

BSES Yamuna Power Limited

CII National Award for Excellence in Energy Management, 2022

Presenter :

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BYPL Profile



Key Parameters	As of Mar'20
Area	160 sq KM
Consumers	18.3 Lakhs
Customer Density	~11400 /Sq.KM
Peak Load	1662 MW
AT&C Losses	7.27 %
Reliability Index	99.96%
Annual Energy Sales	6683 MU
Average Consumption	3652 kWh/year/consumer
Circles	3
Division	14

- ❖ Joint venture of Reliance Infra and GoNCTD (51 : 49)
- ❖ Licensed in 2002 for distribution and retail supply of power in Central and East Delhi
- ❖ Supply to historic and high density old city areas of central and east Delhi

Successfully serving power requirements of people of Delhi for over a decade & half

Infrastructure details

Network Infrastructure Details

Particulars	Mar'22
66/33 kV Substations (Nos)	5
33/11 kV Substations (Nos)	34
Power Transformers (Nos)	168
Distribution Transformers (Nos)	3975
33 kV OH feeders (Nos)	9
33 kV UG feeders (Nos)	162
11 kV OH feeders (Nos)	0
11 kV UG feeders (Nos)	989
Line Length (km)	543
33 kV OH Line (km)	99
33 kV UG Cable (km)	1077
11 kV OH Line (km)	25
11 kV UG Cable (km)	2134
LT Line (OH, AB & UG) (km)	6160

Consumer category	Sanctioned Load (MW) as of Mar'22
Domestic	3291
Non-Domestic	1685
Industrial	237
Agriculture	0.4
Others	159

Particulars	Mar'22
Circles	3
Divisions/Districts	14
Zones	46

Overview – Sales & Demand

Parameter	Unit	FY 19-20	FY 20-21	FY 21-22
Energy purchased	MUs	7183	6374	8065
Annual Energy Sale	MUs	6658	5866	6171
Total Consumer	No.	1731136	1769976	1829093
Total Area	Sq.km	200	200	200
Consumer density	No./Sq. km	8656	8850	9145
Average Consumption	kWh/year/connection	3846	3314	3374

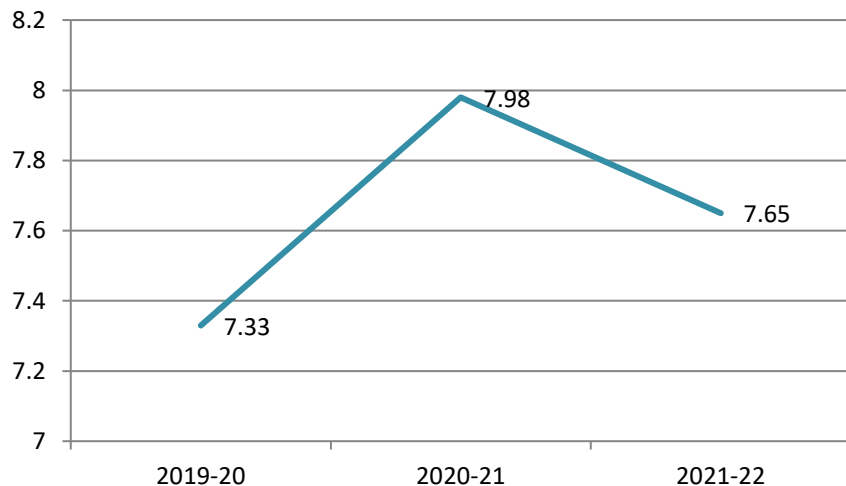
Parameter	Unit	FY 19-20	FY 20-21	FY 21-22
Maximum Peak Load	MW	1653	1439	1662
Minimum Load	MW	232	252	244
Average Load	MW	825	739	776

Category Wise Sales	Unit	FY 19-20	FY 20-21	FY 21-22
Domestic	MUs	4057	3963	3943
Commercial	MUs	1737	1221	1382
Agricultural	MUs	0.22	0.3	0.3
Industrial	MUs	373	318	326
Others	MUs	491	362	370

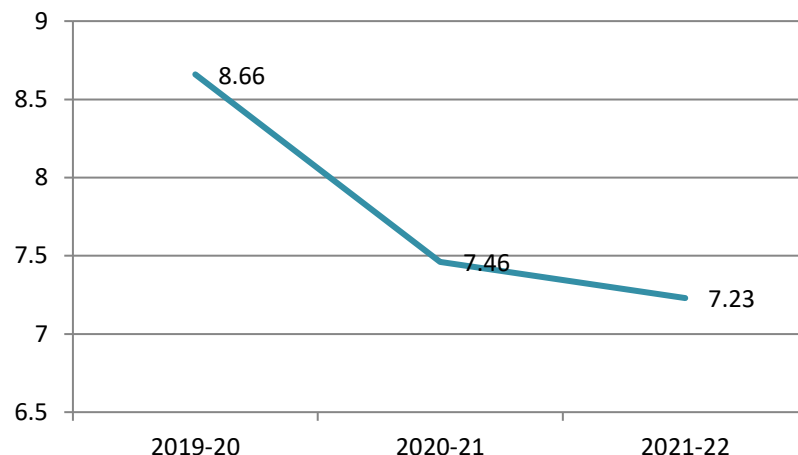
T&D, AT&C Losses in last 3 years (FY 2019-22)

- BYPL started with losses almost double the National Average in 2002; Highest amongst the Delhi discoms
- Currently operating at loss level of <8% ; nearly 12% below national average & comparable with other Delhi discoms

