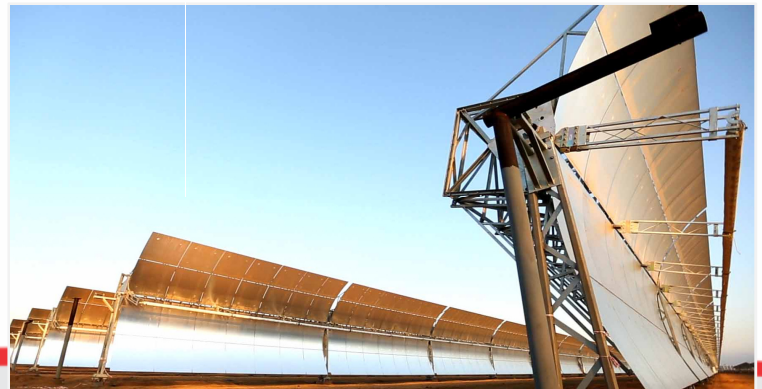
HIRA

GODAWARI GREEN ENERGY

SHAURYA ONE

Jitendra Solanki
General Manager



ant Layout

72.16°N, 27.60°E N

ER RESERVOIR

OLAR FIELD-1

EVAPORATION POND

SOLAR FIELD-2

SHAURYA ONE

OLAR FIELD-3

POWER BLOCK

SOLAR FIELD-4

132 KV SUBSTATION

Total l
450 a
- Solar
- Powe
- Othe

roject details

Particulars	Details

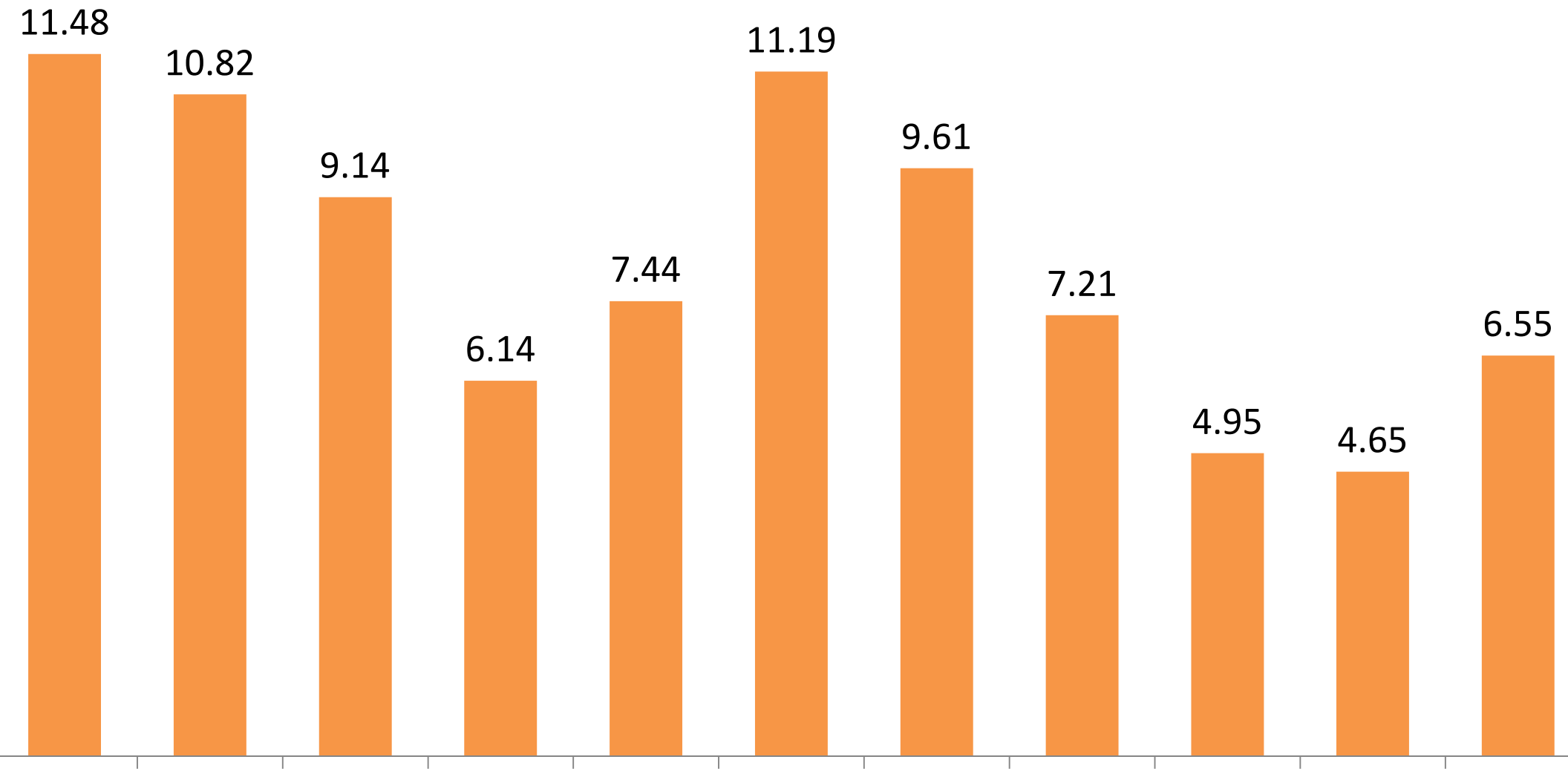
ant Specifications

	Specification of Equipments	Ma
ld	▪ Aperture area - 3,92,400 M^2 ▪ No. of Loops -120 ▪ Surface area – 2.4 M^2 ▪ Model - EN572-2:2004 ▪ Specular Reflectance > 94 % ▪ No. of Mirrors per Module – 28 ▪ Total no of Mirrors – 1,61,280 ▪ Emissivity < 0.1 ▪ Solar Transmittance > 0.96 ▪ Operating Temperature – 385 Deg C	**EURO** Germa
enerator		**FLABE** Germa
Generator		**SCHOT** Germa
nsformer		**AALBO** Denma
	▪ Rating – 75 MVA, 10.5 / 132 KV ▪ Heat rate – 2262.3 Kcal/kwh	**SIEME** Swede
er	▪ Type : Water Cooled ▪ Steam flow : Axial	**ABB** India
Tower	▪ Type : ID Counter Flow ▪ No. of Passes – 03 ▪ Approach – 07 Deg C ▪ Capacity – 11.5 M^3/hr	**SIEME** India **PAHAR** India **ION EX** India

...rformance at a Glance

- Power Generation (Million Units)

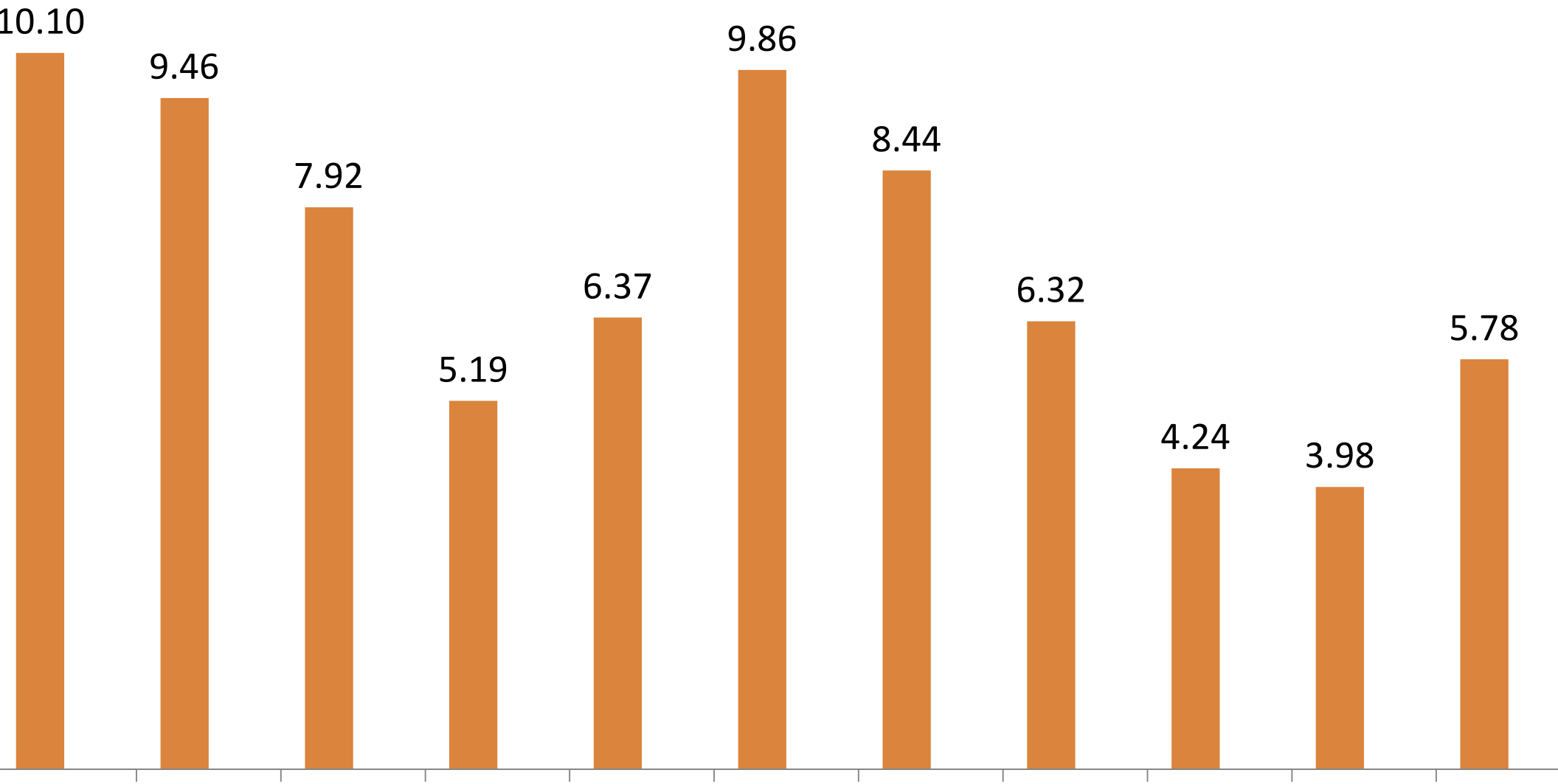
FY 2014-15 : 98



...rformance at a Glance

- Net Realization Export (Million Units)

