

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
World Trade Centre, Centre No.1, 13th Floor, Cuffe Parade, Mumbai 400 005
Tel. No. 022 22163964/65/69 – Fax 022 22163976
E-mail: mercindia@mercindia.org.in
Website: www.mercindia.org.in

Case No. 18 of 2006

In the matter of
Suo Motu Review of Progress of Pilot DSM projects/ Programmes undertaken by
MSEDCL.

Dr Pramod Deo, Chairman
Shri. A. Velayutham, Member

Dated: August 16, 2006

ORDER

1. The Commission has been seized of the issue of Maharashtra State Electricity Board's ("MSEB") supply-demand situation for quite some time and has passed several Orders on various aspects and measures in relation thereto. One such measure considered by the Commission is "Energy Conservation and Demand Side Management (DSM)" and the need for MSEDCL's own initiative and involvement in this field to gain quick results, particularly through the adoption of energy efficient lamps and other efficiency measures and to induce consumers to adopt energy efficient devices.
2. Under its Tariff Order dated January 10, 2002, the Commission had specifically observed, as under:

"Managing the demand through DSM techniques, which include load shaping as well as reduction in the consumption levels through use of energy efficient devices, is very essential, to bridge the gap between demand and supply. The World Bank has already conducted studies in this regard, which should be used by the MSEB to formulate appropriate DSM schemes. The Commission directs the MSEB to come forward with concrete schemes to implement DSM in the State. This will also enable the MSEB to undertake Least Cost Planning in the future, and will enable the MSEB to manage its demand to match its supply. The MSEB should encourage the use of energy efficient devices, and publicize the benefits to the consumer through appropriate publicity media... The detailed plan, to promote energy efficiency at the consumer end, should be submitted to the Commission within three months of this Order."



3. While disposing of a Petition filed by Shri Pratap Ganpatrao Hogade, President, Maharashtra Rajya Veej Grahak Sanghatana, regarding compliance of Tariff Order dated 10th March 2004 in respect of Load Shedding by MSEB and other related issues, by its Order dated 4th March 2005 (Case No. 2 of 2003) the Commission had issued certain directives for bringing in immediate and lasting impact on the supply-demand situation, through “Energy Conservation and Demand Side Management”, besides others. While observing that MSEB needs to take up energy efficient lighting projects on a demonstration basis to firm up the details of a large-scale programme in the field, the Commission under its aforesaid Order dated 4th March 2005 had issued the following directions: —

“17.4 Energy Conservation and Demand Side Management

....

MSEB should submit, within the next one month, a detailed first-phase plan for energy conservation and energy efficiency keeping in view the above, with details of proposed funding and savings. The plan should include schemes to promote the usage of energy efficient devices through appropriate publicity and awareness building and sharing of investment needs, and would be incorporated subsequently in the rolling Investment Plan expected by the end of the current Financial Year.”

4. The Commission had initiated a review of compliance by MSEDCL of various directions in its Tariff Orders. In relation to the aforesaid Petition filed by Shri. Hogade, a meeting was convened by the Commission on 29th September 2005 to review the progress of DSM programmes and its implementation by Maharashtra State Electricity Distribution Company Limited (successor entity to MSEB for undertaking distribution functions), besides other distribution licensees. During the said meeting, MSEDCL had apprised the Commission of a pilot project undertaken by MSEDCL for installation of Compact Fluorescent Lamps (“CFLs”) in Nashik District. MSEDCL had assured that the impact of the pilot programme in Nashik would be captured by tagging the sale of CFLs through the billing system. MSEDCL had also assured that necessary software would be installed in the billing system for this purpose. MSEDCL had stated that the first impact of the programme would be known by February 2006, and that based on the pilot project experience, the CFL programme would be extended to cover the entire State. MSEDCL had submitted that the impact of energy savings being an important issue, it had already directed its officials in Nashik to carry out the impact assessment of CFL Pilot Project.

5. To take the matter further, the Commission held a hearing *suo motu* on 11th July 2006 with participation by consumer representatives (authorized on a standing basis under Section 94(3) of the Electricity Act, 2003), M/s. ABPS Infrastructure Advisory (consultants to the Commission), besides MSEDCL to :

- a. Review the progress made in the evaluation of Nashik Pilot Project
- b. Review other DSM programmes, pilot projects or initiatives that MSEDCL and / or its zonal/circle/divisional/sub-divisional offices were in the process of planning, designing or implementing



