

***ESD 126 Energy Systems and
Economic Development***

*Overview
Spring 2001*

Objectives

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- *Technology: What supply technologies are available (commercial and non-commercial)?*
 - *What policy alternatives are available for the development of the electric and gas sectors?*
 - *How are supply and demand balanced in the energy sectors?*
 - *Choosing a region, develop an analysis of the commercial energy system focused specifically on a region – Asia and more specifically ASEAN*

Class Schedule

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- *Week 1* *Introduction and Policy Analysis of Electric Restructuring*
 - *Week 2* ***Electric Market Game (Zobian et al): Market negotiations***
 - *Week 3* *Policy Analysis of Electric Restructuring II*
 - *Week 4* *Natural Gas Restructuring (Hornby et al)*
 - *Week 5* *Renewable and Distributed Technologies: Class assignments*
 - *Week 6* *Renewable and Distributed Technologies: Class assignments*
 - *Week 7* *Spring Break*
 - *Week 8* *Legal / Regulatory Realities in Restructuring: (Guest)*
Or California, where are we and how did we get there?
 - *Week 9* *Methods of Project / Regulatory Evaluation I*
 - *Week 11* *Methods of Project / Regulatory Evaluation II*
 - *Week 12* *Country Reports I*
 - *Week 13* *Country Reports II*
 - *Week 14* *Summary Class*

Class Requirements

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- *See handout*

Focus of Policy Analyses ESD 126

- *The Electric Sector*
- *The Gas (and / or liquid fuels) Sector*
- *The demand for energy by sector*
- *The regulatory, legal and legislative structure vis a vis energy*
- *The role energy in the economic (manufacturing, etc) structure of the country*
- *Mechanism / phasing of reform*
- *Attractiveness of reform scheme to private sector players / financiers*
- *Probability of overall success of reform program – grading across Critical Success Factors*

The Policy Paradigm

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History of the Issue

Problem
Definition

Policies
and
Methods of
Analysis

Stake-
holders/
Politics

Policy Formulation
“What can we do?”

Policy Implementation
“How do we make it work”

The Case Study

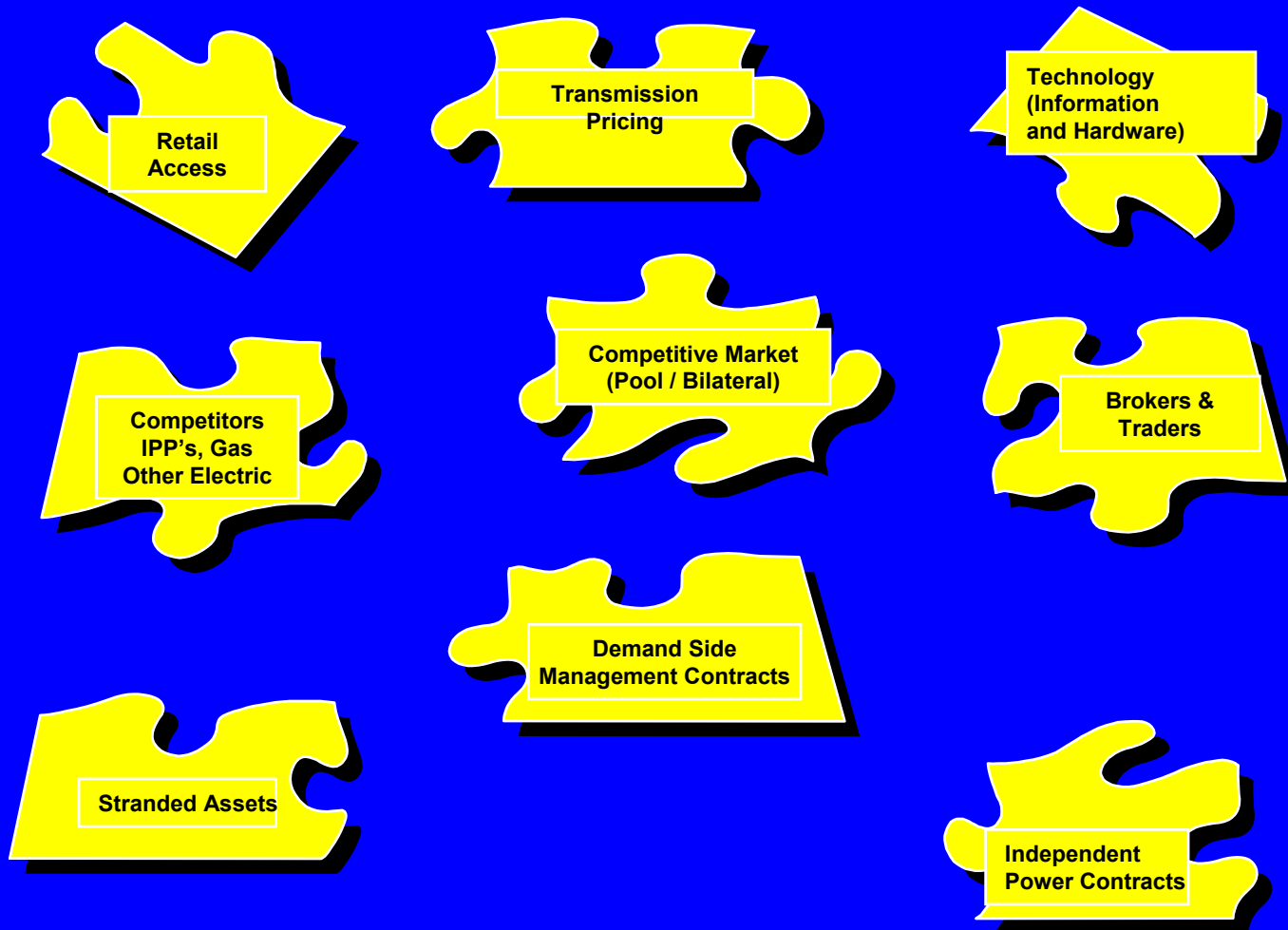
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Association of Southeast Asian Nations ASEAN



