MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.
(A. Govt. of Maharashtra Undertaking)
CIN: U40109MH2005SGC153645

Maharashtra State Electricity Distribution Co. Ltd.
महाराष्ट्र राज्य विद्युत वितरण कंपनी मर्यादित
Office of the Director (Commercial)
'Prakashgad' 6th Floor, Station Road, Bandra (E), Mumbai-400 051.
Tel.: (P) 26476743 **Extn.:** 2066, **(O)** 26474211
Email: directorcomm@mahadiscom.in • **Website :** www.mahadiscom.in

Ref. No. MSEDCL/DSM/ No 0 9 2 7 9

Date: 0 3 APR 2019

To,
The Secretary,
Central Electricity Regulatory Commission,
3rd & 4th Floor, Chandralok Building,
36, Janpath, New Delhi – 110 001.

Sub: MSEDCL's Representation regarding the CERC's DSM 4th Amendment dated 20.11.2018.

Ref: Daily Order of Hon'ble High Court of Delhi dated 27.03.2019.

Dear Sir,

This is reference to above cited subject, MSEDCL has filed a Writ Petition No. 241 of 2019 before Hon'ble Court of Delhi regarding issues in implementing the CERC's Deviation Settlement Mechanism and related matter (Fourth Amendment) Regulation dated 20.11.2018.

Further, Hon'ble High Court of Delhi, vide its Daily Order dated 27.03.2019 has directed petitioner (MSEDCL) to file its representation before the CERC regarding issues in implementation of the CERC's Deviation Settlement Mechanism and related matter (Fourth Amendment) Regulation dated 20.11.2018.

In view of above, please find attached herewith MSEDCL's representation regarding issues in implementation of the CERC's Deviation Settlement Mechanism and related matter (Fourth Amendment) Regulation dated 20.11.2018. It is humbly requested to consider the same.

Thanking you,

Yours faithfully,

Encl: A/A

(Satish Chavan)
Director (Commercial), MSEDCL

Copy s.w.r.to.-

The Chairman and Managing Director, MSEDCL, Mumbai.

Issues need to be addressed by CERC

MSEDCL has filed a Writ Petition (W.P. 241 of 2019) before Hon'ble High Court of Delhi against the CERC (Deviation Settlement Mechanism and related issues) (Fourth Amendment) Regulation, 2018 dated 20.11.2018 due to operational issues in implementation of sais amendment & financial implication thereof with highlighting following issues:

1) Difficulty in implementation of the Amendment regulation due to following issues
   a) Different DSM mechanism i.e. FBSM is operational in Maharashtra
   b) Effect of weather on forecasting of demand
   c) Error is SCADA data
   d) Effect of Special day on demand
   e) Forecasting problem of distributed RE generation
   f) Intermittent RE Generation
2) Exorbitant additional penalty of 20 %
3) Exorbitant rate of penalty for deviation
4) Difficulty to change the UI sign after every 6 time blocks

After hearing the matter on 27.03.2019, Hon'ble High Court of Delhi has directed the petitioner (MSEDCL) to approach the Commission with a comprehensive representation pertaining to operational clauses 7(1), 7(10) and 7(11a). Accordingly, the operational issues in implementation of said Regulation which needs to be addressed on priority are as under:

1) **Difference between UI recorded in SCADA & SEM:**

The real time monitoring of flows on various ISTS drawl points is done on basis of data received to SLDC through SCADA system. On basis of SCADA data, various decisions in real time are taken to avoid deviation between schedule drawl and actual drawl. Further based on deviations (unscheduled Interchange i.e UI) recorded in various time blocks, decisions are also taken for compliance of sign change violation after six time block; failing which each such violation attract additional penalty of 20% of daily base DSM charges payable/receivable. Hence in order to avoid this penalty, all-out efforts are taken for sign change. However, the actual UI settlement bill is prepared on the basis of SEM meter data which is altogether different than the visible SCADA data, on the basis of which the real time decision of Overdrawl/underdrawl is taken.

As per real time data operation, from 1st January 2019 to 10th March 2019 total sign change actually occurred as per decision taken based on SCADA data, it is

observed that only 143 sign change violations occurred. Whereas as per bills prepared by WRPC based on SEM meter data of same ISTS drawl point, total sign change violations are 224. Due to difference between SCADA & meter data value, net DSM bills of Maharashtra was not only increased due to sign change violations but also increased due to overdrawl & underdrawl of energy. The impact of SCADA on DSM bills of Maharashtra is as under:

	As per WRPC Bill						As per SCADA						Impact of SCADA (Rs. In lacs)
Period	OD Mus	UD MUS	DSM Bill W/O Sign change penalty	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)	OD Mus	UD MUS	DSM Bill W/O Sign change penalty	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)	
01 to 10 Jan	19	-22	219	44	344	562	12	-35	-337	53	536	199	364
11 to 20 Jan	17	-17	167	43	208	375	13	-22	-124	33	165	41	334
21to 31 Jan	22	-19	407	35	223	629	19	-26	185	25	82	267	363
01 to 10 Feb	18	-16	202	22	116	318	16	-19	122	13	31	153	165
11 to 20 Feb	18	-15	188	17	73	261	17	-17	110	5	17	126	135
21to 28 Feb	21	-7	507	36	434	941	14	-10	219	6	14	233	708
01 to 10 Mar	19	-13	279	27	159	437	16	-16	59	8	36	95	342
Total	135	-108	1967	224	1556	3524	107	-145	234	143	881	1114	2409
Average	1.9	-1.6	29	3.2	23	51	1.6	-2.1	3.4	2.1	13	16	35

It can be seen from above table that net impact of SCADA in these 69 days is about Rs.24 Crs.

It can be seen from data attached herewith as Annexure-A, that as per drawl data available in real time from SCADA system, no sign change violation occurred on some days but as per bills issued , penalty is imposed on account of sign change violations. This was due to difference between SCADA & SEM. The reasons for difference in SCADA & SEM recorded drawl are as under:

a. Communication problem of any line results in loss of data or data stuck, which is difficult to be monitored in real time operations and also need to correct.
b. Difference in Accuracy class of SCADA and SEM such as CT/PT /metering equipments.
c. Structural difference between data summation in SCADA & SEM.

31st Jan 2019 – As per SCADA only 2 sign change violation whereas WRPC bills 7 sign change violation & average difference between SCADA & WRPC bills UI is ~98 MW. This leads to excess sign change violation penalty of Rs.0.86 Crs on account of SCADA data issue **(Annexure-A-1)**

23rd Feb to 26th Feb 2019: As per SCADA only 4 sign change violation whereas WRPC bills 26 sign change violation & average difference between SCADA & WRPC bills UI is ~ 76 MW . This leads to excess sign change violation penalty of Rs.2.62 Crs on account of SCADA data issue **(Annexure-A-2)**

1st Mar to 5th Mar 2019: As per SCADA only 2 sign change violation whereas WRPC bills 19 sign change violation & average difference between SCADA & WRPC bills UI is ~ 61 MW . This leads to excess sign change violation penalty of Rs.1.11 Crs on account of SCADA data issue **(Annexure-A-3)**

The daywise difference between UI bills as per SCADA data & as per actual bills raised by WRPC based on SEM meter for period 1st January 2019 to 10th March 2019 is attached herewith as **Annexure-A4**

Since real time monitoring of data is different than actual billed data, applying penalty of sign change based on source of meter data rather than actual source (i.e SCADA) on which real time decisions are taken is not appropriate. Hence it is necessary that system need to be developed whereby SLDC can access actual meter data (on which DSM bills are prepared) in real time basis & unless such system is in place, said sign change violation needs to be counted only on recorded sign change in SCADA of respective SLDC or the penalty due to such sign change needs to be suspended till such arrangements.

Further meter data can be accessed through use of Automatic meter reading technique and same can be used as reference to check actual sign change as well as to identify correction required in SCADA data of particular ISTS point in real time. This will help DISCOM to reduce burden of DSM charges on account of SCADA data issue. Presently all interface meters of ISTS drawal points are installed by CTU (PGCIL). Hence it is requested that CTU be directed to install meter with AMR & time synchronizing facility on urgent basis and also directed to share AMR data of meter with all SLDCs on real time basis. Further it is also requested to direct CTU to immediately allow DICSOM to install AMR on existing CTU meter till these meters replaced with new meter & AMR from CTU.

2) **Change of schedule of NPCIL & SSP by actual generation on post facto basis:**

The generation from Tarapur, Kakarapara are generation from atomic energy source and are exempted from DSM charges. Hence at present schedule of the state are revised on post facto basis considering actual generation & share in respective atomic generation station. Similarly in case of power schedule from Sardar Sarovar Project (SSP), in DSM bills, schedules are replaced with actual generation. This has resulted in change in overall schedule of State on post facto basis. But in real time, considering schedule available on RLDC website, decisions are taken. Hence levying sign change penalty by post facto revising schedule is not appropriate. Hence it is suggested that schedule of these station should not be revised on actual basis for computation of UI of Maharashtra by replacing same with actual generation. Accordingly DSM bills shall be revised for Maharashtra. The MSEDCL has attached herewith day end schedule of Maharashtra and schedule considered in DSM bills, for 10th March 2019 as **Annexure-B** as a sample.

3) **Inclusion of actual generation of Pench Hydro in schedule on Post Facto basis:**

Maharashtra has 33.3% Share in Pench Hydro project and Madhya Pradesh has 66.6% share in said Pench Hydro station. Total installed capacity of Pench Hydro station is 160MW. The said Hydro station is connected to STU network of Madhya Pradesh. As per clause 6.4(2) (c) (i) of IEGC-2010 (Demarcation of responsibility), scheduling of station having share more than 50% and connected to state network would be with state having more than 50% share. In instance case, Madhya Pradesh is having more than 60% share in Pench & hence scheduling of said Hydro station is being done by Madhya Pradesh. However, as scheduling is being done by Madhya Pradesh SLDC, WRLDC is not considering its schedule in Maharashtra total share. Also schedule for Maharashtra is also not communicated by Madhya Pradesh SLDC. Since power from Pench Hydro is not included in schedule of Maharashtra available on WRLDC website, same is not considered while managing unscheduled interchange by Maharashtra SLDC. Hence it is not appropriate to include actual generation of Pench Hydro in share on Maharashtra on post facto basis, whose schedule is not communicated to either SLDC or RLDC and thereby not included in share of Maharashtra state available on RLDC website. The Schedule of Maharashtra for sample date available on RLDC website and taken in DSM bills is attached herewith as **Annexure-B**. It can be seen that from time block 29 to 35 actual generation of Pench Hydro is taken in schedule of Maharashtra in DSM bill for calculation of unscheduled interchange but same is not included in RLDC website schedule.

4) **Wastage of generation resource for sign change of UI at high frequency**

As per clause 11 of Regulation 7 of new CERC(DSM) regulation 2018, sign change after six time block required to be achieved. However during real time operation, on some occasions of sign change instances, it is observed that frequency was above 50.05 Hz due to the amended regulation to avoid sign change violation & penalty thereof, SLDC has to keep system in underdrawl. By keeping system in underdrawl, system operator thereby created threat for system security for sake of sign change penalty. In such cases, although system operator saved penalty on sign change; however State have occurred double financial loss. Firstly, DISCOM required to pay penalty for under drawl at high frequency at rate of Market clearing price for the day & also secondly required to pay to generator for its injection, which is actually not used for system. Further, inspite of the need of maintaining overdrawl for grid security, due to sign reversal requirement imposed by this amended regulation, generation was picked up thus caused a wastage of national resources and also imposed a threat to system security. MSEDCL on one such occasion, given email to SLDC to take up this concern with RLDC & Hon'ble commission. The copy of email correspondence is attaché herewith as **Annexure-C**. There is no correspondence from either SLDC or RLDC on this issue raised. It is suggested that review needs to be done for sign change which is presently irrespective of frequency. Sample events showing requirement of underdrawl at frequency above 50.05 Hz for avoiding sign change violation based on SCADA data on which real time operations are done are attached herewith as **Annexure-D.**

5) **Unwanted penalty for overdrawal at low frequency for compliance of sign change**

In real time operation, on some occasion it is also noticed that frequency was below 49.85 Hz and to avoid sign change violation & penalty thereof, SLDC has to keep system in overdrawal. In such instances, by keeping system in over drawl, system operator thereby created threat for system security for sake of sign change penalty. In such cases, although system operator saved penalty on sign change but State would be required to pay DSM charges @ Rs. 16 per unit for over drawl at frequency below 49.85 Hz , even though having availability of hydro generation to control overdrawal. This has resulted in unnecessary penalties to DISCOM for overdrawl and also posed threat to system security. Sample events showing requirement of overdrawl at frequency below 49.85 Hz for avoiding sign change violation based on SCADA data on which real time operations are done are attached herewith as **Annexure-E.**

6) **Increase in pickup & backdown operations of Thermal stations:**

For compliance of sign change violations atleast after mandatory time period, there is increase in pick up & backdown instructions from SLDC. In Maharashtra, most of Intra State Generators are at top position in MOD stack due to higher variable cost and there by resulting in increase in operation of these thermal generators due to such frequent pick up & backdown instructions from SLDC. Infact, there is also rise in numbers of revisions of Central sector generating stations which can be seen from increase in revisions for period Jan to March in current year as compared to previous year. The total numbers of revisions of Central sector generating stations were 6340 during Jan-18 to Mar -2018, whereas total numbers of revisions of Central sector generating stations were 8405 during Jan-19 to Mar -2019. Thus there is rise of about 32% in number of daily revisions & thereby increase in pick up & backdown of thermal generating stations. Such increase in operation of thermal generating stations is detrimental to life of costly equipments of Thermal Generating stations. The comparative statement showing daywise Number of revisions in Central sector power for 1st Jan 2018 to 31St March 2018 and for 1st Jan 2019 to 31St March 2019 is attached herewith as **Annexure-F**.

7) **Factoring impact of variation & uncertainty of RE generation in DSM limit & sign change violations:**

The generation from renewable energy source depend on weather condition i.e Wind & Solar are given special treatment in DSM regulation with exemption of DSM charges for very wide error band (15%) and reducing % error between schedule generation & actual generation by incorporating definition of absolute error whereby error calculated on basis of Available capacity. Further all RPCs have exempted RE generations from sign change violations penalty; even though there was no specific clause whereby this exemption was mentioned in 4th amendment of DSM regulation.

It is well known fact that demand particularly agricultural demand, has impact of weather & even if demand is forecasted with accuracy of 1% , in case of Maharashtra having recorded peak demand of about 25000MW, forecast error is 250MW which is close to its deviation limit. Even achieving highest level of accuracy in demand forecasting by DISCOM & SLDC, deviation of RE generators will impact overall load generation balance & thereby will pose practical problem, particularly during high Wind period .

The State Commission of Maharashtra in the month of July 2018 notified regulation on forecasting & scheduling of Wind & Solar whereby commercial operation date was fixed not later than 1st April 2019 but still on request of SLDC, revised implementation date to 1st July 2019. The copy of daily order of Hon'ble MERC dated 18th March 2019 is attached herewith as **Annexure-G**.

Hence, it can be seen that at both State as well as Central level, special consideration is given by commission towards practical difficulty of RE Generators. Hence looking into impact of such RE generators on DSM of state, it is requested that sign change violation limit of state shall also be based on quantum of RE generation in state. The state having high RE installed capacity shall be given sign change penalty after 8, 10 or 12time block depending on quantum of RE installed capacity and if required necessary study for impact of RE generation forecast error on DSM of state shall be done.