- c. Ascertain whether or not impact measurement mechanisms form an integral part of existing and future planned DSM programmes and projects, and if not, to find out how MSEDCL will integrate impact measurement mechanisms in the DSM projects and programmes it is implementing at present or is planning for the future.
6. At the hearing held on 11th July 2006, MSEDCL made presentations before the Commission covering (a) CFL Pilot Project in Nashik District, and (b) Other demand management and Demand Side Management (DSM) initiatives being pursued by MSEDCL.
7. In view of the large number different DSM and demand management programmes that were discussed in the hearing held on 11th July 2006, the Commission, for the sake of clarity and easy referencing, has structured its Order in four parts. Part “A” covers MSEDCL’s presentations and submissions; comments, observations and suggestions of the Commission and the consumer representatives; as well as directives and Orders of the Commission with respect to CFL pilot project in the Nashik district. Part “B” covers MSEDCL’s presentations and submissions; comments, observations and suggestions of the Commission and the consumer representatives; as well as directives and Orders of the Commission with respect to the proposed state level CFL project and the proposed Nashik district level as well as state level electronic ballast projects. Part “C” covers MSEDCL’s presentations and submissions; comments, observations and suggestions of the Commission and the consumer representatives; as well as directives and Orders of the Commission with respect to other DSM and demand management initiatives being pursued by MSEDCL. Part “D” provides a consolidated summary of the Commission’s directives and Orders and the Commission’s observations as regards the DSM activity in MSEDCL.

PART “A”

CFL Pilot Project in Nashik District:

8. *Consumer response to CFL pilot project:* Shri. Dhabade, Executive Director of MSEDCL, submitted that under the CFL pilot project in Nashik District, about 3,79,000 CFL lamps were bought by various consumers belonging to residential and commercial categories. He further mentioned that Around 21,944 consumers had opted for making payment for the CFL lamps by means of appropriate adjustment in the electricity bills and a majority of consumers had opted to pay directly by cash on installation. He also submitted that in the Panchavati Sub-Division where there are around 45,000 consumers, 9,037 consumers had opted for the CFLs which had resulted in the overall purchase of 32,447 CFLs.
9. *Evaluation of CFL pilot project:* Shri Dhabade mentioned that the anticipated load relief of about 10 MW as a result of purchase and use of 379000 CFLs lamps in Nashik district was too small compared to the maximum demand of about 825 MW in the Nashik district and hence, at the system level, it had not been possible for MSEDCL



establish or detect if any relief in load had in fact been there as a result of the pilot project. Shri Dabhade further submitted that, although evaluation and impact measurement and verification did not form an integral part of the MSEDCL's CFL pilot project design, MSEDCL had tried to establish and measure the impact of the CFL pilot project through several means. Elaborating on the means adopted by MSEDCL to establish the impact of CFL pilot, Shri Dabhade made following submissions:

- (a) MSEDCL had hired a consultant and conducted a test to compare the difference in the power consumed by a 40W incandescent bulb vis-à-vis that by a 15W CFL lamp, and a 60W incandescent bulb vis-à-vis that by a 20W CFL lamp. The power drawn by a 40W incandescent bulb at 238 Voltage was recorded to be 38W, and by a 15W CFL lamp as 8.43W. Similarly, the power drawn by a 60W incandescent bulb at 240 Voltage was recorded to be 58W and by a 20W CFL lamp as 10.94W. Since the test results showed almost 80% reduction in power drawn by CFL lamps as compared to incandescent bulbs, MSEDCL contended that undertaking the pilot project was justified.
- (b) MSEDCL further submitted that they had conducted a study at two different apartments – Pramegh Apartment and Amol Vihar Apartment. The two Apartments have a total of 22 flats (11 flats per Apartment). Initially, measurement of consumption of electricity in each of these flats was recorded over a period of five days. These were “before” measurements. Two incandescent bulbs in each of the 22 flats were then substituted with CFL lamps and again the measurement of consumption of electricity in each of these flats was recorded over a period of five days. These were “after” measurements. The study revealed an energy saving (“Before” consumption minus “After” consumption) of 27.16 %.
- (c) A second study had been conducted by MSEDCL on two separate consumers. These consumers had started using CFL lamps from January 2006 onwards. MSEDCL contended that, largely as a result of use of CFLs, in comparison to their electricity bills for the months of December 2005, there has been a reduction in their monthly bills from February 2006. In support of their submission, MSEDCL presented the following consumption data with regard to two consumers:

| Consumer | Monthly Consumption in Kwh for the month of: | | | | | |
|--------------|--|--------|--------|--------|--------|--------|
| | Dec 05 | Jan 06 | Feb 06 | Mar 06 | Apr 06 | May 06 |
| B.S. Naikam | 212 | 178 | 112 | 112 | 167 | 184 |
| C.M. Bhavsar | 81 | 33 | 22 | 30 | 31 | 50 |

- (d) MSEDCL presented the following chart of monthly consumption of residential consumers in the pilot project area who had purchased CFL lamps under the pilot project. MSEDCL interpreted the fall in aggregate consumption as being largely due to purchase and use of CFL lamps by consumers.



| Month/year | Jan 06 | Feb 06 | Mar 06 | Apr 06 | May 06 |
|----------------------------|--------|--------|--------|--------|--------|
| Consumption in Million kWh | 1.342 | 0.862 | 0.969 | 0.975 | 1.249 |

