Research Article

State Wise Modeling and Descriptive Analytics with Data Visualization of Indian Southern Power Grid Operation

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Abstract: The energy grid storage is a collection of methods used to store large-scale electrical energy within an electric grid. Data visualization alludes to the procedures used to data or information by encoding it as visual plans. The goal is to pass on information obviously and gainfully to customers. It involves producing images that impart connections among the represented data to viewers of the images. Data visualization design toolkits help clients to investigate information and make representations. In this paper, we present data visualization design for demand data based on state wise of Demand Met, Day Energy Forecast and Deviation particulars over day wise and week wise of southern regional grid for various states is proposed. The performance measure of state wise outcome is determined by visualizing its demand needs over its state energy consumption where tamilnadu leads its maximum energy needs compared with other states.

Keywords: Data Visualization, SRLDC, Power Grid, SCADA, Energy Analytics

1 Introduction

The Southern Regional Load Despatch Center (SRLDC) is one of the five Regional Load Despatch Centers (RLDCs) working under the National Load Despatch Centre(NLDC) possessed, worked and kept up by Power System Operation Corporation of India Limited (POSOCO). SRLDC is situated at Bangalore, the IT Hub of India and it is the operational hub for observing and planning activities of the Indian Southern Power Grid Operation containing the conditions of Andhra Pradesh, Telangana, Karnataka, Kerala, Puducherry and Tamilnadu [1, 2].

Among the five districts, the North Eastern Region and Eastern Region were the first to be worked in coordinated mode since 1993.Subsequently, these two districts were synchronized with the Western Region in March 2003 and the three associated locales were named as Central Grid [3]. India's capacity to generate power has gradually increased over the past few years, but growth in demand has gone way ahead of growth in supplies [4, 5].

By far most of coal power plants in a power framework are base-load units that can't be turned here and there as often as possible. The variances of the force request are principally met with gas units and, some of the time, with hydroelectric units [6, 7]. The study performed by Indian vitality division had seen colossal development during the previous four decades. The 70% of the vitality utilization is from business vitality sources, to be specific coal, oil, flammable gas, and power [10].

2 Related Works

A momentary determining of the hourly collected inventory bends in Day-Ahead power markets. The examination is proposed to cultivate compelling subordinate administrations approaches in India [9].

Another study by an researcher investigates the research work was led to research the fiery presentation of an air stream rate and the U-estimation of the nursery spread material have the most noteworthy impact on the nursery indoor temperature [11, 12]. It finds out the outcomes of essential energy request be required to keep up an elevated level of improvement, since a noteworthy piece of the vitality utilized by developing nations is by and large progressively dedicated to continue the government assistance of created nations by methods for universal trade [13, 14].

A study found out the transaction between CO2 alleviation endeavors and adjustments to environmental change in the force area utilizing the Long-extend Energy Elective Planning System (LEAP) model [15].

A study gives a review of ideal ESS position, estimating, what's more, activity. It thinks about a scope of network situations, directed execution destinations, applied systems, ESS types, and points of interest and constraints of the proposed frameworks and approaches [16, 27].

A study examines the time arrangement dependent on its topological highlights, saw on a complex arrange produced from the time arrangement information. In particular, we present a pattern discovery

calculation for stochastic time arrangement dependent on network discovery and system measurements [18, 28]. The model presents a few focal points over customary time arrangement investigation. The another kind of DSS created upon the open-source Geospatial Cyber infrastructure (GCI) stage (named GeOlive) can give a significant electronic operational instrument for olive developing as it better associates profitability and natural maintainability [29].

A study performs the work targets going around these limitations by introducing a technique for managing SCADA large information that comprises of a pre-handling calculation and mixture approach exception identifiers [30].

The structure examines the conveyed reserving and accumulation system to deal with the representation of sensor information, which is time arrangement information [19]. Its highlights incorporate a) bitmap ordering for catching the elements of the reserved information b) misusing regency of information use when making store addition and substitution choices and c) incorporating existing databases and open-source. The research considers the territories where perception would be advantageous in exploration and configuration utilizing variety relevant request led with proficient information investigators. In light of this exploratory representation rules will advance selection by this sort of client [26].

The visual intelligent framework and framework, Voila, for intuitively identifying anomalies in spatial transient information gathered from a spilling information source [25]. A study applied the BDA to criminal information where exploratory information investigation is led for perception and patterns expectation. A few best in class information mining and profound learning procedures are utilized [23].

At long last, we present spatiotemporal pattern examination for factual datasets including twitter information, sea search and salvage occasions, and syndrome reconnaissance [21]. It exhibits the adequacy and convenience of P5 through an assortment of model applications and a few presentation benchmark tests. It examines the present VisAct, a perception structure framework dependent on semantic activities, that encourages normal clients to develop representations bit by bit. Our framework contributes lot of activity based representation parts and a significant level language for semantic activities [23].

3 Research Design

The research design framework analyzes the strategy of design process. The design process explains the overall design of SRLDC data and visualizing the demand met at various aspects in state wise.

3.1 Design Process

For the design process analysis, this study has followed several procedures, which are shown in Fig.1. In particular it shows the six step process of design methodologies such as collecting SRLDC data, arranging unstructured data, splitting data in different orders, preprocessing data, analyzing and comparing data in different orders and finally identifying the results by visualization.