Annexure - A1

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
31-Jan-19	1	3627	3870	243	3653	3825	172	-71	25		
31-Jan-19	2	3516	3924	408	3541	3835	294	-114	25		
31-Jan-19	3	3730	3899	170	3755	3874	119	-51	25		
31-Jan-19	4	3614	3832	218	3639	3766	127	-91	24		
31-Jan-19	5	3460	3666	206	3483	3462	-21	-227	24		
31-Jan-19	6	3371	3651	280	3395	3509	114	-166	24		
31-Jan-19	7	3351	3715	364	3376	3514	138	-226	24	YES	
31-Jan-19	8	3393	3650	257	3416	3412	-4	-261	23		
31-Jan-19	9	3372	3620	248	3395	3504	109	-139	23		
31-Jan-19	10	3339	3543	204	3361	3476	115	-89	22		
31-Jan-19	11	3278	3546	268	3302	3551	249	-19	23		
31-Jan-19	12	3226	3468	241	3250	3433	183	-58	24		
31-Jan-19	13	3163	3481	318	3186	3461	275	-43	23	YES	
31-Jan-19	14	3379	3572	193	3403	3560	157	-36	24		
31-Jan-19	15	3674	3656	-18	3697	3585	-112	-94	23		
31-Jan-19	16	3892	3936	44	3915	3930	15	-29	23		
31-Jan-19	17	3948	4067	118	3972	3967	-5	-123	23		
31-Jan-19	18	3952	4188	236	3976	4101	125	-111	24		
31-Jan-19	19	4017	4473	455	4041	4382	341	-114	24		
31-Jan-19	20	4166	4600	433	4190	4459	269	-164	24		
31-Jan-19	21	4233	4488	254	4256	4339	83	-171	23		
31-Jan-19	22	4325	4425	100	4349	4268	-81	-181	24	YES	
31-Jan-19	23	4436	4563	127	4460	4474	14	-113	24		
31-Jan-19	24	4571	4947	377	4596	4956	360	-17	26		
31-Jan-19	25	4770	5083	312	4796	5038	242	-70	25		
31-Jan-19	26	4897	5139	242	4922	5106	184	-58	25		
31-Jan-19	27	4997	5132	135	5022	5082	60	-75	26		
31-Jan-19	28	5061	5055	-6	5087	4914	-173	-167	26		
31-Jan-19	29	4986	5325	339	5011	5257	246	-93	25		
31-Jan-19	30	4872	5521	649	4896	5475	579	-70	24		
31-Jan-19	31	4909	5472	563	4934	5449	515	-48	24		
31-Jan-19	32	4947	5123	176	4970	5107	137	-39	23		
31-Jan-19	33	4989	4955	-35	5012	5044	32	67	22		
31-Jan-19	34	5026	4931	-95	5048	4866	-182	-87	22		
31-Jan-19	35	5241	5099	-142	5260	5153	-107	35	19		
31-Jan-19	36	5335	5293	-42	5351	5354	3	45	17		
31-Jan-19	37	5478	5313	-165	5492	5387	-105	60	14		
31-Jan-19	38	5599	5449	-150	5613	5563	-50	100	14		
31-Jan-19	39	5641	5367	-274	5652	5463	-189	85	11	YES	
31-Jan-19	40	6023	5591	-432	6031	5680	-351	81	8		
31-Jan-19	41	5854	5935	81	5860	5865	5	-76	6		
31-Jan-19	42	6073	6116	43	6092	6015	-77	-120	19		
31-Jan-19	43	6111	6142	31	6131	6120	-11	-42	20		
31-Jan-19	44	6111	6081	-30	6130	6053	-77	-47	19		
31-Jan-19	45	5850	5852	2	5869	5916	47	45	19		
31-Jan-19	46	5738	5913	175	5756	5919	163	-12	18		
31-Jan-19	47	5997	5853	-144	6015	5496	-519	-375	18		
31-Jan-19	48	5870	5893	22	5889	5710	-179	-201	19		
31-Jan-19	49	5702	5846	144	5721	5958	237	93	19		
31-Jan-19	50	5640	5742	102	5660	5659	-1	-103	19		
31-Jan-19	51	5541	5830	289	5560	5740	180	-109	19		
31-Jan-19	52	5489	5770	281	5508	5708	200	-81	19		
31-Jan-19	53	5428	5486	58	5445	5460	15	-43	17		
31-Jan-19	54	5352	5496	144	5369	5538	169	25	18	YES	
31-Jan-19	55	5348	5391	43	5365	5426	61	18	17		
31-Jan-19	56	5351	5327	-24	5368	5269	-99	-75	18		
31-Jan-19	57	5363	5471	108	5382	5297	-85	-193	19		
31-Jan-19	58	5401	5586	184	5421	5493	72	-112	20		
31-Jan-19	59	5441	5612	171	5461	5581	120	-51	20		
31-Jan-19	60	5448	5438	-10	5469	5337	-132	-122	21		
31-Jan-19	61	5458	5397	-62	5479	5341	-138	-76	21		
31-Jan-19	62	5426	5551	124	5448	5437	-11	-135	22		
31-Jan-19	63	5398	5685	287	5420	5631	211	-76	22		
31-Jan-19	64	5386	5686	300	5409	5478	69	-231	23		
31-Jan-19	65	5396	5521	126	5420	5353	-67	-193	24		
31-Jan-19	66	5402	5303	-99	5427	5320	-107	-8	25		
31-Jan-19	67	5302	5237	-64	5327	4940	-387	-323	26		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
31-Jan-19	68	5199	5280	81	5225	5009	-216	-297	26		
31-Jan-19	69	5063	5195	132	5089	4869	-220	-352	27		
31-Jan-19	70	5061	5053	-8	5088	4818	-270	-262	27		
31-Jan-19	71	5033	5097	64	5062	5085	23	-41	29		YES
31-Jan-19	72	4781	5032	252	4809	5024	215	-37	29		
31-Jan-19	73	4798	5093	295	4827	5143	316	21	29		
31-Jan-19	74	4972	5282	310	5000	5259	259	-51	28		
31-Jan-19	75	5160	5424	264	5189	5332	143	-121	29		
31-Jan-19	76	5179	5514	335	5208	5401	193	-142	29		
31-Jan-19	77	5176	5293	117	5205	5216	11	-106	29	YES	
31-Jan-19	78	5100	5026	-74	5129	5002	-127	-53	29		
31-Jan-19	79	5055	4988	-67	5083	4965	-118	-51	29		
31-Jan-19	80	4939	4906	-33	4968	4919	-49	-16	29		
31-Jan-19	81	4680	4655	-25	4709	4724	15	40	29		
31-Jan-19	82	4492	4631	140	4520	4589	69	-71	28		
31-Jan-19	83	4476	4667	191	4503	4642	139	-52	28		
31-Jan-19	84	4709	4956	247	4738	4965	227	-20	29		
31-Jan-19	85	4517	4790	273	4544	4715	171	-102	28		
31-Jan-19	86	4289	4544	255	4317	4510	193	-62	29		
31-Jan-19	87	4274	4220	-54	4303	4170	-133	-79	29		YES
31-Jan-19	88	4399	4214	-185	4428	4185	-243	-58	29		
31-Jan-19	89	4297	4083	-214	4325	3967	-358	-144	28		
31-Jan-19	90	4113	4102	-11	4143	4060	-83	-72	30		
31-Jan-19	91	4390	4174	-216	4419	4092	-327	-111	29		
31-Jan-19	92	4326	4141	-185	4355	4099	-256	-71	30		
31-Jan-19	93	4120	4080	-40	4149	4090	-59	-19	29	YES	
31-Jan-19	94	4057	4029	-29	4087	4055	-32	-3	29		
31-Jan-19	95	4122	3968	-154	4150	3946	-204	-50	28		
31-Jan-19	96	4107	3863	-244	4136	3907	-229	15	28		

Annexure-A2

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change Violation Remark	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
23-Feb-19	1	5166	5346	180	5159	5206	47	-133	-7		
23-Feb-19	2	5140	5374	235	5132	5295	163	-72	-7		
23-Feb-19	3	5114	5418	304	5106	5380	274	-30	-8		
23-Feb-19	4	5091	5428	336	5084	5368	284	-52	-8		
23-Feb-19	5	5069	5201	132	5060	5153	93	-39	-8		
23-Feb-19	6	5080	5054	-26	5072	5033	-39	-13	-8		YES
23-Feb-19	7	5057	4927	-129	5048	4911	-137	-8	-9		
23-Feb-19	8	5039	4832	-207	5031	4813	-218	-11	-8		
23-Feb-19	9	5023	4902	-122	5015	4962	-53	69	-8		
23-Feb-19	10	5014	4962	-52	5006	4984	-22	30	-7		
23-Feb-19	11	5008	4938	-69	5000	4969	-31	38	-8		
23-Feb-19	12	5002	4959	-43	4994	4986	-8	35	-7	YES	
23-Feb-19	13	4968	4954	-14	4960	4970	10	24	-8		
23-Feb-19	14	4926	4992	66	4919	5027	108	42	-7		
23-Feb-19	15	4993	5034	41	4984	5068	84	43	-8		
23-Feb-19	16	4987	5035	48	4978	5036	58	10	-8		
23-Feb-19	17	5004	5021	17	4995	4988	-7	-24	-9		
23-Feb-19	18	5013	5082	69	5004	4982	-22	-91	-9		
23-Feb-19	19	5052	5149	97	5043	5008	-35	-132	-8		
23-Feb-19	20	5068	5252	184	5060	5185	125	-59	-8	YES	
23-Feb-19	21	5092	5240	148	5083	5130	47	-101	-9		
23-Feb-19	22	5112	5297	184	5104	5219	115	-69	-8		
23-Feb-19	23	5138	5514	375	5130	5452	322	-53	-8		
23-Feb-19	24	5541	5627	86	5533	5515	-18	-104	-8		
23-Feb-19	25	5903	5961	58	5895	5929	34	-24	-8		
23-Feb-19	26	6357	6259	-98	6349	6118	-231	-133	-8		
23-Feb-19	27	6584	6592	9	6576	6545	-31	-40	-7		
23-Feb-19	28	6397	6623	225	6390	6510	120	-105	-7		
23-Feb-19	29	6335	6566	231	6328	6421	93	-138	-7		
23-Feb-19	30	6316	6510	194	6309	6389	80	-114	-7		
23-Feb-19	31	6322	6282	-41	6315	6156	-159	-118	-7		
23-Feb-19	32	6360	6270	-90	6354	6169	-185	-95	-7		
23-Feb-19	33	6564	6336	-229	6546	6329	-217	12	-19		
23-Feb-19	34	6484	6350	-134	6455	6276	-179	-45	-29		
23-Feb-19	35	6425	6388	-37	6378	6257	-121	-84	-46		
23-Feb-19	36	6552	6605	53	6500	6603	103	50	-52		
23-Feb-19	37	6307	6664	357	6288	6600	312	-45	-19		
23-Feb-19	38	5981	6531	550	5975	6466	491	-59	-6		
23-Feb-19	39	6175	6451	275	6170	6456	286	11	-5		
23-Feb-19	40	6275	6342	68	6270	6287	17	-51	-4		
23-Feb-19	41	6242	6304	62	6238	6208	-30	-92	-4		
23-Feb-19	42	6331	6443	112	6327	6308	-19	-131	-4	YES	
23-Feb-19	43	6490	6636	146	6486	6610	124	-22	-4		
23-Feb-19	44	6595	6868	273	6591	6535	-56	-329	-4		
23-Feb-19	45	6582	7043	461	6577	6748	171	-290	-5		
23-Feb-19	46	6613	7114	501	6608	6864	256	-245	-5		
23-Feb-19	47	6621	7044	422	6617	6744	127	-295	-4		
23-Feb-19	48	6594	6927	333	6591	6622	31	-302	-4	YES	
23-Feb-19	49	6459	6870	410	6455	6684	229	-181	-5		
23-Feb-19	50	6297	6500	202	6293	6187	-106	-308	-4		
23-Feb-19	51	6282	6568	286	6278	6399	121	-165	-5		
23-Feb-19	52	6131	6523	391	6126	6269	143	-248	-5		
23-Feb-19	53	5883	6261	378	5877	5986	109	-269	-6		
23-Feb-19	54	5868	6135	267	5863	5894	31	-236	-5	YES	
23-Feb-19	55	5862	6118	257	5857	5852	-5	-262	-5		YES
23-Feb-19	56	5950	6142	193	5945	5860	-85	-278	-5		
23-Feb-19	57	5959	6116	158	5954	5840	-114	-272	-4		
23-Feb-19	58	5963	6098	135	5959	5821	-138	-273	-4		
23-Feb-19	59	5963	6164	202	5958	5889	-69	-271	-4		
23-Feb-19	60	5966	6200	234	5963	5877	-86	-320	-4	YES	
23-Feb-19	61	5876	6161	285	5871	5833	-38	-323	-5		
23-Feb-19	62	5693	6127	434	5688	5821	133	-301	-5		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change Violation Remark	
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23-Feb-19	63	5697	6079	381	5692	5781	89	-292	-5		
23-Feb-19	64	5692	6040	348	5687	5809	122	-226	-5		
23-Feb-19	65	5696	5911	215	5691	5663	-28	-243	-6		
23-Feb-19	66	5690	5925	235	5685	5634	-51	-286	-5	YES	
23-Feb-19	67	5687	5947	261	5681	5625	-56	-317	-5		
23-Feb-19	68	5678	5846	168	5673	5475	-198	-366	-5		
23-Feb-19	69	5478	5780	302	5472	5502	30	-272	-6		
23-Feb-19	70	5287	5685	399	5282	5400	118	-281	-5		
23-Feb-19	71	5192	5548	356	5187	5305	118	-238	-5		
23-Feb-19	72	5062	5333	271	5057	5139	82	-189	-5	YES	
23-Feb-19	73	5213	5207	-7	5208	5085	-123	-116	-5		
23-Feb-19	74	4921	5096	176	4916	4936	20	-156	-5		
23-Feb-19	75	5090	5238	148	5084	5044	-40	-188	-5		
23-Feb-19	76	5195	5488	293	5190	5203	13	-280	-5		
23-Feb-19	77	5246	5631	386	5240	5474	234	-152	-6		
23-Feb-19	78	5255	5551	296	5250	5515	265	-31	-5		
23-Feb-19	79	5262	5245	-17	5257	5191	-66	-49	-6		
23-Feb-19	80	5114	5041	-73	5107	5010	-97	-24	-7		
23-Feb-19	81	5190	5040	-150	5185	4986	-199	-49	-5		
23-Feb-19	82	5186	5118	-68	5181	5070	-111	-43	-5		
23-Feb-19	83	5297	5380	83	5292	5354	62	-21	-5		
23-Feb-19	84	5022	5284	262	5017	5242	225	-37	-6		
23-Feb-19	85	4840	4991	151	4835	4960	125	-26	-5		
23-Feb-19	86	4897	5085	188	4891	5153	262	74	-6		
23-Feb-19	87	5062	5095	33	5056	5137	81	48	-6		
23-Feb-19	88	5068	4939	-129	5062	4916	-146	-17	-6		
23-Feb-19	89	5063	5086	23	5056	4967	-89	-112	-6		
23-Feb-19	90	5044	5298	254	5039	5236	197	-57	-5		
23-Feb-19	91	5021	5253	232	5015	5134	119	-113	-6		
23-Feb-19	92	5111	5245	135	5105	5148	43	-92	-6		
23-Feb-19	93	5209	5143	-66	5209	5072	-137	-71	0		
23-Feb-19	94	5180	5100	-80	5181	5063	-118	-38	0		
23-Feb-19	95	5250	5135	-115	5250	5067	-183	-68	0		
23-Feb-19	96	5222	5123	-98	5221	5037	-184	-86	0		
24-Feb-19	1	5359	5261	-98	5351	5201	-150	-52	-8		
24-Feb-19	2	5339	5351	12	5331	5296	-35	-47	-8		
24-Feb-19	3	5320	5328	8	5313	5236	-77	-85	-7		
24-Feb-19	4	5294	5345	51	5287	5263	-24	-75	-7		
24-Feb-19	5	5275	5339	63	5268	5292	24	-39	-7		
24-Feb-19	6	5180	5316	136	5172	5325	153	17	-8		
24-Feb-19	7	5083	5297	214	5076	5279	203	-11	-7		
24-Feb-19	8	5194	5201	6	5187	5196	9	3	-8	YES	
24-Feb-19	9	5189	5136	-53	5182	5105	-77	-24	-8		
24-Feb-19	10	5178	5203	25	5171	5172	1	-24	-8		
24-Feb-19	11	5171	5258	87	5164	5202	38	-49	-7		
24-Feb-19	12	5167	5190	23	5160	5192	32	9	-7		
24-Feb-19	13	5162	5108	-53	5154	5081	-73	-20	-8		
24-Feb-19	14	5155	5031	-124	5147	4967	-180	-56	-7		
24-Feb-19	15	5143	5091	-53	5136	5110	-26	27	-7		
24-Feb-19	16	5138	5191	53	5130	5178	48	-5	-7		
24-Feb-19	17	5138	5164	26	5131	5176	45	19	-7		
24-Feb-19	18	5143	5206	63	5136	5211	75	12	-7		
24-Feb-19	19	5041	5284	243	5033	5252	219	-24	-8		
24-Feb-19	20	5124	5079	-44	5116	5023	-93	-49	-8		
24-Feb-19	21	5154	5227	73	5146	5163	17	-56	-9		
24-Feb-19	22	5153	5307	154	5145	5225	80	-74	-8		
24-Feb-19	23	5326	5322	-5	5319	5261	-58	-53	-8		
24-Feb-19	24	5372	5562	190	5365	5420	55	-135	-8		
24-Feb-19	25	5413	5532	119	5399	5510	111	-8	-14		
24-Feb-19	26	5641	5640	-1	5610	5578	-32	-31	-31		
24-Feb-19	27	5788	5954	166	5757	5893	136	-30	-31		
24-Feb-19	28	5895	6164	269	5864	6087	223	-46	-31		