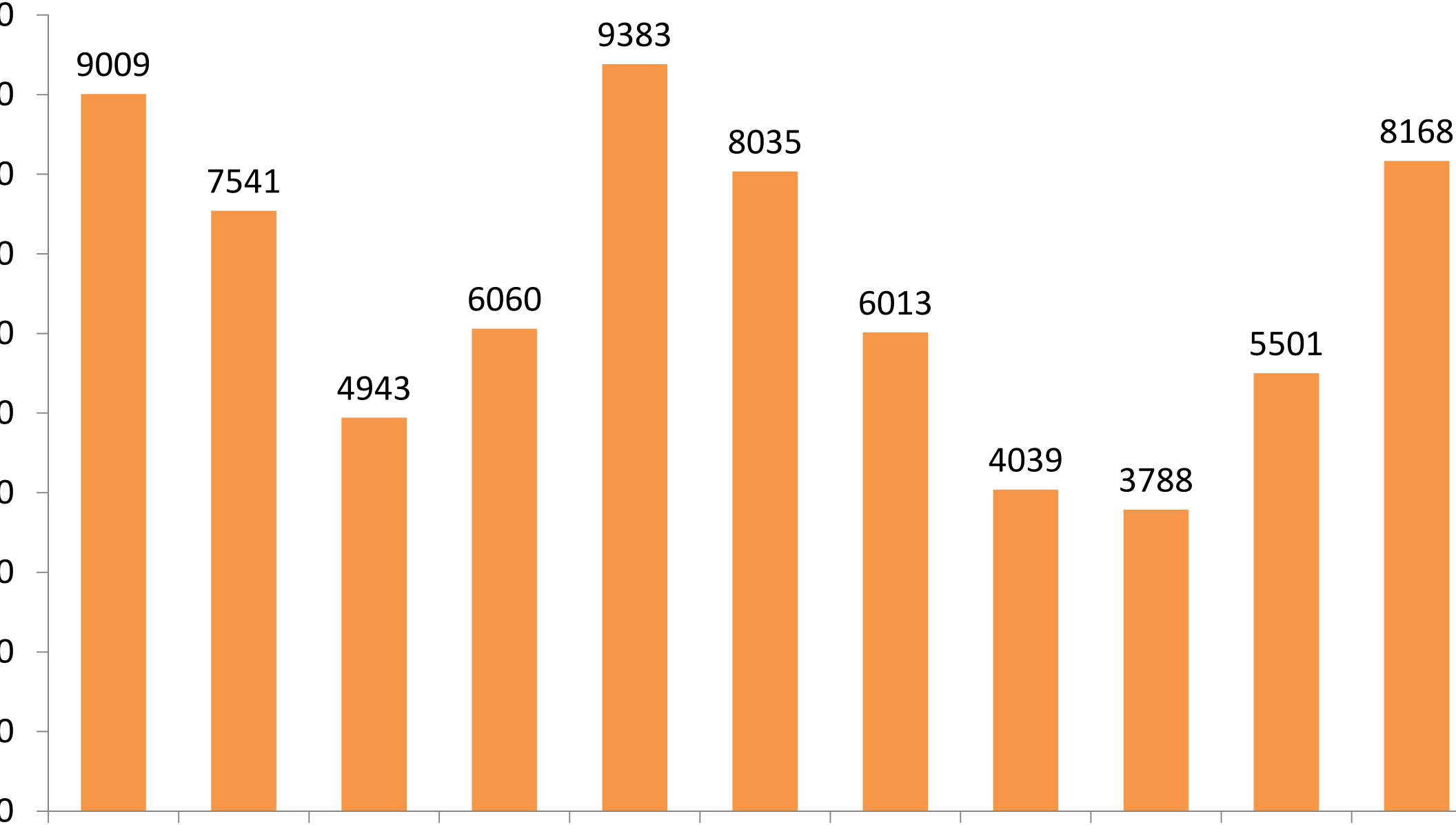
FY 2014-15 : 86



...rformance at a Glance

- CER (tn CO2)

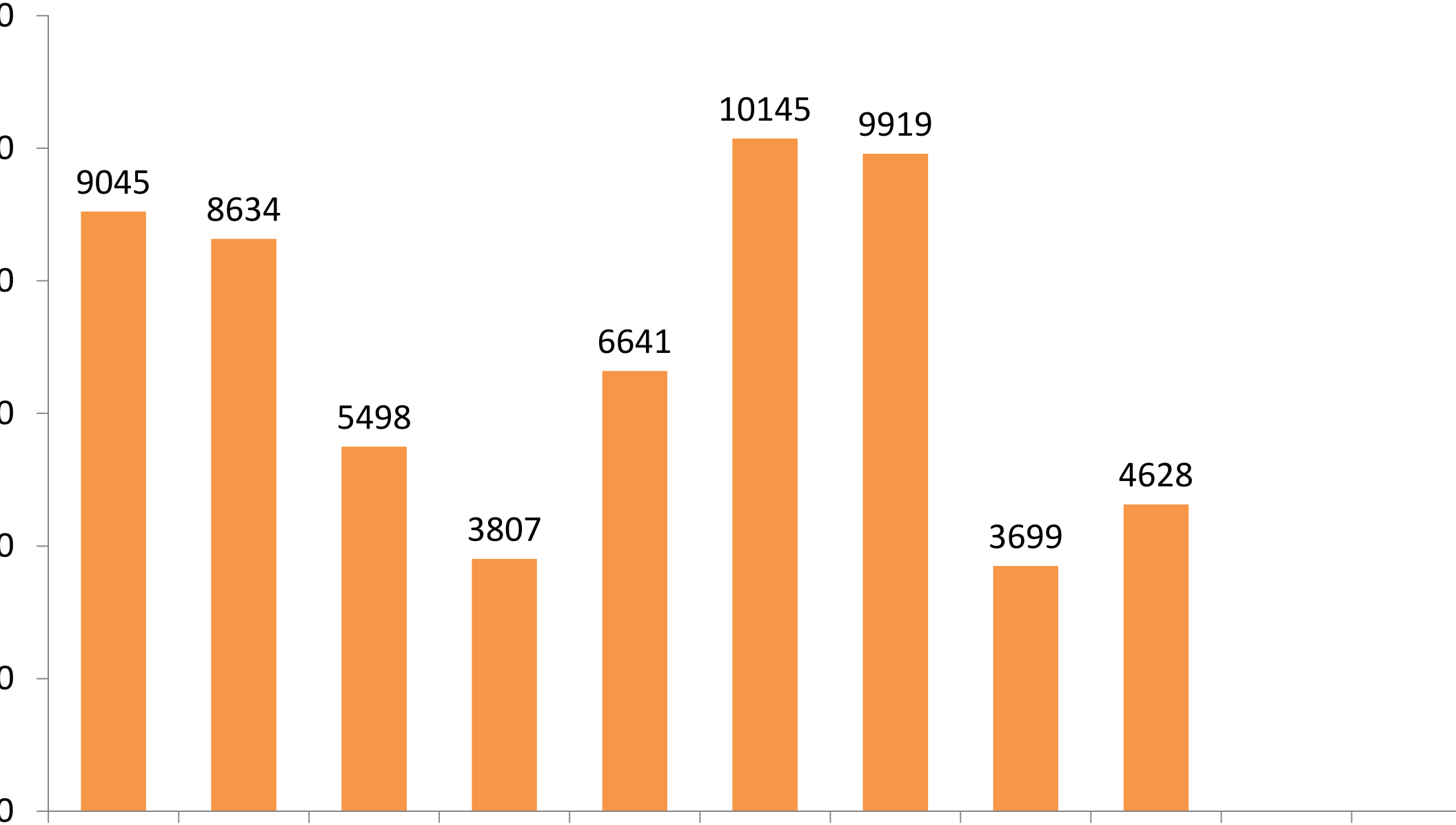
FY 2014-15: 81



...rformance at a Glance

- CER (tn CO2)