T&D Loss %



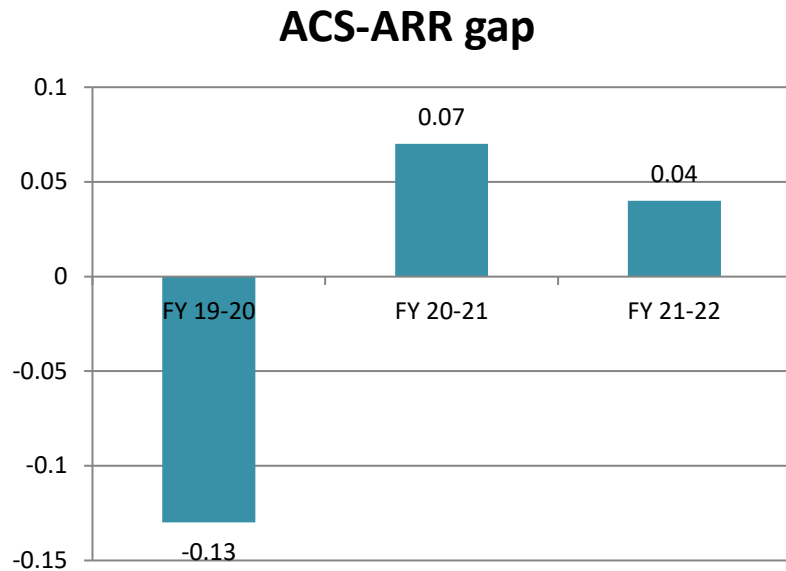
AT & C Loss %



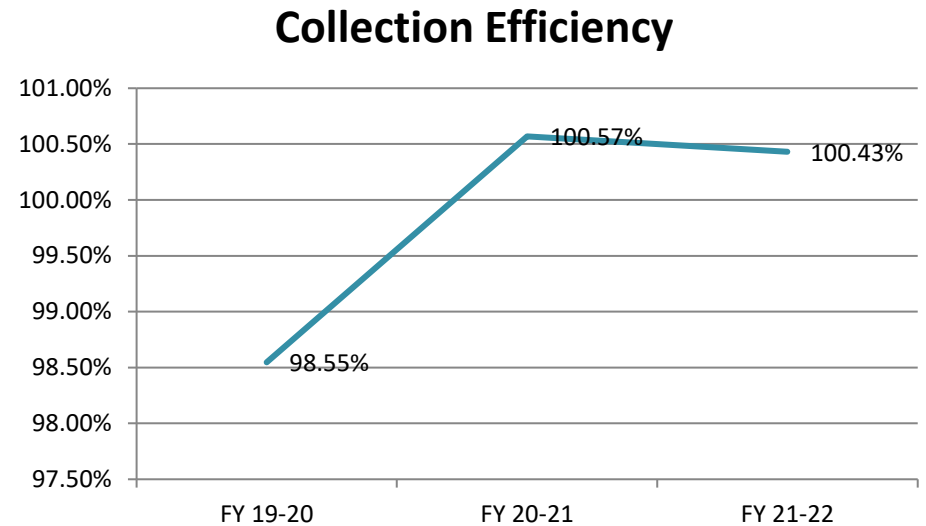
~58% reduction in losses post takeover against 20% rise in a decade up-to privatization

ACS – ARR Gap & Collection Efficiency in last 3 years (FY 2019-22)

ACS – ARR Gap : Rs/unit



Collection Efficiency



- *BYPL is endeavoring towards reducing the ACS-ARR gap.*
- *Regulatory Assets for nullifying gaps in ACS-ARR Gap*

Benchmarking

Discom	AT&C (%)	ACS-ARR Gap (Rs / Unit)	T&D (%)	SAIDI (Mins)	SAIFI (Nos)
Your Value- BYPL ACoS - ARR figures are indicating Revenue (surplus) - Gap	7.46%	0.64	7.98%	3.3	4.19
Other DISCOMS (near by) - 2 BRPL ACoS - ARR figures are indicating Revenue (surplus) - Gap	6.87%	1.27	7.17%	2.42	4.82
Other DISCOMS (near by) - 3 TPDDL	6.44%	0.85	7.15%	1.05	1.83

Operational Performance

Parameter	Unit	FY 19-20	FY 20-21	FY 21-22
Total no of interruptions	Nos	2730	2522	2018
Interruption Duration	Hrs	1948	1765	1512
Total Consumer	No.	1731136	1769963	1829093
SAIFI*	%	0.54	4.88	4.19
SAIDI*	Hrs	0.39	3.48	3.3
Reliability Index	%	99.96	99.96	99.96

Parameters	UoM	2019-20	2020-21	2021-22
T&D Losses		7.33	7.98	7.65
PAT-VII Baseline	%		-	9.3
Pat-VII Target	%	15.33	-	9.03
PAT-VII Achievement	%	9.31	-	-

- ***Sustained reliability Indices***
- ***Under PAT-II Cycle BYPL achieved massive reduction of 250%***
- ***SAIFI & SAIDI as per DERC norms***

DSM Projects : 19-20

S. No.	Title of Project	Year	Annual Electrical Saving (MWh)	Annual Electrical Cost Saving (Rs in million)	Investment Made (Rs in million)	Payback (Months)
1	Renewable Energy	2019-20	18262	134	0.2	0.02
2	UJALA	2019-20	4211	31	0.1	0.04
3	AC Replacement Scheme	2019-20	207	2	20	154.5
4	Consumer engagement programs on energy efficiency & conservation	2019-20	100000	734	0.2	0.004
5	Loss Reduction Activities	2019-20	144110	1058	911	10.3
Total			266790	1958	931	

