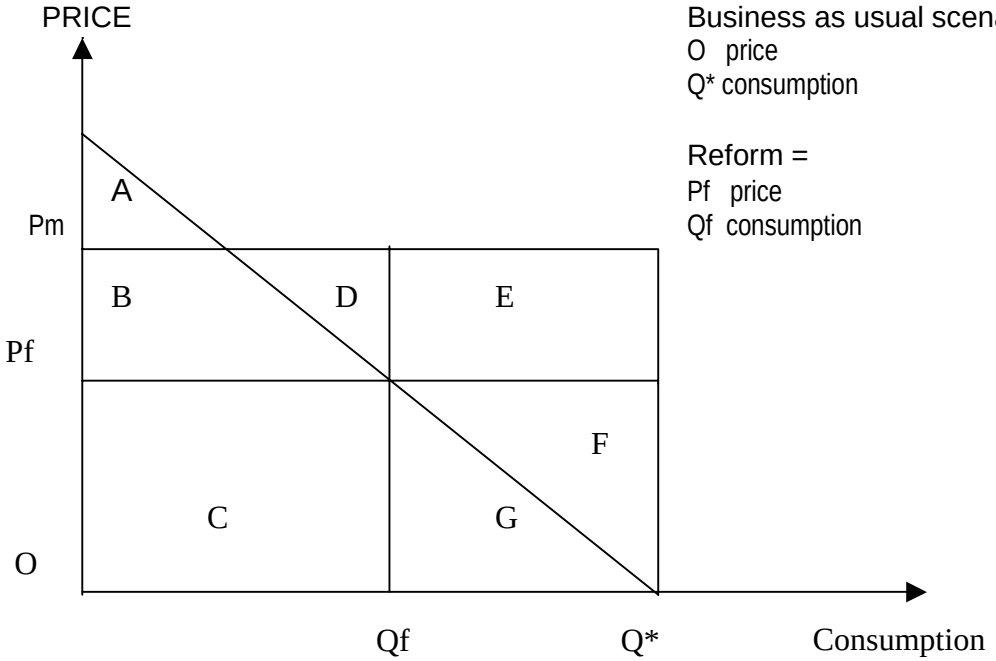
ECONOMIC BENEFITS OF METERING

Metering all consumers would allow utilities and public at large, to reliably quantify the level of electricity consumption and therefore system losses. This, in turn, would allow utilities to identify high loss areas, and prepare and implement a plan for their reduction. From the economic point of view, non-technical losses represent transfer payments, either from Government (through the utility by subsidies) or from other consumers through cross-subsidies. A methodology to estimate the net economic benefits of a metering program is included in the AP Economic Analysis Report and here below summarized. In essence, as a result of the metering program, previously unmetered consumers are expected to suffer an economic loss, (equivalent to a reduction in their consumers surplus), which is however offset by the avoided cost of supply consequent to their reduction in consumption (likely to occur with the introduction of meters). The net economic benefit is equivalent to the deadweight loss less the cost of meters. In a supply constrained scenario, however, the electricity freed up by the reduction in consumption of previously unmetered consumers can be resold. The net economic benefit therefore is not equivalent to the avoided cost of supply, but its value to other consumers, which may be taken as the difference between their willingness to pay and the cost of supplying that energy. In the case of Haryana, the assumed reduction in consumption is resulting from the metering program was taken as 50%. Assuming the costs shown in the table below, a cost of supply of Rs. 3.00/kWh, an average tariff of Rs. 2.63/kWh, a willingness to pay of Rs. 4.00/kWh, the net economic benefits of metering about 263,000 consumers in Haryana is estimated at Rs. 3,872 Million equivalent to an ERR of 46.1%.

Cost Item		Cost
Total number of unmetered consumers (as of FY2000)	283,000	
Cost of installation of one meter with box, and cabling		Rs. 5,000 ($109)
Total Capital cost		**Rs. 1,415 Million ($30 Million)**
No. Meters read each month for bi-monthly cycle (assuming 20 average number of meters read by one person)	400	
Cost of reading each meter (assuming Rs. 10,000=manmonth cost)		Rs. 25 ($0.54)
Annual cost of reading 283,000 (6 cycles)		Rs. 42.5 Million ($0.91 Million)
O&M cost @ 4% per year		Rs. 56.4 Million ($1.2 Million)
Total Annual Cost		Rs. 98.9 Million ($2.1 Million) [7% of capital cost]

The financial benefits of metering consists of the following: (i) the revenue collected from previously unmetered consumers, and (ii) since the consumption of electricity by the previously unmetered pilferers will likely decrease once paid for, the corresponding decrease in consumption may be sold to other consumers in the supply constrained situation. Assuming an average cost of supply of about Rs. 3.00/kWh and an average tariff of Rs. 2.63/kWh, and a 50% split between additional sales and cost reduction, the financial benefits would be massive at about Rs. 4.2/billion per year. The FRR is infinite because the cash flow would be positive from the start up.

Impact of Non-Technical Loss Reduction: Unmetered consumers



Assumption = No constraints in supply
Unmetered consumes Q* units at a cost of Pf.Q* [=B+D+E+C+G+F]
Consumers Benefits = [A+B+C+G]

	Utility	Unmetered Consumer	Society
Before metering			
1. Benefits		A+B+C+G	A+B+C+G
2. Cost of Production	-B-C-D-E-F-G		-B-C-D-E-F-G
3. Tariff Revenue to utility			
4. Net Benefit	-B-C-D-E-F-G	A+B+C+G	A-D-E-F
After metering			
5. Benefits		A+B+C	A+B+C
6. Cost of production			
7. Cost of meters	-B-D-C-X		-B-D-C
8. Tariff Review	C	-C	-X
9. Total	-X-B-D	A+B	A-X-D
IMPACT	**C+E+F+G-X**	**-C-G**	**E+F-X**
		Loss of cons. surplus