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24-Feb-19	29	6107	6228	121	6075	6033	-42	-163	-31		
24-Feb-19	30	6214	6363	149	6183	6288	105	-44	-31		
24-Feb-19	31	6231	6494	263	6199	6364	165	-98	-32		
24-Feb-19	32	6274	6345	71	6221	6312	91	20	-53		
24-Feb-19	33	6051	6127	75	5998	6030	32	-43	-53	YES	
24-Feb-19	34	6065	6030	-34	6012	5977	-35	-1	-53		
24-Feb-19	35	6081	6010	-71	6028	6018	-10	61	-54		
24-Feb-19	36	6004	5869	-136	5952	5868	-84	52	-52		
24-Feb-19	37	5908	5928	20	5856	5833	-23	-43	-52		
24-Feb-19	38	5888	5995	107	5858	5957	99	-8	-30		
24-Feb-19	39	5887	5892	5	5859	5845	-14	-19	-28		
24-Feb-19	40	5770	5823	52	5764	5756	-8	-60	-6		
24-Feb-19	41	5767	5796	30	5760	5751	-9	-39	-7		
24-Feb-19	42	5788	5771	-17	5781	5756	-25	-8	-7		
24-Feb-19	43	5907	5946	38	5901	5947	46	8	-6		
24-Feb-19	44	6108	6189	81	6102	6172	70	-11	-6		
24-Feb-19	45	6208	6190	-18	6201	6255	54	72	-7		
24-Feb-19	46	6216	6058	-157	6210	6084	-126	31	-6		
24-Feb-19	47	6111	5900	-211	6105	5830	-275	-64	-6		
24-Feb-19	48	5943	5910	-33	5937	5911	-26	7	-6		
24-Feb-19	49	5768	5965	197	5762	5966	204	7	-6		
24-Feb-19	50	5622	5749	127	5615	5777	162	35	-7		
24-Feb-19	51	5440	5668	227	5434	5535	101	-126	-6		
24-Feb-19	52	5316	5581	265	5309	5450	141	-124	-7		
24-Feb-19	53	5118	5199	81	5111	5130	19	-62	-7		
24-Feb-19	54	5109	4954	-154	5102	4973	-129	25	-6		
24-Feb-19	55	5110	4861	-250	5103	4885	-218	32	-7		
24-Feb-19	56	5110	4729	-382	5103	4767	-336	46	-7		
24-Feb-19	57	5110	4859	-250	5103	4921	-182	68	-7		
24-Feb-19	58	5106	4941	-166	5100	4928	-172	-6	-7		
24-Feb-19	59	5105	4990	-115	5098	4977	-121	-6	-7		
24-Feb-19	60	5106	5150	44	5099	5127	28	-16	-7		
24-Feb-19	61	4811	5160	349	4804	5065	261	-88	-7		
24-Feb-19	62	4953	5160	206	4946	5151	205	-1	-7		
24-Feb-19	63	5070	5161	91	5063	5198	135	44	-7		
24-Feb-19	64	5098	5065	-32	5091	5091	0	32	-7		YES
24-Feb-19	65	5098	4989	-109	5092	4943	-149	-40	-7		
24-Feb-19	66	5142	5059	-83	5135	4995	-140	-57	-7		
24-Feb-19	67	5167	5097	-70	5160	5065	-95	-25	-7		
24-Feb-19	68	5170	5075	-95	5163	4997	-166	-71	-7		
24-Feb-19	69	5174	4997	-176	5167	4950	-217	-41	-7		
24-Feb-19	70	5180	5076	-104	5172	5047	-125	-21	-8	YES	
24-Feb-19	71	5165	5229	65	5157	5242	85	20	-8		
24-Feb-19	72	5054	5164	110	5046	5195	149	39	-8		
24-Feb-19	73	5220	5007	-213	5212	5029	-183	30	-8		
24-Feb-19	74	5219	5046	-173	5212	5050	-162	11	-7		
24-Feb-19	75	5437	5335	-102	5429	5360	-69	33	-8		
24-Feb-19	76	5490	5744	254	5483	5694	211	-43	-7		
24-Feb-19	77	5470	5924	454	5461	5831	370	-84	-8		
24-Feb-19	78	5439	5844	405	5431	5856	425	20	-8		
24-Feb-19	79	5347	5618	271	5339	5597	258	-13	-8		
24-Feb-19	80	5362	5598	236	5354	5529	175	-61	-8		
24-Feb-19	81	5558	5540	-18	5551	5468	-83	-65	-8		
24-Feb-19	82	5556	5416	-140	5549	5313	-236	-96	-7		
24-Feb-19	83	5618	5483	-135	5611	5399	-212	-77	-8		
24-Feb-19	84	5562	5477	-86	5555	5441	-114	-28	-7		
24-Feb-19	85	5315	5470	155	5307	5403	96	-59	-7		
24-Feb-19	86	5150	5439	289	5143	5363	220	-69	-7		
24-Feb-19	87	5047	5353	306	5039	5301	262	-44	-8		
24-Feb-19	88	5076	5421	345	5069	5413	344	-1	-8		
24-Feb-19	89	5074	5349	275	5066	5246	180	-95	-8		
24-Feb-19	90	5086	5307	221	5078	5217	139	-82	-8		

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24-Feb-19	91	5203	5216	13	5195	5163	-32	-45	-8	YES	
24-Feb-19	92	5256	5268	11	5249	5264	15	4	-7		
24-Feb-19	93	5105	5276	171	5097	5266	169	-2	-8		
24-Feb-19	94	5063	5133	70	5055	5106	51	-19	-8		
24-Feb-19	95	5032	4959	-72	5024	4878	-146	-74	-8		
24-Feb-19	96	5007	5083	75	4999	5051	52	-23	-8		
25-Feb-19	1	5305	5258	-47	5296	5276	-20	27	-8		
25-Feb-19	2	5282	5344	62	5274	5270	-4	-66	-8		
25-Feb-19	3	5190	5372	182	5182	5300	118	-64	-8		
25-Feb-19	4	5079	5399	320	5071	5306	235	-85	-8		
25-Feb-19	5	4972	5342	371	4963	5277	314	-57	-9		
25-Feb-19	6	4948	5405	457	4940	5290	350	-107	-8		
25-Feb-19	7	4924	5341	417	4916	5207	291	-126	-8		
25-Feb-19	8	4902	5150	247	4894	5134	240	-7	-8	YES	
25-Feb-19	9	4961	4818	-143	4952	4770	-182	-39	-9		
25-Feb-19	10	4880	5014	134	4871	4969	98	-36	-9		
25-Feb-19	11	4871	5061	190	4862	5050	188	-2	-9		
25-Feb-19	12	4864	4924	60	4855	4836	-19	-79	-9		
25-Feb-19	13	4859	4875	16	4850	4819	-31	-47	-9		
25-Feb-19	14	4853	4954	101	4844	4903	59	-42	-9		
25-Feb-19	15	4846	5007	161	4838	4927	89	-72	-9		
25-Feb-19	16	4842	5151	309	4834	5080	246	-63	-9	YES	
25-Feb-19	17	4999	5185	186	4990	5103	113	-73	-9		
25-Feb-19	18	5073	5183	110	5064	5082	18	-92	-9		
25-Feb-19	19	5147	5023	-124	5139	4927	-212	-88	-8		
25-Feb-19	20	5241	5075	-166	5233	5035	-198	-32	-8		
25-Feb-19	21	5300	5339	38	5292	5344	52	14	-8		
25-Feb-19	22	5327	5584	257	5319	5517	198	-59	-8		
25-Feb-19	23	5330	5659	329	5322	5572	250	-79	-7		
25-Feb-19	24	5381	5710	329	5373	5579	206	-123	-8		
25-Feb-19	25	5488	5494	6	5480	5293	-187	-193	-8		
25-Feb-19	26	5701	5925	225	5693	5760	67	-158	-8		
25-Feb-19	27	5852	6126	274	5845	5973	128	-146	-7	YES	
25-Feb-19	28	6084	6143	59	6072	6061	-11	-70	-12		
25-Feb-19	29	5996	6052	57	5947	5984	37	-20	-48		
25-Feb-19	30	6119	6266	147	6066	6177	111	-36	-54		
25-Feb-19	31	6163	6290	127	6109	6069	-40	-167	-54		
25-Feb-19	32	6194	6143	-50	6139	5973	-166	-116	-54		
25-Feb-19	33	6320	6180	-140	6266	6008	-258	-118	-54		
25-Feb-19	34	6257	6187	-70	6202	5951	-251	-181	-55		
25-Feb-19	35	6151	6320	169	6101	6126	25	-144	-50		
25-Feb-19	36	6273	6415	141	6243	6242	-1	-142	-30		
25-Feb-19	37	6288	6381	93	6279	6269	-10	-103	-10		
25-Feb-19	38	6319	6195	-124	6313	6101	-212	-88	-6		
25-Feb-19	39	6338	6110	-228	6331	6081	-250	-22	-6		
25-Feb-19	40	6367	5987	-380	6361	5899	-462	-82	-6		
25-Feb-19	41	6376	6095	-282	6370	5984	-386	-104	-7		
25-Feb-19	42	6324	6423	100	6318	6347	29	-71	-6		
25-Feb-19	43	6114	6678	564	6108	6554	446	-118	-6		
25-Feb-19	44	6266	6774	507	6261	6685	424	-83	-5		
25-Feb-19	45	6317	6589	272	6312	6495	183	-89	-5		
25-Feb-19	46	6361	6462	102	6355	6463	108	6	-5		
25-Feb-19	47	6409	6304	-105	6404	6317	-87	18	-5		
25-Feb-19	48	6274	6113	-162	6267	6133	-134	28	-7		
25-Feb-19	49	6062	5930	-132	6054	5953	-101	31	-9		
25-Feb-19	50	5981	5943	-39	5974	5962	-12	27	-8		
25-Feb-19	51	5901	5836	-65	5892	5842	-50	15	-9		
25-Feb-19	52	5800	5704	-96	5792	5749	-43	53	-8		
25-Feb-19	53	5657	5651	-6	5649	5673	24	30	-8	YES	
25-Feb-19	54	5588	5636	48	5579	5633	54	6	-9		
25-Feb-19	55	5574	5526	-48	5565	5587	22	70	-9		
25-Feb-19	56	5653	5431	-222	5644	5443	-201	21	-9		

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25-Feb-19	57	5663	5601	-61	5655	5591	-64	-3	-7		
25-Feb-19	58	5661	5645	-16	5655	5608	-47	-31	-7		
25-Feb-19	59	5667	5676	9	5660	5564	-96	-105	-7		
25-Feb-19	60	5640	5732	92	5633	5677	44	-48	-7		
25-Feb-19	61	5592	5722	130	5584	5675	91	-39	-7		
25-Feb-19	62	5437	5709	272	5430	5784	354	82	-7		
25-Feb-19	63	5595	5774	179	5588	5816	228	49	-8		
25-Feb-19	64	5636	5824	188	5628	5836	208	20	-8		
25-Feb-19	65	5552	5755	203	5544	5718	174	-29	-8	YES	
25-Feb-19	66	5644	5535	-109	5637	5475	-162	-53	-7		
25-Feb-19	67	5491	5532	42	5483	5541	58	16	-8		
25-Feb-19	68	5383	5367	-15	5375	5354	-21	-6	-8		YES
25-Feb-19	69	5233	5119	-114	5225	5079	-146	-32	-8		
25-Feb-19	70	5228	4919	-309	5219	4891	-328	-19	-9		
25-Feb-19	71	5034	4844	-190	5027	4786	-241	-51	-7		
25-Feb-19	72	4986	4816	-170	4978	4836	-142	28	-7		
25-Feb-19	73	4985	4665	-320	4977	4616	-361	-41	-8		
25-Feb-19	74	4997	4820	-178	4989	4759	-230	-52	-8	YES	
25-Feb-19	75	5282	5185	-97	5274	5249	-25	72	-9		
25-Feb-19	76	5374	5664	290	5366	5549	183	-107	-8		
25-Feb-19	77	5478	5813	335	5469	5728	259	-76	-8		
25-Feb-19	78	5521	5754	233	5512	5629	117	-116	-9		
25-Feb-19	79	5520	5624	104	5512	5494	-18	-122	-8		
25-Feb-19	80	5254	5346	92	5246	5246	0	-92	-8		
25-Feb-19	81	5048	5164	116	5039	5075	36	-80	-9		
25-Feb-19	82	4906	5020	114	4898	5007	109	-5	-8	YES	
25-Feb-19	83	4879	4981	102	4870	4898	28	-74	-9		
25-Feb-19	84	4901	4975	74	4892	4921	29	-45	-9		
25-Feb-19	85	4878	4809	-69	4869	4756	-113	-44	-9		
25-Feb-19	86	4959	4904	-54	4950	4908	-42	12	-9		
25-Feb-19	87	4952	4987	35	4943	4936	-7	-42	-8		
25-Feb-19	88	4945	5063	118	4936	5046	110	-8	-9		
25-Feb-19	89	4899	5116	217	4890	4970	80	-137	-9		
25-Feb-19	90	4874	5196	322	4865	5069	204	-118	-9		
25-Feb-19	91	5001	5379	378	4992	5292	300	-78	-9		
25-Feb-19	92	5033	5416	383	5025	5335	310	-73	-8		
25-Feb-19	93	5309	5329	20	5300	5236	-64	-84	-9	YES	
25-Feb-19	94	5272	5289	17	5264	5265	1	-16	-9		
25-Feb-19	95	5244	5313	69	5235	5234	-1	-70	-8		
25-Feb-19	96	5363	5396	34	5354	5383	29	-5	-9		
26-Feb-19	1	5560	5432	-127	5551	5410	-141	-14	-9		
26-Feb-19	2	5538	5434	-104	5529	5354	-175	-71	-9		
26-Feb-19	3	5519	5438	-80	5509	5327	-182	-102	-9		
26-Feb-19	4	5435	5452	16	5426	5323	-103	-119	-9		
26-Feb-19	5	5300	5452	153	5290	5347	57	-96	-9		
26-Feb-19	6	5214	5429	216	5204	5302	98	-118	-10		
26-Feb-19	7	5160	5235	75	5150	5114	-36	-111	-10		
26-Feb-19	8	5136	5130	-6	5127	5061	-66	-60	-9		
26-Feb-19	9	5119	5200	81	5110	5145	35	-46	-9		
26-Feb-19	10	5112	5162	49	5103	5115	12	-37	-9		
26-Feb-19	11	5103	5127	23	5094	5038	-56	-79	-9		
26-Feb-19	12	5096	5177	81	5087	5081	-6	-87	-9		
26-Feb-19	13	5091	5211	120	5082	5133	51	-69	-9		
26-Feb-19	14	5086	5167	81	5076	5104	28	-53	-9		
26-Feb-19	15	5079	5184	105	5069	5115	46	-59	-10	YES	
26-Feb-19	16	5075	5285	210	5065	5232	167	-43	-10		
26-Feb-19	17	5223	5198	-25	5212	5115	-97	-72	-11		
26-Feb-19	18	5353	5244	-110	5343	5220	-123	-13	-10		
26-Feb-19	19	5359	5285	-74	5350	5247	-103	-29	-9		
26-Feb-19	20	5410	5443	34	5400	5403	3	-31	-10		
26-Feb-19	21	5424	5498	74	5414	5382	-32	-106	-10		
26-Feb-19	22	5441	5687	246	5431	5530	99	-147	-10		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change Violation Remark	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
26-Feb-19	23	5458	5861	404	5449	5698	249	-155	-9		
26-Feb-19	24	5506	6069	563	5497	5906	409	-154	-9		
26-Feb-19	25	5746	6134	388	5736	5817	81	-307	-9		
26-Feb-19	26	5859	5946	87	5851	5728	-123	-210	-8	YES	
26-Feb-19	27	5946	6006	60	5938	5898	-40	-100	-9		
26-Feb-19	28	5986	6129	144	5977	5968	-9	-153	-9		
26-Feb-19	29	5767	6086	319	5757	5841	84	-235	-9		
26-Feb-19	30	5798	6282	484	5790	6081	291	-193	-9		
26-Feb-19	31	5830	6238	408	5821	6013	192	-216	-9		
26-Feb-19	32	5860	6102	242	5852	5878	26	-216	-8	YES	
26-Feb-19	33	5988	6070	82	5979	5991	12	-70	-9		
26-Feb-19	34	5912	5935	23	5904	5726	-178	-201	-8		
26-Feb-19	35	5947	5895	-52	5938	5811	-127	-75	-8		
26-Feb-19	36	5985	5823	-162	5977	5716	-261	-99	-9		
26-Feb-19	37	5849	5898	49	5841	5806	-35	-84	-8		
26-Feb-19	38	5874	5937	63	5867	5789	-78	-141	-7		
26-Feb-19	39	5839	6118	279	5832	6046	214	-65	-7		
26-Feb-19	40	5822	6001	179	5815	5858	43	-136	-7		
26-Feb-19	41	5830	5879	49	5823	5748	-75	-124	-7		
26-Feb-19	42	5993	6055	62	5986	5936	-50	-112	-7		
26-Feb-19	43	6150	6252	102	6143	6170	27	-75	-7	YES	
26-Feb-19	44	6154	6284	130	6148	6228	80	-50	-6		
26-Feb-19	45	6154	6106	-48	6147	6082	-65	-17	-7		
26-Feb-19	46	6152	6060	-93	6145	6037	-108	-15	-7		
26-Feb-19	47	6151	5901	-250	6145	5905	-240	10	-6		
26-Feb-19	48	5997	5764	-233	5991	5787	-204	29	-7		
26-Feb-19	49	5994	5723	-271	5987	5752	-235	36	-7		
26-Feb-19	50	5912	5762	-150	5906	5770	-136	14	-7		
26-Feb-19	51	5835	5919	85	5827	5946	119	34	-7		
26-Feb-19	52	5694	5784	90	5686	5769	83	-7	-7		
26-Feb-19	53	5597	5543	-54	5589	5571	-18	36	-8		
26-Feb-19	54	5535	5435	-100	5527	5392	-135	-35	-8		
26-Feb-19	55	5520	5433	-87	5512	5451	-61	26	-9		
26-Feb-19	56	5514	5470	-44	5506	5470	-36	8	-8		
26-Feb-19	57	5519	5467	-52	5510	5475	-35	17	-9		
26-Feb-19	58	5517	5664	147	5509	5688	179	32	-8		
26-Feb-19	59	5474	5685	211	5467	5647	180	-31	-7		
26-Feb-19	60	5480	5535	56	5472	5509	37	-19	-8		
26-Feb-19	61	5535	5506	-30	5528	5532	4	34	-8		
26-Feb-19	62	5438	5487	50	5429	5484	55	5	-9		
26-Feb-19	63	5440	5569	129	5432	5606	174	45	-8		
26-Feb-19	64	5438	5275	-162	5429	5307	-122	40	-9		
26-Feb-19	65	5329	5272	-57	5320	5170	-150	-93	-9		
26-Feb-19	66	5186	5328	143	5177	5212	35	-108	-9		
26-Feb-19	67	5032	5221	190	5023	5104	81	-109	-9		
26-Feb-19	68	5026	5202	176	5017	5114	97	-79	-9		
26-Feb-19	69	4988	5183	195	4979	5213	234	39	-9		
26-Feb-19	70	4982	5075	93	4971	4951	-20	-113	-10		
26-Feb-19	71	4883	5136	253	4875	5126	251	-2	-8		
26-Feb-19	72	4779	4974	195	4771	4976	205	10	-8	YES	
26-Feb-19	73	5004	4754	-250	4996	4742	-254	-4	-8		
26-Feb-19	74	5147	4870	-277	5139	4907	-232	45	-8		
26-Feb-19	75	5303	5201	-102	5296	5132	-164	-62	-8		
26-Feb-19	76	5337	5527	190	5329	5443	114	-76	-7		
26-Feb-19	77	5343	5648	305	5336	5571	235	-70	-7		
26-Feb-19	78	5342	5480	138	5335	5434	99	-39	-7		
26-Feb-19	79	5342	5384	41	5335	5371	36	-5	-8		
26-Feb-19	80	5104	5312	208	5096	5303	207	-1	-8		
26-Feb-19	81	4717	4964	246	4709	4943	234	-12	-8		
26-Feb-19	82	4682	4608	-75	4674	4563	-111	-36	-8		
26-Feb-19	83	4612	4695	83	4603	4686	83	0	-9		
26-Feb-19	84	4550	4775	225	4541	4784	243	18	-9		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change Violation Remark	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
26-Feb-19	85	4538	4668	130	4528	4647	119	-11	-10		
26-Feb-19	86	4533	4561	28	4525	4468	-57	-85	-8		
26-Feb-19	87	4528	4690	163	4519	4715	196	33	-9		
26-Feb-19	88	4673	4736	64	4663	4742	79	15	-9		
26-Feb-19	89	4608	4695	87	4599	4608	9	-78	-9	YES	
26-Feb-19	90	4583	4699	116	4575	4627	52	-64	-8		
26-Feb-19	91	4660	4708	48	4652	4654	2	-46	-8		
26-Feb-19	92	4897	4785	-111	4889	4787	-102	9	-7		
26-Feb-19	93	5002	4892	-111	4994	4848	-146	-35	-8		
26-Feb-19	94	5014	5083	69	5006	5060	54	-15	-8		
26-Feb-19	95	5139	5234	95	5131	5210	79	-16	-8		
26-Feb-19	96	5206	5409	203	5199	5381	182	-21	-7		