DSM Projects : 20-21

S. No.	Title of Project	Year	Annual Electrical Saving (MWh)	Annual Electrical Cost Saving (in million)	Investment Made (in million)	Payback (Months)
1	Renewable Energy	2020-21	23420	158	0.3	0.02
2	UJALA	2020-21	49591	334	0.1	0.004
3	AC Replacement Scheme	2020-21	4018.4	27	1	0.5
4	Consumer engagement programs on energy efficiency & conservation	2020-21	300	2	0.1	0.593
5	Loss Reduction Activities	2020-21	16000	108	580	64.5

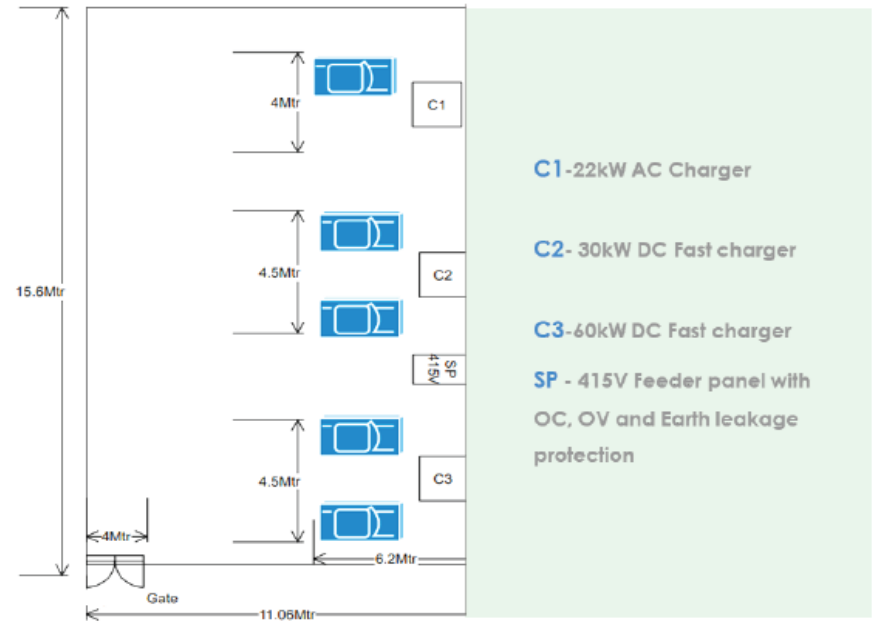
DSM Projects : 21-22

S. No.	Title of Project	Year	Annual Electrical Saving (MWh)	Annual Electrical Cost Saving (in million)	Investment Made (in million)	Payback (Months)
1	Renewable Energy	2021-22	26271	200	0.3	0.02
2	UJALA	2021-22	49591	378	0.1	0.003
3	AC Replacement Scheme	2021-22	1573	12	1	1.2
4	Consumer engagement programs on energy efficiency & conservation	2021-22	300	2	0.1	0.524
5	Loss Reduction Activities	2021-22	16000	122	630	61.9
Total			93735	715	632	

IT Initiatives taken

S.No	Initiatives	Amount Spent (In cr)	Impact on Discom	Impact on Consumer
1	IMPLEMENTATION OF SUPPLIER RELATIONSHIP MANAGEMENT -SRM IN SAP.	0.7	Faster, Effective & smooth vendor management	Uninterrupted & reliable power
2	IMPLEMENTATION OF GROUP NET METERING/VIRTUAL NET METERING (GNM/VNM)- IT PROJECTS.	0.4	Enhanced penetration of renewables	Option to go green
3	TESTING AND COMMISSIONING OF FRTU IN MOTORIZED RMU WITH INTEGRATION WORKS.	0.1	Quick repairs & less time consuming with reduced dependency	Uninterrupted & reliable power
4	IMPLEMENTATION OF SAP DISASTER RECOVERY CENTER (DR)	3.5	Data security	Uninterrupted & reliable power
5	IMPLEMENTATION OF FIREWALL	0.8	Data security	Uninterrupted & reliable power
6	IMPLEMENTATION OF B4/HANA PROJECT	3.9	Data security & ease access	Uninterrupted & reliable power
7	INSTALLATION OF FPI FOR FASTER FAULT IDENTIFICATION & POWER RESTORATION IN BYPL.	0.3	Faster supply restoration	Uninterrupted & reliable power

