

Before Maharashtra Electricity Regulatory Commission, Mumbai

**Objections / Comments in response to the public notice dt. 16th Feb 2004 in the
matter of ARR application by M/s. Tata Power Company
for FY 2003-04 and 2004-05**

By Prayas (Energy Group)

11th March 2004

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**Objections / Comments in response to the public notice dt. 16th Feb 2004 in the
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**By Prayas (Energy Group)
10th March 2004**

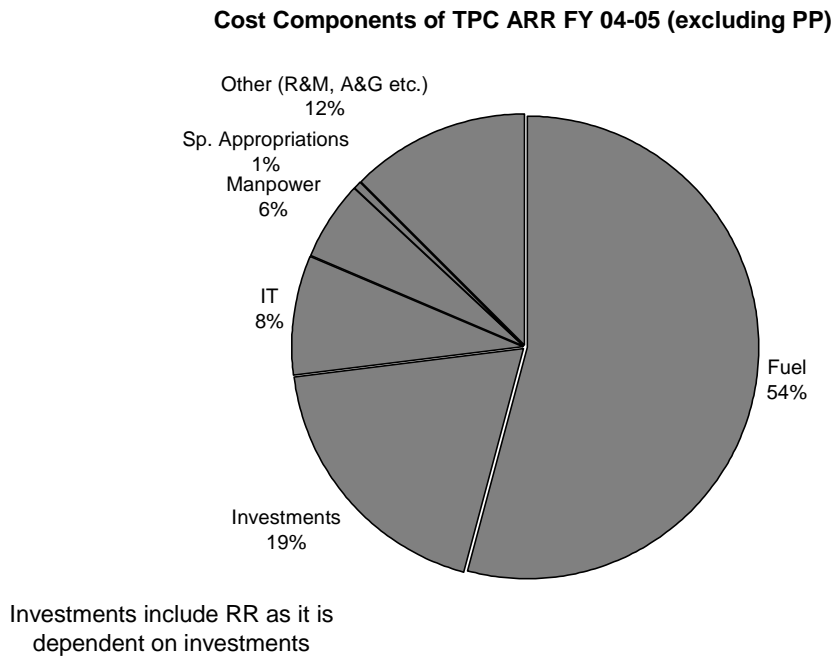
1.Introduction:

The performance review of Tata Power Company (TPC) is being undertaken for the first time since constitution of MERC in 1999. We welcome this opportunity and look forward to this evaluation of performance. Some of the issues arising out of the TPC ARR also relate to BSES ARR, these are also considered in this submission. We urge MERC to consider our submission on BSES ARR along with this, to the extent it relates to the interactions with TPC ARR and vice-versa.

2. Major Cost Components of TPC ARR

Figure 1 shows the break-up of major cost components in the TPC ARR, excluding the power purchase (and stand-by charges paid to MSEB). The investment related costs shown in the figure includes the depreciation, interest as well as the reasonable return. All these costs are primarily dependent on the capital investments made by the licensee. In addition, the IT (Income Tax) is also dependent on the profit and hence linked to investments.

Figure 1: Major Cost Components of TPC ARR (FY 04-05)



From the above figure it is clear that:

- Fuel cost = 54% of the ARR.
- Investment dependent costs (i.e. Profit + IT + Depreciation + Interest) = 27%
- R&M, Admin & General, Manpower = 18%

The investments and fuel component account for 81% of the ARR. Our observations and submissions on these and other related issues are provided in the subsequent paragraphs of this submission.

3. Fuel Related Issues

This section presents our analysis and observations on the related issues to fuel costs, which is the biggest contributor to the TPC tariff. The low cost fuel—gas is in short supply and the coal burning is limited due to dual limit of Coal use (Tons/day) as well as limit on SO₂ emissions.

3.1 Coal calories received and burnt

Data of coal contracts in Vol. II B for the coal received in FY 02-03 was analysed. Based on the data for nearly 90% of the coal receipts (PO 11, 24, 28, 30), the average calorific value of coal is nearly 6083 Kcal/kg (5288,031 MKcal). While the excel worksheet

“FuelConsumptionData.XLS” indicates that the average calorific value (weighted average of coal consumed) is 5125 Kcal/kg. This indicates a significant difference of 958 Kcal/kg (or 15.7%). Hence, we request the TPC to explain the difference showing the Kg and Kcal balance for year 02-03 (based on coal received and coal burnt).

3.2 Less Usage of Coal than Allowed

Table 1 shows the coal usage per day (Ton/day) of TPC for last few years and the two ARR years. The allowed rate of coal burning at TPC plants is also indicated in the table below. The lower coal usage (in Ton/day) than the allowed limit is shown in the third row. Coal - the low cost fuel is replaced by a higher cost fuel, viz., oil. This has resulted in excess payments from consumers, which are shown in the last row.

Table 1: Coal Usage at Unit 5 of TPC

	2000-2001	2001-2002	2002-2003	2003-2004	2004-05
Allowed MT/day	1,470	2,205	2,940	4,370	5,800
Usage MT/day	643	1,254	2,592	3879	5,301
Shortfall MT/day	827	951	348	491	499
Average Kcal/Kg Coal	6,066	5,656	5,094	4,560	4,750
Excess Oil use G Kcal	1,831	1,964	648	816	865
Cost (oil-coal) Rs/1000 Kcal	0.485	0.39	0.608	0.652	0.528
Excess cost Rs.Cr	89	77	39	53	46

Data source: Allowed MT/day of coal usage is taken from TPC note on FCA. The actual coal usage (in MT/day) and calorific value (Kcal/kg) have been taken from file FuelConsumptionData.XLS. The higher cost of oil (LSHS) over and above the coal cost is also taken from the same file – for sheets relevant to Unit 5 for different years. Change in allowed coal usage limit has been incorporated while calculating the “Allowed MT/day” limit.

If coal burning to the extent of allowed tonnage was not possible due to some reasons, then TPC should demonstrate this imperative along with the calculations (such as the calculations showing S balance) and alternative scenarios.

3.3 MERC’s Order dt. 1st Nov. 2002 in Case 16 / 2002

In response to the petition by Prayas dated 27th August 2002 (Case no. 16/2002), the honourable MERC, in its order dated 1st November 2002 ordered that “Both the TPC and BSES are ordered to submit their method for charging FCA along with monthly details for review, from August 1999”. Unfortunately, no further action on this has been taken since then. Hence, we urge the MERC to evaluate the reasonableness of fuel costs and FAC charged by both these utilities since the MERC’s order dt. 1st November 2002 on Prayas petition, and any unreasonable or inefficient expenses on this account should be dis-allowed by means of reduction in the approved ARR for FY 04-05.

4. Merit Order Dispatch of Mumbai Plants (TPC and BSES)

It is desirable to have merit order dispatch for the state as a whole to optimise generating capacity and fuel costs. This can be achieved by a two pronged approach of (1) setting proper tariff for the exchange of power between utilities and (2) setting procedures for state-level merit order dispatch. But this might need some time to implement. At present, we urge MERC to move towards integrated merit order dispatch of all Mumbai generating plants (TPC and BSES). This is possible through proper arrangement of power purchase between TPC-BSES-MSEB as well as directing the utilities to follow integrated operation as necessitated by the merit-order dispatch.