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		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
01-Mar-19	1	5311	5335	24	5307	5367	60	36	-4		
01-Mar-19	2	5191	5404	213	5188	5345	157	-56	-3		
01-Mar-19	3	5118	5465	347	5115	5412	297	-50	-3		
01-Mar-19	4	5065	5397	332	5063	5332	269	-63	-2		
01-Mar-19	5	5039	5250	210	5037	5217	180	-30	-3		
01-Mar-19	6	5243	5159	-84	5240	5162	-78	6	-3		
01-Mar-19	7	5327	5171	-157	5325	5129	-196	-39	-3		
01-Mar-19	8	5307	5064	-243	5304	5055	-249	-6	-3		
01-Mar-19	9	5143	4971	-172	5141	4963	-178	-6	-3		
01-Mar-19	10	5136	4965	-171	5133	4944	-189	-18	-3		
01-Mar-19	11	4709	4990	281	4705	4837	132	-149	-4		
01-Mar-19	12	4555	4988	433	4552	4840	288	-145	-3		
01-Mar-19	13	4475	4891	416	4473	4835	362	-54	-3		
01-Mar-19	14	4681	4892	211	4679	4908	229	18	-2		
01-Mar-19	15	4855	4959	104	4852	4966	114	10	-3		
01-Mar-19	16	4945	4924	-21	4942	4864	-78	-57	-3		
01-Mar-19	17	5205	5019	-186	5202	4959	-243	-57	-3		
01-Mar-19	18	5332	5088	-244	5329	5054	-275	-31	-3		
01-Mar-19	19	5367	5294	-73	5364	5311	-53	20	-3		
01-Mar-19	20	5404	5471	67	5401	5456	55	-12	-3		
01-Mar-19	21	5400	5633	233	5397	5600	203	-30	-3		
01-Mar-19	22	5452	5759	307	5449	5675	226	-81	-3		
01-Mar-19	23	5518	5667	149	5515	5579	64	-85	-4		
01-Mar-19	24	5725	5667	-58	5721	5602	-119	-61	-3		YES
01-Mar-19	25	5762	5764	3	5759	5675	-84	-87	-3		
01-Mar-19	26	5966	5978	12	5963	5887	-76	-88	-3		
01-Mar-19	27	6026	6007	-19	6023	6007	-16	3	-4		
01-Mar-19	28	5985	5748	-237	5982	5657	-325	-88	-3		
01-Mar-19	29	6107	5960	-147	6103	6061	-42	105	-4		
01-Mar-19	30	6219	6168	-51	6216	6143	-73	-22	-3		
01-Mar-19	31	6252	6168	-84	6248	6123	-125	-41	-4		
01-Mar-19	32	6287	6123	-163	6283	6073	-210	-47	-4		
01-Mar-19	33	6178	6118	-60	6174	6073	-101	-41	-4	YES	
01-Mar-19	34	6149	6085	-63	6145	6017	-128	-65	-4		
01-Mar-19	35	6000	6002	2	5996	5882	-114	-116	-4		
01-Mar-19	36	5914	6091	177	5911	6079	168	-9	-4		
01-Mar-19	37	5788	6050	262	5784	5995	211	-51	-3		
01-Mar-19	38	5761	5944	184	5758	6017	259	75	-2		
01-Mar-19	39	5831	5749	-82	5828	5830	2	84	-3		
01-Mar-19	40	5899	5620	-279	5897	5671	-226	53	-2		
01-Mar-19	41	5914	5546	-368	5911	5505	-406	-38	-3		
01-Mar-19	42	5968	5712	-256	5967	5626	-341	-85	-2		
01-Mar-19	43	5941	5974	32	5940	5918	-22	-54	-2		
01-Mar-19	44	5851	6322	471	5850	6252	402	-69	-1		
01-Mar-19	45	5830	6354	524	5829	6267	438	-86	-1		
01-Mar-19	46	5826	6197	371	5825	6088	263	-108	-1		
01-Mar-19	47	5821	6050	228	5820	5972	152	-76	-1		
01-Mar-19	48	5812	5791	-21	5810	5812	2	23	-2		
01-Mar-19	49	6083	5933	-150	6081	5934	-147	3	-1		
01-Mar-19	50	6068	6031	-37	6068	6037	-31	6	0		
01-Mar-19	51	6050	5967	-84	6049	6124	75	159	-1		
01-Mar-19	52	6028	5900	-127	6028	6128	100	227	0		
01-Mar-19	53	5888	5578	-310	5887	5564	-323	-13	-1		
01-Mar-19	54	5776	5515	-261	5774	5428	-346	-85	-1	YES	
01-Mar-19	55	5821	5677	-144	5820	5668	-152	-8	-1		
01-Mar-19	56	5836	5809	-26	5843	5795	-48	-22	8		
01-Mar-19	57	5848	5854	7	5855	5812	-43	-50	7		
01-Mar-19	58	5837	6148	311	5845	6073	228	-83	8		
01-Mar-19	59	5838	6273	435	5846	6206	360	-75	8		
01-Mar-19	60	5795	6263	468	5802	6193	391	-77	7		
01-Mar-19	61	5849	6057	208	5856	6081	225	17	7		
01-Mar-19	62	5888	6054	166	5894	6028	134	-32	6		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
01-Mar-19	63	5887	5942	56	5892	5886	-6	-62	5	YES	
01-Mar-19	64	5683	5905	222	5688	5904	216	-6	5		
01-Mar-19	65	5582	5802	220	5586	5879	293	73	4		
01-Mar-19	66	5685	5753	68	5688	5895	207	139	3		
01-Mar-19	67	5685	5775	90	5688	5804	116	26	3		
01-Mar-19	68	5682	5710	28	5685	5648	-37	-65	3		
01-Mar-19	69	5697	5719	22	5691	5695	4	-18	-5	YES	
01-Mar-19	70	5687	5630	-57	5682	5638	-44	13	-5		
01-Mar-19	71	5452	5433	-18	5444	5478	34	52	-7		
01-Mar-19	72	5442	5230	-212	5434	5209	-225	-13	-8		
01-Mar-19	73	5471	5036	-435	5463	5436	-27	408	-8		
01-Mar-19	74	5477	5078	-399	5470	5235	-235	164	-7		
01-Mar-19	75	5510	5201	-310	5503	5239	-264	46	-7		
01-Mar-19	76	5604	5531	-74	5598	5481	-117	-43	-7	YES	
01-Mar-19	77	5770	5740	-30	5763	5697	-66	-36	-7		
01-Mar-19	78	5900	5841	-59	5892	5923	31	90	-8		
01-Mar-19	79	5830	5690	-140	5822	5819	-3	137	-8		
01-Mar-19	80	5720	5510	-210	5712	5617	-95	115	-8		
01-Mar-19	81	5530	5354	-176	5521	5433	-88	88	-9		
01-Mar-19	82	5443	5388	-55	5435	5434	-1	54	-8	YES	
01-Mar-19	83	5448	5494	46	5439	5508	69	23	-9		
01-Mar-19	84	5701	5687	-15	5693	5675	-18	-3	-9		
01-Mar-19	85	5531	5685	154	5521	5669	148	-6	-9		
01-Mar-19	86	5504	5723	220	5495	5701	206	-14	-9		
01-Mar-19	87	5479	5620	141	5471	5594	123	-18	-8		
01-Mar-19	88	5558	5456	-102	5551	5486	-65	37	-7		
01-Mar-19	89	5662	5598	-63	5654	5531	-123	-60	-8		
01-Mar-19	90	5640	5552	-88	5633	5506	-127	-39	-7		
01-Mar-19	91	5607	5642	35	5600	5560	-40	-75	-7		
01-Mar-19	92	5309	5608	299	5302	5534	232	-67	-7		
01-Mar-19	93	5246	5539	293	5239	5387	148	-145	-7		
01-Mar-19	94	5099	5487	388	5092	5384	292	-96	-7		
01-Mar-19	95	5063	5339	276	5062	5224	162	-114	-1		
01-Mar-19	96	5036	5179	143	5037	5141	104	-39	1		
02-Mar-19	1	5014	5125	111	5007	5047	40	-71	-7		
02-Mar-19	2	5063	5273	210	5056	5239	183	-27	-7		
02-Mar-19	3	5107	5427	321	5099	5409	310	-11	-7		
02-Mar-19	4	5223	5367	144	5216	5365	149	5	-7		
02-Mar-19	5	5213	5313	101	5205	5355	150	49	-7		
02-Mar-19	6	5197	5081	-116	5190	5065	-125	-9	-7		
02-Mar-19	7	5023	4993	-30	5015	4853	-162	-132	-8		
02-Mar-19	8	5006	5043	37	4998	5013	15	-22	-8		
02-Mar-19	9	4975	4968	-7	4967	4944	-23	-16	-8		
02-Mar-19	10	4811	4901	91	4803	4823	20	-71	-8		
02-Mar-19	11	4805	4860	55	4797	4837	40	-15	-8		
02-Mar-19	12	4798	4857	60	4790	4814	24	-36	-8		
02-Mar-19	13	4783	4847	64	4776	4786	10	-54	-7		
02-Mar-19	14	4776	4887	111	4768	4851	83	-28	-8		
02-Mar-19	15	4773	4749	-25	4766	4666	-100	-75	-7		
02-Mar-19	16	4773	4768	-4	4765	4760	-5	-1	-8		
02-Mar-19	17	5140	4845	-295	5133	4853	-280	15	-7		
02-Mar-19	18	5206	4950	-256	5198	4981	-217	39	-8		
02-Mar-19	19	5326	5188	-138	5318	5204	-114	24	-8		
02-Mar-19	20	5335	5424	89	5328	5391	63	-26	-7		
02-Mar-19	21	5458	5633	175	5450	5632	182	7	-8		
02-Mar-19	22	5476	5645	169	5469	5516	47	-122	-7		
02-Mar-19	23	5497	5641	143	5490	5459	-31	-174	-7		
02-Mar-19	24	5526	5755	229	5519	5618	99	-130	-7		
02-Mar-19	25	5727	5950	223	5719	5849	130	-93	-7		
02-Mar-19	26	5869	6050	181	5862	5984	122	-59	-7	YES	
02-Mar-19	27	5954	6135	181	5946	6044	98	-83	-7		
02-Mar-19	28	5973	6088	114	5966	5963	-3	-117	-7		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
02-Mar-19	29	5996	6034	38	5988	5887	-101	-139	-7		
02-Mar-19	30	6031	6311	280	6024	6287	263	-17	-7		
02-Mar-19	31	6050	6255	205	6042	6198	156	-49	-7		
02-Mar-19	32	6077	6102	24	6070	6045	-25	-49	-8	YES	
02-Mar-19	33	5886	6015	129	5878	5932	54	-75	-8		
02-Mar-19	34	5927	6010	83	5919	5893	-26	-109	-8		
02-Mar-19	35	6191	5970	-221	6183	5855	-328	-107	-7		
02-Mar-19	36	5991	6012	20	5984	5911	-73	-93	-8		
02-Mar-19	37	6030	5945	-84	6022	5933	-89	-5	-8		
02-Mar-19	38	6059	5966	-93	6052	5947	-105	-12	-7		
02-Mar-19	39	6094	6097	3	6086	6057	-29	-32	-8		
02-Mar-19	40	6015	6117	103	6008	6219	211	108	-7		
02-Mar-19	41	5946	6098	152	5937	6059	122	-30	-8		
02-Mar-19	42	6261	6108	-153	6254	6045	-209	-56	-7		
02-Mar-19	43	6390	6214	-176	6383	6182	-201	-26	-7		
02-Mar-19	44	6421	6469	48	6414	6441	27	-21	-7		
02-Mar-19	45	6311	6611	300	6305	6517	212	-88	-6		
02-Mar-19	46	6160	6547	387	6155	6400	245	-142	-4		
02-Mar-19	47	6385	6297	-88	6396	6227	-169	-81	11		
02-Mar-19	48	6369	6213	-156	6381	6215	-166	-10	12		
02-Mar-19	49	6360	6200	-160	6371	6204	-167	-7	11		
02-Mar-19	50	6229	6264	36	6242	6248	6	-30	13		
02-Mar-19	51	6036	6157	120	6049	6142	93	-27	12		
02-Mar-19	52	5979	6085	106	5992	6141	149	43	13		
02-Mar-19	53	5908	5750	-158	5920	5680	-240	-82	12		
02-Mar-19	54	5874	5511	-363	5885	5498	-387	-24	11		
02-Mar-19	55	5873	5619	-254	5883	5603	-280	-26	10		
02-Mar-19	56	5871	5795	-76	5881	5725	-156	-80	10		
02-Mar-19	57	5875	5885	10	5885	5878	-7	-17	10		
02-Mar-19	58	5877	6084	207	5888	6033	145	-62	10		
02-Mar-19	59	5842	6216	375	5851	6110	259	-116	10		
02-Mar-19	60	5845	6171	326	5854	6054	200	-126	9		
02-Mar-19	61	5895	6247	352	5902	6197	295	-57	7		
02-Mar-19	62	5902	6237	336	5907	6116	209	-127	5		
02-Mar-19	63	5906	5903	-4	5911	5791	-120	-116	4		
02-Mar-19	64	5903	5918	15	5907	5896	-11	-26	4		
02-Mar-19	65	5755	5938	183	5758	5846	88	-95	3		
02-Mar-19	66	5757	5791	34	5759	5694	-65	-99	2		
02-Mar-19	67	5657	5683	26	5659	5609	-50	-76	2		
02-Mar-19	68	5508	5533	26	5506	5472	-34	-60	-2		
02-Mar-19	69	5422	5401	-21	5412	5415	3	24	-10		
02-Mar-19	70	5430	5495	65	5419	5398	-21	-86	-11		
02-Mar-19	71	5281	5388	107	5269	5364	95	-12	-12		
02-Mar-19	72	5045	5231	185	5032	5155	123	-62	-13		
02-Mar-19	73	5258	5142	-117	5206	5179	-27	90	-53		YES
02-Mar-19	74	5336	5139	-196	5275	5184	-91	105	-60		
02-Mar-19	75	5350	5295	-55	5289	5203	-86	-31	-61		
02-Mar-19	76	5570	5511	-59	5511	5400	-111	-52	-60		
02-Mar-19	77	5755	5595	-160	5695	5426	-269	-109	-60		
02-Mar-19	78	5763	5466	-297	5703	5379	-324	-27	-60		
02-Mar-19	79	5693	5377	-316	5632	5312	-320	-4	-61	YES	
02-Mar-19	80	5499	5495	-4	5440	5495	55	59	-59		
02-Mar-19	81	5359	5328	-32	5323	5282	-41	-9	-36		
02-Mar-19	82	5221	4991	-229	5206	4964	-242	-13	-15		
02-Mar-19	83	5141	4819	-322	5126	4815	-311	11	-15		
02-Mar-19	84	5113	4814	-299	5099	4810	-289	10	-14		
02-Mar-19	85	5320	4852	-467	5305	4946	-359	108	-15	YES	
02-Mar-19	86	5102	5068	-34	5087	5084	-3	31	-15		
02-Mar-19	87	4683	5204	522	4668	5180	512	-10	-15		
02-Mar-19	88	4717	5033	316	4709	5018	309	-7	-8		
02-Mar-19	89	4850	4990	140	4837	4924	87	-53	-13		
02-Mar-19	90	4901	5054	153	4887	4938	51	-102	-13		
02-Mar-19	91	5121	5025	-96	5108	4932	-176	-80	-13		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
02-Mar-19	92	5191	5120	-72	5178	5062	-116	-44	-13		
02-Mar-19	93	5057	5073	16	5044	5041	-3	-19	-14		
02-Mar-19	94	4915	5112	197	4902	5056	154	-43	-13		
02-Mar-19	95	4807	5094	287	4795	5053	258	-29	-13		
02-Mar-19	96	4787	5109	323	4775	5117	342	19	-12		
03-Mar-19	1	4838	5043	205	4831	5066	235	30	-7		
03-Mar-19	2	4793	5030	237	4786	4972	186	-51	-7		
03-Mar-19	3	4920	4959	39	4913	4954	41	2	-7		
03-Mar-19	4	4901	4887	-15	4895	4883	-12	3	-6		
03-Mar-19	5	4889	4813	-76	4882	4751	-131	-55	-7		
03-Mar-19	6	4869	4837	-32	4862	4805	-57	-25	-7		
03-Mar-19	7	4746	4765	19	4739	4713	-26	-45	-7		
03-Mar-19	8	4726	4660	-66	4719	4564	-155	-89	-7		
03-Mar-19	9	4561	4790	229	4553	4716	163	-66	-7		
03-Mar-19	10	4550	4727	178	4542	4649	107	-71	-7		
03-Mar-19	11	4537	4767	230	4530	4689	159	-71	-7		
03-Mar-19	12	4681	4906	225	4674	4928	254	29	-7		
03-Mar-19	13	4708	4938	231	4701	4911	210	-21	-7		
03-Mar-19	14	4765	4949	184	4758	4944	186	2	-7		
03-Mar-19	15	4966	4914	-53	4959	4931	-28	25	-7		
03-Mar-19	16	4961	4865	-96	4954	4852	-102	-6	-7		
03-Mar-19	17	5121	4902	-219	5115	4899	-216	3	-7		
03-Mar-19	18	5211	4909	-303	5204	4942	-262	41	-7		
03-Mar-19	19	5280	4991	-289	5273	5037	-236	53	-7		
03-Mar-19	20	5085	5055	-30	5078	5004	-74	-44	-7		
03-Mar-19	21	4673	5193	521	4666	5124	458	-63	-7		
03-Mar-19	22	4867	5375	507	4860	5341	481	-26	-7		
03-Mar-19	23	5210	5413	202	5203	5369	166	-36	-7		
03-Mar-19	24	5373	5413	41	5366	5311	-55	-96	-7		
03-Mar-19	25	5590	5496	-94	5583	5348	-235	-141	-6		
03-Mar-19	26	5696	5740	44	5689	5655	-34	-78	-6		
03-Mar-19	27	5767	5958	191	5761	5895	134	-57	-6		
03-Mar-19	28	5772	6033	262	5765	5954	189	-73	-7		
03-Mar-19	29	5782	5942	160	5775	5876	101	-59	-7		
03-Mar-19	30	5804	5740	-64	5797	5578	-219	-155	-7		
03-Mar-19	31	5823	5736	-87	5816	5653	-163	-76	-7		
03-Mar-19	32	5840	5848	8	5834	5753	-81	-89	-7		
03-Mar-19	33	5863	5829	-34	5856	5726	-130	-96	-7		
03-Mar-19	34	5885	6017	132	5878	5884	6	-126	-7		
03-Mar-19	35	5907	6030	123	5900	5971	71	-52	-7		
03-Mar-19	36	5474	5816	341	5467	5773	306	-35	-7		
03-Mar-19	37	5730	5853	123	5724	5889	165	42	-7		
03-Mar-19	38	5757	5775	18	5749	5784	35	17	-7		
03-Mar-19	39	5775	5666	-108	5768	5655	-113	-5	-7		
03-Mar-19	40	5914	5678	-236	5907	5707	-200	36	-7		
03-Mar-19	41	5920	5661	-260	5913	5571	-342	-82	-7		
03-Mar-19	42	5936	5807	-129	5929	5741	-188	-59	-7		
03-Mar-19	43	6065	5929	-136	6058	5872	-186	-50	-6		
03-Mar-19	44	5874	6101	227	5868	6019	151	-76	-6		
03-Mar-19	45	5962	6144	182	5955	6130	175	-7	-7		
03-Mar-19	46	6043	6060	17	6037	6031	-6	-23	-6		
03-Mar-19	47	6084	5946	-138	6078	5959	-119	19	-5		
03-Mar-19	48	6078	5873	-204	6072	5903	-169	35	-6		
03-Mar-19	49	6072	5802	-270	6066	5879	-187	83	-6		
03-Mar-19	50	6068	5814	-253	6063	5748	-315	-62	-5		
03-Mar-19	51	5717	5977	260	5711	5890	179	-81	-5		
03-Mar-19	52	5670	5933	264	5665	5908	243	-21	-5		
03-Mar-19	53	5641	5731	90	5636	5743	107	17	-5		
03-Mar-19	54	5624	5610	-14	5619	5569	-50	-36	-6		
03-Mar-19	55	5613	5692	79	5607	5718	111	32	-5		
03-Mar-19	56	5601	5640	39	5596	5650	54	15	-5		
03-Mar-19	57	5593	5566	-26	5587	5522	-65	-39	-6		
03-Mar-19	58	5580	5534	-46	5574	5454	-120	-74	-6		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
03-Mar-19	59	5566	5522	-44	5560	5443	-117	-73	-6		
03-Mar-19	60	5558	5526	-32	5553	5465	-88	-56	-5		
03-Mar-19	61	5553	5513	-40	5547	5480	-67	-27	-6		
03-Mar-19	62	5549	5739	189	5544	5720	176	-13	-6		
03-Mar-19	63	5506	5782	275	5500	5747	247	-28	-6		
03-Mar-19	64	5480	5667	187	5475	5612	137	-50	-5		
03-Mar-19	65	5466	5556	90	5460	5469	9	-81	-6		
03-Mar-19	66	5468	5520	52	5463	5395	-68	-120	-5		
03-Mar-19	67	5469	5643	174	5463	5474	11	-163	-5		
03-Mar-19	68	5467	5600	133	5462	5497	35	-98	-5	YES	
03-Mar-19	69	5480	5473	-7	5475	5423	-52	-45	-5		
03-Mar-19	70	5477	5455	-22	5472	5426	-46	-24	-5		
03-Mar-19	71	5487	5480	-7	5482	5469	-13	-6	-5		
03-Mar-19	72	5492	5387	-105	5487	5418	-69	36	-5		
03-Mar-19	73	5500	5277	-224	5495	5393	-102	122	-5		
03-Mar-19	74	5523	5155	-368	5518	5168	-350	18	-6		
03-Mar-19	75	5227	5335	108	5221	5353	132	24	-6		
03-Mar-19	76	5397	5695	298	5391	5628	237	-61	-6		
03-Mar-19	77	5449	5745	296	5445	5588	143	-153	-5		
03-Mar-19	78	5451	5704	253	5446	5664	218	-35	-6		
03-Mar-19	79	5466	5447	-19	5460	5368	-92	-73	-6		
03-Mar-19	80	5463	5405	-57	5457	5405	-52	5	-6		
03-Mar-19	81	5458	5378	-79	5451	5395	-56	23	-7		
03-Mar-19	82	5445	5535	90	5439	5588	149	59	-6		
03-Mar-19	83	5439	5575	136	5432	5589	157	21	-7		
03-Mar-19	84	5545	5742	197	5540	5687	147	-50	-6		
03-Mar-19	85	5520	5790	270	5513	5686	173	-97	-8		
03-Mar-19	86	5508	5733	225	5502	5757	255	30	-6		
03-Mar-19	87	5495	5559	63	5488	5587	99	36	-7		
03-Mar-19	88	5541	5266	-274	5533	5284	-249	25	-8		
03-Mar-19	89	5615	5365	-250	5608	5336	-272	-22	-7		
03-Mar-19	90	5611	5531	-80	5605	5456	-149	-69	-7		
03-Mar-19	91	5606	5596	-10	5600	5544	-56	-46	-6		
03-Mar-19	92	5594	5782	189	5588	5764	176	-13	-6		
03-Mar-19	93	5479	5828	349	5473	5771	298	-51	-6		
03-Mar-19	94	5458	5938	480	5452	5941	489	9	-6		
03-Mar-19	95	5436	5806	370	5431	5753	322	-48	-5		
03-Mar-19	96	5412	5511	99	5407	5481	74	-25	-5		
04-Mar-19	1	5265	5375	111	5258	5253	-5	-116	-6		
04-Mar-19	2	5191	5350	159	5185	5325	140	-19	-6		
04-Mar-19	3	5161	5406	245	5155	5357	202	-43	-6		
04-Mar-19	4	5298	5430	132	5293	5409	116	-16	-6		
04-Mar-19	5	5335	5354	19	5329	5264	-65	-84	-7		
04-Mar-19	6	5316	5126	-190	5310	5065	-245	-55	-6		
04-Mar-19	7	5298	5131	-167	5291	5110	-181	-14	-7		
04-Mar-19	8	5280	5091	-189	5273	5077	-196	-7	-7		
04-Mar-19	9	5269	5209	-59	5261	5228	-33	26	-7		
04-Mar-19	10	5127	5368	241	5120	5413	293	52	-7		
04-Mar-19	11	5229	5375	146	5222	5296	74	-72	-7		
04-Mar-19	12	5197	5268	71	5190	5220	30	-41	-7		
04-Mar-19	13	5131	5266	135	5124	5283	159	24	-7		
04-Mar-19	14	5115	5088	-26	5107	5032	-75	-49	-7		
04-Mar-19	15	5106	5232	127	5098	5110	12	-115	-7		
04-Mar-19	16	5102	5401	299	5095	5395	300	1	-7		
04-Mar-19	17	5227	5354	127	5220	5358	138	11	-7		
04-Mar-19	18	5179	5205	26	5172	5186	14	-12	-7		
04-Mar-19	19	5214	4947	-266	5207	4908	-299	-33	-7		
04-Mar-19	20	5251	5064	-187	5244	5006	-238	-51	-7		
04-Mar-19	21	5274	5197	-77	5268	5128	-140	-63	-7		
04-Mar-19	22	5224	5330	107	5217	5323	106	-1	-7		
04-Mar-19	23	5262	5336	75	5255	5304	49	-26	-7		
04-Mar-19	24	5308	5369	61	5302	5298	-4	-65	-6		
04-Mar-19	25	5454	5473	19	5448	5398	-50	-69	-6		