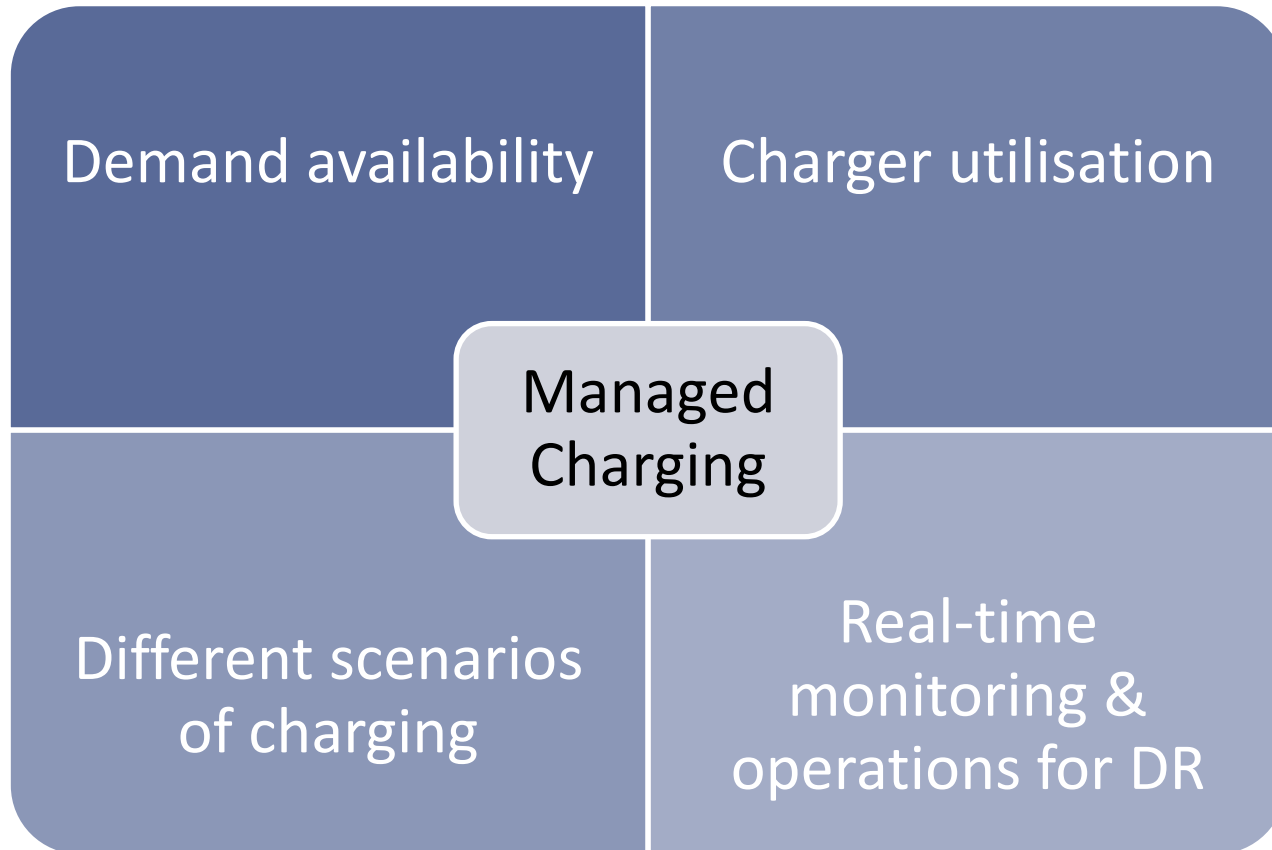
EV Managed Charging



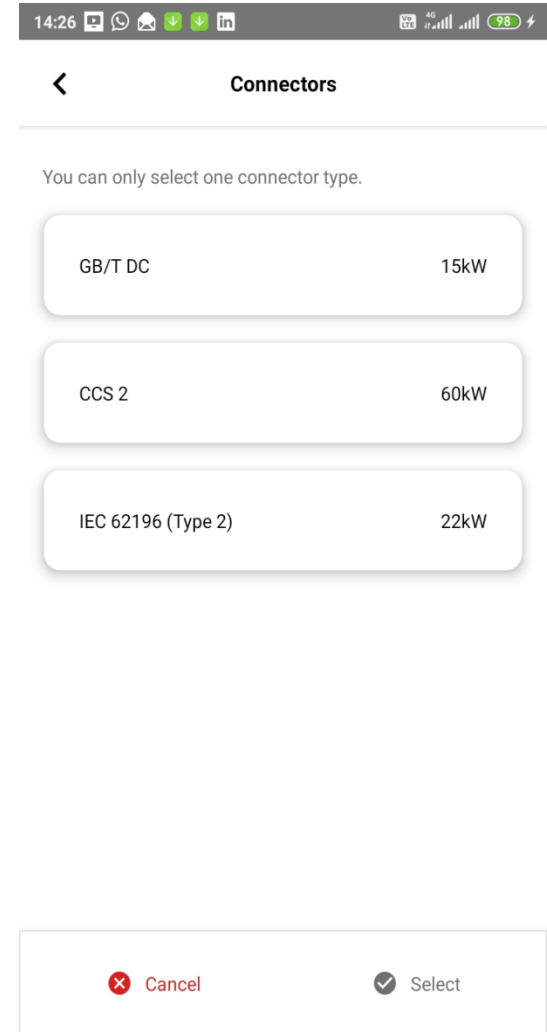
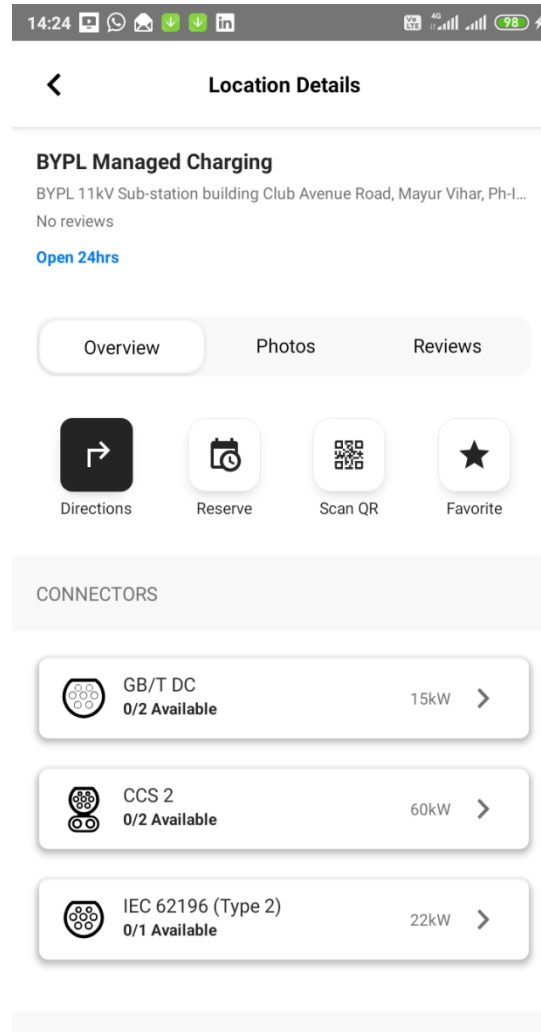
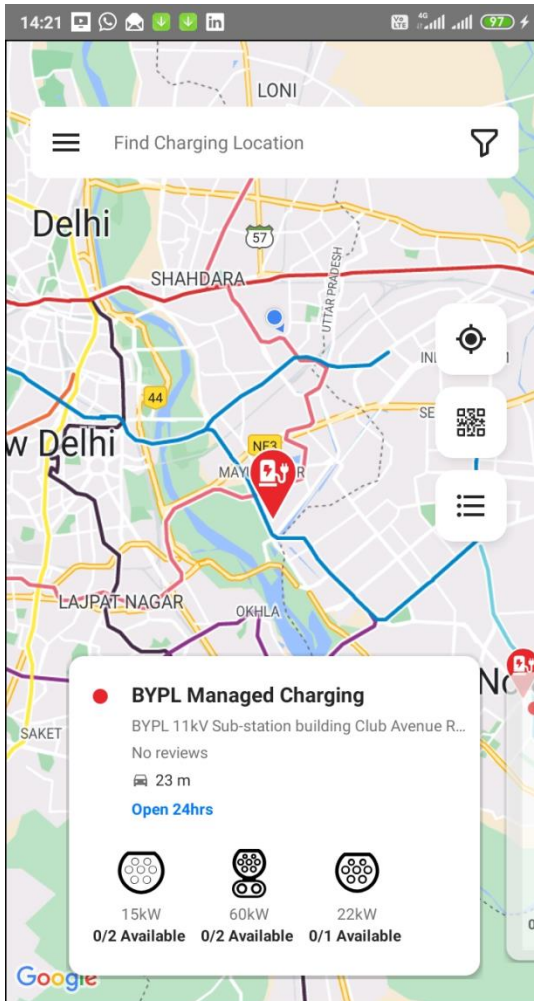
BYPL has developed India's first Smart Managed EV Charging at Mayur Vihar.