Based on the data of hourly plant generation for the last few years provided by TPC and BSES as well as of the fuel cost for different plants, we have carried out an indicative analysis to explore such an approach. The analysis shows significant financial savings for the Mumbai consumers. The following sections explain the broad methodology and results of the analysis.

4.1 Mumbai Merit Order Dispatch Analysis by Prayas

Methodology adopted by Prayas for evaluating the benefits of merit order dispatch in Mumbai is based on principles enumerated by Edward Kahn, an eminent energy analyst from Lawrence Berkeley Laboratory and University of California. (*Electric Utility Planning and Regulation, Book published by American Council for Energy Efficient Economy, 1991*)

Step 1 – Development of Representative Load Duration Curve for Integrated Mumbai Generation

Based on the hourly generation data (of TPC and BSES plants) we developed the integrated Load Duration Curve (LDC) for Mumbai. To arrive at this, the total generation by TPC and BSES plants were added for all hours of the year to arrive at the load shape of Mumbai. The data provided by licensees (especially BSES) had some inconsistencies for a few hours (like non availability of data or abnormally high generation, etc.). Such data points were removed while developing the load duration curve. Using this methodology, Mumbai LDC for three years i.e. FY 99-00, FY 00-01 and FY 01-02 was developed. Based on these, LDC for the FY 04-05 was projected by up-scaling the base LDC to match the energy content projected by licensees for the FY 04-05 (without assessing the reasonability of the projections made by licensees). The three base year LDCs are shown in Figure 2. Figure 3 shows the projected LDC for FY 04-05.

Figure 2 - Indicative Mumbai LDC for FY 99-00 to FY 01-02

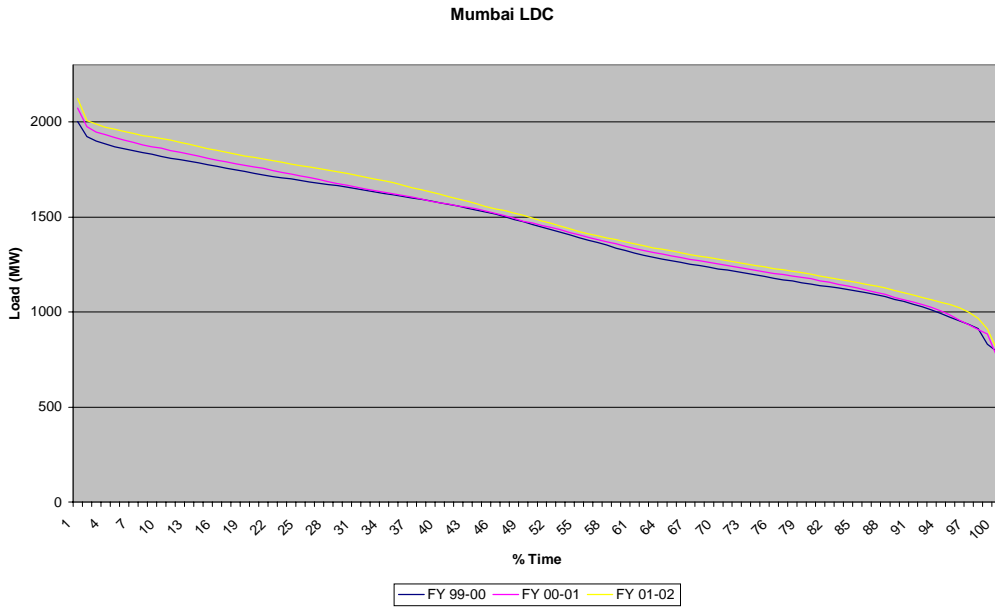
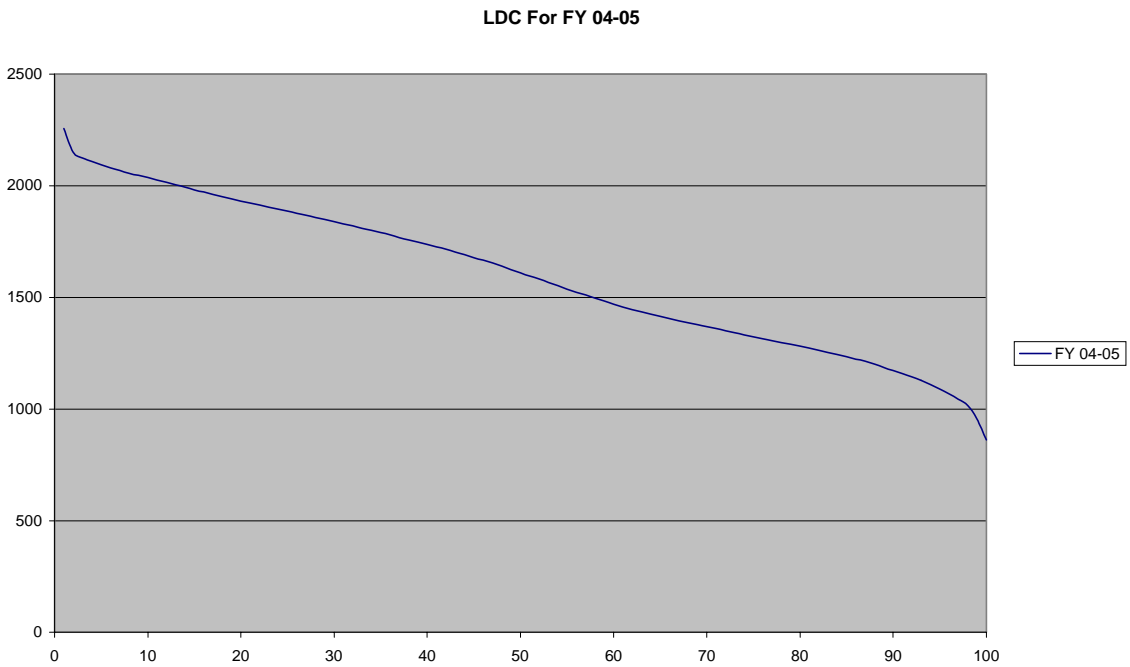


Figure 3 - Projected Mumbai LDC for FY 04-05



Step 2 – Estimating the variable (fuel) cost and availability of different plants

The next step in this exercise is to estimate the plant wise fuel cost and availability. Based on the plant heat rate and fuel data provided by licensees in the ARR, the following values were used for this exercise (see Table 2).

Table 2: Fuel Cost and Capacity for Mumbai Plants Considered for this Analysis

	Fuel Cost (Rs.. / U)	Capacity MW	Availability	Effective MW
BSES	1.17	500	0.95	475
TPC 5	1.32	500	0.95	475
TPC 7	0.71	180	0.76	137
TPC 6	2.53	500	0.95	475
TPC 4	2.78	150	0.9	135
TPC Hydro	1200MU	447	0.8	358

$$\text{Effective MW} = \text{Capacity} * \text{Availability}$$

Step 3 – Estimating Plant Dispatch to Minimise Fuel Cost

The last step in this exercise optimises plant wise generation with the twin objective of minimising the fuel cost and to meet demand (within the availability constraints of the plants). For this purpose, the ‘Effective MW’ (or net available capacity) of each plant was derived by multiplying the installed capacity by the projected availability of the plant. Subsequently, the plant with lowest fuel costs were considered to run at full capacity (i.e. at effective / net capacity through out the year). Based on the projected LDC, the remaining load to be met (after deducting load met from these low cost plant) was calculated. The plant with next higher fuel cost is considered to meet this remaining load. This process is taken further in the same manner.