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date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
04-Mar-19	26	5556	5669	113	5550	5617	67	-46	-6		
04-Mar-19	27	5614	5891	277	5608	5746	138	-139	-6		
04-Mar-19	28	5877	5915	38	5871	5844	-27	-65	-6	YES	
04-Mar-19	29	5894	6031	137	5888	5986	98	-39	-6		
04-Mar-19	30	5926	6332	406	5919	6210	291	-115	-6		
04-Mar-19	31	5950	6246	295	5943	6217	274	-21	-7		
04-Mar-19	32	5981	6091	110	5974	6015	41	-69	-7		
04-Mar-19	33	5867	6065	198	5860	5981	121	-77	-7		
04-Mar-19	34	5900	5963	63	5893	5864	-29	-92	-7	YES	
04-Mar-19	35	5938	5800	-138	5931	5691	-240	-102	-7		
04-Mar-19	36	5993	5919	-74	5986	5889	-97	-23	-7		
04-Mar-19	37	5934	5933	-1	5927	5910	-17	-16	-7		
04-Mar-19	38	5970	5917	-54	5963	5876	-87	-33	-7		
04-Mar-19	39	5898	6055	157	5892	6083	191	34	-7		
04-Mar-19	40	5930	6093	164	5923	6040	117	-47	-6		
04-Mar-19	41	5943	6016	73	5937	5941	4	-69	-6		
04-Mar-19	42	6062	6100	38	6056	6028	-28	-66	-6		
04-Mar-19	43	6181	6341	160	6175	6264	89	-71	-6		
04-Mar-19	44	6187	6571	384	6181	6444	263	-121	-6		
04-Mar-19	45	6182	6611	429	6177	6507	330	-99	-5	YES	
04-Mar-19	46	6184	6598	414	6179	6487	308	-106	-5		
04-Mar-19	47	6170	6457	288	6174	6359	185	-103	4		
04-Mar-19	48	6161	6176	14	6166	6107	-59	-73	4		
04-Mar-19	49	6184	6120	-63	6187	6163	-24	39	4		
04-Mar-19	50	6225	6170	-55	6230	6131	-99	-44	5		
04-Mar-19	51	6145	6055	-90	6149	5990	-159	-69	4		
04-Mar-19	52	6117	6033	-84	6122	5960	-162	-78	5		
04-Mar-19	53	6030	5880	-150	6035	5745	-290	-140	5		
04-Mar-19	54	5894	6028	134	5889	6054	165	31	-5		
04-Mar-19	55	5778	6066	288	5772	6028	256	-32	-6		
04-Mar-19	56	5634	5896	262	5628	5866	238	-24	-6		
04-Mar-19	57	5608	5751	143	5603	5739	136	-7	-5		
04-Mar-19	58	5625	5742	117	5619	5716	97	-20	-6		
04-Mar-19	59	5778	5592	-185	5773	5529	-244	-59	-5		
04-Mar-19	60	5838	5645	-193	5833	5546	-287	-94	-5		
04-Mar-19	61	5885	5808	-78	5880	5726	-154	-76	-5		
04-Mar-19	62	5894	5873	-21	5888	5816	-72	-51	-6		
04-Mar-19	63	5870	5907	37	5865	5854	-11	-48	-5		
04-Mar-19	64	5762	5943	181	5757	5855	98	-83	-5		
04-Mar-19	65	5737	5686	-51	5732	5650	-82	-31	-5		
04-Mar-19	66	5693	5572	-121	5688	5640	-48	73	-5		
04-Mar-19	67	5701	5466	-235	5695	5421	-274	-39	-6		
04-Mar-19	68	5695	5378	-317	5689	5338	-351	-34	-6		
04-Mar-19	69	5609	5300	-309	5603	5289	-314	-5	-6		
04-Mar-19	70	5480	5177	-303	5476	5197	-279	24	-5		
04-Mar-19	71	5278	5160	-117	5272	5281	9	126	-5	YES	
04-Mar-19	72	5117	5112	-5	5112	5050	-62	-57	-5		
04-Mar-19	73	5055	4950	-105	5051	4861	-190	-85	-4		
04-Mar-19	74	5076	4972	-104	5071	5023	-48	56	-5		
04-Mar-19	75	5208	5234	26	5202	5276	74	48	-6		
04-Mar-19	76	5280	5457	177	5275	5339	64	-113	-5		
04-Mar-19	77	5213	5629	416	5208	5482	274	-142	-5		
04-Mar-19	78	5444	5637	192	5439	5547	108	-84	-5		
04-Mar-19	79	5583	5608	25	5578	5517	-61	-86	-6		
04-Mar-19	80	5735	5650	-84	5728	5654	-74	10	-6		
04-Mar-19	81	5715	5599	-116	5709	5569	-140	-24	-6		
04-Mar-19	82	5699	5669	-30	5693	5628	-65	-35	-6		
04-Mar-19	83	5687	5620	-68	5681	5676	-5	63	-6		
04-Mar-19	84	5466	5638	172	5460	5625	165	-7	-6		
04-Mar-19	85	5397	5604	207	5391	5640	249	42	-7		
04-Mar-19	86	5629	5659	30	5622	5669	47	17	-7		
04-Mar-19	87	5606	5688	82	5599	5674	75	-7	-7		
04-Mar-19	88	5580	5722	142	5574	5798	224	82	-6		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
04-Mar-19	89	5564	5486	-78	5557	5397	-160	-82	-7		
04-Mar-19	90	5545	5640	95	5539	5633	94	-1	-7		
04-Mar-19	91	5527	5747	221	5520	5596	76	-145	-7		
04-Mar-19	92	5410	5744	334	5403	5650	247	-87	-7		
04-Mar-19	93	5589	5603	14	5581	5676	95	81	-7		
04-Mar-19	94	5465	5437	-28	5459	5374	-85	-57	-7		
04-Mar-19	95	5434	5367	-67	5427	5316	-111	-44	-7		
04-Mar-19	96	5407	5427	20	5400	5402	2	-18	-7		
05-Mar-19	1	5585	5400	-186	5579	5327	-252	-66	-7		
05-Mar-19	2	5557	5458	-99	5551	5422	-129	-30	-6		
05-Mar-19	3	5535	5579	44	5529	5569	40	-4	-6		
05-Mar-19	4	5343	5574	231	5337	5554	217	-14	-6		
05-Mar-19	5	5237	5518	280	5232	5522	290	10	-6		
05-Mar-19	6	5357	5371	14	5350	5397	47	33	-7		
05-Mar-19	7	5339	5206	-133	5332	5219	-113	20	-7		
05-Mar-19	8	5220	5067	-153	5214	5106	-108	45	-7		
05-Mar-19	9	5212	5134	-78	5205	5205	0	78	-7		
05-Mar-19	10	5200	5051	-149	5193	5100	-93	56	-7		
05-Mar-19	11	5049	5042	-7	5042	5041	-1	6	-7		
05-Mar-19	12	4951	5131	180	4943	5112	169	-11	-7		
05-Mar-19	13	5182	5051	-131	5175	5042	-133	-2	-7		
05-Mar-19	14	4924	5030	107	4916	5039	123	16	-7		
05-Mar-19	15	4877	4912	35	4869	4924	55	20	-8		
05-Mar-19	16	4933	4800	-133	4925	4825	-100	33	-7		
05-Mar-19	17	4979	4836	-143	4972	4756	-216	-73	-8		
05-Mar-19	18	5044	5039	-6	5038	5004	-34	-28	-7		
05-Mar-19	19	5215	5276	61	5208	5230	22	-39	-7		
05-Mar-19	20	5447	5354	-92	5440	5284	-156	-64	-7		
05-Mar-19	21	5519	5404	-115	5512	5310	-202	-87	-7		
05-Mar-19	22	5538	5596	58	5532	5479	-53	-111	-6		
05-Mar-19	23	5569	5765	196	5562	5675	113	-83	-7		
05-Mar-19	24	5602	5809	207	5596	5705	109	-98	-6		
05-Mar-19	25	5573	5885	311	5567	5700	133	-178	-6		
05-Mar-19	26	5778	6011	234	5772	5901	129	-105	-6		
05-Mar-19	27	5862	6331	469	5856	6147	291	-178	-6		
05-Mar-19	28	5936	6300	364	5930	6030	100	-264	-6	YES	
05-Mar-19	29	5978	6061	83	5973	5778	-195	-278	-6		
05-Mar-19	30	6018	6127	109	6011	5925	-86	-195	-7		
05-Mar-19	31	6155	6139	-16	6149	5905	-244	-228	-6		
05-Mar-19	32	6306	6233	-73	6299	6024	-275	-202	-7		
05-Mar-19	33	6358	6599	241	6250	6378	128	-113	-108		
05-Mar-19	34	6417	6916	499	6309	6574	265	-234	-107		
05-Mar-19	35	6444	6875	430	6337	6541	204	-226	-107		
05-Mar-19	36	6500	6711	212	6392	6436	44	-168	-107		
05-Mar-19	37	6536	6592	56	6411	6317	-94	-150	-125		
05-Mar-19	38	6550	6667	118	6426	6391	-35	-153	-124		
05-Mar-19	39	6582	6458	-124	6475	6215	-260	-136	-106		
05-Mar-19	40	6395	6384	-11	6289	6188	-101	-90	-106		
05-Mar-19	41	6278	6329	51	6171	6106	-65	-116	-107		
05-Mar-19	42	6127	6387	259	6005	6125	120	-139	-122		
05-Mar-19	43	6073	6461	388	5941	6205	264	-124	-132		
05-Mar-19	44	6263	6551	288	6133	6329	196	-92	-130		
05-Mar-19	45	6303	6464	161	6188	6220	32	-129	-115		
05-Mar-19	46	6423	6395	-28	6319	6289	-30	-2	-104		
05-Mar-19	47	6419	6353	-66	6314	6095	-219	-153	-105		
05-Mar-19	48	6410	6385	-26	6306	6258	-48	-22	-105		
05-Mar-19	49	6395	6505	110	6289	6469	180	70	-107		
05-Mar-19	50	6383	6356	-28	6277	6345	68	96	-106		
05-Mar-19	51	6150	6186	36	6043	6192	149	113	-107		
05-Mar-19	52	5966	6135	169	5860	6133	273	104	-106		
05-Mar-19	53	5927	5893	-35	5922	5871	-51	-16	-6		
05-Mar-19	54	5890	5877	-13	5885	5841	-44	-31	-5		
05-Mar-19	55	5894	5944	51	5888	5953	65	14	-5		