The first step is collecting SRLDC data from Bangalore. The demand met data are collected from particular SRLDC dataset. From this collected data second steps are arranged in an unstructured way. The unstructured data is arranged and splitting is carried out in different orders like evening peak, off peak, forecast and deviation forecast of day energy particulars is done in third step. Once the data is divided the preprocessing data is done in fourth step for demand met data and analyzing these data and comparing data in different orders in fifth step. Once the data is compared with different demand needs the results are identified and visualized in sixth step process. These are design process to identify and analyze the better results of power production of energy.

Figure 1. Design Process Steps Chart

4 Methodology

4.1 Data Visualization

Data Visualization is the graphical portrayal of data and data. By using visual segments like graphs, outlines, and maps, data observation gadgets give an open strategy to see and get examples, inconsistencies, and models in data. Data portrayal is another kind of visual craftsmanship that gets our favorable position and keeps our eyes on the message [18]. It is moreover arranged as a pioneer Business Intelligence and Analytics Platform in Gartner Magic Quadrant. (Hongjin Wu et al. 2019). There are three essential advances engaged with making any Tableau information investigation report.
These three stages are −
Associate with an information source − It includes finding the information and utilizing a suitable kind of association with read the information.
Pick estimations and measures − this incorporates picking the vital segments from the source data for examination.
Apply portrayal framework − this incorporates applying required discernment techniques, for instance, a specific graph or outline type to the data being dismembered.

4.2 Research Tool and Justification

In data visualization, Tableau has various appealing and interesting highlights. Its mind blowing data and investigation application grants you to address noteworthy requests quite promptly. You can use Tableau's streamlined interface to imagine any data, explore different points of view, and even join various databases without any problem. It doesn't require any complex scripting. Any person who understands the business issues can address it with an impression of the pertinent data. After examination, imparting to others is as simple as distributing to Tableau Server.

Tableau Features
Tableau gives answers for a wide range of enterprises, divisions, and data conditions. Following are some one of kind highlights which empower Tableau to deal with differing situations.

Speed of Analysis: As it doesn't require elevated level of programming fitness, any customer with access to data can start using it to get a motivator from the data.

Confident: It needn't bother with a mind boggling programming arrangement. The variant of work area which is utilized by numerous clients can without much of a stretch introduce and contains all the highlights expected to begin and complete data examination.

Visual Discovery: The clients examine and separate the data by using visual instruments like hues, design lines, frameworks, and diagrams.

Mix Diverse Data Sets: Tableau licenses you to blend unmistakable social, semi-sorted out and crude data sources logically, without expensive clear coordination costs.

Engineering Agnostic: Tableau works in a wide scope of contraptions where data streams. In this way, the client need not worry over unequivocal hardware or programming essentials to use Tableau.

Ongoing Collaboration: Tableau can channel, sort, and examine about data on the fly and embes a live dashboard in gateways like SharePoint site or Sales force. You can spare your point of view on data and license accomplices to purchase in to your keen dashboards so they see the latest data just by reviving their internet browser.

Unified Data: Tableau server gives a fused zone to manage the total of the affiliation's circulated data sources. You can delete, change approvals, incorporate names, and oversee plans for one helpful area.

4.3 Process Metrics

The study utilizes the demand met particulars of southern regional load dispatch centre. In that particular dataset the demand is classified in three ways and checking the results in tableau. From this demand met data has been visualized in three way of classification one is evening peak, off peak and day energy particulars of demand. In the evening peak the one month data of demand met at timing of (19:00) mw and its shortage/surplus and requirement of evening peak. In the off peak the same one month data of

demand met at off peak at timings of 03:00 mw units and its shortage /surplus and its requirement of off peak data. In the day energy they are classified as forecast and deviation forecast of day energy data.

First the demonstration is done by taking the demand met at 19:00 mw and checking for the one month data. Next the data is compared with demand met data with shortage/surplus and checking the requirement of evening peak data using tableau. In the same way the data are checked in off peak and day energy of state demand met in mega watts using tableau visualization. The results are demonstrated by day wise and week wise calculation of each and individual dataset. From this demand data, we are visualizing the results for demand met particulars and taking some observations and concluding the results for one month dataset of January 1 to 31, 2020 and the results are visualized for state wise demand data of deviation particulars.

5 Results and Discussion with Data Visualization and Interpretation for Decision Making

5.1 State wise Demand, Shortage Surplus and Requirement at Evening

The demand met at evening peak describes about the states demand of day wise energy production. The Fig.2.explains about the demand met, shortage (-) / surplus(+) and requirement at evening peak of all states. In the day wise order the study utilizes the energy demand is higher in tamilnadu compared to other states due to energy needs. In the shortage (-) /surplus(+) we having the data of date, state and shortage (-) / surplus(+) observation readings. We are visualizing the day wise data of shortage (-) / surplus(+) particulars and seeing the result for seven states in region that is Andhra Pradesh, Telangana, Tamilnadu, Pondicherry, Region, Karnataka, and Kerala. Hence, from the observation tamilnadu has higher shortage and surplus at evening peak than the other states. The requirement at evening peak examines about the energy production in day wise order. The requirement of energy met at evening peak and it shows the result of energy is higher in tamilnadu but demand met at evening peak is higher than the requirement of energy production.