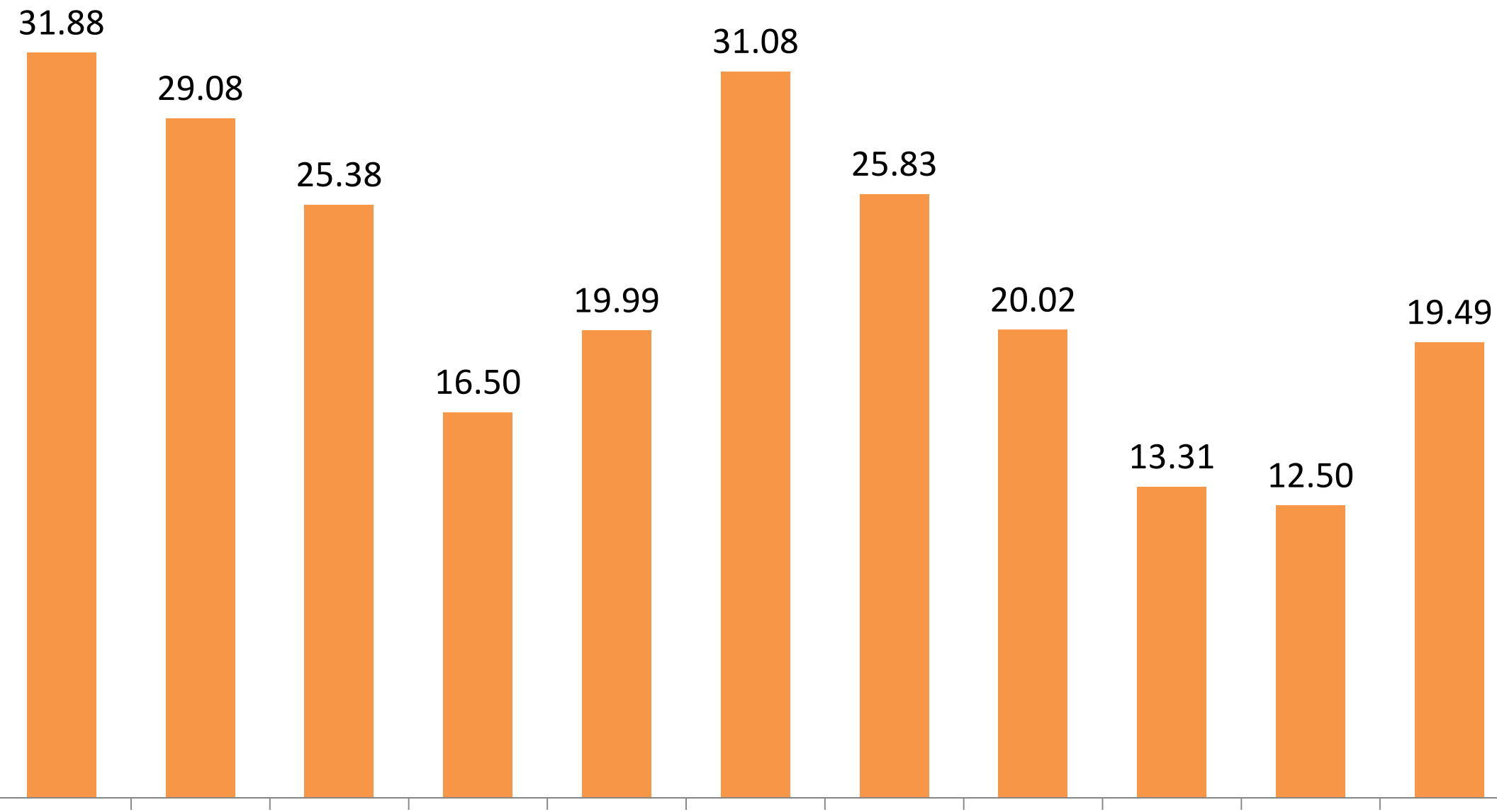
FY 2015-16: 62



...rformance at a Glance

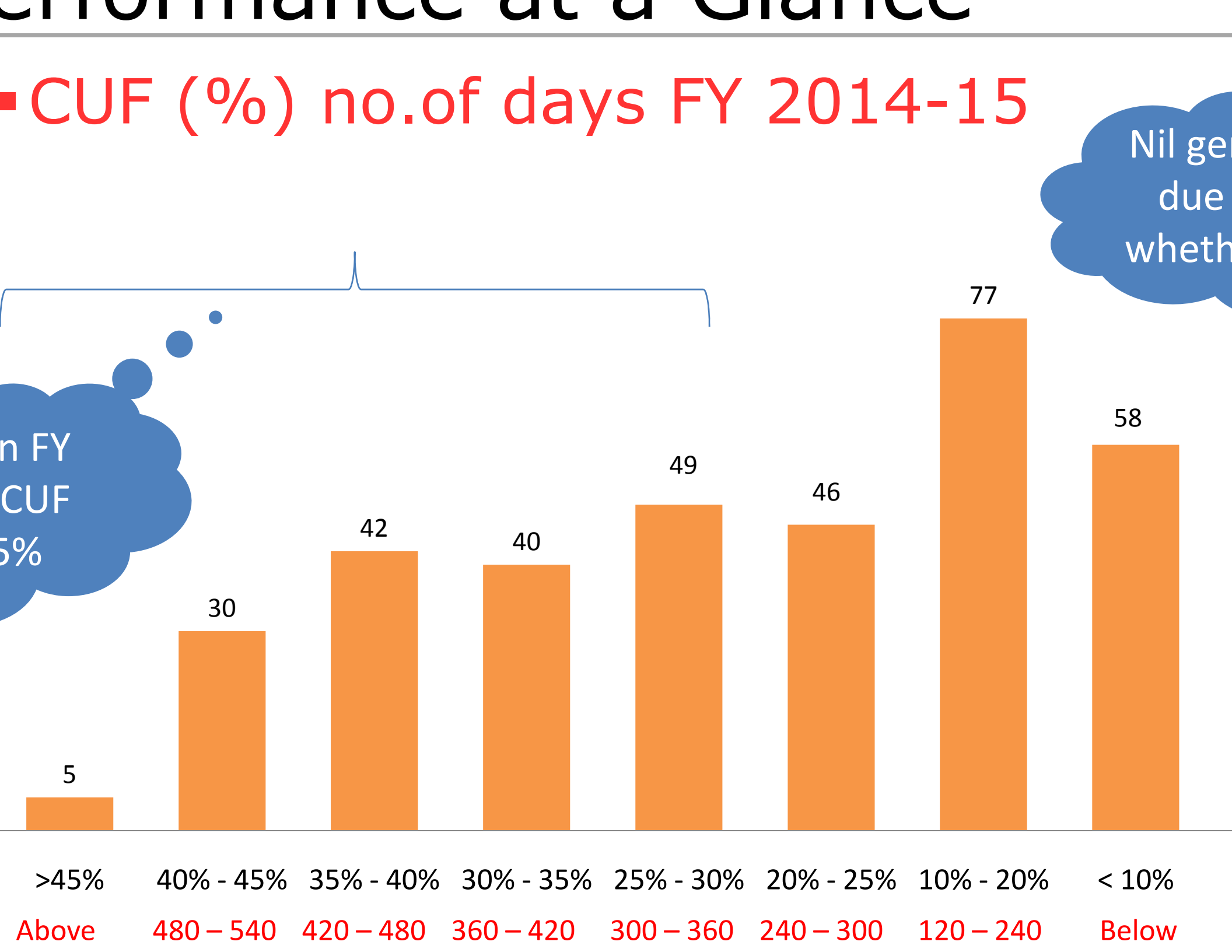
- Capacity Utilisation Factor (%)

