Gujarat Energy Transmission Corporation Limited

State Load Despatch Centre, Gujarat

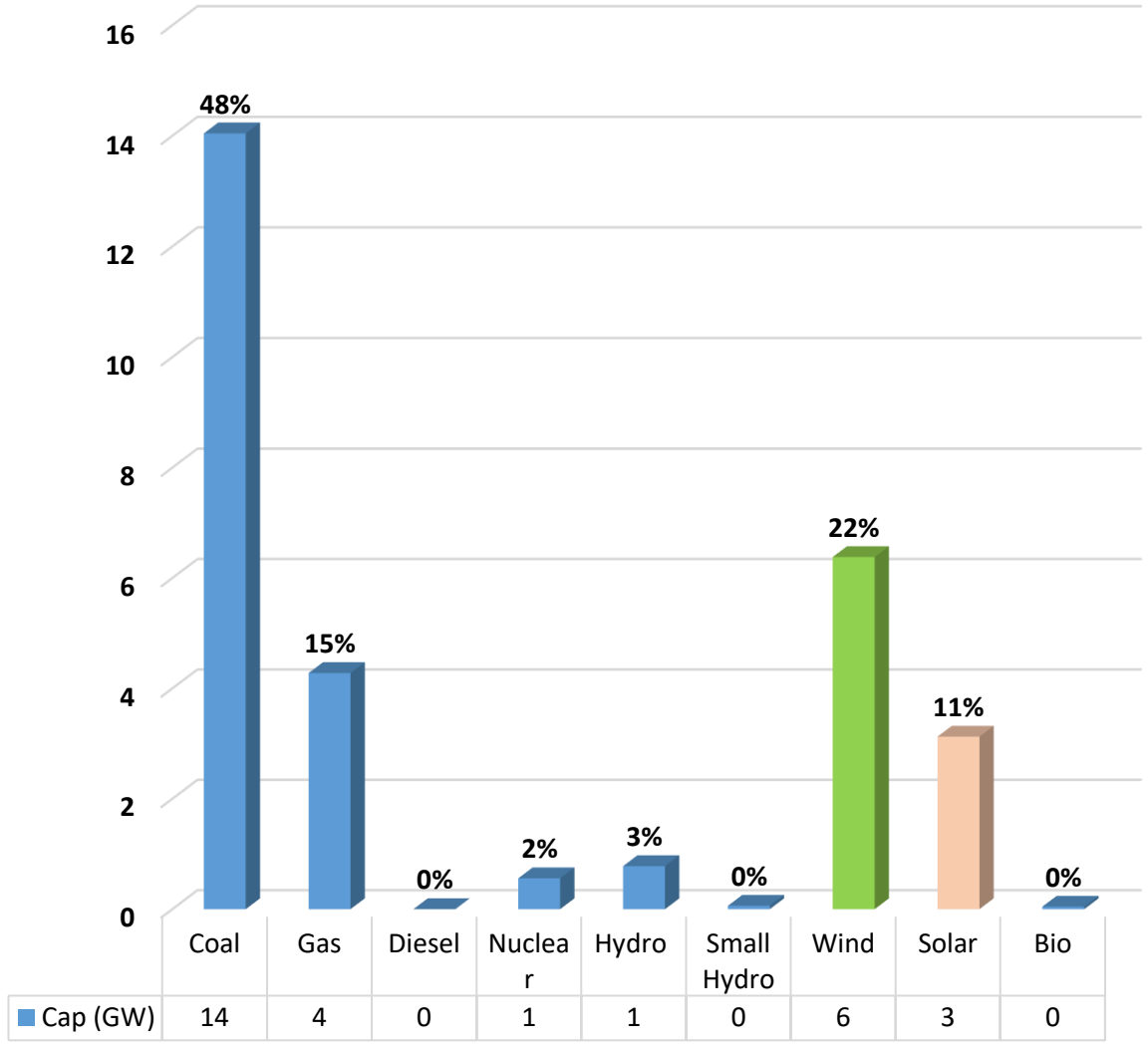
GETCO

"Best Practices in Power System Operation & Grid Management"

Power System Statistics of India & Gujarat

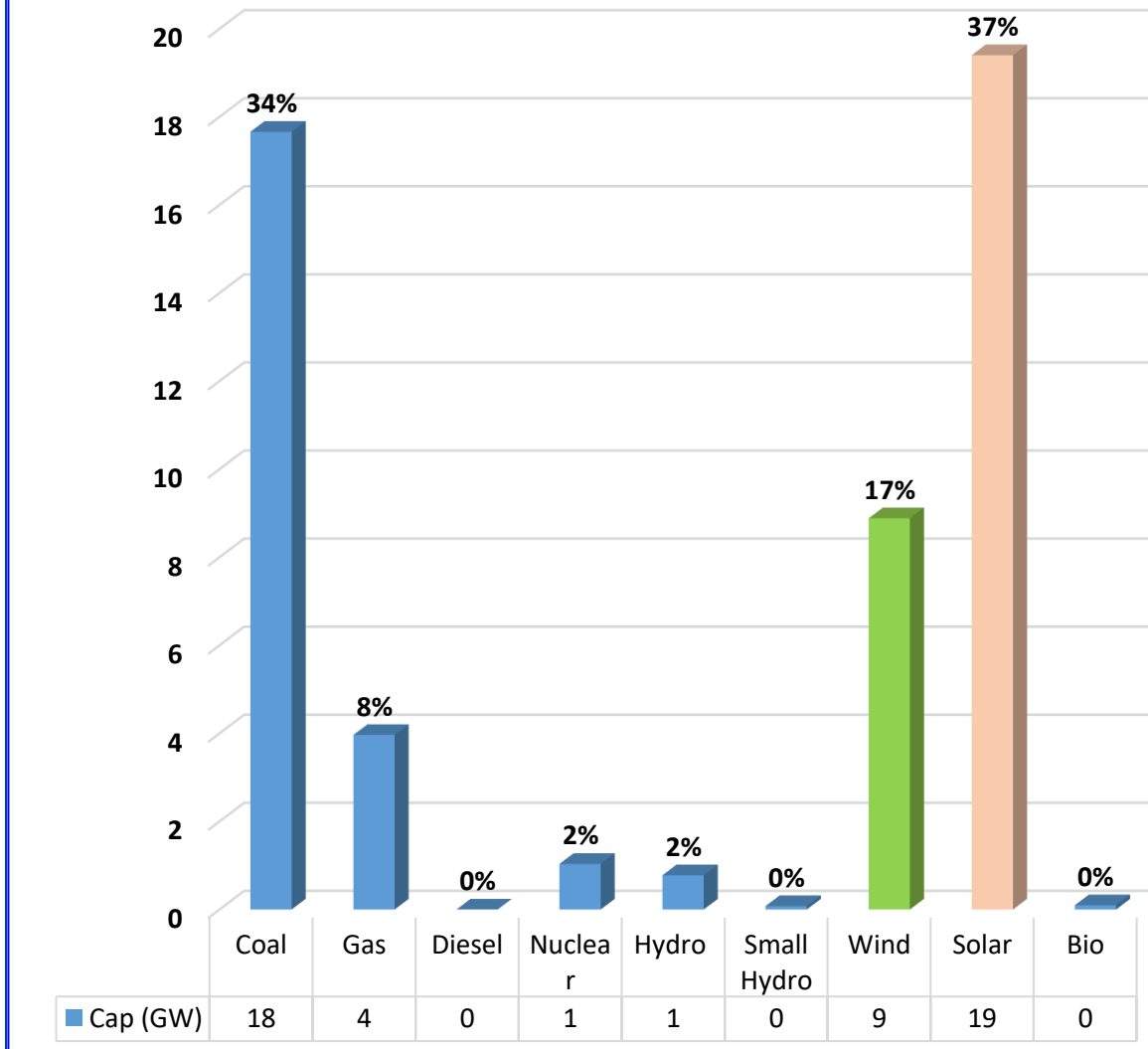
GETCO

Power System Scenario Gujarat – 2021(Jan)



	Coal	Gas	Diesel	Nuclear	Hydro	Small Hydro	Wind	Solar	Bio
Cap (GW)	14	4	0	1	1	0	6	3	0

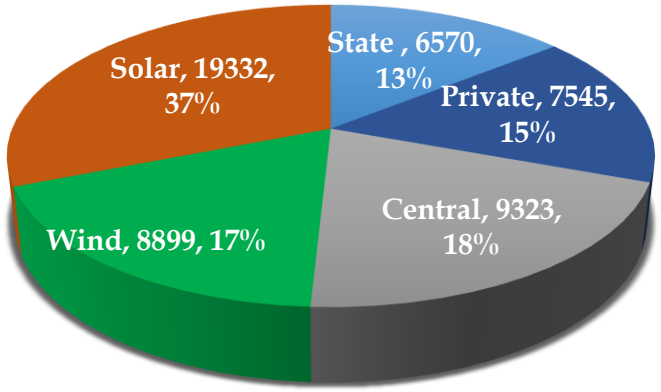
Power System Scenario Gujarat – 2026(Jan)



	Coal	Gas	Diesel	Nuclear	Hydro	Small Hydro	Wind	Solar	Bio
Cap (GW)	18	4	0	1	1	0	9	19	0

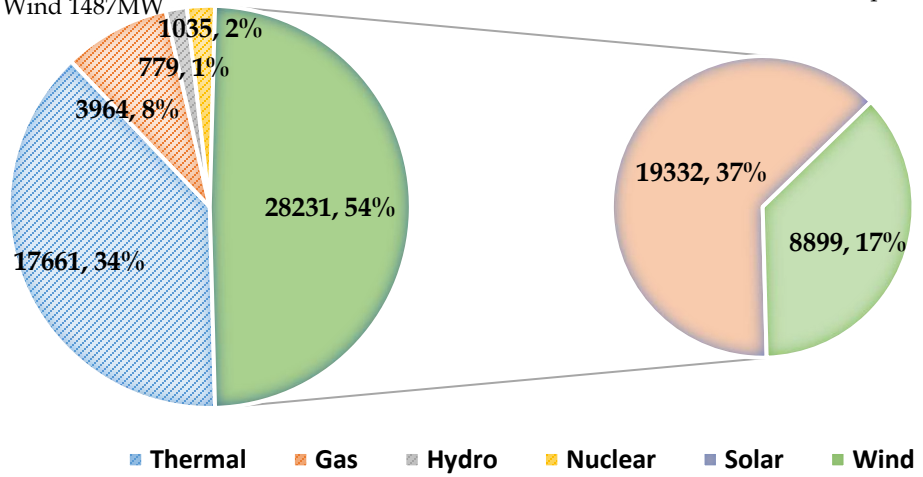
Mix of Generation & Contribution of Renewables

