

SECTION – 8: ELECTRICAL UTILITY BILL ANALYSIS

We have analysed last 12-month (July-20 to June-21) electricity bills received from service provided M/s Uttar Gujarat Vij Company LTD. (UGVCL) All parameters and cost heads are tabulated as below. Charts of important parameters are attached for better understanding.

8.1. Maximum Demand Reduction

Contract Demand – It is the maximum demand in KW which is allowed, beyond which penalty will be charged.

Billing Demand – Minimum 85% of Contract demand above will be charged as a “Demand Charges” irrespective of actual consumption.

Actual Demand – actual maximum KVA registered by utility meter. Ideally, it should be between Contract Demand and Billing Demand.

Details from UGVCL website as below:

13.1 DEMAND CHARGES:		
13.1.1 For billing demand up to contract demand		
(a)	For the first 500 kVA of billing demand	Rs. 150/- per kVA per month
(b)	For next 500 kVA of billing demand	Rs. 260/- per kVA per month
(c)	For billing demand in excess of 1000 kVA	Rs. 475/- per kVA per month

ENERGY BILL ANALYSIS				
Consumer No: 19238				
		(Present)		
Proposed CD	Actual MD	600	580	620
		510	493	527
Jul-20	539	Rs.85,140	₹ 85,140.00	₹ 85,140.00
Aug-20	547	Rs.87,220	₹ 87,220.00	₹ 87,220.00
Sep-20	613	Rs.1,08,215	₹ 1,14,115.00	₹ 1,04,380.00
Oct-20	553	Rs.88,780	₹ 89,665.00	₹ 88,780.00
Nov-20	550	Rs.88,000	₹ 88,000.00	₹ 88,000.00
Dec-20	528	Rs.82,280	₹ 82,280.00	₹ 82,280.00
Jan-21	530	Rs.82,800	₹ 82,800.00	₹ 82,800.00
Feb-21	520	Rs.80,200	₹ 80,200.00	₹ 82,020.00
Mar-21	558	Rs.90,080	₹ 92,440.00	₹ 90,080.00
Apr-21	549	Rs.87,740	₹ 87,740.00	₹ 87,740.00
May-21	616	Rs.1,09,880	₹ 1,15,780.00	₹ 1,05,160.00
Jun-21	588	Rs.97,880	₹ 1,00,240.00	₹ 97,880.00
TOTAL		Rs.10,88,215	Rs.11,05,620	Rs.10,81,480
SAVING		Base case	-Rs.17,405	Rs.6,735

No change in Contract Demand value is recommended.

8.2. Power Factor Correction

Power factor is an electrical parameter which requires to be monitored since it has rebate/penalty structure for specified values i.e., minimum of 0.90 to avoid penalty and 0.99 to have maximum rebate.

Details from UGVCL’s website as below:

Project: CEDAR DECOR, KADI - MEHSANA	Document No.: Report – 01
Document: ELECTRICAL SAFETY AUDIT	Revision: R0

13.6 POWER FACTOR ADJUSTMENT CHARGES:

13.6.1 Penalty for poor Power Factor:

- a) The power factor adjustment charges shall be levied at the rate of 1% on the total amount of electricity bills for the month under the head "Energy Charges", arrived at using tariff as per para 13.2 of this schedule, for every 1% drop or part thereof in the average power factor during the month below 90% up to 85%.
- b) In addition to the above clause, for every 1% drop or part thereof in average power factor during the month below 85% at the rate of 2% on the total amount of electricity bill for that month under the head "Energy Charges", arrived at using tariff as per para 13.2 of this schedule, will be charged.