Dahanu and Trombay coal units are the first plants to be dispatched, followed by U 5, Trombay U 7 and Trombay 6. (Although the fuel cost of Trombay U 7 is lower than that of Dahanu plant, it has fuel supply restrictions. Based on the projected PLF or gas availability, U 7 is considered for intermediate load). After exhausting these thermal plants, TPC’s hydro plants were considered for dispatch instead of Trombay U 4. This was due to the high fuel cost of U 4 (~ Rs. 2.78 / unit). While considering the hydro utilisation, both capacity as well as energy constraint (1200 MU) were considered.

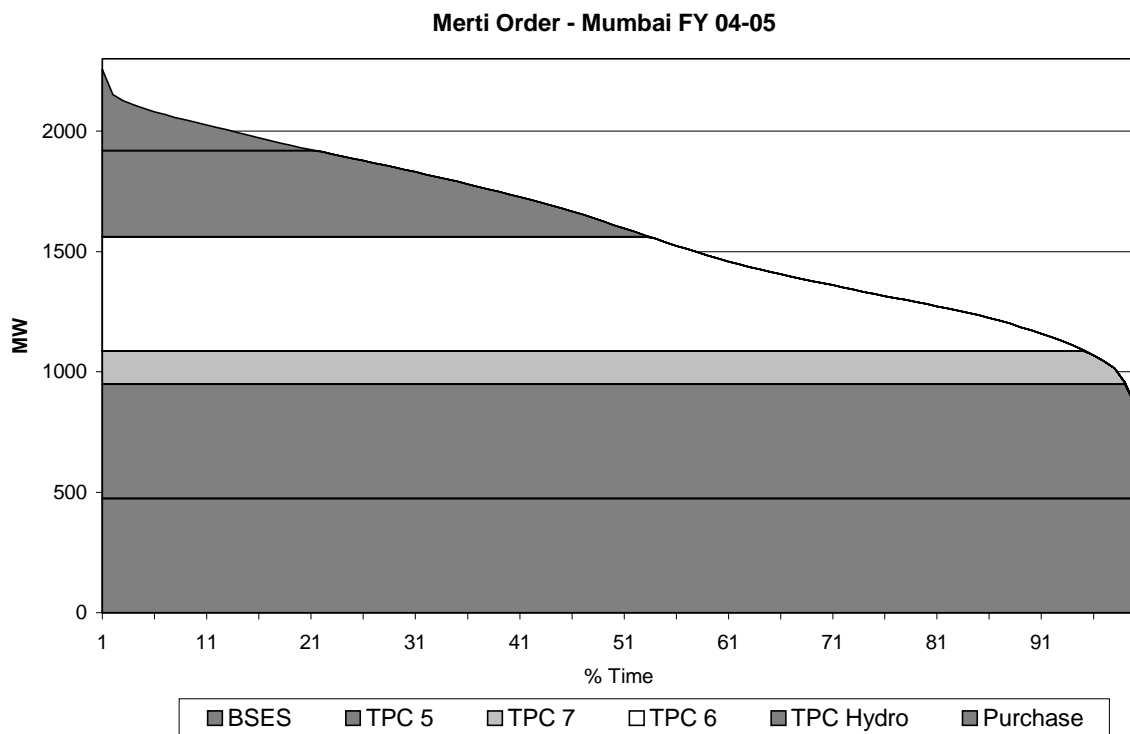
After considering the above generation pattern, energy demand of only 215 MUs (1.5% of system energy requirement) with the maximum load of about 330 MW remains unmet. For meeting this remaining demand, three options can be considered. The first option is to consider generation from Trombay U 7. The second option is to consider purchase from other sources such as MSEB or PTC. And the third option is to adopt measures such as DSM, and interruptible tariffs to reduce load during this limited period (and to avoid the incremental fuel / power purchase cost).

As mentioned earlier, variable cost of generation from Trombay unit 4 is about Rs. 2.78 / unit. Further as mentioned by TPC, since U 4 cannot be subjected to variable load or frequent starts and shut downs. U 4, if operated, has to be subjected to base load

operation, thereby displacing lower fuel cost generation. Considering the difference in load shapes of Mumbai system and MSEB system, and also considering that TPC/BSES are paying stand-by charges to MSEB, we consider it prudent to purchase this small amount of energy from MSEB for meeting the unmet peak demand of about 215 MUs rather than using Trombay U 4. It needs to be noticed here that TPC ARR also indicates some purchase from MSEB. Alternatively, arrangements could be made with PTC to buy power on short-term basis. Based on detailed analysis of past trends it would be possible to estimate the period when such purchase is required. We have assumed cost of such power purchase to be Rs. 2.50 / unit¹.

Figure 4 graphically depicts the merit order dispatch arrived on the basis of above methodology. Table 3 gives the comparison of generation projected from different plants in the respective ARRs and the generation arrived at on the basis of merit order dispatch considered above. The table also shows the difference in fuel cost in these two scenarios.

Figure 4 - Merit order dispatch of Mumbai generation plants



¹ In light of the stand-by charges we consider it appropriate that MSEB provides this minimal support (compared to MSEB's system) at a tariff of Rs. 2.50 / unit or lower, to ensure overall economy.

Table 3: Generation from Mumbai Plants - Merit order v/s ARR projections

	<-Generation (MU)->		< -Fuel Cost Rs. Cr.->	
	ARR	Merit Order	ARR	Merit order
BSES	3886	4161	455	487
TPC 5	3808	4153	504	550
TPC 7	1197	1163	86	83
TPC 6	3028	3095	767	784
TPC 4	869	0	241	0
TPC Hydro	1200	1203	0	0
			Difference	(-149)
			PP Cost	53
			Net. Diff.	(96)

4.2 Salient Observations About Merit Order Analysis Presented Above:

1. Adopting a merit order dispatch would save of about Rs. 96 Cr. for consumers of Mumbai in one financial year on account of efficient plant dispatch.
2. The merit order dispatch increases generation from TPC U 5 and Dahanu plant. Fuel cost of Dahanu increases by about Rs. 32 Cr. while the TPC costs (for all units put together and cost of power purchase) reduce by about Rs. 128 Cr. leading to net saving of Rs. 96 Cr.
3. The saving arises due to (i) Full utilisation of low cost units (i.e. Dahanu plant and Trombay Unit 5, which can now fully operate on coal) (i.e. no backing down of units and PLF being equal to projected Availability) (ii) Due to purchase of power (when necessary) from other utilities, generation from costliest Trombay Unit 4 running on liquid fuel is avoided. In the absence of such purchases unit 4 becomes must-run unit and displaces low cost generation at the time of low demand.
4. Trombay unit 4 should not be used for power generation until it is converted to start using coal, as the variable cost of generation from this unit is very high and could be economically replaced by power purchase from other sources. Further, in this context, we also wish to submit that the proposed capital investment for converting Unit 4 to coal should be undertaken only after a detailed analysis. This analysis should demonstrate that, based on the environmental restrictions, it would be possible to use coal for unit 4 after full capacity utilisation of unit 5 along with DPR.