5.2 State wise Demand, Shortage Surplus and Requirement at Off Peak

The study explains about the demand met, shortage (-) / surplus(+) and requirement at off peak describes about the states demand needs. From the Fig.3.study examines the energy demand is higher in tamilnadu compared to other states due to energy needs. Comparatively the demand met at off peak is lesser than the demand met at evening peak of energy demand in state wise order. The study describes about the off peak shortage and surplus of energy demand. The shortage (-) / surplus(+) are been visualized for various states. From the result we have some deviation in observations of all states in shortage (-) / surplus(+) at off peak. By comparing with other states tamilnadu is higher than the other states but shortage surplus of evening peak is lower than off peak observation. The requirement at off peak describes about the state wise order of day wise analysis. The analysis informs about the energy production in day wise order. The analysis informs the requirement at off peak about each and every state. Hence from this performance tamilnadu is higher than the other states but by seeing the demand met at off peak is higher than the requirement at off peak of energy demands.

5.3 State wise Forecast and Deviation Forecast of Day Energy Particulars

The Study describes about the state wise forecast deviation forecast of day energy in day wise report. The Fig.4.explains about the state wise report of load generation balance report of Andhra Pradesh, Karnataka, Kerala, Pondicherry, Tamilnadu and Telangana. It visualizes the forecast of day wise report of power production. By this result the tamilnadu produces the highest forecast of day energy whereas pondycherry does not require that much of energy production in kerala, due to low population. The Study describes about the state wise deviation forecast of energy needs. It visualizes the deviation forecast of energy demand. The energy is increased and decreased based on the consumption of energy forecast. From the result the Andhra Pradesh is increased in deviation and it produce the energy higher than the tamilnadu but remaining states are decreased based on the consumption of energy needs.

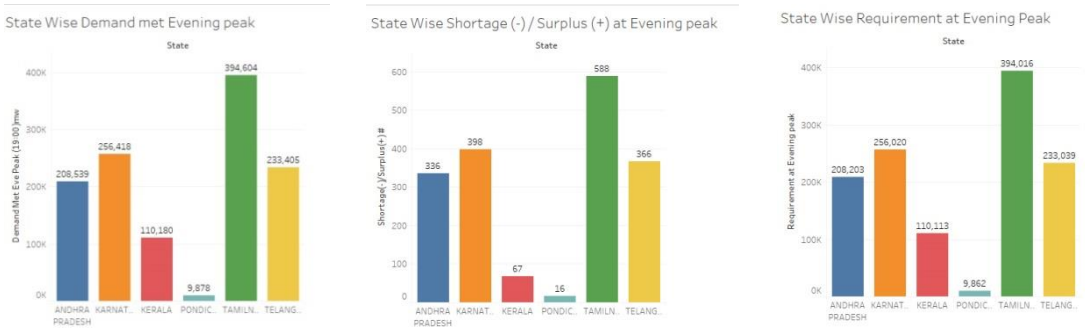


Figure 2. Visualization of State Wise Demand, Shortage Surplus and Requirement at Evening Peak

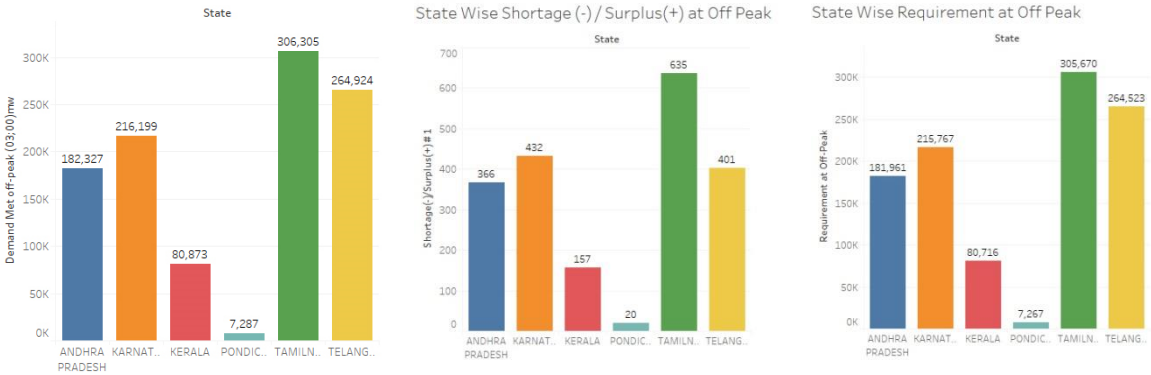


Figure 3. Visualization of State Wise Demand, Shortage Surplus and Requirement at Off Peak

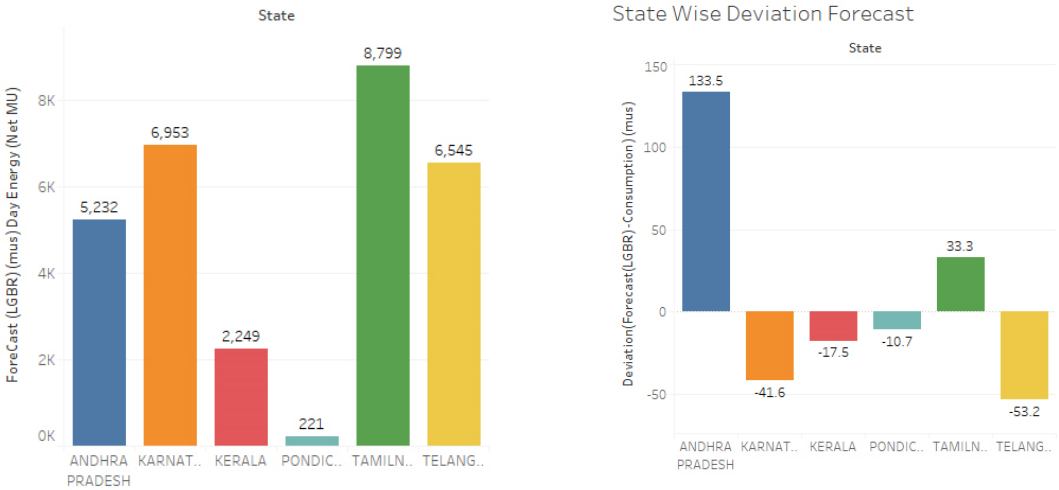


Figure 4. Visualization of State Wise Forecast and Deviation Forecast of Day Energy Particulars