13.6.2 Power Factor Rebate

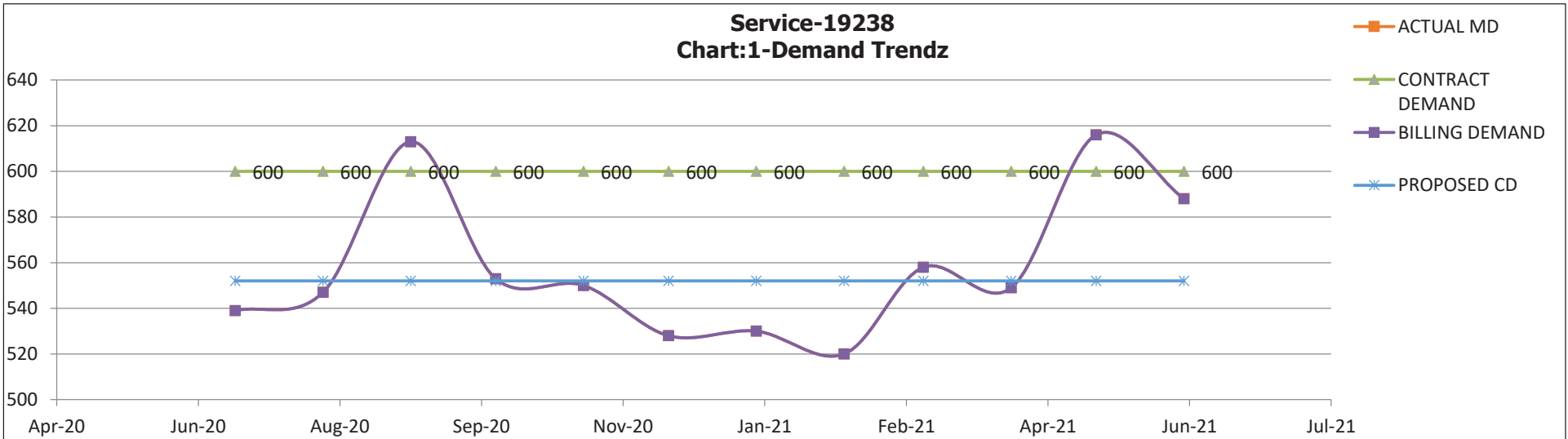
If the power factor of the consumer's installation in any month is above 95%, the consumer will be entitled to a rebate at the rate of 0.5% (half percent) in excess of 95% power factor on the total amount of electricity bill for that month under the head "Energy Charges", arrived at using tariff as per para 13.2 of this schedule, for every 1% rise or part thereof in the average power factor during the month above 95%.

This value can be controlled using element called "Capacitor banks", which is already existing in main LT panel. We have analysed bill and observed that, Power factor averages is above 0.99. So as per norms no changes are required in Power factor correction.

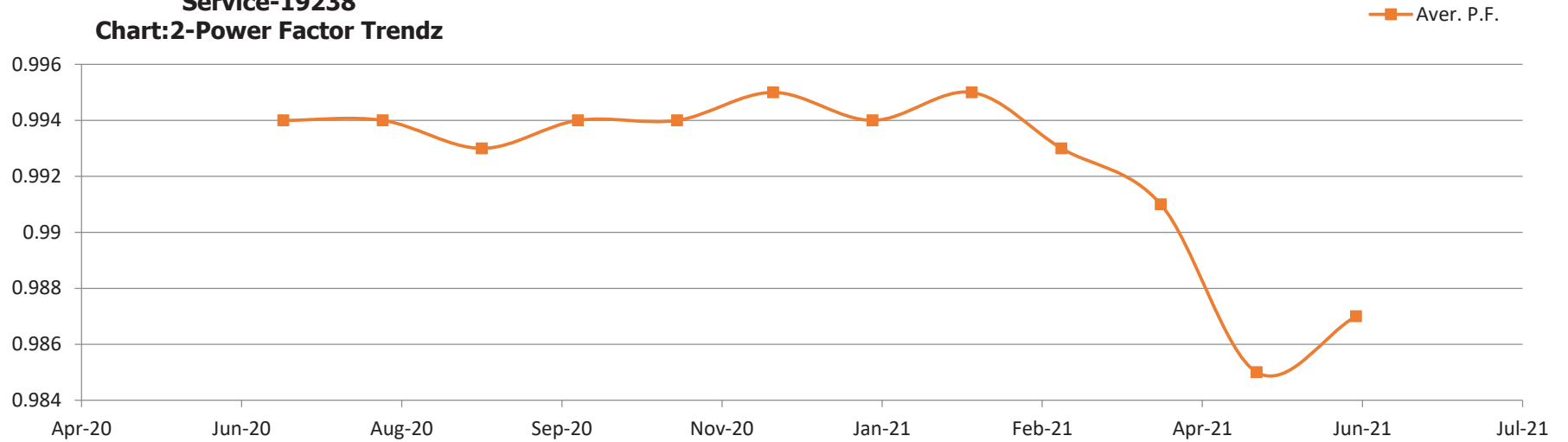
Following rebate table indicates the month wise rebate:

Month	Aver. P.F.	Rebate given	P.F. Adjustment Charges	Total Energy charges	Set Point	% Rebate	Additional rebate
Jul-20	0.994	-2.20%	-Rs.24,376	Rs.11,08,014	0.995	0.050%	Rs. 554
Aug-20	0.994	-2.20%	-Rs.24,902	Rs.11,31,912	0.995	0.050%	Rs. 566
Sep-20	0.993	-2.15%	-Rs.26,936	Rs.12,52,872	0.995	0.100%	Rs. 1,253
Oct-20	0.994	-2.20%	-Rs.26,119	Rs.11,87,247	0.995	0.050%	Rs. 594
Nov-20	0.994	-2.20%	-Rs.28,410	Rs.12,91,374	0.995	0.050%	Rs. 646
Dec-20	0.995	-2.25%	-Rs.22,007	Rs.9,78,108	0.995	0.000%	Rs. 0
Jan-21	0.994	-2.20%	-Rs.26,270	Rs.11,94,127	0.995	0.050%	Rs. 597
Feb-21	0.995	-2.25%	-Rs.24,014	Rs.10,67,291	0.995	0.000%	Rs. 0
Mar-21	0.993	-2.15%	-Rs.22,970	Rs.10,68,396	0.995	0.100%	Rs. 1,068
Apr-21	0.991	-2.05%	-Rs.22,727	Rs.11,08,648	0.995	0.200%	Rs. 2,217
May-21	0.985	-1.75%	-Rs.18,681	Rs.10,67,530	0.995	0.500%	Rs. 5,338
Jun-21	0.987	-1.85%	-Rs.19,727	Rs.10,66,350	0.995	0.400%	Rs. 4,265
Total savings=							Rs. 7,495