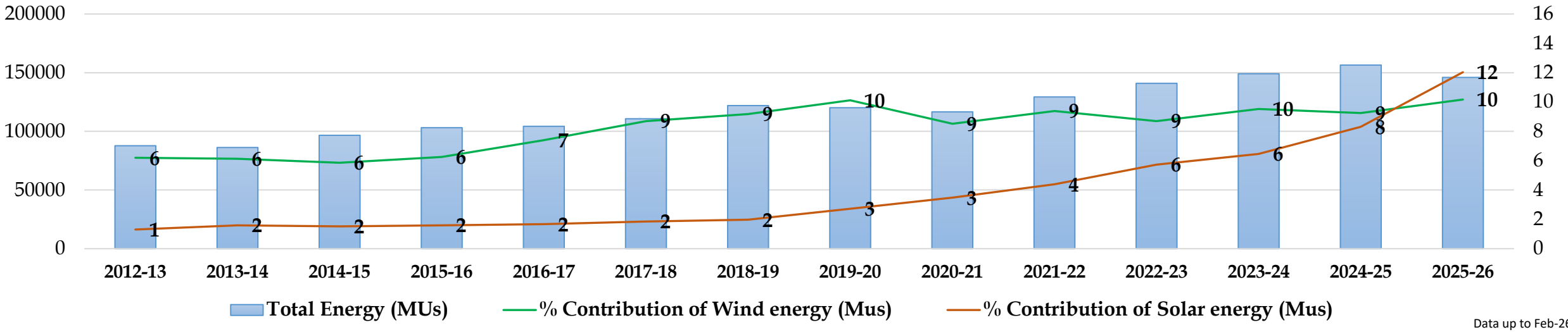
Source	Thermal	Gas	Hydro	Nuclear	Solar	Wind	Bio/WtE	Mini Hydro	Total
As on Date	17661	3964	779	1035	19332	8899	181	99	51948
% Share	34	8	1	2	37	17	0	0	100



Including
Hybrid Solar 1573MW
Hybrid Wind 1487MW

Excluding
Rooftop Solar 6667MW





Data up to Feb-26

Power System Operation - Milestone Achieved So far

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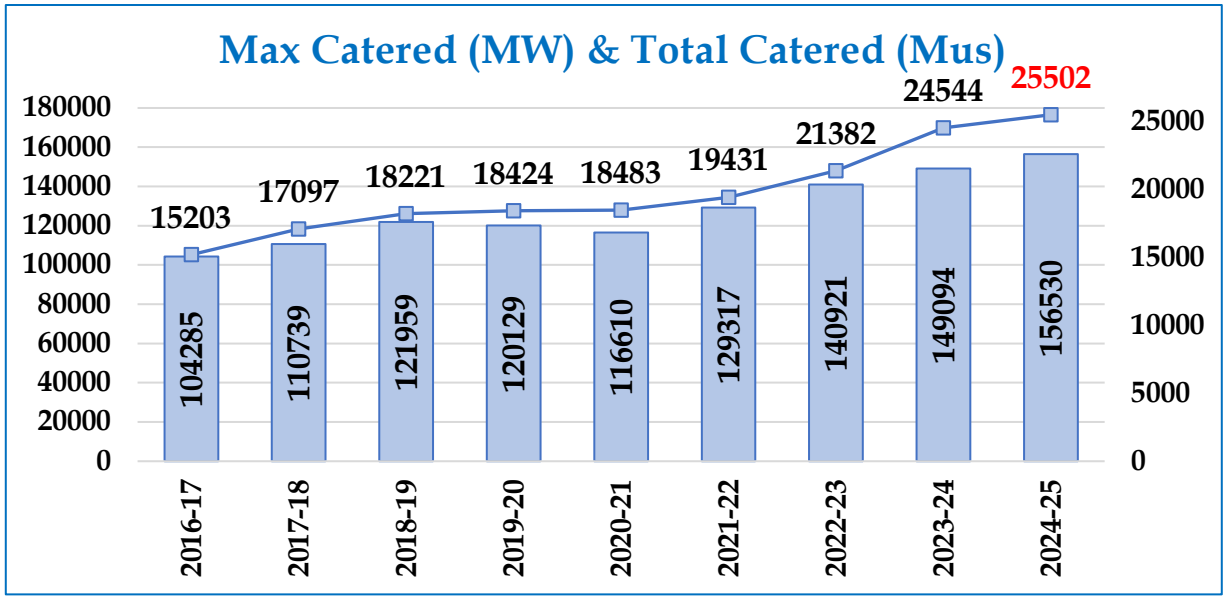
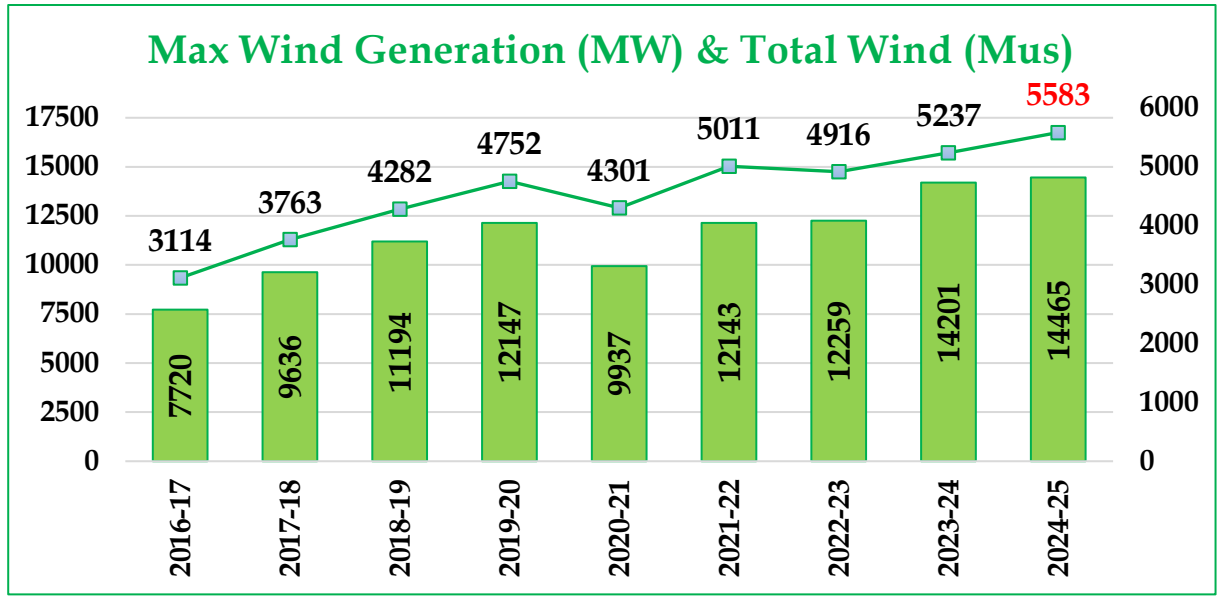
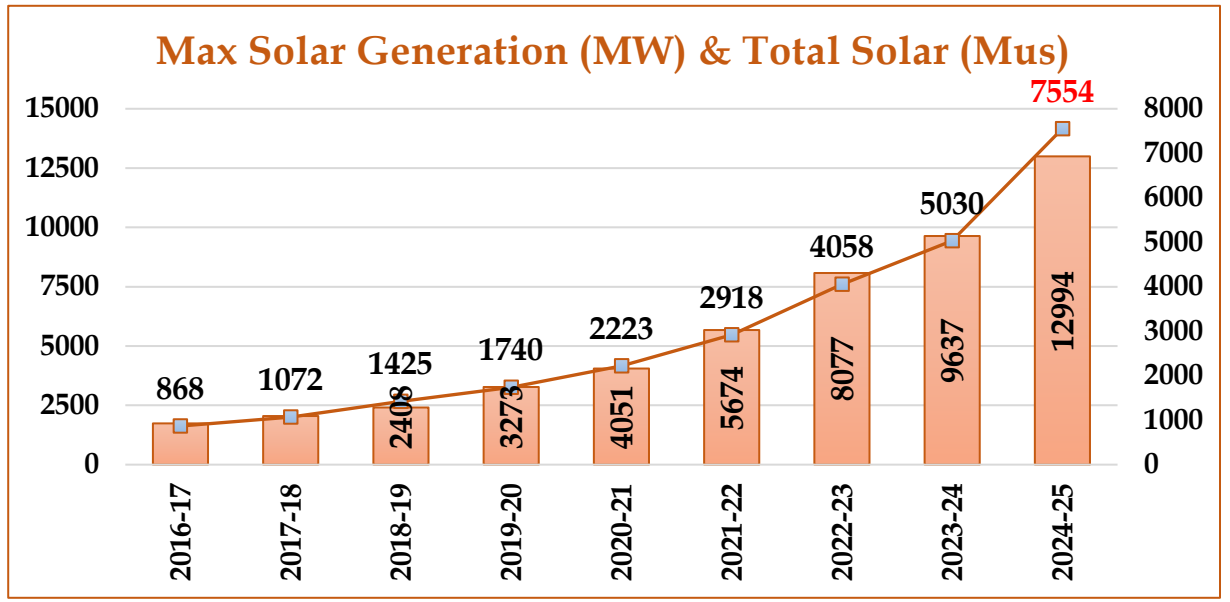




Max Demand Catered in MW	26457 MW (14.06.25)
Max Demand Catered in Mus	530 Mus (13.06.25)

Max Wind Generation in MW	6124 MW (01.06.25)
Max Wind Generation in Mus	123 Mus (07.09.25)

Max Solar Generation in MW	10715 MW (06.03.26)
Max Solar Generation in Mus	81 MUs (06.03.26)



Power System Operational Practice

Close coordination for Annual planning of State & Private Sector Unit outages to ensure adequate availability to meet peak demand of every month.

- **Month Ahead Planning:**
- *Consideration generation availability keeping 15% margin for forced outages,*
- *Consideration of Planned outages of generator,* (Outages of evacuation lines are facilitated along with planned shutdown of units.)
- Demand & Seasonal variation of renewables is taken into account,

Short-term Planning:

- Planning of shutdown of Units is reviewed.
- If any need arises, all generators are informed to squeeze their unit outages.