FY 2014-15: 22



...rformance at a Glance

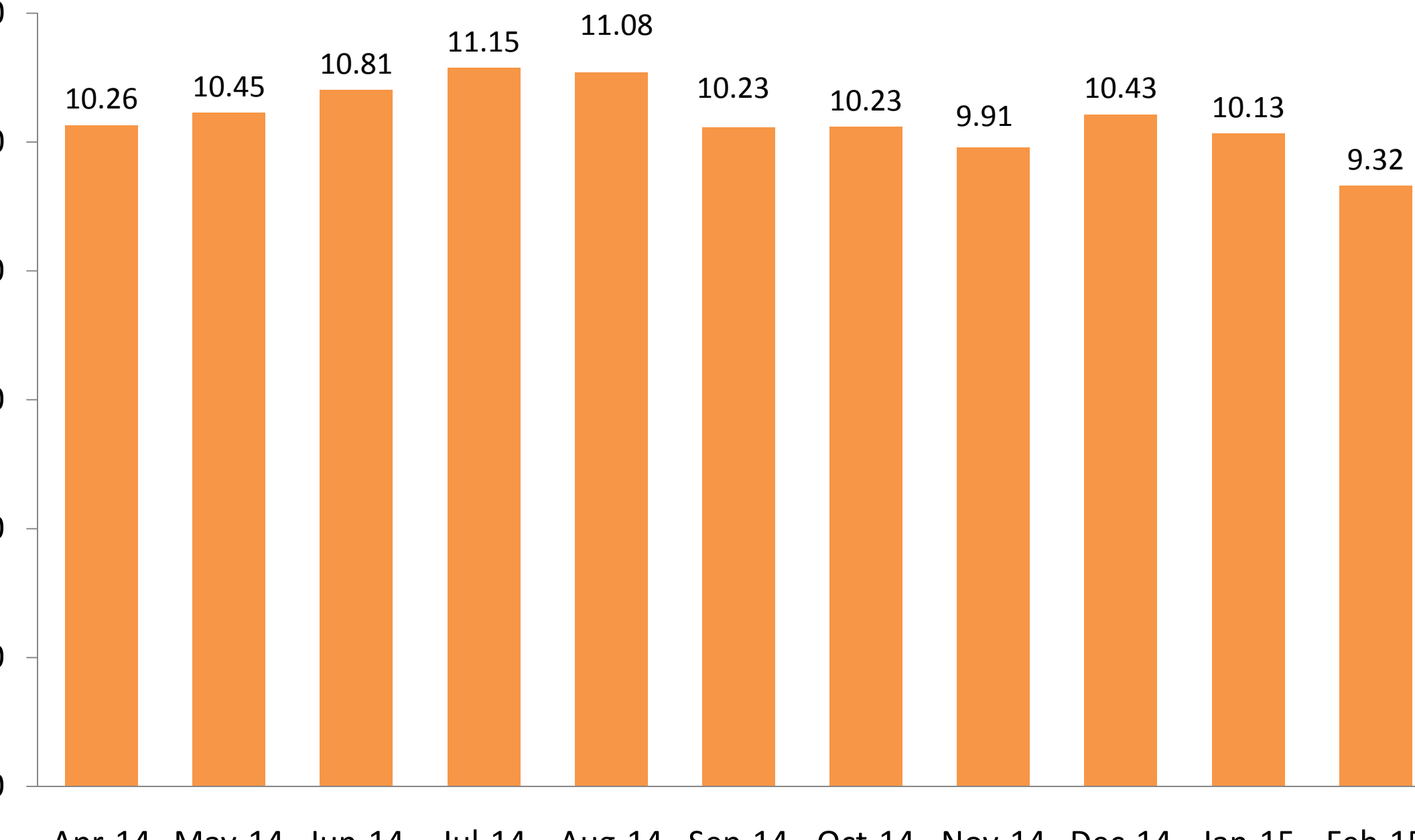
- CUF (%) no.of days FY 2014-15



...rformance at a Glance

Auxiliary Power Consumption (%)

FY 2014-15: 10.

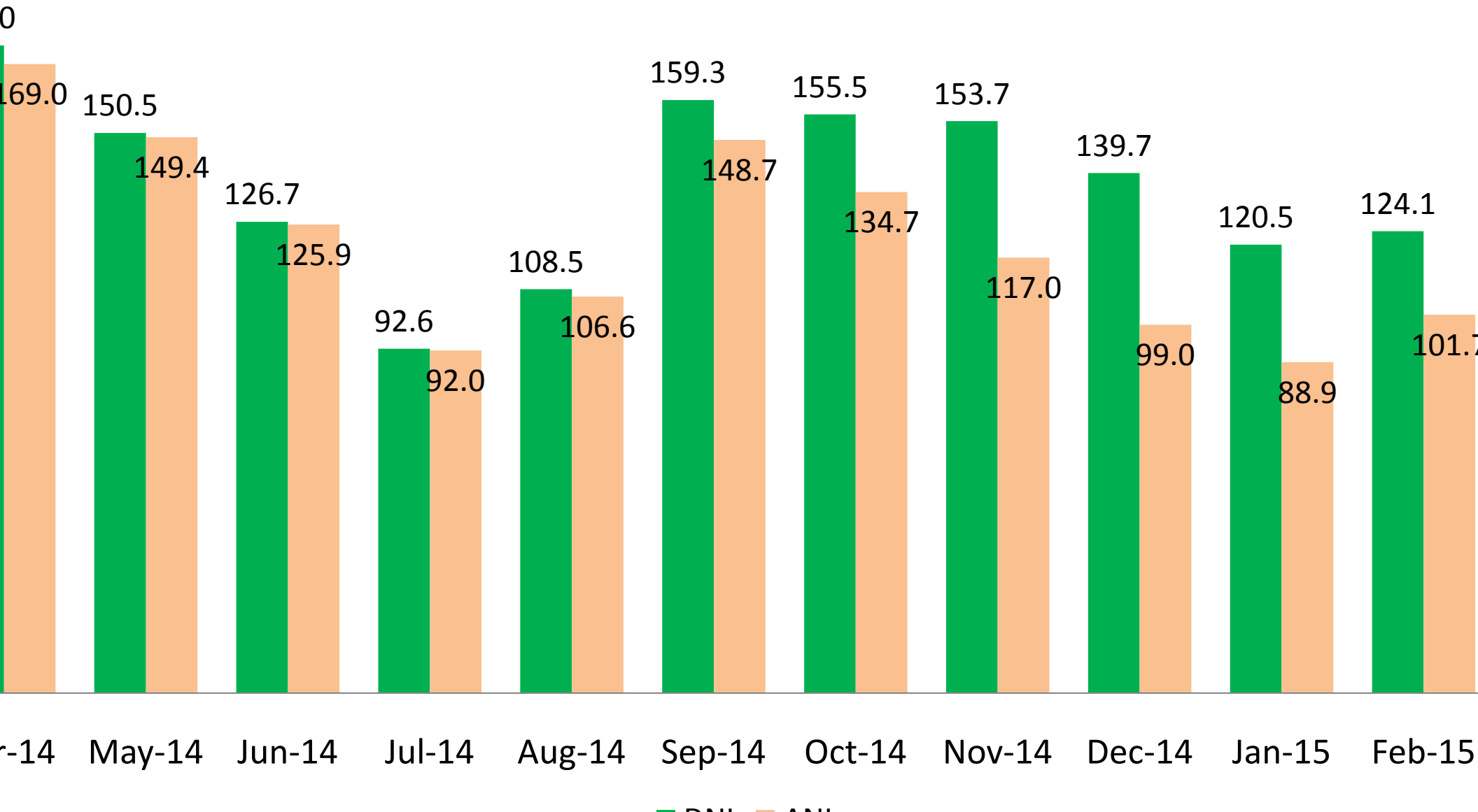


...rformance at a Glance

Solar Energy availability (kwh/M2/Month)

FY 2014-15 : 1

FY 2014-15 : 1



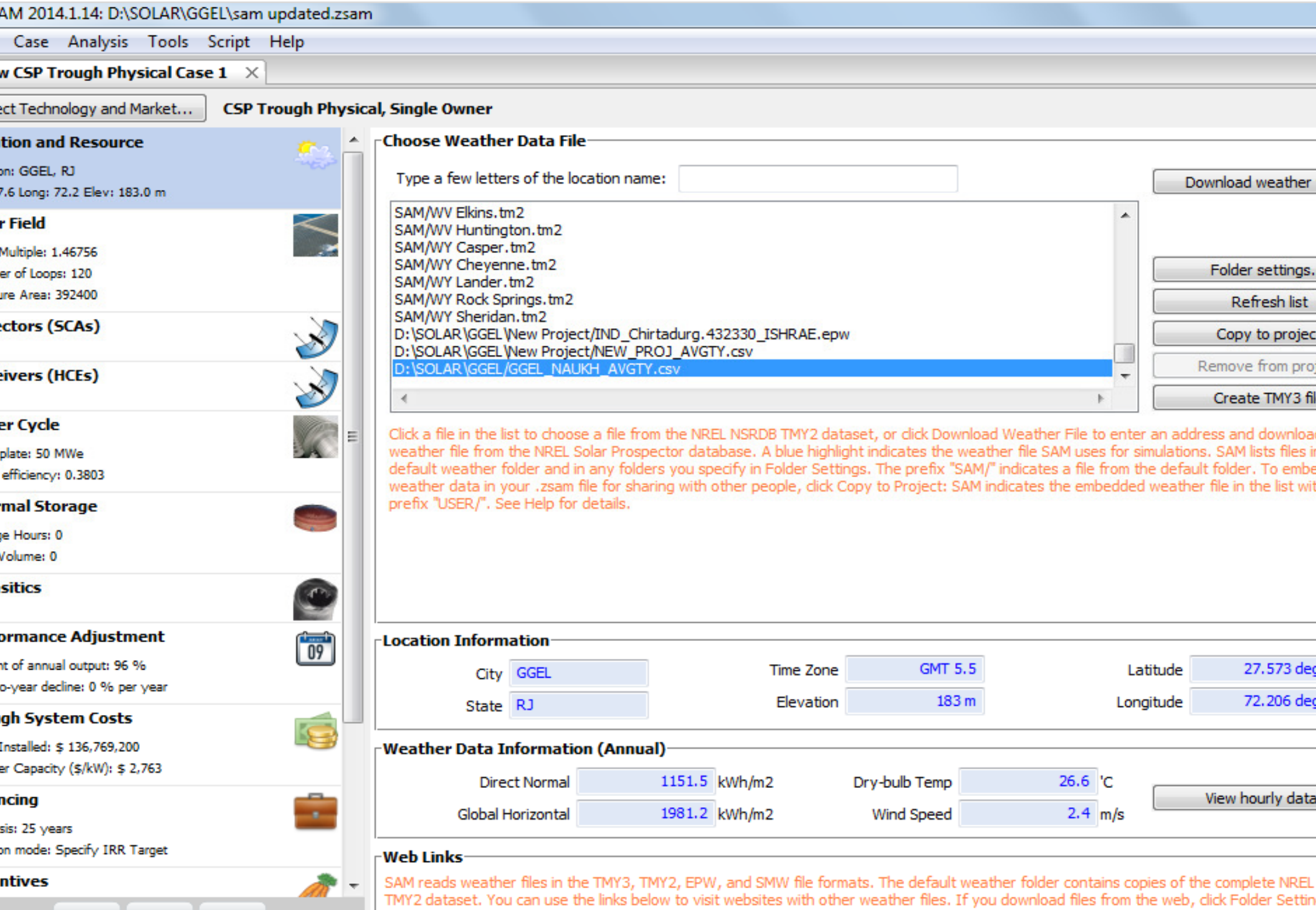
erformance analysis

Necessity

- It is essential to analyze the hourly output and efficiency parameters with standard tools to enhance the Plant performance.
- System Advisory Model (SAM) for Plant performance analysis.
- SPECULAR REFLECTOMETER to measure mirror reflec
- Digital balancer to get the accuracy of SCA tracking.
- Thermal Imager to analyze temperature profile.

