GRID CORPORATION (GRIDCO) – PARADIP PORT TRUST COOKING FUEL SUBSTITUTION PROGRAM – INDIA

Program Summary	
Program overview:	Introduction of LPG as a domestic cooking heating medium to replace electric stoves used by Paradip Port Trust employees for household cooking
Program objectives / goals:	To reduce system peak demand
Program design and implementation strategy:	Utility driven program Private sector participation – utility customer Initiated and funded by Paradip Port Trust which is a bulk customer of GRIDCO
Program results:	Energy Savings – LPG fuel replaced electricity, which was used in electric stoves Demand Savings – 2.3 MW morning peak load and 3.2 MW evening demand
Key lessons learned:	The most important attribute of this case study is the nature of the customer. Paradip port trust is a single bulk customer, supplying electricity to its employees with greater control on the supply conditions. This kind of DSM activity is suitable for public-sector, private-sector and other organizations providing residential facilities to its employees in a single large complex
Utility Characteristics	
Utility Name:	GRIDCO, the electricity supply company of Orissa
Utility characteristic:	GRIDCO is involved with the transmission and bulk distribution of electricity in Orissa
Phase in restructuring:	The electricity company in Orissa was unbundled & trifurcated in the 1990's, GRIDCO is now a semi-private agency
DSM initiatives: (since 1996)	GRIDCO is not known to have DSM programs
Program Design	
Program Description:	The program involves replacement of all the electric stoves with LPG cooking stoves Almost 90% of the 3592 households in the residential facility used electric stoves for cooking, adding approximately 3.23 MW to the electricity demand for household use
Program Goals:	Reduction of electricity demand, by almost 7,076 MWh per annum by replacing 2155 electric stoves with LPG stoves
Customer / market characteristics:	The project was planned for the household cooking activity in the residential sector as this activity contributed to approximately 60% of the electrical usage in each household. As electricity is supplied to the employees at a subsidized average flat rate of Rs.132 per month, the Port trust has to bear an annual loss of around Rs.31 million. The maximum contract demand of Paradip port was 7.5 MVA. The peak demand often reached 9 to 10 MVA, resulting in levy of penalty charges. The industrial load does not exceed 4 MVA at any point in time but the domestic use exceeds the contract quantity by 2 to 3 MVA during peaks. As electric stoves are the largest contributors to the peak demand, replacing these with LPG cooking stoves would result in considerable energy and cost savings
DSM measures (technology / management):	The electric stoves were replaced with LPG cooking stoves. The package includes, cooking stoves and LPG cylinders. As the flat rate for electricity supply was reduced and slabs were fixed for charging flat rate or GRIDCO rate, individual meters were installed for monitoring the electricity consumption by individual households. A LPG cylinder bottling plant, with assured gas supplies from the port was planned in the area to ensure adequate supply of LPG cylinders

Types of incentives:	The Port trust offered the customers the following incentives to move from electric stoves to LPG stoves: 100% subsidy on purchase of LPG connection and gas stove 100% reimbursement of cost of the LPG cylinder, upon showing the proof of purchase Flat rate electricity tariff reduced from Rs.132 to Rs.80 Limit of electricity consumption for flat tariff fixed at 108 units a month. Any consumption above this, to be charged at the full purchase price of Rs.3.37 per unit	
DSM marketing strategy:	The end-user in this project is an employee of the Port and is thus directly connected to the promoter of the scheme. The area being a finite, controlled geographical area, it is easier for the Port to create awareness, market and control the program	
Implementing organization:	The Port was the implementing agency, directly replacing the electric cookers with LPG cooking systems. As the port was in economically sound condition, they could self-finance and manage this project	
Projected Savings:	Program Period: Data not available	
	Energy Savings:	A 60% uptake of the LPG replacement scheme is assumed for calculation of the projected savings. The annual projected savings, of Rs.15 million, after deducting the direct costs, of Rs.19 million, gives a simple payback period of 1.3 years. This is assumed at an Internal Rate of Return (IRR) of 88%
	Demand Savings:	Data not available
Program Implementation		
Program delivery:	The Port trust is the main stakeholder responsible for the financing, procurement, and implementation and monitoring of the project. The major investment in this project is the procurement and installation of the LPG cook-stoves and electric meters in individual households in the residential facility, was as follows Gas stoves for 2874 houses @ Rs.1200 Rs.34,48,800 Enrolment fees for 2874 houses@ Rs.1000 Rs.28,74,000 Fire resistant panel in huts @ 1000 Rs.12,62,000 Security cages, pipes for cylinders@ 800 Rs.10,09,600 Fire extinguishers for huts -200 @ 5000 Rs.10,00,000 Electricity meters for all houses @ 2500 Rs.89,80,000 Publicity & Safety trainings - 2874 @ 400 Rs.11,49,600 Total Initial Costs Rs.1,97,24,000 This entire cost was to be borne by the Port trust and recovered through electricity and cost savings	
Staffing:	The Housing department of the Port trust was responsible for this entire program. The additional cost of running the program was identified as Rs.200,000 per year	
Customer participation:	The bulk customer, namely the Port trust, is the sponsor and implementation agency for the program. The port trust is responsible for involving the end-user in the conversion program through various awareness and publicity programs	
Program Monitoring and Evaluation		
M&V objectives:	Data not available	
M&V types:	Data not available	
Organization:	Data not available	
Data collection:	Data not available	
M&E period:	Data not available	
Program Results		
# of participants by year:		
Savings per year:	Demand savings 2.3 MW & 3.2 MW in morning and evening peak load respectively	
Cumulative savings (kW, kWh):	Data not available	

Program Costs:	Data not available
Program Benefits	
Benefit to the Customers, Benefit to the utility, Other benefits, Cost of energy saved:	Data not available