The Station has - 2x30 kW, 2x15 kW & 1x22 kW Chargers, all of which are Demand Response Compatible

EV managed Charging.....Contd



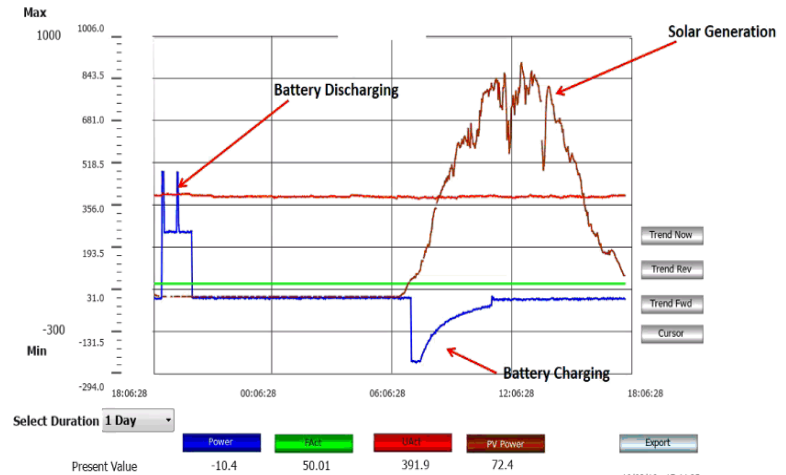
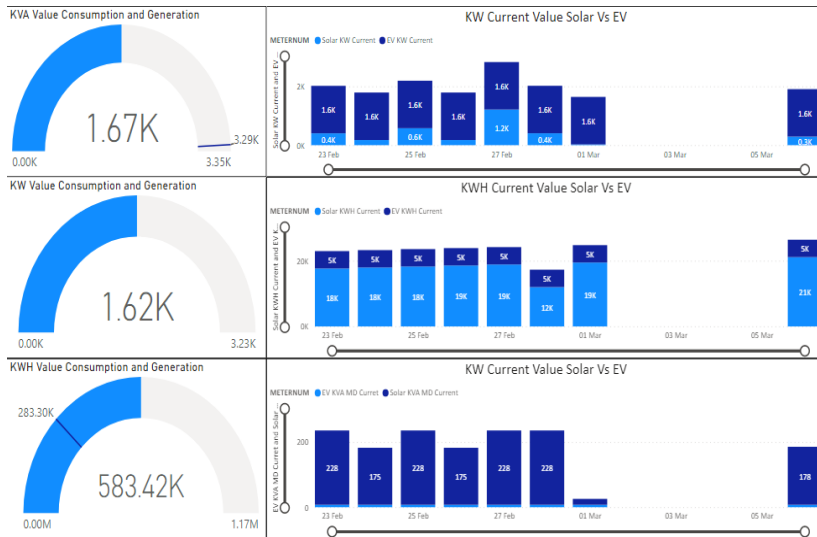
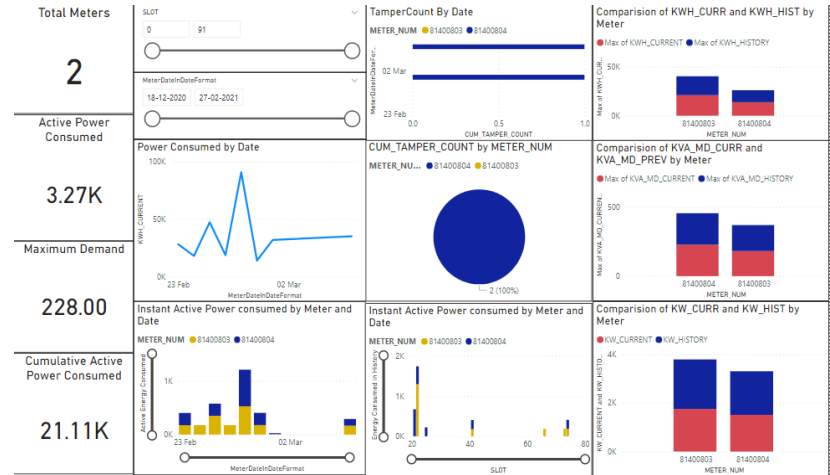
BSES App – EV Charging.....