5. TPC – BSES Arrangement

This section comments on supply arrangement between TPC and BSES, islanding of Mumbai, and the tariff structure.

5.1 PPA between TPC – BSES, Stand-by charges, and reliable Power to Mumbai

The reliability of power supply in Mumbai is one of the important issues. Historically, power utilities in Mumbai have been able to maintain a highly reliable power supply. As a result of this, inefficient investment on back-up devices such UPS and DG sets has been avoided and consumers take availability of power granted at all times. Hence, the issues regarding PPA between TPC and BSES and provision of standby supply from MSEB need to be seen in the context of its implications for the reliability. This section submits few of our observations on this issue.

The reasons for supply disruption include: (1) problems in distribution – this is not a serious case in Mumbai as both utilities have done large investments in network strengthening. (2) Load shedding – this also is not a problem for Mumbai, as supply is adequate and power can be purchased to mitigate any shortfall. (3) Tripping of generation units of TPC or BSES. This is a one of the possible situations, (4) Collapse of the Western Regional Grid, which we have witnessed for a few times during the last year, and may not be completely avoidable for at least the next 3 to 4 years.

Thus, the last two situations are plausible, and if the objective is to ensure continuity of power supply to Mumbai even under these two scenarios, then we need to look at options to mitigate such supply disruptions.

5.1.1 Tripping of one of the generating sets of TPC or BSES:

To mitigate adverse impact of such an event, the normal practice is to maintain a ‘spinning reserve’ in the system. Considering the demand – supply situation in Mumbai, neither TPC nor BSES can currently provide such spinning reserve on their own. Hence, in the current scenario, it is inevitable to depend on MSEB for provision of spinning reserve through the mechanism of ‘Stand-by’ supply. Conceptually, assuming that either TPC or BSES draws power directly from PGCIL grid, MSEB’s stand-by supply may not be needed and supply in the case of tripping of generating units could be obtained under ABT regime. But this also poses higher risk as the availability of supply in such situations may not be assured for a long duration, unless the buyer is able to secure such available-on-demand generation. In this context, it needs to be remembered that when MSEB provides ‘stand-by’ supply to Mumbai, MSEB meets Mumbai’s demand even at the cost of additional load shedding in other parts of the state. If for any reason, present ‘stand-by’ arrangement with MSEB is either dis-continued or if, MSEB’s revenue from this is greatly reduced, then it needs to be ensured that MSEB does not meet Mumbai’s demand at the cost of load shedding in other parts of Maharashtra. To ensure this, (if present arrangement is discontinued), we urge MERC to direct MSEB and its concerned LDC officer to prove (on the basis of detailed study) that the MSEB supply to Mumbai

was not at the cost of load shedding. This filling should be done within seven days of every such instance. This study should include details such as availability of generation at that time, frequency, MSEB's scheduled demand and supply under ABT, and load-shedding schedule in force at that time etc.

Since, the concept of 'stand-by' is similar to the concept of 'spinning reserve', the stand-by charges should be shared between beneficiary utilities in the ratio of largest generation unit size (as spinning reserve is expected to be equal to the largest generating unit size in the system). Hence, it should be shared 2:1 between TPC and BSES.

5.1.2 Western Regional Grid Collapse:

As mentioned, the second scenario leading to disruption of supply in Mumbai would be the collapse of the Western grid. The 'islanding' system developed in Mumbai is expected to protect Mumbai consumers in such situations. One of the key requirement for such a scheme is availability of sufficient generation within the 'island' to separate Mumbai system from the Western grid / MSEB system. This could be achieved only through continued reliance on TPC's generation plants for meeting significant part of Mumbai's load.² Hence, if the objective is to ensure reliability of Mumbai supply even in the case of collapse of the Western Grid, then it is essential to continue reliance on TPC plants, and hence it would be essential to have a PPA between TPC and BSES / BEST to avoid supply and commercial uncertainties.

In the nut-shell, depending on the extent of reliability required for Mumbai system, the present arrangement of dependence on TPC's generation plants as well as the 'stand-by' arrangement with MSEB will have to be continued. There is a danger that any major deviation from the current arrangement might increase vulnerability of Mumbai to supply disruptions. Hence, we request MERC to carefully and transparently evaluate any decision that would affect the present arrangement.

5.2 Inter-utility Exchange and Tariff Simplification

MERC should streamline the tariff for power exchange between utilities. Some of the issues in this regard are as follows:

1. Having a two-part tariff between TPC and bulk consumers. The ABT tariff (with UI charges) gave economic incentive to maintain the grid discipline – similar issue is on the hands for MERC. The recent process initiated by MERC regarding intrastate ABT is a welcome step.
2. The net-exchange of power should be computed for every 15 min. interval.
3. The reactive power flows should be charged at a reasonable rate. As the UI charge is linked to frequency, this charge should be linked to the voltage at the point of exchange.
4. The tariff should be based on present fuel cost, to reduce the FCA amounts.

² This does not imply that 100% power needs to be generated in Mumbai all the time. Even after adopting the merit order supply presented elsewhere in the submission, a large part of Mumbai's load would always be met through Mumbai generation and that should be sufficient for successful 'islanding' of Mumbai.

5. Tax on Sale of Electricity should not be divided in tariff and separate charge.
6. The technical losses due to TPC's wheeling through MSEB should be deducted from the power delivered to TPC rather than treating it as sales to TPC.
7. MERC should define technical limit to be followed for plant dispatching

6. Profit and Income Tax

High and increasing profit and the Tax on profit is an issue of concern. The profit, Income Tax and provision for deferred tax has been around **55 paisa /unit** sold since last three years. This is projected to **increase to 61 paisa/u in FY 04-05**. The increase as well as the base numbers, both are large especially for a predominantly generation utility. In case of MSEB the return allowed is just 11 Paisa/unit. And in case of NTPC the pre-Tax profit is about 26 paisa/unit. The TPC expenses excluding power purchase and depreciation are about Rs 2800 Cr against its Profit + Tax amount of Rs 590 Cr (FY 04-05)! It needs serious questioning whether such increase is warranted and is in consumer interest.