***The Market Paradigm:
Why is there Restructuring?***

The Pieces of the Puzzle in the Electric Supply Industry



The Structural Paradigm: Functions within an Electricity Supply Industry

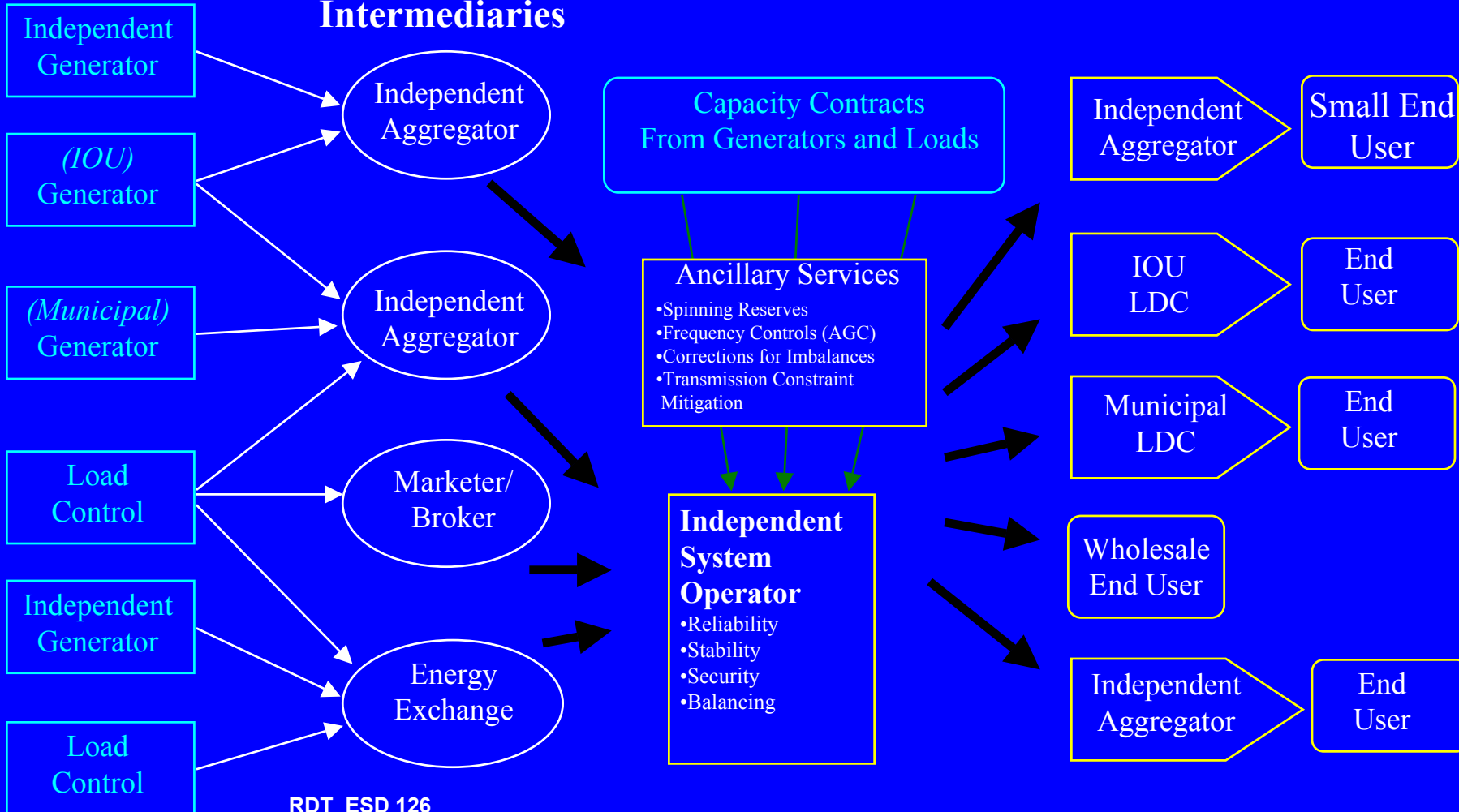
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Suppliers