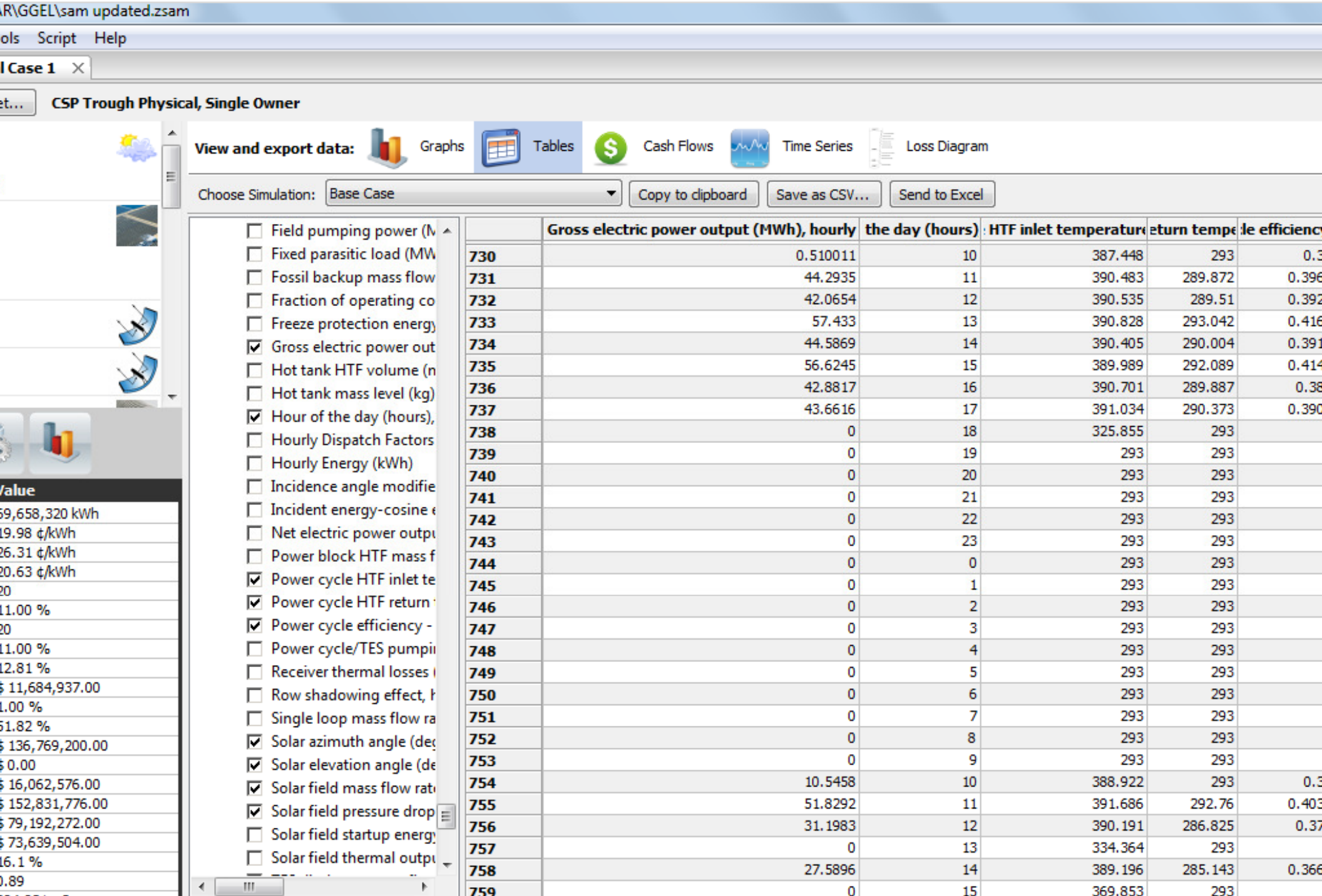
performance analysis with SAM Mod

put



erformance analysis with SAM Mod

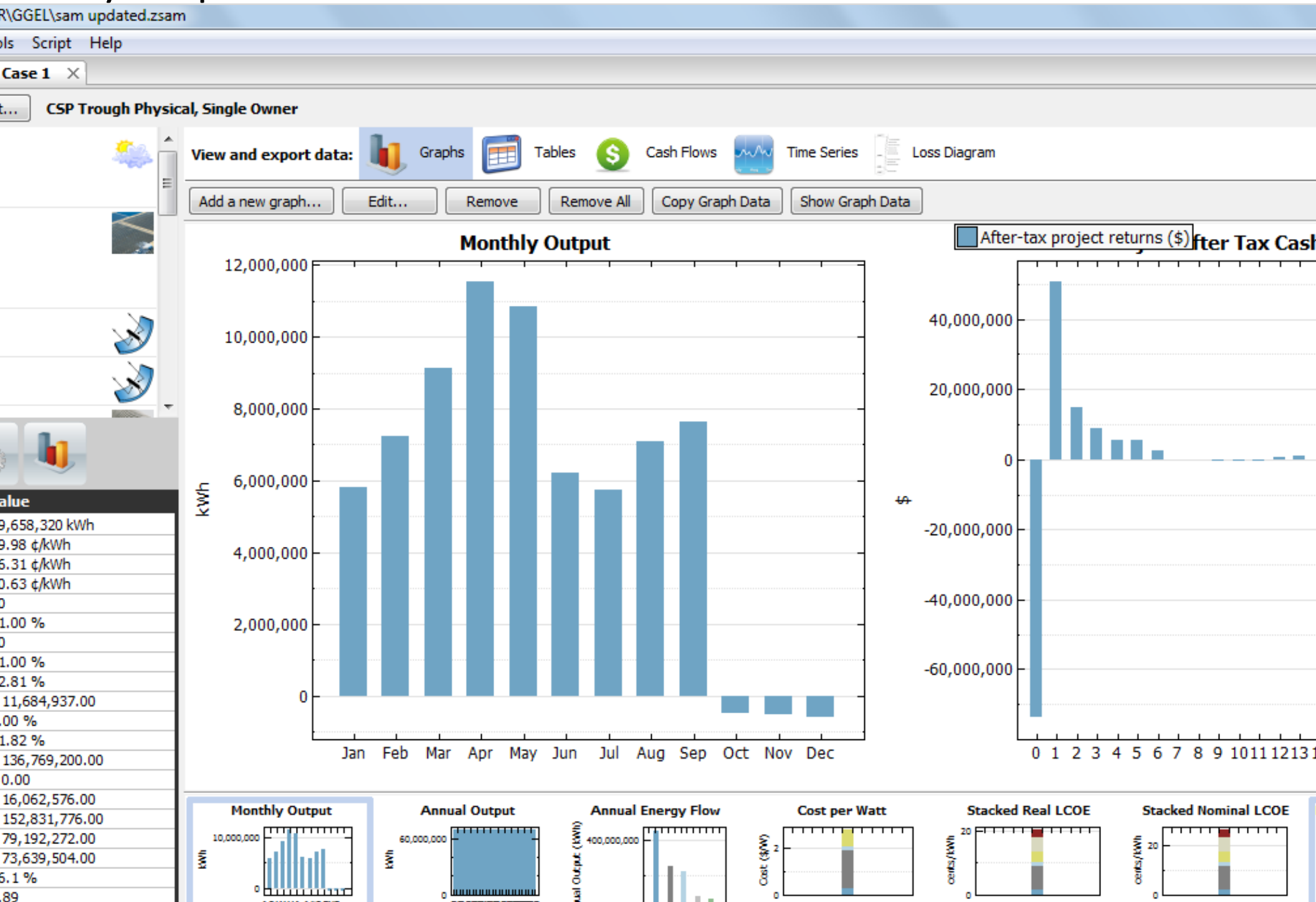
ourly output



	Gross electric power output (MWh), hourly	the day (hours)	HTF inlet temperature	eturn tempe	le efficienc
730	0.510011	10	387.448	293	0.3
731	44.2935	11	390.483	289.872	0.396
732	42.0654	12	390.535	289.51	0.392
733	57.433	13	390.828	293.042	0.416
734	44.5869	14	390.405	290.004	0.391
735	56.6245	15	389.989	292.089	0.414
736	42.8817	16	390.701	289.887	0.38
737	43.6616	17	391.034	290.373	0.390
738	0	18	325.855	293	
739	0	19	293	293	
740	0	20	293	293	
741	0	21	293	293	
742	0	22	293	293	
743	0	23	293	293	
744	0	0	293	293	
745	0	1	293	293	
746	0	2	293	293	
747	0	3	293	293	
748	0	4	293	293	
749	0	5	293	293	
750	0	6	293	293	
751	0	7	293	293	
752	0	8	293	293	
753	0	9	293	293	
754	10.5458	10	388.922	293	0.3
755	51.8292	11	391.686	292.76	0.403
756	31.1983	12	390.191	286.825	0.37
757	0	13	334.364	293	
758	27.5896	14	389.196	285.143	0.366
759	0	15	369.853	293	