6 Week 1 Analysis Report

6.1 Demand met and Requirement at Evening peak

The Study analyses the overall results of week 1 to week 5 demand needs, requirement, forecast and deviation forecast of energy production. The figure 5 represents about the week 1 to 5 of an energy analytics. The week 1 to week 5 displays about the demand met at evening peak, shortage / surplus, requirement at evening peak, demand met at off peak, shortage / surplus at off peak, requirement at off peak, forecast and deviation forecast of day energy particulars. The week 1 of demand met at evening peak is arranged in state wise order from the date of 1/1/2020 to 5/1/2020. From the result tamilnadu met higher demand on the date of 3/1/2020 other than remaining states in evening peak.

Andhra Pradesh is higher in 2/1/2020. Karnataka, kerala, pondycherry met more demand on the date of 3/1/2020. Telangana met higher demand on the date of 5/1/2020. By this demand met at evening peak on 3/1/2020 tamilnadu met more power generation compared to other states. The shortage / surplus at evening peak are based on the demand needs and requirement of an energy analytics. The date of 1/1/2020 to 5/1/2020 consider as an week 1 analysis of shortage / surplus at evening peak. From the figure tamilnadu has higher surplus on **3/1/2020** compare to other states. Andhra Pradesh, karanataka, kerala, pondycherry, telangana also have more surplus on 3/1/2020 but it has lower than the tamilnadu. The requirement at evening peak describes the state wise order of an energy production. The requirement met high in tamilnadu on **4/1/2020**. Andhra Pradesh met more requirements on 2/2/2020. The other states met high requirement on 3/1/2020. Telangana met more requirements on 5/1/2020.

6.2 Demand met and Requirement at Off Peak

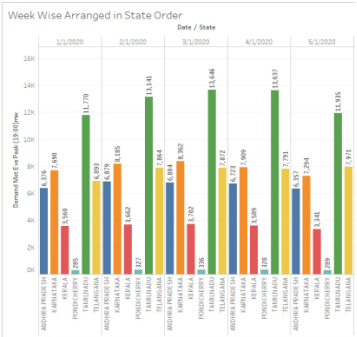
The demand met at off peak results describes about the demand and requirements of off peak. From the Figure 6 the week 1 is analyzed and visualized in state wise order. From 1/1/2020 to 5/1/2020 tamilnadu met more demand on **5/1/2020**. Andhra Pradesh and pondycherry met more demand on 4/1/2020. Karnataka and telangana have more demand on 5/1/2020. The shortage / surplus mentioned the increase and decreased of an energy production. Tamilnadu met high on the date of 2/1/2020 and 5/1/2020. From this discussion, the remaining states also met high surplus at off peak in the same day of 2/1/2020 and 5/1/2020.

In the demand met at off peak is does not occur any shortage in state wise order. The requirement at off peak represents the state wise order of week 1 analysis from 1/1/2020 to 5/1/2020. From week 1 analysis the requirement met high in tamilnadu on **5/1/2020** compared to all other states. At the same time Andhrapradesh, kerala and pondycherry met more requirements on 3/1/2020 whereas Karnataka, telangana have high requirement on 5/1/2020.

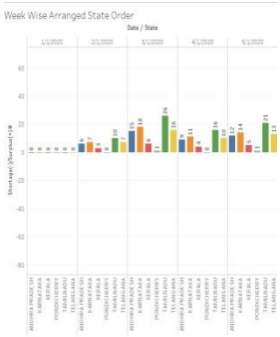
6.3 Forecast and Deviation Particulars of Day Energy

The forecast of week 1 analysis is compared with demand met, requirement at evening peak as well as in off peak. From the figure 7 the forecast is higher on the state of tamilnadu on the date of 4/1/2020 compared to other states. The deviation forecast is calculated by mean of the dataset. From the forecast results the deviation will be occurred in all the states. In the week 1 deviation forecast tamilnadu has more deviation compared to other states. The load generation balance report will generate the consumption of day energy forecast in megaunits. From the day energy particulars tamilnadu met higher deviation forecast on 3/1/2020.