- (e) MSEDCL also presented the following data on the average current flowing through the 11 kV Peinth Road feeder from Panchavati 33/11 kV sub-station, for different months. The feeder comprises of residential and commercial consumers and MSEDCL interpreted the gradually declining levels of aggregate average current as being largely due to rising penetration and use of CFL lamps by consumers being served by this feeder.

| Month/Year | Oct 05 | Nov 05 | Dec 05 | Jan 06 | Feb 06 | Mar 06 | Apr 06 | May 06 | June 06 | 10 July 06 |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|------------|
| Current in Amps | 182 | 174 | 168 | 155 | 147 | 126 | 156 | 162 | 156 | 140 |

10. Based on MSEDCL's presentation on CFL pilot project in Nashik district, during the hearing, the Commission and Commission's consultants raised following questions and provided below mentioned comments and suggestions. The clarifications and responses provided by the MSEDCL, during the course of the hearing, to some of the questions, comments and suggestions have also been set along side.

- (a) With respect to MSEDCL's study at Pramegh and Amol Vihar Apartments, the Commission enquired as to which two incandescent bulbs from each apartment were substituted with two CFL lamps and for what duration each such incandescent bulbs were normally put to use by the apartment consumers? Shri. Taksande, Executive Engineer Special Projects of MSEDCL submitted that no particular incandescent bulbs were substituted during the study. What was done was that, when the "before" readings for first five days were being recorded, two incandescent bulbs were kept "on" for four hours in the morning and four hours in the evening. But for these two lamps, flat owners were asked to use the electricity as per their normal practice. Similarly, when "after" readings were being recorded, the two incandescent bulbs were substituted by two CFL lamps which too were kept "on" for same number of hours in the morning and evening. Here too, but for these two CFLs, the flat owners were asked to use the electricity as per their normal practice. The reduction in "after" consumption of electricity for all the 22 flats taken together as compared to "before" consumption was then deemed to have been the result of use of CFL lamps in place of incandescent bulbs. The consultant to the Commission there upon commented that the said study was only a controlled experiment and hence the resultant figure of 27.16 % savings were not true savings but were savings obtained under controlled



condition and hence the study as well as its results had very limited value for ascertaining the impact of the pilot project.

- (b) With respect to the study conducted by MSEDCL on two consumers, the Commission observed that this study being conducted on only two consumers, it would lack credence and consequently would not be acceptable by the Commission as an impact evaluation study.
- (c) With respect to the chart of monthly consumption of residential consumers who had purchased CFL lamps under the pilot project, the consultant to the Commission observed that it needed to be checked if the reduction in consumption was due to seasonal variation. For this the consultant to the Commission suggested that MSEDCL should study the 2005 data and study the variation in consumption for the period under study, i.e. January 2005 to May 2005 and compare (in percentage terms) it with the variation in consumption observed during January 2006 to May 2006 period. If the percentage reduction in consumption in 2006 is observed to be more than 2005, then it could be an indicator of the fact that reduction has come about perhaps as a result of use of CFLs. In response, Shri. Dhabade of MSEDCL agreed to undertake the said comparative data analysis and provide the Commission with the results.
- (d) With respect to data on the average current flowing through the 11 kV Peinth Road feeder from Panchavati 33/11 kV sub-station, Director Technical (EE) in the Commission's office observed that it is incorrect to use "amount of average current flowing through a feeder" as an indicator of impact of CFL project. Elaborating further, Director Technical (EE) in the Commission's office pointed out that, since current flowing through the feeder gets affected by the power factor, the correct indicator to use is the average load on the feeder in kW or MW terms. Director Technical (EE) in the Commission's office then asked MSEDCL if the 11kV Peinth Road feeder had the necessary metering and data recording arrangements to arrive at the average load on the feeder. In response Shri Dabhade of MSEDCL submitted that it would be possible for MSEDCL to arrive at the average load on the feeder as necessary arrangements were available at Panchavati sub-station. MSEDCL promised to study and report to the Commission if the available data at Panchavati sub-station could be processed and analysed to present average feeder load profile for various months for the years 2005 and 2006.
- (e) Emphasising the need for carrying out an evaluation of the CFL pilot project, consultant to the Commission suggested that such an evaluation could incorporate the following:
 - (i) Data showing number of residential and commercial customers that have purchased the CFL lamps under the pilot project, the type (how many residences/commercial establishments have



purchased 15W and how many 20W) of CFL lamps that have been purchased, and tariff category wise purchase of lamps.