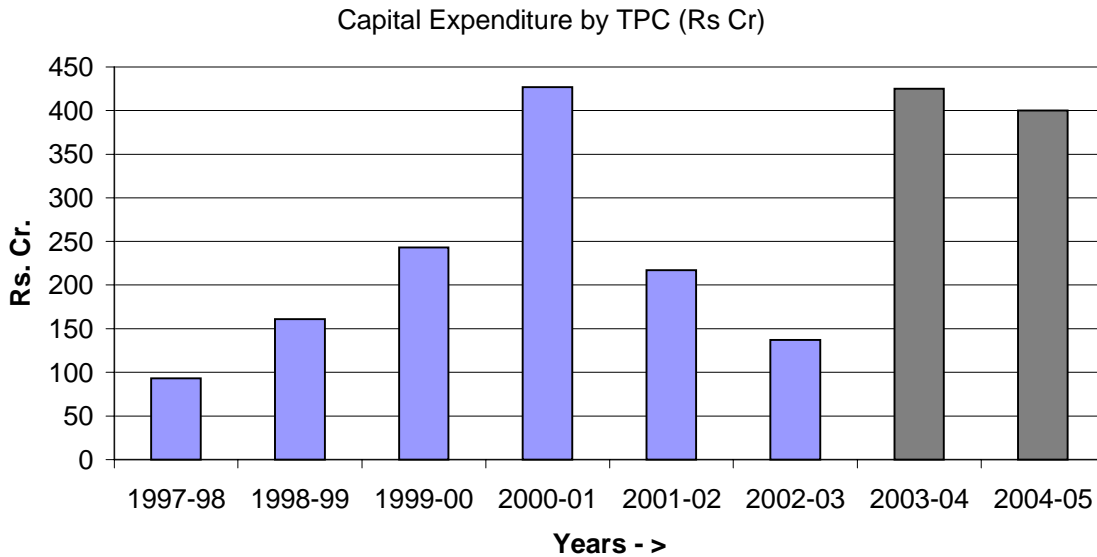
7. Capital Expenditure

The Capital Expenditure has significant and long-term impact on tariff as mentioned earlier.

7.1 Trend of Investments by TPC

TPC has also been making significant capital expenditure, especially during the last few years as shown in figure below. Figure 2 compares the proposed investments by TPC with the past trend. About Rs. 1000 Crore of investment is done by TPC after formation of MERC, which is over 25% of the fixed assets of TPC!. A similar level of investment is being proposed for the two ARR years also. More than half of these investments are on account of 'New Schemes' i.e. schemes initiated in the ARR years. This also includes some major schemes such as Rs. 38 Cr. for U 7, Rs. 125 Cr. for U 4 and Rs. 120 Cr. jetty and over Rs. 100 Cr. for network development.

Figure 5: Capital Expenditure by TPC



Note: CapEx upto yr. 2002-03 is based on changes in the original cost of fixed assets as per Capital base data and for FY 03-04 and 04-05 are based on CapEx proposed in the ARR for the respective years.

In light of earlier observation, that a significant part of consumer tariff is on account of capital investments by licensees, the reasonability of investments proposed by licensees needs to be evaluated in detail and the cost: benefit of the same needs to be validated. The TPC has not given sufficient data on the proposed capital expenditure and the Benefit:Cost justification of these schemes. We urge the MERC not to approve any new schemes proposed in FY 03-04 and 04-05 without undertaking a detailed scrutiny of such investments. For example, in case of investment for U 4, MERC needs to ensure that TPC would be able to fully use coal for U 4 (in addition to full generation from Unit 5) considering the environmental restrictions. Also the proposed investment in jetty needs to be evaluated in terms of planned capacity, reduction in costs on account of use of barges / trucks/ rail etc. TPC should be required to submit a detailed project report for such schemes to initiate the MERC scrutiny of these schemes.

Also in the ARR for FY 04-05 TPC has deferred CapEx scheme for relocation of feed-water pump house involving CapEx of Rs. 150 Cr without assigning any reason whatsoever. Such sudden deferral of investment scheme of such magnitude raises several questions about the necessity of scheme and the manner in which the schemes are proposed / developed. Similar is the case about jetty – change from Multi-fuel jetty at MbPT to coal jetty at Trombay. These examples also highlights the need for careful evaluation of the need for proposed CapEx plan.

7.2 Profit Maximizing Utility under Cost Plus Regulation

It is well known that under “Cost Plus” regulation, utilities tend to over invest –also called ‘Gold Plating’. In 1960 Averch and Johnson provided analytical support for the assertion that rate of return regulation causes inefficient production because of the overuse of capital. (Averch, H. and Johnson, L. L. “Behavior of the Firm under Regulatory Constraint.” The American Economic Review, Vol. 52, No. 5 (December 1962), pp. 1053-1069.) The utilities have an incentive to use more capital in production than would be dictated by cost minimization principle. Utility increases its profits by the substitution of capital for the other inputs.

Dr Petersen H. Craig (Utah State University) in his article “An Empirical test of regulatory effects” 2001, says: “Another way to look at the result is that the excess return (on capital), $S - P_k$, where S is the allowed return and P_k is the cost of capital, as a subsidy granted to the use of capital.” Because capital is subsidized the firm makes an inefficient decision.

To maintain overall economy, minimise cost, and protect public interest, proper control on investment is key to regulate utilities under the cost-plus regulation. Hence, MERC has to take very cautious approach while approving capital expenditure and passing on its costs to consumers - to be paid in future years.

7.3 Examples of Proposed Investments with Questionable Appropriateness

TPC submission on Cost:Benefit analysis of the proposed investments has several shortcomings. Hence, it is not possible to identify the prudence of many of the investments. In this context, a few observations about the capital investments by TPC are presented. Following list is only indicative.

7.3.1 TPC’s Capital Expenditure Towards Purchase of Helicopters

As per the annual report for FY 00-01, TPC has purchased Helicopters at a cost of Rs. 25 Cr. One wonders the usefulness and prudence of such an investment. We urge MERC to disallow this capital investment and the related costs (since FY 2000-01) from the ARR unless TPC demonstrates the usefulness of this investment for Mumbai consumers (which can only be done after submitting the flight log of this helicopter(s)).

7.3.2 Khopoli Tailrace

TPC ARR (03-04) page 94 (item A 9) indicates that Khopoli Tailrace to cost Rs 18 crore and would add a generation of 7 MU. The cost of incremental power would be about Rs 5.5 to Rs 8.5/unit depending on nature of financing of Capital Expenditure (prudent debt:equity ratio or from fully equity) . In either of the cases, the scheme is not economical.

Similar is the example of Adharwadi Nallah Diversion Pumping Scheme at Bhira. The cost of Rs 4 crore is expected to produce additional power of 4.4 MU. The energy cost of pumping and expected increase in manpower and O&M costs are not specified by TPC.

7.3.3 Network development activity:

ARR FY 03-04 and 04-05 both propose sizable expenditure for network development activity. It is not clear if the two items have any overlap or the total request is an addition of the two Rs 88 plus Rs 70 crore (= Rs 158 Cr). The explanation given in ARR is very general and much more details including voltage level, kind of work, expected benefits should be specified by TPC for such a large expenditure.

7.4 Need for Distinction Between O&M cost and CapEx.

The Capital Expenditure items proposed in ARR include a large number of items that can fall under routine maintenance. For example, repairs of ‘Spring loaded systems for coal mills’ (pg 105 ARR 03-04, C-8 page 49 ARR 04-05), procurement of spares, replacement of CVTs, procurement of tools, instruments, and PCs etc.

The item called ‘Minor schemes’ has a budget of Rs 11 and Rs 16 Cr (for FY 03-04 and 04-05 respectively) and is said to contain 300 minor schemes. The average cost of each small scheme is Rs 9 lack! And it is not clear why these items including the office furniture, water coolers, fax machine, welding machines, pumps, minor testing equipment are treated as Capital Expenditure and not part of routine maintenance expenses. A clear distinction between the routine O&M expenses and the Capital Expenditure is essential.

This is especially important considering that TPC has sought a budget of Rs 109 and 99 Cr for “Repairs and Maintenance” for FY 03-04 and 05-04 respectively. In addition, there are items such as “Other Operating Expenses”, “Cost of Services Procured” which are difficult to classify assess either as O&M expenses or CapEx without further details.