Dem met at evening peak



Shortage / surplus at evening peak



Requirement at evening peak

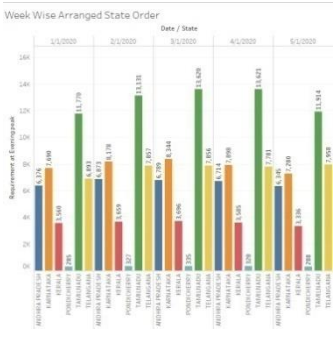


Figure 5. Demand met at evening peak for week 1 analysis

Dem met at off peak | Shortage / surplus at off peak | Requirement at off peak

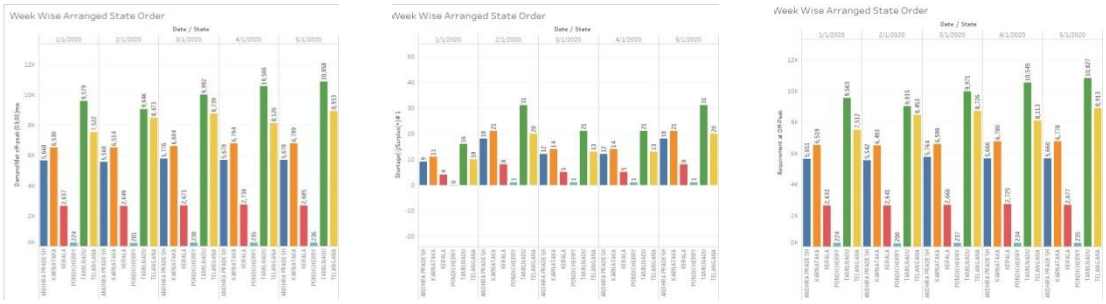


Figure 6. Demand met at off peak for week 1 analysis

Forecast | Deviation Forecast

Figure 7. Forecast and deviation forecast of day energy of week 1 analysis

7 Week 2 Analysis Report

7.1 Demand met and Requirement at Evening peak

The week 2 studies about the energy production of demand met at evening peak, shortage / surplus at evening peak and requirement at evening peak of week 2 analysis. The figure 8 visualizes the week wise production of demand met at evening peak. From 6/1/2020 to 12/1/2020 the demand met at evening peak visualizes the energy in state wise order. From this visualization the demand is more in tamilnadu on **9/1/2020**. At the same time, Andhra Pradesh met high on 11/1/2020 whereas kerala and pondycherry met high demand on 7/1/2020. Karnataka is high on 9/1/2020. Telangana met high demand on 6/1/2020. The shortage / surplus describes about the evening peak of energy requirement. In this evening peak the shortage / surplus simultaneously increased and decresed in evening peak in week 2 analysis. In 6/1/2020 and 12/1/2020 there is no shortage present. Compared to both dates the surplus is high on 6/1/2020. Tamilnadu met higher surplus compared to all other states. The shortage present in the date of 7/1/2020 and 10/1/2020. But in this date tamilnadu also met some shortages due to its demand and its requirement. The requirement at evening peak represents the state wise order of week 2 analysis. From the state wise order tamilnadu met high demand on the date of **9/1/2020**. Compared to all other states the analysis of demand met at evening peak and its requirement is high in tamilnadu on same date of 9/1/2020.

7.2 Demand met and Requirement at Off Peak Results

The demand met at off peak studies the state wise order of an energy production of off peak. From this figure 9 the tamilnadu met more demand on **11/1/2020**. Compared to all other states Andhra Pradesh, Karnataka met high demand on 11/1/2020. Kerala, pondycherry, telangana met high demand on 7/1/2020. The shortage / surplus is increase and decreased based on the demand and its requirement. In week 2 analyses there is no shortage present. Tamilnadu is higher on surplus on the date of 12/1/2020. The requirement at off peak is analyzed and visualized in state wise order. From this requirement at off peak tamilnadu is higher on **11/1/2020**.

7.3 Forecast and Deviation Particulars of Day Energy

From the figure 10 the forecast is calculated by using the demand and its requirement of both evening and off peak. From the forecast results tamilnadu has high forecast on 8/1/2020. The deviation forecast is calculated from forecast by the mean of the dataset. The results visualize the deviation in state wise order based on its consumption.

Dem met at evening peak | Shortage / surplus at evening peak | Requirement at evening peak