Day a head planning:

- Generation availability from all the generators,
- Demand forecast from Discoms,
- Renewable generator declaration from QCA/ generator pooling station (through REMC system),
- Renewable generator forecast through FSP & also inhouse for wind generation,
- SLDC considered Discom demand, renewable generation forecast along with conventional generator availability for next day planning.

Power System Operational Practice

- **Power System balancing depends on Generation Availability and Discom Demand on day basis.**

Conventional Generation Availability

State

Private

Central Sector

- Declare Capacity Submitted by State & Private Generator
- Entitlement of Central Sector

Forecast/ Anticipation

Demand

Wind Generation

Solar Generation

- Demand Forecast Submitted by Discom
- Wind & Solar Generation Forecast by Forecaster, Developer & SLDC (Inhouse NRMSE is below 7 in general, which is defined in REMC)

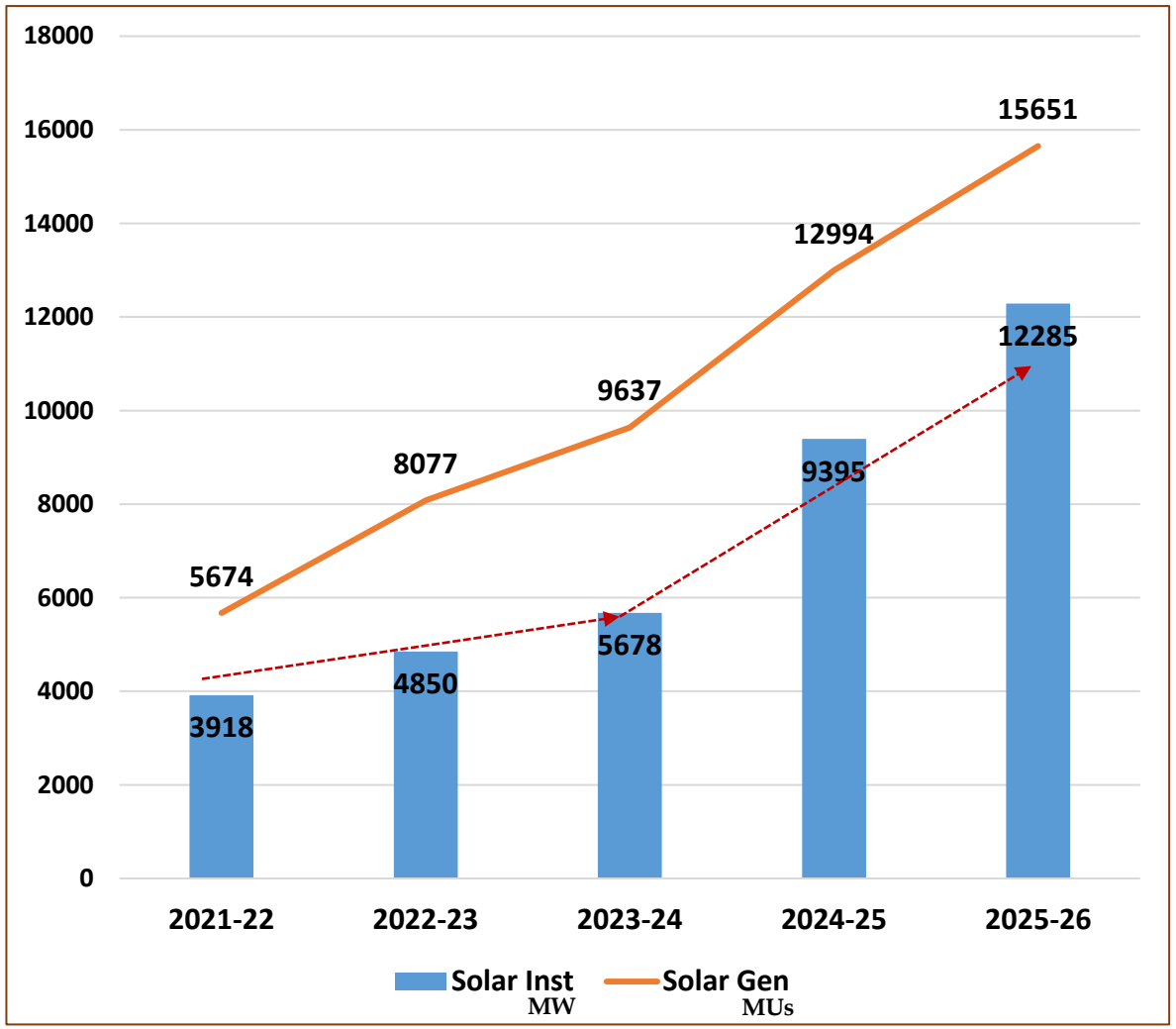
Deficit / Surplus

Power requirement

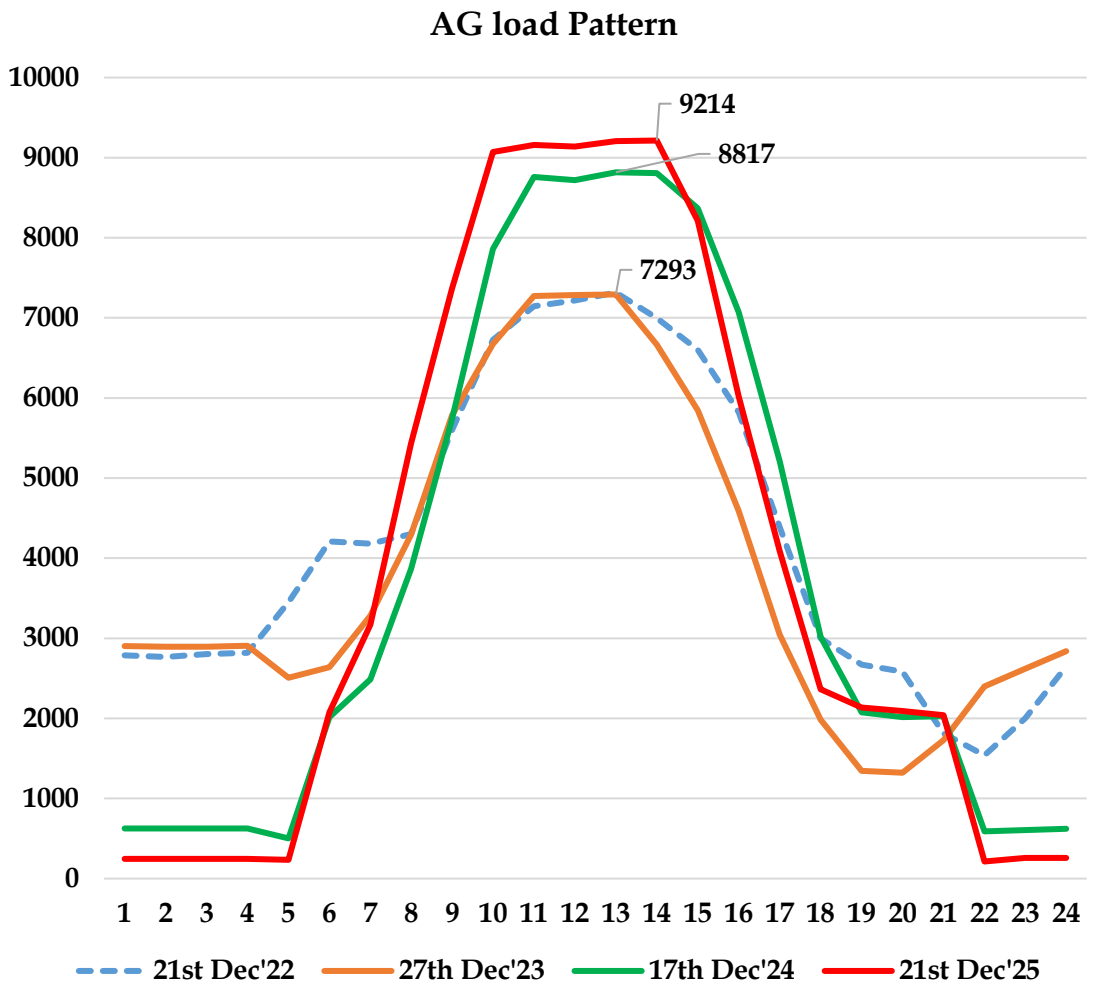
- Purchase proposed in Day Ahead & Real time
- Change in Discom Demand
- Variation in RE Generation
- Revision in Declare capacity
- Unit tripping
- Effect of schedule revision proposed from Central Sector in real time

Transition of Solar Generation to Agriculture Demand

Solar Installation (MW) Vs Solar Generation (Mus)



AG Demand converted in day-time with solar generation



Generator & Transmission Operation Associated Practice

Inter-State Available Transmission Capability (ATC)/ Total Transmission Capability (TTC) study & review

- Work out differ ATC for Solar & Non-Solar hours, to tap available resources
- Periodic review of ATC/ TTC on completion of new transmission elements
- Close co-ordination with RLDC

Available Transfer Capability (ATC) / Total Transfer Capability (TTC) Limit (State Periphery)			
Particulars	**Total Transfer Capability (TTC)**	Transmission Reliability Margin (**TRM**)	**Available Transfer Capability (ATC)**
Solar Hours (9 to 17)	12780 MW	560 MW	12220 MW
Non-Solar Hours (0 to 9 & 17 to 24)	14620 MW	480 MW	14140 MW

- Back-up SLDC operation exercise – Periodically
- Periodic checking/ validation & Formulation of Islanding scheme (roadmap for Jamnagar & Kutch)
- Black start exercise (recently Ukai & Kadana hydro) - Once in a year
- Special Protection System (SPS) at strategic locations - Convey to licensee
- Review of load connected under df/dt & UFR relays – Convey to transmission/ distribution company
- Daily report, Monthly report, Power System Availability/ resource adequacy report etc for information to the management.
- Developed online Application for SLDC real-time data/ details monitoring - for higher authority

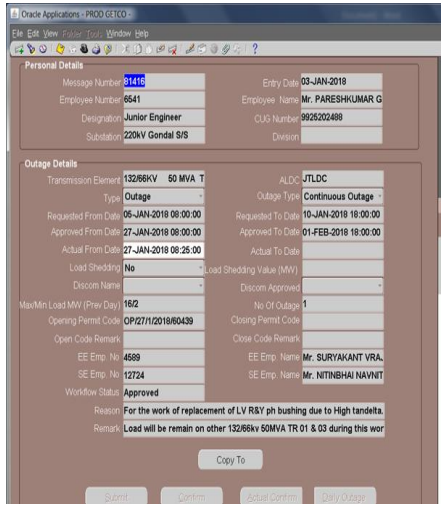
Transmission Element Outages Practice

ORACLE based ERP solution for element outages

- **Average Daily 80 - 100 Nos. transmission element outages**
- SLDC Permits shutdown after complete system Monitoring
- Various elements are cross- Checked prior to Outage Approval

- SLDC uses ORACLE based ERP software
- The end users easily initiate the outage application
- Predefined work flow of approval process
- More than three days continuous outage request received after approval of Chief Engineer, AM
- An emergency outage request, application directly comes to SLDC CR.