- (ii) For arriving at the impact, MSEDCL could take a sample of 1000 to 2000 consumers who have purchased CFL lamps under the pilot project and ascertain from this sample how the CFLs are being used:
 - 1. Are they being used to replace incandescent bulbs or tube lights?
 - 2. Are they being used in places where incandescent bulbs are being used for at least 4/5 hours per day or are they being used in corridors, bathrooms or latrines
- (iii) For arriving at the impact, if possible, MSEDCL should attempt to link the consumers who have purchased CFLs under the pilot project to the distribution transformers and attempt to identify distribution transformers where large number of CFLs has been purchased. For such transformers, MSEDCL should attempt compare the consumption and load figures over a period of past 12 months to see if savings have been achieved.
- (iv) Apart from impact evaluation, MSEDCL needs to carry out an evaluation of the efficacy and workability of the various processes employed during pilot project implementation, design and planning. In particular, MSEDCL should try to find out how effective, efficient and equitable were:
 - 1. The delivery mechanisms in delivering the CFLs to the intended target consumers
 - 2. The pilot project implementation arrangements
 - 3. The pilot project administration and management systems
 - 4. The pilot project communication processes at interface with stakeholders
 - 5. The pilot project marketing among target consumers
- (v) Mentioning that only about 20% of the consumers in Panchavati area had participated in the pilot project, consultant to the Commission emphasised the need for evaluating the consumer response to the pilot project offer, including level of participation in the pilot project, reasons for participation, reasons for non-participation, etc.

11. Main comments and suggestions received from consumer representatives participating in the hearing as well as MSEDCL's response to these comments and suggestions have been summarised below:

- (a) Shri. Santanu Dixit, on behalf of Prayas Energy Group, raised the following issues:



- (i) Where was the test to compare the difference in the energy consumed by a 40W incandescent bulb vis-à-vis that by a 15W CFL lamp, and a 60W incandescent bulb vis-à-vis that by a 20W CFL lamp conducted? In manufacturers test facility or in independent test facility? In response, Shri Dabhade, Chief Engineer-Special Projects of MSEDCL submitted that the tests were not conducted in manufacturers test facility but were independently conducted by consultants to MSEDCL
- (ii) What feedback has been received from the consumers, if any, about the failure of CFL lamps purchased by them under the pilot project?
- (iii) Since the pilot project provides for replacement of CFL lamp bought under pilot project if any defect is found within a year from date of purchase, has MSEDCL created any mechanism to monitor the number of CFL lamps that have been returned due to failure or other defects?
- (iv) What kind of quality control mechanisms and checks MSEDCL had employed to ensure that the CFL lamps that were actually offered for sale under the pilot project were of good quality and of the same technical specification as was mentioned by the manufacturers in their tenders?
- (v) MSEDCL needs to undertake a preliminary analysis on the impact of the market inasmuch to find out whether the price of the CFL lamps has reduced after the MSEDCL's implementation of the pilot project.
- (vi) Has MSEDCL done any analysis as to why almost all of the 379000 CFL lamps that were sold during the pilot project period were sold by only one manufacturer? Elaborating further on this issue, Shri Dixit of Prayas stressed that it is essential that such an analysis is carried out because when any manufacturer's CFL lamps are included in a project supported and managed by MSEDCL, consumers tend to believe that the lamps being supplied by that manufacturer are of good quality and they by putting their trust in the lamps supplied by that manufacturer, go ahead and procure these lamps. Thus, associating with any programme involving support and management by MSEDCL has a powerful "branding" effect on the lamps being sold by the manufacturer and hence it is crucial that all manufacturers who meet the necessary technical specifications and standards, form part of the project and programme and not just one manufacturer. In the light of this, Shri Dixit strongly stressed the need for investigating as to why only one manufacturer was predominantly associated with the pilot project in Nashik. The consultant to the Commission, supplemented by saying that MSEDCL should investigate and find out why M/s Philips, who as one of the leading manufacturers had been included to participate in the pilot project, declined to participate in the pilot programme. Responding to this issue, Shri. Dhabade of MSEDCL submitted that MSEDCL had identified five manufacturers, namely, M/s Philips, M/s Osram Limited, M/s Asian Electronics, M/s Phoenix Lamps and M/s Sterlite Lighting to participate in the pilot project in

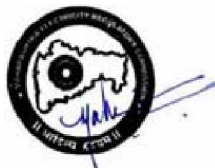


Nashik. Elaborating further, Shri Taksande of MSEDCL submitted that though MSEDCL had issued its supply order on five manufacturers, including M/s Philips, the said company could not respond during the period during which pilot project was being implemented. Shri Taksande further submitted that, despite MSEDCL's efforts to get M/S Philips to participate in the pilot project, M/s Philips could not somehow manage to show any positive response. Shri Taksande also submitted that two other manufacturers, namely, M/s Phoenix Lamps and M/s Osram Limited could mobilize their efforts only towards February and thus could participate in the pilot thereafter. As regards M/s Asian Electronics, the only manufacturer who has supplied almost 310,000 of the total of 379,000 lamps purchased in the pilot project, Shri Taksande of MSEDCL submitted that M/S Asian Electronics is based in Nashik and thus was able to quickly mobilize and gear up its distributors and dealers for the pilot project. Concluding his submissions on this issue, Shri Taksande of MSEDCL said that, in the light of the explanations, it can be seen that MSEDCL had not deliberately relied on only one manufacturer for the pilot project. Shri Taksande of MSEDCL further assured that, for the proposed state level CFL programme, MSEDCL would ensure that all the five CFL manufacturers that were identified for the pilot project, would not face any difficulties and barriers for participating in the state level programme.