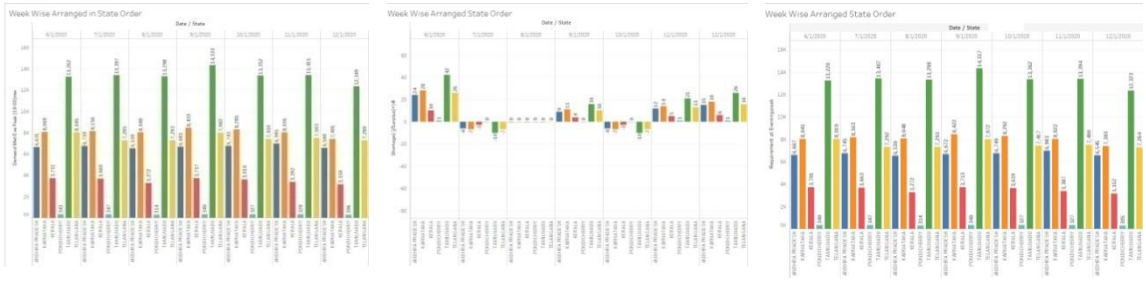


Figure 8. Demand met at evening peak for week 2 analysis

Dem met at off peak | Shortage / surplus at off peak | Requirement at off peak

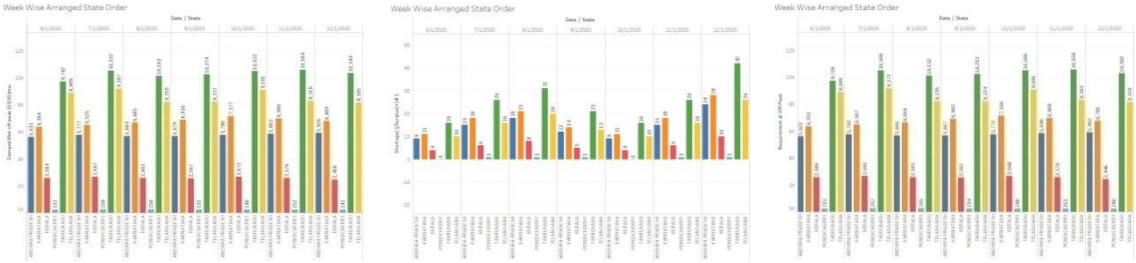


Figure 9. Demand met at off peak for week 2 analysis

Forecast | Deviation Forecast

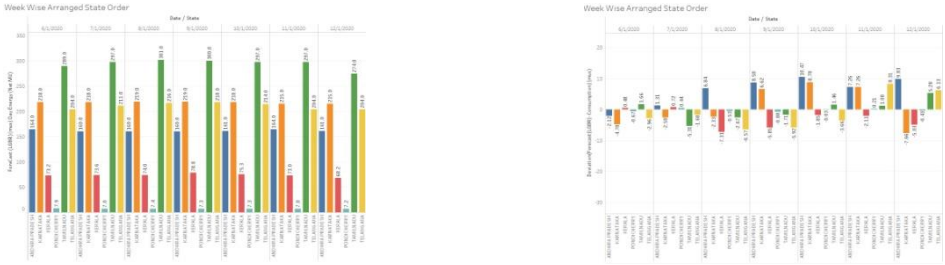


Figure 10. Forecast and deviation forecast of day energy of week 2 analysis

8 Week 3 Analysis Report

8.1 Demand met and Requirement at Evening Peak Results

The study analyses about the week 3 analysis of demand met at evening peak, shortage / surplus and requirement at evening peak. From the figure 11 the analysis is performed for week 3 evening peak of both demand and its requirement. From 13/1/2020 to 19/1/2020 considers as an week 3 performance of evening peak analysis. From this week 3 visualization tamilnadu met more demand on the date of **13/1/2020** compared to all other remaining states. At the same time remaining states of Andhra Pradesh, Karnataka, kerala, pondycherry, telangana met more demand on 13/1/2020. The shortage/ surplus at evening peak visualizes the demand and its requirement of evening peak. From this analysis there is no shortage occurred in week 3 performance. By this performance analyses tamilnadu met high surplus on 18/1/2020. The requirement at evening peak studies about the energy production in evening peak. By this scenario the requirement met more requirement on the date of **13/1/2020**. The demand met and requirement is higher in tamilnadu on the same date of 13/1/2020 at evening peak.

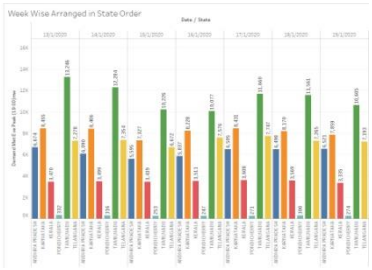
8.2 Demand met and Requirement at Off Peak Results

The study utilizes the performance of power production in state wise order. From this figure 12, tamilnadu met higher demand on **14/1/2020** compared to remaining states. The shortage / surplus is increased and decreased due to its requirement and demand. The demand at off peak is higher in 14/1/2020 but in shortage / surplus at off peak on 14/1/2020 shortage has occurred. The requirement at off peak is higher in tamilnadu on **14/1/2020**.

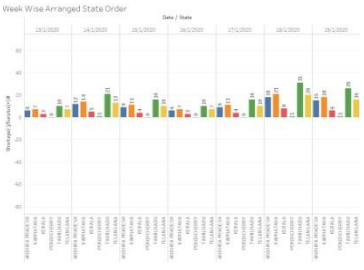
8.3 Forecast and Deviation Particulars of Day Energy

The forecast performance is increased and decreased on load generation balance report of both demand and requirement of evening peak as well as in off peak in figure 13. From this forecast analysis tamilnadu has more demand and requirement on 13/1/2020. The mean of the dataset is calculated by a deviation forecast of day energy particulars. The deviation is occurred based on the forecast results.

Dem met at evening peak



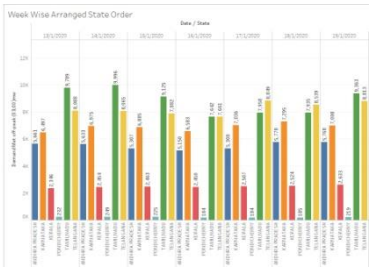
Shortage / surplus at evening peak



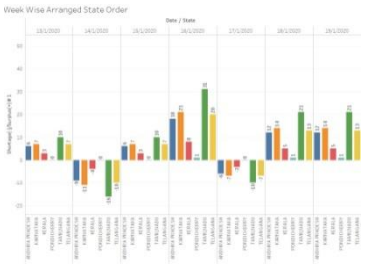
Requirement at evening peak

Figure 11. Demand met at evening peak for week 3 analysis

Dem met at off peak



Shortage / surplus at off peak



Requirement at off peak

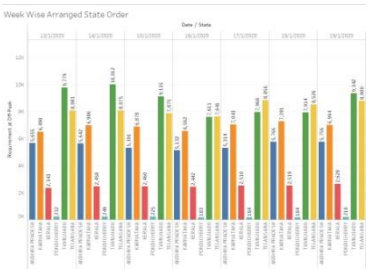
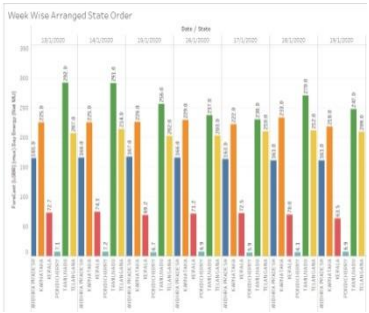