- Users can access the status of outage request in module thereby saving a lot of time in communication.
- Final approval / Rejection / deferment is conveyed in system before 17:00 Hrs on day ahead through module and E-mail.
- Real time codes initiation for taking element out / in through same system.
- Critical outages are given after conducting study in PSSE software.



Requisition Received → Plan, Schedule and Organize → Check Readiness → Execute → Review & Improve

Display of Outage Planning on website, with approval / rejected remark for information and better management.

Transmission Element Outages Practice

Feedbacks to field offices for planning of outages / expediting restoration of elements which are under forced outages:

- SLDC – Gujarat conveys the messages to field offices for availing opportunities of outages.
- Few critical elements in system for which outages are not feasible for even one hour. But, sometime due to rescheduling of generators, load drop in system on festivals, outages of these elements becomes feasible.
- Keen interest to facilitate outages for construction of new EHV lines and for R & M work of EHV lines so as to accommodate new elements in the grid at right time.
- Daily, SLDC conveys the Flash report furnishing important elements under outages to all higher officers and to the Competent Authority.
- Every Monday, SLDC submits the report of elements which are under forced outage for prolonged period to the Competent Authority. It helps for expediting restoration.

Power System During Highest Demand

GETCO

GUJARAT SYSTEM CATERED (ABT)

14-Jun-2025 15:02:23

BLOCK NO	49	50	51	52	53	54	55	56	57	58	59	60
UI	-137	-47	228	471	250	291	47	266	360	340	-31	44

SLDC 50.13 Hz SUNRISE : 5.59 AM SUNSET : 19.80PM WRLDC 50.08 Hz R 40.0 DEG BLOCK 59

STN	1	2	3	4	5	6	7	8	9	10	TOTAL
UTPS			171	195	176	438					980
WTPS	174	188	0	203	122	172	199	749			1808
GTPS			210	198	201						608
STPS			0	0							0
KLTPS			58	0	BLTPS		108	168		276	58
UGPP(II)	105	84									188
DGBPS	0	0	0	0	DGBPS	3GT	35	SOLAR	0	39	35
UHPS	0	0	0	0	0	GSEG II	13	0			13
KHPS	0	0	0	0	0	GIPCL II	0	0			0
ADANI	312	306	312	306	601	621	625	623	0	981	3707
EPGL	555	0					APL	EPGL		ST2<-ST3	555
AECO		120	115	120		GS	3951	593			356
SLPP	95	93	99	97		EXBUS	3707	555			384
SUGEN	274	227	0			UNO	185				686
A'MOTA	5	21									-1
GPPC	7	0	0	0							7
ACBIL	114	105									219
DGEN	-1	0	-1								-2

GUVNL PUR	0	0	0	0
GUVNL RTM	0	0	0	0
AECO RTM	0	0	0	0
SECO RTM	0	0	0	0
RAILWAY RTM	0	0	0	0

DADRI-I	198	186	197	203							
FARAKKA	146	167	135	374	331	0					
BARH	445	0	0								
KAHALGAON	189	164	183	172	482	487	485				2082
TAPS	0	0	532	432							966
KAPP	201	-2	613	-8							200
KORBA	184	202	178	515	468	467	470				2450
SIPAT	0	605	615	453	453						2122
VCHAL	173	0	180	188	184	182	357	404	460	451	3928
	445	455	455								
TPCL	454	440	447	449	466						2257
MAUDA	450	458	598	619							2121
ZANOR	66	71	-5	94							225
KAWAS	56	1A 0	1B 32	1C 0	2A 58	2B 34	2C				178

TAPS	STG1	STG2
GEN	0	881
DC	0	785
DIFF	0	96

KAPS	STG1	STG2
GEN	388	1180
DC	380	1135
DIFF	8	45

LARA STPP	772	748
GADARWARA	0	581
KHAREGAON	446	457

CHPH	0	37	0	36	35			CHPH → 105			107
RBPH	-1	0	0	-1	0	0		INJ → 92			-2

NG WR-NR WR-ER WR-SR SYSTEM OVERVIEW CPP KHPS-ISLAND JHANOR

☐ →17477 → 3960 ← 6161 GUJ.GRID SUMMARY 75 ☐

	SCHEDULE			DRAWAL	DIFF
GUJRAT	9922	9922	9991	9972	G 57 W 67
MSEB	7632	8551	10449	7578	-54 ACE 100
MPEB	7073	8603	8601	6764	-309
CSEB	2425			2588	163
GOA	544			527	-18
DNH	764			973	209
DD	346			403	57
ESTL	328			229	-99

	DGVC	MGVC	UGVC/ 1	PGVC	AECO	SECO	RAILWAY
DWL	5524	2583	5485	9200	1972	755	76
SCHFS-WS	4315	1541	3907	4956	1114	393	154
SCHACT-WS	4960	1939	5232	6530	1077	506	
DIFF	563	643	255	2671	894	249	-78

	CURR. BLOCK	PREV.	DAM RATE
DAM RATE	3.553	3.553	3.55
DEV GUJ	162	125	
FREQ.	50.142	50.036	

Ins.Cap 10382+1555

SOLAR	5770
ISGS SLR	422
TOTAL SLR	6193

(Ins. Cap 8352)

W/F 886

SUGEN+UNOSGN	
DWL	686
SCH	360
DIFF	326

GSECL TOTAL	3951
PRIVATE TOTAL	12721
GUJ GEN TOTAL	16673
GUJRAT DRAWAL	9972
GUJRAT CATERED	26653

ADANI	
DWL	3707
SCH	3264
DIFF	443

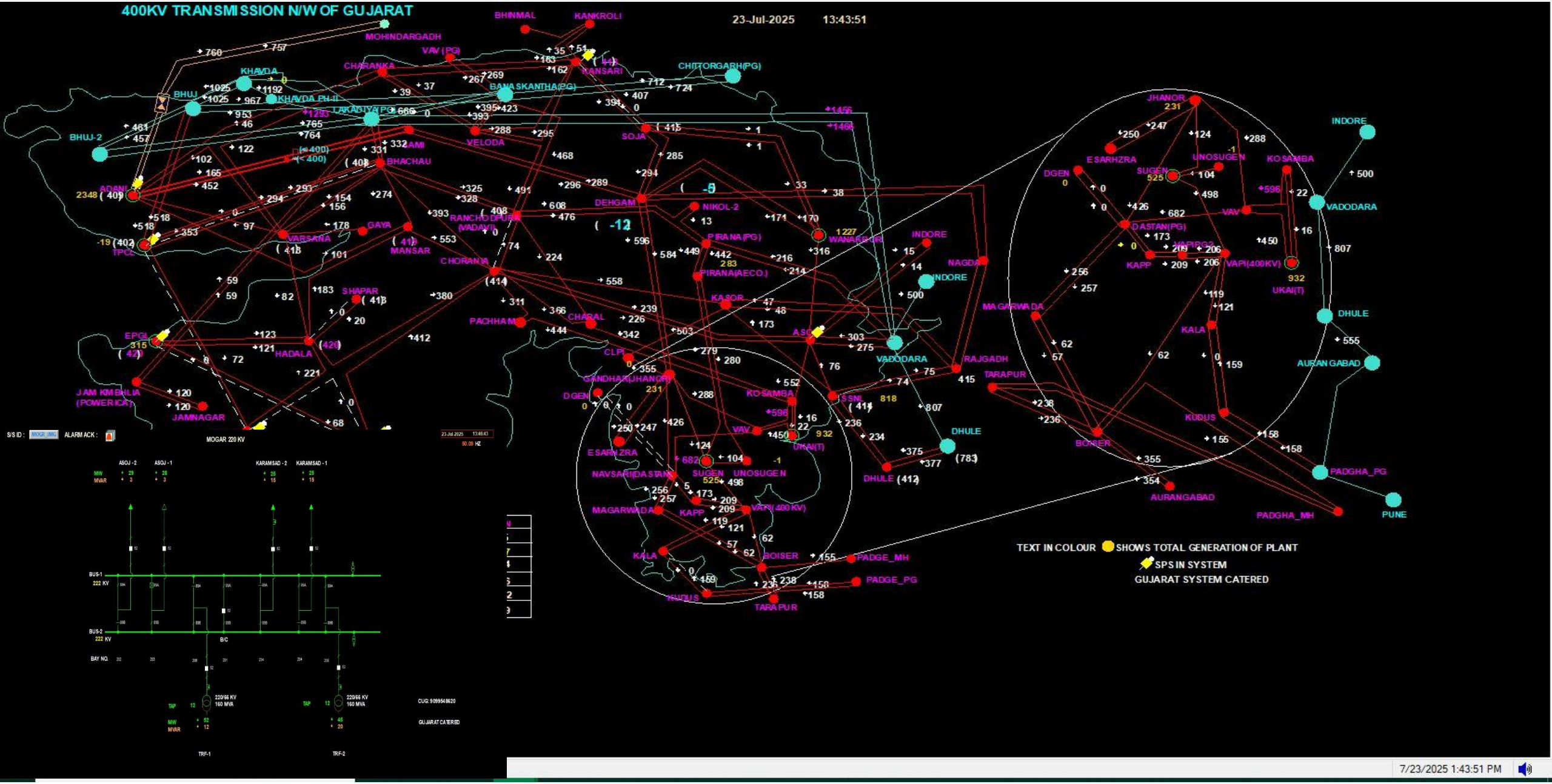
ADANI	SCH	INJ
APL-1-4	997	1236
APL-5-6	500	1223
APL-7-8	1401	1248
APL-9		0

AGR-GWL		
NR	← 2048	WR

JAIPUR-GWL		
NR	← 387	WR
	← 388	

DEHGAM - JHANOR- 1 &2	→ 258 / → 254	→ 258 /→ 254	0
DEHGAM - NAGDA 1&2	← 225 / ← 222	← 217 /← 220	-8
KNSARI- KNKRO / BHINMAL	→ 90	→ 62	
MOHNDGDH- MUNDRA 1&2	← 1113	← 1108	-138
VADODARA DIFF		→ 1	(4to6 %
PIRANA DIFF		→ 1	Loss)
PADGHE-CHNDRAPURA	← 424	← 555	
VAPI -MUML 1 & 2	← 189	← 186	
NVSR- NASKO	→ 0		
NVSR- RELI_MH	← 104		
HLDW - KAKPR 1 & 2	→ 23	→ 24	
HLDW - KAWAS 1 & 2	→ 48	→ 48	
HLDW - JHNOR 1 & 2	← 179	← 181	
ICHH - KAWAS 1 & 2	← 194	← 191	
CLPI - JHNOR	→ 120		