erformance analysis with SAM Mod

onthly output



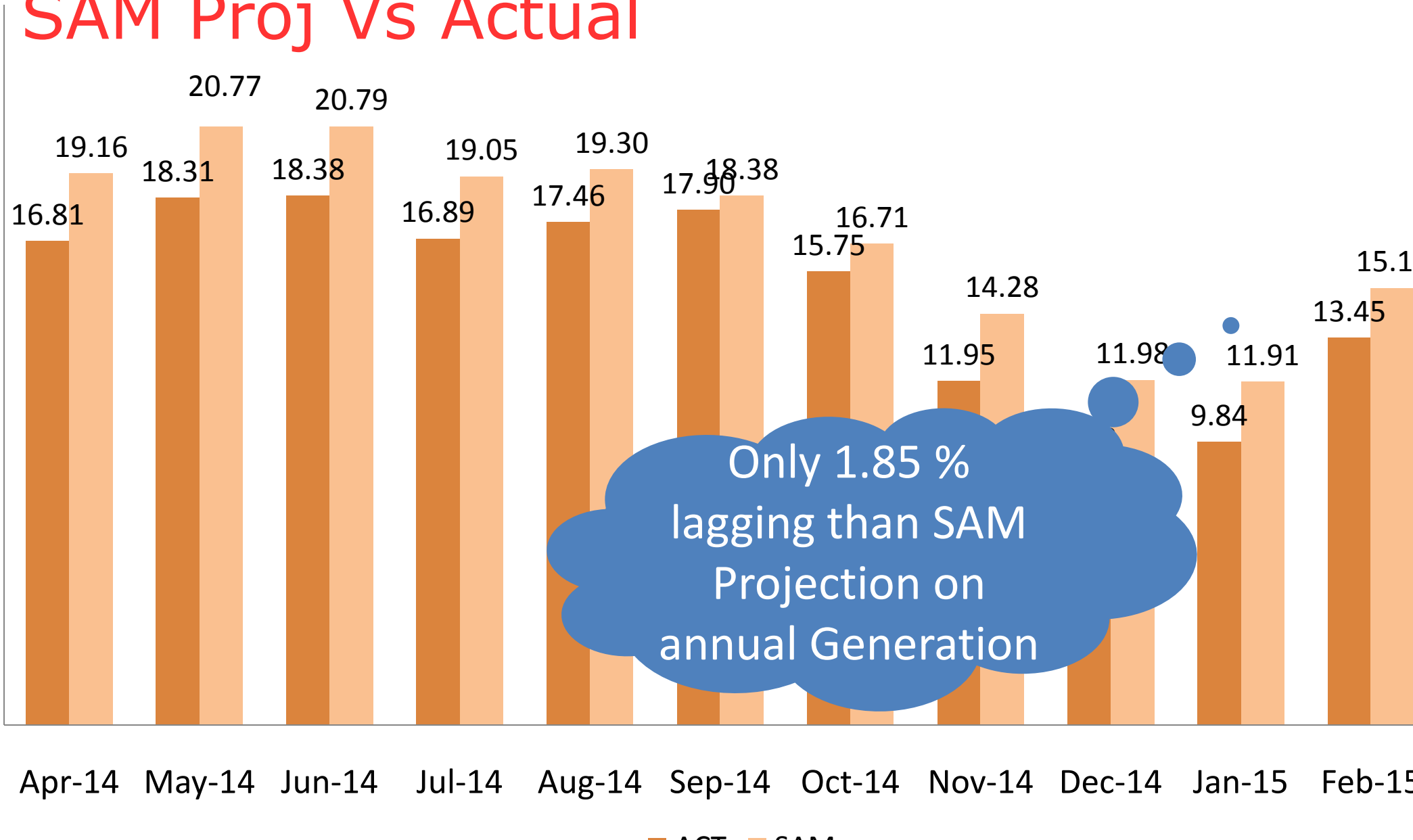
...rformance at a Glance

- Energy Conversion Factor – Solar to Power(%)

FY 2014-15: 15

FY 2014-15: 17

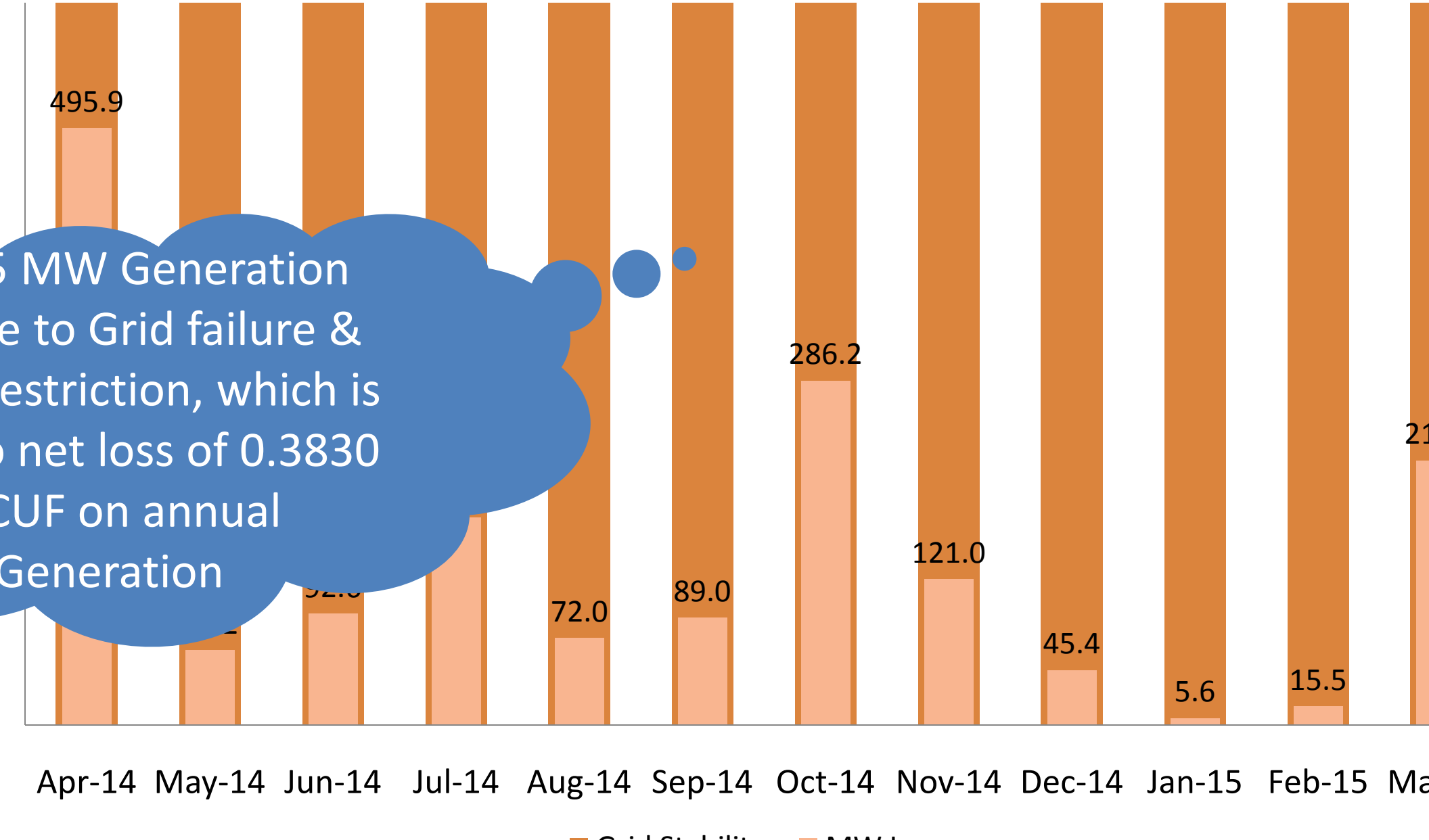
SAM Proj Vs Actual



...rformance at a Glance

Grid Stability (%)
& Generation Loss (MWh)