**Aggregators/
Market
Intermediaries**

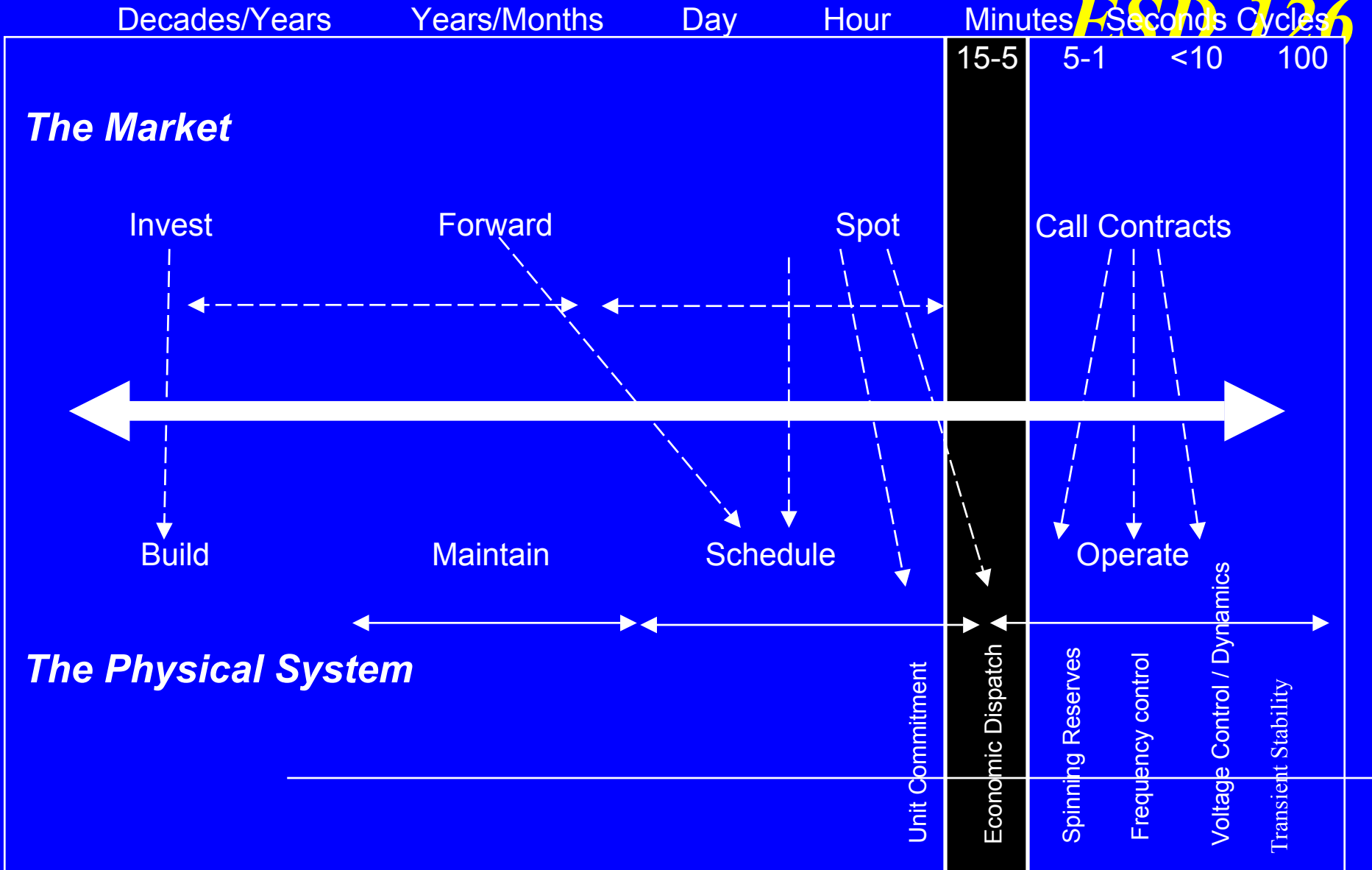
**Independent
System Operator**

**Consumers
Wholesale Retail**



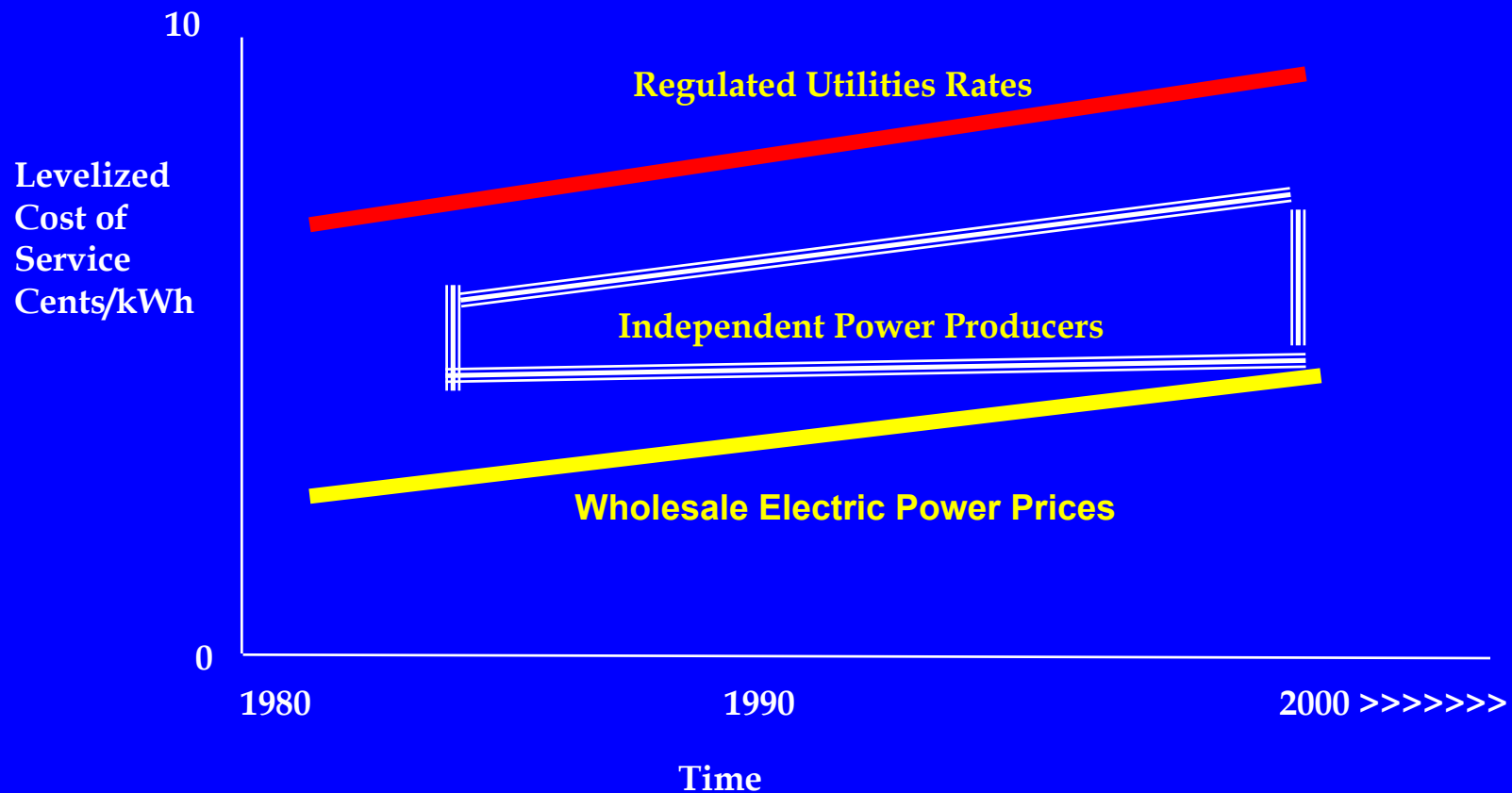
Electric System Time Line: Market and Physical

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The Gaps in Today's Costs

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Between a Rock ...

- *Increased Competition on the Supply Side*
- *Increased Competition on the Demand Side*
- *Low Fuel Costs (tagged +/- to OPEC oil)*
- *Regulated Rate of Return*
 - Expensive Generating Capital
 - Transmission and Distribution Capital
- *Required Purchases from IPPs and NUGs*
- *Negawatt “Mortgages”*

... and a Hard Place

- *Competition based on New Technology!*
 - Gas Turbine Combined Cycle
 - 50% Efficiency
 - Clean!
 - Cheap!
- *Competition looks to “Cherry Pick” Attractive Customers -- High Load Factor -- by Tailoring of Service*
- *While Utility’s Obligation to Serve remains*

Enter Competition: The Slippery Slope

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