Transmission Network Observability through SCADA



Intra-State Transmission Network

GETCO

50.13HZ **SYSTEM OVER VIEW (Rev-1 date: 24-12-2022)** R 14-Jun-2025 15:02:23

STN	KV1	KV2	REACT	765/400/220 KV ICT			
VDODRA	773	771	247	792	782	791	
BK PG	786	784	354	510	510		
BHUJ PG	780	781	348	12	12	12	0
ASOJ	420	418	0	314	328	202	317
ADANI	409	408	72 72 114	107	108		
AMRLI	410	408	0 -2 -2	83	89	94	148
BHUJ PG	408	410	122	-42	-49	-48	-48
BHACHAU	408	407	60 122	120	128		
BK PG	415	413	123				
CHARNKA	412	412	0	-145	-145		
CHORNIA	409	410	0 0	135	130	127	
CHARAL	409	406	0	119	127	115	
DEHGAM	408	410	129 57	-346	191	276	
HADALA	404	402	0 0	200	199	220	310
JETPUR	398	397	0 0	190	189	306	317
KNSARI	415	413	0 0	122	0	126	205
KOSMBA	404	406	0	125	129	137	207
KASOR	409	410	0 0 0 0	148	0	156	243
MANSR	410	407	0	213	213		
PACHHAM	411	416	0		-9	-14	
SUGN/UNC	406	404	0	214	212	214	206
SOJA	410	410	0 0	244	238	244	
TPCL	398	407	61				
UTPS	410	410	0	84	77		
VADAVI	407	401	0 0	126	112	116	129
VAV	398	396	0	265	270	263	
VAPIPG	394	395		246	248	258	
VDODRA	404	405	120	312	305		
VERSNA	411	415	0 0	244	231	0	243
VELODA	411	422	-3	246	246		
WTPS	410	410		343			

STN	KV1	KV2	KV	220 / 132KV					220 / 66KV				STN	REC
ASOJ	225	226	128	85	79	83	84	65	20				ANJAR	0
BECL	224	222											BHATIA	-1
BOTAD	218	218	129	17	30				0	41			BHUTIYA	0
DGBPS3	229	217	142	0	0								DEODAR	0
GONDAL	208		121	103	110	110							DHOKD	0
JAMNGR	208	211	124	68	67				18	18			HALVAD	0
KARMSD	222	221	131	42	47	46			28	18	27		JAMNGR	0
KANGSY	206	206							104	109	110		KLTPS	0
KIM	215	216						63	69	68	72	98	KPDWJ	0
LALPAR	207	207							92	91			MOTIPN	0
MORBI	205								113	70	107	115	NKHTRN	0
RAJKOT	212	212	124	60	61				103	103			NNKH	0
RANSAN	221	221	131	131	122	122	100						OTHA	0
SHAPUR	212	212	124	40	42				32	32	33		RANSN	0
SIKKA	213	212	126	26	37								SGHAD	0
TIMBDI	212	214	125	27	26	25			44	47	36		STCOM	-70
VARTEJ	218								72	73	74		THARAD	0
VAPI	215	212							67	117	118	0	VISVD	0
VSVDR	214	215							28	27	25		VONDH	-1
													VRMGM	0

UGVCL LINES FLOW

DEH- SOJA-1&2	→ 6	→ 8
VAD - NICL/PRNPG	← 337	← 167
CHOR- VAD DC	← 37	← 38
KAN- SOJA	→ 118	
VELU- VADAVI	→ 397	
BHACH- VAD DC	→ 233	← 231
DEH- WTP-1&2	← 262	← 263
PR(TP)- PR(PG)	← 336	← 315
KNSR- CHRNK DC	← 160	← 160
VELODA- CHRNKA	← 18	← 16
VELODA- BANAS 1&2	→ 320	← 528
VELODA- BANAS- 3&4	← 493	← 487
KNSR- VELODA 1&3	← 329	← 74
CHRNK- JNGR DC	→ 131	→ 131
VELU- SANK DC	→ 137	→ 136
MEHS- VELU/SNKH	← 107	← 52
GANR - RNASN DC	→ 173	→ 176
KANSRI- PLNPUR DC	→ 152	→ 150
RAN - VAT DC	→ 38	→ 38
DHU- MMD	→ 54	

MGVCL LINES FLOW

ASOJ-SSP	← 447	
ASOJ-KSMB/WTP	→ 397	← 118
GPEC-KSOR	← 313	
VDRA-ASJ DC	→ 436	→ 408
VDRA-PRPG DC	→ 458	→ 454
KSOR-RAJG DC	← 370	← 277
VDRA-JAMB DC	→ 166	→ 166
VDRA-VYNK DC	→ 140	→ 144
WTPS-GODH	→ 189	
ASOJ-CHDR DC	→ 132	→ 132
ASOJ-JMB DC	→ 146	→ 147
ASOJ-VYNK	← 5	
JAMB-DGB2DC	← 11	← 10
KSOR-KRM DC	→ 174	→ 173
DGB-KMSD DC	→ 3	→ 3
KSOR- GVSD DC	→ 87	→ 87
ASOJ-FERDC	→ 34	→ 34
KARM-NADIAD	→ 92	

PGVCL LINES FLOW

ASOJ-CHOR DC	→ 180	→ 160
KSOR-CHOR	→ 141	
CHOR-HDLA/MNSR	→ 128	← 68
HDLA - JETPUR	→ 32	
JETP-AMRL	→ 8	
AMRL-CHOR	← 160	
ADNI-VRSN DC	→ 58	→ 68
ADNI-SAMI DC	→ 104	→ 104
ADNI-MANSAR	→ 261	
VRSN-HDLA	→ 511	
KLVD-EPGL DC	← 282	← 282
CGPL-BHACH 1&2	→ 612	← 0
CGPL-BHACH 3&4	→ 509	→ 510
CGPL-JETP	→ 494	→ 491
BHACH-MNSR/CHOR	→ 489	→ 324
VRSN-BHACH DC	← 463	← 461
TAPR-VRSN DC	← 343	← 346
ADNI-TAPDC	→ 117	→ 116
SHIV-TAPR/PS3	← 135	← 106
ADNI-NNKH DC	→ 203	→ 200
AMRL-SKDL DC	→ 0	→ 4
GOND-MTODJETP	← 34	← 216
HDLA-RJKT DC	→ 163	→ 162
HDLA-RJKT-3	→ 106	
SIKA-MPNELI 1&2	← 4	← 5
KNGS-JETP/HDLA	→ 34	← 110
TAPR-VONDH1&2	→ 151	→ 150
BOTD-DHSA/AMRL	→ 37	→ 5
SART-VGHSYA	→ 37	
RAJ-VIK/VAJ	→ 61	→ 60
JASD- GDL/PLD	← 76	→ 33
JMNGR-J'LIA	← 18	
SIKKA - BHATIA	← 26	← 25

DGVCL LINES FLOW

UKAI-KOS DC	→ 95	→ 75
UKAI-VAV	→ 162	
VAV-KSMB	← 85	
VAV-DASTAN	← 488	
DAS-MGRW DC	← 42	← 42
JHA-DEHGM DC	← 258	← 258
SUGN/UNSG-PIR	← 31	← 32
SUGN-VAPI/JHA	← 48	← 52
JHA-CLPI/VAV	← 120	← 69
SSP-DHULE	← 242	← 248
SSP-RAJ	← 108	← 112
KAPP-MUML DC	← 75	← 75
DSTN-KAPP DC	← 224	← 228
KSMB- GSG-1 & 2	→ 78	← 78
HALDARWA-DAHEJ	→ 124	→ 122
WAG-HAL/DHEJ	← 174	→ 65
UTRN-MOT/VAV	← 24	← 38
KSMB-KIM	→ 0	→ 191 → 108
MOTA-VAV DC	← 20	← 21
UKAI-MOTA DC	→ 143	→ 144
JHA-HAL 3/JAGH	→ 99	→ 35
JHA-HALDC	→ 179	→ 181
NVSR-DASDC	← 135	← 135
VAPI- MUML DC	→ 189	→ 186
SLPP-JAGh DC	→ 124	→ 125
BHI-ATUL/VAPI	→ 2	→ 27
SAC-GSG/ICHH	← 123	← 110
GSG-ICHH	→ 25	
KAW-ICHAPUR	→ 194	→ 191
SUVA-GVSD	← 120	
KIM-SUGEN DC	← 58	← 62
HAL-SUVA	→ 135	
ATUL - NAVSAR	← 56	
ATUL - R1/R2	→ 5	→ 0

WR LINES FLOW (UGVCL)

DEH- JHANOR 1 & 2	→ 258	→ 258
DEH- NAGDA 1 & 2	← 225	← 217

Structure for Scheduling Operational Workflow

Stakeholders
GSECL
IPP/ CPP
Wind/ Solar
WRLDC/ WRPC
IEX/ PXI
Others (Bio, WtE etc.)
State Discom
Pvt Discom
SEZ (GIFT, TEL etc.)

Status mail sent to the user

Acknowledgement mail sent to the user

Data Process @ SLDC

Data Recd. @ SLDC

Data Entry

Module

Internet

Web

SLDC Web

User

Appropriate reliability – No major outage in last 10 year

For external entity – API Integrations

USER can submit DC & view information regarding Entitlement & Scheule block wise report through web based authorized access.