Other Sustainable Initiatives



Energy Management Dashboard



Energy Management Dashboard

https://bypw1.bsesehi.com:7076/api/ESSData

POST https://bypw1.bsesehi.com:7076/api/ESSData

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "uid": "hub_1",
3   "timestamp": "2021-02-15 15:58:00",
4   "offset": "0",
5   "city": "M",
6   "data": {
7     "A",
8     "B",
9     "C",
10    "D"
11  }
12 }
```

Body Cookies Headers Test Results Status: 201 Created Time: 809 ms Size: 329 B Save Response

Pretty Raw Preview Visualize JSON

```
1
2 {"status": "Data Successfully Posted for uid = hub_1."}
3
```

https://bypw1.bsesehi.com:7076/api/ESSData/hub_1/command/1/commandStatus-success

POST https://bypw1.bsesehi.com:7076/api/ESSData/hub_1/command/1/commandStatus-success

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

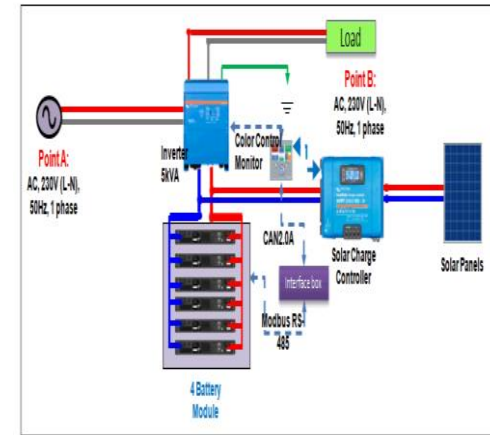
Query Params

KEY	VALUE	DESCRIPTION
uid	hub_1	
command	1	
commandStatus	success	

Body Cookies Headers Test Results Status: 200 OK Time: 691 ms Size: 434 B Save Response

Pretty Raw Preview Visualize JSON