FY 2014-15 : 98



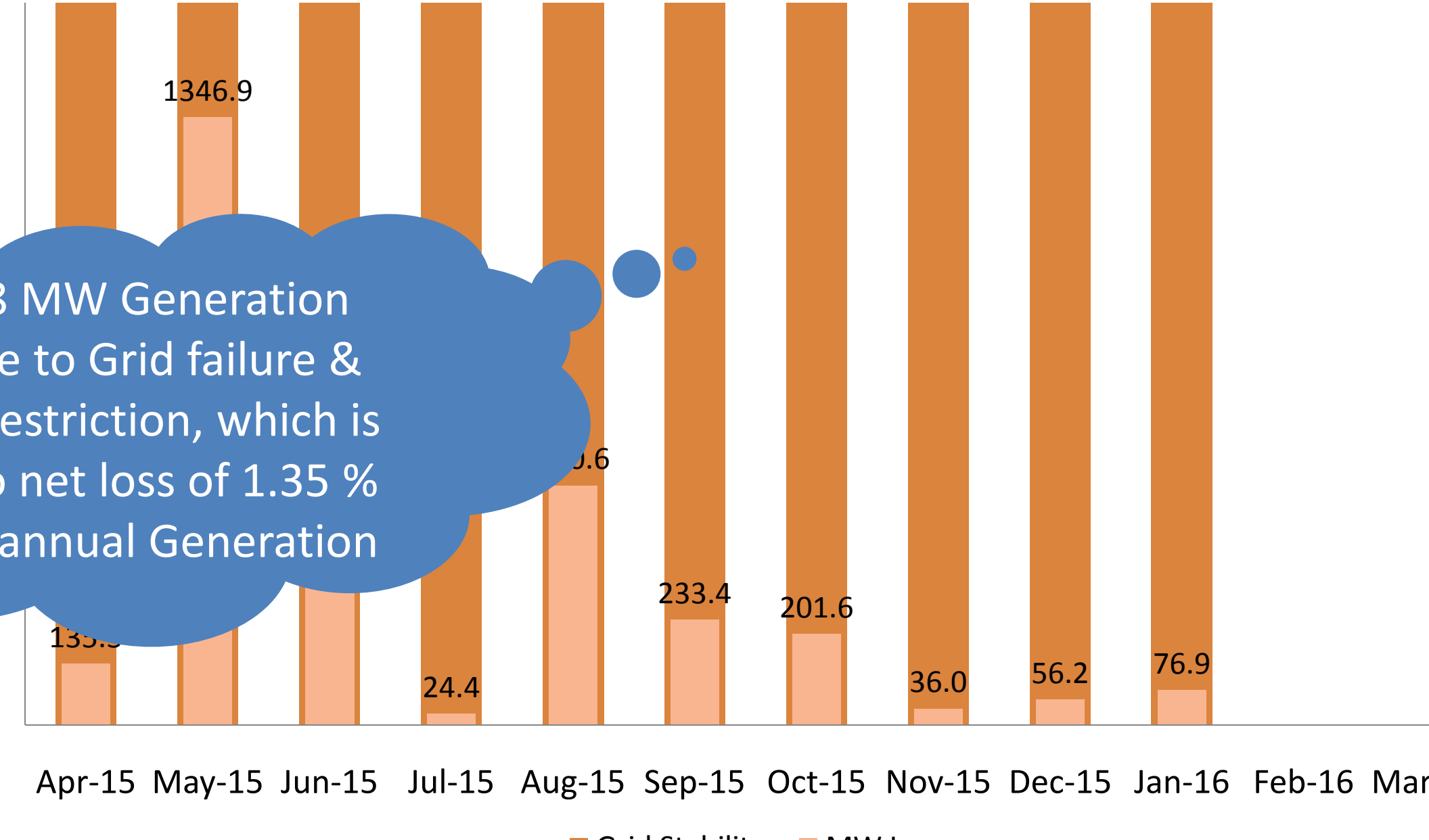
...MW Generation
...e to Grid failure &
...estriction, which is
... net loss of 0.3830
...CUF on annual
...Generation

erformance at a Glance

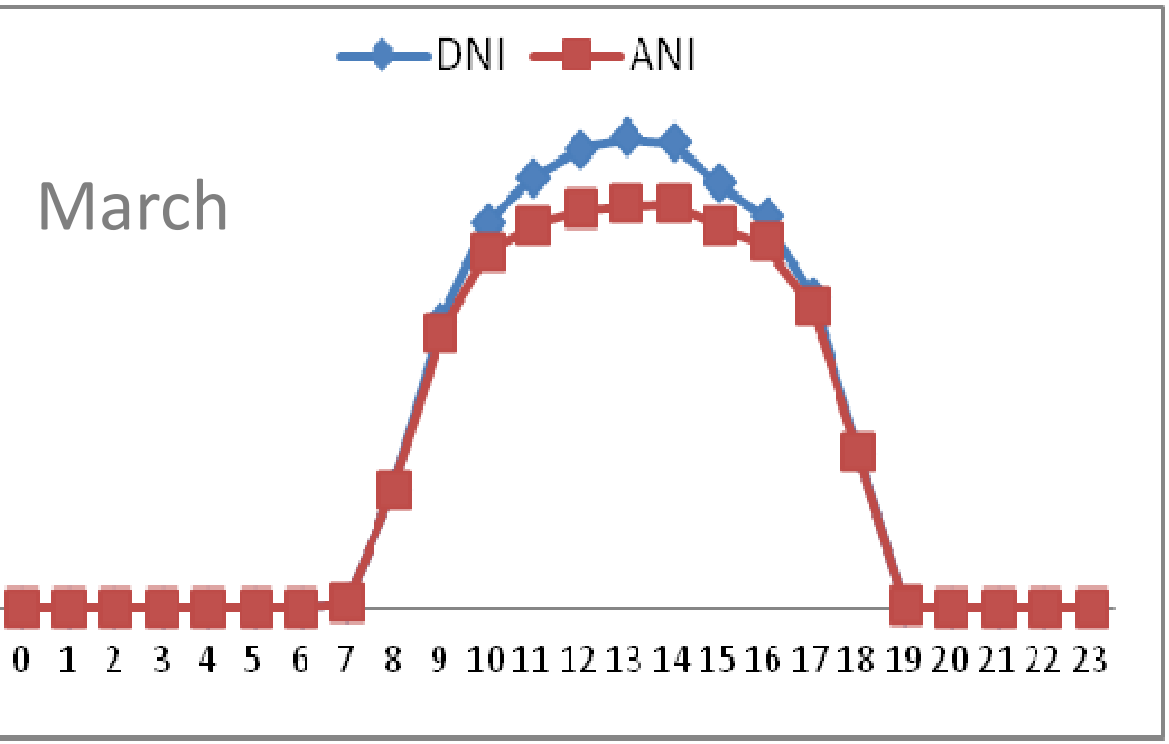
Grid Stability (%)

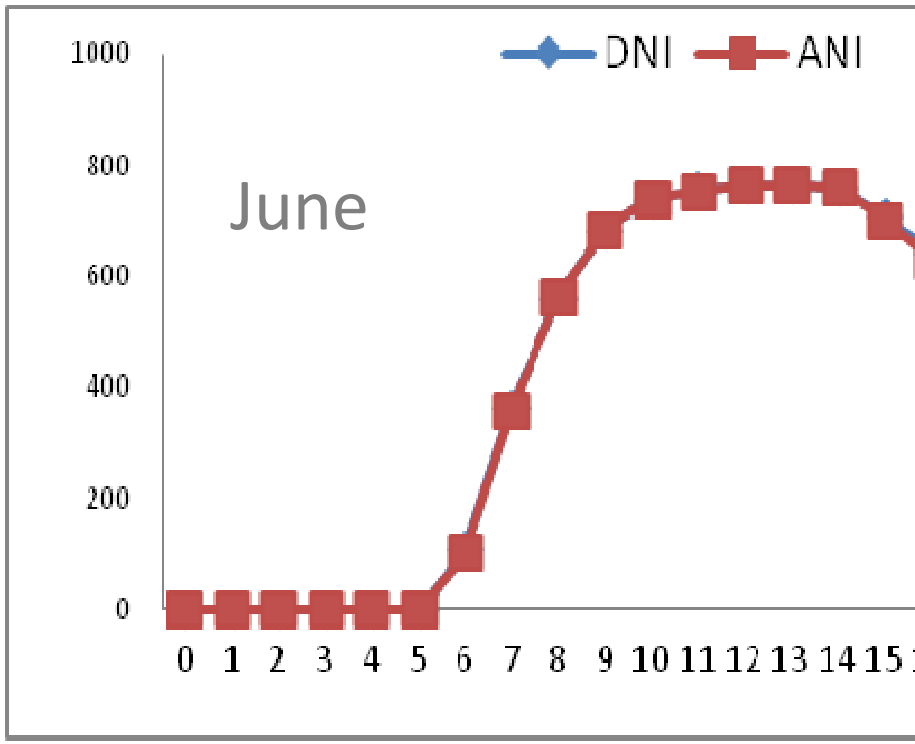
& Generation Loss (MWh)