(vii) Shri Shantanu Dixit of Prayas also queried if MSEDCL had verified that the manufacturers identified by MSEDCL for participation in the pilot project did indeed have the required quality certification from Efficient Lighting Initiatives (ELI). Shri Taksande of MSEDCL submitted that MSEDCL had not relied on the manufacturer's testimony in this regard and had obtained, scrutinised and verified that the identified manufacturers actually had either the Indian Standards Institution (ISI) or the ELI certification, as was asked for in the tender.

12. The Commission's observations and views on MSEDCL's written submissions and oral presentation, as well as wide ranging issues and queries raised and the comments and suggestions made during the hearing have been elaborated below:

- a) The Commission observes certain factual discrepancies with respect to number of consumers who have purchased the CFL lamps on instalment basis and those who have purchased CFL lamps by paying the full amount up-front. As per the oral presentation made by MSEDCL, majority of consumers had opted to pay directly by cash. However, the written submissions made by MSEDCL vide their letter CE/Spl.Proj.Cell/905/19969 of 10.07.2006, indicates that almost 93% of the total lamps purchased under the pilot project, were purchased on instalment basis. Since such discrepancy in the factual data can lead to completely wrong conclusions and recommendations, there is obviously a need for having the matter clarified.



- b) The Commission is absolutely certain that the lighting load, which coincides with the system peak load, can be reduced by more than 1000 to 1200 MW by replacing the existing incandescent bulbs with CFL lamps of appropriate wattage. Since the market forces alone may not be able to tap this vast 1000-1200 MW potential due to “high first-cost barrier” that the CFL lamps face, the Commission is very keen, especially at times such as now when the State is facing huge power shortages, to see that a state wide CFL programme is taken up at the earliest. However, as has come out from the hearing, MSEDCL needs to address several issues before it is in a position to undertake a state wide programme that will be effective, efficient, equitable and one that will not bring bad reputation, in the eyes of the consumer, to this very good energy conservation technology (CFL lamp technology). The Commission, therefore, is very keen to see that a quick evaluation of the CFL pilot project in Nashik is undertaken so that the experience and learning from the pilot project are carried forward for better and improved design, planning and execution of the state wide CFL programme. The Commission is also clear that the proposed State wide CFL programme would stand to benefit immensely if the evaluation addresses all the issues and queries raised as well as the comments and suggestions made during the hearing.

13. With observations as laid out in the preceding section, the Commission directs MSEDCL to:

- a) To provide written clarification on the discrepancy with respect to number of consumers who have purchased the CFL lamps on instalment basis and those who have purchased CFL lamps by paying the full amount up-front; within a period of one week from the date of this Order.
- b) To carry out an evaluation of the CFL pilot project in Nashik and present the evaluation report to the Commission within a period of one month from the date of this Order.
- c) To address all the issues and queries raised as well as all the suggestions and comments made during the hearing in the evaluation report that will be submitted to the Commission.
- d) To include in the evaluation report, all such data that MSEDCL has agreed to provide during the hearing, especially the data as has been discussed in sections 10 (d) and 10 (e).



PART "B"

Proposed State wide CFL Project and the Proposed Nashik District/State Level Electronic Ballast Projects

14. During the hearing, MSEDCL suggested that MSEDCL were readying themselves for the state wide CFL project, which they intended to launch from the 3rd week of July 2006. Reacting to MSEDCL's suggestion about the State level CFL project, the Commission commented that, in the absence of an evaluation report for the Nashik pilot project, and without incorporating the lessons learned from the Nashik pilot project with respect to the efficacy of delivery mechanisms, implementation arrangements, administration and management systems, communication processes, consumer participation barriers, etc.; it was pre-mature to embark on a state wide CFL project. The Commission observed that the State level project also needed to have a sound monitoring and verification (M&V) mechanism to track and monitor the impact of the project on a continuous basis. The Commission further observed that, in the absence of such a mechanism, it would not serve any purpose to undertake a state level project. Referring to the notion that since the cost of the CFL project or the electronic ballast projects will be entirely borne by the consumers and not by MSEDCL, there is no need to measure the impact of the CFL project or to incorporate M&V mechanism as an integral part of the project design, the Commission observed that this was a mistaken notion and it was indeed necessary to measure the impact of the project and for this it was necessary to have in place a competent M&V mechanism before embarking on a state wide CFL or electronic ballast projects.

