

EXERCISE IN CHOOSING THE STRUCTURE OF ELECTRICITY MARKET REFORM

(Session 3 Syndicate Group)

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Section I. Introduction

This team exercise provides participants with practice in deciding how the electricity sector will be reformed. In many countries these policy decisions are left to legislative bodies or ministries, and implementation is in the hands of the regulators. However, as regulators responsible for implementation and oversight, you have a unique role and opportunity to offer advice to legislative bodies and ministries on what you believe would work best given your country's unique circumstances.

The kinds of decisions that must be made with respect to regulatory policy include whether to corporatize and/or privatize the vertically integrated monopoly. Moreover, decisions must be made with respect vertical and horizontal unbundling, what aspects of the industry will continue to have regulated prices and what form of regulation will be used. Finally, what aspects will be opened to competitive mechanisms and the nature (design) of the competitive mechanisms.

In addition to making decision on the nature of restructuring, the team should also explain the reasons for making these decisions. The reasons can range from political and social considerations to technical feasibility and economic efficiency considerations.

In the real-world, the reform process can take years. Unfortunately, we do not have years, but only 2 hours realistically. I fully expect that all groups may not get through the entire exercise (make all the decisions), but the learning takes place in discussing the options amongst yourselves and in the debriefing later in the day.

To better frame the exercise, Section II will describe a hypothetical country and its current state of the electricity industry as well as the overall objectives that political decision makers would like to achieve. Section III will outline the various policy options that exist, but the list is not exhaustive. Teams are encouraged to mix and match policy options or come up with other alternatives if they believe doing so would be helpful to achieving the stated goals.

Section II. The Case

This section describes the market structure case.

As the newly appointed regulator in the country of Teslaland you been asked to provide advice and technical assistance in drawing up the restructuring plan for your country's electricity sector. The current physical state of Teslaland's electricity industry is below.

- State-owned, vertically integrated monopoly
- 3500 megawatts of generating capacity at 5 generating stations.
- One of the generating stations is a reservoir hydroelectric facility with 7 generating units and a total plant capacity of 2000 megawatts.
- Two of the generating stations are coal-fired, with two units each. The capacity at each of these plants is 600 megawatts.
- The last two stations are fueled by oil, combustion turbines, and each station has a capacity of 150 MW.
- The installed capacity operates at 80% capacity factor.
- Only 55% of the country has access to electricity service.
- Reliability of service is poor. 20% of the time service is curtailed to some part of the system due to the need to upgrade the transmission and distribution facilities. Another 5% of the hours, service is curtailed due to lack of capacity.
- Technical losses are approximately 7%, but commercial losses are in the 25%-30% range.
- There is currently an estimated potential demand, at system peak, for an additional 1200 megawatts of generating capacity.
- Moreover, in the future it is expected that load growth will be about 2%-4% per year requiring additional capacity additions.

The financial health of Teslaland's monopoly electricity provider is stated below:

- Currently electricity rates are low. The per kWh (kilowatt-hour) charge to consumer's is 5 cents on average.
- The current per kWh charge does not allow the utility to recover its costs and the government is subsidizing the difference through general tax revenues and borrowing from international capital markets. The actual average cost is about 8 cents/kWh.
- It is hypothesized that costs could be decreased easily by laying off approximately half of its 20,000 person workforce, but this is politically difficult to do as the workers are unionized and also support large extended families.
- It is also hypothesized that costs could be cut by improving generating unit efficiency as well as doing a better job in fuel procurement.

In summary, the current state of affairs of the electricity sector in Teslaland is that more generation capacity is needed immediately (to serve as yet unserved customers and customers that already have access) and into the future (to serve future load growth). Moreover, the reliability of service needs to be improved substantially.

Moreover, from government's point of view, it can no longer support the financial losses of the utility.

In the 1990s and early 2000s, the electric industries in many countries have undergone major restructuring efforts with varying degrees of success. In many cases wholesale markets for power were created, although the structure and design of these markets were quite different. For example prices for power in the United Kingdom have fallen tremendously. Argentina has also had success with its version of competitive power markets. Yet, there is also California, which initially saw decreasing wholesale power prices, but eventually the market reform imploded and saw astronomical prices and the bankruptcy of one its investor-owned utilities.

Beyond the markets for power, many countries implemented price cap or revenue cap regulation for transmission and distribution. These regulatory innovations have led to increased efficiency and lower costs for these portions of the business in some countries, but in other countries the results have not been as good.

Your Government has observed the international experience in electricity reform and seems intent on carrying out a restructuring effort, though its form has yet to be decided. Government hopes that restructuring, regardless of its final form will accomplish the following goals:

1. The electricity industry should not be dependent upon government subsidies.
2. Final prices to consumers should decrease, though no pronouncement has been made on whether this means lower than the actual current cost or the price currently faced by consumers.
3. The industry should become more technologically efficient and economically efficient in its operation.
4. Social objectives such as extending service to those not yet connected and affordable prices for economically disadvantaged consumers must be met.

Section III. Choice of Policy Options

This section lists some of the policy options you could implement. Again, this is not an exhaustive list and remember that you can mix and match the various policy options if your team believes this will further the goals announced by Government.

1. Corporatization and Privatization

- Should the vertically integrated monopoly be corporatized or can the government put sufficient controls in place to correct perceived problems? Explain.
- Should the vertically integrated monopoly be corporatized and eventually privatized? Do you believe this will correct perceived problems and meet goals more easily? Explain.

2. Vertical Unbundling

- Should the vertically integrated monopoly be broken up into generation, transmission, distribution, and retail supply?
- How should this unbundling take place?
 - Accounting/financial separation only?
 - Separate companies under the same holding company?
 - Completely independent companies?

3. Horizontal Unbundling

- Should any of the companies, regardless of form be split separate, and potentially competing, companies?
- For example, multiple vertically integrated monopolies? Multiple generating companies? Multiple transmission companies? Multiple Distribution companies? Multiple supply companies?

4. Regulation of Prices and Choice of Regulation Mechanism

- In what aspects of the industry would you continue to regulate prices? Why?
- What kind of regulatory mechanism would you choose? Price Caps? Rate-of-Return? Revenue Caps? A hybrid mechanism mixing and matching the above mechanisms?
- What other aspects may be involved in setting the prices? Sharing profits/revenues/costs? Benchmarking?

5. Choice of Competition and Competitive Mechanism Design

- What aspects of the industry would you open up to competitive pressures? Why?

- If you are choosing competitive mechanisms, would this be “competition for the market” or “competition in the market”? Why?
- If you choose “competition for the market”, how would you propose to construct contract terms and conditions for the winning bidder(s)?
- If you are choosing “competition in the market” in generation, what kind of market structure would you choose? Why?
 - Single buyer
 - Bilateral market
 - Pool market
 - Hybrid market
- If you are choosing competitive mechanisms, would this be full and unfettered competition or managed competition? Why?
- If you choose managed competition, how exactly would you “manage” this competition? Why?
- How would you choose to detect any market power abuses and what mitigation measures would you choose? Why?
- Would you choose to have competition at both the wholesale and retail levels, or just at the wholesale level? Why?
- How would you envision regulated service prices and competitive service prices being tailored so they work together?

Policy	Explanation
Corporatization	
Privatization	
Vertical Unbundling	
Horizontal Unbundling	
Regulated Rates	
Regulation Mechanism	

Competition for the Market	
Competition in the Market	
Type of Market Design	
Managed Competition	
Full and Unfettered Competition	
Market Power Mitigation Measures	

Compatibility of Regulated Prices with Market Prices	
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Other Comments and Explanations For Policy Decisions