Figure 12. Demand met at off peak for week 3 analysis

Forecast



Deviation Forecast

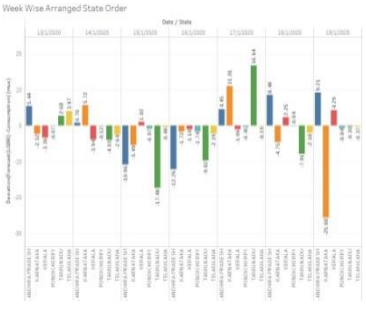


Figure 13. Forecast and deviation forecast of day energy of week 3 analysis

9 Week 4 Analysis Report

9.1 Demand met and Requirement at Evening Peak Results

The study performs the report of week wise analyses and produces the better results by visualization chart. From the figure 14 the visualization represents high demand in tamilnadu on **22/1/2020** Compared with other remaining states. The shortage / surplus represent the evening peak report of demand and its requirement. The analyses shows there is no shortages on demand met at evening peak. The requirement at evening peak met more requirements in tamilnadu on **22/1/2020**.

9.2 Demand met and Requirement at Off Peak Results

It utilizes the analysis of week 4 off peak performance of state wise order. From this study tamilnadu met more demands on **23/1/2020**, whereas the shortage / surplus at off peak represents there is no shortages on week 4 analysis but all states remains higher on 20/1/2020, 25/1/2020 and 26/1/2020. The requirement at off peak results show the requirement of tamilnadu is higher on **24/1/2020** on figure 15.

9.3 Forecast and Deviation Particulars of Day Energy

From the figure 16, the forecast will be higher in tamilnadu based on the day energy of demand and requirement of both evening and off peak. The consumption will be based on forecast and given the results of the deviation forecast.

10 Week 5 Analysis Report

10.1 Demand met and Requirement at Evening Peak Results

The week 5 analyses reports the state wise order of power consumption of evening peak analyses. From this figure 17, tamilnadu met more demand on **30/1/2020**. The shortage / surplus will be high and low on demand and its requirement. The shortage occurs in kerala but the surplus is equal in remaining in all other states. The requirement is more in tamilnadu on **30/1/2020** compared with all other states.

10.2 Demand met and Requirement at Off Peak Results

The study analyses about the off peak results of demand needs and requirement sown in figure 18. From the visualization the demand is high on **31/1/2020**. The shortage / surplus are moderate on demand and its requirement needs. There are no shortages in off peak. The requirement at off peak is more in tamilnadu in the date of **31/1/2020**.

10.3 Forecast and Deviation Particulars of Day Energy

The study performs about the day energy particulars of forecast shown in figure 19. The forecast is high on 30/1/2020 and 31/1/2020 in tamilnadu. From this the forecast is performed base on the demand and its requirement of both evening and off peak. The study performs about the day energy particulars of forecast shown in figure 20. The forecast is high on 30/1/2020 and 31/1/2020 in tamilnadu. From this the forecast is performed base on the demand and its requirement of both evening and off peak.

Dem met at evening peak

Shortage / surplus at evening peak

Requirement at evening peak

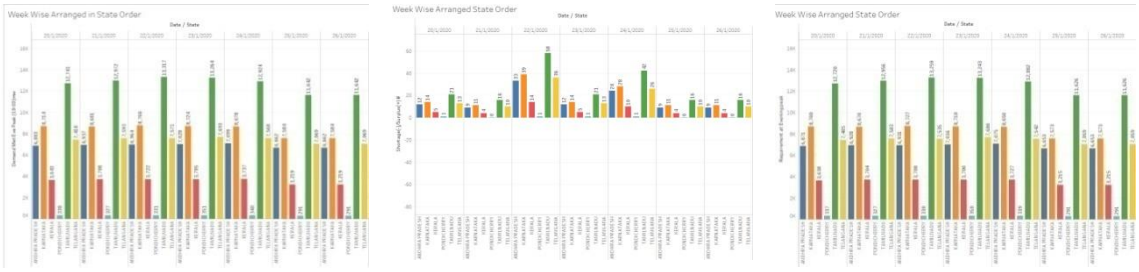
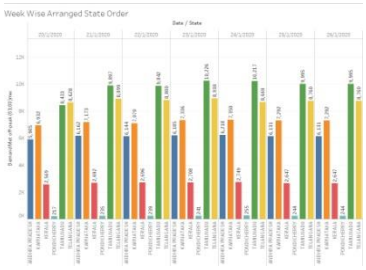
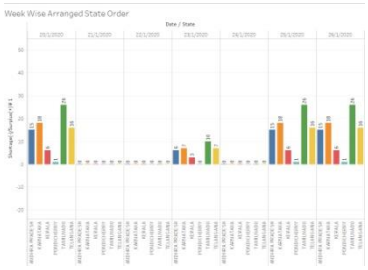