We urge the MERC to dis-allow any such schemes which are essentially in the nature of R & M expenses from the CapEx schemes.

7.5 Need for Scheme-wise Evaluation and Lack of Sufficient Data for the Same

Considering the fact that TPC has not given sufficient information to decide the usefulness of the requested investments, which are sizable; and decisions relating to capital investments have long-term implications on consumer tariffs, we request the commission to take a very caution approach on this aspect. Due to lack of sufficient information we are constrained in making comments on this at this stage.

We request MEC to seek additional information from TPC and evaluate the proposed expenses scheme-by-scheme. MERC should permit these investments only if they stand the test of ‘prudence’ and ‘usefulness’. As mentioned earlier TPC should be required to submit DPRs for all schemes over Rs. 10 Cr. to enable MERC to initiate such a review.

8. Sourcing of Capital Investment and Normative Capital Structure

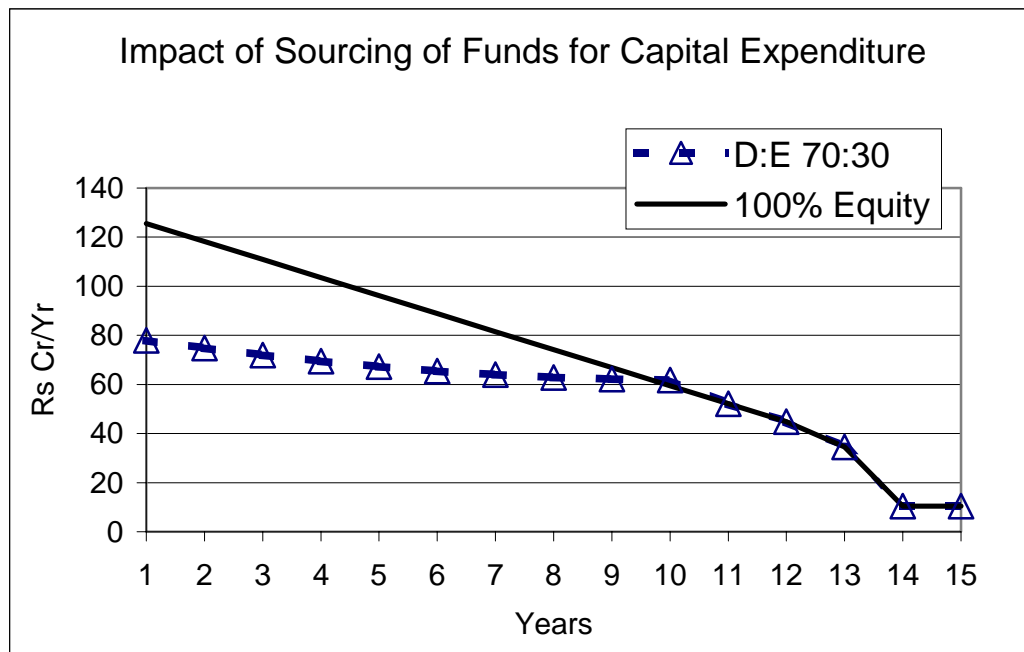
The sourcing of funds for capital investment has large impact on tariff. The prudent sourcing contains sizable component of debt. When asked about sourcing funds for investments – TPC has given a general answer indicating that they generally source funds as equity. This is clearly against consumer interest. While it may be natural for a private utility to maximise its profits (through such sourcing), it is the duty of the Commission to protect consumer from such behaviour of utilities.

8.1 Impact of Sourcing of Funds for Capital Expenditure in Future:

This sub-section shows the impact of sourcing of funds, and uses numbers just to illustrate the point. It is without prejudice to our prayer to the commission that Capital Expenditure should be allowed only after thorough study and after obtaining full details (such as DPR) of the planed schemes.

TPC has sought permission for capital expenditure of Rs 400 Cr in FY 2004-05. TPC wants to raise this capital through internal resources. In such case, the tariff will be much higher than if the capital was sourced through a mix of loan and equity (say 70:30 ratio). Figure 6 shows the consumer payment (revenue requirement) for Rs 400 Cr investment under the two scenarios mentioned above.

Figure 6: Impact of Sourcing of Rs 400 Cr for Capital Expenditure on Consumer Payments



Return on equity is assumed as 16%, and the IT rate of 39%. Since TPC has AAA rating, the interest rate on debt is assumed to be slightly more than SBI PLR. It is worth noticing

that TPC has very limited loan and can easily obtain debt. It is clear that consumers pay much higher tariff if investment is done purely from equity.

For each investment of Rs 100 Cr, proper choice of sourcing of funds would result in consumer saving of nearly Rs 65 Cr over the 15-year period.

We request MERC to ensure that all further capital investment, is done in a manner such that debt:equity ratio of 70:30 (or even higher) is maintained for the licensees' business in Mumbai. Or the 70:30 ratio is considered normative for calculation of tariff purposes.

8.2 Normative Debt:Equity Ratio for Capital

TPC's capital structure is loaded with high equity and has small quantity of loan. This is imprudent structure from consumer perspective, resulting in a large tariff burden for consumers. Prudence norm has to be applied as a good regulatory practice. **If a normative 70:30 ratio is used then ARR will reduce due to fall in Reasonable Return and Income tax by an amount of 150 Cr. We urge MERC to adopt this approach – and stop the continuing loss of consumers.**

9. Foreign-exchange Write-off, Reserves & Special Appropriations

TPC ARR has significant component of foreign-exchange write offs, reserves and special appropriations. These need a very careful scrutiny.

9.1 The Foreign Exchange Write-off

The amount of Forex Write offs are high. These amounts are directly added to the revenue requirement (directly increase the tariff). The Forex write offs have been Rs. 271 Cr in 5 years (past three years and proposed for FY 03-04 and 04-05).

Table 4 shows the closing balance (outstanding) foreign exchange loan, loan repayment in that year, interest payment amount, guarantee fee for the loan, Forex Fluctuations shown by TPC (in file "Forexloadetails.XLS") and 'Forex Write Off' recovered or proposed to be recovered. Table also calculates the Forex write offs as a % of outstanding loan and also as % of loan payment (including the interest and guarantee fees).

Table 4: Foreign Exchange Loans, Repayments, Write offs

No	98-99	99-00	00-01	01-02	02-03	03-04	04-05
1 Forex Loan Closing Balance	554	512	439	393	375	?	?
2 Re-payment	126	105	108	99	161		
3 Interest	53	46	36	31	25		
4 Guarantee Fee	18	17	16	14	11		
5 Exchange Fluctuation	179	170	130	115	131		
6 Foreign Exchange Write off	?	?	60	51	89	21	51
7 Write offs as % Balance Loan			14%	13%	24%		
8 Write offs as % cost of loan (2+3+4)			37%	36%	45%		

Note to table 4 : Row 1 to 5 data from file "Forexloadetails.XLS". Row 6 from ARR 04-05 page 57.

Pg 56 of ARR 04-05 explains that "*Net change in company liability for repayment of foreign exchange loan on realignment in Rupee value against the foreign currency value is recognized over the period of repayment of liabilities on the basis of realised losses or gains on repayment as a "Foreign Exchange Write off"*".