Benefits	Features
✓ Instant Response with Acknowledgement ✓ Reduced Correspondence and Efficient utilization of resources ✓ Reliable & Secure ✓ Less chances of Error ✓ Less human intervention	✓ Better Integration with other modules ✓ Accessing data base & reports ✓ Online access for discrepancy solution ✓ Optimize time of cycling/ iteration ✓ Operate in any mode of browser/ mobile ✓ All process in auto mode on based of logics

Scheduling Cycle – Operates in real-time & post facto

○ **Day ahead Scheduling (D - 1)** ○ **Real time Scheduling (every 15-minute RTC)**	• Declared Capacity from all the generators. Viz. GSECL, IPP, UMPP, RE etc. • Entitlement to all Discom • Requestion by Discom/ Open access consumer • Schedule to all Generators & Discoms & Bilateral Power
○ **Post facto scheduling /Implemented schedule (15 Days)**	• Rectification of discrepancies represented by entities in day-to-day scheduling.
○ **State Energy Accounts (Monthly basis)**	• 7th - 1st Provisional • 15th - 2nd Provisional • 25th – Final
○ **State Energy Accounts**	• Availability/Entitlement for SGS • Scheduled/Injection Energy for SGS, CPPs, Hydro & Renewables. • Inter/Intra State Bilateral/Collective Exchanges

- Each generator/scheduling unit is assigned specific variable cost (as per the merit order prepared by GUVNL/DISCOMs)
- **Scheduling done from Cheapest to costliest.**
- **Technical minimum of 'ON-BAR' generators is ensured.**
- In case of local network constraints, rule can be set accordingly.

Open Access Time Line Flow & thereof

Inter-State Power Market

Intra-State contract in lines with GNA for taking power at entity periphery using State grid, for all entity availing GNA

> 7 Years

Nodal Agency CTU

General Network Access (GNA)

1 Block to 11 Month

Nodal Agency NLDC/ NOAR (National Open Access Registry)

Temporary General Network Access (T-GNA)

STOA Application in 2025	
Received	3805
Approved	3764
Rejected	41

Products in the Short-Term Market

- **Advance**
- **Exigency**
- **Collective (Term Ahead/ Day Ahead/ Real-time Market)**

Nodal Agency NLDC/ RLDC/ NOAR (National Open Access Registry)

Intra-State Power Market

> 12 Years

Nodal Agency STU

Long Term

3 Months - 3 Years

Nodal Agency STU

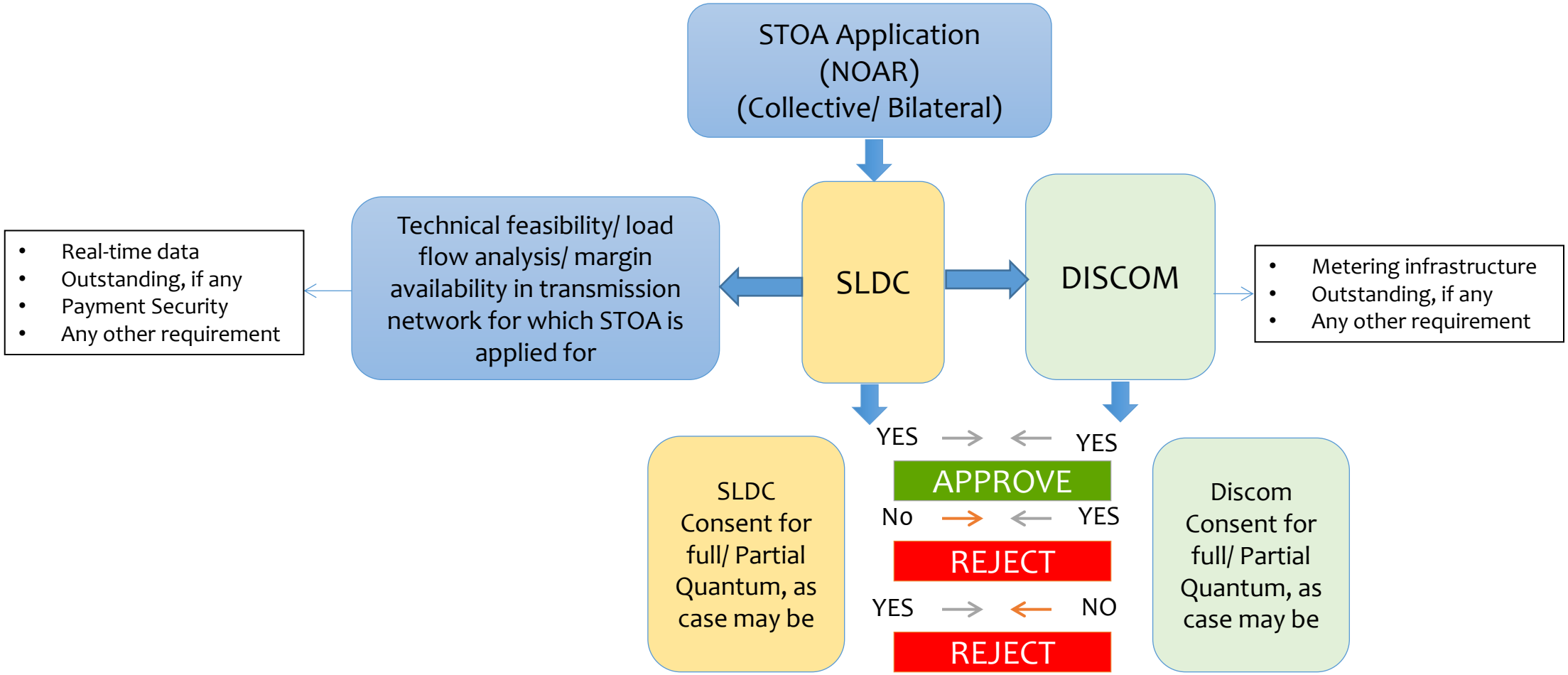
Medium Term

1 month

Nodal Agency SLDC

Short Term

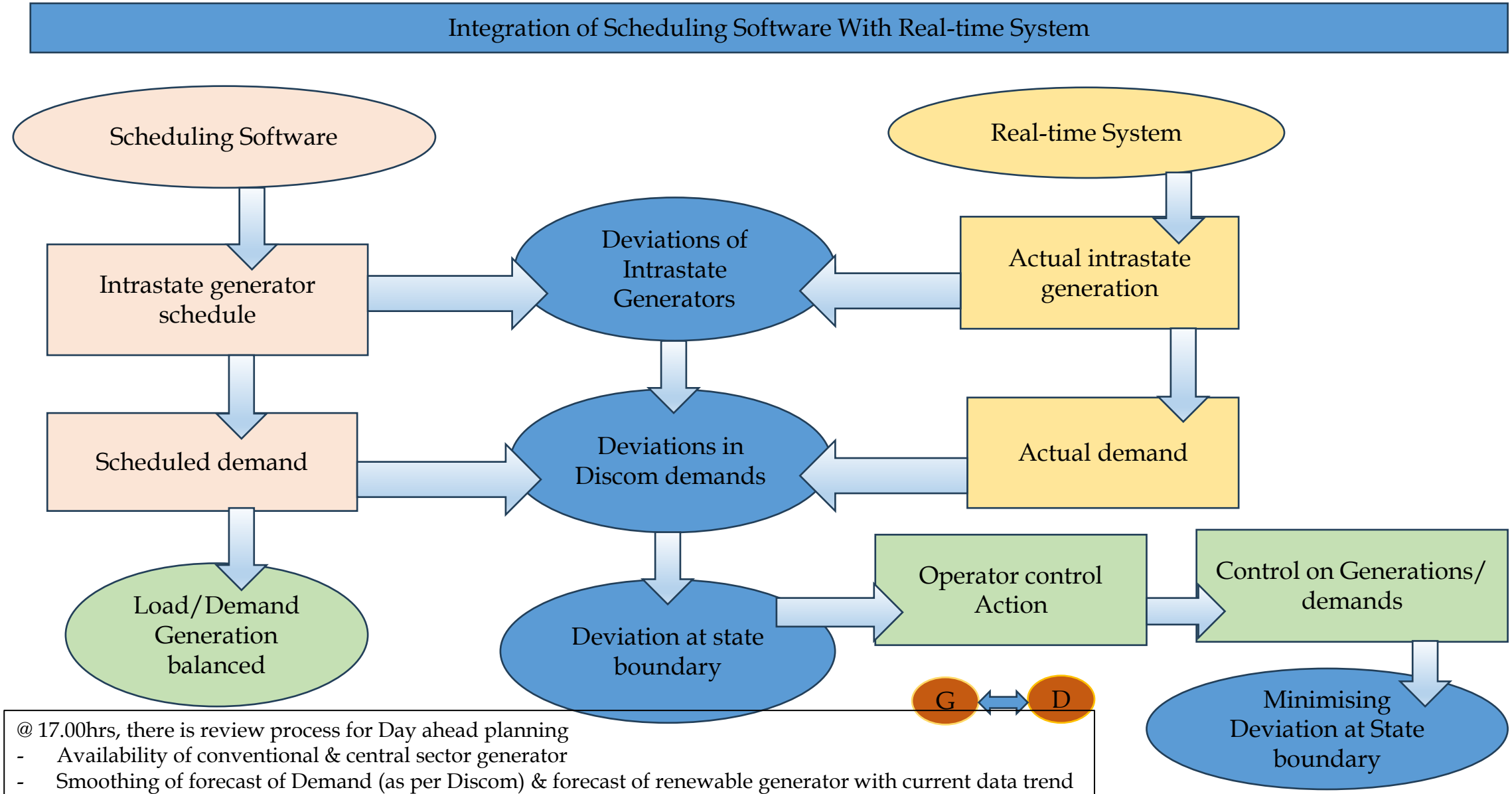
Short Term Open Access (STOA) Procedure



Processing STOA Applications at SLDC Level

- Indigenous software developed aligned with NOAR through API Integration
- Online consent mechanism for STU & Discom

Operational Process in Real-time



@ 17.00hrs, there is review process for Day ahead planning

- Availability of conventional & central sector generator
- Smoothing of forecast of Demand (as per Discom) & forecast of renewable generator with current data trend
- Purchase/ sale of power through bilateral/ exchange (GUVNL & other stakeholders)

EASS Software- Energy Accounting Practice

Data files of all ABT meters are being collected

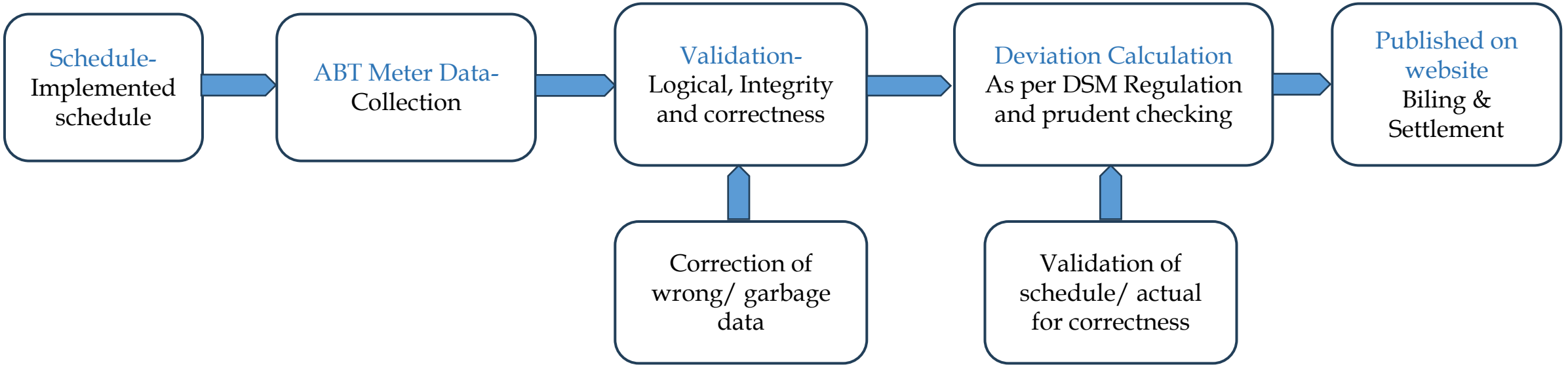
Block wise ABT meter energy data checking block to block for 96 Blocks * 7 Days through pair validation process.