Fig.15. Demand met at evening peak for week 4 analysis

Dem met at off peak



Shortage / surplus at off peak



Requirement at off peak

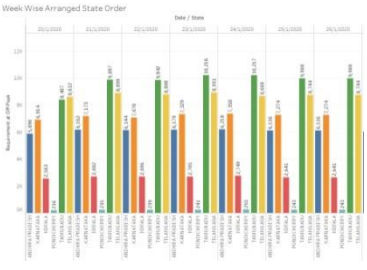
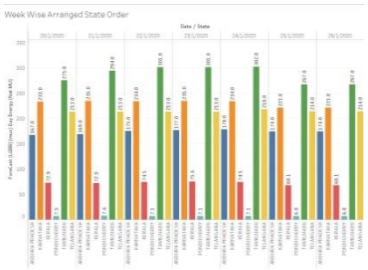


Fig.16. Demand met at off peak for week 4 analysis

Forecast



Deviation Forecast

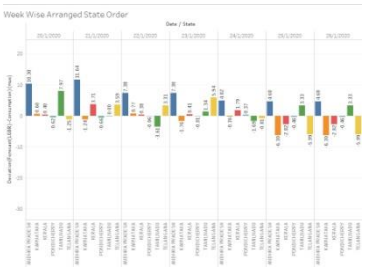
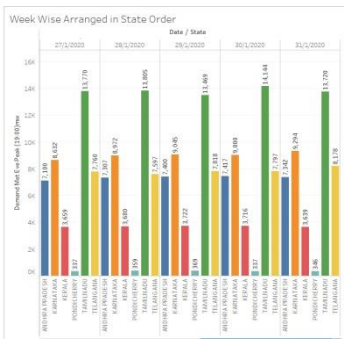
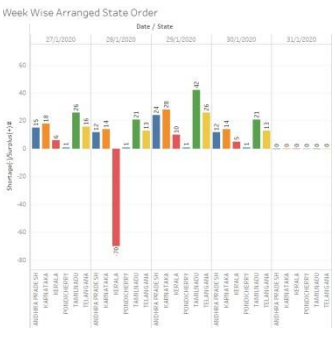


Fig.17. Forecast and deviation forecast of day energy of week 4 analysis

Dem met at evening peak



Shortage / surplus at evening peak



Requirement at evening peak

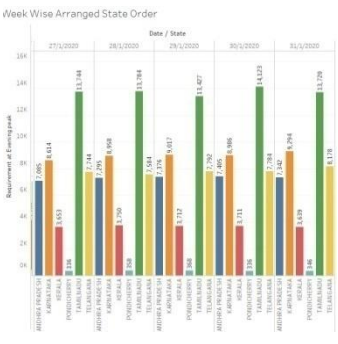


Fig.18. Demand met at evening peak for week 5 analysis

Dem met at off peak

Shortage / surplus at off peak

Requirement at off peak

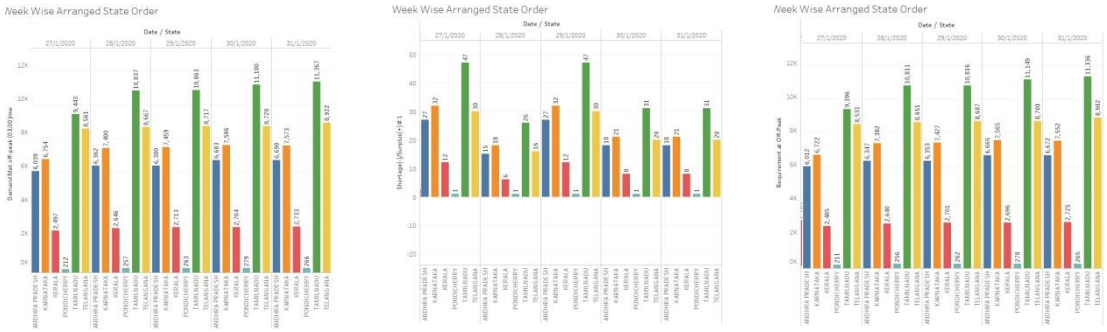


Fig.19. Demand met at off peak for week 5 analysis

Forecast

Deviation Forecast

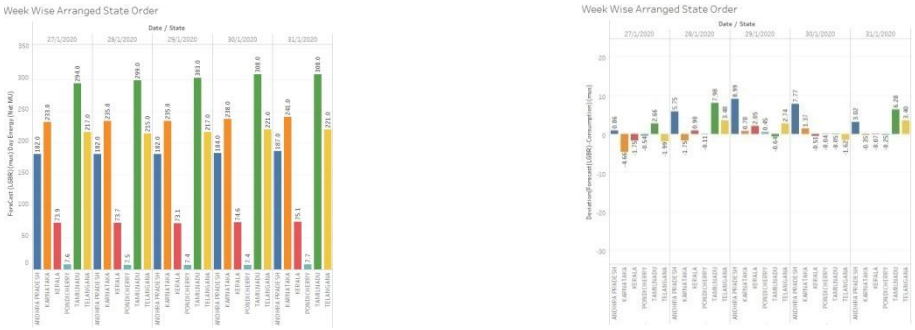


Fig.20. Forecast and deviation forecast of day energy of week 5 analysis

11 Conclusions

Data visualization is the graphical depiction of information and data. By using this visualization it is easily understand the trends, outliers and patterns in data. The demand data is analyzed in state wise metrics. The data is classified and visualized in state wise is based on various states. From this performance the visualization parameters are checked in evening peak, off peak, deviation forecast of day energy particulars of demand and requirement met in the day wise and week wise analyses. By this comparatively the state wise visualization the demand and its requirement is higher in tamilnadu compared with remaining states. This will bring the district's steady advancement provoking better desires for energy production and improved conservative conditions as well. In future work the load data details are needed to be analyzed for various renewable energies with corresponding different states.

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