```
1
2 {"status": "Command Status Successfully updated."}
3
```



RE Purchase & RPO Purchase

	Annual Energy purchased MU (2019-20)	% Share	Annual Energy purchased MU (2020-21)	% Share	Annual Energy purchased MU (2021-22)	% Share
Wind	0	0	53.05	0.83	132.8	5.5
Solar Photovoltaic (PV)	59.4	0.83%	142.19	2.23	301.6	2.4
Others	41.74	0.58%	93.24	0.46	44.8	0.82

RPO Targets	2019-20		2020-21		2021-22	
	Target given (%)	Achieved (%)	Target given (%)	Achieved (%)	Target given (%)	Achieved (%)
Solar	6.75%	0.89%	7.25%	2.5%	8.75	5.5
Non Solar	10.25%	0.63%	10.25%	2.57%	10.25	3.2

Monitoring

Frequency of Review of Performance & Consumption

- **Monthly review of Performance and Consumption** is being carried out by the energy Audit Cell on a monthly basis. A monthly report is prepared and presented to the management and divisions for review at various levels.
- **Energy Efficiency Projects:** For monitoring progress against energy efficiency projects , a mechanism as part of Annual Operating plan exists. Under AOP review meetings, progress against each project is discussed on a monthly basis.

Roles & Responsibilities of Energy Manager /DSM Cell

- Devising of new schemes for energy efficiency projects and monitoring progress
- Capacity building for personnel and recommendations
- Organization's Mandatory Energy Audit in accordance to stipulated norms from BEE
- Compliances and submissions for statutory and regulatory bodies as per requirements

Review Matrix:

S. No	Forum Name	Review Level	Scope	Participation
1	AOP Formulation Meeting	CEO, CFO	Operational Target setting along with identification of Strategic themes for every business, operation & support function	HoDs, Biz & Operational Support teams
2	AOP Review Meeting	CEO, CFO	Performance review : Target Vs actual performance (catch-up plan if reqd); need based project addition / scope modification	Divisional Level Participation (O&M, Biz & Support functions)
3	Project Based reviews ✓ Cost review ✓ Improvement / gains ✓ Statutory compliances	Head Biz / Head O&M along with respective department heads	Functional Performance	Departmental teams

Monitoring Contd.

CEO Cell along with Operational Excellence Team (OET) & Business Excellence Teams (BET) work in tandem for supporting the overall review framework

Sample reporting formats

SDO	Division Name	Sub-Cluster Code	Sub-Cluster Name	DT Function al Code	No Of DTs in Substati on	DT Capacity	DT Meter No	Monthl y DT Input (MU)	Monthl y DT Sale (MU)	Monthl y FL Input (MU)	Monthl y FL Sale (MU)	No Of DTs In Sub-Cluster	Monthl y Sub-Cluster Input (MU)	Monthl y Sub-Cluster Sale (MU)	Differen ce (MU)	Sub-Cluster Loss (%)
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Sr	Key Driver / Parameters	AOP Theme	UoM	FY20 AOP	Achieved till Aug'19	Remarks, if Any
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Monitoring Contd.

Sample Monitoring Dashboards

BYPL						
Financials - Revex/ Profitability (Rs Cr)						
Item	Span	AOP	Actual	Variance with AoP	Last yr.	YoY Variance
Revenue (Total)*	Feb'19	337	301	-10%	273	10%
	YTM	4970	4729	-5%	4493	5%
Opex	Feb'19	278	252	-9%	244	3%
	YTM	3830	3746	-2%	3680	2%
O&M Cost	Feb'19	60	54	-10%	49	10%
	YTM	627	651	4%	613	6%
Capex	Feb'19	44	26	-40%	44	-40%
	YTM	357	232	-35%	270	-14%
EBIDTA*	Feb'19	59	50	-16%	30	66%
	YTM	1140	983	-14%	813	21%
PAT	Feb'19	7	25	272%	7	272%
	YTM	64	112	75%	22	410%

*Excluding RA

Operational						
Item	Span	AOP	Actual	Variance from AoP	Last yr.	YoY Variance
Sales (MU)**	Feb'19	416	373	-10%	378	-1%
	YTM	6340	6147	-3%	6068	1%
BST (Rs/Unit)	YTM	4.55	4.56	0%	4.49	1.6%
T&D (%)**	Rolling	9.6%	9.1%	-0.5%	11.4%	-2.3%
AT&C (%) **	Rolling	9.8%	9.7%	-0.2%	11.9%	-2.2%
Overdue Debtors	YTM	199	264	33%	274	-4%
CWIP Reduction	YTM	104	126	21%	201	-37%

**Excluding Open Access

Reliability						
Item	Span	AOP	Actual	Variance with AoP	Last yr.	YoY Variance
No supply complaints	YTM	513712	587562	14%	604367	-3%