Energy data are verified and validated.

SLDC-Gujarat follows zero balancing principle for preparing UI/DSM account for Pool Members and WRLDC.

Zero Balancing settlement is Block to Block and computed through high end equipment and solution availed from M/S Infosys Ltd.

USER can view information regarding SEM data and block wise UI report through web based authorized access.



The DSM Process bridges physical grid operations with financial accountability
Ensuring stability through block-wise data reconciliation

Energy Account - Issuing timely

GETCO

Energy Accounts Prepared, Published & maintained at SLDC:

- UI / DSM Pool Account –weekly basis
- REC (Reactive) Pool Account - weekly basis
- State Transmission Loss –Monthly basis
- RTDA account - Monthly
- Wind Energy Certificate - Monthly
- Security Constrain Economic Despatch (SCED) - Monthly
- Congestion Charges Pool Account – As & when
- Ancillary & DSM Pool Deficit Account – As & When

Pool Member
Discom -13
GSECL -17
IPP -14
CPP -25
Other (Bio, WtE) – 9
Renewable -1
Western Region -1

- All inter-State account issued considering Gujarat as a one entity
- SLDC derive procedure for back-to-back settlement of this account amongst intra-State entities…
- SEA committee for account approval
- External auditor for each account

Key Activity

- Meter Data Collection, processing & validation
- STL calculation and certification
- Interstate UI/DSM & Reactive Account preparation, validation, verification & publication
- Wind Energy Certification for generators as per GEDA certification w.r.t PS reading
- Energy Injection Report for REC Certification
- Interstate RTDA accounts preparation & verification and Provisional Intrastate RTDA accounts

SCADA and IT Department Integration

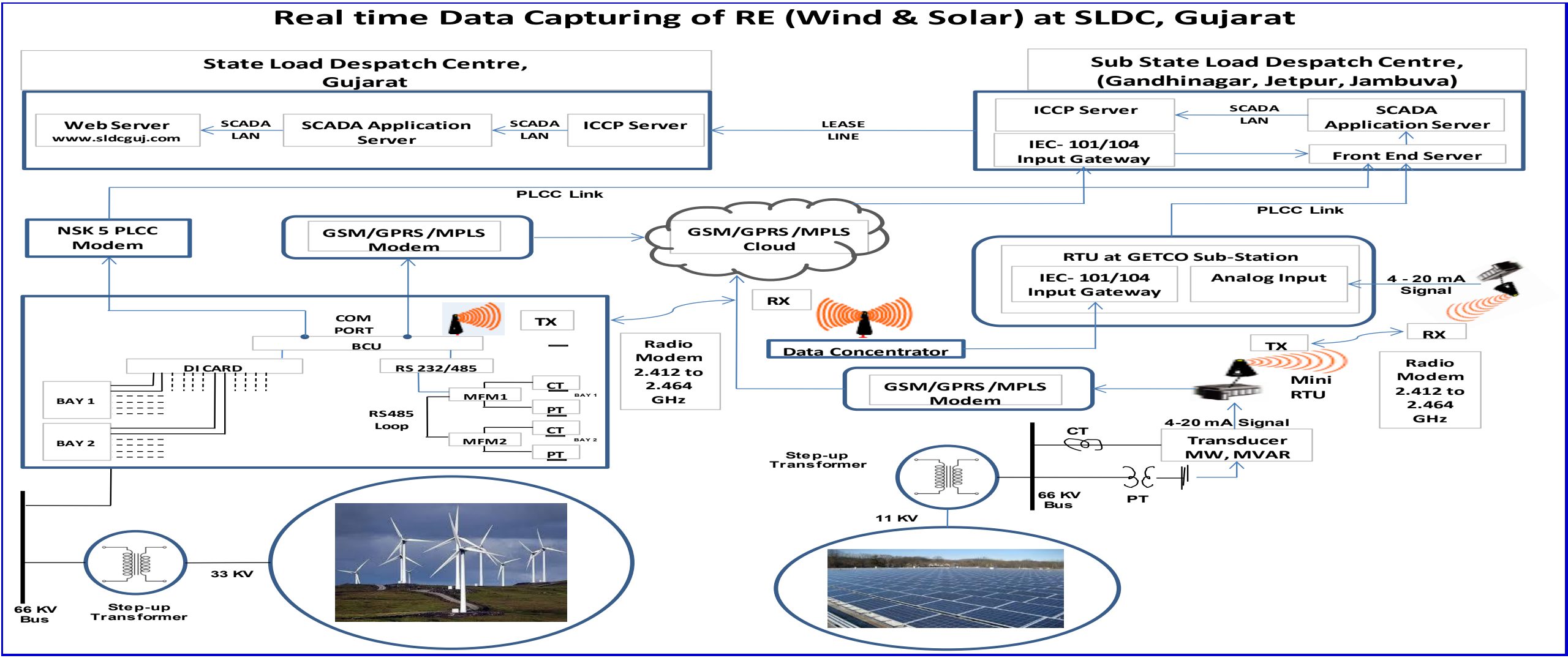
- Supervisory Control & Data Acquisition System (SCADA) with Energy Management System(EMS)
- Wide Area Monitoring System (WAMS Phase I & Phase II)
- Automatic Demand Management system (ADMS)
- Renewable Energy Management Centre (REMC) system
- Energy Accounting & Scheduling system (EASS)
- IT infrastructure and Cyber Security

IT Infrastructure:

- SSL Certification for SLDC website
- Firewall Cyber Security for internal LAN and WAN
- Secure redundant LAN with OFC network
- SMS Gateway for conveying important information's to competent Authority.
- Video Conference facility at SLDC, backup - SLDC and Sub-SLDC
- Integration between WAMS and SCADA and URTDSM

Renewables - Real time Data Integration

- 100 % real time data capture through mix technology of radio links, GSM/GPRS, lease line, PLCC, Optical Fiber etc. **(Now all network converted to PLCC, lease line & mainly Fiber Optic)**
- Monitoring of each RE Pooling Station Generation data



Wide Area Monitoring Systems (WAMS)- Implemented

WAMS System Utilization

Visualization

- Magnitude, angle of all three voltage/current phasor
- Sequence components of Voltage/current phasor
- Rate of change of frequency
- Angular separation between pair of nodes
- Voltage recovery post fault clearance

Analysis

- Grid events within region
- Type of fault viz. LG, LL, LLG, LLLG
- Time of the fault & sequence of events
- Fault clearance time
- Summary of element on fault
- Protection operation/mal-operation
- 1-phase auto reclosing in EHV transmission line
- Performance of System Protection Scheme

Detection of ….

- Ambient & automatic event detection
- Time, duration, amplitude, frequency of oscillations
- Type of oscillation
- Nature of oscillation viz-damped or un-damped
- Modes present, their amplitude and damping factor

Total PMUs Location: 87 Location

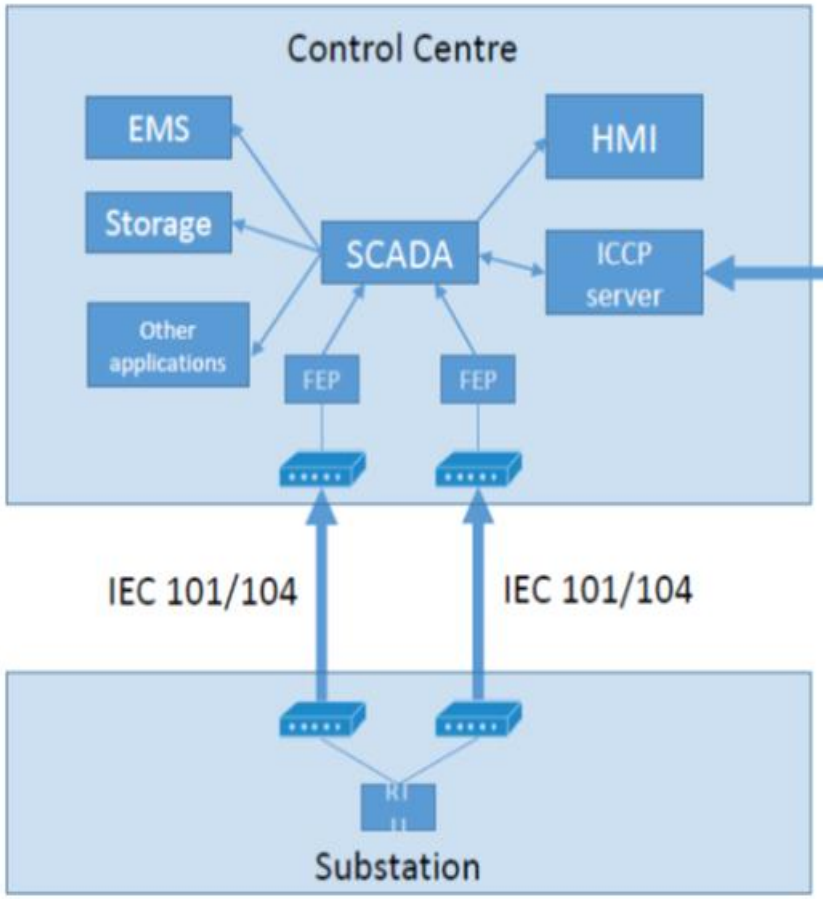
Total PMUs: 343 Nos

Indirectly reporting (From WRLDC PDC): 46 Nos

IIT Bombay develop analytics:

- Enhancing Situational Awareness
- Forensic analysis of faults/grid incidents
- Analysis of oscillations in the power system

Real-time Data Capturing & Management of Power System



Real-time Data Integration & Monitoring

- Real-time data capturing of generator, transmission & related elements
- Renewable generation data fetching through Fiber Optic Cable
- More than 1400 Nos. of Remote Terminal Unit (RTU) for Generators including Renewables, More than 350 Nos. RTU of transmission
- Digital Points: 47279 & Analog Points: 71024
- Analog data refresh rate : 8 – 10 secs
- 4 Nos of CII (Critical information Infrastructure): EASS, SCADA & URTDSM

- Monitoring real time data of generation, active/ reactive power & related data (Status of Isolator, Circuit breaker, bus etc.)
- Monitoring of available margin of running machines.

