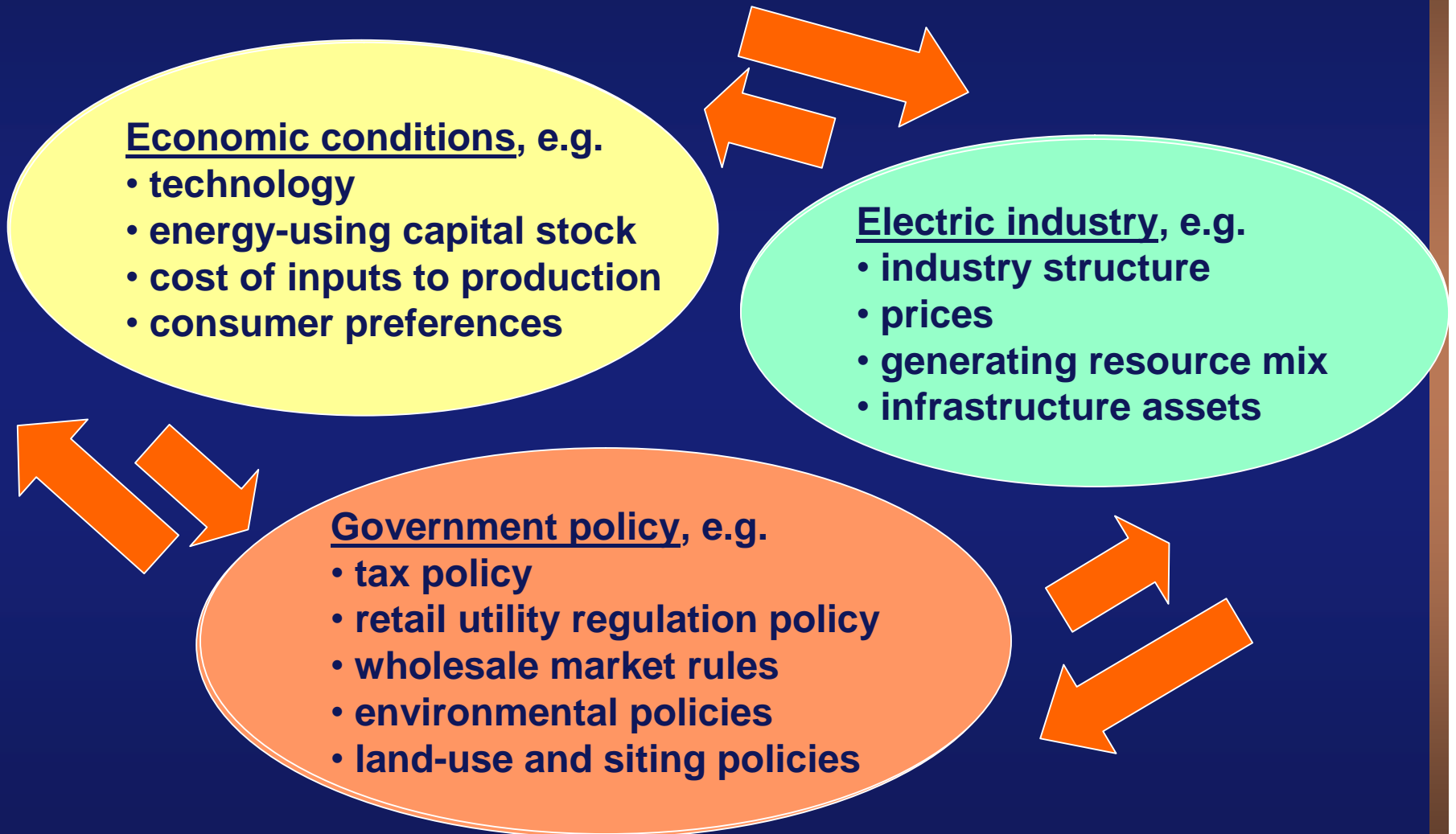


# The role of analysis in informing policy

- **“What if” analysis**
  - Estimating future outcomes of different scenarios
  - Comparing scenarios in terms of estimated outcomes
  - Identifying constraints that impede progress
  - Identifying policies to address some of these constraints
  - Identifying potential set of unintended consequences
  - Appreciating the interaction between policy and outcomes
- **Limits of “what if” analysis**
  - Our understandings of system outcomes is affected by a model’s structure, data, assumptions
  - In real world, actual outcomes are messier – in positive and negative ways