15. Commenting on the need for having a sound M&V mechanism to monitor the impact of the state wide CFL or ballast projects, the consultant to the Commission mentioned that measuring the impact of the CFL or ballast projects was necessary because the CFL or the ballast projects would have direct bearing on the tariff that the consumers of MSEDCL are required to pay. Elaborating further, the consultant to the Commission mentioned that, while on the one hand, the result of the State-wide CFL or ballast projects would be to bring about a reduction in the demand for electricity due to lighting end-use during the evening peak hours on a permanent basis, on the other hand, the state wide CFL or ballast projects would also bring about a reduction in the overall electricity sales that MSEDCL makes to its consumers. This, explained the consultant to the Commission, would enable the MSEDCL to not only postpone some of its capacity additions, and hence postpone some of its capital expenditure, but would also enable the MSEDCL to avoid buying of costly power during the evening peak hours. However, it would also result in reducing the future revenue that the MSEDCL earns from sale of electricity to their consumers. Since avoiding buying of costly power or postponing of capital expenditure or reduction in revenue earnings of MSEDCL would all affect the tariff that MSEDCL's consumers are required to pay, it would be necessary to monitor, track and measure all these parameters in order to arrive at the exact extent to which tariff would get affected or in other words the extent to which tariff would get affected by undertaking State-wide CFL or ballast projects.



16. Elaborating further, the consultant to the Commission explained that, irrespective of how the reduction in demand and/or electricity consumption has come about – whether as a result of MSEDCL’s DSM initiatives such as the CFL or ballast projects or whether as a result of consumers’ voluntary action to adopt energy conservation practices or whether as a result of some other external energy efficiency programmes/projects, the net result would be that all such electricity demand or electricity consumption reducing initiatives would ultimately have a bearing on the tariff that the consumers are required to pay and hence it is necessary to continuously track, monitor and measure the extent to which electricity demand and electricity consumption is getting affected. The consultant to the Commission thereafter stressed the need for MSEDCL to undertake load research on a continuous basis in order to be able to track, monitor and estimate the extent to which load and consumption is getting affected. The consultant to the Commission, elaborating on the benefits of load research, mentioned that load research study apart from providing data on benefits accruing as a result of DSM initiatives, would also provide insight about consumer load profile (who are the consumers, how much are they consuming, for what they are consuming, where they are consuming and for what they are consuming), data on cost of service, data on profitability analysis, and also help MSEDCL in rate design, load forecasting, load control and load management. The consultant to the Commission thereafter suggested that MSEDCL should initiate the load research exercise on a continuous basis.

17. Shri. Santanu Dixit of Prayas Energy Group, referring to the notion that since MSEDCL is not paying for CFL or the electronic ballast projects, there is no need to measure the impact of the CFL project or to incorporate M&V mechanism as an integral part of the project design; mentioned that whether or not MSEDCL spends money is not critical because, many studies have shown that there is tremendous potential for energy conservation and energy efficiency improvement in all consuming sectors and to tap this vast potential, MSEDCL will have to develop projects and programmes that will require ingestion of MSEDCL funds and hence MSEDCL as matter of routine practice should incorporate sound M&V mechanism as an integral part of all their DSM projects, including the proposed state wide CFL and ballast projects.

18. The Commission’s observations and views on MSEDCL’s submissions as well as on wide ranging issues and queries raised and the comments and suggestions made during the hearing on the issue of state wide CFL and ballast projects have been elaborated below:

- a) The Commission considers it extremely important that M&V mechanism forms an integral part of the project design. The Commission observes that for all demand management or DSM projects/schemes, MSEDCL should be in a position to state what has been the achievement and should be able to prove the achievements stated. This, the Commission feels, is only possible if parameters to be tracked and indicators to be used to track and monitor the parameters as well as the means to be used or methods to be used to verify and measure these identified indicators are all identified much before the project is launched. Not only this, comprehensive base line data collection exercise also



needs to be undertaken before the launch of the project to provide quantitative and qualitative picture of conditions before the project is launched. As regards the proposed state level CFL project or the ballast projects are concerned, the Commission notes that a sound M&V protocol is not forming an integral part of the projects.