This description is not sufficient to ascertain the validity of the claims.

1. The amounts under 'Forex Write Off' seem very large compared to either the outstanding loan or the repayment.
2. The method of calculating the write off is not clear from the ARR description. And even the worksheet files provided by TPC do not contain formulae to ascertain the method of calculations.
3. We request TPC to provide detailed calculations explaining the amounts of write offs for past three years (FY 00-01 to 02-03) and the proposed amounts in the ARR years.

9.2 Reserves & Special Appropriations

The TPC balance sheet contains very large reserves and appropriations. All of these reserves and appropriations are financed directly through consumer tariff over the years. These reserves have partly arisen out of structure of IE Acts and partly arisen due to the special permissions by the GoM to TPC. Some of these reserves are included in the capital base and others are not included. These reserves and appropriations are either invested in trust securities or can be used for capital expenditure.

9.2.1 Overview of Reserves and Appropriations

Table 5 below shows the list and amount of these reserves and whether they are included in the capital base.

Table 5: Reserves ad Special Appropriations

No		Balance								Balance
		March 1996	1996 -97	1997 -98	1998 -99	1999 -00	2000 -01	2001 -02	2002 -03	March 2003
1 #	Tariffs and Dividend Control Reserve	12								12
2 @	Contingencies Reserve	69	12	12	10	16	8	9	18	154
3 @	Development Reserve (created prior to 1976)	5								5
4 #	Investment Allowance Reserve	121								121
5 #	Debt Redemption Reserve	52								52
6	Debenture Redemption Reserve	44								46
7	Income net of tax on DRR investments		2	3	4	4				11
8 #	Special Appropriation towards Project Cost	380	2	23	23	35	18	11	29	521
9	Deferred Taxation Liability Fund	279	0					107	23	420
10	Income net of tax on DTLF investments		11	3	4	4				
	Total of income net of tax		13							
	Total appropriation		14	12	10	16	8	116	41	
	Total	962	27							1342

Notes: 1. Data taken from additional submission by TPC.

2. # indicates that the amount is deducted from the Capital Base to calculate the Reasonable Return.

3. @ indicates that the amount is added to the Capital Base to calculate the Reasonable Return.

Before going into the details of the each of these reserves it is important to notice that the total of these reserves and appropriations are Rs 1342 (as of 02-03).

9.2.2 Comparison of TPC R&A with other Utilities

It is worth making a comparison of the reserves and appropriations of TPC with that of other private utilities in the country. Table 6 below indicates various reserves and appropriations and then compares the same with original cost of fixed assets of these utilities.

Table 6: Comparison of reserves and appropriations

	CESC Yr. 2000	SEC Yr. 2001	BSES Yr. 2003	TPC Yr. 2003
Contingencies Reserve		53	7	102
Development reserves		2	3	163
Investment allowance reserve		12	1	
Tariffs and Dividends control reserve	-	-		
Consumers Rebate Reserve		1	0	
Special appropriations permitted by state government.	-		0	100
Deferred taxation liability fund				4
Debenture redemption reserve				6
Debt redemption reserve				167
Total		67	11	542
Total as % of Fixed Assets		2%	3%	18%
Original cost of fixed assets	4423	341	3027	3646

From Table 6 it is very clear that TPC's reserves and appropriations are way more than other private licensees in India.

Considering that effectively all these amounts are advances from consumer, a fair treatment of these R and A will require adherence to following principles,

- (1) All income from these investments (if these amounts are required to be maintained, as investments in trust securities) should reduce the ARR
- (2) Assets created from these reserves have to be treated similar to the consumer contributions. Consumers should not be burdened either
 - (i) With depreciation of these assets or
 - (ii) With return (profit) to utility (and the IT on the profit) on the Capital Expenditure funded through R&A i.e. total consumer contributions to these reserves should be deducted from the Capital Base.

In addition, MERC also needs to ensure that the R&A are reasonable in terms of amount and also its utilisation.

9.2.3 Contingency Reserve:

This consumer advance is a sort of insurance given to the utility against the possible loss of revenue / additional costs due to un-avoidable accidents, strikes or circumstances outside the control of management. It was conceptualised under the Schedule VI in early years of utility industry in India. Now considering the range of insurance covers obtained by utilities the need, treatment, and the quantum of such fund should be reassessed.

In the ARR period the TPC has sought addition to Contingency fund at the highest level of 0.5% of Original Cost of Fixed Assets allowed by Schedule VI (the minimum being 0.25%). The proposed additions to this fund are Rs 18 Cr and Rs 19 Cr for FY 03-04 and 04-05 respectively.

The treatment of contingency reserve as per Sc. VI is unjust to consumers from another perspective also. This consumer advance is added to the capital base of the utility and hence the utility earns return on this amount. The Income tax of the utility on this profit is a pass-through and hence is paid by consumer. In this manner this is a very costly affair for consumers. Consumers pay the base amount as insurance to utility, give profit to utility as well as income tax of the company (on the said profit)! As shown in table 7 below the interest earned on such funds is much less than the cost on account of profit and IT, effectively implying that consumers are required to make additional payments rather than earning any income from such advance payment!

Table 7: Cost of Contingency Reserve for Consumers

	1998 -99	1999 -00	2000 -01	2001 -02	2002 -03
Income on Contingency Reserve	9	9	9	8	0
Reasonable Return to TPC (say @15%)	15	18	19	20	23
IT on the RR on Contingenies Reserve (38%)	9	11	12	13	14
Net Cost to Consumers (on advance they have paid)	16	20	22	25	37

It is worth making a note that TPC already has an insurance cover for assets worth of nearly Rs 5,400 crores against risks (Fire, Machinery Break-down, Earthquake, Floods, Riots / strikes / Malicious Damage, Storm / Tempest, Terrorism cover). This insurance is in addition to the IAR Policy, Motor Vehicles policy, Hull Insurance policy, Aviation policy, Personal Accident policy, Directors & Officers liability policy, Public liability policy, All risk policy, Transit Insurance policy, Fire policy (office/res. premises), and other miscellaneous policies.

Considering these factors, it is essential to substantially reduce (by about 50%) the contingency reserve and the reduction in this reserve should be returned to consumers in the form of special rebate over the next two years. Also the contingency reserve should not form part of capital base.

9.2.4 Debenture Redemption Reserve

As per the information submitted in the ARR filing TPC has no debentures outstanding now, hence, this fund of Rs 46 Crore is not required. It should be either returned to consumers or it should be used for investments. The investments made from this fund should be deducted from the capital base and utility should not be allowed to charge any depreciation on these assets. This is because depreciation is charged to enable licensee repayment of principle amount of any loan taken for creating assets. In this case licensee is not required to repay this amount (as it is paid in advance by consumers).

9.2.5 Investment Allowance Reserve & Special Appropriations Towards Project Costs:

No fresh additions can be made to Investment allowance Reserve since 1993 due to changes in IT Act. The amount accumulated on this account needs to be maintained as reserve and deducted from capital base even after utilisation of funds. Hence, it continues to appear in the accounts.

The TPC's Special Appropriations Towards Project Cost (SATPC) would be about Rs 550 Cr in FY 04-05. As per the explanation given by TPC - the appropriation is allowed under a special permission by GoM to TPC. The fund can only be utilised for expenses on the specific projects for which the fund is collected. The balance in this reserve has to be deducted from the Capital Base.