# Systems interactions and feedbacks – Policy ↔ Electric Industry Interactions



## **The Past as a Prelude – Classic examples of Policy** **↔ Electric Industry Interactions**

**In today's electric industry in New England, the imprint of policy can be seen in countless ways – some subtle, some less so.**

**Examples:**

- **Combined cycle technology: DOD investment**
- **Low emissions / kWh: N'east States' air regulation**
- **Low kWh use / capita: energy efficiency programs**
- **Transmission access: FERC policies**
- **Wind project proposals: RPS**
- **Recent retail increases: end of transition prices**
- **Consumers' patterns of electricity use: Non-time-differentiated retail rates**



# Policy ↔ Electric Industry Interactions: Example 1

## End-use Energy Efficiency

### Economic conditions, e.g.

- “energy crisis”
- high energy prices
- technology improvements
- productivity gains (GDP/mWh)

### Electric industry, e.g.

- Manufacturing gains
- utility rebates
- customer adoption of more efficient appliance
- demand reduction

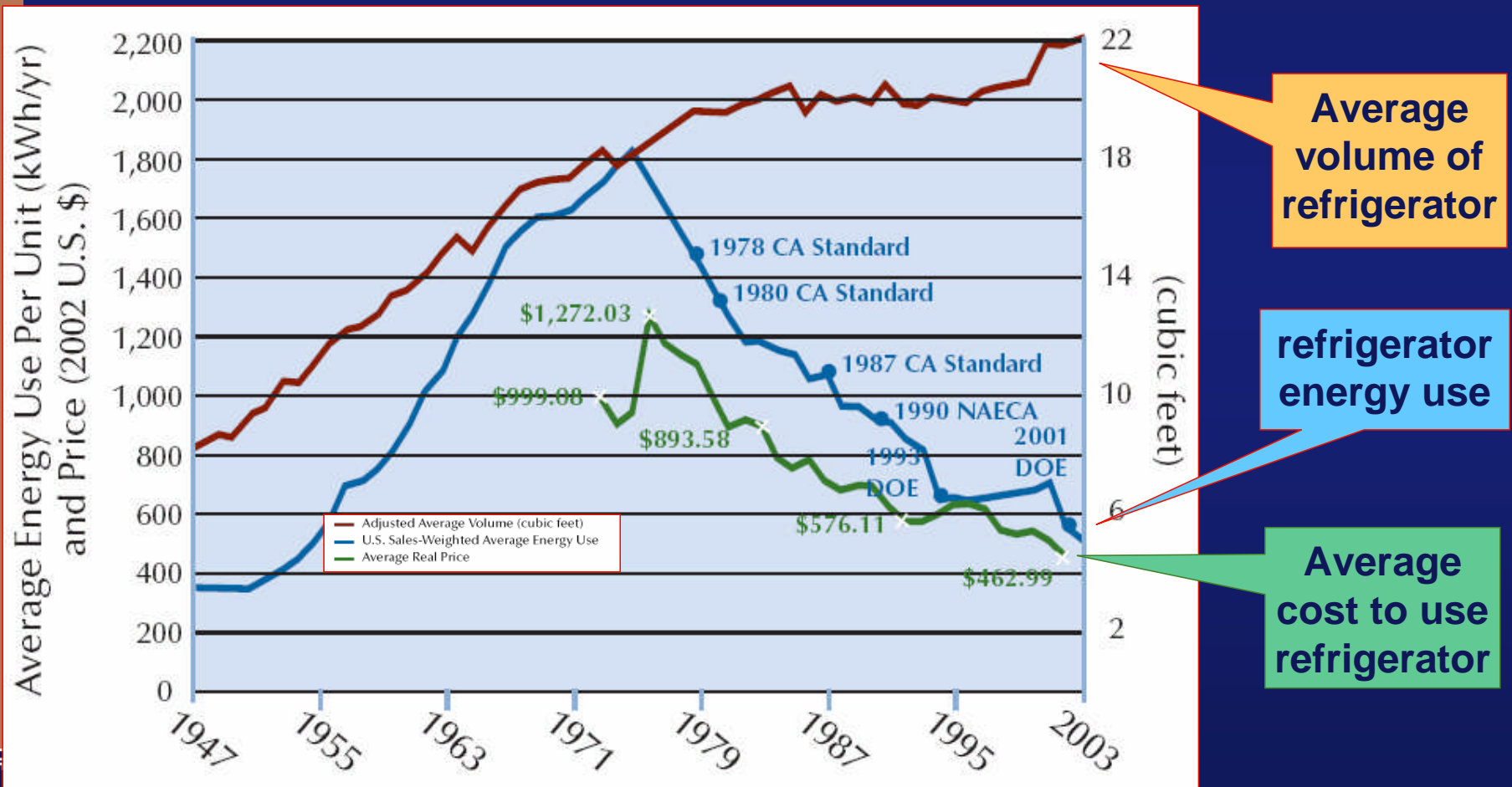
### Government policy, e.g.