		SEM_DATA			SCADA_DATA			Difference in UI recorded between SCADA & SEM	Difference in Schedule recorded between SCADA & SEM	Sign Change	
date	block	Schedule	Drawal	UI	Day Last Schedule	Drawal	UI			SEM	SCADA
05-Mar-19	56	5896	5928	32	5891	5917	26	-6	-5		
05-Mar-19	57	5907	5893	-14	5903	5874	-29	-15	-4		
05-Mar-19	58	5907	5870	-37	5905	5844	-61	-24	-2		
05-Mar-19	59	5980	5893	-87	5977	5845	-132	-45	-3		
05-Mar-19	60	5914	5891	-23	5912	5876	-36	-13	-2		
05-Mar-19	61	5921	5968	47	5917	5939	22	-25	-4		
05-Mar-19	62	5924	6218	294	5921	6211	290	-4	-3		
05-Mar-19	63	5924	6205	280	5922	6124	202	-78	-3		
05-Mar-19	64	5921	6130	209	5916	6105	189	-20	-5		
05-Mar-19	65	5819	5736	-83	5813	5762	-51	32	-6		
05-Mar-19	66	5722	5548	-174	5716	5658	-58	116	-6		
05-Mar-19	67	5717	5509	-208	5712	5499	-213	-5	-6		
05-Mar-19	68	5650	5452	-198	5644	5391	-253	-55	-6		
05-Mar-19	69	5571	5580	10	5565	5616	51	41	-6		
05-Mar-19	70	5544	5529	-15	5538	5593	55	70	-6		
05-Mar-19	71	5369	5368	-1	5361	5379	18	19	-7		
05-Mar-19	72	5385	5208	-177	5377	5215	-162	15	-8		
05-Mar-19	73	5301	5043	-259	5293	5042	-251	8	-8		
05-Mar-19	74	5257	4988	-270	5250	4999	-251	19	-8		
05-Mar-19	75	5484	5213	-271	5476	5228	-248	23	-8		
05-Mar-19	76	5618	5558	-60	5610	5530	-80	-20	-8	YES	
05-Mar-19	77	5637	5777	140	5528	5675	147	7	-109		
05-Mar-19	78	5931	5809	-122	5821	5785	-36	86	-110		
05-Mar-19	79	6011	5679	-331	5901	5624	-277	54	-110		
05-Mar-19	80	6002	5689	-314	5891	5642	-249	65	-111		
05-Mar-19	81	5988	5542	-446	5879	5667	-212	234	-109		
05-Mar-19	82	5840	5426	-414	5730	5666	-64	350	-110		
05-Mar-19	83	5675	5400	-275	5566	5664	98	373	-110		
05-Mar-19	84	5581	5401	-180	5470	5528	58	238	-110	YES	
05-Mar-19	85	5533	5495	-37	5422	5528	106	143	-110		
05-Mar-19	86	5602	5495	-107	5492	5528	36	143	-110		
05-Mar-19	87	5630	5489	-142	5519	5468	-51	91	-111		
05-Mar-19	88	5641	5437	-204	5531	5434	-97	107	-110		
05-Mar-19	89	5612	5436	-176	5602	5395	-207	-31	-10		
05-Mar-19	90	5491	5620	129	5481	5617	136	7	-10		
05-Mar-19	91	5323	5814	491	5313	5772	459	-32	-10		
05-Mar-19	92	5280	5691	411	5271	5665	394	-17	-9		
05-Mar-19	93	5443	5475	31	5433	5388	-45	-76	-10		
05-Mar-19	94	5350	5386	36	5341	5330	-11	-47	-10		
05-Mar-19	95	5354	5371	18	5344	5324	-20	-38	-9		
05-Mar-19	96	5328	5489	162	5318	5495	177	15	-10	YES	

Annexure- A4(i)

DSM Charges for Maharastra

Date	As per WRPC Bill								As per SCADA								Impact of SCADA	Net SCADA UI Diff (MW)
	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)		
01-Jan-19	2.4	-2.6	7	24	41	6	38	110	2.2	-2.9	-14	31	27	9	31	76	34	154
02-Jan-19	2.8	-1.4	78	4	27	3	49	159	0.9	-6.2	-198	91	8	8	171	72	87	277
03-Jan-19	1.6	-2.7	-74	26	5	3	29	-14	1.4	-3.2	-102	30	6	2	28	-37	23	49
04-Jan-19	1.4	-2.9	-90	38	6	3	31	-15	1.2	-3.6	-123	41	11	3	49	-22	7	71
05-Jan-19	2.1	-1.7	11	7	25	4	14	58	1.3	-3.2	-45	11	30	5	34	30	28	83
06-Jan-19	1.4	-2.2	-36	21	11	4	12	8	1.0	-3.0	-56	19	13	4	29	6	2	88
07-Jan-19	1.2	-3.0	-59	24	40	9	63	69	1.1	-4.3	-84	37	39	7	66	58	11	61
08-Jan-19	1.6	-1.8	-15	9	6	2	3	2	1.0	-2.4	-54	10	8	4	36	-1	3	68
09-Jan-19	1.4	-2.3	-25	10	3	3	9	-3	1.1	-3.2	-70	31	1	5	38	1	-4	106
10-Jan-19	2.6	-1.5	61	7	26	7	95	188	0.9	-2.7	-64	20	8	6	53	17	172	152
11-Jan-19	2.1	-2.0	4	9	11	7	19	43	1.3	-2.3	-51	14	3	4	30	-4	47	95
12-Jan-19	2.5	-1.6	42	9	23	4	41	116	1.8	-2.0	-5	8	14	3	2	19	96	79
13-Jan-19	1.1	-2.1	-30	6	18	4	19	13	0.9	-2.8	-51	8	22	4	34	14	-1	57
14-Jan-19	1.5	-1.8	-13	16	9	5	3	15	1.4	-2.2	-22	14	8	5	8	8	8	46
15-Jan-19	2.2	-1.3	5	6	8	4	8	27	1.6	-1.6	-11	4	11	3	4	8	19	54
16-Jan-19	2.1	-1.1	38	4	15	4	34	91	1.3	-2.1	-13	11	15	2	1	14	76	78
17-Jan-19	1.6	-1.9	1	3	11	3	3	18	1.5	-2.5	-17	6	10	3	7	5	13	46
18-Jan-19	0.6	-2.1	-61	7	5	6	65	16	0.5	-2.7	-103	22	2	4	65	-15	31	63
19-Jan-19	2.2	-1.5	17	2	3	3	11	33	1.9	-1.9	-15	4	2	3	7	-3	36	64
20-Jan-19	1.5	-1.5	-12	2	8	3	6	4	1.2	-1.9	-25	4	8	2	8	-5	9	37
21-Jan-19	1.3	-1.3	-15	5	6	3	6	2	1.0	-1.8	-40	10	6	5	29	6	-3	49
22-Jan-19	2.3	-1.5	19	5	12	3	15	52	1.8	-1.7	2	4	10	3	4	20	31	55
23-Jan-19	2.1	-2.0	6	13	8	4	15	41	1.7	-1.8	-10	6	4	4	3	3	38	89
24-Jan-19	2.1	-1.1	30	3	9	3	20	63	1.4	-1.7	-19	6	3	2	5	-5	68	77
25-Jan-19	1.8	-2.0	-40	14	2	0	0	-25	1.5	-2.2	-48	15	1	1	7	-25	0	48
26-Jan-19	1.6	-2.5	-34	18	13	2	6	4	1.4	-2.9	-38	18	15	1	4	0	4	45
27-Jan-19	1.7	-2.6	-1	16	98	4	13	127	1.7	-5.5	-12	16	98	3	2	104	23	36
28-Jan-19	1.9	-1.3	29	5	23	4	27	85	1.8	-2.1	23	5	28	2	11	67	17	46
29-Jan-19	2.2	-2.3	13	12	19	3	15	58	2.4	-2.2	17	8	16	2	10	51	8	61
30-Jan-19	2.1	-1.4	32	3	9	2	14	59	1.8	-2.0	6	6	8	0	0	20	39	49
31-Jan-19	3.5	-0.8	64	2	6	7	93	165	2.2	-1.5	9	8	4	2	7	27	138	98
Total	58.4	-57.9	-46	330	508	122	775	1567	44.2	-82.2	-1234	521	437	111	783	507	1060	77

Annexure- A4 (ii)