- b) As regards the notion that since MSEDCL need not bother about tracking, monitoring and measuring the impact of state wide CFL or ballast projects as MSEDCL is not incurring any cost towards implementation of these projects, the Commission completely agrees with the views expressed during hearing. Since any DSM initiative has bearing on the tariff that the consumer is required to pay, the extent of impact the DSM projects have on demand and consumption of electricity needs to be tracked, measured and monitored. Also, the Commission fully appreciates the point made by the consumer representative that to capture the vast energy conservation potential MSEDCL will have to develop schemes and projects that require investments to be made by MSEDCL. The Commission in fact will like to caution MSEDCL that, under a mistaken notion that MSEDCL need not bother about M&V if MSEDCL is not incurring any cost, it should not happen that MSEDCL only develops and undertakes such DSM projects that require no investments from MSEDCL's side or avoid incorporating elements in the project (e.g. carrying out base line survey, carrying out post project / post pilot project evaluation) that are essential but require money to be spent from MSEDCL's side.
- c) The Commission also feels that, since DSM projects have bearing on the consumer tariff, utility revenues, utility capital expenditure programme and utility purchase cost of electricity; apart from M&V, the DSM projects irrespective of whether they are substantially funded by the consumers or MSEDCL, need to be evaluated for techno-economic feasibility not only from consumers point of view but also from MSEDCL's, society's and from the point of view of the total project (total project costs versus total project benefits). The Commission considers it important to undertake such feasibility because the feasibility exercise helps in identifying if any incentive is required either for the consumer or for the utility for a project that may be highly desirable from society's and total project perspective but may not be feasible from Consumers' or utility's perspective. The Commission considers it inappropriate to undertake DSM projects that are infeasible from the point of view of society or from the point of view of total project.

19. With observations as laid out in the preceding section, the Commission's directives and Orders in the matter are:

- a) As regards the proposed state level CFL project, the Commission notes that, the evaluation of the CFL pilot project in Nashik is yet to be undertaken. *Inter alia*, MSEDCL has not been able to incorporate in the design and implementation plan of the state level CFL project, the lessons learned from



the CFL pilot project. Since the very purpose of the CFL pilot project was to provide learning and experience, the Commission finds it logically inconsistent to embark on a full-fledged state level CFL project without taking into consideration the experience and learning from the pilot project. The Commission also notes that a sound M&V protocol does not form an integral part of the proposed state level CFL project. The Commission therefore cannot allow MSEDCL to proceed with the implementation of this state level project and directs MSEDCL not to launch the state level CFL project till such time as the evaluation of the CFL pilot project in Nashik is completed. The Commission further directs MSEDCL to prepare the CFL state wide project, incorporating therein the lessons learned from CFL pilot project and then to submit that project to the Commission, along with techno-economic feasibility from consumer, utility, society and total project perspective within a period of two months from the date of this Order. In this regard, if the MSEDCL feel the need for acquiring external assistance, they may do so; the Commission will allow the MSEDCL to set aside expenses on this account either to Load Management Charge Fund created in 2005 or ARR.

- b) In the case of the proposed Nashik District and the state level electronic ballast projects, the Commission notes that base line data collection has not been attempted, and there is no clarity on whether or not M&V protocol forms an integral part of the two project designs. The Commission thus cannot allow MSEDCL to go-ahead with the implementation of the proposed Nashik District level or the state level electronic ballast projects. The Commission therefore directs MSEDCL not to take up the implementation of state level ballast project. The Commission further directs that the Nashik District ballast should be taken up as a pilot project only after getting a go ahead from the Commission. In this matter, MSEDCL is directed to submit for Commission's perusal and approval, project proposal describing the Nashik District pilot ballast project within a period of one month from the date of this Order. Such a proposal should also contain arrangements MSEDCL proposes to make towards M&V and towards development of base line and collection of base data. As in the case of state wide CFL project, here too, if the MSEDCL feel the need for acquiring external assistance, they may do so; the Commission will allow the MSEDCL to set aside expenses on this account either to Load Management Charge Fund created in 2005 or ARR.

PART "C"

Other Demand Management and Demand Side Management (DSM) Initiatives Being Pursued by MSEDCL

20. As regards Other Demand Management and DSM initiatives being pursued by MSEDCL, Shri. Basvante of MSEDCL briefly talked about demand management initiatives such as the goathan feeder separation programme, the single phasing programme and the reactive power management programmes, as well as about DSM



projects such as the Dindori agricultural pumps capacitor installation pilot programme and the gram urja bachat yojna programme being implemented in coordination with the Maharashtra Energy Development Agency (MEDA). Since the focus of the hearing was on DSM projects, the Commission asked Shri Basvante of MSEDCL for more elaborate and detailed presentation on the two DSM projects, namely the Dindori pilot project and the MEDA project.

21. As regards Dindori pilot project involving installation of capacitors on agricultural pumps, Shri Taksande of MSEDCL submitted that the MSEDCL is targeting to install capacitors on 9,046 agricultural pumps and about 50% of the proposed work has been completed. Shri Taksande further submitted that in this pilot project, MSEDCL has developed a base line by taking readings of the appropriate parameters before starting of the pilot project and MSEDCL will also take the readings of the appropriate parameters after the installation of all the capacitors to see what has been the impact of the pilot project. Shri Taksande further submitted that, MSEDCL plans to take up, at an estimated investment of Rs. 3.91 crores, one more similar project in Sangli District, involving 1,17,939 pumps. Shri Taksande informed that the Sangli project was yet to start.