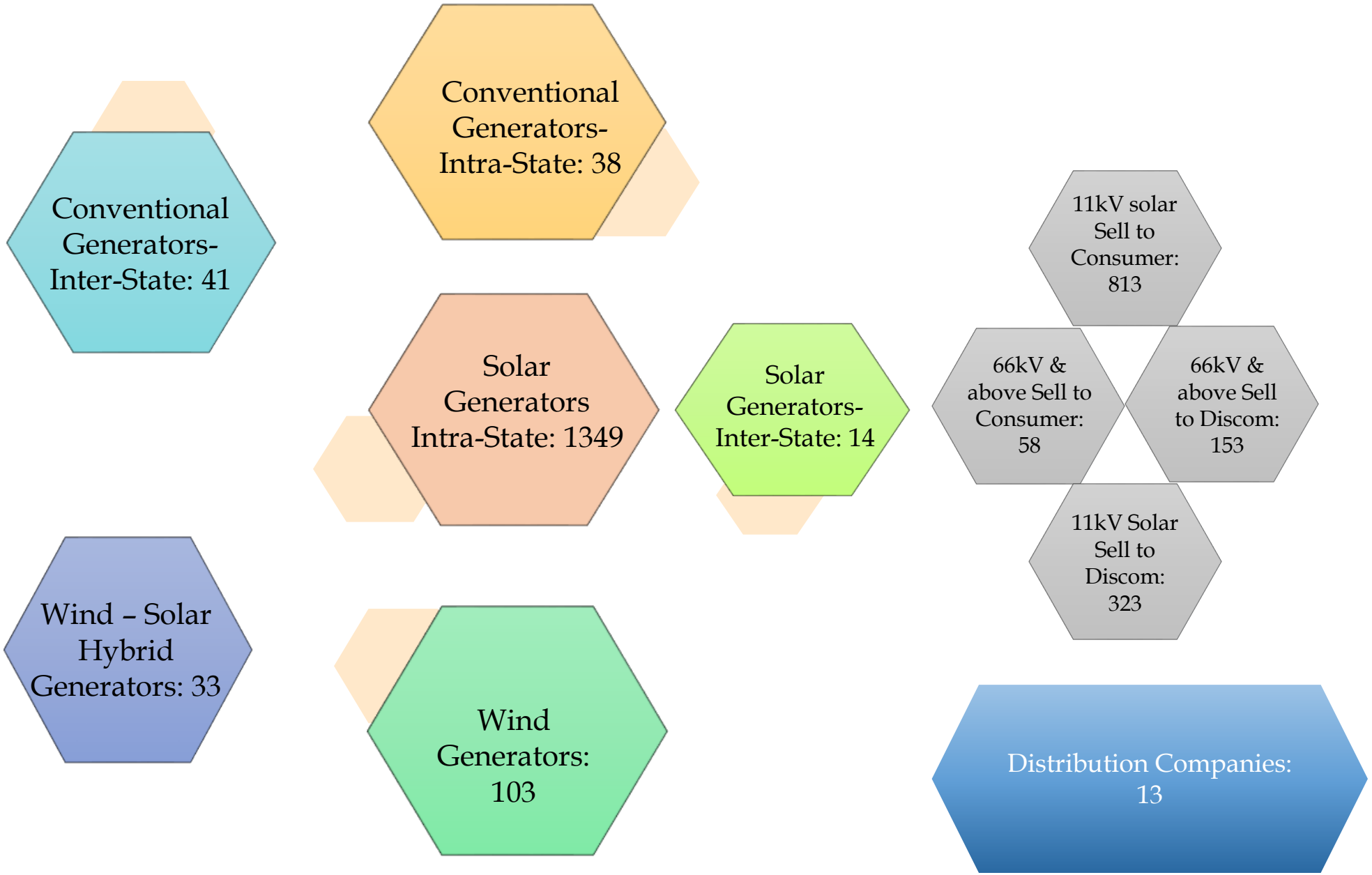
Real Time Grid Visualization strengthening

- Upgraded SCADA system with EMS
- Phasor Measurement Unit (PMU) / Wide Area Monitoring System (WAMs): 87 Location & 343 Nos of PMUs Data set & 46 Nos. indirect reporting from WRLDC
- 3 Nos. Data Analytics Developed:
  1) Online oscillation mode identification
  2) State Estimator,
  3) Voltage instability early warning scheme

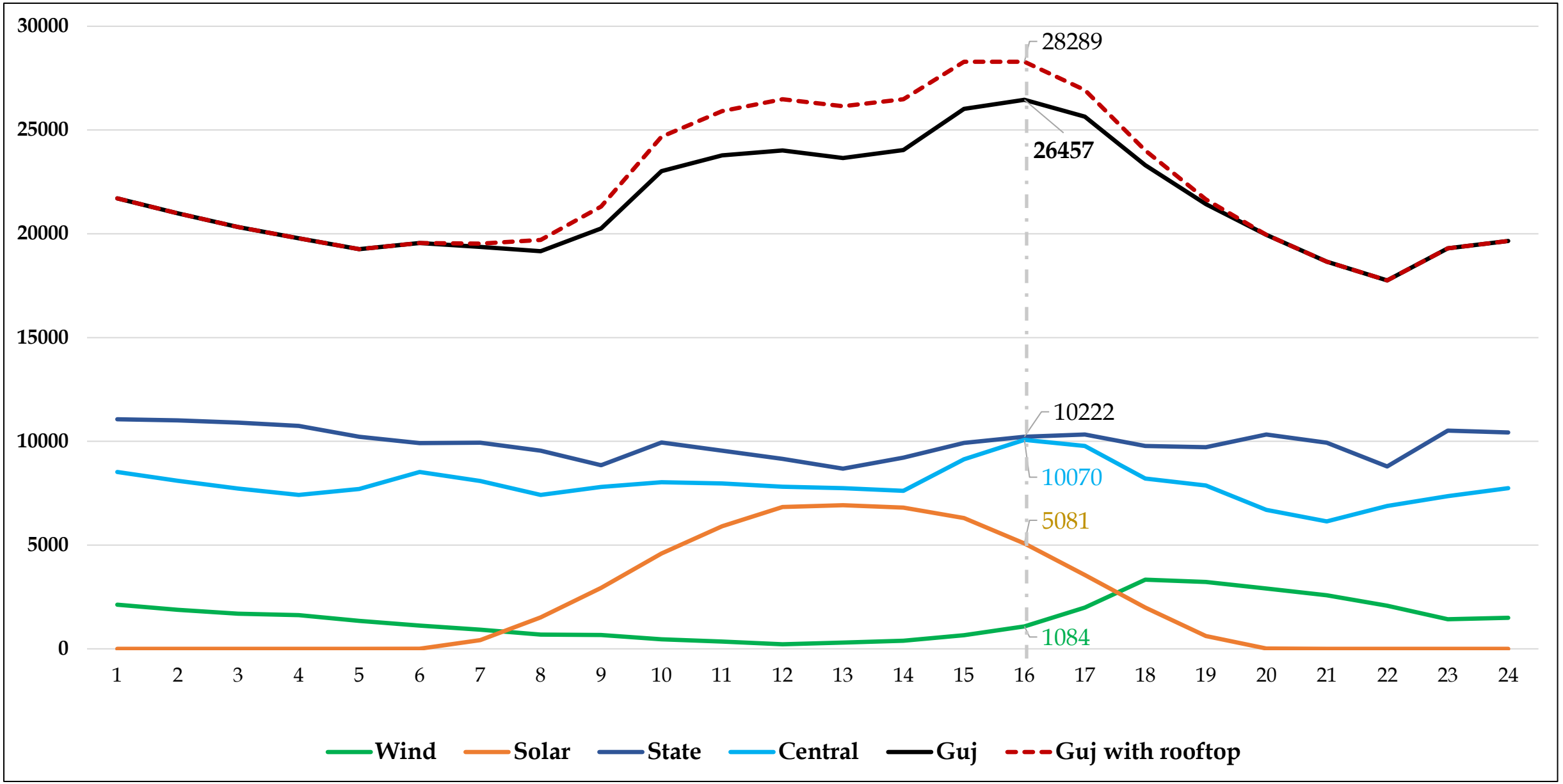
Scheduling & Energy Accounting & Open Access

- Registration & Scheduling of 813Nos (11kV) and 58Nos (66kV & above) RE PS in 2026
- Open Access Application received: 3691, Approved: 3660 & Rejected: 31 for FY 2025-26
- More than 6000 ABT Meter: receiving 15-minute data set from each stakeholders
- Prepare, Publish & Maintaining Deviation, Reactive energy, Congestion, Security constrain, Regional Transmission Deviation account
- More than 2600 Wind energy certification, More than 1400 solar energy certification

Scheduling, Accounting & Operational Control



Achieved ever highest Demand



Future Project Planning

"New Energy Accounting & Scheduling Software" with Microservices based latest technology on DC (DATA CENTER) & DR (Disaster Recovery) site - 2027
Establishment of Security Operation Center (SOC) Establishment of Network Operation center (NOC)
Establishment of Data center architecture 4.0 setup

Revamping of "Automatic Demand Management scheme"
Islanding scheme for Adani & Sikka Power station
Establishment of SCADA Laboratory at SLDC For Simulation, Testing & Training
Wide Area Monitoring (WAMs) Analytics – with IIT Bombay for Gujarat Grid security Applications
ADEPT (Assisted Energy Portfolio Optimization for Renewable Rich Energy Grid Management) Project with IIT-Gandhinagar with AI/ML technology for Wind Generation forecasting & Load Forecasting
Replacement of Existing SCADA (Supervisory Control and Data Acquisition) / EMS (Energy Management Software) under ULDC (Unified Load Dispatch & Communication System) of Western Region (WR) with latest AI/ML based technology
Resource Adequacy Software by Stelar
Inertia Modulation Application - with IIT Mumbai

Thank You !