DSM Charges for Maharastra

Date	As per WRPC Bill								As per SCADA								Impact of SCADA	Net SCADA UI Diff (MW)
	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)		
01-Feb-19	1.8	-1.9	-9	6	6	2	1	4	1.6	-1.9	-15	6	4	2	4	-1	6	37
02-Feb-19	1.7	-2.1	-8	8	4	1	0	4	1.6	-2.3	-15	10	4	2	2	1	2	34
03-Feb-19	2.2	-1.1	30	2	16	1	6	54	1.9	-1.3	15	3	15	1	4	36	18	52
04-Feb-19	1.5	-1.5	9	2	9	3	7	27	1.3	-2.3	-18	15	9	2	1	8	19	53
05-Feb-19	2.1	-1.1	21	4	2	4	20	47	1.9	-1.2	14	3	1	0	0	18	29	41
06-Feb-19	0.8	-2.5	-63	7	9	3	34	-14	0.9	-2.6	-59	7	9	1	10	-33	19	39
07-Feb-19	1.3	-1.7	-13	3	15	2	4	9	1.1	-1.9	-4	1	16	1	1	14	-5	57
08-Feb-19	1.7	-1.4	8	1	26	1	2	37	1.6	-2.3	-4	2	22	2	1	21	16	43
09-Feb-19	2.0	-1.5	7	9	32	1	3	51	2.0	-2.4	6	8	29	1	3	47	4	41
10-Feb-19	2.6	-0.7	49	0	10	4	39	99	2.2	-1.2	30	1	6	1	6	43	56	63
11-Feb-19	2.0	-1.1	29	2	7	3	18	56	1.5	-1.7	4	3	8	0	0	15	41	67
12-Feb-19	2.2	-1.3	24	8	4	1	6	42	1.7	-1.7	-6	9	4	0	0	7	35	59
13-Feb-19	1.6	-1.8	-19	8	8	1	2	-1	1.8	-1.9	-10	9	7	0	0	6	-6	94
14-Feb-19	2.4	-1.6	5	12	10	2	7	35	2.3	-1.9	-4	15	10	1	2	23	12	35
15-Feb-19	1.3	-1.5	-10	1	11	0	0	2	1.3	-2.0	-30	2	10	1	6	-13	14	47
16-Feb-19	1.6	-1.5	5	4	10	3	5	25	1.4	-1.6	-4	4	5	0	0	5	20	73
17-Feb-19	2.4	-1.0	32	1	18	4	26	76	1.9	-1.3	19	1	15	1	4	39	37	47
18-Feb-19	1.3	-2.0	-24	9	4	1	3	-8	1.4	-2.1	-20	10	4	1	2	-4	-4	49
19-Feb-19	1.6	-1.1	15	1	3	1	3	22	1.6	-1.2	16	2	2	0	0	20	1	57
20-Feb-19	1.9	-1.6	-8	15	5	1	1	14	2.0	-1.8	-1	15	12	1	3	29	-16	61
21-Feb-19	1.8	-1.5	-10	11	5	3	1	7	1.8	-1.5	-3	9	5	1	1	11	-4	48
22-Feb-19	2.6	-0.9	73	7	16	2	32	128	2.1	-1.3	39	8	14	0	0	61	67	48
23-Feb-19	4.1	-0.4	115	0	15	8	184	314	1.7	-1.0	10	0	7	2	4	21	293	130
24-Feb-19	2.1	-0.6	29	0	12	4	23	65	1.6	-1.1	12	0	11	1	2	26	39	42
25-Feb-19	2.8	-0.8	43	2	15	8	72	132	1.9	-1.4	14	4	13	1	4	34	98	65
26-Feb-19	2.5	-0.7	68	0	9	6	82	159	1.5	-1.2	13	0	4	0	0	18	142	68
27-Feb-19	3.0	-0.9	43	0	9	3	26	77	2.0	-1.1	14	0	7	1	3	24	54	68
28-Feb-19	2.1	-1.0	35	2	7	2	15	59	1.8	-1.3	27	2	10	0	0	38	21	40
Total	57.1	-37.0	474	125	298	75	623	1520	47.4	-46.6	38	149	263	24	62	513	1007	50

Annexure- 4(iii)

DSM Charges for Maharastra

Date	As per WRPC Bill								As per SCADA								Impact of SCADA	Net SCADA UI Diff (MW)
	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)	OD Mus	UD MUS	Base DSM (Rs. In lac)	CAP DSM (Rs. In lac)	DSM Penalty (Rs. In lac)	Nos of sign change Violation	Sign Change Penalty (Rs. In lac)	Net (Rs. In lac)		
01-Mar-19	2.5	-1.2	22	7	22	6	35	87	2.1	-1.6	15	2	15	1	3	36	50	61
02-Mar-19	2.3	-1.0	27	4	15	4	25	71	1.6	-1.6	1	3	16	1	1	22	50	55
03-Mar-19	2.5	-0.9	70	1	19	1	14	104	2.1	-1.5	37	2	16	0	0	55	49	50
04-Mar-19	2.3	-0.9	18	1	8	4	15	41	1.7	-1.4	-10	2	10	0	0	2	40	56
05-Mar-19	2.1	-1.5	28	5	13	4	26	71	1.6	-1.6	0	1	6	0	0	7	64	83
06-Mar-19	2.0	-0.9	38	0	3	2	15	56	1.7	-1.2	22	0	5	2	9	36	21	73
07-Mar-19	0.9	-1.8	-51	5	9	1	9	-28	1.0	-1.6	-43	0	4	1	8	-30	2	44
08-Mar-19	1.8	-1.3	19	0	4	2	8	31	1.6	-1.6	1	3	3	1	1	9	22	52
09-Mar-19	1.5	-1.7	-13	4	14	0	0	5	1.1	-2.3	-67	13	7	1	11	-36	41	55
10-Mar-19	1.2	-1.6	-25	7	5	3	11	-2	1.3	-1.7	-17	6	4	1	2	-5	3	37
11-Mar-19	1.3	-1.3	-4	4	6	1	0	6	1.2	-1.4	-10	5	7	0	0	2	4	37
12-Mar-19	1.0	-1.8	-33	3	1	2	12	-16	0.9	-1.8	-30	3	1	0	0	-26	9	38
13-Mar-19	1.5	-1.3	16	1	1	3	10	28	1.2	-1.5	-2	1	0	2	0	0	28	46
14-Mar-19	1.7	-0.9	31	0	0	1	6	37	1.3	-1.3	-2	0	0	0	0	-1	39	55
15-Mar-19	1.9	-1.0	26	1	1	1	5	34	1.3	-1.4	-1	2	0	0	0	1	33	58
16-Mar-19	2.0	-1.1	25	2	2	5	27	56	1.4	-1.6	-12	1	0	3	7	-4	60	98
17-Mar-19	2.1	-0.9	39	1	6	4	32	77	1.2	-1.6	-7	2	4	1	1	0	77	78
Total	30.5	-21.1	231	47	130	44	251	659	38.0	-41.3	-123	48	98	16	44	66	592	69

Annexure-B

Note: All Figures in MW

Time Block	Schedule as per WRLDC Website for 10.03.2019						Actual Injection taken in WRPC bills on post facto						Diff
	KAPS	SSP	TAPS-I	TAPS-II	Pench	Total	KAPS	SSP	TAPS-I	TAPS-II	Pench	Total	
1	67.2	6.8	148.4	388.9	No schedule on WRLDC Website	611.3	66.8	6.8	152.5	392.1	-0.02	618.1	6.8
2	67.2	6.8	148.4	388.9		611.3	66.8	6.8	152.6	392.2	-0.02	618.4	7.1
3	67.2	6.8	148.4	388.9		611.3	66.8	6.7	152.5	392.0	-0.02	618.0	6.7
4	67.2	6.8	148.4	388.9		611.3	67.0	6.8	152.8	391.9	-0.02	618.4	7.1
5	67.2	6.8	148.4	388.9		611.3	67.0	6.8	152.6	392.0	-0.02	618.3	7.0
6	67.2	6.8	148.4	388.9		611.3	67.0	6.8	152.7	391.8	-0.02	618.3	7.0
7	67.2	6.8	148.4	388.9		611.3	67.1	6.8	152.8	391.9	-0.02	618.6	7.3
8	67.2	6.8	148.4	388.9		611.3	66.8	6.8	152.7	391.4	-0.02	617.6	6.3
9	67.2	6.8	148.4	388.9		611.3	67.1	6.9	152.7	391.8	-0.02	618.4	7.1
10	67.2	6.8	148.4	388.9		611.3	67.0	6.8	152.5	391.8	-0.02	618.1	6.8
11	67.2	6.8	148.4	388.9		611.3	67.2	6.8	152.5	391.3	-0.02	617.7	6.4
12	67.2	6.8	148.4	388.9		611.3	67.1	6.8	152.3	391.6	-0.02	617.8	6.5
13	67.2	6.8	148.4	388.9		611.3	67.3	6.8	152.4	392.0	-0.02	618.4	7.1
14	67.2	6.8	148.4	388.9		611.3	67.2	6.8	152.2	392.3	-0.02	618.4	7.1
15	67.2	6.8	148.4	388.9		611.3	67.2	6.8	152.6	392.1	-0.02	618.7	7.4
16	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.5	392.0	-0.02	618.7	7.4
17	67.2	6.8	148.4	388.9		611.3	67.5	6.9	152.5	392.4	-0.02	619.3	8.0
18	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.4	392.5	-0.02	619.1	7.8
19	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.5	392.6	-0.02	619.1	7.8
20	67.2	6.8	148.4	388.9		611.3	67.1	7.0	152.5	392.5	-0.02	619.0	7.7
21	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.5	392.6	-0.02	619.2	7.9
22	67.2	6.8	148.4	388.9		611.3	67.1	7.0	152.7	392.2	-0.02	618.9	7.6
23	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.5	392.1	-0.02	618.9	7.6
24	67.2	6.8	148.4	388.9		611.3	67.2	7.0	152.5	391.6	-0.02	618.3	7.0
25	67.2	6.8	148.4	388.9		611.3	67.5	7.0	152.6	391.8	-0.02	618.9	7.6
26	67.2	6.8	148.4	388.9		611.3	67.3	7.0	152.1	391.8	-0.02	618.1	6.8
27	67.2	6.8	148.4	388.9		611.3	67.5	7.0	152.0	392.0	-0.02	618.5	7.2
28	67.2	6.8	148.4	388.9		611.3	67.5	7.0	152.0	391.6	-0.03	618.2	6.9
29	67.2	6.8	148.4	388.9		611.3	67.8	7.0	152.2	391.2	22.19	640.5	29.2
30	67.2	6.8	148.4	388.9		611.3	67.7	7.1	152.0	391.7	32.98	651.4	40.1
31	67.2	6.8	148.4	388.9		611.3	68.0	7.1	152.2	391.5	45.65	664.5	53.2
32	67.2	6.8	148.4	388.9		611.3	67.8	6.8	152.1	391.2	45.48	663.4	52.1
33	67.2	6.8	148.4	388.9		611.3	68.3	6.6	152.3	391.5	45.46	664.1	52.8
34	67.2	6.8	148.4	388.9		611.3	68.2	6.6	152.2	391.4	38.86	657.3	46.0
35	67.2	6.8	148.4	388.9		611.3	68.0	6.6	152.0	391.2	3.11	620.9	9.7
36	67.2	6.8	148.4	388.9		611.3	67.4	6.6	152.1	391.7	-0.02	617.8	6.5
37	67.2	6.8	148.4	388.9		611.3	67.4	6.6	152.0	391.9	-0.02	618.0	6.7
38	67.2	6.8	148.4	388.9		611.3	67.3	6.8	151.9	391.4	-0.02	617.4	6.1
39	67.2	6.8	148.4	388.9		611.3	67.3	6.9	151.9	391.5	-0.02	617.6	6.3
40	67.2	6.8	148.4	388.9		611.3	67.1	7.6	151.8	391.8	-0.02	618.3	7.0
41	67.2	13.7	148.4	388.9		618.1	67.4	14.0	151.7	392.4	-0.02	625.5	7.3
42	67.2	13.7	148.4	388.9	0.0	618.1	67.2	13.6	151.7	391.9	-0.02	624.4	6.3
43	67.2	13.7	148.4	388.9	0.0	618.1	66.7	13.8	151.9	392.4	-0.02	624.9	6.7
44	67.2	13.7	148.4	388.9	0.0	618.1	66.6	13.9	151.9	392.2	-0.02	624.6	6.4
45	67.2	13.7	148.4	388.9	0.0	618.1	66.6	14.0	152.0	392.5	-0.02	625.1	7.0
46	67.2	13.7	148.4	388.9	0.0	618.1	66.7	14.3	152.2	391.8	-0.02	625.0	6.9
47	67.2	13.7	148.4	388.9	0.0	618.1	66.5	14.2	152.1	392.0	-0.02	624.8	6.7

Time Block	Schedule as per WRLDC Website for 10.03.2019						Actual Injection taken in WRPC bills on post facto						Diff
	KAPS	SSP	TAPS-I	TAPS-II	Pench	Total	KAPS	SSP	TAPS-I	TAPS-II	Pench	Total	
48	67.2	13.7	148.4	388.9	0.0	618.1	66.5	14.0	152.1	392.4	-0.02	624.9	6.7
49	67.2	13.7	148.4	388.9	0.0	618.1	66.5	13.8	152.5	392.3	-0.02	625.2	7.0
50	67.2	13.7	148.4	388.9	0.0	618.1	66.5	13.3	152.1	392.1	-0.02	623.9	5.7
51	67.2	13.7	148.4	388.9	0.0	618.1	67.4	13.1	152.2	392.3	-0.02	625.0	6.9
52	67.2	13.7	148.4	388.9	0.0	618.1	66.4	13.1	152.3	391.5	-0.02	623.2	5.1
53	67.2	13.7	148.4	388.9	0.0	618.1	66.7	13.0	152.7	391.4	-0.02	623.8	5.7
54	67.2	13.7	148.4	388.9	0.0	618.1	66.8	13.0	152.4	391.6	-0.02	623.8	5.6
55	67.2	13.7	148.4	388.9	0.0	618.1	67.4	13.0	152.6	391.4	-0.02	624.4	6.2
56	67.2	13.7	148.4	388.9	0.0	618.1	67.0	13.0	152.2	391.9	-0.02	624.2	6.0
57	67.2	13.7	148.4	388.9	0.0	618.1	66.7	13.0	152.3	391.6	-0.02	623.6	5.4
58	67.2	13.7	148.4	388.9	0.0	618.1	66.6	13.0	152.0	391.7	-0.02	623.4	5.2
59	67.2	13.7	148.4	388.9	0.0	618.1	66.4	13.1	151.9	391.8	-0.02	623.2	5.1
60	67.2	13.7	148.4	388.9	0.0	618.1	66.5	13.0	151.9	391.8	-0.02	623.2	5.0
61	67.2	13.7	148.4	388.9	0.0	618.1	66.4	13.0	151.8	391.4	-0.02	622.6	4.4
62	67.2	13.7	148.4	388.9	0.0	618.1	66.4	13.5	151.5	391.9	-0.03	623.2	5.1
63	67.2	13.7	148.4	388.9	0.0	618.1	66.3	13.4	151.3	392.7	-0.02	623.6	5.5
64	67.2	13.7	148.4	388.9	0.0	618.1	65.9	13.5	151.6	391.8	-0.02	622.8	4.7
65	67.2	13.7	148.4	388.9	0.0	618.1	66.4	13.5	152.0	391.5	-0.02	623.3	5.2
66	67.2	13.7	148.4	388.9	0.0	618.1	66.3	13.4	151.9	391.5	-0.02	623.0	4.9
67	67.2	13.7	148.4	388.9	0.0	618.1	66.1	13.5	151.9	391.9	12.62	636.0	17.9
68	67.2	13.7	148.4	388.9	0.0	618.1	66.0	13.4	151.7	391.7	23.19	646.0	27.8
69	67.2	13.7	148.4	388.9	0.0	618.1	66.0	13.4	151.7	391.8	23.03	646.0	27.8
70	67.2	13.7	148.4	388.9	0.0	618.1	65.9	13.4	151.6	392.0	23.50	646.4	28.2
71	67.2	13.7	148.4	388.9	0.0	618.1	65.8	13.4	151.6	391.6	23.53	645.8	27.7
72	67.2	13.7	148.4	388.9	0.0	618.1	66.0	13.3	151.7	391.2	22.95	645.1	27.0
73	67.0	13.7	148.4	387.8	0.0	616.9	66.3	13.4	152.0	390.1	22.96	644.7	27.8
74	67.0	13.7	148.4	387.8	0.0	616.9	66.3	13.4	151.9	389.9	22.98	644.4	27.5
75	67.0	13.7	148.4	387.8	0.0	616.9	66.2	13.3	151.7	390.5	23.21	644.9	28.0
76	67.0	13.7	148.4	387.8	0.0	616.9	66.1	13.3	151.1	390.8	23.21	644.4	27.5
77	67.0	13.7	148.4	387.8	0.0	616.9	66.0	13.4	151.2	390.2	23.20	644.0	27.1
78	67.0	13.7	148.4	387.8	0.0	616.9	65.8	13.3	150.7	390.2	29.78	649.8	32.9
79	67.0	13.7	148.4	387.8	0.0	616.9	66.1	13.2	150.9	390.2	46.42	666.8	49.9
80	67.0	13.7	148.4	387.8	0.0	616.9	66.2	13.2	151.0	390.3	46.22	666.9	50.0
81	67.0	13.7	148.4	387.8	0.0	616.9	66.0	13.3	151.2	390.7	46.17	667.3	50.4
82	67.0	13.7	148.4	387.8	0.0	616.9	66.2	13.2	151.0	390.3	46.06	666.8	49.9
83	67.0	13.7	148.4	387.8	0.0	616.9	66.3	13.3	151.1	390.6	45.91	667.2	50.3
84	67.0	13.7	148.4	387.8	0.0	616.9	66.3	13.2	151.2	390.7	45.80	667.1	50.1
85	67.0	13.7	148.4	387.8	0.0	616.9	66.5	13.3	151.3	390.6	46.05	667.8	50.8
86	67.0	13.7	148.4	387.8	0.0	616.9	66.6	13.2	151.3	390.2	46.02	667.3	50.4
87	67.0	13.7	148.4	387.8	0.0	616.9	66.5	13.2	151.5	389.8	46.05	667.1	50.2
88	67.0	13.7	148.4	387.8	0.0	616.9	66.7	13.2	151.7	389.9	46.00	667.5	50.6
89	67.2	13.7	148.4	388.9	0.0	618.1	66.6	13.3	151.6	391.5	24.41	647.4	29.2
90	67.2	13.7	148.4	388.9	0.0	618.1	66.7	13.1	151.6	391.5	42.37	665.4	47.2
91	67.2	13.7	148.4	388.9	0.0	618.1	66.5	13.1	151.6	392.0	46.21	669.6	51.4
92	67.2	13.7	148.4	388.9	0.0	618.1	66.3	13.2	151.8	391.6	46.18	669.0	50.9
93	67.2	13.7	148.4	388.9	0.0	618.1	66.5	13.3	151.7	391.7	46.16	669.3	51.2
94	67.2	13.7	148.4	388.9	0.0	618.1	66.7	13.1	152.1	391.5	46.07	669.4	51.3
95	67.2	13.7	148.4	388.9	0.0	618.1	66.6	13.3	152.2	391.3	46.06	669.4	51.3
96	67.2	13.7	148.4	388.9	0.0	618.1	66.6	12.8	152.5	391.3	46.03	669.2	51.1