Consumer No: 19238														Consumer No: 19238			
Discription	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	Mag-21	Jun-21	AVERAGE	MAX & MONTH	MIN & MONTH		
Contract Demand (kVA)	600	600	600	600	600	600	600	600	600	600	600	600					
85% of CD (kVA)	510	510	510	510	510	510	510	510	510	510	510	510					
Aver. P.F.	0.994	0.994	0.993	0.994	0.994	0.995	0.994	0.995	0.993	0.991	0.985	0.987	0.99	0.995	Dec-20 0.985		
Energy Charges (Rs.)	Rs.11,08,014	Rs.11,31,912	Rs.12,52,872	Rs.11,87,247	Rs.12,91,374	Rs.9,78,108	Rs.11,94,127	Rs.10,67,291	Rs.10,68,396	Rs.11,08,648	Rs.10,67,530	Rs.10,66,350	1126822.42	1291374.00	Dec-20 978108.00		
FPPPA charges (Rs.)	Rs.5,01,245	Rs.5,39,006	Rs.5,96,606	Rs.5,65,356	Rs.5,56,520	Rs.4,21,518	Rs.5,14,611	Rs.4,59,951	Rs.4,60,427	Rs.4,77,774	Rs.4,57,513	Rs.4,57,007	500627.81	596606.00	Sep-20 421518.00		
Rebate on PF (%)	-2.20%	-2.20%	-2.15%	-2.20%	-2.20%	-2.25%	-2.20%	-2.25%	-2.15%	-2.05%	-1.75%	-1.85%		-0.02	May-21 -0.02		
P.F. Adju. Charges (Rs.)	-Rs.24,376	-Rs.24,902	-Rs.26,936	-Rs.26,119	-Rs.28,410	-Rs.22,007	-Rs.26,270	-Rs.24,014	-Rs.22,970	-Rs.22,727	-Rs.18,681	-Rs.19,727	-23928.25	-18681.00	May-21 -28410.00		
P.F. Adju. Charges (Night) (Rs.)	-Rs.38,579	-Rs.39,970	-Rs.43,706	-Rs.41,299	-Rs.45,665	-Rs.33,791	-Rs.42,742	-Rs.38,023	-Rs.37,796	-Rs.37,981	-Rs.35,604	-Rs.36,721	-39323.08	-33791.00	Dec-20 -45665.00		
Fixed Charges (Demand) (Rs.)	Rs.85,140	Rs.87,220	Rs.1,08,215	Rs.88,780	Rs.88,000	Rs.82,280	Rs.82,800	Rs.80,200	Rs.90,080	Rs.87,740	Rs.1,09,880	Rs.97,880	90684.58	109880.00	May-21 80200.00		
Excess Demand Charge (Rs.)	Rs.0	Rs.0	Rs.7,215	Rs.0	Rs.0	Rs.0	Rs.0	Rs.0	Rs.0	Rs.0	Rs.8,980	Rs.0			Jul-20		
Total demand charges (Rs.)	Rs.85,140	Rs.87,220	Rs.1,15,430	Rs.88,780	Rs.88,000	Rs.82,280	Rs.82,800	Rs.80,200	Rs.90,080	Rs.87,740	Rs.1,18,760	Rs.97,880	92025.83	118760.00	May-21 80200.00		
Time of use charges (Rs.)	Rs.72,629	Rs.74,456	Rs.82,361	Rs.78,199	Rs.84,971	Rs.64,020	Rs.77,040	Rs.69,764	Rs.70,140	Rs.73,156	Rs.71,805	Rs.70,084	74052.08	84971.00	Nov-20 64020.00		
Total con. Charges (Rs.)	Rs.17,04,073	Rs.17,67,722	Rs.19,76,627	Rs.18,52,164	Rs.19,46,790	Rs.14,90,128	Rs.17,99,566	Rs.16,15,169	Rs.16,28,277	Rs.16,86,610	Rs.16,61,323	Rs.16,34,873	1730276.81	1976627.00	Sep-20 1490128.00		
Electricity duty (Rs.)	Rs.2,55,611	Rs.2,65,158	Rs.2,95,411	Rs.2,77,824	Rs.2,92,018	Rs.2,23,519	Rs.2,69,934	Rs.2,42,275	Rs.2,44,241	Rs.2,52,991	Rs.2,47,866	Rs.2,45,231	259339.92	295411.00	Sep-20 223519.00		
Actual M.D. (kVA)	539	547	613	553	550	528	530	520	558	549	616	588	557.58	616.00	May-21 520.00		
Billing M.D. (kVA)	539	547	613	553	550	528	530	520	558	549	616	588	557.58	616.00	May-21 520.00		
Total units con./months (kWh)	263812	269503	298303	282678	307470	232893	284316	254116	254380	263964	254174	253892	268290.92	307470.00	Nov-20 232893.00		
RkVAh units (kVAh)	18983	20967	24968	22060	22519	14630	22124	14900	21285	27508	28794	32024	22555.17	32024.00	Jun-21 14630.00		
MD crossing	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO					
Propose M.D. (kVA)	552	552	552	552	552	552	552	552	552	552	552	552					
Current Months Bill (Rs.)	Rs.19,60,250	Rs.20,47,039	Rs.22,87,134	Rs.21,53,913	Rs.21,61,915	Rs.17,37,260	Rs.20,71,054	Rs.18,61,458	Rs.18,74,088	Rs.19,41,618	Rs.17,52,184	Rs.18,80,844	1977396.42	2287134.00	Sep-20 1737260.00		
PLF %	68	69	68	71	78	62	75	68	64	67	58	61	67.47	78.11	Nov-20 58.18		
Avg. Unit cost (Rs.)	Rs.7.43	Rs.7.60	Rs.7.67	Rs.7.62	Rs.7.03	Rs.7.46	Rs.7.28	Rs.7.33	Rs.7.37	Rs.7.36	Rs.6.89	Rs.7.41	7.37	7.67	Sep-20 6.89		
Avg Unit Charge/Year	7.366																



Service-19238
Chart:2-Power Factor Trendz



Service-19238
Chart 3-Unit consumption