22. As regards MEDA's gram urja bachat yojna project, Shri. Basvante of MSEDCL submitted that MSEDCL had formulated a scheme with MEDA for energy conservation in water pumping and street lighting, called the Gram Urja Bachat Yojana. On a query raised by the Commission as to what the project is, Shri. Basvante submitted that the scheme attempts to achieve load shifting through the installation of certain electronics based equipments, including micro process based equipments. Shri. Taksande of MSEDCL submitted that the scheme has been formulated by MEDA to shift the peak hour demand of water pumping in various public water systems to off-peak hours. Shri Taksande further informed that MEDA is executing the scheme at Aurangabad and Osmanabad and will be installing the required programmed energy saving equipments with the help of the local Gram Panchayats. Shri Taksande also submitted that the role of MSEDCL has been solely related to financial support.

23. The Commission's observations and views on MSEDCL's submissions during the hearing on the issue of other demand management and DSM projects being pursued by MSEDCL have been elaborated below:

- (a) As regards Dindori agricultural pumps capacitor installation project, the Commission notes MSEDCL's submission that the project has M&V mechanism as an integral part of the project and MSEDCL has taken adequate measures to develop base line for the project by taking "before" readings on various parameters. The impact measurement of DSM projects being very important, the Commission will like to reiterate that MSEDCL must record its achievement and /or objective in terms of load relief with regard to both the Dindori and Sangli schemes and submit the same to the Commission showing in detail the targets laid, the efforts undertaken and the load relief achieved.



- (b) As regards MEDA's gram urja bachat programme, the Commission notes that MSEDCL does not have detailed description of the project. The Commission also notes that MSEDCL is not aware if MEDA has in place a competent M&V protocol to track, monitor and measure the project impact in terms of savings obtained, if any.

24. With observations as laid out in the preceding section, the Commission's directives and Orders in the matter are:

- a. MSEDCL should furnish to the Commission a report describing the achievements of Dindori and Sangli projects.
- b. Since MSEDCL does not have details of MEDA's gram urja bachat project, the Commission directs MSEDCL to submit within one week of this Order, a detailed report describing what the MEDA's gram urja bachat scheme is? How it is being implemented? And what methods are being employed by MEDA for tracking, monitoring and measuring the savings, if any.

PART "D"

Consolidation of Various Directives and Orders

25. With regard to CFL pilot project in Nashik, the Commission directs MSEDCL:

- a. To provide written clarification on the discrepancy with respect to number of consumers who have purchased the CFL lamps on instalment basis and those who have purchased CFL lamps by paying the full amount up-front; within a period of one week from the date of this Order.
- b. To carry out an evaluation of the CFL pilot project in Nashik and present the evaluation report to the Commission within a period of one month from the date of this Order.
- c. To address all the issues and queries raised as well as all the suggestions and comments made during the hearing in the evaluation report that will be submitted to the Commission.
- d. To include in the evaluation report, all such data that MSEDCL has agreed to provide during the hearing, especially the data as has been discussed in sections 10 (d) and 10 (e).

26. With regard to proposed state wide CFL project and electronic ballast Nashik District and state wide projects, the Commission directs MSEDCL:

- a. Not to launch the state level CFL project till such time as the evaluation of the CFL pilot project in Nashik is completed.



- b. To prepare the CFL state wide project proposal, incorporating therein the lessons learned from CFL pilot project and then to submit that project to the Commission, along with techno-economic feasibility from consumer, utility, society and total project perspective within a period of two months from the date of this Order.
- c. Not to take up the implementation of state level electronic ballast project.
- d. To take up Nashik District ballast scheme as a pilot project only after getting a go ahead from the Commission.
- e. To submit for Commission's perusal and approval project proposal describing the Nashik District pilot ballast project within a period of one month from the date of this Order. Such a proposal should also contain arrangements MSEDCL proposes to make towards M&V and towards development of base line and collection of base data

27. With regard to other demand management and DSM projects being pursued by MSEDCL, the Commission directs MSEDCL:

- a. To furnish to the Commission a report describing the achievements of Dindori and Sangli projects.
- b. To submit within one week of this Order, a detailed report describing what the MEDA's gram urja bachat scheme is? How it is being implemented? And what methods are being employed by MEDA for tracking, monitoring and measuring the savings, if any.

28. These DSM project and programmes are being undertaken by the MSEDCL on directions issued by the Commission and they are permitted to charge the expenses towards these programmes either to Load Management Charge Fund created in 2005 or ARR, etc. Hence the Commission shall continuously review the projects /programmes by holding hearings and issue suitable directions.

Sd/-
(A. Velayutham)
Member

Sd/-
(Dr. Pramod Deo)
Chairman



(Ms. Malini Shankar)
Secretary, MERC