- appliance efficiency standards
- R&D policy for efficient materials
- state requirements for utility
- technology improvements
- productivity gains (GDP/mWh)



# Example 1: Setting minimum efficiency standards

- Appliance efficiency codes: Steady progress
  - E.g., U.S. refrigerators



# Policy ↔ Electric Industry Interactions: Example #2a

## Electric Industry Restructuring – mid 90s

### Economic conditions, e.g.

- CCGT technology
- low gas prices
- “merchant power model”
- average price > marginal cost
- customer choice pressure

### Electric industry, e.g.

- Vertical integration
- Series of rate increases
- Aging generating fleet
- High emissions levels

### Government policy, e.g.

- Transmission access
- Retail access with rate caps
- ISO markets
- Siting and zoning
- New source review, BACT



**Policy ⇔ Electric Industry Interactions: Example #2b**  
**Electric Industry Restructuring – ~2000-2006**

**Economic conditions, e.g.**

- high natural gas prices
- generator investment risk
- average price < marginal cost?
- electronic gadgets galore

**Electric industry, e.g.**

- Divested utilities
- investor interest/disinterest
- ~10,000 MW of new capacity
- Gas sets prices ~85% of hours
- post-rate-cap price increases
- few retirements of old plants
- little customer migration

**Government policy, e.g.**

- Transmission access (FERC)
- Transmission depreciation
- Forward Capacity Markets
- Regional Greenhouse Gas Initiative
- Federal siting (transmission)
- Federal preemption over LNG



# Policy ↔ Electric Industry Interactions Nuclear Power Development

## Economic conditions, e.g.

- Manhattan Project
- National electrification goals
- Attitudes for “peaceful” atoms
- Competing nuclear teams

## Electric industry, e.g.

- Nuclear expansion
- Early estimate: ~1000 plants
- Reactor accidents
- Licensing delays, rising costs
- ~ 100 operating reactors

## Economic conditions, e.g.

- Nuclear rate increases
- Fossil fuel prices
- Concerns over carbon

## Electric industry, e.g.

- Consolidation of nukes
- Improved capacity factors
- Revenue growth
- Revived nuclear interest

## Government policy, e.g.

- Atomic Energy Act of 1954
- Price Anderson Act
- Nuclear R&D policy
- Federal licensing preemption

## Government policy, e.g.

- Investment disallowances
- “Least-cost” regulatory push
- NRC 1-step licensing
- Yucca Mountain
- EPACT '05 support



# Policy ↔ Electric Industry Interactions Renewable Power Development

## Economic conditions, e.g.

- Manufacturing improvements
- Technical/wind analysis
- Materials & turbine development
- “Green” product preferences

## Electric industry, e.g.

- Interconnection systems
- ISO energy markets
- Project finance
- Open access

## Government policy, e.g.

- PURPA
- R&D policy
- Tax policy – PTC
- System benefit funds
- Renewable Portfolio Standards



## **Policy ⇔ Electric Industry Interactions**

### **Conditions often leading to push for policy:**

- Externalities
- “Public Good” attributes of a technology or development
- Public health and safety (police power issues)
- Monopoly and antitrust concerns
- Economic development stimulation
- Underwriting risks
- Market conditioning
- Politics, politics, politics



## **Policy ⇔ Electric Industry Interactions**

### **Policy tool kit:**

- Tax policy (PTC, depreciation rates)
- RD&D (nuclear, renewables, sequestration)
- Regulation – air emissions, safety, zoning, tariffs
- Education support – nuclear engineers
- Information development & dissemination (EIA)
- Standards – NAERO, NRC reactor license approval
- Industry structure – mergers/acquisitions/divestitures
- Content/entry requirements – fuel use act, RPS, appliance efficiency standards
- Public financing – securitization, public power
- Transition support – stranded cost, allowance allocation



## Policy ↔ Electric Industry Interactions

### **Hazards & potholes in the policy field:**

- Politics and policy compromises
- Law of unintended consequences
- Policy reach and “leakage”
- Tensions among means and ends
- Changing policy preferences and positions
- Outcomes in markets may require unpopular fixes



- Suggesting a note of caution in this exercise:  
Analyze “what if” scenarios to better understand *possible* outcomes, *possible* implications, *possible* policy levers





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