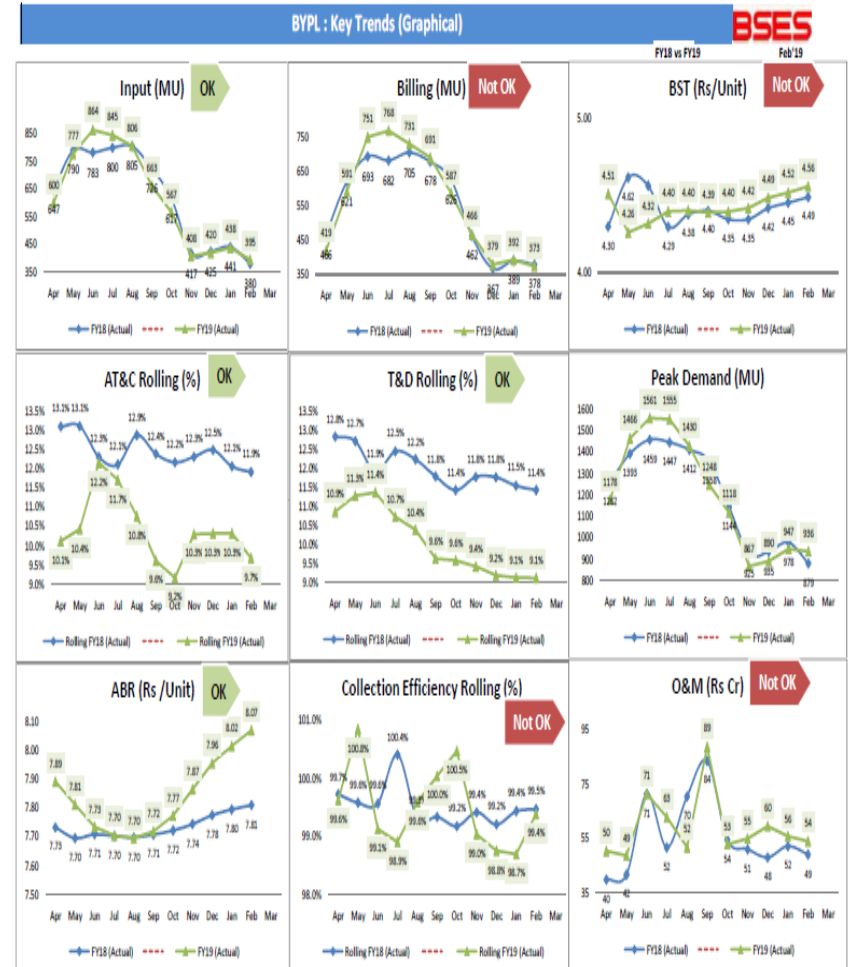
Notes

Loss Decrease from last year : 2.2%

Loss increase from monthly AOP target : 0.2%

Delta from yearly AOP target : 0.2%

New Consumers Added		
New Consumers Added (Nos.)	Feb'19	3,048
	YTM	68,177



Steps / efforts taken to create awareness in public for DSM

Initiatives	Impact on DISCOM	Impact on Consumer
Sanjha Prayas	<ul style="list-style-type: none"> • Conducted for door step resolution of consumer grievances. Also, • consumers are provided information of DSM, energy conservation 	<ul style="list-style-type: none"> • Increased awareness amongst consumers & especially kids
Pragati	<ul style="list-style-type: none"> • Focus on imparting information for safety, energy conservation & DSM through Flyers, quizzes etc. for increased awareness 	<ul style="list-style-type: none"> • Increased awareness amongst consumers & especially kids
Information on bill - Energy saving tips	Information published at monthly electricity bills along with information for safety, energy conservation etc. The bill is an integral part of document kept for record by consumers	Increased awareness amongst consumers & consumers have now started enquiring about techniques & tools available for energy conservation & DSM
Comparative analysis available on website for increased awareness on energy efficiency / conservation	Apart from energy efficiency & DSM, we also share information pertaining to consumption of electricity data of consumers for encouraging energy efficiency. Each individual can see its own data & analyse consumption	The shared information will inculcate habit of energy conservation & energy efficiency. The information will also encourage consumers to go for energy efficient appliances

Awareness Campaigns



BYPL organises Rallies, Campaigns & Nukkad Natak to propogate need & benefit of Energy Conservation.

- ✓ More than 2500 nos of Consumer Engagement Program conducted since 2016 to 2022

Steps / efforts taken to create awareness in public for DSM

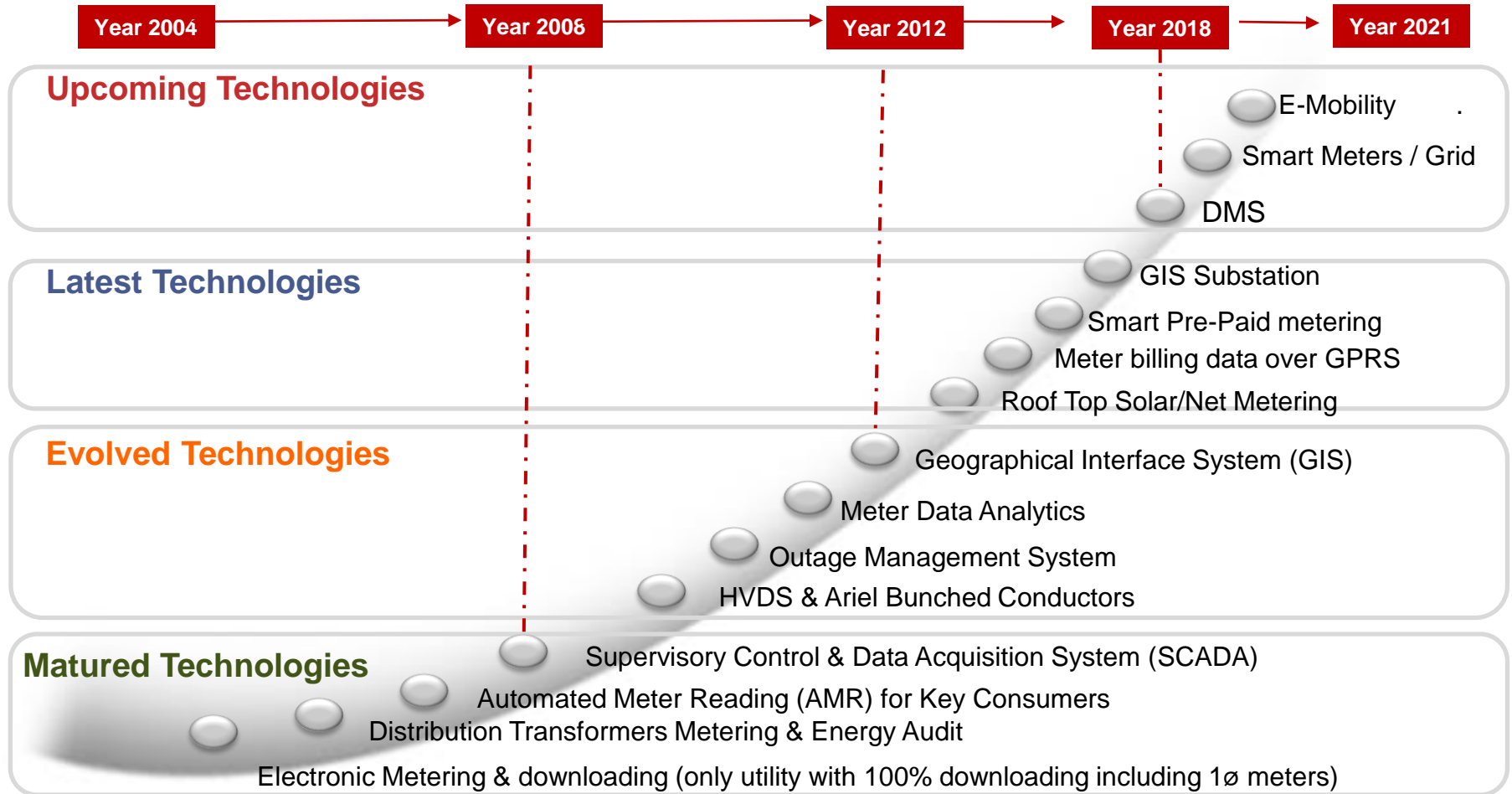
BEE Capacity building program for EE & DSM



We have already conducted Training of Trainers program for imparting training to around 170 senior employees to inculcate Energy efficiency awareness & strong sense to implement DSM measures & new initiatives. Internal trainings are organized on regular basis



Technology Journey



Technological innovation has been a regular feature

Rewards & Recognitions... *International & National Level*



+75 Awards & further counting...

Recent Awards	Details
CII – Excellent Energy Efficient Unit	Excellent Energy Efficient Unit Award-2019,2020,2021 National Energy leader - 2021
Smart City Awards	Best Smart Grid Project by Utility
India Smart Grid Forum	Best Smart Grid project
ICC	Innovation with Impact Awards – Green Energy
Golden Peacock Award	Innovative Product Service Energy Efficiency (2021)
IESA Industry Excellence Award	EV Infrastructure project of the year

Way forward to improve Energy Performance

- Strategic tie-ups with leading industry players for bringing in advanced technologies and upgrades
- Establish Energy Management System (EnMS) as an integral part of our Integrated Management System (IMS).
- Minimize wastages by involving various stakeholders to incorporate best practices and promote Energy efficient products for efficient Energy storage & promotion of green technologies.
- Ensure involvement of employees, Customers & public at large through awareness programs about Energy conservation.
- Implementing Policies & Regulations for enhanced proliferation of EVs & EV Charging Station.

BYPL is proud to serve the National Capital & look forward to a collaborative spirit to achieve the common objective in the interest of consumers of Delhi...

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Thank You

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