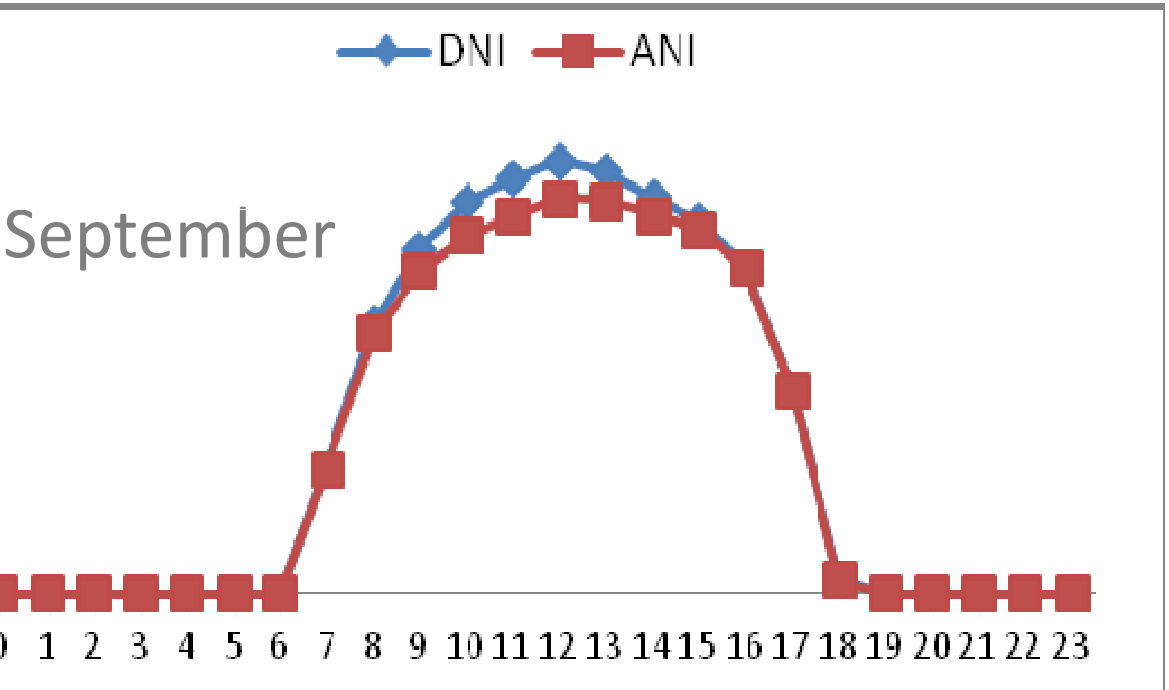
FY 2015-16 : 96

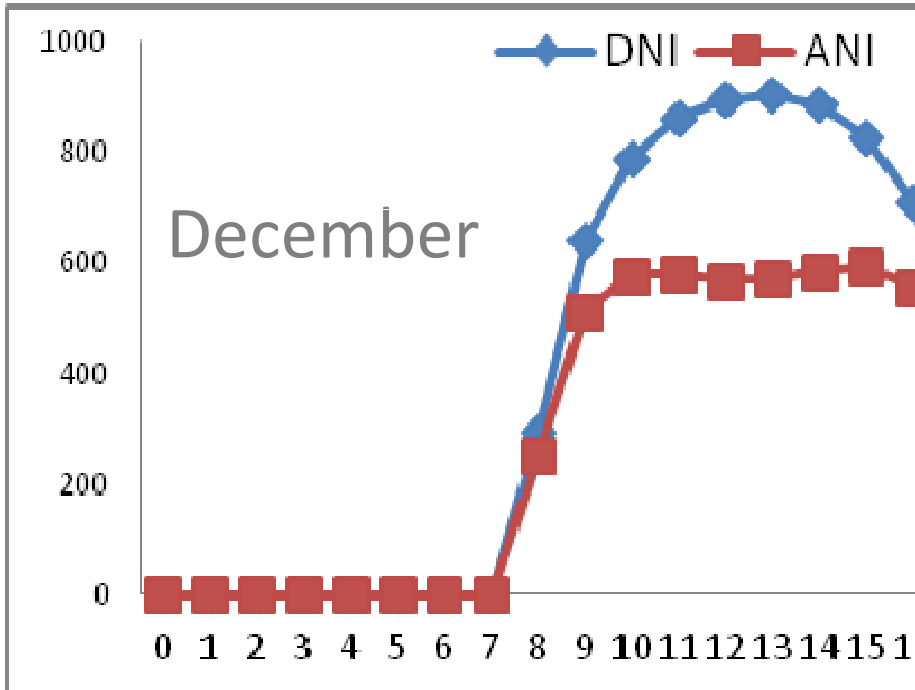


NI / ANI at different quarter

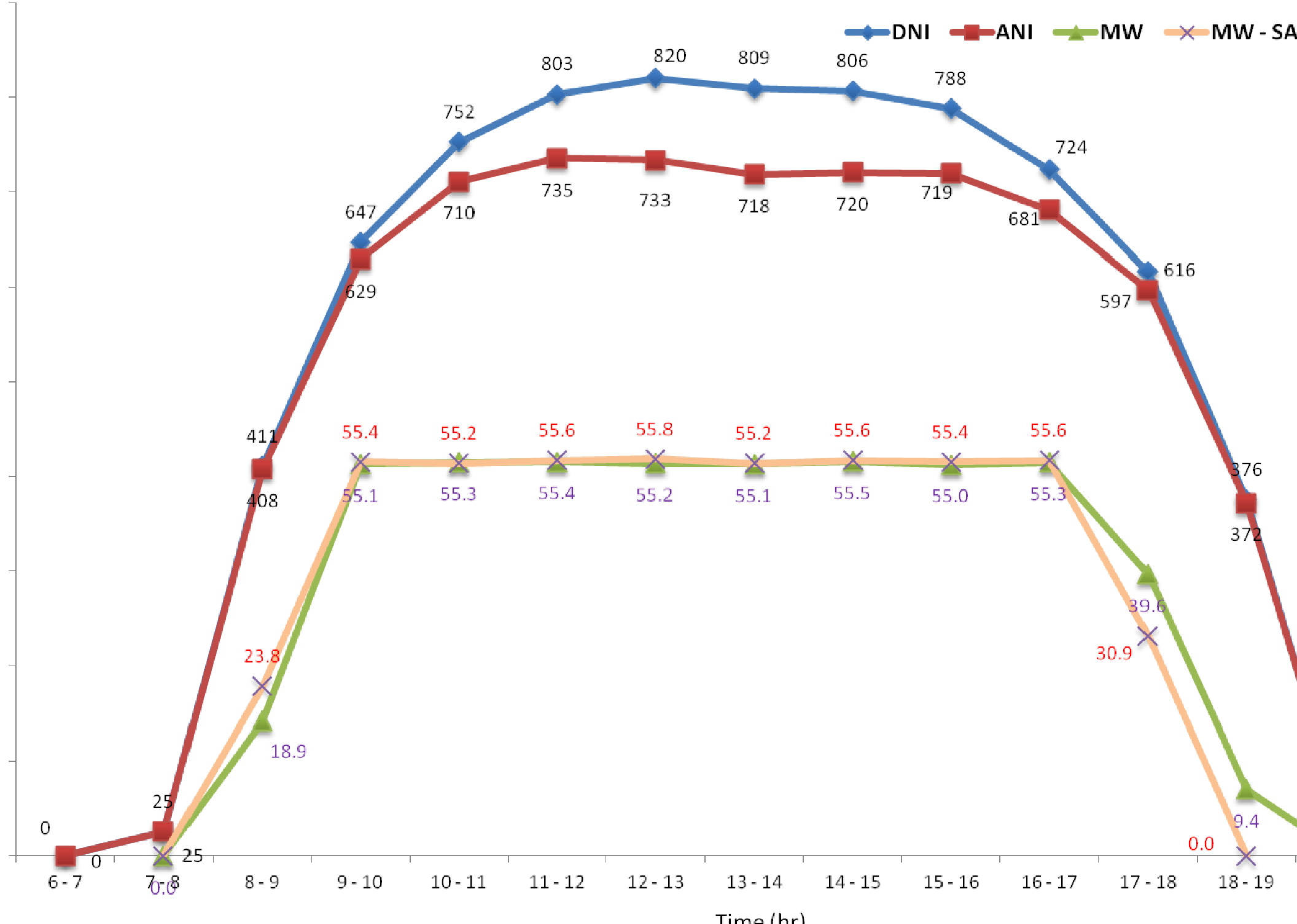








radiance & Generation in a da



ocus Area

Technical Challenges:-

Auxiliary Power reduction

Fine tuning Solar Field efficiency

Reducing non generating hours power consumptio

Achieving much closer results to SAM output

Reducing non generating hours temperature drop

loops

Sustaining Turbine & Steam generators efficiency

ocus Area:

- **Others Challenges :-**
- Developers failures
- Lack of knowledge on the part of developers in Execution and associated problems
- Financial closures difficulties at initial stage
- High rate of interest
- Time allotted is not as per capacity
- Non availability of site base realistic DNI data

ocus Area:

Others Challenges :-

- Hybridization of CSP not allowed
- Local issues
- Demonstration model in the form of Pilot Projec
- Lack of focus on development of CSP
- Power evacuation or grid availability

dvantages of CSP

Higher CUF with storage

Better grid stability

24 hour operation possible with storage or hybridization

way Forward

US :

THANK Y

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