Gmail **Supritendent Engineer LM Section <selmkalwa@gmail.com>**

Provision of sign change of UI after six time block posing problem to system security

1 message

SE LMCell Kalwa <selmkalwa@gmail.com> Tue, Jan 8, 2019 at 3:57 PM
To: scheduling <scheduling@mahasldc.in>, "scheduling.sldc" <scheduling.sldc@gmail.com>
Cc: Chief Engineer <ceppmsedcl@gmail.com>, Satish Chavan <directorcommsedcl@gmail.com>

dear sir,

As per clasue 7(2) of 4th amendment of DSM regulation, overinjection/underdrawal is not allowed when frequency is above 50.05HZ & to deter such overinjection/underdrawal, penalty is imposed.

Today, at time block no-53, it is observed that during High Frequency system, system is kept in under drawal condition by using Koyan Hydro Generation . When requested to reduce hydro, it was replied from the control room that

Koyna was taken to keep system in underdrawal for Sign Change purpose .

Time block	Schedule	Drawal	UI	Freq
46	5,274	5,169	**-105**	**49.94**
47	5,238	5,212	**-26**	**49.95**
48	5,231	5,273	42	**50.00**
49	5,228	5,257	29	**49.88**
50	5,061	5,224	163	**49.99**
51	4,917	5,113	196	**50.02**
52	4,788	4,751	**-37**	**50.12**
53	4,714	4,547	**-167**	**50.07**
54	4,702	4,521	**-181**	**50.08**
55	4,702	4,568	**-134**	**50.04**
56	4,701	4,597	**-103**	**50.08**

As can be seen from above, sign change was achieved in 52 time block but still underdrawal continued. By keeping system in underdrewal that too with Koyna Hydro , not only hydro generation is wasted but also pose threat to system by keeping system in underdrawal & thereby violation of clause 7(7) of DSM.

During High frequency one can support grid by either adhere to schedule or by managing system in Over-Drawal condition but due to these sign-change criteria, SLDC are compelled to work against system requirement & thereby posing threat to system security. Similarly there are instances, when frequency is below 49.85Hz and SLDC are compelled to keep system in overdrwal for sake of sign change of UI in six time block.

It is requested to take-up matter with CERC or RLDC so that proper clarification can be received regarding same.

Regards

--

Load Management Cell,
MSEDCL,Old SLDC Building,
Power House, Sector-1, Airoli.
Navi Mumbai -400708
Control Room Mobil No: 9833383880
Control Room Fax No: 022-27602220

use of hydro during high frequency_1.pdf
542K

Sample Event showing requirement of underdrawal at frequency above 50.05 Hz for avoiding sign change violation based on SCADA data on which real time operation done

1. **Date -19th January 2019.**

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
19-Jan-19	81	50	3.4024	-192	underdrawal	52
19-Jan-19	82	49.99	3.6898	49	Overdrwal	100
19-Jan-19	83	49.9	6.2759	256	Overdrwal	334
19-Jan-19	84	49.99	3.6898	262	Overdrwal	418
19-Jan-19	85	49.92	5.7012	178	Overdrwal	386
19-Jan-19	86	49.98	3.9771	220	Overdrwal	412
19-Jan-19	87	50.04	0.6805	112	Overdrwal	276
19-Jan-19	88	50.06	0	-92	underdrawal	232

It can be seen that in order to under draw at time block No. 88 , Hydro was used which ultimately resulted in wastage of resource with penalty for underdrawal at frequency above 50.05 Hz

2. **Date 21st January 2019**

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
21-Jan-19	71	49.97	4.2184	80	Overdrwal	58
21-Jan-19	72	50.01	2.6766	117	Overdrwal	114
21-Jan-19	73	50.04	0.6691	47	Overdrwal	116
21-Jan-19	74	50.02	2.0074	46	Overdrwal	116
21-Jan-19	75	49.93	5.382	37	Overdrwal	149
21-Jan-19	76	50.02	2.0074	18	Overdrwal	385
21-Jan-19	77	50.01	2.6766	7	Overdrwal	431
21-Jan-19	78	50.01	2.6766	12	Overdrwal	383
21-Jan-19	79	50.01	2.6766	114	Overdrwal	114
21-Jan-19	80	49.99	3.6366	71	Overdrwal	114
21-Jan-19	81	50.06	0	-60	underdrawal	111
21-Jan-19	82	50.05	0	128	underdrawal	111

3. Date 09th Feb 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
09-Feb-19	42	50.11	0	-279	underdrawal	171
09-Feb-19	43	50.06	0	113	Overdrwal	115
09-Feb-19	44	50.04	0.5805	320	Overdrwal	97
09-Feb-19	45	49.99	3.2213	318	Overdrwal	152
09-Feb-19	46	50	2.9027	195	Overdrwal	230
09-Feb-19	47	50.01	2.3222	180	Overdrwal	196
09-Feb-19	48	50.04	0.5805	244	Overdrwal	240
09-Feb-19	49	50.07	0	-148	underdrawal	531

4. 16th Feb 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
16-Feb-19	37	49.95	4.5646	-131	underdrawal	430
16-Feb-19	38	50.01	2.4025	43	Overdrwal	430
16-Feb-19	39	50.02	1.8019	144	Overdrwal	430
16-Feb-19	40	50.06	0	67	Overdrwal	430
16-Feb-19	41	50	3.0031	214	Overdrwal	430
16-Feb-19	42	50.01	2.4025	142	Overdrwal	430
16-Feb-19	43	50.05	0	136	Overdrwal	430
16-Feb-19	44	50.06	0	-47	underdrawal	660

5. 27th Feb 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
27-Feb-19	61	49.97	4.1605	-122	underdrawal	78
27-Feb-19	62	50	3.2744	37	Overdrwal	59
27-Feb-19	63	50.02	1.9646	10	Overdrwal	59
27-Feb-19	64	50.03	1.3098	1	Overdrwal	58
27-Feb-19	65	50.07	0	378	Overdrwal	58
27-Feb-19	66	50.04	0.6549	159	Overdrwal	58
27-Feb-19	67	50.04	0.6549	73	Overdrwal	57
27-Feb-19	68	50.05	0	-106	underdrawal	222
27-Feb-19	69	50.07	0	63	Overdrwal	117

It can be seen that in order to under draw at time block No.67 , Hydro was used which ultimately resulted in wastage of resource with penalty for underdrawal at frequency above 50.05 Hz

6. 3rd March 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type	Hydro
03-Mar-19	3	49.92	5.4569	41	**Overdrwal**	158
03-Mar-19	4	49.93	5.139	-12	**underdrawal**	244
03-Mar-19	5	49.93	5.139	-131	**underdrawal**	300
03-Mar-19	6	49.85	7.6821	-57	**underdrawal**	174
03-Mar-19	7	49.83	8	-26	**underdrawal**	227
03-Mar-19	8	49.82	8	-155	**underdrawal**	201
03-Mar-19	9	49.84	8	163	**Overdrwal**	109
03-Mar-19	10	49.87	7.0463	107	**Overdrwal**	153
03-Mar-19	11	49.91	5.7748	159	**Overdrwal**	73
03-Mar-19	12	49.99	3.2317	254	**Overdrwal**	74
03-Mar-19	13	50.03	1.1655	210	**Overdrwal**	72
03-Mar-19	14	50.06	0	186	**Overdrwal**	72
03-Mar-19	15	50.08	0	-28	**underdrawal**	304

It can be seen that in order to under draw at time block No.67 , Hydro was used which ultimately resulted in wastage of resource with penalty for underdrawal at frequency above 50.05 Hz

Annexure-E

Sample Event showing requirement of overdrawal at frequency below 49.85 Hz for avoiding sign change violation based on SCADA data on which real time operation done 4th Jan 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type
04-Jan-19	25	50.05	0	184	Overdrwal
04-Jan-19	26	50.02	2.2548	-459	underdrawal
04-Jan-19	27	50	3.758	-736	underdrawal
04-Jan-19	28	49.94	5.3488	-444	underdrawal
04-Jan-19	29	49.92	5.879	-374	underdrawal
04-Jan-19	30	49.82	8	-126	underdrawal
04-Jan-19	31	49.7	8	-151	underdrawal
04-Jan-19	32	49.84	8	-250	underdrawal
04-Jan-19	33	49.92	5.879	-210	underdrawal
04-Jan-19	34	49.81	8	-222	underdrawal
04-Jan-19	35	49.85	7.7349	-180	underdrawal
04-Jan-19	36	49.88	6.9395	-144	underdrawal
04-Jan-19	37	49.85	7.7349	49	Overdrwal
04-Jan-19	38	49.84	8	-30	underdrawal
04-Jan-19	39	49.88	6.9395	-397	underdrawal
04-Jan-19	40	49.79	8	-424	underdrawal
04-Jan-19	41	49.78	8	-632	underdrawal
04-Jan-19	42	49.93	5.6139	-473	underdrawal
04-Jan-19	43	49.93	5.6139	-247	underdrawal
04-Jan-19	44	49.9	6.4092	7	Overdrwal

It can be seen that system frequency was continuously low & out of IEGC band and hence system was kept in underdrawal . But in order to avoid 2nd sign change violation, finally SLDC compulsorily required to overdraw from grid at time block No. 37 & then at time block No. 44 which further create threat to system security.

21st January 2019

Date	Time Block	Frequency	DSM Rate (Rs/kwh)	UI	UI Type
09-Mar-19	78	49.93	5.1324	50	Overdrwal
09-Mar-19	79	49.96	4.1766	-56	underdrawal
09-Mar-19	80	50.03	1.1608	-225	underdrawal
09-Mar-19	81	49.97	3.858	-335	underdrawal
09-Mar-19	82	49.8	8	-284	underdrawal
09-Mar-19	83	49.86	7.3628	-277	underdrawal
09-Mar-19	84	49.87	7.0441	149	Overdrwal
09-Mar-19	85	49.75	8	-128	underdrawal

It can be seen that in order to avoid sign change violation , compulsorily required to overdraw from grid at time block No. 84 which further create threat to system security.

Annexure-F

Comparative statement showing daywise Number of revisions in central sector power for 1st Jan 2018 to 31St March 2018 and for 1st Jan 2019 to 31St March 2019.

Date	Nof os Revisions		Nos of Revisions		Nos of Revisions	
	Jan-18	Jan-19	Feb-18	Feb-19	Mar-18	Mar-19
1	74	91	68	98	**70**	**97**
2	67	86	68	89	**76**	**108**
3	85	89	67	92	**76**	**105**
4	85	96	74	83	**78**	**92**
5	75	121	72	82	**82**	**89**
6	59	134	67	85	**75**	**99**
7	69	113	71	107	**74**	**82**
8	65	95	77	96	**66**	**79**
9	70	97	72	103	**64**	**76**
10	67	80	75	101	**64**	**80**
11	72	97	84	94	**62**	**84**
12	80	92	94	91	**68**	**74**
13	65	91	81	81	**73**	**86**
14	72	96	76	89	**64**	**69**
15	85	70	65	99	**81**	**79**
16	67	84	61	95	**72**	**89**
17	78	77	62	86	**76**	**83**
18	87	76	55	97	**63**	**81**
19	71	73	68	90	**67**	**80**
20	71	87	73	89	**56**	**80**
21	62	100	68	85	**76**	**82**
22	65	98	73	89	**75**	**82**
23	67	97	73	94	**66**	**77**
24	61	89	68	85	**60**	**82**
25	58	141	76	85	**66**	**74**
26	76	116	64	80	**64**	**86**
27	68	79	64	98	**71**	**72**
28	65	119	74	84	**79**	**78**
29	65	118	0	0	**63**	**112**
30	58	101	0	0	**65**	**205**
31	73	88	0	0	**76**	**205**
Total	2182	2991	1990	2547	2168	2867

Annexure-G

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
World Trade Centre, Centre No.1, 13th Floor, Cuffe Parade, Mumbai 400005.
Tel. 022 22163964/65/69 Fax 22163976
Email: mercindia@merc.gov.in
Website: www.mercindia.org.in/ www.merc.gov.in

Notification of Effective Date for implementation of Commercial Arrangement under MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018

Date: 18 March, 2019

Notification

In accordance with first proviso of Regulation 1.2 of MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018, notified on 20 July, 2018, the Commission is required to notify the date for coming into force of Commercial Arrangement specified in Part C of these Regulations and the related provisions regarding Deviation Charges and Penalties applicable for Wind and Solar Generating Stations in the State. Such date for coming into effect of Commercial Arrangement ("**Effective Date**") shall not be later than 9 months from the notification of these Regulations (i.e. 20th April 2019).

2. MSLDC vide its letter dated 12 March, 2019 submitted that, for implementation of said Regulations, a Co-ordination meeting was held with the Stakeholders on 26 February, 2019 at Prakashganga, HQ. of MSETCL, Mumbai. MSLDC submitted the minutes of the meeting dated 26 February, 2019 to the Commission wherein it is stated that, during meeting, Stakeholders raised the concern about the short time period available for activities to be undertaken for implementation of the said Regulations. MSLDC further provided updated status of the implementation activities along with the timelines. The Commission notes that as per the proposed timelines indicated by MSLDC, the establishment of online Qualified Coordinating Agency (QCA) management and Renewable Energy Scheduling and Deviation Accounting Software shall be ready by 30 June 2019.

3. The Commission has noted the concern raised by Stakeholders during the meeting dated 26 February 2019 regarding the short time available for implementation of the Regulations and also the submission made by MSLDC about its preparedness to rollout the Commercial Arrangement by 30 June 2019.

4. In view of the above, in exercise of the power conferred by Regulation 19 and in pursuance of first proviso of Regulation 1.2 of the MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018, the Commission hereby notifies the **Effective Date** for coming into force of Commercial Arrangement as **1 July 2019**.

Sd/-	**Sd/-**	**Sd/-**
(Mukesh Khullar)	**(I. M. Bohari)**	**(Anand B. Kulkarni)**
Member	**Member**	**Chairperson**