

Annexure-XI

Details of calculation for Gujarat

Item No.	Balancing Cost	Rs./Unit
1	Total balancing charge for CGs Coal and gas based station (fixed +fuel charge)(Rs/kWh)-Spread over renewable generation	0.24
2	Total balancing charge for Gujarat Coal and Gas based station (fixed +fuel charge)(Rs/kWh)-Spread over renewable generation	-
3	Impact of DSM per unit (Rs/kWh)- Spread over renewable generation	0.12
4	Impact on tariff (Rs./Unit) for Gujarat discom for backing down Coal generation assuming solar and wind at Rs. 4/kWh and coal fuel charge at Rs. 2.0/kWh- Spread over renewable generation (Considering 25% on account of renewables)	0.5
5	Stand by charge (Rs/kWh)- Spread over renewable generation	0.33
6	Extra transmission charge (Rs/kWh)- Spread over renewable generation	0.26
	Total Impact- Spread over renewable generation (Rs/kWh)	1.45

Guj-Item no. 1

TIME	From Central Sector (MWH)
1	3381
2	3403
3	3433
4	3334
5	3800
6	4044
7	4216
8	4154
9	4408
10	4559
11	4362
12	3940
13	4035
14	3573
15	3545
16	3346
17	3633
18	3305
19	3489
20	3201
21	3247
22	3783
23	3635
24	3644

wind+solar	
1333.00	
1219.00	
1017.00	
876.00	
703.00	
535.00	
223.42	
183.09	
417.93	
740.58	
1134.27	
1726.97	
2278.15	
2394.01	
2623.68	
2799.85	
2909.97	
2695.53	
2465.80	
2117.38	
1865.00	
1721.00	
1598.00	
1494.00	
Total	37071.63

Total generation MWh	89468	IC (MW)	4559.44	Total generation MUs(85% plf)	93.01
Max Capacity available MW	4559.44				
Max generation MWh	109426.6				
PLF Achieved	81.76				

Fixed cost (Rs/kwh)@85 % PLF	1.5
-------------------------------------	------------

total fixed cost (Rs) in crores at 85% PLF 13.95

total fixed cost (Rs) in crores at 81.76% PLF 1.56

Difference in fixed cost (Rs/kWh) 0.06

Difference in fixed cost (Rs/kWh)spread over renewable generation 0.14

Loss of efficiency due to operation at 81.76% PLF 2% As per CERC Grid Code

Fuel charge for coal based plants (Rs./kWh) 2

Total loss due to low PLF operation (Rs.) 3578736.4

Per Unit Loss spread over renewable generation (Rs./Unit) 0.10

Total balancing charge for CGs Coal and Gas based station (fixed +fuel charge)(Rs/kWh)-Spread over renewable generation	0.24
--	-------------

Guj-Item no. 2

TIME	Gas
1	1157
2	1156
3	1167
4	1136
5	1132
6	1155
7	1157
8	1248
9	1334
10	1370
11	1401
12	1388
13	1372
14	1389
15	1450
16	1461
17	1434
18	1494
19	1496
20	1340
21	1253
22	1256
23	1216
24	1439

TIME	Coal & Lignite
1	6111
2	5689
3	5388
4	5667
5	5426
6	5469
7	5805
8	5932
9	5983
10	6236
11	6480
12	6782
13	6467
14	6448
15	6899
16	6882
17	6544
18	6350
19	5913
20	6185
21	6488
22	6579
23	6767
24	7059

Total generation MWh	31401 IC	Total generation MUs(85% plf)	
Max Capacity available MW	1496	1496	30.5184
Max generation MWh	35904.0		
PLF Achieved	87.46		

Fixed cost (Rs/Kwh)@85 % PLF	1.5
------------------------------	-----

total fixed cost (Rs) in crores at 85% PLF	4.58
total fixed cost (Rs) in crores at 87.46% PLF	1.46

Difference in fixed cost (Rs/kWh)*	-0.04
------------------------------------	-------

Total generation MWh	149547 IC	Total generation MUs(85% plf)	
Max Capacity available MW	7058.7	7058.7	143.9975
Max generation MWh	169408.8		
PLF Achieved	88.28		

Fixed cost (Rs/Kwh)@85 % PLF	1.5
------------------------------	-----

total fixed cost (Rs) in crores at 85% PLF	21.60
--	-------

total fixed cost (Rs) in crores at 88.28% PLF	1.44
---	------

Difference in fixed cost of coal operating at 88.28% PLF (Rs/kWh)*	-0.06
--	-------

Note: * Since these are -ve figures, values have been taken as Zero.

Guj-Item no. 3

TIME	Total (wind+solar)	deviation (15%)	Deviation beyond 250 MW	Charges (Rs.) due to DSM considering Rs. 4/Kwh
1	1333	200	-50	-200200
2	1219	183	-67	-268600
3	1017	153	-97	-389800
4	876	131	-119	-474400
5	703	105	-145	-578200
6	535	80	-170	-679000
7	223.42	34	-216	-865948
8	183.09	27	-223	-890146
9	417.93	63	-187	-749242
10	740.58	111	-139	-555652
11	1134.27	170	-80	-319438
12	1726.97	259	9	36182
13	2278.15	342	92	366890
14	2394.01	359	109	436406
15	2623.68	394	144	574208
16	2799.85	420	170	679910
17	2909.97	436	186	745982
18	2695.53	404	154	617318
19	2465.8	370	120	479480
20	2117.38	318	68	270428
21	1865	280	30	119000
22	1721	258	8	32600
23	1598	240	-10	-41200
24	1494	224	-26	-103600
TOTAL	37071.63			4358404 Taking only +ve values

Impact of DSM per unit (Rs/kWh)- Spread over renewable generation	0.12
---	------

Guj-Item no. 4

TIME	Total (wind+solar)
1	1333
2	1219
3	1017
4	876
5	703
6	535
7	223.42
8	183.09
9	417.93
10	740.58
11	1134.27
12	1726.97
13	2278.15
14	2394.01
15	2623.68
16	2799.85
17	2909.97
18	2695.53
19	2465.8
20	2117.38
21	1865
22	1721
23	1598
24	1494
TOTAL	37071.63

Total wind and solar (MWh)	37071.63
Money spent extra by backing down coal generation to take renewables (Rs)	74143260.00
Impact on tarrif (Rs./Unit) for Gujarat discom for backing down Coal generation assuming solar and wind at Rs. 4/kWh and coal fuel charge at Rs. 2.0/kWh- Spread over renewable generation (Considering 25% on account of renewables)	0.50

Guj-Item no. 5

TIME	Total (wind+solar)
1	1333
2	1219
3	1017
4	876
5	703
6	535
7	223.42
8	183.09
9	417.93
10	740.58
11	1134.27
12	1726.97
13	2278.15
14	2394.01
15	2623.68
16	2799.85
17	2909.97
18	2695.53
19	2465.8
20	2117.38
21	1865
22	1721
23	1598
24	1494
TOTAL	37071.63

Max wind+solar generation	2909.97
10% standby available capacity	291.00
10% standby gross capacity	342.35
MWH generated during day	8216.39
Total implication during the day (Rs.)	12324578.82
Stand by charge (Rs/kWh)- Spread over renewable generation	0.33

Guj-Item no. 6

Extra transmission charge (Rs/kWh)- Spread over renewable generation	0.26
--	------