The fundamental problem with "Investment Allowance Reserve" as well as "Special Appropriations Towards Project Cost" relates to depreciation. These amounts are similar

to the consumer contributions for new assets, and hence the amount has to be directly deducted from the Original Cost of Fixed Assets not just for calculating the Reasonable return but also while calculating depreciation.

In effect the correct treatment of these reserves would entail:

1. Treating the same as consumer contribution in the capital base calculation and the original fixed cost of assets should be reduced to this extent,
2. While computing the allowed depreciation, cost of assets funded through such reserves should be ignored (as unlike loan for CapEx, licensee is not required to repay this amount to consumers)

While making above calculations total inflow in these reserves should be considered (and not just the actual amount utilised or balance) as this is the actual amount recovered from the consumers.

Unless this is done, the utility keeps earning 7% depreciation on this consumer contribution. In case of TPC, for FY 04-05 the reduction in depreciation on this account would be Rs. 44 Cr.

We request MERC to calculate allowed depreciation only on the assets that are not financed through consumer's money under any other head also.

9.2.6 Deferred Taxation Liability Fund

In the wake of changes of Income Tax rules and norms about depreciation, the need and quantum of Deferred Taxation Liability Fund needs to be re-assessed. Presently, the fund stands at Rs 420 Crore. Further it needs to be noted that the interest income on this large amount is just quite low (around 3% in last two years). Also the amounts under dispute with IT department are very low compared to this fund. TPC's average IT for the last five years has been only Rs. 210 Cr. Hence, unless TPC justifies the need for such large fund on the basis of projected IT liability in the next three / four years, the fund should be reduced to 50% of the average IT of last five years and the balance amount (around Rs. 300 Cr.) should be returned to consumers as special rebate in next two / three years. In this context it needs to be noted that in case of MSEB, MERC has allowed for any liability arising out of taxes as a pass through under FOCA. A similar approach should be adopted for TPC also.

9.2.7 Consumer benefit account

TPC has shown Rs. 11 Cr. as balance in the consumer benefit account and the government audit has pointed out that this amount should be distributed to consumers. Hence, we urge the MERC to reduce the ARR to this extent and extinguish the balance in consumer benefit account.

10. Prayers to MERC

In light of above submissions we urge the MERC to kindly consider our following prayers.

1. Considering interlinked nature of many issues in the BSES ARR (case 18/2003) and TPC ARR (case 30/2003) we urge the MERC to consider our two submissions in these cases (this submission and earlier submission in BSES case dt. 2nd March 2004) together and interlinked.
2. Similar to MERC's decision in case of MSEB's ARR, MERC should fix tariff only on the basis of ARR for FY 04-05 without making any adjustments for FY 03-04 shortfall if at all.
3. Direct TPC to provide explanation for difference in calories and weight of coal received and burnt as pointed out in section 3.1. Further, as submitted in section 3.2; unless TPC justifies burning less than allowed coal for the last three years on account of environmental restrictions; disallow the higher cost due to inefficient fuel use.
4. Adopt integrated merit order dispatch for TPC and BSES plants as discussed in section 4. This can lead to savings of about Rs. 100 Cr. for Mumbai consumers.
5. As submitted in section 5, if the objective is to ensure reliability of supply in Mumbai even in case of grid failure (i.e. for successful islanding of Mumbai grid), it is essential to have significant generation in Mumbai itself. Hence, to ensure commercial and technical certainty, it is essential to have a PPA between BSES and TPC. Further, we urge the MERC to carefully consider impact of any change in the present arrangement (i.e. significant supply to Mumbai from Mumbai generation plants and stand-by arrangement with MSEB) on the reliability of supply.
6. Please consider our suggestions for simplification of inter-utility exchanges and tariff as mentioned in section 5.2
7. Proposed capital expenditure by TPC should not be approved without a detailed scrutiny. We urge the MERC to direct TPC to submit detailed project reports for all CapEx schemes above Rs. 10 Cr. to enable initiation of such a scrutiny. Submission of DPRs is a standard practice followed by other SERCs also.
8. The costs (e.g. depreciation, RR and IT) arising out of imprudent investments such as helicopters and Khopoli tailrace should be disallowed.
9. Capital Expenses and O& M expenses should be clearly distinguished and all O& M related capex and other expenses should be included under the O&M category rather than CapEx.
10. As mentioned in section 8, excessive reliance on internal resources for CapEx is against consumer interest and TPC should be required to adopt a prudent financing plan consisting of debt:equity ratio of 70:30. MERC should use a prudent, normative debt:equity ratio of 70:30 while considering the ARR. On the account of reduction in profit and IT, about Rs. 150 Cr. should be disallowed from TPC ARR for FY 04-05.
11. TPC should be required to explain in detail the foreign exchange write-offs and only reasonable write-offs should be allowed.

12. The reasonability and justification for the quantum and appropriateness of various reserves and special appropriations should be scrutinised in detail. Further as demonstrated in section 9.2 there is a strong case to depart from schedule VI methodology in this regard in order to ensure that consumers are not unjustifiably burdened on account of various reserves and special appropriations created through consumer tariff. Specifically we urge the MERC to dis-allow / return to consumers (as special rebate) about Rs. 277 Cr. as described in Table P1.

Table P1: Dis-allowance / Rebates on account of Reserves & Special Appropriations

Sr. No.	Amount (Rs. Cr.)	Description	Submission Ref.
1	75.5	Unreasonable contingency Reserve	9.2.3
2	46	Excess debenture redemption reserve	9.2.4
3	44	Inappropriate provisions in Sc. VI for investment and project cost appropriations	9.2.5
4	100	Excessive DTLF	9.2.6
5	11	Balance in consumer benefit account	9.2.7
Total	277		

13. A similar approach regarding reserves and appropriations need to be adopted regarding BSES also.
14. We urge MERC to examine the appropriateness of utilisation of various reserves appropriations and loans raised by TPC as well as BSES in the last five years.
15. MERC should direct that TPC and BSES should not create any encumbrance on the assets and revenues of Mumbai license area operations, in any form, without prior approval of MERC. Further both licensees should submit information about any such encumbrance created or proposed to be created.
16. We also wish to take this opportunity to clarify our submission on the issue of standby-charge. We submit that the stand-by charge applied by MSEB should not be construed as any kind of cross-subsidy as this charge is being levied to compensate MSEB for the supply of power to Mumbai in case of any emergency. In case of such emergency, MSEB is required to supply power to Mumbai. Even in present general power shortage scenario MSEB is required to meet such demand of Mumbai and at times, even at the cost of load shedding in other parts of Maharashtra. We request the MERC to kindly ignore any part of our submission in case 18/2003 (BSES ARR) that conveys a stand contrary to the above on the issue of stand-by charges.
17. We urge the MERC to call for a meeting of the State Advisory Committee if MERC is considering any new options such as regulatory liability / asset, new incentive / disincentive mechanism etc. Such a meeting would provide valuable opportunity to MERC to seek feedback of all stakeholders in such proposals.
18. We request the MERC to kindly give us an opportunity for oral submission at the time of public hearing.
